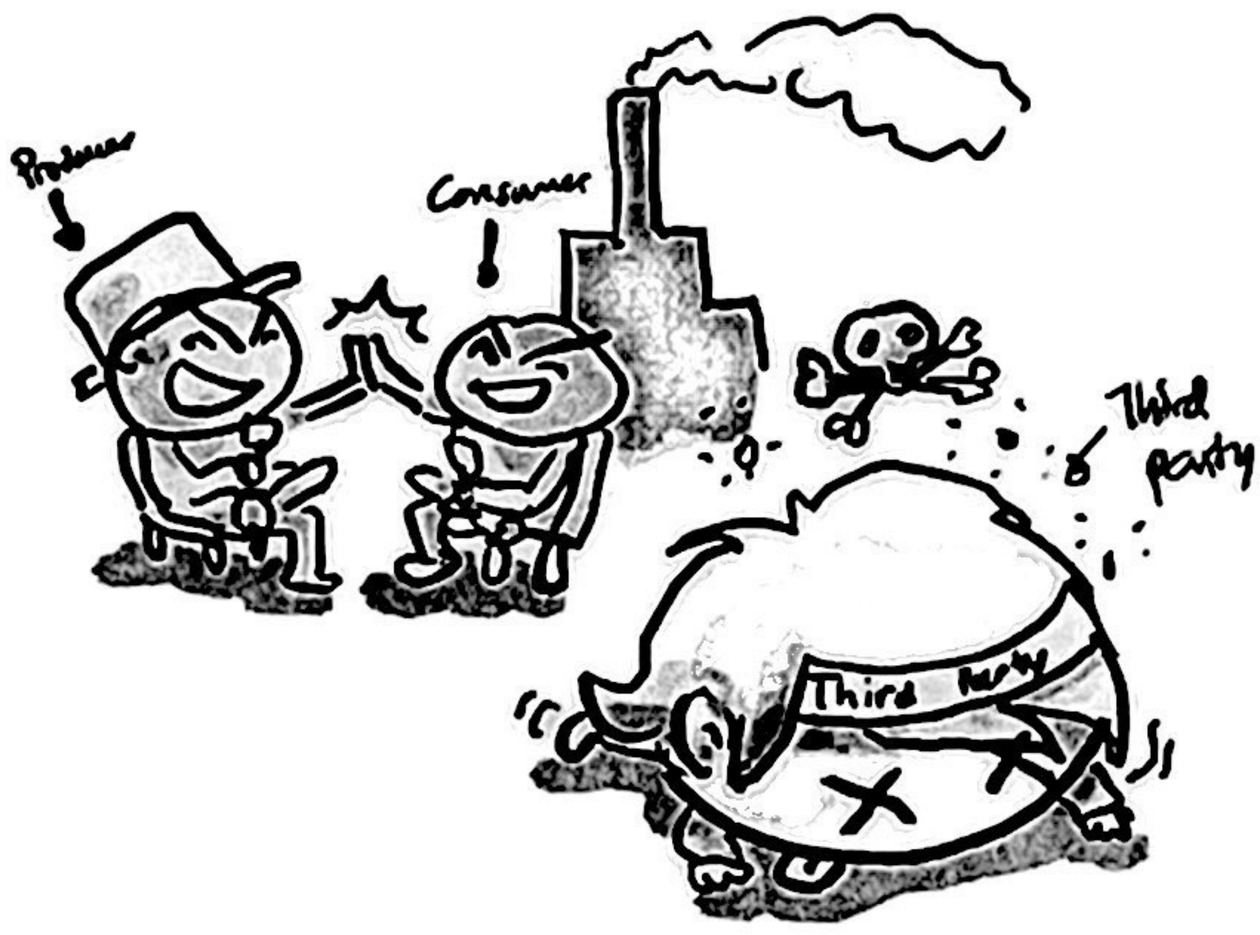
Market Failure & Government Intervention



Follow us @ hc.econs

http://bit.ly/hcecons

Name: _____ **CT: 22**____

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Learning Outcomes

Extracted from SEAB Syllabus Content for H2 Economics (9570)

Concepts and Tools of Analysis

- Allocative efficiency
- Equity
- Market failure
- Deadweight loss
- Marginal private benefit and cost
- Marginal external benefit and cost
- Marginal social benefit and cost
- Social versus private (market) optimum
- Public goods
  - Non-excludability and non-rivalry
- Positive and negative externalities
- Information failure
- Market dominance
- Factor immobility

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

CHAPTER OUTLINE

3.1 CONCEPT MAP

3.2 INTRODUCTION TO MARKET FAILURE & EFFICIENCY

- **3.2.1 Decision making: using cost benefit analysis**
- **3.2.2 Allocative efficiency in the free market**

3.3 CAUSES OF MARKET FAILURE & GOVERNMENT INTERVENTION

- **3.3.1 Externalities**
  - 3.3.1.1 Negative Production Externalities: The Problem
  - 3.3.1.2 Negative Production Externalities: The Solutions
  - 3.3.1.3 Negative Consumption Externalities: The Problem
  - 3.3.1.4 Negative Consumption Externalities: The Solutions
  - 3.3.1.5 Positive Consumption Externalities: The Problem
  - 3.3.1.6 Positive Consumption Externalities: The Solutions
- **3.3.2 Public Goods**
  - 3.3.2.1 Public Goods: The Problem
  - 3.3.2.2 Public Goods: The Solutions
- **3.3.3 Information Failure / Imperfect Information**
  - 3.3.3.1 Imperfect Information: The Problem
  - 3.3.3.2 Imperfect Information: The Solutions
  - 3.3.3.3 Asymmetric Information: The Problem
  - 3.3.3.4 Asymmetric Information: The Solutions
- **3.3.4 Immobility of Factors of Production**
  - 3.3.4.1 Immobility of Factors of Production: The Problem
  - 3.3.4.2 Immobility of Factors of Production: The Solutions
- **3.3.5 Market Dominance (Details covered in the next chapter)**
  - 3.3.5.1 Market Dominance: The Problem
  - 3.3.5.2 Market Dominance: The Solutions

3.4 ANOTHER CAUSE OF GOVERNMENT INTERVENTION

- **3.4.1 Inequality in Distribution of Income And Wealth (a cause of GI, not MF)**
  - 3.4.1.1 Equity in Relation to Markets
  - 3.4.1.2 Inequality in Income & Wealth: The Problem
  - 3.4.1.3 Inequality in Income & Wealth: The Solutions

3.5 CAUSES OF GOVERNMENT FAILURE

3.6 CONCLUSION

Appendix A – Imperfect Information from consumers' perspective (case of smoking)

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Hwa Chong Institution
Year One H2 Economics 2022
Chapter #3: Microeconomics II – Markets: Market Failure & Government Intervention

A LEVEL ESSAY QUESTIONS IN RECENT YEARS

TYS 2020 Q1
Discarded plastic and carbon emissions are among the biggest causes of pollution. The environmental damage to the air and water runs into billions of dollars. This affects not only our health but also our food supply.
Adapted from: Kimberly Amadeo, How Air, Water and Plastic Pollution Affect the Economy, 18 June 2019

a) Explain how pollution leads to market failure. [10]
b) Discuss the extent to which government policy measures are likely to address this market failure. [15]

TYS 2021 Q1
The market for bicycles is often said to generate external benefits such as reduced traffic congestion and reduced air pollution.

(a) Explain how economic theory suggests consumers act rationally to decide whether or not to buy a bicycle, and how producers of bicycles act rationally to determine their level of output. [10]
(b) Discuss how government intervention in the market for bicycles could be used to maximise social welfare and consider how likely it is that such intervention will be successful in achieving this aim. [15]

TYS 2019 Q3
There was a serious outbreak of flu (influenza) across the world at the beginning of 2018. In many countries, vaccinations were provided free of charge to the most vulnerable people and various Health Authorities urged the elderly and children to get vaccinated as soon as possible.

(a) Explain why vaccinations against infectious diseases, if left to market forces, might be allocated undesirably. [10]

(b) Suppose the government decides to intervene in the market and subsidies vaccinations against infectious diseases. Discuss whether government subsidy is the best policy to ensure vaccinations are allocated desirably. [15]

TYS 2018 Q3
The proposed Cross Island MRT line would run through the Central Catchment Nature Reserve. An alternative route going round the reserve's southern edge would preserve Singapore's natural heritage and serve a much larger number of residents. The Land Transport Authority, LTA, says that the alternative route would entail longer travelling time, higher costs, more land acquisition and possibly bigger engineering challenges.
Source: *The Straits Times*, accessed 24 May 2017

(a) Explain what needs to be considered when a government makes rational spending decisions about such projects. [10]

(b) Discuss whether the government should proceed with the proposed alternative route for the Cross Island MRT. [15]

TYS 2017
Government policies to restrict the use of cars and encourage the public to use the Mass Rapid Transit (MRT) system continue to be a source of heated debate in Singapore.

Assess the effectiveness of the policies available to the Singapore government in overcoming market failure in Singapore's land transport market. [25]

TYS 2016
Singapore's spending on healthcare is about 4% of GOP. This is lower than many developed countries. However, Singapore's population is ageing and economic growth may not be as high as before. The government's share of national healthcare expenditure is expected to rise from 33% in 2012 to over 40% in the future.

(a) Explain why a government intervenes in the provision of healthcare. [10]

(b) Discuss how the opportunity cost of increased healthcare expenditure differs, depending on whether it is financed by individuals or the Singapore government. [15]

TYS 2015
Prospective students and governments each make decisions that affect the scarce resources that are devoted to university education.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Hwa Chong Institution
Year One H2 Economics 2022
Chapter #3: Microeconomics II – Markets: Market Failure & Government Intervention

(a) Explain the determinants of a rational prospective student's decision on whether to participate in university education. [10]

(b) Discuss the factors that governments should consider in allocating resources to university education [15]

TYS 2015
'Market dominance is the main factor determining the profitability of firms.'

(a) Explain how market dominance can influence a firm's price and output decisions. [10]
(b) Discuss whether government intervention is always needed when a firm dominates the market. [15]

TYS 2014
There is considerable agreement over the need for governments to provide public goods. There is less agreement over the extent to which markets fail because of imperfect information.

(a) Explain why markets might fail in the case of public goods and where information is imperfect. [10]
(b) Evaluate the alternative policies that are adopted by the Singapore government to correct for both these types of market failure. [15]

TYS 2013
Economics assumes rational decision-making by consumers, firms and government.
(a) Explain what is involved in rational decision-making both by consumers and by firms. [10]
(b) Discuss whether rational decision-making by consumers, firms and government always leads to an efficient allocation of resources. [15]

TYS 2012
University education in Singapore and throughout the rest of the world is subsidised by national governments rather than left to market forces. During 2010, several governments announced that these subsidies would be cut, stating the need to reduce large fiscal budget deficits as the reason.
Explain why countries subsidise university education and discuss whether reductions in subsidies are justified. [25]

TYS 2011
Consumers and producers are generally assumed by economists to be motivated by self-interest.
(a) Explain how, according to economists, the pursuit of self-interest can help to address the problem of limited resources and unlimited wants. [10]
(b) Assess whether the price mechanism will always allocate scarce resources in the most efficient manner for all goods and services in a market economy. [15]

TYS 2010
(a) Explain why government intervention is advocated in the markets both for public goods and for goods where externalities are present. [12]
(b) In the UK, entry to national museums and art galleries is free of charge and tickets to see the opera are heavily subsidized. In contrast, in Japan, entry to museums and art galleries comes at a high price and a ticket to see opera is among the most expensive in the world.
Assess the economic case for these two different approaches. [13]

TYS 2009
Governments around the world protect consumers against market failure due to market dominance.
(a) Analyse, with supporting examples, how market dominance might lead to market failure. [10]
(b) Assess the extent to which market dominance, rather than any other potential market failure, is the major cause of government intervention in the markets for goods and services within Singapore. [15]

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

3.2 INTRODUCTION TO MARKET FAILURE & EFFICIENCY

3.1 CONCEPT MAP

<table>
<tr><td colspan="6">MARKET IS EFFICIENT (MSB = MSC)</td></tr>
<tr><td colspan="6">Underlying Assumptions:</td></tr>
<tr><td colspan="2">Not public goods</td><td>No externalities</td><td>No Information Failure</td><td>Perfect Factor mobility</td><td>No market dominance</td></tr>
<tr><td colspan="6">CAUSES OF MARKET FAILURE</td></tr>
<tr><td rowspan="2">Non-provision of Public Goods</td><td colspan="2">Presence of Externalities</td><td rowspan="2">Information Failure/ Imperfect Information</td><td rowspan="2">Factor immobility</td><td rowspan="2">Market dominance</td></tr>
<tr><td>Negative</td><td>Positive</td></tr>
<tr><td colspan="6">SOLUTIONS</td></tr>
<tr><td>Direct provision by the govt</td><td>Tax

Regulations

Tradable permits</td><td>Subsidy

Regulations</td><td>• Legislation for producers to provide information
• Education
• Screening
• Signalling</td><td>• Education and training
• Improve transport network</td><td>• Prevention
• Deregulation
• Price regulations e.g. MC-pricing</td></tr>
<tr><td colspan="6">ANOTHER CAUSE OF GOVERNMENT INTERVENTION</td></tr>
<tr><td colspan="6">Income Inequality / Equity Issue</td></tr>
<tr><td colspan="6">GOVERNMENT FAILURE</td></tr>
<tr><td colspan="6">Government creates inefficiency due to lack of information,
administrative & compliance costs & unintended consequences & political objectives</td></tr>
</table>

Resource allocation

In the study of the Central Problem of Economics, we learnt that resources are scarce relative to wants. This gives rise to the economic problems of how best these scarce resources should be allocated in terms of what and how much to produce, how to produce and for whom to produce. These questions refer to the choices that every society must make in allocating scarce resources amongst competing uses.

Price mechanism

In theory, the free market economy is regarded as an efficient system in the allocation of scarce resources. In Chapter 2, we learnt about how the market economy makes use of the price mechanism to make decisions on the allocation of resources according to the preferences of the consumers.

If there is no market failure, the price mechanism allocates resources in such a manner as to maximise society's welfare. This outcome is achieved when the free market's signalling and incentive mechanism lead

▼ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

producers to produce only goods and services that are most desired by consumers in the correct quantities, using the most efficient methods of production.

Market failure

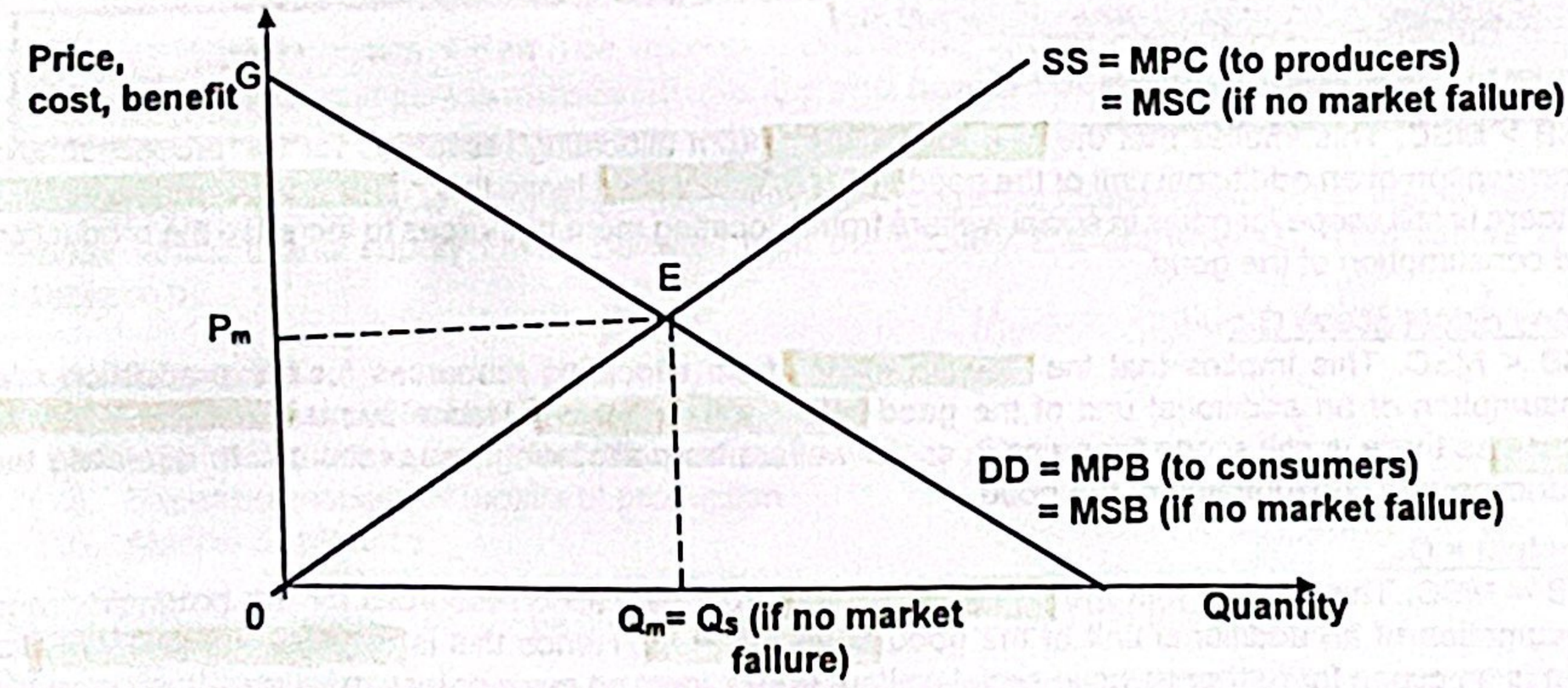
However, in reality, assumptions such as the absence of externalities, existence of perfect competition and existence of perfect information may not hold. Hence, market failure arises. The free market does not always allocate scarce resources efficiently in a way that maximises society's welfare. In other words, the free market equilibrium (quantity demanded = quantity supplied) may not be the most efficient outcome from society's perspective, even though there is neither a shortage nor a surplus. This is known as Market Failure. Government intervention is required when there is market failure.

