# 2021 Notes - Market Failures

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## **Features of Free Market Economy**

The free market economy relies on the use of market mechanism to conduct resource allocation where the government will only conduct the administration of laws that regulate the economy. It has the following characteristics:

* Private ownership of property
* Freedom of choice and enterprise (consumption and production)
* Competition (keen or high degree of competition)
* Maximization of personal benefits (consumer surplus and producer surplus)
* Price is determined freely by market demand and supply

## **Meaning of Market Mechanism**

The market mechanism focuses on the use of the market forces of demand and supply to allocate resources so to attain social optimization where there is maximization of net social benefit gain without incurring any deadweight loss. While the market demand reflects the consumers' willingness and ability to purchase, the market supply reflects the producers' willingness and ability to produce. In this price mechanism, the equilibrium price and output level is attained whereby the market demand is equal to the market supply when the demand curve intersects the supply curve.

The market mechanism will attain the price signal to determine how the economy solves the three fundamental economic problems that arise due to the problem of scarcity

Draw the demand and supply – intersection of demand and supply curve – determine market equilibrium – derive price signal

maximization of net social benefit gain = total benefit gain – total cost

1. **Explain how the price mechanism conducts resource allocation**

In the process of resource allocation, the market mechanism for price mechanism is adopted to solve the three fundamental economic problems of what to produce, how to produce and for whom to produce with the use of the price signal.

For what to produce, the price mechanism would reflect the choice of consumers through the price signal which will rise if there is a rise in demand for the good. increase in demand for condo – increase in price of condo – producers will produce more condos

For the method of production or how to produce, the firm will have the method of production on price indication of the factor and product market, abiding to the rule of profit maximisation. (MR = MC)

Lastly, for the allocation of the good and services or for whom to produce, the price signal from the consumer market will reflect the consumers’ purchasing power that will determine the allocation.

(goods are allocated based on those who can afford)

## **Pros and Cons of Free Market Economy**

### **Advantages**

* Price mechanism leads to allocative efficiency – absence of glut or excess as the consumer demand and production condition is efficiently reflected and determined (assuming perfect market/information)
* No need for complex and costly government interference – speedy allocation as it is based on price signal, avoiding administration cost and time lag.
* Competition forces firms to keep cost and price low, which consumers benefit from.

### **Disadvantages (Effects of market failures)**

* Lack of perfect market information and mobility of resources will make it impossible for the economy to attain the efficiency of allocation of resources. Industries may not be able to attain production at socially optimum level.
* Purchasing Power and property rights are unequally distributed: The have and the have-nots, creating extensive unequal distribution of income and wealth.
* To maximise private benefits, firms have the incentive to collude and increase market power and price. This undermines the welfare of consumers🡪Consumer exploitation occurs as the lack of perfect information causes consumers to pay more than they should.

**3.3 Explain how the price mechanism conducts efficient resource allocation to solve problem of scarcity (10).**

**Introduction** (definitions, requirement of the question, economic principles)

* Definition of price mechanism and resource allocation, problem of scarcity
* State that the price mechanism used in the market economy can be used to solve the problem of scarcity to conduct resource allocation

**Main Body**

1. Explain the problem of scarcity – unlimited wants are constrained by limited resources –incur opportunity cost when makes choices

2) Explain how the price mechanism derive price signal (concept of demand and supply) - draw diagram and describe diagram

3) Explain how the price signal conduct resource allocation by solving the three fundamental economic problems

4) Meaning of efficient resource allocation – maximization of net social benefit gain – without incurring DWL

5) Evaluation – assumptions required. (perfect market information and mobility of resources

**Conclusion – retrospective summary**

## **Meaning of Market Failures**

Market failure refers to the failure of price mechanism to conduct efficient resource allocation and thus, calls for the intervention of the government. The presence of dead weight loss and complete loss of welfare will indicate market failures as there is no maximization of net social benefit gain

The price mechanism will fail under the conditions when there is absence of the provision of public good, the presence of externalities and the presence of imperfect market. It is also a condition of market failures when the society is unable to reduce the extensive disparity in the distribution of the net social benefit gain when there is extensive unequal distribution of income

Conditions for Market Failures

1. Failure to provide public good
2. Presence of externalities (positive and negative)
3. Presence of imperfect market condition

* Condition of market dominance (DWL – Qm below Qs)
* Condition of immobility of resources
* Condition of imperfect information (over-consumption or under-consumption that causes moral hazzard, adverse selection

1. Unequal distribution of Income

## **Reasons for Market Failures**

The cause of market failures can be seen from the following manners:

1. The nature of public goods will make it difficult for the private producers to produce the goods as the private firms cannot charge the consumers due the problem of free-riders (Non-payee cannot be excluded from the consumption of the good). This occurs as the public goods are non-excludable and non-rival in production and consumption which make the separation of the payers and non-payers a difficulty. In the absence of the provision of public goods, there will be complete market failure as consumers
2. are unable to attain any welfare without the consumption of public goods.

**Private goods are rival and excludable**

**Absence of public goods** - because private sectors has no incentive to produce public goods – due to the problem of free-ridership – This occurs because public goods are non-rival and non-excludable – price is zero as marginal cost is zero – no profit incentive to produce – absence of public goods – complete loss of welfare – complete market failure.

non-rival will facilitate sharing and allow free-riding – marginal cost is zero and price can be set at 0 – no profit incentive to produce

non-excludable - non-payee cannot be charged and consumers can free- ride – no incentive to produce.

