**Chapter 6 Market Failure**

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**Chapter 6 Market Failure**

**1. Explain how the price mechanism conducts efficient resource allocation to solve problem of scarcity. [10]**

**1.1 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

**1.2 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

**1.3 Conclusion** – retrospective summary

**2. What is Market Failure?**

Market failure refers to the failure of the price mechanism to conduct efficient resource allocation and thus, calls for the intervention of the government. The presence of deadweight 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 goods, 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

**3. Explain how market failure is caused by Public Good**

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 public goods). This occurs as the public goods are non-excludable and non-rivalry in production and consumption which make the separation of the payers and non-payers a difficulty. When the public goods are non-rivalrous, it can be shared and this will make free-ridership possible while the goods are considered to be non-excludable, the non-payee can be excluded from the use of the good even though he has not paid for it. Thus, the private sector cannot charge the consumers and thus, will not produce the good.

In the absence of the provision of public goods, there will be complete market failure as consumers are unable to attain any welfare without the consumption of public goods.

**4. Explain how Direct Provision can be used to solve market failure caused by Public Good**

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 statutory 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. Eg. The use of taxation like GST is to fulfill this task.

**4.1 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

**4.2 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

**5. Explain how market failure is caused by market imperfection and market power**

The presence of market imperfection and market power would cause under-production which will create deadweight-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 conditions where the downward sloping demand curve, which will contribute to the difference of the production level (underproduction). Consequently, there will be allocative inefficiency causing the industry to incur deadweight loss.

Diagram

**6. Explain how market failure solved by market imperfection and market power can be solved**

**6.1 Use of Legislation to reduce formation of market power**

- 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 Provision of information to reduce the degree of market imperfection**

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

**7. Explain how market failure is caused by positive externality**

**7.1 Under-production and consumption of merit good like education**

In the production and consumption of merit good like education services, the presence of positive externality seen in terms of a productive labour force creates external benefit like reduction in cost of production. However, if there is underproduction or consumption of education services, the external benefit is not reaped and this lead the rise of welfare loss seen in terms of loss of investment, employment and national income for the economy.

Diagram

The cause of market failures in the education industry can also occur as a result of unequal distribution of income which causes the unequal distribution of net private benefit and this is a form of market failures as individuals are unable to consume more and raises the consumption to the social efficient level, contributing to underproduction and underconsumption. Furthermore, individuals are receiving lesser value of net private benefit gain and this means that there is unequal distribution of net social benefit gain for the individuals.

Furthermore, there is also the cause of imperfect market information where the consumers are unaware of the benefits of the education services and therefore, they under consumer the quantity of education services. This leads to inefficient resource allocation of resources whereby the market equilibrium of production is below social equilibrium level of production and welfare loss arises.

**7.2 Underconsumption of healthcare industry**

**Describe how market failures can occur in the healthcare industry.**

Without government intervention, the market equilibrium is set at Qm where MPC is equal to MPB. However, the presence of positive externalities will create market failure from underconsumption of the good at the market equilibrium. This usually occurs due to imperfect information, where the consumer is not fully aware of the positive externalities to society of consuming the good. The presence of positive externalities will create a divergence between the private marginal benefit and social marginal benefit as MPB pivots to MSB where MSB is equal to the sum of MPB and MEB. Since consumers will only take into account their private benefits, they consume at quantity Qm, which is lower than the socially optimal level of consumption QS. This results in underconsumption of the good and deadweight loss to society between the social equilibrium at Qm and market equilibrium at Qs, represented by shaded portion marked ABC.

**8. Explain how Subsidy can be used to solve market failure caused by Positive Externality**

**8.1 Provision of Subsidies to 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.

**8.2 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, prompting a decrease in price of these goods. This will increase the quantity demanded from Qm to Qs and thus the industry can attain a socially efficient level of production and consumption and thus, reduces DWL.

**8.3 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

**8.4 Disadvantages**

- May lead to the rise of government spending – may need to raise debts

- May encourage excessive welfare

**9. Explain how other forms of intervention can be used to solve market failure caused by positive externality**

**9.1 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

**9.2 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

**9.3 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

**10. Explain how market failure is caused by negative externality**

**10.1 Overconsumption of demerit goods**

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 the demerit good is deemed higher by the individuals than the value deemed by the society.