3.2.1 DECISION MAKING: USING COST BENEFIT ANALYSIS

We had learned in Chapter 1.1.2 about the rational decision-making process by economic agents. While there are many aspects to decision making, the two most important aspects are the weighing of costs and benefits[1]. Similarly the free market allocation of resources can be better understood by using a cost benefit analysis approach. In other words, the market demand curve and supply curve can be used to represent the benefit curve and cost curve respectively. The use of such an approach makes it easier and clearer to explain how rational decisions or choices are made by consumers and producers in a free market.

- With reference to Figure 1:

Figure 1: Using demand and supply curves to represent costs and benefits



The Market Demand Curve

- The market demand curve represents the marginal private benefit (MPB) to consumers.
- **Marginal Private Benefit (MPB)** measures the benefit consumers gain from consuming an additional unit of the good.
- The benefit consumers gain can come from the happiness or utility from satisfying his needs or wants and preferences by consuming the good.

[1] Please revisit the rational decision-making framework, as a number of questions on decision making have been set for the topic of Market Failure in recent years.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

The Market Supply Curve

- The market supply curve represents the marginal private cost (MPC) to producers.
- **Marginal Private Cost (MPC)** measures the cost producers incur from producing an additional unit of the good.
- The costs producers incur can come from the prices paid for inputs such as labour and raw materials used in the production.

3.2.2. ALLOCATIVE EFFICIENCY IN THE FREE MARKET

- The free market equilibrium is achieved when the market demand equals the market supply. At this equilibrium, there is no shortage or surplus and the resulting equilibrium price is P_m and the equilibrium quantity is Q_m.

- In the absence of market failure, there is no divergence between private and social benefits and cost. Hence MPB = MSB and MPC = MSC.

- **Marginal Social Benefit (MSB)** measures the benefit to society from the consumption or production of an additional unit of the good. Society is a term used to refer collectively to consumers, producers as well as third parties.

- **Marginal Social Cost (MSC)** measures the cost to society from the consumption or production of an additional unit of the good. This cost reflects the opportunity cost of the scarce resources used to enable the production and consumption of an additional unit of the good.

- **Social welfare is maximised when MSB = MSC.**

  At any output below Q_m:
  MSB > MSC. This implies that the benefit to society from allocating resources for the production and consumption of an additional unit of the good outweighs its cost. Hence this is not optimal for the society as there is still scope for gains in social welfare from allocating more resources to increase the production and consumption of the good.

  At any output above Q_m:
  MSB < MSC. This implies that the cost to society from allocating resources for the production and consumption of an additional unit of the good outweighs its benefit. Hence this is not optimal for the society as there is still scope for gains in social welfare from allocating less resources to decrease the production and consumption of the good.

  At output = Q_m:
  MSB = MSC. This implies that the benefit to society from allocating resources for the production and consumption of an additional unit of the good equals its cost. Hence this is optimal for the society as there is no scope for further gains in social welfare from allocating more or less resources to change the production and consumption of the good away from Q_m. Hence **allocative efficiency is achieved as social welfare is maximised and there is no under or over consumption or production of the good.**

- In the absence of market failure, consumers and producers, each acting in their own self-interests, create a market equilibrium outcome where both consumer and producer surplus and social welfare (i.e. area 0GE) are maximised.

- Area 0GE is the net total social benefits or Total Social Benefit – Total Social Cost at output Q_m. It is the sum of the consumer surplus (Area GEP_m) and producer surplus (Area $0EP_m$).

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

- At the **free market equilibrium outcome**,

  MPB = MPC

- In the absence of market failure, given that there is no divergence between private and social costs and benefits:

  MSB = MPB = MPC = MSC

- Thus at the free market equilibrium price, the output is socially optimal because it satisfies this **condition for socially efficient resource allocation**:

  Marginal Social Benefit (MSB) = Marginal Social Cost (MSC)

- Hence in the absence of market failure, the market equilibrium output Q_m also equals to the socially efficient output Q_s.

- To sum up:

  MC = MB

  is the marginalist decision making approach (thinking at the margin) for determining the optimal level of consumption or production.

3.3 CAUSES OF MARKET FAILURE & GOVT. INTERVENTION

Market failure occurs when free markets, operating without any government intervention, fail to allocate scarce resources efficiently and hence society's welfare is not maximised.

↓ no wastage

The market is said to have failed when the equilibrium production/consumption level that is determined by market demand and supply forces deviates from the socially efficient level Q_s. This occurs due to the existence of:

Market failure: inefficient use of resources

1. Externalities
2. Non-provision of Public Goods
3. Information failure/ imperfect information
4. Imperfect mobility of factors of production
5. Market dominance

In the following sections, we will be studying how the above causes the market to fail.

3.3.1 EXTERNALITIES

EXTERNALITIES occur when the production or consumption of a good affects the well-being or welfare of third parties. Externalities are also called spillover effects or third-party effects.

Third parties are neither consumers nor producers who are directly involved with the consumption or production of the good. E.g. In the case of tobacco smoking, the third parties are non-smokers who are neither consumers nor producers of tobacco but whose health are adversely affected by passive smoking.

Eg. a person buys an apple, so other consumers have 1 less apple to buy → not a third party effect

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Types of Externalities

Positive or Negative Externalities

Externalities could either be positive spill-over effects which are beneficial or negative spillover effects which are harmful to others (third parties) not directly related to the consumption or production of the good. In measuring social costs and benefits, externalities are included together with private costs and benefits.

Consumption or Production Externalities

Externalities are related to market activities which could either arise from consumption or production. In the former case, they are called consumption externalities and in the latter case they are called production externalities.

1. Negative production externality

- Refers to harmful spill-over effects caused by production.
- Examples of sources of negative production externality: Factory Pollution (noise, air and water) when factories discharge toxic waste into rivers or emit toxic fumes into the atmosphere.
- External cost: Toxic waste kills fishes in the river and thus causes fishermen downstream to suffer financial losses for which they do not get compensation from the factory; Sulphur dioxide emissions from steel plants cause acid rain which corrodes buildings and destroy marine life.

2. Negative consumption externality

- Refers to harmful spillover effects caused by consumption.
- Examples of sources of negative consumption externality: consumption of alcohol or smoking
- External cost: Alcohol-related crime, loss of productivity due to alcohol consumption, cost to families/social network due to alcohol misuse; Tobacco smoking causes negative externalities as it imposes healthcare costs on non-smokers who suffer from health problems caused by passive smoking.

3. Positive production externality

- Refers to beneficial spillover effects caused by production activity.
- Examples of sources of positive production externality: An orchard next to a bee farm, power generation plants discharging warm water into the river or R&D efforts by private firms.
- External benefit: the flowers from the apple trees are a good source of nectar to help a beekeeper nearby to enhance his production of honey. The warm water discharged into the river by power generation plants promotes marine life such as the breeding of more fishes benefiting fishermen; the money spent on R&D by individual firms could lead to the discovery of new technology that could benefit the entire industry e.g. new cures for cancer.

4. Positive consumption externality

- Refers to the beneficial spillover effects caused by consumption.
- Examples of sources of positive consumption externality: Education, immunisation against infectious diseases.
  vaccines

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

- External benefit: a better educated workforce can attract investments into the country, which will not just create jobs for the skilled workers but also create jobs for the low skilled workers. E.g. if more Singaporeans are trained in aerospace engineering and foreign companies such as aircraft engine manufacturer Rolls Royce is attracted to set up production plants in Singapore, this will create jobs and benefit not just graduates in aerospace engineering but also create more job opportunities for relatively low skilled workers such as cleaners and security guards; If an individual goes for an immunisation jab against infectious diseases such as small-pox, others will also benefit from reduced chances of getting infected. Thus, third parties are protected from infectious diseases without having to go for the jab.

Externalities and Misallocation of Resources

The presence of externalities distorts the signalling function of market prices leading to resource misallocation. Externalities whether external costs or external benefits are typically unpriced by the free market, and therefore are not reflected by market prices. In the absence of government intervention, producers and consumers do not take such external costs and benefits into account in decision making. Thus, market demand and supply curves do not reflect these external costs/benefits.

Positive Externalities (MEB > 0)

- **Marginal External Benefit (MEB)** measures the benefit to third parties from the consumption or production of an additional unit of the good. MEB arises due to positive externalities.

- When positive externalities exist, MSB no longer = MPB because:

$$MSB = MPB + MEB$$

- Hence MSB will be greater than MPB. Graphically, the MSB curve will lie above the MPB curve, with the vertical distance between MSB and MPB representing the MEB.

Negative Externalities (MEC > 0)

- **Marginal External Cost (MEC)** measures the cost to third parties from the consumption or production of an additional unit of the good. MEC arises due to negative externalities.

- When negative externalities exist, MSC no longer = MPC because:

Divergence between MSC & MPC
(social costs > private costs)

$$MSC = MPC + MEC$$

- Hence MSC will be greater than MPC. Graphically, the MSC curve will lie above the MPC curve, with the vertical distance between SMC and PMC representing the MEC.

The next section considers some typical cases of externalities and how they result in resource misallocation and market failure.

3.3.1.1 Negative Production Externalities: The Problem

Negative production externalities occur when the production of a good negatively affects the well-being of third parties.

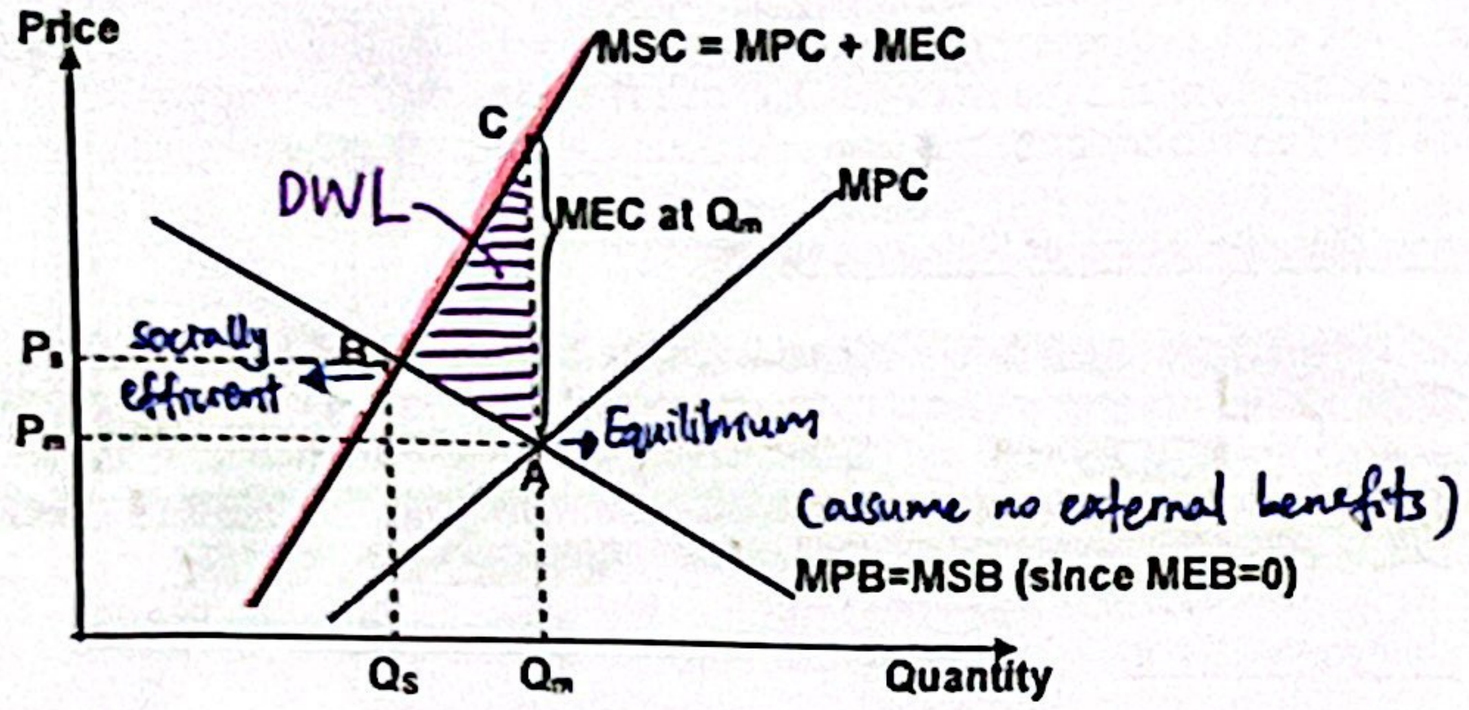
♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Price mechanism (without considering MEC): overconsumption of good by $Q_s - Q_m$ → social cost of area $Q_m Q_s BC$ → since social benefit is $Q_m Q_s BA$, Deadweight loss = ABC

Context: Market for Steel (Decision-making by producers)

Figure 2: External cost from steel production



With reference to Figure 2:

- Marginal Private Cost (MPC) measures the cost to producers of producing additional units of steel such as the cost of raw materials and wages of workers.
- Marginal Private Benefit (MPB) measures the benefit to consumers from consuming additional units of steel.
- Q_m represents the free market equilibrium output where MPC = MPB.

Divergence between private and social costs

- Steel production generates external costs to third parties who are neither consumers nor producers of steel.
- Example:
  For each unit of steel produced, toxic fumes are emitted into the atmosphere by the factory which is breathed in by third parties living near the factory. But if they fall sick, the factory does not bear their medical expenses. Moreover, any loss in labour productivity due to absence from work is not borne by the steel producer but by society at large such as the employers of the third parties who are absent from work.
- The third parties (residents near the factory and their employers) are not compensated by steel producers for the external costs that they incur. Hence such external costs are unpriced by the market and not reflected in the MPC which only reflects the private costs of production.
- Hence as seen in Figure 2, external costs cause a divergence between private and social costs, with MSC lying above MPC as MSC = MPC + MEC.
- The market does not price in the true costs or social costs of producing the marginal unit of steel. P_m reflects only the private costs and excludes the external cost.
- As such, the free market has "under-priced" the production of steel relative to its true social costs, leading to an inefficient allocation of resources.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Important: The concept of "under-priced" here is not used in comparison with Ps but with the true price, Pm' (see Figure 3) that would result in the socially efficient outcome, Qs. At Qm, the good is "under-priced" as Pm < Pm' (= true price).

Socially efficient output

- To find the socially efficient outcome, we need to take into account the full costs and benefits to society of an additional unit of steel. Hence the socially efficient quantity of steel to maximise social welfare is at Q_S where

MSC = MSB

- However, if left to the free market, equilibrium price is P_m and output Q_m. Hence, there is an over-production of $Q_m - Q_S$ units of steel and an over-allocation of resources to the steel market.

Impact on Society's Welfare

- From the over-production of $Q_m - Q_S$, area Q_mQ_SBC is the total social cost incurred while area Q_mQ_SBA is the total social benefit gained.
- Since total social costs incurred exceeds the total social benefits gained, area ABC represents the deadweight welfare loss due to over-production of $Q_m - Q_S$.

Conclusion:

From the standpoint of society, negative externalities cause distortion in market price leading to market under-pricing the good, and thus providing the wrong price signals resulting in over-production. This is the key reason for market failure in the case of negative externalities in production.

What do you think is the reason behind the increasing divergence between MPC and MSC?

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

3.3.1.2 Negative Production Externalities: The Solutions

Measures to tackle negative production externalities include taxes (widely used), regulations that include ban (for extreme cases) and quota such as tradable/marketable permits (for some goods). In theory, it is useful to divide the measures/solutions into 2 broad categories: (A) Market-based solutions and (B) Command and control measures.

(A) Market based solution

Taxes

- In the case of negative externalities, the misallocation of resources arises as the free market cannot price in externalities and thus underpriced the good, resulting in over-consumption or over-production.

- Hence, the government can intervene to help the market price in the external costs so as to internalise the negative externality. If it is done accurately, the market price should reflect the social costs.

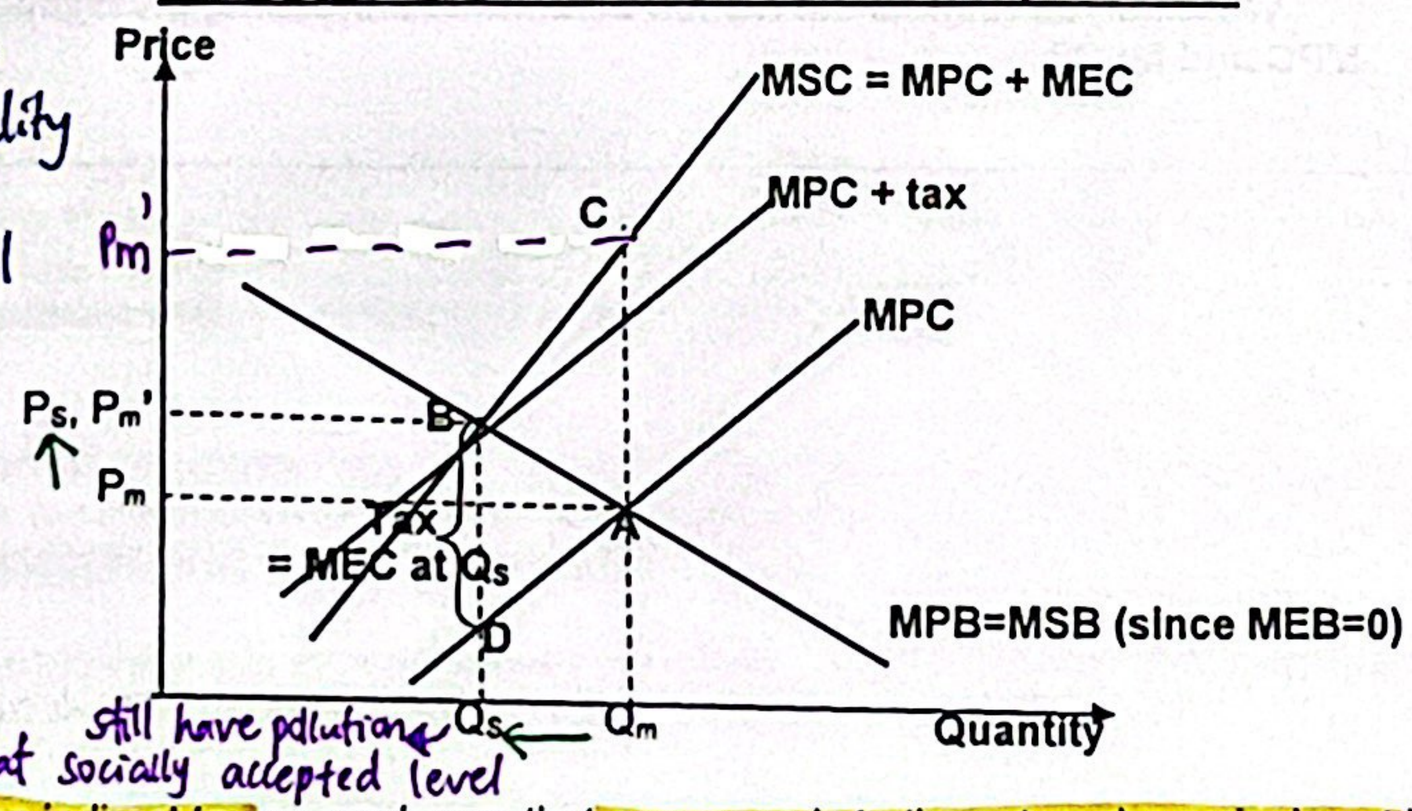
- **Internalising the externality:** This form of tax is called **a Pigouvian tax** *(named after welfare Economist AC Pigou)*. A Pigouvian tax improves resource allocation because it helps the market price in external costs so that the full social costs is accounted for by consumers and producers.