Example – street lights / fireworks

effects of street lamps which make it easy for people to see at night can be shared (non-rival)

This effect cannot be made exclusive to only payee as it is difficult to set a parameter for the usage (non-excludable), it will be a private good

**Why government must provide public goods?**

* The welfare is shared by the whole society (must prevent complete market failure
* Huge initial investment and difficulty in attaining return on capital invested – private sector is unwilling to produce street lamps

**Alternative solution to direct provision by government**:

Direct sponsorship from individuals will provide the goods to the public for free

Discuss whether public education is a public good.

Public park a public good> quasi public good – rival to a certain extent, can be excluded

Is public park a public good? No, it is a merit good as it is rival and excludable and has positive externality.

Other goods which are mistakenly known as public good, - public housing, public wifi, public library, public school

1. **The presence of market imperfection and market power** would cause under-production which will create dead weight-loss. Under such production condition, the firms will not be able to attain allocative efficiency as the firms focuses on profit maximization which is at a production level where the marginal cost is equal to the marginal revenue, and this is below the social efficient level of production where the production level is at the level where the price is equal to marginal cost. This is due to the market power the firms possess under imperfect market condition where the downward sloping demand curve, which will contribute to the difference of the production level. Consequently, there will be allocative inefficiency causing the industry to incur deadweight loss.

**Explain how imperfect market information will lead to market failures due to over-consumption of demerit good**

Due to imperfect market information of the negative externalities, consumers will likely over consume and contribute to over-consumption, creating welfare loss that leads to condition of market failures.

In this case of overconsumption due to ignorance of the negative externalities, the private demand (Do) by the consumers is above the social demand (D1) and this will create a situation where the market equilibrium is above the social equilibrium. Consequently, there will be welfare loss identified between Qm and Qs

1. The **presence of externalities** would cause market failures as it creates deadweight loss as the production and consumption at market equilibrium without government intervention will be below or above the social equilibrium level, undermining social welfare gain. **For merit goods,** the presence of positive externalities will create positive benefit that lead to the divergence of the private marginal benefit and social marginal benefit. This will lead to the condition of under-production (Qm < Qs) which will incur deadweight loss. **As for demerit goods**, the presence of negative externalities will create external cost that lead to the divergence of the private marginal cost and social marginal cost. This will lead to the condition of over-production (Qm> Qs) and thus, causes deadweight loss.
2. The **presence of inequality of distribution of income** will mean that the net social benefit gain will be unevenly distributed. This will undermine the interest of the poor as they will receive lesser benefit than the rich from the production of the good despite the presence of maximization of net social benefit gain 🡪 a form of market failure total net social benefit gain is unevenly distributed – some may get less than equal share

P

S0

Overproduction

D0

Qty

Q0

Q2

Q1

Demerit good

Merit good

Underproduction

## **Why DWL indicates market failure?**

## DWL will reduce the net social benefit gain attained by the society – no optimization of resources – indicates market failures

## **Solutions to Market Failures**

### **6.1 Solutions for the problems of public goods**

### **Government will make direct provision by producing and distributing the public good**

### Direct provision of public goods by the government is made through the institutions of state statuary boards and paid for by the collection of tax imposition from the general public. This will solve the problem of free riders as the people can be charged indirectly to pay for it. the use of GST is to fulfill this task.

**Reasons for government intervention**

* Government has the moral authority and the resources to do so – can impose tax to finance the expenditures of these goods - to prevent complete loss of welfare
* Government possesses the discretionary power to solve some of the complexity of the issue as it possesses.
* It will also help to raise the standard of living of the poor as these public goods like public facilities will make their lives more convenient and comfortable / the legal rights to do so.
* huge initial fixed capital investment / slow rate of return on investment

**Possible problems**

* May not possess the technology to provide the goods and services
* Lack of funds - Need to increase tax or raise loans – Incurring internal loan would add on the tax burden of the future generation while incurring external loan would deplete future earnings.
* May create a glut or shortage due to the inherent problems of the government inefficiency – insufficient information on the needs of the facilities may lead to unnecessary production.
* If provision is free to the public 🡪 may have excessive consumption above social optimal🡪QGovt>QSocial⇨rise of DWL
* alternative solution - sponsorship

**Reasons for and against government for producing public good or merit good**

**what must be considered when they provide public good?**

* cost of financing (how the society will be taxed to finance it?)
* size of welfare loss (value of DWL)
* technological expertise
* time factor
* efficiency of the government

**Is national defense a public good? (4)**

**explain how market failures occur due to absence of public good (8)**

**1. definition or characteristics of public good  
2. Meaning of market failures**

**Main Body  
1.how the characteristics of public good (non-rivalry and non-excludable (free-ridership – no provision by private sector – complete loss of welfare – market failures**

**2. evaluation – free-rider issue – degree of welfare loss**

**Conclusion**

### **6.2 Solutions for the problem of market imperfection and market power (KIV)**

6.2.1. The use of legislation to reduce the formation of market power such as the act of anti-Trust Law in US and the Competition Act in Singapore. (to solve market power)

* The legislation will forbid the firm from exercising market power to set higher price or provide goods at unfavourable term to consumers so as to prevent consumer exploitation

### 6.2.2 Provision of information to reduce the degree of market imperfection

The ministry of health has made it compulsory for hospital to publish their prices of medical services to allow the consumer to make better choices to prevent consumer exploitation.

