

**(a) Explain how scarcity is managed in a free market when consumers and producer aim to maximise their own welfare. (10)**

Question interpretation

- What is the problem of scarcity?
- How does consumer and producer maximise their own welfare?
- How does individual welfare maximisation create market forces?
- How are resources allocated by the market forces in a perfectly competitive free market?

Introduction

- The problem of scarcity arises because society's wants are unlimited but resources are limited.
- Since resources are scarce, the goods produced by resources are also scarce
- In a free market where consumers and producers aim to maximise their own welfare, the resulting market forces of demand and supply enables such scarce goods to be allocated.
- This essay aims to explain how welfare maximisation by consumers and producers create the market forces of demand and supply before analysing how such market forces enable scarce goods to be allocated in a perfectly competitive free market.

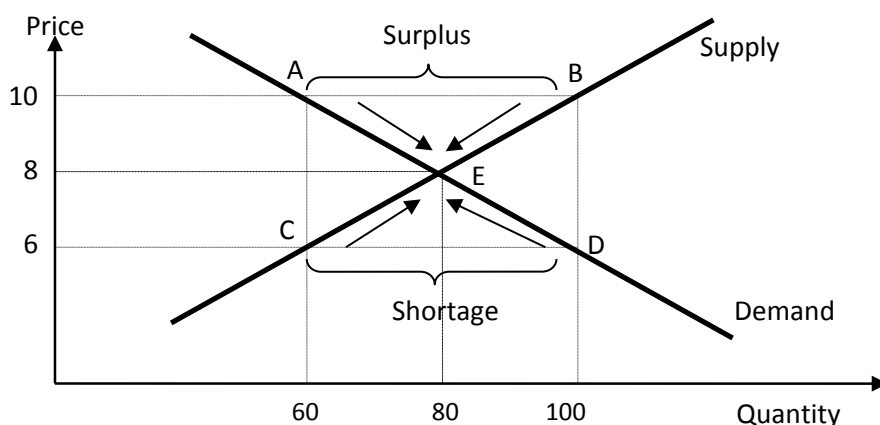
How does welfare maximisation by consumers create demand?

- A consumer seeks to maximize his satisfaction derived from the consumption of a good
- To maximise his welfare, the consumer will buy an additional unit of a good as long as the value of the expected satisfaction derived is greater than the price
- However, due to diminishing marginal utility, the satisfaction derived from buying and consuming each successive unit of a good decreases
- Hence when the price of a good decreases, the consumer will buy more units of the good, so there is an inverse relationship between price and quantity demanded
- This explains why the demand curve of an individual consumer is downward sloping

How does welfare maximisation by producer create supply?

- The producer seeks to maximize his welfare by maximising profits.
- The producer maximizes profit by selling an additional unit of a good when the price that can be earned is higher than the marginal cost of producing that unit
- Due to diminishing returns, where the output derived from employing the additional unit of the variable factor falls, marginal cost will rise with output
- Hence, when the price of a good increases, the new price now exceeds marginal costs so the producer increases profits by producing and selling more units
- There is thus a positive relationship between price and quantity supplied which explains why the supply curve of an individual producer is upward sloping

How do market forces allocate scarce resources?



- The market demand curve is the horizontal summation of the individual demand curve while the market supply curve is the horizontal summation of the individual supply curve
- In a perfectly competitive free market, the market equilibrium is achieved at the point where the market demand & supply curves intersect, such that quantity demanded is equal quantity supplied
- If the current price is \$10, the quantity supplied is 100 units while the quantity demanded is 60 units resulting in a surplus of 40 units
- To clear this surplus, suppliers will lower prices until the equilibrium price of \$8 is achieved such that quantity demanded rises from 60 to 80 units while quantity supplied falls from 100 to 80 units
- Conversely, if the price is \$6, the quantity supplied is 60 units while the quantity demanded is 100 units resulting in a shortage of 40 units
- To meet the shortage, suppliers will raise prices until the equilibrium price of \$8 is achieved such that quantity demanded falls from 100 to 80 units while quantity supplied rises 60 to 80 units
- In conclusion, consumers' and producers' attempts at maximising their own welfare create the market forces that enable the price of a scarce good to adjust such that it can be allocated from producers to consumers

L1: Define scarcity and/or the free market [1]

L2: Explain how welfare maximisation by consumers and producers create market forces [2-5]

L3: Analyse how the free market enables a scarce good to be allocated [6-10]

**(b) Discuss the need for the government to always intervene to ensure efficient resource allocation. [15]**

Question interpretation

- What is efficiency?
- When is the free market efficient and when is it inefficient?
- How can government intervention improve efficiency and how may it worsen efficiency instead?
- Is government intervention always necessary to enable efficient resource allocation?