- Taxation is an example of a **market-based approach** as it relies on the use of the price mechanism. Consumption and production decisions are left to consumers and producers in the market to decide and so long as buyers and sellers take into account the full social costs and benefits of their actions, the outcome will be socially efficient.

- Govt forces firms to pay a fee to shift the MPC upwards to internalise the externality

- Imposition of tax will result in a socially efficient level of consumption where MSC = MSB.

Figure 3: Tax to internalise MEC from steel production



- Imposition of an indirect tax on producers that corresponds to the external marginal cost i.e. **Tax = MEC at Q_S** (distance BD) on each unit of steel shifts the MPC upwards from MPC to MPC + tax.

- Hence, the new market equilibrium quantity where MPB = MPC + tax, now coincides with the **socially efficient** quantity Q_S, where MSB = MSC.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Smoking eg.

- Lack of objective measures for intangible components eg. effect of passive smoking : each person has a different tolerance (level) } Lack of information
- Loss in economic output from the deaths of passive smokers } Difficult to estimate

- If the tax accurately reflects the marginal external cost, steel producers and consumers are now in effect paying for the use of the environment.

- The externality has then been internalised or priced in. Deadweight loss is then eliminated as Q_m is reduced to socially optimal level, Q_s.

Limitations:

Lack of information

- Even if a government decides to impose a tax equal to MEC, there will still be a problem of measuring those costs and apportioning blame. E.g. How do we measure the monetary cost of the damage to buildings, lakes and forests from acid rain caused by pollutants discharged by steel plants using coal-fired blast furnaces? Also, there are other contributors to acid rain – how should the tax be apportioned amongst them?

- To correct the negative externality, the tax must accurately reflect the external costs. In reality, this is easier said than done. If the government over-estimate or under-estimate the external costs, then the problem of resource misallocation cannot be eliminated through taxation.

Impractical to use different tax rates

- To correctly internalise the externality, the tax should accurately reflect the external costs. However, firms produce varying types and amounts of externalities. But it is administratively impractical to impose different tax rates for firms with different types and quantities of pollution. For example, newer steel factories might emit a less toxic mix of pollutants due to the use of pollutant abatement technologies. Hence the MEC they cause would be lower than that of older steel factories. However, it would be extremely difficult to measure and ascertain how differently to tax steel factories of varying ages or factories with varying use of pollution abatement technologies.

Evaluation

- Even with the limitations, many economists are in favour of using taxes to internalise the externality. This is because, tax also provides incentive for firms to reduce pollution. If firms are subject to taxes for polluting, they are encouraged to work out cleaner ways of producing goods.

- The most appropriate situation for imposing a pollution tax is when the emissions level can be more easily measured e.g. emissions from aviation fuel. The government can then impose a tax per unit of fuel used by airlines. In order to avoid paying pollution taxes, airlines may switch to cleaner and greener methods of production such as more fuel-efficient jet engines in order to reduce their MEC and hence pay less per unit tax.

2. True or false? Explain your answer.
Since negative externalities reduce societal welfare, government should act to remove ALL negative externalities to improve welfare.

Yes, unless cost of removing > benefit.

* if PED/PES<1, the tax needed to be imposed is large, which may not be feasible.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

(B) Command and Control measures

These are measures designed for the government to take over the functions of the market in the allocation of resources. In other words, the state dictates what, how much to produce and how to produce using regulation and quotas.

(1) Regulation

The government could require by law that producers equip their factories with emission reduction devices to reduce pollution and enforce this regulation by conducting checks and fine or suspend offending firms. This approach is interventionist and economists sometimes refer to it as **command-and-control policies.**

Limitations:

Lack of Compliance and high administrative costs

- The effectiveness of regulations depends very much on its compliance. Whether firms comply with the regulations will depend on the effectiveness of monitoring and enforcement. A key reason is because of lax enforcement of anti-pollution laws due to the priority given to promoting economic growth. In some cases, high administrative and compliance costs (e.g. costs of deploying inspection teams, installing monitoring equipment and prosecution of offenders etc.) may outweigh the social benefits from correcting the market failure.

Blunt instrument and unsustainable

- Legal restriction is a blunt instrument as it cannot handle the complexities of the problem it seeks to resolve. For example, in Beijing recently the government tried to reduce the smog problem by shutting down all factories temporary as well as restricting the use of vehicles on the streets. However, the policy is too blunt as not every factory pollutes the environment with the same intensity. The authorities also adopted an "odd and even number system" to regulate the use of vehicles, stipulating that vehicles with even and odd numbers take turns to use the roads on alternate days. Such contingency method is unlikely to be sustainable as it leads to overcrowding of the public transportation system.

Total Ban on the Product (for extreme cases)

A total ban represent an extreme form of regulation in which the authorities prohibits the production of the good.

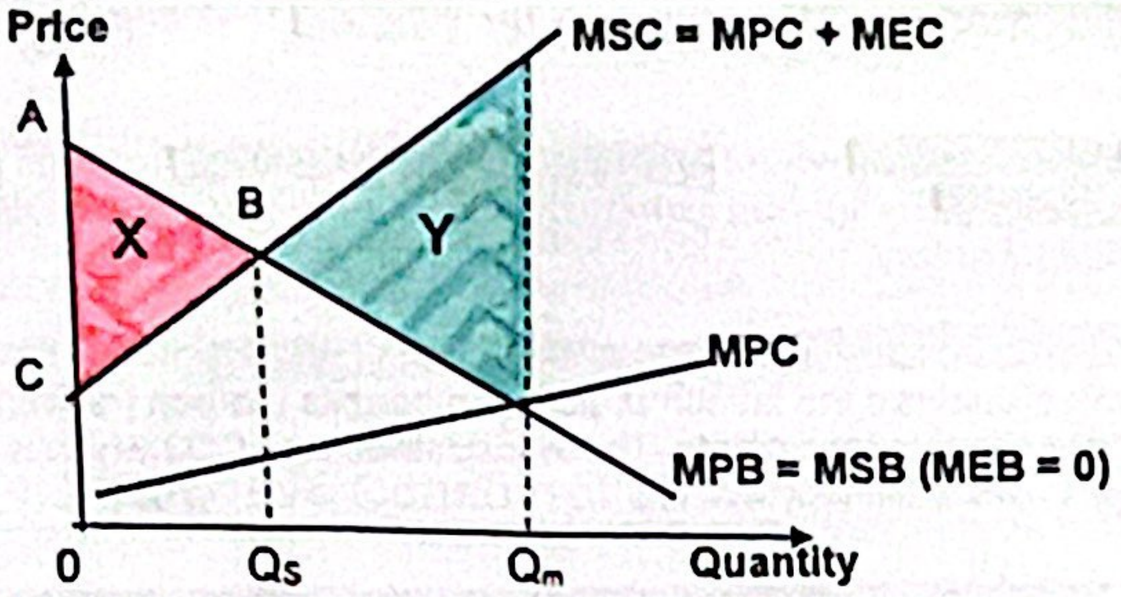
Is a total ban beneficial or harmful to society?
It is beneficial if it results in net welfare gain and harmful if it results in net welfare loss.

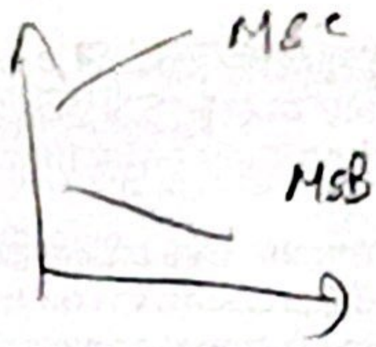
Net welfare loss: Figure 4 compares the welfare loss caused by the negative externality from producing a product with the welfare loss brought about by a total ban of the product. For example, a ban on the use of coal to generate electricity (coal fired-electricity) in Ontario due to the large amount of MEC it causes.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Figure 4: Banning the production of coal-fire electricity





- The market equilibrium quantity is at Q_m where MPB = MPC, compared to the socially efficient quantity Q_s where MSB = MSC. Hence there is an over-production of electricity from coal by quantity Q_m - Q_s, which results in a deadweight welfare loss of area Y.
- When there is a total ban, zero quantity of electricity is generated.
- In such a situation, there would be a loss of Area X (0ABQs – 0CBQs) measured in terms of potential net welfare benefit forgone if the socially efficient quantity of good was produced.
- On the other hand, a stoppage of production would result in a welfare gain of Area Y from the removal of the deadweight welfare loss caused by over-production of Qm – Qs. Hence, final outcome on welfare would depend on the relative size of Area X & Area Y.

Conclusion:
If Area Y > Area X, there would be a net welfare gain from imposing the ban. → beneficial to society
If Area X > Area Y, there would be a net welfare loss from imposing the ban. → harmful to society

Limitations:

- Government intervention in the form of regulation may be costly to administer and enforce. The administrative costs of administering and enforcing a particular policy to correct market failure may outweigh the social benefits from the correction. For example, the cost of monitoring the entry of banned products for a large country would be high.
- Also, it may work against the welfare of the society if the ban results in greater welfare loss (i.e. Area X > Area Y).

3. Draw a diagram to show a ban resulting in a bigger welfare loss.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

(2) Tradable / Marketable Permits (Quotas)

- **Quotas** are **quantitative restrictions** i.e. caps on the **quantity** that can be **legally produced or consumed.**

- **Tradable permits** is a **quota system** where **government issues permits** to firms **allowing to pollute.** They may **trade these permits** by buying (when they pollute in excess) or selling to other firms (when they have unused permits).

- Example: Use of **tradable pollution permits** to **control discharge of wastes** into the environment. The USA and European Union have pioneered the launch of pollution permits (carbon trading) to curb air pollution from air-travel and electricity generations plants. These industries emit CO_2 which is widely suspected of causing global warming.

How it works:

- This method is sometimes called a **"Cap and Trade"** system. The **government** places a **"cap"** (i.e. **quota** or limit) on the **total permissible level** of pollution.
- The **government** will **estimate** the **socially efficient level** of emission before it decides on the corresponding number of permits to issue to individual firms. The **permits** give the firms the **legal 'right' to pollute.** Firms are **allowed to pollute** up to the **permitted level.**
- However, if the firm wishes to **pollute beyond the permitted level,** it can **purchase extra permits** from **others** who **might not need** to use them. In other words, amongst themselves, the firms can **trade** these permits issued by the government. The **total level of pollution produced** by **all** the firms **remains the same**, which is the **"cap"** that the government set.
- Example: Suppose the **government** determines that the **environment** has a **natural capacity** to **absorb a hundred tons of carbon dioxide** (CO_2) emissions **per day**. **One hundred permits** are then issued in denominations of one ton of CO_2 **per day**. If a firm has ten permits, it is allowed to emit ten tons of CO_2 per day. **Firms** who need to **emit more** would have to **buy permits** from firms who managed to cut down on their CO_2 emissions. Thus **firms which pollute more** would have to **pay** according to the **number of permits purchased,** which **internalises the external costs,** forcing firms to **consider the cost of pollution** in their **production decision.**

Advantages:

Efficient distribution of permits

- The advantage of this method is that once the **cap** is **determined accurately,** the **government** can **leave it** to the **market** to **distribute the permits efficiently** amongst the polluting firms.
- The market for permits is in effect a market for bads. i.e. pollutants.

Incentive to voluntarily reduce pollution

- Secondly, this measure provides an **incentive** for **polluting firms** to **cut back on pollution** e.g. **adopting green technology.**
- Firms that can **cut back on pollution** stand to **benefit from selling their unused.** Typically, such firms are those with lower pollution abatement costs than other firms.

Limitations:

Lack of information

- One **problem** with permits is the **need to determine** the **correct number** of **permits to issue.**
- To achieve an **efficient allocation,** the government must be able to **determine the quota** or **optimal quantity** of permits to issue **accurately.** This requires the government to have **information** on the **level** of

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

permissible pollution corresponding to the socially optimal level of output. In reality, such information is not easy to obtain or estimate accurately.

- Hence if government over-issued the permits, too much pollutants will be released to the environment.

Lack of Compliance and high administrative costs

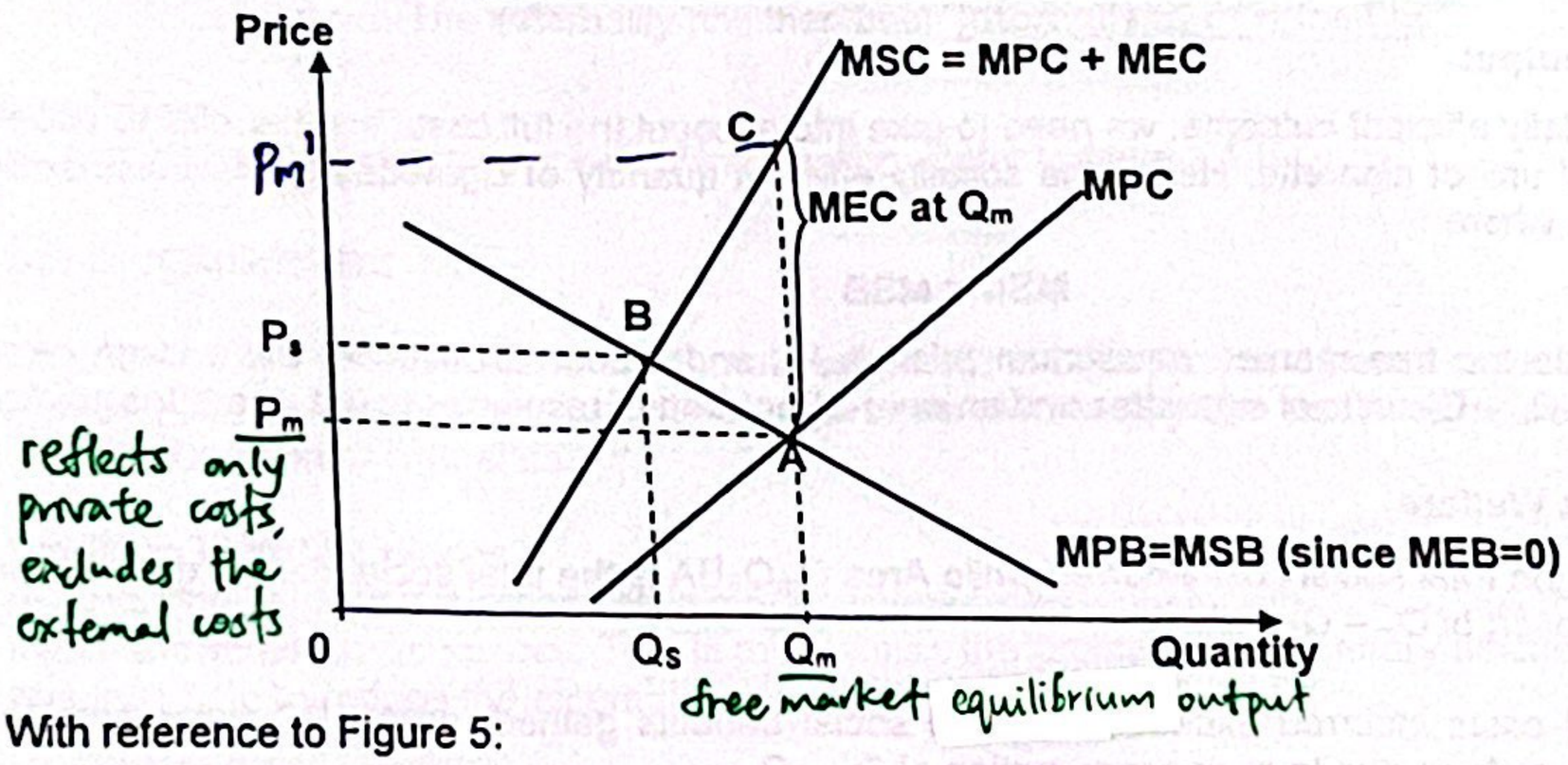
- To ensure that firms comply with the pollution permits issued, there must be effective monitoring and enforcement. Otherwise firms can flout the rules and pollute beyond their allocated quotas.
- However, in reality, the system may fail because compliance may be too lax and ineffective or too costly to enforce.

3.3.1.3 Negative Consumption Externalities: The Problem

Negative consumption externalities occur when the consumption of a good negatively affects the well-being of third parties.