**6.3 Explanation on how imperfect market information leads to under-consumption or overconsumption**

# Imperfect information leads to under-consumption of healthcare services.

Economic agents may have **under-estimated the true private benefits** for themselves in the consumption of healthcare services, such as vaccinations, doctor consultations. For example, they may not see the doctor when they are sick if they under- estimate the seriousness of their illness. As a result, the virus may spread to other healthy people close to the patient. In other times, the sick person may also over-estimated the costs of consuming the healthcare services, thereby refusing treatments and/or consultations. As rational economic agents, they will only consume healthcare services up to a point when their perceived marginal private benefit is equal to their marginal private cost. However, due to imperfect information, the true private benefits of the consumption of healthcare services is higher than the estimated marginal private benefit, there will be an **under-consumption of healthcare services, leading to market failure.**



Benefits / Costs

Welfare loss

C

MPC

P

AE

A

P

M

B

MPB (actual)

MPB (perceived)

0

Q

M

Q

s

Quantity of health check-ups

As seen from the diagram above, the socially optimal level of consumption of healthcare services should be where the marginal private benefits (actual) equal to the marginal private cost, Qs. However, because of imperfect information, the market level of consumption is only at Qm, where the marginal private benefit (perceived) equals to the marginal private cost. As Qm is lower than Qs, there is under-consumption of healthcare services, therefore the market for healthcare services fails.

Imperfect market information may lead to over-consumption of goods like gambling

For goods like gambling, the consumers may have overestimated the benefits of gambling and have perceived benefits above the actual level benefit. The consumers who like to gamble sees the joy of consumption to be more than who just see the benefit on how they contribute to employment and joy from the gambling industry.

When the consumers over-estimate that the satisfaction of gambling to be greater and set the quantity of consumption at market equilibrium at Qs but the consumers who like to gamble and set at market equilibrium at Qm which they perceive the personal satisfaction beyond just for fun and employment. Consequently, there will be over-consumption and welfare loss occurs, implying that ther is market failures.

S

0

(MPC)



Benefits / Costs

C

P

1

A

P

0

B

D

0

(MPB actual)

D

1

(MPB perceived)

0

Q

M

Q

s

Quantity of health check-ups

As seen from the diagram, the market equilibrium is set Qm where (MPC) is equal to actual demand (MPB – actual ) and the social equilibrium is at Qs where the MPB (perceived) is equal to MPC is at Qs. As a result, welfare loss (DWL)arises between Qm and Qs as there is over-consumption, given that MPC (actual) is greater than MPB (actual), given that MPC is greater than MPB (actual).

# Point 2: Asymmetric information leads to market failure in the healthcare insurance market (adverse selection and moral hazard).

In the health insurance market, consumers have to pay insurance premiums when they purchase health insurance. These premiums are often linked to their health status/conditions. The better the health condition, the lower the insurance premium. Therefore, **some consumers may hide certain bad habits such as smoking or their true physical medical conditions from the health insurers, when paying lower premiums.** Without any form of intervention, health insurance companies may not be able to ascertain whether the information provided by the consumers are factual or not. Therein, this means that the consumers will have more knowledge about their own medical conditions than the health insurers.

As a result of such asymmetric information, the **health insurers may charge higher premiums for all consumers, therefore squeezing out the consumers who indeed have healthy medical status,** as they are less willing to pay for such high premiums since they are healthy. It is likely that the market may be left with those who have poor medical health, who are willing to pay the higher premiums if they view that the premiums can be offset by the sum they are insured of. This is a situation of **adverse selection**.

On top of that, after the consumption of health insurance, some consumers may be **more reckless in their consumption habits**, since they know they are insured. As a result, they may engage in more risky behaviour such as drinking and binge eating, as their medical costs can be claimed from the insurance companies. Insurance companies may end up having to fork out more insured payments, as a result of this moral hazard. This leads to wastage of resources.

D

0

(MPB actual)



Benefits / Costs

P

1

P

0

S

0

(MPB actual)

S

1

(MPB perceived)

0

Q

M

Q

s

Quantity of health check-ups

As seen from the diagram, the market equilibrium is set at Qs where the demand (actual MPB) and supply (actual MPC) while the demand (actual MPB) is equal to supply (perceived MPC) at Qm. As a result, the is under-consumption where Qm is lower than Qs where DWL arises, given than MPB (actual) is greater than MPC (actual)

## **Solutions to Solve Externalities**

### **Explain how market failures will occur as a result of the presence of negative externalities**

**Economic Causation of impact of demerit good**

|  |  |  |
| --- | --- | --- |
| **Demerit Good** | Smoking | Road Usage |
| **Negative Externalities** | Pollution | Traffic Congestion |
| **External Cost**  **(monetized value)** | ↑Medical cost/↑COP↓productivity | ↑cost of travelling/↑COP (↓productivity) |
| **DWL(affect society)** | ↑Hospital expenditure | ↓production/↓I/↓NY, N+ |

Alcoholic drinks – social problems (negative externalities) – cost in managing social problems (external cost) - social loss of stability which will affect investment (DWL)

carbonated drinks – rise of negative ext (chronic illness) – (external cost – rise in insurance cost) – DWL (increase in hospital expenditure – raise government expenditure)

Explain how the consumption of carbonated drink leads to market failure. (6)

### **Economic Causation (Demerit good/ negative externality, external cost, DWL** (social welfare loss).

### (2)In the consumption and production of road usage which is considered a demerit good by the government as it gives rise to negative externality in the form of traffic congestion. This will contribute to the rise of external cost like longer traveling and higher cost of traveling. Consequently, we can observe that there will welfare loss (dead-weight loss), seen in terms of loss of investment and production as cost of production is higher cost of production. This will undermine the industry from attaining maximization of net social benefit gain, indicating that market failures have occurred.:

**Qn:Why the government must intervene into the road usage market (4)**

(1)The government must intervene into the road usage market as there is market failures due to the presence of negative externalities

**Qn:Explain how market failures occur in the road usage? (4)**

There is market failure in the road usage industry as there is the presence of negative externalities which will call for government intervention.

