Market Failure and Government Intervention

Important Definitions:

Market Failure = The failure of the free market to allocate resources in an optimum and efficient manner and to achieve social goals like equity Government Intervention = Government implementation of market or non-market oriented policies so as to correct market failure Externalities = Occur when there are third party costs (negative) or benefits (positive) associated with the production or consumption of a good **Demerit goods** = Goods that the government deems to be bad/undesirable/harmful for consumers and the rest of society but are over-consumed by society

Merit goods = Goods that the government deems to be good and desirable for consumers and the rest of society but are under-consumed by society

Public goods = Goods that are non-excludable and non-rivalrous

Microeconomic Aims

- 1. Efficiency
 - Allocative efficiency (P=MC/No deadweight welfare loss)
 - · Productive efficiency (Macro: Operate on PPC | Society: Operate at MES | Firm: Operate on LRAC i.e. X-efficiency)
 - Dynamic efficiency
- 2. Equity

Sources of Market Failure

Sources:

- 1. Externalities
- 2. Merit/Demerit Goods
- 3. Public Goods
- 4. Imperfect Info
- 5. Market Dominance
- 6. Immobility of Factors of Production
- 7. Income Inequality

Externalities

How to explain market failure caused by goods that generate externalities:

- Private costs and benefits (brief)
 Divergence in MC/MB curves due to external costs/benefits
- 3. Free-market outcome since economic agents only pursue self-interest
- 4. Socially optimal output
- 5. Over/Underproduction of the good
- 6. Deadweight welfare loss

E.g. Negative Externalities in Production

- · Chemical firms incur private costs like electricity costs, labour costs and research costs.
- · However, they also generate external costs due to a lack of environmental controls resulting in chemical firms dumping waste into rivers, hence polluting the rivers. River pollution by the chemical firms affect the production of fishermen and the consumption of swimmers.
- External costs create a divergence between the marginal private costs and the marginal social costs of producing the chemicals. The divergence between the MPC and MSC is the marginal external costs.
- In the pursuit of self-interest, rational producers will only consider their own MPC (Cost of production) and MPB (Price of the good) resulting in a free market equilibrium of OQe units of the good where MPB=MPC. However, at this output, MSC exceeds MSB. Thus, output OQe is allocatively inefficient.
- The socially ideal output level is at OQ_s where MSC=MSB.
- The free market equilibrium results in an overproduction of the good by QeQs units.
- This results in a deadweight loss, represented by the shaded area, as the amount of resources used to produce an additional QeQs units exceed the gain in benefit from producing Q_eQ_s units from society's point of view.
- · Hence, the free market equilibrium is not allocatively efficient when externalities are present. By reducing the output, the society saves more in social cost than it loses in social benefit.

E.g. Positive Externalities in Consumption

- Marginal private benefit (MPB) of consuming education is the additional private benefits such as higher personal productivity and future earnings to the consumer and marginal private cost (MPC) of producing education is the cost of employing teachers for the additional unit of education produced.
- · However, they ignore the marginal external benefit (MEB) which is the ability of a higher educated workforce in attracting foreign investment, creating jobs even for those who were not involved in the consumpti on of the additional unit of education.
- The presence of marginal external benefits (MEB) creates a divergence between the marginal private benefits (MPB) and marginal social benefits with MSB>MPB by MEB
- At the free market equilibrium, rational consumers will pursue self-interests and only consider their MPB and their MPC (Price of education) and consume 0Qe units

where MPB=MPC. At 0Qe, MSB exceeds the MSC, meaning that loss in benefit from not consuming QeQs exceeds the resources saved by no t producing QeQs from society's point of view

- Socially optimal output level is 0Qs units, where MSB=MSC.
- This results in a deadweight loss represented by area ABC The free market equilibrium output is thus allocatively inefficient and there is underconsumption of merit goods such as education and healthcare.