Context: Smoking (An example of negative consumption externality)

Figure 5: External cost from cigarette consumption



With reference to Figure 5:

- Marginal Private Cost (MPC) measures the cost to producers of producing additional units of cigarettes such as the cost of raw materials like tobacco leaves and wages of workers.
- Marginal Private Benefit (MPB) measures the benefit to consumers from consuming additional units of cigarettes.
- Q_m represents the free market equilibrium output where MPC = MPB.

Divergence between private and social costs

- Cigarette **consumption** generates **external costs** to **third parties** who are neither cigarette consumers nor cigarette producers.
- Example:
  For each unit of cigarette consumed, second hand smoke is emitted and breathed in by passive smokers who will have a higher risk of developing smoking-related diseases. But if they do fall sick, the smokers

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

do not bear their medical expenses. Moreover, any loss in labour productivity due to absence from work is not borne by the smokers but by society at large such as the employers of the third parties who are absent from work.

- The third parties (passive smokers and their employers) are not compensated by cigarette consumers for the external costs that they incur. Hence such external costs are unpriced by the market and not reflected in the MPC which only reflects the private costs of production.

- Hence as seen in Figure 5, external costs cause a divergence between private and social costs, with MSC lying above MPC as MSC = MPC + MEC.

- The market does not price in the true costs or social costs of consuming the marginal unit of cigarette. P_m reflects only the private costs and excludes the external cost.

- As such, the free market has 'under-priced' the consumption of cigarettes relative to its true social costs, leading to an inefficient allocation of resources.

<u>Important:</u> The concept of "under-priced" here is not used in comparison with Ps but with the true price, Pm' (see Figure 6) that would result in the socially efficient outcome, Qs. At Qm, the good is "under-priced" as Pm < Pm' (= true price).

Socially efficient output

- To find the socially efficient outcome, we need to take into account the full costs and benefits to society of an additional unit of cigarette. Hence the socially efficient quantity of cigarettes to maximise social welfare is at Q_S where

$$MSC = MSB$$

- However, if left to the free market, equilibrium price is P_m and output Q_m. Hence, there is an over-consumption of $Q_m - Q_S$ units of cigarettes and an over-allocation of resources to the cigarettes market.

Impact on Society's Welfare

- Area Q_mQ_SBC is the total social cost incurred while Area Q_mQ_SBA is the total social benefit gained from the over-consumption of $Q_m - Q_S$.

- Since total social costs incurred exceeds the total social benefits gained, area ABC represents the deadweight welfare loss due to over-consumption of $Q_m - Q_S$.

Conclusion:
From the standpoint of society, negative externalities cause distortion in market price leading to market under-pricing the good, and thus providing the wrong price signals resulting in over-consumption. This is the key reason for market failure in the case of negative externalities in consumption.

3.3.1.4 Negative Consumption Externalities: The Solutions

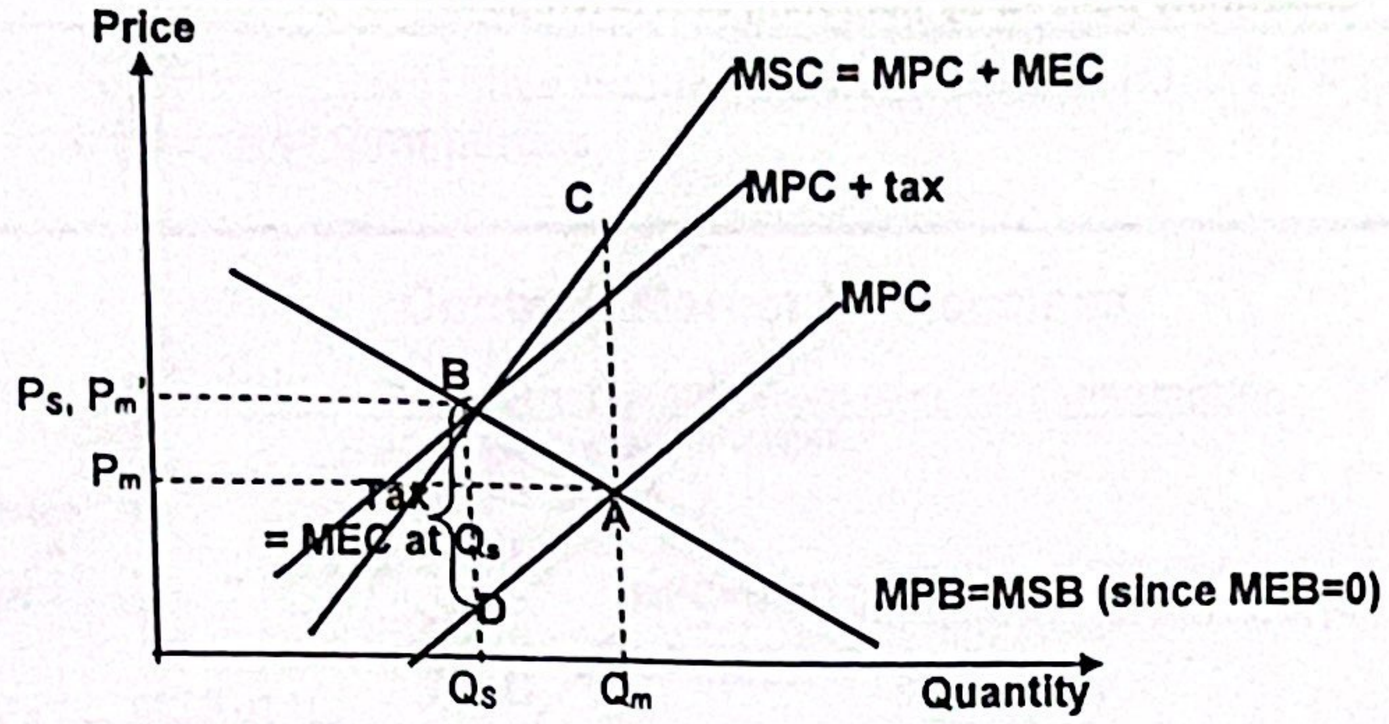
(A) Taxes

- The government might impose an indirect tax corresponding to the external marginal cost i.e. Tax=MEC <u>at Q_S</u> (distance BD) on each unit of cigarette. This shifts the MPC upwards so that the new MPC, which equals MPC + tax, coincides with the MPB at Q_S.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Figure 6: Tax to Internalise MEC from cigarette consumption



- Hence, the new market equilibrium quantity where MPB = MPC + tax, now coincides with the **socially efficient** quantity Q_s, where MSB = MSC.

- If the tax accurately reflects the marginal external cost, cigarette consumers are now in effect paying for the external cost they impose on others as the price they are paying is now higher at P_m', compared to P_m before the tax. The externality has then been **internalised or priced in**.

Limitations:

- Similar to Pigouvian taxes: lack of information. Refer to page 3.15.

(B) Regulations

Regulations can help to lower the external cost (MEC) of cigarettes and hence reduce the gap between the market and socially optimal quantity of cigarettes, decreasing the deadweight welfare loss due to the overconsumption of cigarettes.

Smoking in public places
In Singapore, smoking is prohibited in air-conditioned areas, playgrounds, food outlets, carparks, buses and trains and other public spaces. This is to minimise the problem of secondary smoke affecting third parties and thus help to reduce the external cost caused by smoking.

Limitations:

Lack of Compliance and high administrative costs
Government failure in terms of getting people to comply with the law. Government intervention can be costly to administer and enforce. The administrative costs of administering and enforcing a particular policy to correct market failure may outweigh the social benefits from the correction. For this regulation to be effective, it has to be accompanied by vigilant policing and a heavy penalty for those who flout the rule. Even with the law to prohibit smoking in non-designated areas, very often we still experience smokers who disobey the law.

Other Solutions to Address Imperfect Information in the context of cigarette consumption (to be covered in 3.3.3)

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

4. Special case: How would you explain the problem of negative externality caused by gambling and driving?

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

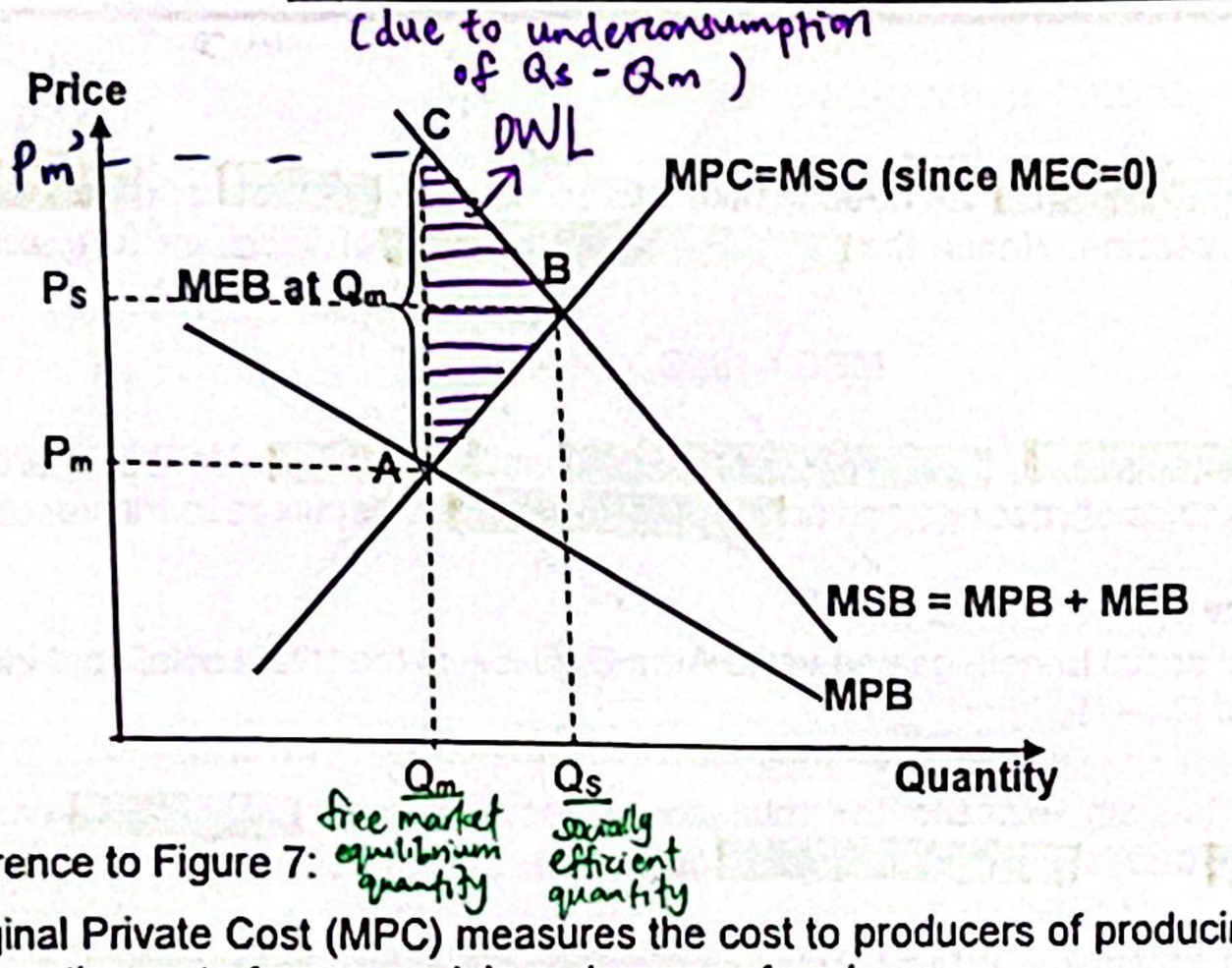
Scanned with CamScanner

3.3.1.5 Positive Consumption Externalities: The Problem

Positive consumption externalities occur when the consumption of a good positively affects the well-being of third parties.

Context: Market for Vaccines

Figure 7: External benefit from vaccine consumption



With reference to Figure 7:

- Marginal Private Cost (MPC) measures the cost to producers of producing additional units of vaccines such as the cost of raw materials and wages of workers.
- Marginal Private Benefit (MPB) measures the benefit to consumers from consuming additional units of vaccines such as the improved immunity against certain diseases.
- Q_m represents the free market equilibrium output where MPC = MPB.

Divergence between private and social costs

- Vaccine **consumption** generates **external benefits** to **third parties** who are neither vaccine consumers nor vaccine producers.

- Example:
  For each unit of vaccine consumed, third parties who do not immunise themselves will also benefit in the form of a lower risk of contracting the illness as there will now be less people who they can potentially contract the illness from. This positively translates into a healthier and hence more productive workforce for the economy which benefits employers too.

- The third parties (the non-immunised and employers) **do not compensate** vaccine consumers for the external benefits that they enjoy. Hence such external benefits are **unpriced** by the market and not reflected in MPB which reflects only the private benefits of consumption.

- Hence as seen in Figure 7, external benefits cause a **divergence** between private and social benefits, with **MSB lying above MPB as MSB = MPB + MEB.**

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

- The **market** does **not price in the true benefits** or **social benefits** of consuming the marginal unit of vaccine. P_m reflects only the private benefits and excludes the external benefits.

- As such, the **free market** has **"over-priced"** the consumption of vaccines relative to its true social benefits, leading to an **inefficient allocation** of resources.

Important: The concept of "over-priced" here is not used in comparison with Ps but with the **true price, Pm'** (see Figure 8) that would result in the socially efficient outcome, Qs. At Qm, the good is "over-priced" as Pm > Pm' (= true price).

Socially efficient output

- To find the **socially efficient outcome**, we need to take into account the **full costs** and **benefits to society** of an additional unit of vaccine. Hence the **socially efficient quantity** of vaccines to maximise social welfare is at Q_S where

$$MSC = MSB$$

- However, if **left to the free market**, **equilibrium price is P_m** and **output Q_m**. Hence, there is **under-consumption** of $Q_S - Q_m$ units of vaccines and an **under-allocation** of resources to the vaccines market.

Impact on Society's Welfare

- Area Q_mQ_SBC is the total social benefit gained while Area Q_mQ_SBA is the total social cost incurred from the under-consumption of $Q_m - Q_S$.

- Since total social benefits gain exceeds the total social costs incurred, **area ABC** represents the **deadweight welfare loss** due to **under-consumption** of $Q_m - Q_S$.

Conclusion:
From the standpoint of society, **positive externalities** cause **distortion in market price** leading to **market over-pricing** the good, and thus providing the **wrong price signals** resulting in **under-consumption**. This is the key reason for market failure in the case of positive externalities in consumption.

5. Why is the gap between MPB and MSB converging? Can the gap diverge?

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

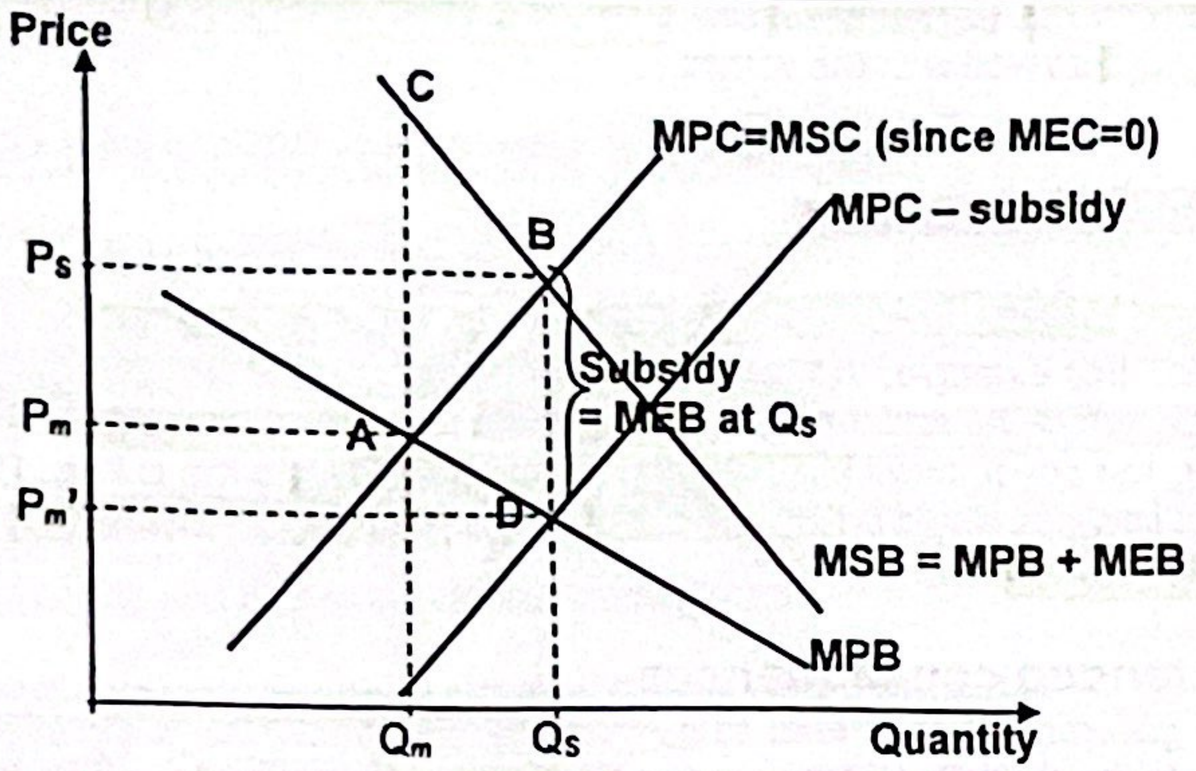
Scanned with CamScanner

3.3.1.6 Positive Consumption Externalities: The Solutions

(A) Subsidies to Producers

- Like taxes, implementing subsidies to internalise a positive externality is a market based approach. This approach gives private individuals the freedom of choice in making rational decisions with regard to the best level of consumption that would maximise society's welfare.

Figure 8: Subsidy to Internalise MEB from vaccines consumption



- The government might give a subsidy to producers corresponding to the external marginal benefit i.e. subsidy = MEB at Q_s (distance BD) on each unit of vaccine. This shifts the MPC downwards so that the new MPC, which equals MPC – subsidy, coincides with the MPB at Q_s.