1. Overview sentence

2. economic causation (apply the economic principles to the context of the question)

3. draw graph

4.description of graph

5 Analysis

(4)

As seen from the diagram, the market equilibrium is set at QM­ where PMC is equal to PMB without the consideration of negative extenalities. However, the **presence of negative externalities** will lead to the **rise of external marginal cost** which will lead to the **pivotal rise of PMC to SMC, (PMC + EMC = SMC),** implying that the social equilibrium of production of cars at QS is lower than the market equilibrium of car at QM. Between Qm and Qs, without government intervention, the economy will experience DWL (shaded area), implying that there is market failures.

**7.2 Explain how market failures will occur as a result of over-consumption of demerit good**

In the consumption of demerit goods such as gambling, there will be negative externalities seen in terms of the social problems associated with this good. This will raise the external cost whereby there is higher cost of administration of the social problems. Without any government intervention, there will be a rise in deadweight loss (DWL), which is the cost of loss of investment, production and national income as a result of social and political instability

In this industry, over-consumption occurs where the consumers will consume at a level beyond the social equilibrium as their level of demand represented by PMB (Private Marginal Benefit) is higher than the level of demand deemed socially beneficial to the society represented by the SMB (Social Marginal Benefits). This is because the value of benefit of demerit good is deemed higher by the individuals than the value deemed by the society

SMC=PMC+EMC

PMB

SMB

Qty

Qm

Qs

P­m

Cost/Benefit

(Private benefit)

(Social benefit)

As seen by the diagram, the value of external cost is represented by the SMC which will include the PMC (Private Marginal Cost) and EMC (External Marginal Cost) while the PMB represented the demand of the individuals. As individual perceived the benefit of consumption based on private demand (PMB) to be greater that actual level of benefit of consumption based on social demand (SMB), as there is imperfect market information about the detriments of gambling. The consumption at Qm will experience overconsumption as the quantity at market equilibrium at Qm is higher than the social equilibrium at Qs and thus, there will be occurrence of DWL represented by the shaded portion, as SMC is higher than SMB at production level between Qm and Qs. This indicates that there is an overconsumption of demerit good which contributes to market failures.

### **4. Solutions to the problems of market failures due to negative externalities**

The use of taxationwill internalize the external cost as part of the cost of production by raising the price of the goods and thus reduce the market equilibrium to the socially efficient level. In the course, the DWL is eradicated and maximization for the society is attained.

P1

P0

PMC (S0)

Qty of Road Usage

Cost/Benefit

QS

QM

SMC

SMC’ = PMC + tax (S1)

SMB

DWL

The imposition of taxation will raise the PMC to SMC’ (PMC+tax) where the supply curve shift from S0 to S1, contributing to the increase in price of quantity from P0to P1 and thus lead to a decrease in quantity demanded from QM to QS. Consequently, the DWL (shaded area) incurred will be eradicated as the production level is at QS instead of QM.

**Economic distribution effect**

1. Eradication of the deadweight loss
2. Reduction in the external cost
3. Internalization of external cost
4. Increase in government revenue

Examples of tax imposition – ERP for road usage, cigarette tax for smokers

**Advantages**

* It will adjust the production and consumption level for the industry to the social optimal level.
* It reduces the external cost due to lower quantity of production by forcing the consumers and producers to cut down production and consumption.
* It will also encourage the market to adopt consumption and production level with less externality as the firms have to take in part of the external cost as part of cost of consumption and production.
* Eventually, it will provide revenue for the government to improve the public project to minimize the effects of externalities.

**Disadvantages**

* Taxation may not be a favourable policy to adopt.
* It may increase cost of living and cost of production.
* May not be easy to rectify the problem of externalities since it is not easy to identify and measure the negative externalities.

### **7.3 Other forms of Intervention**

**7.3.1 The use of rules and regulation**

The use of rules to ban or control the amount of consumption such that negative externalities will not occur.

Example – Bus Lane for road usage, restrictive smoking areas for smoking

**Advantages**

* Forceful and direct – can ensure the result is attained
* Easy to administer – as the regulation is forceful and based on the quantity.

**Disadvantages**

* High cost of administration in terms of higher wage rate will lead to inefficient administration
* The effectiveness of the regulation greatly depends on the efficiency of the administrative bodies
* Excessive regulation may undermine the functioning of the economy

**Qn: Is banning effective? (depends on the value of DWL and Net Private Benefit Gain)**

**Qn: Why it is justifiable to ban smoking in an enclosed area but not in open space?**

1. **Enclosed area** – DWL > net private benefit gain

✓DWL – intensified effects / direct impact on non-smokers

🡪net private benefit gain – exclusive to the smoker

1. **Open space** – DWL < net private benefit gain

✓DWL – less intensive / minimal impact on non-smokers

🡪net private benefit gain – broader base – must include economic activities on tobacco industries

banning of car usage is not feasible as the benefit of road usage is greater than DWL caused congestion

7.3.2 **The Sale of Permit** (quota)

* Sales of the rights to produce the goods to exclusive producers so as to regulate them more effectively.
* Example: certificate of entitlements (COE) for road usage / Carbon Emission trading System

**Advantages**

* Can collect revenue
* Can effectively identify and control the source of negative externality
* Allow the price mechanism to continue to operate but it has to adjust to the constraint

**Disadvantages**

* Unclear and improper administrative procedures will undermine the efficient functioning of the system to ensure that the regulated allocation will aid the efficient allocation of resources
* Regulated quantity of production will undermine the function of the economy as the supply of goods and resource may disallow production and consumption and thus, undermining the economy from attaining higher level of economic growth or standard of living
* Control of the rights for production indirectly controls the market and thus, creating market power which will lead to allocative inefficiency. (carbon emission)
* Temporal market power (permit expires over time) – another form of consumer exploitation 🡪 ↑DWL

Distribute free to producers and let them trade – no increase in cost of production – no increase in price but consumer will not be compensated

Distribute at a tax and let them trade – increase in cost of production – increase in price – but consumer will be paid for the negative ext (tabacco tax) – justifying the rights to pollution.

