**2014 – Economics Notes – Chapter 3 – Market Failure**

**3.1.1 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:
1. 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.
2. 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.
3. 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.

**3.1.2 What is Market Failure?**

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

**3.1.3 Conditions for Market Failure**

* Failure to provide public good

Public goods are

* Non-rival – consumption of one good by one party will not deny the consumption by another
* Non-excludable – Individuals cannot be excluded from consumption
* Absence of externalities
* Positive and Negative Externalities
* Presence of imperfect market
* Imperfect market information
* Immobility of resources
* Market power
* Unequal distribution of income

## 3.2 Reasons for Market Failures

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

1. Absence of Public Goods

* 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 are **unable to attain any welfare without the consumption of public goods.**

2. Imperfect Market Condition

* 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.

3. Externalities

* 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 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 and thus, causes deadweight loss.**

4. Unequal Distribution of Income

* 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, which is a form of market failure because total net social benefit gain is unevenly distributed.

**a) 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 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 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. 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 at Qm.

**Economic impact of demerit good**

|  |  |  |
| --- | --- | --- |
| **Demerit Good** | Smoking | Road Usage |
| **Negative Externalities** | Pollution | Traffic Congestion |
| **External Cost** | ↑Medical cost/ ↑COP$∵$↓productivity | ↑cost of travelling/↑COP (↓productivity) |
| **Deadweight Loss**  | ↑Hospital expenditure | ↓production/↓I/↓NY, N+ |

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

Due to the presence of negative externalities, such as traffic jam which arises from the production and consumption of demerit good such as excessive road usage, the production and consumption of cars (seen in road usage) will experience over-production when there is absence of government intervention whereby the market equilibrium level of production is higher than the social equilibrium level of production, thus giving rise to deadweight loss (social welfare loss).

P0

Qty of Road Usage

Cost/Benefit

QS

QM

SMC

PMC

SMB

DWL

As seen from the diagram, 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. Without government intervention, the economy will incur deadweight loss (shaded area) as indicated in the diagram.

**c) Explain how market failures will occur as a result of under-consumption of merit good**

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

DWL: Failure to reap external benefits due to underproduction

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

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 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 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. Consequently, the value of deadweight loss will arise if there is no government regulation.

**Government Intervention to Correct Market Failure**

### **3.3 For Negative Externalities**

**3.3.1 Taxation**

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 deadweight loss 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 deadweight loss (shaded area) incurred will be eradicated as the production level is at QS instead of QM.

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 is politically unfavourable.

× 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. Difficult to quantify the external costs incurred.

Examples of tax imposition

* ERP for road usage
* Cigarette tax for smokers

Case Study – ERP

✓Traffic Jam – Causation 🡪 Too many vehicles on the same road at the same time

✓Adv of ERP – conduct route and time allocation of road usage

Qn: Why ↑ petrol tax is not effective in solving traffic congestion?

↑tax🡪↑cost of road usage🡪↓Qty dd is price-inelastic

∴↓Qty dd is less than proportional – Why dd is price-inelastic?

⇨High degree of necessity of dd and lack of substitution

**3.3.2 Rules and Regulation**

The use of rules to ban or control the amount of consumption such that negative externalities will not occur. For instance, the implementation of bus lanes for road usage to reduce traffic congestion as well as the restriction of smoking areas in enclosed spaces.

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 term 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

* Demerits of extensive government intervention in free market economy
* Distort price mechanism

**3.3.3. Educational Campaigns**

Government can use educational campaigns and advertisements to change the mindsets of the people in term 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

**3.3.4 Sale of Permit**

Sales of the rights to produce the goods to exclusive producers so as to regulate them more effectively. For instance, the sale of certificate of entitlements (COE) for road usage in Singapore, as well as the establishment of the Carbon Emission Trading System that controls the level of carbon emission.

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 shows and thus, creating market power which will lead to allocative inefficiency.

× Temporal market power (permit expires over time) – another form of consumer exploitation 🡪 ↑DWL

**3.3.5 Nationalization/State Provision**

State provision 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. For instance, the state provision of nuclear plants in Japan.

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

**3.4 For Positive Externalities**

**3.4.1 Provision of Subsidies to Consumers**

Cost/Benefit

DWL

SMC

SMB = PMB + EMB

P1

P0

SMB’ = PMB + Subsidies

PMB

QS

Qty of Education Services

QM

As seen from the diagram, 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.

### **3.4.2 Direct Provision by Government**

The government will provide the level of production of merit good as at the social efficient level. For instance, General Academic Education is provided by the Singapore Government.

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

### **3.4.3 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 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