- Hence, the new market equilibrium quantity where MPB = MPC – subsidy, now coincides with the socially efficient quantity Q_s, where MSB = MSC.

- If the subsidy accurately reflects the external marginal benefit, the price consumers are paying is now lower at P_m', compared to P_m before the subsidy. The externality has been internalised or the market is said to have priced in the externality.

Limitations:

Lack of Information
Government may fail to measure external benefits accurately and thus end up either over-subsidizing or under-subsidizing health care services.

Opportunity costs due to budget constraints

- Government uses its budget to fund many types of expenditures such as education, health-care, national defence and public infrastructure. As its budget is limited it has to set priorities in funding expenditures as every expenditure will incur a trade-off or opportunity costs. Thus, for example in a recession the government's priority is to use its budget to fund projects that would lead to the creation of more jobs than spend it on subsidizing vaccinations.

- However, during the Covid-19 pandemic, the government provided free (subsidise 100%) vaccines, hospitalisation and some products like masks and thermometers. In the 2015 haze episode, the government also provided subsidies for the treatment of haze-related ailments.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Unintended Consequences

Breeds Inefficiency
Subsidies, if given to producers, may breed inefficiency as it reduces the incentive for providers of health care services to stay efficient by finding the lowest cost of production.

Strain on the budget
Subsidies are funded out of tax revenue. As such, subsidies impose a strain on the government's budget. It may lead to the imposition of higher taxes to meet funding requirements. This in turn have both unfavourable economic and political consequences. Higher taxes may sap the economic incentive to be more productive and they are politically unpopular as well with the voters.

(B) Direct Provision by Government

The government could directly provide goods and services with positive externalities to supplement the provision by the free market. For example, in many countries government build and run public schools, hospitals and clinics for the benefit of the society. The building costs and operation costs are largely financed from tax revenues. However, the government may still charge nominal fees to the public. The government will often decide if goods and services would be provided free or at a partially subsidised rate such that there is some co-payment by the consumer.

Limitations and unintended consequences

- Direct provision by the government may lead to inefficiency and poor standards of service. This is because it is not subject to the discipline of the market. Government hospitals and clinics are not run on the basis of maximising profits. Unlike privately run hospitals, there is lack of incentive to minimise costs and to offer the best standard of service as they are not subject to competition.

- The expenses incurred in running government health care services are funded mainly from tax revenue. As a result, it puts a strain on the government's budget.

3.3.2 PUBLIC GOODS

PUBLIC GOODS are goods or services that have the characteristics of non-excludability and non-rivalry in consumption.

- Such goods cannot be provided by the market.
- It is a case where the free market falls to allocate any resources to produce goods that could enhance the welfare of society.
- *Examples of public goods are national defence and street lighting*

3.3.2.1 Characteristics of Public Goods

- **Non-excludable in consumption refers to the situation where the consumption or use of the good or service cannot be limited to the consumers who have paid for it.**

- The reason is due to the lack of private property rights over its use because it is impossible or prohibitively expensive to exclude non-payers from consuming it.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

- *For example, once street lighting is provided, there is no inexpensive or practical way to restrict the availability of the service to only people who pay for their use. The same can be said for national defence. For example, once an army is provided to defend the country, every citizen benefits from its protection regardless of whether they pay for it.*

- **Non-rivalry in consumption refers to the situation where the consumption or use of the good or service by one consumer does not reduce its availability to another consumer.**

- *For example, the use of the street lighting by one pedestrian will not reduce the amount of light available to others. The benefit of street lighting can be shared jointly by everyone who happened to be in the vicinity of the street lights.*

- **Non-rejectability of a public good once it is supplied.**

- For example, once street lighting is provided, an individual walking along the brightened street cannot reject the light that is provided. Similarly, once an army is provided to defend the country, an individual cannot refuse the protection that is provided. Other examples include nuclear defence system or flood defence projects.

NOTE: *Do not confuse street lighting with street lamps and national defence with military goods. Street lamps and military goods are private goods, such that non-payers can be prevented from having access to the goods. Street lighting and national defence are systems.*

Implication of the characteristics of Public Goods on its provision by the market

Free ridership
As a result of the characteristics of non-excludability, once a public good is provided, others can free-ride on the good. A free-rider is anyone who receives the benefits from a good or service without having to pay for it. Since anyone can enjoy all the benefits of a public good once it is produced without paying for it, no rational consumer motivated by self-interest will reveal his effective demand.

No price signals
There will be no price signals to indicate consumers preference for such goods. Hence producers will not supply this good. Hence despite the fact that a pure public good yields valuable benefits to society (e.g. national defence provides security and street lighting provides safety). Thus the free rider problem means that the market will not provide such a good.

No user charge
As a result of non-rivalry, the **marginal cost of providing a public good to an additional consumer or user is zero.** *For example, since joint or collective consumption is possible, once an army is formed, the total cost of defending the country is the same regardless of the number of persons the army has to protect.* There is no extra cost involved for defending an additional person or user. Since the optimal or allocative efficient quantity to supply is where Price (P) = Marginal Cost (MC), the efficient price to charge for the use of public good should be zero. However, this means that no private firm in a free market can supply it profitably and hence the market fails to allocate resources to produce such goods.

NOTE: *MC of an additional street light user = 0 but the MC of an additional street light ≠ 0!*

In conclusion, due to the twin characteristics associated with public goods, it is not possible for free markets to supply such goods profitably because it is neither possible (due to non-excludability in consumption) nor desirable (due to non-rivalry in consumption) for private producers to charge a price for its use. Without the profit incentive and price signals, the market fails in the provision of public goods. Hence public goods are provided by the government as the market clearly cannot allocate resources to produce them.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

6. Identify the key differences between public goods and private goods.

7. Are the following examples public goods and why?
(i) Free-to-air TV broadcast **(ii) roads**

3.3.2.2 Public Goods: The Solutions

Direct Provision by Government with Full Subsidy

- Due to the problem arising from the non-rivalry and non-excludability characteristics of public goods, no free markets will provide them and hence the government has to provide public goods in order to enhance society's welfare.
- The government is in the best position to provide public goods since their objective is not to maximise profits, unlike that of the private producers.
- In their pursuit to maximise social welfare, the government will take into account the full social costs and benefits generated by public goods. The government can choose to produce the goods or services themselves or they can outsource to a private company to do it but bear the full cost.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

NOTE: Direct provision does not necessarily imply that there is a government-owned company that actually produced these goods. E.g. Whilst street lighting is directly provided by the government, it usually does not produce and install them, but engage the help of private firms and contractors to do the job. i.e. provision is not necessarily production.

Limitations:

Lack of Information

- Whilst it is clear that only the government can provide public goods, there is no guarantee that government provision will lead to efficient allocation.
- There is an issue of how a government can possibly identify accurately the optimal level of public demand for the provision of public goods. E.g. How much is enough? And how much is too much?
- The lack of price signals makes it difficult for the government to determine the optimal level of provision as those who want the goods are not prepared to reveal their true preference via the price mechanism. Thus from the standpoint of efficiency society's welfare will not be maximized if too much or too little of the good is produced.
- For example, whilst government is able to provide national defence, it is not easy to determine the optimal size of the army.

Lack of Public funds

- The provision of public goods is funded from taxation.
- As such it is not always possible to provide sufficient public goods if there is not enough tax revenue, i.e. the provision of public goods is constrained by the state of the government finances.
- For instance, during a recession, the provision of public goods may be constrained by inadequate government finances.
- Similarly, for some countries where government pursue fiscal austerity measures to cut down public debt, spending on provision of public goods may have to be curtailed.

Political Pressures

- Government may make decisions based on political popularity (i.e. preferences of the electorate or voters).
- Decisions at times are affected by the pursuit of self-interest among politicians and civil servants rather than the pursuit of the socially optimum outcome, leading to a misallocation of resources.
- Electoral pressures may lead to inappropriate government spending and tax decisions e.g. decisions to cut tax ahead of an election which can then affect the government's ability to spend on public goods.

3.3.3 INFORMATION FAILURE/ IMPERFECT INFORMATION

3.3.3.1 Imperfect Information: The Problem

The lack of perfect information is a major cause of market failure. The free market allocates resources efficiently on the assumption that all consumers and producers have full or perfect information about the market and products and hence are able to make optimal choices to maximize their welfare. However, in reality this is not true due to:

(1) Incorrect Information

- Consumers may make bad choices because they have been "misinformed" or received the wrong information from sellers. A good example is the information provided by firms through persuasive advertising.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

- For example, before government regulations clamped down on misleading cigarettes advertisements, cigarette manufacturers attempted to deceive consumers through misleading captions such as "More doctors smoke CAMELS than any other cigarettes", giving the impression than even doctors feel that there was no harm smoking cigarettes. This makes consumers overestimate their true marginal private benefit from cigarette consumption.

(2) Ignorance

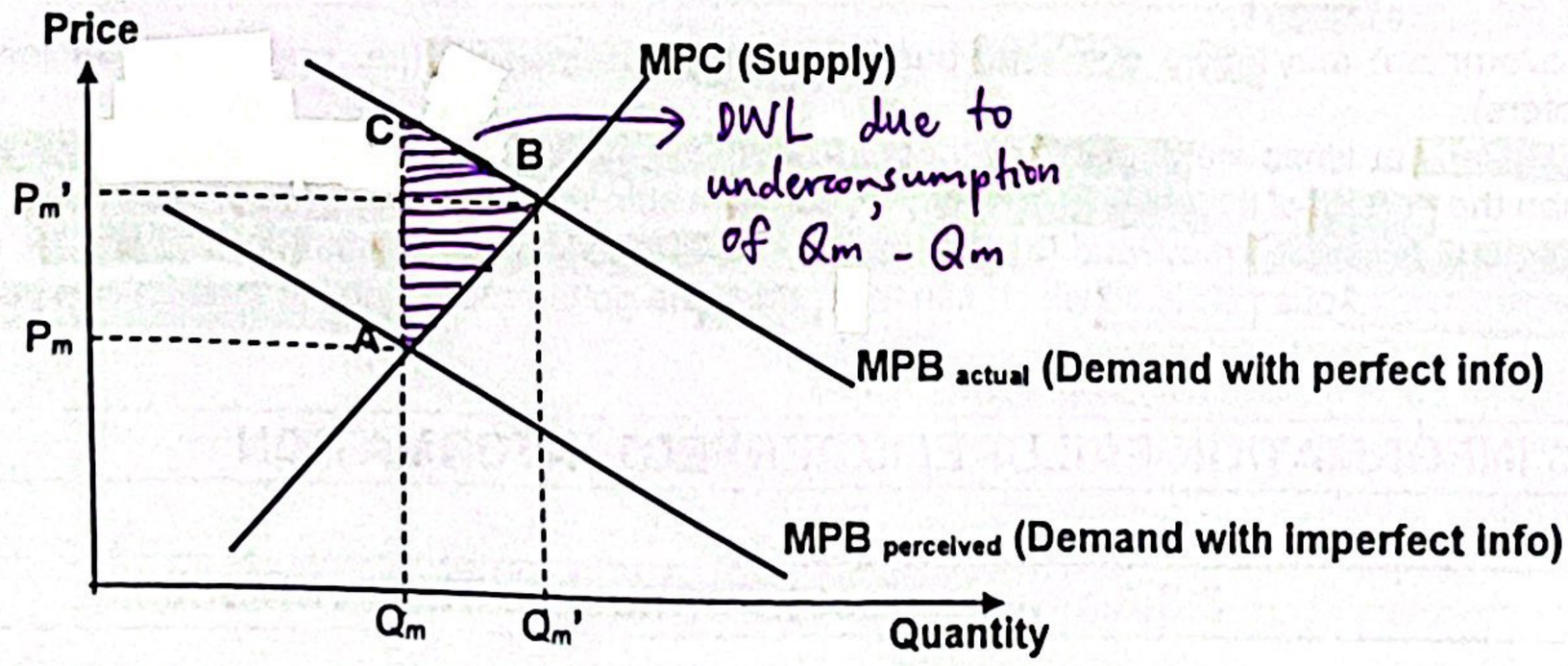
- Consumers may not buy some products even though they will benefit from them because they are ignorant of the benefits they bring. For example, consumers may be unaware that early detection of illnesses such as breast or colorectal cancer can increase the probability of survival to almost 100%. This makes consumers underestimate their true marginal private benefit from such cancer screenings.

- On the other hand, the demand for certain products will be higher than they would have been if consumers were fully informed. For example, the wearing of surgical masks when one is sick is primarily used to prevent the spread of virus (e.g. Covid-19), rather than to protect one from virus in the air. However, consumers may misunderstand and think that the mask functions both ways. This makes consumers overestimate their true marginal private benefit from consuming masks.

- Ignorance can also arise from a low frequency of consumption or lack of experience. A consumer buying a soft drink is likely to have tried out a variety of drinks before. The particular soft drink being bought is likely to be something the consumer likes and so the consumer has good information about the product. In contrast, a consumer is only likely to buy a washing machine every five years. Hence the consumer is unable to accurately assess the true marginal private benefit of a particular brand of washing machine.

Context: Healthcare – Colorectal cancer screening: Imperfect information

Figure 9: Imperfect information on actual MPB of cancer screening



With reference to Figure 9:

- Marginal Private Cost (MPC) measures the cost to producers like hospitals of producing additional units of colorectal cancer screening services such as the cost of screening kits and wages of medical staff. Hence it is also the market supply curve.

- Marginal Private Benefit (MPB) measures the actual or perceived benefit to consumers from consuming additional units of colorectal cancer screening. Hence it is also the market demand curve.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Divergence between actual and perceived MPB due to consumers having imperfect information

- Consumers may **underestimate** their **true private marginal benefits** from colorectal cancer screening due to **imperfect information.** For example, consumers **may not be aware** that **colorectal cancer** is the **most common cancer in Singapore** for both males and second most common cancer for females and hence **underestimate** the **probability** that such **screenings** can help them **detect this cancer early.** Furthermore, consumers may be unware that while it is a top cancer killer, colorectal cancer is highly treatable at early stages unlike other cancers like brain cancer and hence early diagnosis can often lead to a complete cure. Hence **MPB actual** lies **above MPB perceived.**

Market equilibrium with imperfect information

- With imperfect information, Q_m represents the free market equilibrium output where MPC = MPB perceived.

Market equilibrium with perfect information

- With perfect information, consumer demand is higher and Q_m' represents the free market equilibrium output where MPC = MPB actual. The market equilibrium price is now higher at P_m'.

True private optimum

- The new market equilibrium outcome of Q_m' units of cancer screening services is now truly the private optimum because at this level of output:

$$MPB_{actual} = MPC = P_m'$$

Impact on Society's Welfare

- By **increasing consumption** from Q_m to Q_m', Area $Q_m'Q_mCB$ is the **additional total private benefit gained** while Area $Q_m'Q_mAB$ is the **additional total private cost incurred.**

- Since **total private benefits gained exceeds** the **total private costs incurred, area ABC** represents the **deadweight welfare loss** due to **under-consumption of $Q_m' - Q_m$.** Hence there is market failure when imperfect information exists.

8. **Illustrate with a diagram and briefly explain how imperfect information can cause market failure in the market for cigarettes.**

• While theoretically it is possible to talk about imperfect information by producers, the focus thus far seems to be just on consumers. Hence focus on issues regarding imperfect information by consumers and the associated diagrams.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

3.3.3.2 Imperfect Information: The Solutions

The government can intervene to provide information to correct the MPB from $MPB_{perceived}$ to MPB_{actual} and help consumers make informed decisions.

(A) Regulation

Examples:

- **Mandatory food labelling/health warning**
  Important information that affects the welfare of consumers has to be made available on the food packaging (e.g. nutritional guide for food products) or health warning on cigarettes pack (e.g. information to potential smokers on the health risks involved in smoking such as the heightened risk of contracting cancer).
- **Laws to protect against incorrect information**
  In Singapore, the *Lemon Law* was introduced recently to protect consumers from exploitation by unscrupulous traders who sell faulty products by passing them on as new and working products.

  The Singapore government has also put into place laws that ban overt cigarette advertisements that glamourise smoking.

- **Laws to protect the ignorant (e.g. due to young age)**
  Singapore retailers are banned from selling cigarettes to smokers under 21 years old.

LOOPHOLES: Some may try to beat the system. For example, those under 21 years old are not allowed to purchase cigarettes but can always request their older friends to purchase cigarettes for them.

(B) Education and Moral Suasion

Moral suasion is an appeal to morality in order to influence or change behaviour. It is a persuasion tactic used by the authority to influence and pressure, but not force, consumers into adhering to policy.

Examples:

- Singapore government uses public education to encourage the consumption of healthcare products or services. The Health Promotion Board in Singapore often organizes health education program in schools; public talks and exhibitions, and runs national campaign nationwide to inform the public about the benefits of healthcare checks.

- Singapore government can help raise awareness of the harmful effects of smoking on both smokers and their loved ones, in campaigns to 'persuade' smokers to quit smoking.

Limitations:

Education is a long drawn process that involves changing mindsets. Its effectiveness depends on how consumers respond to the information given. For example, if smokers consider the graphic health warnings as being exaggerated or discount the probability of the harmful health effects of smoking falling on them, their demand for cigarettes may not fall to the optimal level.

Furthermore, for an addictive product like cigarette, even if consumers had full information, they might still be unable to change their habits and hence not lower their demand for cigarettes. Hence smoking campaigns need to start early in schools as they might be more effective before consumers are addicted.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

9. **Can you think of other situations in which one's perceived benefits are higher/lower than actual benefits?**

3.3.3.3 Asymmetric Information: The Problem

Asymmetric information is a subset of information failure.

Asymmetric information arises when the economic agents (e.g. consumers and producers) involved in the transaction do not have the same amount of knowledge, resulting in a distortion of incentives and inefficient market outcomes.

Asymmetric information between buyers and sellers in a market can lead to adverse selection and moral hazard which causes market failure.