7.3.3 **Nationalization or direct provision by the government**

Involves the government taking over the production of goods to ensure the negative effects of the production will not affect the society as the level of consumption and production will set at the social optimal level. (e.g. nuclear plant)

**Advantages**

* Government can directly regulate and control the problem by focusing on the root cause of the problems
* The government has the legal authority to deal with social and political complexity of the issues

**Disadvantages**

* The government may incur more expenditures as price level is low
* May not have the technology to produce the goods
* May lead to more wastages if the good is provided free as it will encourage excessive consumption

7.5.4 **Negotiation (Coarse Theorem) – negotiation process to solve environmental issues**

Determine the property rights and opportunity cost so as to set terms of compensation for those who are affected by the negative externalities and those who cause it. It also depends on the value of opportunity cost of the respective consumption and conducts a comparison of the respective activities to determine the level of production

**Advantages**

Ensure the problem is resolved with the acceptance by all parties

**Disadvantages**

Difficult to assess property rights/ opportunity cost to determine compensation

7.3.4 **Use of education campaigns – to reduce friction against punitive measures**

Government can use educational campaigns and advertisements to change the mindsets of the people in terms of their production and consumption behaviour. The aim of the campaign is to correct their consumption and production behaviours such that they take note of the undesirable third party effects that they may incur.

**Advantages**

Solve the root cause of the negative externalities which will derive a more permanent effect

**Disadvantages**

* High cost of promotional campaigns
* Effectiveness may be undermined by the ineffectiveness of the campaign and the lack of understanding the targeted audience

### **Is taxation the most appropriate form of government intervention to solve market failures due to over-consumption of chocolates? [15]**

Introduction

market failure occur in the chocolate market as the consumption will create negative externalities that will lead to the rise of welfare loss

Main Body

1. explain how the consumption of chocolate will lead to market failures (briefly
2. explain the imposition of taxation will solve market failures in the chocolate industry (draw diagram and describe)
3. evaluate the advantages and disadvantage of tax imposition on the consumption of chocolate
4. briefly explain other measures (public education/ rules and regulation)
5. comparative evaluation – solve the root cause – reduce the price-inelastic nature of chocolate consumption / a costly and difficult measure to introduce for children

Conclusion

### **8. Explain how market failures will occur as a result of the presence of positive externalities**

**Economic Causation of impact of merit good**

|  |  |  |
| --- | --- | --- |
| **Merit Good** | Education | Medical Services |
| **Positive Externalities** | Productive Labor Force | Productive labour force |
| **External Benefit $** | ↑productivity /COP ↓ | ↑productivity /COP ↓ |
| **DWL** | ↓I, ↓N+ | ↓I, ↓N+ |

🞹DWL: Failure to reap external benefits due to underproduction

(economic causation – merit good, positive ext, external benefit, welfare loss (DWL)

Due to the presence of positive externalities in the production and consumption of merit goods like education services, external benefit such as the benefit of more productive workers will arise. This will lead to a condition of under-production when there is no government intervention and the society fails to reap the benefit whereby the market equilibrium is lower than the social equilibrium, thus contributing to deadweight loss (DWL); **welfare loss to society which is the value of external benefit the society fails to reap.**

P0

Qty of Education Services

Cost/Benefit

QS

QM

SMB = PMB + EMB

SMC

PMB

DWL

As seen from the diagram, the **market equilibrium is set at Qm where the PMB is equal to PMC and no externalities have been taken into account. T**he presence of positive externalities will create external marginal benefit that will raise the PMB to SMB(PMB + EMB), causing the market equilibrium of the production education services to be set at Qm which is lower than the social equilibrium level of production education services at Qs where SMB=SMC and there is under-production or consumption. Consequently, the value of deadweight loss will arise between Qm and Qs if there is no government regulation, implying that there is market failure.

**Explain how the market for vaccination against Covid-19 will lead to market failures.**

1. overview
2. economic causation
3. diagram
4. description of diagram
5. analysis

8.1 **Provision of Subsidies of consumers**

Subsidies are given to consumers which will increase their disposable income and purchasing power of the consumers. Hence demand for the goods increases, shifting the PMB to SMB’ (PMB + subsidies), which induces an increase in quantity demanded from QM to QS. This will mean that the industries can reap the external benefit and prevent the occurrence of DWL, enabling the economy to attain social efficient level of production. (maximization of net social benefit gain.)

* 1. **Provision of Subsidies to producers**

Subsidies given to producers will decrease the cost of production and increase the supply of the goods. This shifts the SMC to SMC’ (PMC + sub) to the right, which will increase the supply of education, prompted a decrease in price of these goods. This will increase the quantity demanded from Qm to Qs and thus the industry can attain social efficient level of production and consumption and thus, reduces DWL.

**Advantages**

* Strong inducement – can effectively increase the consumption
* May not lead to excessive consumption and production as the subsidies influence both the supply and demand

**Disadvantages**

* May lead to the rise of government spending – may need to raise debts
* May encourage excessive welfare

**Subsidies to consumers** is given when the government wants to encourage individuals to increase consumption (education services)

**Subsidies to producers** is given when the government wants to encourage producers to produce more (water supply)

Qn: Should the government subsidize the producer or the consumer in the provision of water?