Other examples:

- Negative externalities in consumption → Smoking/Driving
- Positive externalities in production → R&D (MEB=1 profits for other firms, 1 productivity of economy)
- Positive externalities in consumption → Vaccinations

Merit and Demerit Goods

Arising from:

- 1. Personal well-being argument: Imperfect information
- 2. Consumption externalities argument
- 3. Equity concerns i.e. Income inequality (merit goods only)

How to explain market failure caused by merit/demerit goods due to imperfect information:

1. Explain why the government considers the good a merit/demerit good

- State that consumers have imperfect information and hence underestimate/overestimate their private benefits and/or costs of consuming the goods
- 3. State that demand under imperfect information is lower/higher than the demand under perfect information
- 4. Free-market outcome
- 5. Socially optimal output
- 6. Over/Underconsumption of the good
- 7. Deadweight welfare loss
- 8. Conclusion

e.g. Demerit Goods - Imperfect Information

- Smoking is deemed to be a demerit good by the government due to the health risks to the consumer associated with smoking such as increased risk of lung cancer.
- While everyone knows of these health risks, some individuals underestimate the private costs of smoking. For example, some smokers believe that as they are still young, the health risks associated with smoking do not apply to them.
- Furthermore, some individuals also overestimate the private benefits of smoking. For example, some smokers believe that it is 'cool' to smoke.
 If left to free market forces, consumer's demand for cigarettes under imperfect information will likely be higher than the demand under perfect information.
- Hence, at the free market equilibrium, OQe units of cigarettes will be consumed where SS=DD_{imperfect info}.
- However, the socially optimal level of consumption is at OQs where SS=DDperfect info.
- Thus, if left to the free market, there will be an overconsumption of cigarettes by QeQs units.
- This results in a deadweight loss, represented by the shaded area, arising from imperfect information as the costs from consuming additional QeQs units exceed the benefits from producing QeQs units.
- Hence, the free market equilibrium is allocatively inefficient for demerit goods due to imperfect information and thus, there is a need for the government to intervene through the use of policies like education and campaigns to overcome the problem of imperfect information.

How to explain market failure caused by merit goods due to excessive income inequality

- 1. Explain why the government considers the good a merit/demerit good
- 2. State that an individual's ability to consume goods and allocation of resources in the free market is based on the dollar vote
- 3. State that free market does not respond to the needs and wants of people with insufficient dollar votes
- 4. State that demand with excessive income inequality is lower than the demand without excessive income inequality
- 5. Free-market outcome
- 6. Socially optimal output
- 7. Underconsumption of the good
- 8. Deadweight welfare loss
- 9. Conclusion

e.g. Merit Goods - Excessive Income Inequality

- Education is deemed to be a merit good by the government due to the long term benefits from receiving a proper education such as higher
 potential earnings over one's working life and allowing for upwards social mobility.
- In the free market economy, an individual's ability to consume goods and services and the allocation of resources would depend on the dollar vote.
- Excessive unequal distribution of income and wealth may result in a misallocation of resources as the free market would not respond to the needs and wants of people with insufficient dollar votes to have any impact on market demand.
- As such, the free market under-represents the needs of these low income groups who may not have the ability to pay for basic education services.

- From Figure 3, free market forces will allocate resources based on the dollar votes where SS=DD0 and produce at OQe units
- However, if income is less unequal, effective demand would increase from DD₀ to DD₁, as the maximum price that consumers are willing and able to pay would increase, hence socially optimal output is OQ_s units where SS=DD₁.
- Thus, if left to the free market, there will be an underconsumption of education by QeQs units.
- This results in a deadweight loss, represented by the shaded area, arising from excessive income inequality as the benefits from consuming additional QeQs units exceed the costs from producing QeQs units.
- Hence, there is a need for the government to intervene and correct the inefficient free market outcome.