(1) Adverse selection

Occurs when a good is mainly bought or sold by a certain segment of the more informed party that would harm the uninformed party.

Such opportunistic behaviour takes place before the transaction and usually results in market failure.

Knowledgeable Sellers (Sellers have more information than buyers):

The market for 'lemons' – used cars

- For example, used car dealers often have more information regarding the condition of the used cars being sold than the buyers have. In order to profit from the sale of the used cars, the dealers might hide some of the information they have about the condition of used cars from potential buyers.
- Potential buyers of the used cars take this into consideration in the decision-making process, and tend to lower the price that they are willing to pay for used cars in view of the possibility that they would be purchasing used cars of a lower quality (often referred to as lemons).
- At this lower price, sellers with used cars in good condition (often referred to as gems) are unwilling to offer their cars for sale, resulting in a used car market where only lower quality used cars (lemons) are sold.
- Asymmetric information thus results in the used car market adversely selecting against quality used cars in favour of used cars of lower quality.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Knowledgeable Buyers (Buyers have more information than sellers):

The insurance market

- In the market for health insurance, buyers know more about the risks they face than sellers do. The consumers of health insurance might not divulge sufficient and accurate information about their health condition to insurance companies and may choose to conceal certain unhealthy habits or genetic traits.
- Insurance companies are often unable to adequately monitor the behavior of those who seek insurance coverage, and thus risk providing insurance coverage to those with higher health risks.
- In the absence of limiting conditions (commonly based on age and pre-existing medical conditions), consumers with higher risks are more likely to buy health insurance and opt for higher levels of coverage. This makes the insurance attractive for the person but unprofitable for the company.
- This is an example of adverse selection: The person getting insured has more information about the quality of his or her health than the insurance company.

(2) Moral hazard

Exists when one party has more information than the other & once they made a transaction, the more informed party changes his behaviour in order to benefit as the costs are borne by another party.

Such opportunistic behavior takes place after the transaction and usually results in market failure.

- This occurs because an individual or institution does not bear the full consequences of its actions, and therefore has a tendency to act less carefully/take on more risk than it otherwise would, leaving the other party to bear the consequences of his actions.
- In this case, the risk-taking party knows more about his intentions than the party bearing the consequences of his actions and has a tendency or incentive to behave inappropriately from the perspective of the party with less information.
- It is a form of opportunistic behaviour after the transaction.

The insurance market

For example, the owner of a bicycle is more likely to prevent theft if his/ her bicycle is not insured, and take precautions such as locking the bicycle. However, when the bicycle is insured for its full value, the bicycle owner is covered and does not lose out in the event of theft. As a result, the bicycle owner has less incentive to protect his/ her bicycle against theft.

The labour market

A moral hazard situation exists in the labour market after the employee has clinched the job. Most contracts that specify one's job scope leave some room for discretion. It is also costly for the firm to monitor its employees continuously. As such the employee has an informational advantage over the firm. He has an incentive to shirk or be lazy; it is the firm that suffers from his laziness. If his laziness is undiscovered, he will still get paid as per normal.

Links to market failure

- Asymmetric Information results in market failure by reducing the size of the market or eliminating it, thereby preventing desirable transactions.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

- It causes a competitive market to lose its desirable efficiency and welfare properties. Thus, desirable goods or welfare enhancing goods and services cannot be provided efficiently by the market. For instance, high quality cars do not sell even though potential buyers value the cars more than their current owners do.

- Similarly, insurance companies would be wary of providing insurance to those who wish to insure themselves against losses from theft, fire, ill-health and traffic accidents.

- This is also why Medishield Life, the need for co-insurance to ensure incentives for people to keep healthy, if not, they will have to pay a percentageof their healthcare bills.

3.3.3.4 Asymmetric Information: The Solutions

The root cause of asymmetric information is that it encourages opportunistic behaviour (i.e. informed party taking advantage of uninformed party) leading to market failure. Hence, measures to counter asymmetric information are directed towards discouraging or eliminating such opportunistic behaviour.

(A) Mandatory or universal coverage

- **Adverse selection** can be prevented if consumption is made compulsory for all such that sellers do not only sell to buyers with less desirable characteristics.

- *For example, the govemment can avoid adverse selection by providing health insurance to everyone (e.g. Medishield Life in Singapore) or by mandating that all motorists buy auto insurance.*

- Similarly, unemployment insurance cannot be undertaken by firms but only through the government who has the power to make it compulsory for everybody. Otherwise, a private firm selling unemployment insurance would tend to attract only those who are more liable to lose their jobs and not, for example, civil servants who tend to have better job stability.

- However, if universal coverage is provided for by the government, it may be a strain on government budget and there may be overprovision if many individuals have already bought their own private insurance. If it is made compulsory, there may be the problem of compliance. E.g. In Columbia, despite laws that compel the purchase of auto insurance, many people choose to drive without it, citing reasons such as being unable to afford insurance or claiming their vehicles were not in use.

- To prevent **moral hazard**, such insurance often comes with a co-payment clause where claimants are not able to claim fully for the costs they incurred and have to bear part of the costs themselves. This gives the insured the incentive to protect their health, vehicle, jobs, etc., despite being insured.

(B) Laws to prevent opportunism i.e. anti-lemon laws or product liability laws

- In **adverse selection** due to **knowledgeable sellers**, product liability laws protect consumers from being sold defective products. Since consumers can rely on such laws to force a manufacturer to make good on defective goods, they need not worry about adverse selection.

- However, in practice, there is a legal or transaction cost involve in taking the seller to court. If the legal cost is too high or too time consuming, consumers might be deterred from suing errant sellers.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

(C) Equalising information (Screening and Signalling):

(i) Screening (used by uninformed parties)

In screening, the party with less information acquires useful information from the party with more information. The less informed party makes it mandatory for the more informed party to provide him with some useful information before the transaction takes place.

Obtain information on consumers:

Insurance company can make it compulsory for medical check-up before accepting a client for insurance coverage.

Obtain information on producers:

- Consumers buy reliable **information from objective experts** to eliminate information asymmetry. For example, a second hand car buyer can hire or pay an expert e.g. mechanic to check used cars in order to screen or identify lemons. However, this means that consumers have to incur additional costs.
- They also can infer product quality from **sellers' reputations** e.g. on-line reviews on seller's reputation by other consumers. However, reliability of such reviews can be questionable.
- Consumers may want to obtain information from reading **reputable reports by independent bodies** such as consumer association or independent reports comparing brands such as a consumer guide.
- Or they can learn of a brand's quality through **certification** – a report that a particular product meets or exceeds a given standard level e.g. ISO certification for electronic products. However, the information might be "degraded" if sellers aim to attain only the minimum standards of the required certification.

(ii) Signalling (used by informed parties)

Signalling is the attempt by the informed side of the market to communicate information that the other side would find valuable.

Signalling by firms

- In the product market when a firm offers a **warranty** for a product, it signals to consumers that the product is of good quality.
- However, firms may provide warranty for inexpensive goods, for which transaction costs are usually too high for consumers to claim the warranty. In this case, such a warranty need not be a credible signal of good quality.
- Another form of signalling used by firms is **branding**. Branding is one way to assure consumers of the product quality. Consumers associate quality with a brand's reputation.
- However, signalling will not solve an adverse selection problem if it is unprofitable for high quality firms to signal or if both high and low quality firms send the same signal, so that the signal is worthless to the consumers.

(iii) Monitoring

- Monitoring refers to one **party** (the one **with less information) obtaining information about the other party's actions after** the **transaction** has taken place. This helps to reduce moral hazard.
- For example, insurance company may not pay out insurance claims if the insured engaged in dangerous activity such as bungee jumping or sky diving or if it is found that the insured set fire to his own house in order to claim insurance payout (i.e. after fact monitoring).
- However, this incurs high administrative costs and investigation takes time.
- Monitoring is also very common in the labour market to prevent employees from shirking e.g. punch time-clocks; CCTV; monitoring emails and phone calls. In the labour market, contracts may be designed to discourage moral hazard e.g. rewarding an employee based on sales' commission rather than fixed pay.

Conclusion:

- The problem of asymmetric information is linked to opportunistic behaviour which leads to market failure.
- However to counter asymmetric information, both government as well as market players (i.e. buyers and

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

sellers) must do their own due diligence such as engaging in monitoring, screening and signaling to equalise information and eliminate asymmetric information.

3.3.4 IMMOBILITY OF FACTORS OF PRODUCTION

3.3.4.1 Immobility of Factors of Production: The Problem

Immobility of factors of production also contributes to market failure as resources cannot respond to incentives to produce goods and services demanded by consumers or disincentives to stop or cut production. The greater the immobility of factors, the more difficult it is for markets to achieve the socially efficient allocation of resources.

Types of Immobility of Factors of Production

(A) Labour Immobility

Labour as a factor of production often experiences occupational and/or geographical immobility.

- **Occupational Immobility:** As an economy progresses, there tends to be a shift in the composition of the types of industries in the economy. For instance, a developed economy may create more employment opportunities in the service sector whereas the manufacturing industries are facing a decline due to a loss in comparative advantage. However, despite greater job opportunities in the service industries, workers are not able to switch jobs immediately to work in the service sector due to occupational immobility. They lack the skills to work in this sector. Thus, even though there may be abundant supply of workers in the economy, they will not be able to fill the job vacancies that are created in the service sector. Thus these workers become **structurally unemployed.**

  For example, a large number of unemployed factory operators with primary school education in Singapore may not be able to work in growing industries like pharmaceutical industries or IT. This implies that there is a **mismatch of skills** between the unemployed and those required in the expanding sunrise industries in Singapore. Clearly, this leads to a waste of scarce labour resources and results in market failure.

- **Geographical Immobility:** Geographical immobility are typically more serious in large countries (e.g.UK, USA, China and India) when there are **barriers to people moving** from one region to another in search of jobs. These barriers include social ties and costs involved in moving between regions. Thus market failure occurs because resources are not being reallocated from areas where demand for labour is low and unemployment high to other areas where demand for labour is high and have plenty of unfilled job vacancies.

(B) Capital Immobility

- **Functional Immobility:** Certain capital goods are difficult to transfer from one use to another. For instance, a train once built is only useful as a train. It cannot function as a car or a plane. In general, specialised equipment and tools designed for specific purposes are immobile (i.e. not suitable for multi-function) e.g. MRT train compared to say a simple hammer or a pair of scissors.

  Geographical Immobility: For other capital goods, it is difficult to transfer it physically from one geographical location to another. For example, a petrochemical plant built in China cannot be easily uprooted and transferred to the US.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

3.3.4.2 Immobility of Factors of Production: The Solutions

Policies to overcome occupational immobility of labour

You will also learn more about the policies & their limitations in Macroeconomics, under Structural Unemployment.

Retraining or reskilling

For occupational immobility of labour, governments can employ supply-side policies such as providing retraining programmes to help workers obtain the requisite skills for the new economy. For example, in Singapore, the Workforce Development Agency (WDA) developed the Singapore Workforce Skills Qualifications (WSQ) Framework, in collaboration with various industries, to improve labour mobility allowing companies in growing industries to easily recruit workers with the necessary skills while improving opportunities for workers to enter these industries.

With greater labour (occupational) mobility, resources can respond to incentives to produce goods and services demanded by consumers or disincentives to stop or cut production. It is hence easier for markets to achieve a socially efficient allocation of resources.

Limitations

Funding issues

To what extent retraining of workers can be done is dependent on the level and access to funding. For instance, in Singapore the government promotes training and retraining via various funding schemes such as Skills Future Credit (every working adult get an opening amount of $500 grant for training) and tax incentives (expenditure on education and training are tax deductible). However, there are constraints to the government's budget for such purposes and the amounts available need not necessarily be sufficient to entice workers to pick up the required skills for the sunrise industries.

Success rate or take up rate

Success of training subsidies would depend on the motivation of workers to undergo training. Motivation in turn is affected by several other factors such as **Age gap, Attitude gap, Aptitude gap & Expectation gap** with regards to the training & job openings. For instance, in a recession, workers might be reluctant to go for training if the prospects for employment is bleak. Moreover, if promotion prospects are poor, workers may be de-motivated to upgrade their skills.

Policies to overcome geographical immobility of labour

The basic economic principle is to introduce measures to facilitate either:

(1) Bringing workers to work: E.g. Better transportation system
(2) Bringing work to the workers: E.g. relocate businesses or decentralised business locations.

Workers to work

- The Singapore government has also spent a lot of resources to improve the transport network system such as the extension of the MRT lines to more parts of the country and the building of more expressways to improve the accessibility and connectivity between parts of the island.
- This is to reduce geographical immobility so that workers are able to travel more easily to different parts of the country to work.
- For large countries like USA or China, the availability of affordable housing is another factor to encourage the movement of labour from one geographical region to another to look for work. The ease of finding suitable accommodation would help to improve geographical mobility of workers.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Work to workers

- An alternative approach is to decentralise or spread out business centres/hubs to various parts of the island so that workers need not travel too far away from their homes to work.
- In Singapore, the government has deliberately developed regional business hubs (e.g. Tampines, Jurong, Woodlands). This will save transport costs and time for workers to commute to work.
- In larger countries like USA, geographical immobility may result in regional unemployment problem (i.e. unemployment confined to certain depressed regions). A good example is the defunct coal mining district of Appalachia in USA. Many ex-coal miners have remained unemployed because they cannot move out of their hometown to find work in other places.
- In such instances, the government may have to provide incentives to encourage businesses to relocate to these depressed regions to provide work for the workers.

Policies to overcome immobility of capital

To overcome the problem of capital immobility, the government can provide various incentives to encourage firms and businesses to **invest in new capital** or to **re-locate.**

Incentives for investment in new capital goods

- In Singapore, tax cuts and subsidies such as the Productivity and Innovation Credit (PIC) are used to encourage firms to invest in new capital goods to overcome the functional immobility of old capital goods.

Incentives to attract businesses to relocate

- Businesses are on the constant lookout for more attractive places to invest.
- Government can offer incentives such as tax rebates, advanced infrastructure or a skilled workforce to attract Foreign Direct Investment (FDI) to relocate their businesses and reduce the problem of geographical immobility of capital.

Limitations

Informational Failure

- The government may not have the full information to know which new sunrise or growth industries to support with subsidies.
- Investment in new growth industries carries high risk as it typically requires long gestation period to bear fruit. Hence information failure may result in funds being misdirected to support the wrong industries, resulting in the misallocation of resources.

Lack of Compliance

- In order to encourage firms to reinvest in new capital (e.g. investments to automate production) the government gives incentives such as grants and subsidies for firms to buy new equipment.
- However, in reality, the funds might not be used by firms to acquire new equipment. For example, the PIC scheme introduced by the Singapore government to encourage local SMEs to upgrade their capital equipment. It has been found that some firms misuse the grants provided. This has an issue of monitoring and compliance.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

3.3.5 MARKET DOMINANCE

This section will be further discussed in the next topic "Firms and Decisions". At this juncture it is sufficient to get a brief preview of what will be covered in greater depth later.

3.3.5.1 Market dominance: The Problem

Market dominance refers to markets in which the product sold is supplied by a single or a few large sellers. As a result the sellers have substantial market share or control over supply and the market price. That being the case, it is in their self-interest to restrict the quantity supplied in order to maximise their profits. The most extreme form of market dominance is when there is only a single seller or MONOPOLY.

For now, it is sufficient to note that under such imperfect competition, production is allocative inefficient because the dominant firm(s) produce(s) at an output where price is above marginal cost (P > MC). Hence the market output is below the socially optimal level, resulting in a deadweight welfare loss to society and hence market failure.

3.3.5.2 Market dominance: The Solutions

For simplicity, let our market dominance here be represented by monopolies in the market.

Objectives of government intervention
The primary aim of regulation is to ensure monopolies do not exploit consumers by under-producing; over-charging and providing substandard products. Government intervention is to "tame" the monopolist and prevent them from undermining consumers' welfare.

(A) <u>Prevention/Prohibition</u>
Laws are designed to prevent the formation of monopolies, for example, US antitrust laws such as the Sherman Act. These laws prohibit the monopolisation of a market by any firm, limit mergers between firms in an industry, break up monopolies by reducing the patent period for a product, etc. The Competition and Consumer Commission of Singapore (CCCS) is not against the formation of a dominant position but acts against the ***abuse*** of dominant position (e.g. predatory pricing, price-fixing or limiting production).

(B) <u>Deregulation</u>
The government may choose to deregulate the industry to subject the incumbent firms to competition so as to keep price more competitive and improve efficiency. For example, in Europe, the 'open skies' policy of a deregulated airline market has led to lower fares and a greater choice of airline for passengers. Similarly, the deregulation in the telecommunications industry in Singapore by licensing to Mobile One and Starhub has led to lower subscription plans and better services such as free-incoming calls for consumers.

(C) <u>Price Regulations: Marginal Cost (MC) pricing</u>
The government can force the monopoly to charge a price equal to its marginal cost.
(The explanation will be covered under Firms and Decisions.)

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

3.4 ANOTHER CAUSE FOR GOVERNMENT INTERVENTION

3.4.1. INEQUALITY IN DISTRIBUTION OF INCOME & WEALTH

3.4.1.1 Equity in Relation to Markets

In the above sections, we have focused on efficiency in resource allocation. However, efficient allocation may not result in **equitable outcomes.** Equity could be defined as **fairness** in the distribution of economic welfare. An efficient allocation may not be a fair allocation. Why?

Market allocation

- A market allocates resources according to consumer preferences as expressed through their purchasing power. In other words, consumers indicate to producers what to produce and how much they want through their willingness to pay the market prices for them.
- In reality, consumers do not have equal purchasing power due to income and wealth inequality within the society.
- Thus, markets are unable to provide for those who are unable to pay because of the lack of purchasing power.

Essential goods and services

- While it may be argued that it is alright for an individual in society to forgo the consumption of goods like luxury cars and condominiums due to the lack of purchasing power, the same cannot be said for essential goods like basic education and health-care.
- Thus, market allocation results in inequitable outcomes as the poor are unable to gain access to essential goods and services due to the lack of purchasing power. In such instances, the government is expected to intervene to provide essential goods and services for the needy.