* subsidize the producer – huge initial cost of investment – therefore need subsidy to encourage production
* subsidize consumers – reduce unequal distribution of net social benefit

## **8.3 Other Solutions to Positive Externalities**

### **8.3.1 Direct Provision by Government**

* The government will provide the level of production of merit good as at the social efficient level.
* Example: General Academic education in Singapore

**Advantages**

* Government can directly regulate and control the problem
* Possess the legal authority to curb the social and political complexity of the issue

**Disadvantages**

* The government may incur more expenditure and may lead budget strain
* May not have the technology to produce the goods
* May lead more wastages if the good is provided free as it will encourage excessive consumption

**Should government provide merit goods? should the government provide merit good free to the people?**

**Should government subsidize tertiary education?**

* no – net private benefit gain is greater than welfare loss
* maximization of net social benefit gain is distributed to the individual more than the society
* yes – the welfare loss is greater than net private benefit gain (depends on contribution of the graduate

### **8.3.2 Public Education**

* The use of promotion and campaigns to influence consumer and producers’ behaviours – E.g. Lifelong education

**Advantages**

* Solve the problems by focusing on the root cause of the problems (E.g. Compulsory primary school education)

**Disadvantages**

* Incurs extra cost
* Effectiveness depends on the design of the promotion and the consumer group

**Qn: Discuss how the Singapore government can solve market failures contributed by positive externalities as in the education industry? [25]**

i. Explain how market failures occur in the education industry positive externalities [10]

ii. Explain and evaluate how the Singapore government solve this form of market failures [15]

subsidies / direct provision / regulation / campaign

### **The Use of Rules and Regulation**

* The use of rules to enforce consumption such that positive externalities will be reaped.
* Example: the introduction of the compulsory secondary school education legislation

**Advantages**

* Forceful and direct – can ensure the result is attained
* Easy to administer as regulation provides proper regulation of the issue

**Disadvantages**

* High cost of administration – may negate the net social benefit gain
* Unclear rules and regulation will create greater complexity that may undermine the effectiveness of the regulation
* Excessive regulation may undermine the functioning of the economy

Market solution – rely on price mechanism to solve market failures

(taxation, subsidies, quotas)

Non-market solution – do not use price mechanism to solve the problems

(rules and regulation, banning, public education, negotiation)

Factors determining the choice of measures adopted to solve market failures

1. Price elasticity of demand
2. time period
3. budget strain – based on taxation and subsidy (cost of financing)
4. size of the country
5. efficiency of administration
6. nature of consumption and production – water supply

Classification - market-based solution and non-market-based solution

## **Reasons for Government to Intervene (market failures)**

* The government has the moral obligation to intervene to act in the interest of public
* The government has the resources to intervene
* The market mechanism fails to conduct resource allocation
* The DWL incurred will be paid by the society, thus affecting the government expenditure – strain on budget position – public debt

## **Reasons for Government Failure & (limitations of government policies)**

Why the government should not intervene? (government failures and limitations of government policies)

### **Distortions that Arise because of Intervention**

Government policies do not provide a complete solution to the problem as it may create new problems for the economy. E.g. Imposition of taxes to reduce traffic jam will discourage workers from working hard.

**Abuse of government policies**

To gain votes as the policies for correcting externalities may undermine certain segments of the population for the mass population’s interest

### **Information Asymmetry**

Lack of information on the part of government causes the incorrect policy decision.

Hard to assess the impact of the policies

### **Bureaucracy and Inefficiencies of Government**

The government may themselves be inefficient due to administrative paths and costs

### **Time Lags**

Time lags from the implementation of policies to act effect may render them to be less effectiveness.

**Cost of financing**

Concern over budget position – may incur – budget deficit – rise of public debt

**Lack of expertise**

Services or good will be provided by private sector and distributed by the government

## **11. Causes of Inequality**

### 11.1 The competitive market mechanism is such that those who have acquired the right skills achieve the most benefits. Those that do not are being marginalized by the society.

### **11.2 Market Structures (market dominance)**

* Monopoly firms take part of the consumer surplus at the expense of consumers
* The failure of market causes deadweight loss

### **11.3 Information Asymmetry**

* Some consumers are unaware of information that can enable them to get the best deal. Hence, they are unable to fully realize their potential welfare.

**11.3A Inflationary Condition in the Global Market**

* Price of resources in the global market undermine the purchasing power of the lower group, while the appreciation of resources and asset will raise wealth of resource and asset owners

## **12. Government Policies to Solve Inequality**

* Creating institutions to govern the market forces to prevent exploitation by the enterprises
* Education to reduce asymmetric information
* Use of taxation and subsidies to affect the consumption and production of the good and services to prevent exploitation

**12.1 Policy Implications**

* In the case of taxation, the government faces a trade-off between imposing taxes and reduction of work incentive of the workers.
* With CBA, the government is then able to assess the cost and benefits of either one effect and make the eventual decision.
* As market is ever fluctuating the government has to continually conduct situational analysis to maximise the welfare of the country.

## **Types of goods**

* Goods are classified based on two main dimensional notions, the notion of excludability and the notion of rivalry (Refers to classification and main definitions from list of definitions)
* Explain how these types of goods will cause market failures
* Distinguish the types of goods
* Reasons for and against producing merit and public good