Public Goods

How to explain market failure caused by public goods

- 1. State and explain that the good is non-excludable
- 2. Explain how non-excludability leads to free-rider problem and thus consumers send the wrong price signal of zero market demand ⇒ no effective demand ⇒ TR=0 ⇒ No profit maximising firm will produce the good ⇒ Missing market problem
- 3. State and explain that the good is non-rivalrous
- 4. Explain how non-rivalry means MC (of allowing an additional user to consume the good)=0 and is thus allocatively efficient at P=MC=0 ⇒ However, no firm will produce at P=0 ⇒ Allocatively inefficient for the government to allow a private firm to produce the good
- 5. Conclusion

e.g. Public Goods

- National defence is non-excludable as it is impossible to exclude non-payers from enjoying the benefits of having a strong national defence force once national defence is provided.
- This results in the free-rider problem where no one has much incentive to help pay for such goods as everyone hopes that someone else would consume the good so that they would be able to benefit without paying for the good.
- Since no one is willing to pay for national defence, the price signal sent to the producers is that market demand is zero even though consumers
 might actually value national defence highly. Hence, there is no effective demand.
- Profit-maximising firms will have no incentive to produce non-excludable goods as they will not be able to enforce payment resulting in no total
 revenue and hence will make subnormal profits from producing the good. Thus, there is a missing market for public goods.
- Furthermore, national defence is non-rivalrous as the consumption of national defence by one more person does not reduce the amount of
 protection that the others receive.
- This means that the marginal cost of allowing an additional person to be protected by national defence is zero. Thus, the allocatively efficient
 output level occurs when the price of the good is zero.
- However, no profit-maximising firm will ever provide goods at a price of zero. Hence, it would be allocatively inefficient for the government to
 allow a private firm to produce the good.
- Thus, there is a need for the government to intervene in the market for public goods to solve the missing market problem and make it available at the price of zero for the consumers.

Non-excludable but rivalrous goods = Common goods ⇒ Free-rider problem ⇒ Tragedy of the Commons

Market Dominance

- Allocative inefficiency
- Productive inefficiency
- Exacerbates income inequality

e.g. Allocative inefficiency due to market dominance

- In an imperfect market structure, the price-setting firm faces a downward-sloping demand curve.
- The allocatively efficient output level is at Q1 where P=MC. At this point, consumer and producer surplus are maximised.
- However, the monopolist will produce at output level Q2 and price P2 where MC=MR to the extent that it is a profit-maximising firm.
- At output level Q2, price, P2, which is the value of the benefit that the consumer gets from the last unit of output is greater than the marginal cost, MC2, which is the cost of resources to produce that unit. Hence, if output is increased to Q1, every additional unit of output will yield a net benefit.
- By restricting output to OQ2 to maximise the monopolist's profits, there is a deadweight loss to society of the shaded area.
- · Hence, the the profit maximising output level of the firm in an imperfect market structure is allocatively inefficient.

e.g. Productive inefficiency due to market dominance

- Monopolists and oligopolists are able to earn supernormal profits in the long run due to high barriers to entry.
- Hence, these firms can become complacent and hence X-inefficient, operating at a point above the LRAC, and still continue to exist as they
 can still make some supernormal profits.
- · However, this results in a wastage of scarce resources which results in productive inefficiency from a firm's perspective.

e.g. Exacerbates income inequality

- · Supernormal profits are concentrated in the hands of a select few monopolies which have the ability to block potential new entrants
- Consumers lose out due to decreased consumer surplus as prices increase and output decreases ⇒ Monopolist firm gains part of the loss in

consumer surplus \Rightarrow Monopolist firm gains at the expense of the consumer

• As a result, the monopoly firm, as the sole producer of the good and hence a price setter, earns a much higher income than the rest of society

Imperfect Information

- Merit and Demerit Goods
- Persuasive Advertising
 - Persuasive advertising contributes to people's ignorance by giving misleading information about the benefits/costs of a good
 - Oversells the benefits and undersells the costs of a product, leading to increased DD and a higher than socially optimal level of consumption
- Asymmetric Information
 - One party has better information than the other
 - Supplier-induced demand
 - Unscrupulous suppliers may advise the consumption of a good that is more than necessary, leading to higher demand and consumption of the good than is socially optimal
 - Unscrupulous suppliers may also advise the consumption of a more expensive good than is necessary
 - Adverse selection
 - Riskier consumers will self-select to buy the insurance while less risky consumers will opt out
 - Proportion of risky consumers increase leading to greater payouts
 - Insurance firms adjust premium upwards, leading to another round of the least risky consumers opting out
 - Hence, market only exists for the most risky consumers or all consumers are priced out of the market and there is no
 - insurance coverageMissing market problem
 - 5