Normative Judgement

- However, it should be noted that the concept of equity is normative.
- A value judgement is required to decide what goods are deemed essential in society
- While food, water, shelter and healthcare may be considered as essential universally, other goods are subject to the values different societies or governments may place on their consumption.
- For example, while petrol is considered an essential good in Indonesia and is subsidised by the government, it is not so in Singapore.

Income inequality is the extent of income disparity between high-income and low-income households. A commonly used indicator is the **Gini coefficient.** The value of the Gini coefficient ranges from 0 to 1. The larger the value, the greater the degree of income inequality.

Distinction between Inequality (Equality) and Inequity (Equity or Fairness)
The issue hinges on inequitable or unfair distribution of resources rather than what is the socially efficient allocation of resources. The issue of 'fairness' in distribution of resources is a normative issue which involves making value judgements. Hence there is no objective way to resolve this issue as what is fair to one person might not be fair to another.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Inequality vs Equity - What is the difference between these two issues?
Market economies rely on the price mechanism to allocate resources. The market equilibrium price is determined by the market forces of demand and supply. Consumers with the purchasing power are able to access the goods and their purchasing power is determined by their level of income. Is this outcome considered fair? Equity is an outcome where society considers the distribution of resources to be fair. There is no absolute answer to this issue as different economic agents in a society may have different perceptions as to what is considered as being fair. In general, essential goods and services such as healthcare, education, housing, transportation, food and utilities should be accessible to the consumers. Thus, lower prices for these goods and services are generally deemed to be a more equitable outcome. **Lower prices** can be achieved by government's intervention through subsidies. Alternatively, the government can implement policies to raise the income level, hence the **purchasing power** of the low income households. **Thus policies to reduce income inequality can help to improve equity.** Refer to Section 3.4.1.3 for more information on the policies.

3.4.1.2 Inequality in Income and Wealth: The Problem

In a market economy, the ability of individuals to consume goods depends on their income and wealth. The market system will not respond to the needs and wants of those with insufficient economic (dollar) votes to have any impact on market demand because what matters in a market based system is **effective demand** (willingness and ability to pay) for goods and services. Consequently, goods and services do not necessarily flow to those who need them the most e.g. food for the starving poor or homes for the homeless. It favours those with the buying or purchasing power. The free market system thus fails to provide for those without the means to pay for goods and services. However, whether this is fair is a normative issue and depends on the individual's value judgement.

FYI: Income versus Wealth (flow vs stock)

Do understand the difference between these two terms. Income is a flow concept, in order to conclude that one earns more income than another, we need to also specify the time dimension.

For example, given that Person A has an income of $1000 vs Person B has an income of $500, can we necessarily conclude that Person A has a higher income than Person B? What if the time dimension is added in, by revealing that Person A earns $1000 **a year**, while Person B earns $500 **a month**? You can see that it will reverse one's conclusion.

Weath, on the other hand, is a stock concept, independent of time. If Person A has a portfolio full of company shares that the market currently values at $1 million, while Person B has another portfolio of company shares that the market currently values at $500,000, we can immediately conclude that A is wealthier than B. There is no need to include any time dimension.

Possible Causes of Income Inequality
In general, income inequality is due to differences in earnings and wealth. This in turn could be due various factors such as:

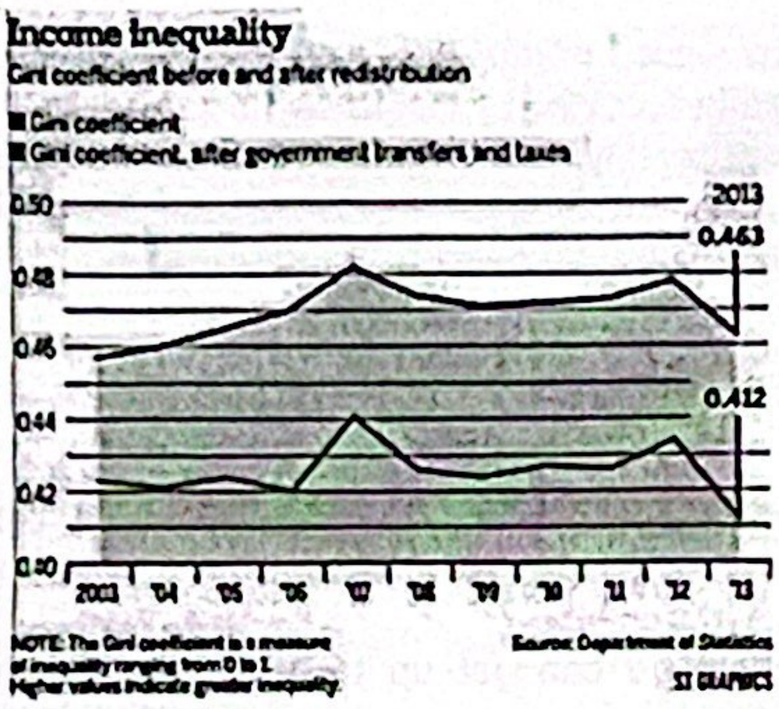
- Differences in educational qualifications or skills
- Differences in innate ability or talent
- Differences in the price of the product made by workers
- Ownership of assets or wealth e.g. property, stocks
- Discrimination e.g. female versus male workers; young versus old workers; local versus foreign workers

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Rising Income Inequality

With reference to the data below, income inequality in 10 of 17 OECD countries have worsened between 2003 to 2013. This trend was also observed in Singapore where the Gini coefficient was on a rising trend at 0.436 in 1990 to 0.463 in 2013.



The global increase in income inequality in recent times is mainly due to **globalization and technological advancement.** For the more developed countries, the transition to a knowledge-based economy leads to more opportunities being created in sectors requiring highly skilled labour while low-skilled production is increasingly phased out. Those who are highly educated and possess the relevant skills experience a fast increase in income as the demand for such workers increases while those who are low-skilled would have difficulty getting employment with the fall in demand for such workers. Furthermore, as developed countries like Singapore open up to the freer flow of foreign labour due to globalisation, the supply of unskilled or low-skilled workers increases, reducing the wages of such workers further and worsening the income gap.

3.4.1.3 Inequality in Income and Wealth: The Solutions

There are broadly 2 approaches to narrow the income inequality gap:

(A) **Levelling up**
(B) **Levelling down**

The first approach aims to narrow the income gap by helping the poor level up or catch up. Such measures typically include equipping the low income with more skills via education and training. This approach is linked to inclusive growth.

The second approach aims to narrow the income gap by taking from the rich to give to the poor. Such measures typically include progressive taxation and transfer payments to the poor.
Here are some common measures to narrow income gap:

(A) Taxation

Progressive income tax can be used to reduce income inequality. A progressive taxation system is one where the higher income earners are taxed a larger percentage of their income than the lower income earners, reducing the gap between the disposable income of the rich and poor.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Limitations:

- However, a tax system that is too progressive may **reduce the incentive to work.** Some people will also become dependent on unemployment benefits and are slow to find employment. This creates a burden on the government's budget to fund the unemployment benefits. The disincentive on work effort will also adversely affect productivity levels, hence the potential growth of the economy.

In Singapore, the government's tax policy is moving away from progressive tax by cutting income and corporate taxes towards a regressive indirect tax by increasing Goods & Services tax (GST). Although this is regressive and worsens income inequality, the objective was to encourage work effort and attract investments. To compensate for this, the Singapore government distributes GST vouchers which are progressive in nature as the payout is higher for low income families and those living in smaller HDB flats.

(B) Subsidies

The tax collected can then be **redistributed** to the low-income households through giving subsidies or unemployment benefits.

For example in the US, the unemployed can get up to 35% of their previous wages in the form of unemployment benefits.

In Singapore, subsidies are also given to lower income groups in the form of medical subsidies. One good example is the mean-tested subsidy for hospitalisation. **Means testing** is used to ensure the poor will be the ones who will receive the most subsidies. Heavily subsidised Class C wards in hospital are meant for the low-income/poor.

Something you should know about Singapore Health Care Financing:

3 Ms (NOTE: Medisave and Medishield Life are not considered as subsidies)
Furthermore, the government put in place safety nets for the people, namely the 3Ms – **Medisave, MediShield Life and Medifund** to ensure co-payment and prevent abuse of the system.

- Medisave is a national compulsory medical savings scheme which helps individuals put aside part of their income into their Medisave Accounts to meet their future personal or immediate family's hospitalization, day surgery and certain outpatient expenses.
- MediShield Life is a compulsory low cost catastrophic illness insurance scheme. It is a national health insurance scheme that provides lifelong protection for all Singapore Citizens and Permanent Residents against large hospital bills.
- Medifund is an endowment fund set up by the Government, with capital injections coming from budget surpluses to help needy Singaporeans who are unable to pay for their medical expenses. Medifund acts as a safety net for those who cannot afford the subsidised bill charges, despite Medisave and MediShield coverage.

The 3M framework that is used by the Singapore government has its benefits and limitations.

Benefits
- Medifund ensures that healthcare is accessible to everyone which helps address income inequality.
- Unlike using subsidy, Medisave and MediShield do not require the Singapore government to incur substantial expenditure.
- Medishield is a form of mandatory insurance coverage for large hospital bills.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

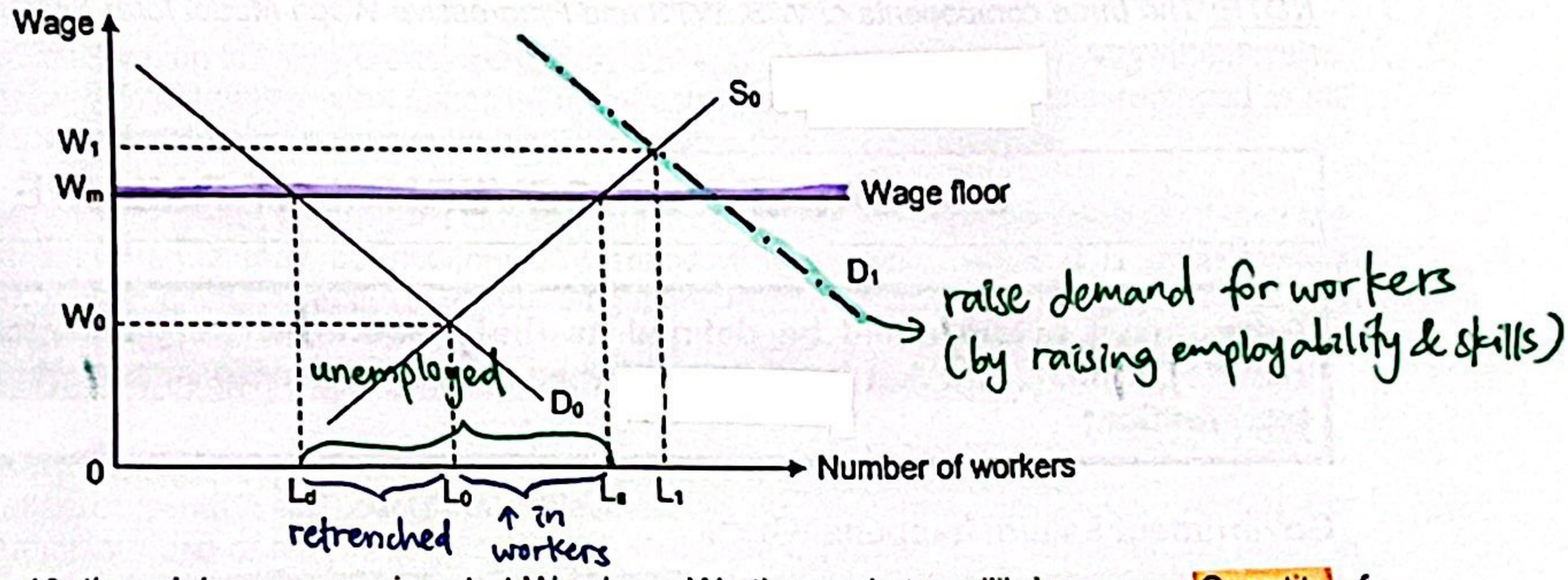
Scanned with CamScanner

Limitations
- Medifund only covers a limited range of healthcare services.
- Only a small proportion of the monthly CPF contribution goes to the Medisave account.

(C) Minimum wage

Income inequality can also be reduced by imposing a wage floor or minimum wage. An effective wage floor is a legally established minimum wage above the market equilibrium wage to protect the incomes of low-wage workers. By legislating the minimum wage workers earn, it raises the wages of the bottom earners, reducing the income gap.

Figure 10: Minimum Wage



Limitations:

Referring to Figure 10, the minimum wage is set at W_m above W_0, the market equilibrium wage. Quantity of workers demanded thus falls from L_0 to L_d and the quantity of workers supplied rises from L_0 to L_s. L_d of workers enjoy the higher wage of W_m but this is at the expense of $L_0 - L_d$ workers who are being retrenched. $L_0 - L_s$ is the increase in the number of workers due to the increase in wage from W_0 to W_m but they are unable to find work. Hence $L_s - L_d$ represents the number of unemployed as a result of the minimum wage.

Singapore does not employ minimum wage. The government believes in raising employability and skills of the low-wage workers rather than mandating minimum wages for them. Thus, policies that enable low-wage workers to be more skilled and productive are used to raise demand for workers to D_1 and enable more workers L_1 to be hired at a higher market equilibrium wage W_1.

FYI: Singapore has adopted an alternative to the minimum wage called the <u>Progressive Wage Model</u>

This model is different from the usual minimum wage laws in 2 key respects:

- *It is implemented for only selected sectors such as cleaning and security guard sectors.*
- *It is designed to be "progressive" i.e. wages will rise progressively in tandem with their skills and responsibilities.*

(D) Training and Skills Upgrading Schemes

The main reason for income inequality is usually due to the differences in education and qualifications of workers. Hence with emphasis on providing a basic level of education and training opportunities for low-income workers to upgrade their skills, they can find better paying jobs, reducing the income inequality. This is the case for Singapore where workers can acquire new skills by signing up for training courses. Low-wage workers can apply for funding under the Workfare Training Support (WTS) Scheme for training courses.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Through training, the workers would be able to acquire new skills so that they can improve their employability, upgrade to better jobs and earn more.

(E) Workfare Income Supplement (WIS)

Though providing training and education may be a good policy to target income inequality, the gestation period may be too long. There must be more immediate help given to the low-income. The Singapore government recognises that and has in place together with WTS the Workfare Income Supplement (WIS) Scheme, which supplements their income and retirement savings through cash payments and CPF contributions. Unlike unemployment benefits, WIS is given to the low-income earners who are employed, hence it does not create disincentives to work. It seeks to raise the income of unskilled workers without raising cost to employers.

NOTE: *The three components of WIS, WTS and Progressive Wage Model form Singapore's own model of minimum wage.*

3.5 CAUSES OF GOVERNMENT FAILURE

Government failure could be defined as the situation where government intervention results in greater market inefficiencies than would otherwise occur without government intervention.

Government Failure happens when:

Government intervention causes the deadweight loss to be even greater than the case without government intervention. Government intervention might introduce further inefficiencies into the market due to high administrative costs, information gaps and time lags resulting from red tape and bureaucracies.

Causes of Government Failure

Information failure or information gap

Governments, like any economic agents, rarely possess complete information on which to make rational informed decisions. It is not surprising, then, that governments may make the wrong policy response to a problem because they lack knowledge in costs, benefits, long term effects, behavioral changes, etc. A good example is the difficulty in measuring externalities accurately in deciding the correct level of tax and subsidies to bring about an efficient allocation of resources.

Costs of administration and compliance

Government intervention can prove costly to administer and enforce. The costs of administering and enforcing a particular policy to correct market failure may outweigh the social benefits from the intervention, even if Q_S is attained. Hence it might not be cost effective for the government to correct all instances of market failure.

Bureaucratic Inefficiency

There is also the administrative inefficiency associated with a large government bureaucracy in implementing government policies such as time lags resulting from red tape and bureaucracy occurs. Sometimes, this problem is compounded by corruption amongst politicians and in the civil service.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Political Factors

- **Short-termism** or a **tendency to look for short term solutions** to economic problems rather than making considered analysis of long term considerations. In a modern democracy the elected government may hold office only for a stipulated period of time (usually 5 years). They are therefore reluctant to make long term decisions that extend beyond their term of office. The risk is that myopic decision-making will only provide short term relief to particular problems but does little to address structural problems. For example, a decision to build more roads and highways might simply add to the problems of traffic congestion in the long run by encouraging an increase in the total number of cars on the roads. The longer term solution would have been to develop and improve the public transportation system.

- **The pursuit of self-interest** amongst politicians and civil servants rather than operating on behalf of citizens leads to a misallocation of resources. For example, politicians and bureaucrats may gain prestige from starting a new spending program even if the cost of the program exceeds its social benefit.

- **Electoral pressures** leading to inappropriate government spending and tax decisions - e.g. decisions to bring forward major items of government spending on infrastructural projects or healthcare ahead of an election without the projects being subjected to a full and proper cost-benefit analysis.

- **Lack of voter support or political support**: Government finds it difficult to implement policies if they are politically unpopular even it may be economically sound. For example, whilst it is economically advantageous to bring in foreign talent to help spur Singapore' economic growth, this policy has met with strong resentment from Singaporeans, forcing the government to reverse its policy to one of "Singaporean First" in the employment of top management to run local companies.

Unintended consequences

- The implementation of government policies to achieve certain outcomes may sometimes backfire. For example, the mandatory use of crash helmets and car seat belts to reduce road accidents can result in more accident-prone riders and drivers. The "protection" provided by crash helmets and seat belts may encourage them to be less careful and hence cause more accidents and injuries.

- The introduction of COE to curb road usage and reduce road congestion may also produce the opposite effect. This may happen when COE prices skyrocket and motorists who paid for such expensive COE may actually have the incentive to drive more in order to get their money's worth, hence contributing to more road congestion.