As seen in the diagram, the value of external cost is captured in the SMB which will include the PMB (Private Marginal Benefit) and EMC (External Marginal Benefit) while the SMC represents the supply of the goods. In the free market, there will be over consumption as the quantity at market equilibrium Qm is higher than the social equilibrium Qs. This will incur DWL represented by the shaded portion, as SMC is higher than SMB at production level between Qm and Qs.

**10.2 Overproduction of demerit good**

In the production of demerit goods, there will be negative externalities such as pollution which creates problems for the society. This will raise the external cost in the form of higher environmental costs. Without any government intervention, there will be a rise in deadweight loss (DWL), which is the cost of clean up and healthcare costs for citizens due to environmental problems. In this industry, over-production occurs where the producers will produce at a level beyond the social equilibrium as their private costs represented by PMC (Private Marginal Cost) is higher than the output level deemed socially beneficial to the society represented by the SMC (Social Marginal Cost).

As seen in the diagram, the value of external cost is captured by the SMC which will include the PMC (Private Marginal Cost) and EMC (External Marginal Cost) while the SMB represents the demand of the individuals. In the free market, there will be overproduction of the good as the quantity produced at market equilibrium Qm is higher than the social equilibrium Qs. This will incur DWL represented by the shaded portion, as SMC is higher than SMB at production level between Qm and Qs.

**11. Explain how Tax can be used to solve market failure caused by Negative Externality.**

The use of taxation will cause the producer to 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 society is attained. The imposition of taxation will raise the PMC to SMC’ (PMC + tax) where the supply curve shifts from S0 to S1, contributing 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.

**11.1 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.

**11.2 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.

**12. Explain how other forms of intervention can be used to solve market failure caused by negative externality**

**12.1 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

**12.2 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

**Explain how the quota works as in the imposition of COE**

A quota is the controlled level of production set by the government to fix the amount of goods and services to be consumed or produced at the level of quantity deemed desirable or efficient by the government. The COE is implemented like a quota as the amount of car ownership is set at a certain level of quantity.

As seen from the diagram, the industry is experiencing market failures as the production level at Qm experiences welfare loss where the MSC is greater than the MSB, given the condition of overproduction in the road usage industry. The imposition of quota like COE sets the output at the social efficient level where the MSC is equal to MSB and there is no dead weight loss and this causes the price level to rise from Po to P1. As such, the condition of market failures is solved.

Evaluation of COE

1. COE is able to solve market failures of pollution and road congestion as it controls the root cause of road usage and pollution which is the size of car population. The fixed amount of cars on the road discourage the rise of pollution and road congestion.

2. COE provides revenue to the government which can be used to finance government expenditure on the building of roads and other transport facilities like bus routes to increase the supply or road and public buses to ease road usage to prevent road congestion and pollution.

3. However, COE may not deter road usage as the car owners may increase road trips to lower the cost per unit of road trip and this will raise the demand for road. Thus, road congestion and pollution prevail.

4. Road congestion may not be solved as it is the result of too many cars using the same route and at the same time of road usage. Thus, traffic congestion still occurs at certain road and

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

How the sales of permits act like quota which creates the following problems?

- 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

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

Involving 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

**12.4 Negotiation (Coase 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

**12.5 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

**13. Explain how income inequality leads to market failures from an individual perspective**

Income inequality is a cause of market failures as it contributes to unequal distribution of benefits, causing individuals not receiving their fair shares of net social benefit gains. There is no maximization of net social benefit gain on an individual basis. As the distribution of goods and services are distributed based on the purchasing power of the rich and the price of the goods, those who are richer are likely to receive more beneits than those who are poorer, causing uneven distribution of goods and services and so does the distribution of benefits. Therefore, the causes of income equality would be the problems of market failures.

There are several factors to consider why income inequality occurs. One of them is due to wage differences due to skill differences as workers are usually paid based on different wage rates, depending on their skills, responsibilities and scope of work. Another factor would be the wealth creation as individuals with wealth capacity can earn more from other income. Income inequality can also be due to the difference in cost of living and standard of living of the cities that the people are living in which makes people living city having a higher income than the people living in the rural region.

**14. 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)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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 |

**15. Reasons for government to provide 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.

**16. 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

**17. 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
* Increase in the cost of financing which leads to budget deficit and this may undermine the economy as there will be higher public debt. Compared to subsidizing, the government expenditure
* The possible rise of government failures will make it not productive for government to be involved in the provision of merit good