Immobility of Factors of Production

- Occupational Immobility
 - Barriers to the mobility of factors of production between different sectors of the economy leading to these factors remaining unemployed or being used in productively inefficient ways
 - Labour
 - Workers may have job specific skills
 - Hence, if made redundant/are retrenched from one industry, they may find it difficult to gain re-employment in growing industries.
 - Mismatch between the skills on offer from the unemployed and those required by employers looking for extra workers
 - Despite supply of unemployed workers in the economy, they will be unable to fill job vacancies created in industries which they do
 not have the skills in
 - Capital inputs
 - Some units of capital are specific to the industry they have been designed for
 - If demand for the goods/services provided by these industries fall, these units of capital cannot be used in growing industries
 ⇒ Left under-utilised
 - FOPs not efficiently allocated to the industries where it is required ⇒ Under-employment of resources is a waste of scarce resources ⇒ Market failure
- · Geographical Immobility
 - · Workers not able to travel to another location to work even if there are job vacancies due to:
 - Family and social ties
 - Financial costs
 - Differences in costs of living and house prices
 - · Less relevant in Singapore but especially relevant in large countries
 - FOPs not efficiently allocated to the industries where it is required ⇒ Under-employment of resources is a waste of scarce resources ⇒
 - Market failure
- · Represented by a point within the PPC

Income Inequality

- Free market allocates goods and services based on the dollar votes and hence, income distribution
- Causes:
 - Globalisation
 - Developed countries:
 - Inflow of cheap foreign labour depresses wages for domestic unskilled labour to a greater extent than for skilled labour ⇒ ↑ income inequality
 - Developing countries
 - Some industries grow faster than others due to specialisation and international trade ⇒ 1DD for workers in industries which the country specialises in ⇒ Faster 1 in wages of workers in industries which the country specialises in compared to other workers
 - Different DD-SS conditions in the market for different jobs
 - Could be due to strong trade unions/discrimination in which case is undesirable
 - However, usually desirable as it is allocatively efficient
 - Monopoly power
 - Unequal factor endowments for non-wage incomes (e.g. rent, interest, profits)
 - Inequalities in access to education
 - e.g. Private schools that have higher quality education
 - e.g. Tuition centres

- Effects:
 - Free market allocates goods and services based on dollar votes and hence, income level
 - Income determines effective demand (i.e. willingness + ability to consume) which is what matters in a market based system
 - · Low income workers are willing to consume some essential goods & services but are unable to due to low income
 - DD under income inequality higher than DD under perfect income equality ⇒ Misallocation of resources as free market does not respond to the needs and wants of those that do not have the ability to pay
 - People with high income levels able to determine what should be produced as they have higher dollar votes ⇒ Profit max producers divert more scarce resources away from production of necessities for the poor into the production of luxury goods for the rich ⇒ Misallocation of resources ⇒ Society's welfare not maximised
 - · Inequity becomes even more apparent for merit goods such as education/healthcare
 - Reduces mSOL of residents in the country ⇒ In the presence of excessive income inequality, lower income groups possess less disposable income ⇒ Lowered purchasing power ⇒ Lowered ability to consume goods and services ⇒ Decreased mSOL + definition
 - Source of social tension, weakening the social cohesion of the society
 Lower income groups do not have basic needs satisfied ⇒ End up disgruntled + Less to lose ⇒ Strikes and riots which threatens social stability and deters FDI
- Law of diminishing marginal returns

Government Intervention

Goals:

- Equity
- Efficiency
 - Productive
 - Allocative
 - Dynamic

Types of Government Intervention:

- Market oriented
 - 1. Taxes/Subsidies
 - 2. Quotas
 - 3. Tradable Permits
 - 4. DD/SS side policies
- Non-market oriented
 - 1. Legislation and regulation
 - 2. Direct government provision
 - 3. Education/campaigns
 - 4. Nationalisation