Policy conflicts

- Governments have multiple economic goals to achieve such as growth, stability, efficiency and equity. However the pursuit of these conflicting goals may result in trade-offs such as:

- **Growth versus efficiency** (negative externalities): in the last few decades, China had focused on rapid growth at the cost of increasing pollution and environmental degradation. It is only recently that the government has attempted to strike a balance between growth and protection of the environment.

- **Growth versus equity**: The pursuit of growth conflicts with equity as economic growth brought about rising income inequality in many countries, including Singapore.

<u>Application of Cognitive Bias by the Government</u>
Often, governments might have certain outcomes they want to achieve, but they also need to tailor their policies in such a way to take cognitive biases of the population into account. This is because in real life, individuals may not act in a rational way to maximise their utility. They may sometimes make decisions that might reduce it because of cognitive biases.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

As explained in the previous section, the introduction of COE as a policy to curb road usage and reduce road congestion may produce the opposite effect. This is because motorists who paid for such expensive COE may actually have the incentive to drive more in order to get their money's worth. Such thinking by the motorists is actually due to the sunk cost fallacy. Thus if motorists were to think in this way, the policy of COE may contribute to more road congestion.

Another policy that government introduced to curb road usage along congested areas is the electronic road pricing (ERP). The application of salience bias is observed in this policy where the information of the ERP charges are shown clearly on the top row of ERP gantries. This information is prominently visible to the motorists so that they are reminded on the amount of ERP paid to use the roads. This information may influence the motorists' decision on whether to use this road for the next trip or they may even decide to use public transport instead.

A tutorial question (Tut 3, Q2) on policies to curb road congestion will be discussed. You would be able to learn more about the policies and the limitations.

3.6 CONCLUSION

In theory, the free market system is often associated with efficiency in the allocation of society's scarce resources. This is the distinctive strength of market allocation using the price mechanism. Yet in the real world, there are various sources of market failure which the market system cannot rectify by itself. This implies that there is always room for government intervention in free markets to eliminate market failure. However, this is not a perfect solution. Due to government failure, government intervention may itself lead to further distortions in the allocation of resources.

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Tutorial 3

Question 1: H1 N2009

The Growth of Air Travel

Extract 3: The Big Green Dilemma

Never before has flying been so controversial. The environmental damage done by planes is now a headline-grabbing issue.

Furthermore, aviation is booming. Today there are around 17 700 commercial aircraft in the world, and manufacturers expect to deliver 25 600 new ones in the next twenty years, with massive growth coming from China, India and Russia as economies develop and flying is deregulated. This year there will be 2.2 billion air passengers worldwide, and the total is currently growing by 4% a year, according to industry forecasts.

No one disputes that flying causes carbon emissions, as well as other consequences such as noise pollution for those who live near airports. According to the 2006 Stern Report, flying accounts for 1.7% of all global greenhouse gas emissions – but power stations account for a massive 24% and other forms of transportation (shipping, train and road) for 12.3%. At the same time, there are benefits from flying – for example, tourism worldwide employs around 230 million people and generates 8-10% of world GDP. Flying is not always the worst choice environmentally, and it is very complex to analyse how different forms of transport compare, though it is suggested that flying is generally about nine times worse than taking the train and three times worse than a car with two passengers.

So should we stop flying? If no one set foot on a plane again, it would undoubtedly help to stop climate change – though at the expense of killing off the tourism-based economies of many of the world's poorest countries. But in the real world, we can encourage a more sophisticated approach to how we as consumers can help the environment. We can encourage aircraft makers to prioritise environmental performance by choosing to fly with airlines that use less polluting aircraft. We can travel to destinations that help local communities rather than destroy them, take the train where possible, reduce carbon emissions at home, and above all, persuade politicians to tackle issues such as deforestation and switching to greener forms of energy.

Source: The Observer, 1 July 2007

(d)(i) With reference to the data, explain how the existence of a negative externality can lead to market failure. [4]

(ii) As a consultant economist, what options would you present to the Singapore government for responding to the alleged negative externalities of air travel, and what would you recommend? Justify your answer. [8]

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Hwa Chong Institution
Year One H2 Economics 2022
Chapter #3: Microeconomics II – Markets: Market Failure & Government Intervention

Question 2: N2005 Q4 ***[behaviour economics can be applied to this question]***
(a) Explain why pollution and congestion caused by cars are likely to cause market failure. [10]

(b) Discuss whether the Singapore government currently adopts appropriate policies to overcome this market failure. [15]

Video: Managing Traffic Congestion in Singapore https://www.youtube.com/watch?v=gyJdfY4d3eM

Question 3: Adapted from N2013 CSQ Q2(e)
It is said that to solve market failure due to negative externalities, governments must put a true price on the goods and services. Goods must be re-priced to reflect the true cost to society. Taxes must be imposed to ensure this.

Explain what is a 'true price' and consider whether an indirect tax is the best way of ensuring that goods are charged at the true price. [8]

Question 4: N2010 (adapted)
(a) Explain why government intervention is advocated in the markets both for public goods and for goods where (positive) externalities are present. [10]

Question 5: 9757 H2 Econs Specimen Paper Q2
Consumers need good quality information when making decisions about which products to buy. It does not matter whether these are technically complex products, such as electronic devices, or apparently simple products, such as canned drinks or ready meals.

(a) Explain why markets might fail when consumers do not have perfect information about both technically complex products and apparently simple products. [10]

(b) Discuss the most appropriate (context) policies that should be adopted by governments when markets fail due to information failures in different types of products. [15]

Question 6: TYS 2011 (part a only)
Consumers and producers are generally assumed by economists to be motivated by self-interest.

(a) Explain how, according to economists, the pursuit of self-interest can help to address the problem of limited resources and unlimited wants. [10]

(b) Assess whether the price mechanism will always allocate scarce resources in the most efficient manner for all goods and services in a market economy. [15]

Question 7: TYS 2013
Economics assumes rational decision-making by consumers, firms and government.

(a) Explain what is involved in rational decision-making both by consumers and by firms. [10]

(b) Discuss whether rational decision-making by consumers, firms and government always leads to an efficient allocation of resources. [15]

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Question 8: HCI C1 H2 2015 Block Test Case Study

Answer all questions.

Health and Defence Sectors In Singapore

Table 1: Price Index of Hospitalisation Fees In Singapore

(2009 = 100)

	2007	2008	2009	2010	2011	2012	2013
Hospitalisation Fees	91.8	98.3	100.0	101.9	104.7	111.7	117.1

Source: Yearbook of Statistics Singapore, 2014

Extract 1: Jump in hospital bills in Singapore

The average bill for a subsidised patient in a public hospital in Singapore has gone up by between a third on the low end and almost double on the high end, in the four years since 2006. When one compares the per-day bill in 2006 of a patient with a specific serious problem, say, heart failure, with the per-day bill of a heart-failure patient last year, one would have noticed a jump too – from $115 a day in 2006 to $173 a day last year. While the figures cited are for average bills, those at the higher end – the top 5 per cent of bills – logged even bigger increases.

The Ministry of Health (MOH) puts this down to multiple factors – including a greater number of more ill and older patients seeking treatment. Most of the hospitals cited rising operating costs such as maintenance fees and manpower expenses as factors for an increase in the hospitals' overall expenses. A spokesman for the MOH pointed out that our public hospitals operate on a cost recovery model. For most healthcare services, there are substantial government subsidies. Still, from time to time, the hospitals have to raise fees to respond to the rising costs of drugs and medical equipment, manpower, maintenance and upgrading of facilities, the spokesman said.

Source: Various

Table 2: Singapore government expenditure for selected sectors (% of GDP)

	2009	2010	2011	2012	2013
Health	1.2	1.1	1.1	1.3	1.5
Defence	3.8	3.3	3.2	3.2	3.1

Source: www.singaporebudget.gov.sg

Table 3: Singapore GDP Growth Rate (%) 2009-2013

2009	2010	2011	2012	2013
-0.6	15.2	6.1	2.5	3.9

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

Source: The World Bank Data

Extract 2: Steady defence spending will continue in Singapore

A robust approach in building our defence capability to achieve strategic deterrence is why Singapore's Ministry of Defence (MINDEF) maintains a steady defence spending which has delivered, over time, a strong Singapore Armed Forces (SAF) respected by even advanced Western militaries. Our planning horizons are intentionally long term and we spend prudently and steadily. MINDEF will continue this approach of steady defence spending that has reaped significant benefits for our defence capabilities. In 2004 the spending on defence was S$8.6 billion and the spending was S$12.2 billion in 2013. In other words, we will avoid sharp spikes unless security risks require increased spending. We will also avoid sharp dips that will undermine our defence capabilities over the medium term. Through this prudent, steady and long term view of defence spending, the SAF today that has been built up is a deterrent force and it sends a strong signal to all that Singaporeans value our independence and will fight to protect it. This signal, this unequivocal signal of deterrence is priceless. No private enterprise is going to provide defence to the country hence the government should and will continue to spend a lot of money to build up the defence capabilities.

Source: Adapted from Minister Ng's speech in Parliament on 6 March 2014

Extract 3: Healthcare in Singapore

Singapore is ranked number 6 on the World Health Organisation's list of 191 countries with the best healthcare system. It is generally acknowledged as having one of the most successful healthcare systems in the world in terms of both efficiency in financing and the results achieved in community health outcomes.

The Singaporean healthcare system comprises public and private healthcare. Good, affordable basic healthcare is available to Singaporeans through subsidised medical services at public hospitals and clinics. Singapore's healthcare system is a mix of public and private care financing, which requires individuals to take responsibility for their own health and for much of their spending on medical care. 80% of the primary healthcare services are provided by private practitioners while the government polyclinics provide the remaining 20%. However, the opposite is true for more costly hospitalisation care, whereby 80% of it is provided by the public sector and 20% by the private sector.

Singapore has developed a healthcare system that achieves positive health outcomes with a relatively low expenditure. The healthcare system is largely privately funded with about one-third financed by the government through taxation.

Healthcare Financing

Singapore offers universal healthcare coverage to our citizens, with a financing system anchored on the twin philosophies of individual responsibility and affordable healthcare for all. The first tier of protection is provided by heavy government subsidies of up to 80% of the total bill in acute public hospital wards, which all Singaporeans can access. The second tier of protection is provided by Medisave, a compulsory individual medical savings account scheme which allows practically all Singaporeans to pay for their share of medical treatment without financial difficulty. The third level of protection is provided by MediShield, a low cost catastrophic medical insurance scheme.

Finally, Medifund is a medical endowment fund set up by the Government to act as the ultimate safety net for needy Singaporean patients who cannot afford to pay their medical bills despite heavy subsidies, Medisave and MediShield.

Health promotion and disease prevention in Singapore

No description of Singapore's health care system is complete without mentioning its emphasis on health promotion and disease prevention. A 1991 landmark report entitled "Healthy Family, Healthy Nation" argued persuasively for healthy living to be actively encouraged in Singapore. Its recommendations have since been adopted and translated into a multi-pronged, multi-sectoral and continuing national healthy lifestyle

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner

programme. Regular health education, promotion of exercise and outdoor activities, and specific preventive health programmes (eg. smoking, obesity and AIDS awareness) are well-funded and coordinated at the national level. Preventive health strategies are imaginatively tailored to suit specific groups such as schoolchildren, uniformed personnel and the workforce.

Infectious Diseases Act in Singapore

The Infectious Diseases Act (IDA), which was enacted by Parliament in 1976 and came into force on 1 Aug 1977, is the principal piece of legislation that deals with the prevention and control of infectious diseases in Singapore. The IDA requires every child in Singapore to be vaccinated against diphtheria and measles. It permits the Minister to order mandatory vaccination of at-risk persons during any disease outbreaks, when an outbreak is imminent or when it is necessary to secure public safety. Medical practitioners are required under the Act to make records and notify vaccinations carried out by them or carried out under their supervision, as prescribed by the Director.

Source: Various

Questions

(a) (i) Using Table 1, describe the trend of the hospitalisation fees from 2007 to 2013. [1]

(ii) Using a demand and supply diagram, account for the above trend. [4]

(b) (i) Using Tables 2 and 3, compare the government expenditure in the health and defence sectors. [2]

(ii) Define scarcity and opportunity cost. [2]

(iii) Use a diagram to explain the opportunity cost facing the Singapore government of choosing to spend more on defence sector rather than health sector. [3]

(c) Discuss whether the public good argument for defence is the main reason for government intervention. [8]

(d) Discuss the effectiveness of the policies implemented in Singapore in the healthcare sector. [10]

[Total 30]

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

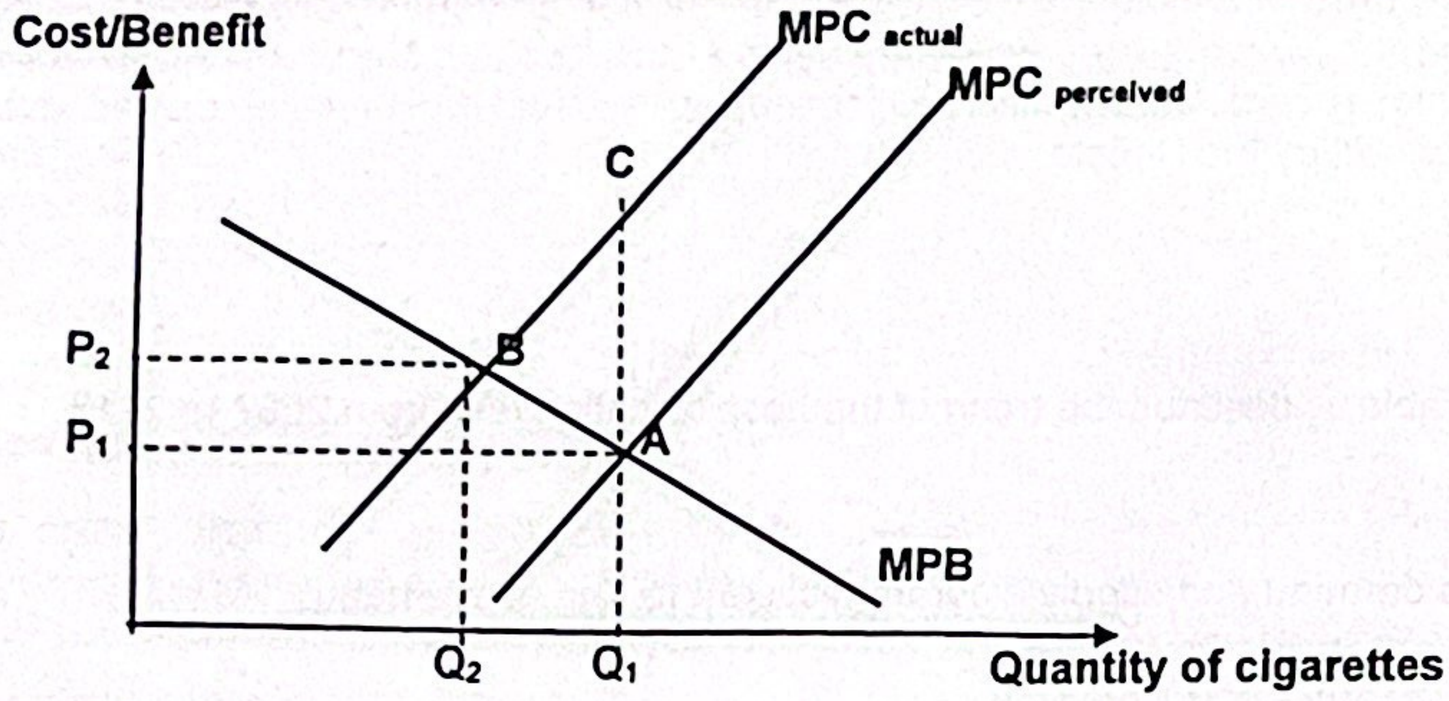
Scanned with CamScanner

Appendix A – Imperfect Information from consumers' perspective (case of smoking)

Q. Explain how rational decision making by a smoker can cause market failure in the market for cigarettes due to imperfect information.

Context: Cigarettes: Imperfect information

Figure 11: Imperfect information on actual MPC of cigarettes



With reference to Figure 11:

- Marginal Private Cost (MPC) and Marginal Private Benefit (MPB) measures the **cost and benefit respectively to a smoker** from consuming additional units of cigarettes.

Divergence created between actual and perceived MPC due to the smoker having imperfect information

- A smoker may **underestimate his true marginal private costs** from smoking if he only consider the price of the cigarettes. He may be unaware of or underestimate the harm of smoking to his health. This may be because the health cost of smoking is not experienced immediately but only over time. Hence the smoker's **perceived MPC lies below the actual MPC.**

s

Decision making with imperfect information

- With **imperfect information**, a smoker will weigh his perceived costs and benefits and consume quantity Q_1 of cigarettes where **MPC perceived = MPB**. Based on his imperfect information, Q_1 will be the quantity of cigarettes that he thinks optimises his welfare.

Decision making with perfect information

- However, at quantity Q_1, the smoker suffers a welfare loss as his **actual MPC** is **greater than** his **MPB** from smoking.

- In fact, if he had **perfect information** about the true MPC of smoking to himself, the optimal quantity of cigarettes for him is Q_2 where **MPC actual = MPB**.

- Hence the smoker suffers from a **welfare loss** of **area ABC** since his **true MPC** is **greater than** his **MPB** for the **overconsumed quantity** of $Q_1 - Q_2$.

- In fact for **some smokers**, the **quantity** of cigarettes **where MPC actual = MPB is zero.** This means it is a **welfare gain** for them to not only reduce the quantity of cigarettes they smoke, but **to drop** the **habit** altogether **or to not** even **start smoking**.

- Since **at the individual level smokers** do **not make optimal consumption choices** due to imperfect information and suffer from welfare loss, **at the collective level**, there is also failure in the market as the **demand** for cigarettes will be **higher under imperfect information** than under perfect information, leading to **overconsumption** and **welfare loss in the market as well.**

♥ Hwa Chong Institution Economics Unit. All Rights Reserved.

Scanned with CamScanner