13.1 Distinguish the types of goods

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Types of good** | **Public Good** | **Private Good** | **Merit Good** | **Demerit Good** |
| **Notion of rivalry** | Non-rivalry in consumption – its use will not deprive others – MC of additional user is zero | Rivalry in consumption – its use by a consumer will deprive others of its consumption | Rivalry in consumption – its use by a consumer will deprive others of its consumption | Rivalry in consumption – its use by a consumer will deprive others of its consumption |
| **Notion of excludability** | Non-excludable – not possible to exclude people from using once provided | Excludable – possible to exclude non-payers from using the good | Excludable – possible to exclude non-payers from using the good | Excludable – possible to exclude non-payers from using the good |
| **Degree of Externalities** | Huge positive externalities | No externalities | Positive externalities | Negative externalities |
| **Source of production** | Not profitable and not marketable because non-rivalry in consumption implies that there is no market price since P=MC at market equilibrium. Non-excludability will lead to people refraining from expressing demand due to free-rider problem 🡪 stop private firms from producing | Profitable and produced by private sector. Market equilibrium is allocative efficient | Profitable and can be produced by private sector but due to external benefit that is not taken into account by private individuals – market produce too little/under-consumption | Profitable and can be produced by private sector but due to external cost incurred, regulation will be made to reduce consumption or production |
| **Degree of government intervention** | Government takes over the production | No need for government intervention, unless government deems intervention is necessary | Government needs to intervene to increase production/consumption | Government needs to intervene to reduce production and consumption |
| **Examples** | Defence, street lights, overhead bridges | Shoes | Education, health services | Smoking, Cars |

**13.2 Reasons for government to provide all public goods**

* To prevent the occurrence of complete market failures which will lead to complete welfare loss as there is no provision of public goods by the public sector.
* The government can provide source of finance as it is able to collect taxes from the public as it has the legal and moral authority to do so.
* Most of the public goods require huge financing and have a slow rate of returns which will discourage the private sector from producing it.
* The government can ensure that the firm will produce at the production level at allocative efficient level despite the fact that the firm will make losses in the case of a natural monopoly as it can finance the loss through subsidy
* To raise the standard of living of the people especially the lower income group as the provision of public facilities will make their lives more convenient and comfortable for them to live.
* To ensure that the industries will be supported by the public facilities to raise the efficiency of production and thus, lower cost of production to increase competitiveness.

**13.3 Reasons for the government to produce merit goods**

* To ensure that the production and consumption is at social optimum level of production so as to reap maximum net social benefit gain, ensuring that there is no welfare loss in the society.
* To ensure that the welfare of the lower income group is taken care of as in the case of provision of merit goods like education
* The lack of capable and efficient private producers to ensure that there is efficient production of the merit goods

**13.4 Reasons against the government for producing merit goods**

* Undermine the advantages of the price mechanism in the allocation of resources which is based on price signals – swift and less administrative cost in the production and distribution process
* The possible rise of government failures will make it not productive for government to be involved in the provision of merit good

**13.5 should government provide merit good free to the people?**

Yes

* Eradicate DWL and prevent market failures – achieve social efficient resource allocation
* significance of external benefit – raise efficiency of production – induce investment – promote econ growth – higher level of employment

No

* Overconsumption – give rise to deadweight loss 🡪 cost of financing

1. **Main Areas of Discussion**

(Is it necessary for government to intervene into the market to correct allocative inefficiency?)

**Many economists strongly oppose to government intervention in the allocation of scarce resources. Their basic presumption is that markets generally work well by themselves and that there are just a few limited instances in which government action is needed.**

**(a) Explain the circumstances in which the government should intervene in resource allocation. [10]**

* 1. **Why government needs to intervene into the market to correct market failures? (consider the negative impact of market failures)**
* To correct inefficient allocation of resources so as to attain maximization of net social welfare gain
* To reduce the cost of the deadweight loss that will be paid by the government
* To prevent the consumers from experiencing consumer exploitation whereby they will be charged higher price and sold with poor quality product
* To prevent the complete loss of welfare due to the absence of the provision of public goods
* To prevent unequal distribution of net social benefit of gain due to unequal distribution of income and wealth
  1. **Why government may not need to correct market failure?**

**Possibility of government failures**

**limitations of the government policies**

* High cost of financing is needed for government to incur in the provision of public goods will discourage the government from providing public goods
* Lack of technological expertise in the production and distribution in the public good will hinder government from the provision
* Government may not correct market failures due to market power as the firm with large market power offers other areas of advantages which may benefit the firm the cost advantages of large scale production
* Government may also find it difficult to estimate the monetary value of externality and thus, it may not want to intervene as the cost of intervention may be higher than the cost of welfare loss
* Complexity of the production and distribution of goods and services will make it difficult for the government to intervene

**To what extent is government intervention in resource allocation desirable? [15]**

* Strengths of government intervention
* Limitations of government intervention
* (Reasons for government failures)
  1. **Comparison bet taxation and quotas as solutions for writing negative externalities**

The imposition of a ban can ensure that the effect of deadweight loss is eliminated but the society may not lose out as it has to forgo the net social benefit gain as there is no production and consumption at all. This form of banning is only introduced when the net social benefit social is less than the dead weight loss the society will incur.

On the other hand, taxation will simply adjust the production level to the social equilibrium level of production where the SMC=SMB and there is no deadweight loss but the maximization of net social benefit gain, implying that there is social optimization of allocation of resources.

Furthermore, the government can enforce the producers and consumers to internalize the external cost as part of the cost of consumption and production which will influence to reduce external cost by using other methods of consumption and production that will not produce externality. The use of taxation will also provide the government the tax revenue to nullify the effect of externalities imposed on the society.

* 1. **Explain how market failures is seen in the health care industry**
* Imperfect market information and market power (Oligopolistic market structure) /inadequate information for consumers.
* presence of positive externalities
* problem of unequal distinction of income

Other industries to consider:

1. education
2. transportation industry

## **15. List of Definitions**

### **15.1 Scarcity**

* It refers to the problem that limited amount of resources available is unable to meet man’s unlimited wants
* As a result, the economy will have to conduct resource allocation whereby the economy will need to resolve the three fundamental economic problems of choice to maximise resource allocation. In the process, it will incur opportunity cost.
* It is therefore important to achieve allocative efficiency in order to maximise welfare for society

### **15.2 Resource Allocation**

* The process of allocation of scarce resources for utilization of the production of goods and services for the consumption for the economy

### **15.3 Method of Resource Allocation**

* Command or planning economy: All decisions are made by government, relies on government’s direction and coordination
* Laissez-faire system: Decisions are made by demand and supply forces of the market
* Mixture of both

### **15.4 Free Market Economy**

* No governmental interference on market activities. People produce accordingly and voluntarily to the market demands.