Taxes and Subsidies

- Pigouvian (Indirect) Taxes
 - Sources of market failure targeted:
 - Goods with negative externalities
 - Demerit goods
 - Especially those due to negative externalities
 - Excessive income inequality
 - Progressive tax
 - How it works
 - (Externalities) A tax is a compulsory payment made to the government. The government levies a specific indirect tax equivalent to the monetary value of the MEC at Q_S. This raises the firms' marginal private cost and hence decreases supply from MPC to MPC+Tax=MSC. Producers can pass on some of the tax to consumers in the form of higher prices. This tax results in a lower free market equilibrium output level because when price of the good increases, consumers will switch to relatively cheaper substitutes. Also, according to the income effect, consumers will face a fall in purchasing power. After tax market equilibrium output level will fall from OQ_E to MPB=MPC+Tax, OQ_S. This is also the socially optimal output level where MSB=MSC. Thus, the **external costs are internalised**, over-allocation of resources is corrected and the deadweight loss is eliminated, achieving allocative efficiency.
 - Imperfect Info) Indirect tax increases the cost of production, shifting the supply curve upwards by the amount of the tax.
 - Producers can pass on some of the tax to consumers in the form of higher prices which leads to a fall in quantity demanded and hence consumption of the demerit good towards the socially optimal level.
 - Advantages
 - Taxation acts as a form of revenue for the government to finance other projects.
 - e.g. Social and community development projects such as funding education programs/subsidising research
 Market continues to operate according to market forces, providing greater flexibility and financial incentives for behavioural
 - changes
 - Flexibility: Tax can be adjusted if the original tax fails to achieve the socially optimal output level
 - Less uncertainty as a specific price is fixed on the external costs
 - Able to influence quantity transacted in the short term
 - Disadvantages
 - Difficult to accurately determine a monetary value for the external costs → Society's welfare may still not be maximised after the tax and hence, there may still be deadweight welfare loss if tax rate is too high or too low

- . Effectiveness of an indirect tax is constrained by the PED as lower PED would mean that a higher tax is required to achieve the desired reduction in output
 - However, imposing indirect taxes that are too high may be politically unpopular
- Equity issues due to regressive effects off such taxes (takes a greater proportion of lower income households' income)
- Analysis assumes that MEC is constant regardless of output level, however, MEC increases with increasing output ⇒ Need to
- change tax rate with changes in demand to ensure that tax rate is at optimum level Only addresses the symptoms of imperfect info, not the root cause
- · Lump-sum Tax on Monopolist
 - · Sources of market failure targeted:
 - Income inequality due to market dominance
 - · How it works
 - Lump sum tax is an increase in fixed cost to the firm. This shifts the AC curve upwards but MC curve remains the same. Profits continue to be maximised at MC=MR at price P and output Q. However, profits are reduced from areas 1+2 to area 1 only. Area 2 is the amount of tax paid to the government. If lump-sum tax was large enough to make AC + lump sum tax = P at the profit maximising output, then all supernormal profits would be taken as tax.
 - Advantages
 - Help to reduce the monopolist's supernormal profits and hence, reduce income inequality
 - Form of revenue for the government to finance other projects/subsidise smaller firms
 - Disadvantages
 - May reduce the monopolist's incentive and ability to conduct R&D
 - May conflict with other government economic objectives like economic growth and efficiency
- Direct/Indirect Subsidies
 - Sources of market failure targeted:
 - Goods with positive externalities Merit goods
 - Especially those due to positive externalities
 - Market dominance
 - Excessive income inequality
 - How it works
 - (Indirect) The government introduces a indirect subsidy equivalent to the monetary value of the MEB at Q_s. This lowers the firms' marginal private cost from MPC to MPC+Subsidy=MSC. Thus, producers have increased ability and willingness to produce and hence, increase production to the new free market equilibrium output level where MPB=MPC+subsidy, OQs. This is also the socially optimal output level where MSB=MSC. As a result, under-allocation of resources is corrected.
 - (Direct) The government introduces a direct subsidy equivalent to the monetary value of the MEB at Q_s. This raises the consumers' marginal private benefit from MPB to MPB+Subsidy=MSB. Thus, the consumers have increased ability and willingness to consume and increase consumption to the new free market equilibrium output level where MPC=MPB+subsidy, OQs. This is also the socially optimal output level where MSB=MSC., under-allocation of resources is corrected.
 - (Market dominance) Government uses subsidies to regulate monopoly output. Since output is restricted under a monopoly, perunit subsidies help to increase the level of output to the allocative efficient level. Per-unit subsidies shift MC0 curve downwards to MC₁ such that the monopolist profit maximises (MC₁=MR) at output Q_s where MC₀=AR.
 - Advantages
 - Easily implemented
 - Flexible as it can be adjusted according to the magnitude of the problem
 - Market continues to operate according to market forces, providing financial incentives for behavioural changes
 - Able to influence quantity transacted in the short term
 - Disadvantages
 - Expensive as it needs to be funded through tax revenue
 - Incurs opportunity costs as tax revenue could have been spent in other areas (e.g. Education/Healthcare)
 May require high tax rates which may discourage effort to work, save and invest in the country
 - Difficult to accurately determine a monetary value for the external benefits
 Only addresses the symptoms of imperfect info, not the root cause

 - May further increase supernormal profits of the monopolist, hence worsening income distribution
 - E.g. Productivity and Innovation Credit Scheme
 - Direct subsidy to consumers (SMEs that require IT and automation equipment)
 - Such equipment deemed to have positive externalities/be merit goods (increased productivity and innovation of the workforce helps to boost Singapore's economy, allows local SMEs to compete on an international level)
 - Reduces excessive income inequality by providing smaller firms with the subsidies to purchase equipment to compete with larger firms

Government regulation/legislation

- Quotas
 - Sources of market failure targeted:
 - Goods with negative externalities
 - · How it works
 - Limit on the quantity produced by imposing a output quota at the socially optimal output level, OQs
 - Advantages
 - Easy to implement compared to market-based measures
 - Results in greater certainty in achieving the targeted output level
 - Producers and consumers compelled to comply with the quota through penalties
 - Disadvantages
 - Displaces the price mechanism Unable to perform signalling function
 - Government has to predict socially optimal output level but government has imperfect information

- Does not create market-based incentives for firms
 - Negative externality may be reduced at a higher cost (e.g. Reducing output vs switching to green technology)
- Enforcement may be expensive and difficult ⇒ incur opportunity costs
- Tradable Permits
 - Sources of market failure targeted:
 - Goods with negative externalities
 - How it works
 - Permits to pollute issued to firms by a government or an international body
 - Quota on the total number of permits with each firm granted a number of permits
 - Total supply capped (Perfectly price inelastic)
 - Permits can be traded among firms in a market
 - Firms that emit less pollutants can sell its unused permits to firms that exceed the level of pollutants set by their permits
 - Advantages
 - More effective than regulation as the level of pollutants emitted can be reduced by firms that have relatively low abatement costs
 Lower costs to society than regulation
 - Rewards efficiency and reduces pollution without damaging competitiveness
 - Encourages cleaner and greener technology
 - Socially optimal output level can be targeted
 - Desired level more likely to be achieved than using taxes and subsidies since quota is set
 - Flexible as government can progressively reduce the number of permits
 - Disadvantages
 - Administrative costs expensive ⇒ incur opportunity costs
 - Imperfect information
 - Over-allocation of carbon quotas would lead to a fall in permit prices
 - Difficult to estimate the socially optimal output levels
 - Market may underestimate the cost of pollution
 - Difficult to distribute permits in a fair way
 - Favours bigger firms
 - Firms with greater financial power may have less incentive to cut down on pollution levels
 - Smaller firms may be unable to buy permits or invest in environmentally friendly production techniques
 - Government failure
 - Due to national freedom to allocate permits, governments may be unwilling to set quota at socially optimal level in fear that they would be less competitive than rival countries
 - Politically unpopular to set quota too low
- Legislation to Regulate Market Dominance
 - Anti-trust laws
 - How it works:
 - Curbs collusive behaviour and the growing concentration of economic power
 - Prohibits anti-competitive practices (e.g. price fixing, predatory pricing)
 - Deems that formation of a monopoly is undesirable
 - Allows the court to stop anti-competitive behaviour and break up monopolies into smaller independent units
 - Reduces BTE ⇒ Encourages new entrants to enter the market ⇒ ↑ no. of firms ⇒ ↓ market power of each individual firm ⇒ ↓DD and more price elastic ⇒ ↓ extent of allocative inefficiency + ↓ supernormal profits ⇒ ↓ extent of exacerbation of income inequity
 - E.g. 2004 Competition Act Singapore
 - Prohibits
 - 1. Anti-competitive agreements
 - 2. Abuse of dominant position
 - 3. Mergers that reduce competition
 - Regulated by the Competition Commission of Singapore
 - Sistic case
 - · Laws to ensure standards of provision
 - How it works:
 - Ensure that there is a guaranteed quality of product provided in monopoly markets
 - E.g. LTA governs the standards of public transportation
 - Increasing the level of competition
 - How it works:
 - Government reduces barriers to entry of certain industries to encourage a greater number of firms in the industry, hence
 increasing competition in the industry
 - Increased competition would decrease the demand and increase the price elasticity of demand of existing firms, hence
 reducing the allocative inefficiency and the equilibrium price of the good
 - Advantages:
 - Easy to implement
 - Relatively short time for implementation required
 - Monopolists compelled to comply with the quota through penalties
 - Disadvantages
 - Enforcement may be difficult and expensive as constant checking is needed ⇒ incur opportunity costs
 - Penalties for breaking the law must be sufficiently harsh
 - Especially since monopolists generally have large long run supernormal profits
 - Anti-competitive agreements/practices may be hard to prove
 - May prevent mergers which could have potential benefits such as IEOS
 - Increased competition may produce wasteful duplication while a monopoly would reduce wasteful duplication
 - Cannot be applied to a natural monopoly where market demand cannot support more than 1 firm operating efficiently