### **15.5 Imperfect Market**

* Market condition that does not fulfil the perfect competition
* Firms and consumers have imperfect knowledge
* Firms have some degree of influence on market price due to their market power and the demand curve is downward-sloping from left to right

### **15.6 Market Failures**

* Market failures refer to the failure of price mechanism to conduct resource allocation efficiently and thus, calls for the intervention by the government.
* The price mechanism fails under the conditions when it is unable to provide public goods, the presence of externalities and the presence of imperfect market.

### **15.7 Allocative Inefficiency**

* Occurs when the firm and the industry’s level of production is not at the social equilibrium level of production where price level is equal to marginal cost and when this occurs, the industry will experience dead-weight loss as the production level at market equilibrium is below the social equilibrium.

### **15.8 Productive Inefficiency**

* Occurs when the firm is unable to attain a level of production where the firm is at the minimum cost of production at the respective level of production.

### **15.9 Static Efficiency**

Efficiency at a given point in time

### **15.10 Dynamic Efficiency**

Experienced over a period of time where changes are occurring at the best rate.

### **15.11 Private Benefit**

The level of utility that an individual or firm is able to receive from the consumption or production of goods and services.

### **15.12 Private Cost**

The cost of consumption and production that an individual or a firm will incur in the process of production or consumption.

### **15.13 Social Benefit**

The total welfare received by the entire society measured in term of the benefit gained by the society which may include the external benefit that the third parties can reap.

### **15.14 Social Cost**

The total cost paid by the society measured in term of the monetary cost or opportunity cost incurred the society which may include the external cost that the third parties will incur.

### **15.15 Marginal Private Benefit (MPB or PMB)**

Amount of private benefit received for an additional unit consumed or produced

### **15.16 Marginal Social Benefit (MSC or SMC)**

Amount of social benefit received for an additional unit consumed or produced

### **15.17 Marginal Private Cost (MPC or PMC)**

Amount of private cost incurred for an additional unit consumed or product.

### **15.18 Marginal Social Cost (MSC or MPC)**

Amount of social cost incurred for an additional unit consumed or produced

### **15.19 Externalities (Positive and Negative)**

* It refers to the third-party effects that the society will experience despite not engaging in the direct consumption and production.
* The effect of production or consumption of good or service on the welfare of the 3rd party, who neither pays or receives any compensation

### **15.20 External Marginal Benefit (EMB or MEB)**

Refers to the additional benefit attained due to the effect of positive externalities when the society produces additional output.

### **15.21 External Marginal Cost (EMC or MEC)**

Refers to the additional cost incurred due to the effect of negative externalities when the society produces additional output.

### **15.22 Deadweight Loss (DWL)**

The welfare loss of efficiency incurred by the society when there is an over or underproduction of goods and services, indicating that the society has failed to attain social optimization of resources. For Deadweight Loss incurred by positive externalities, the welfare loss is seen in term of the external benefit the society fails to reap due to under-production but negative externality, it will be seen in term of the external cost the society need to incur.

### **15.23 Social Optimization of Resources**

Refers to the maximization of resource allocation for production of goods where the net social benefit gain that the society will derive is maximized and there is no deadweight loss experienced by the society.

### **15.24 Government Failure**

The situation where government’s interference reduces allocative efficiency as cost of intervention may exceed the cost of dead weight loss incurred.

### **15.25 Nationalization**

Firms are being bought over by the government and the production and distribution of the business will be handled by the government.

### **15.26 Merit Goods**

* A good that has positive externalities in its production or consumption will lead to occurrence of external benefit that will benefit the society as a whole.
* Note that not all goods with positive externalities are merit goods

### **15.27 Demerit Goods**

A good that has negative externalities associated with the production and consumption that will lead to the occurrence of external cost that will undermine the society as a whole.

### **15.28 Public Goods**

A goods that is non-rivalry and non-excludable in consumption

### **15.29 Non-Rivalry**

Refers to the condition when the consumption of a good by an individual will not deny another from consuming the goods. (Note: marginal cost of the good is zero)

### **15.30 Non-Excludable**

Refers to the condition when the non-payers of the consumption of a good cannot be denied from consumption. (Note: the private sector will not produce the goods as it is not profitable since it cannot charge the consumer)

### **15.31 Market Power**

The extent to which a firm can manipulate price of the market or the control of the level of production and this can be seen by the downward-sloping demand curve. (Note: the degree of market power is reflected by the price-elasticity of demand)

### **15.32 Cost Benefit Analysis (CBA)**

A method for evaluating all cost and benefits associated from a particular economic action.

### **15.33 Income**

* Viewed as a **flow**
* The receipt of money period time

### **15.34 Wealth**

* Viewed as a **stock**
* Values of a person’s total assets at a particular point in time

### **15.35 Equality and Equity**

* Equality is defined in absolute quantities, having an equal outcome. E.g. Government redistributing income to the poor.
* Equity can be defined as having the same opportunity to achieve similar outcomes. E.g. Feminism movement to eliminate the gender discrimination so that women can have the opportunity to compete on equal footing as man.

### **15.36 Lorenz Curve**

* Developed by Max Lorenz
* A graphical representation of income inequality
* Gini co-efficient is derived from the curve to give a numerical representation of inequality in income distribution

**Explain how market failures will occur in the education industry.**

* definition of market failures and
* how this will occur (merit good, positive externality, external benefit, DWL
* draw diagram / description of diagram
* conclusion