Direct Government Provision

- Sources of market failure targeted:
 - Goods with positive externalities
 - Merit goods
- Public goodsHow it works
 - Government supplies the goods and services directly for free/at a price
 - · Good is currently under-consumed but benefits so large that the government directly supplies the good/service
 - May be complete provision (public goods)/supplement private provision (merit goods/goods with externalities
- Advantages
 - Government has control over supply of the goods
 - · Government can influence quantity, quality and affordability
 - Solves missing market problem
- Disadvantages
 - May be inefficient as employees have no incentive to reduce costs due to lack of profit-motive
 - Can minimise X-inefficiency by privatising parts of the industry that can be privatised e.g. Dr Goh Keng Swee privatised its weapons industry through Chartered Industries, now part of Singapore Technology Engineering ⇒ Competes with foreign weapons on a level playing field even for SAF to purchase them
 - Difficult to decide which good to provide and how much to provide
 - May still result in allocative inefficiency
 - Difficult to measure the social benefits and social costs since it displaces the price mechanism → no signalling function
 Requires the use of social cost-benefit analysis (social benefits vs cost of providing the good)
 - Relies on tax revenue (Opp cost)
 - Not possible for government to directly provide all G&S

Public Education

- · Sources of market failure targeted:
 - Goods with externalities
 - Merit/Demerit goods
 - Especially those due to imperfect info
- Imperfect information
- How it works
 - Government uses campaigns or advertisements to inform the public and make them more aware of the true social cost/benefit from the consumption/production of the good
 - e.g. Smoking campaigns, vaccination campaigns
 - Rules/Legislations to force producers to provide accurate information to consumers so that the real social cost/benefit is made known to consumers
 - e.g. Mandatory food labelling/Health warnings
 - · Change consumers' taste and preference to/away from good/service
 - Discourages consumption of goods with negative externalities and encourages consumption of goods with positive externalities towards DD_{perfect info} and hence, achieve socially optimal output level
- Strengths
- Long term solution
- Limitations
 - · May not be successful as it is difficult to change the mindset of some individuals
 - Takes a long time to change consumers' mindsets and tastes and
 - Unlikely to change anything in the short run and would require more punitive measures in the short run
 - Expensive to sustain education and advertising campaigns
 - · Difficult to collect and disseminate all necessary information

Price Regulation

- MC Pricing
 - How it works:
 - Legislates that the monopolist sets prices at P=MC
 - Socially optimum output is achieved at Q_s as consumers' marginal benefit from last unit sold, P, is equal to the marginal cost of
 producing that last unit, MC
 - Advantages
 - Allocatively efficient output is achieved
 - Reduces price and DWL
 - Increases output, consumers' surplus and social welfare
 - Disadvantages
 - Monopolist may face losses
 - Need for
 - Government subsidies
 - Per-unit subsidies by the amount of unit loss at Qs
 - But may be expensive
 - 2 tier pricing
 - Allow monopolists to charge at P₁=P_{MC} + Unit loss
 - Demand and cost curves can only be estimated
 - Regulated firm may withhold or distort information to allow it to charge higher prices

- AC Pricing
 - How it works:
 - Legislates that the monopolists sets prices at P=AC
 - Advantages
 - Monopolist is allowed to break even
 - Reduces price and DWL
 - Increases output, consumers' surplus and social welfare
 - Disadvantages
 - Output, Q_e, is less than socially optimal output level, Q_s
 - Demand and cost curves can only be estimated
 - Regulated firm may withhold or distort information to allow it to charge higher prices

Policies to Correct Factor Immobility

- Occupational Immobility
 - Training schemes/Subsidise the provision of vocational training/Educational policies
 - How it works:
 - Improve the skills and quality of the work force
 - Equip the unemployed with new skills and skills that can be transferred from one occupation to another
 - Reduces the problem of structural unemployment
- Geographical Immobility
 - Increase awareness and information on job situations
 - Reform housing market
 Reduce cost of rented property and increase supply of affordable property
- Reduce cost of rented property and increase supply of affordable property
 Advantages:
 - Reduces productive inefficiency
 - Reduces the loss of potential output due to unemployment
- · Limitations:
 - Requires a long time period
 - · Outcomes uncertain as it depends on acceptability of policies
 - Expensive as it requires significant government expenditure

Singapore Examples

- Traffic congestion and air pollution
 - Sources of Market Failure
 - Negative externalities
 - ERP
 - Advantages
 - Direct way of tackling congestion by targeting car usage
 - Fair as charges are based on usage
 - Disadvantages
 - Public acceptance may be an issue as it requires the pricing of a service that was previously provided free
 - COE
 - Advantages
 - Limiting car ownership leads to reduced number of cars on the road which can lead to reduction in air pollution and less
 congestion
 - Government can use tax revenue collected from COEs to finance land transport and public transport development
 - Disadvantages
 - Blunt tool as congestion is due to car usage, not the possession of the car
 - High car ownership costs may increase car usage as owners may want to get as much value from their car as possible
 - Politically unpopular
 - Quality public transport (efficient, comfortable, affordable and convenient)
 - Advantages
 - Improves substitutability between public transport and cars
 - Minimises road congestion and pollution
 - Disadvantages
 - Expensive
 - Long time lag
 - Comprehensive road network
 - Advantages
 - Minimises road congestion
 - Disadvantages
 - Limited land space in Singapore
 - Does not deal with the root cause of the problem
 - Expensive
 - Long time lag
- Education
 - Sources of Market Failure
 - Positive externalities
 - Merit good
 - Equity concerns
 - Indirect subsidies: Subsidised school fees
 - Direct subsidies: Edusave

- Direct provision: Free primary education, Government schools
- Rules and regulation: Compulsory Education Act in 2003 for primary education
- Healthcare
 - Government regulation
 - Minimise supplier-induced demand
 - Control development of specialist disciplines and medical services
 - Means testing (more subsidies for lower income earners)
 - Targets equity concerns
 - · Indirect subsidies to the hospitals
 - · Medisave, Medishield, Medifund
 - Medisave Government enforcement of saving for healthcare, helps to foster personal responsibility and gives Singaporeans the incentive to make responsible choices and manage moral hazards
 - Medishield National insurance scheme
 Medifund Direct subsidies for the very poor

Government Failure

- Imperfect InformationBureaucracy and Inefficiency of Government Intervention
 - Cost of administration and enforcement
 Time lags
 - Frequent shifts in government policy
 - Law of unintended consequences
 - Disincentive effect
 - Policy myopia
 - Political self-interest