Introduction

- Allocative efficiency arises when resources are allocated in a way which enables society's welfare to be maximized.
- While the absence of market failure enables the free market to achieve allocative efficiency, the presence of market failure instead causes allocative inefficiency to arise
- Even though, government intervention to manage such market failures can enable allocative efficiency to be restored, the possibility of government failure nevertheless exists.
- The essay aims to first explain how free markets can result in both efficient and inefficient outcomes, before analysing how government intervention can also be efficient or inefficient.
- It concludes by evaluating whether government intervention **is** always necessary for efficient resource allocation to occur.

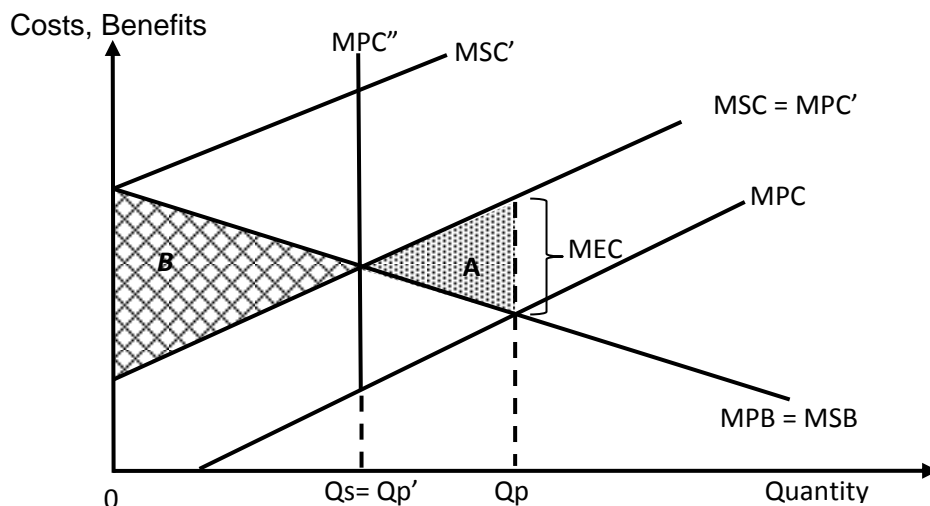
When will the free market be allocatively efficient?

- Allocative efficiency is achieved at an output  $Q_s$  where marginal social costs (MSC) is equal to the marginal social benefit (MSB)
- For any output below  $Q_s$ , there is potential welfare to be gained as  $MSB > MSC$ , so society's welfare can be increased if more of the good is produced and consumed
- For any output above  $Q_s$ , there is negative welfare generated as  $MSB < MSC$ , so society's welfare can be increased if less of the good is produced and consumed

- In the absence of market failure, the marginal private costs (MPC) is equal to the marginal social costs (MSC) and the marginal private benefit (MPB) is equal to the marginal social benefit (MSB)
- The free market will produce and consume at  $Q_p$  where  $MPB = MPC$ , which also coincides with  $Q_s$  where  $MSB = MSC$ , hence the market is allocatively efficient.

When will the free market be allocatively inefficient?

- As there are many sources of market failures, the essay aim to illustrate how market failure can arise from the existence of negative externalities
- Negative externalities refer to the adverse effects imposed on 3<sup>rd</sup> parties from the production or consumption of a good, where 3<sup>rd</sup> parties refer to those not directly involved in the good's transaction.
- For example when a steel plant emits toxic fumes into the air, the polluted air causes respiratory illness to those living nearby, who are the third parties as they do not transact in steel.



- Negative externalities cause MSC to exceed MPC by the marginal external cost (MEC).
- If we assume no positive externalities or merit good effects then  $MPB = MSB$
- The private equilibrium quantity  $Q_p$  occurs where  $MPB = MPC$  while the social equilibrium quantity  $Q_s$  occurs where  $MSB = MSC$ .
- Between  $Q_p$  and  $Q_s$ ,  $MSC > MSB$ , so a deadweight loss of area A arises from the negative welfare generated, hence the free market is allocatively inefficient.

How can government intervention improve outcomes?

- If the government imposes a tax that is equal to MEC, this shifts MPC up to  $MPC'$ .
- The new private equilibrium quantity  $Q_{p'}$  which occurs where  $MPC' = MPB$ , now coincides with the social equilibrium quantity  $Q_s$ , hence allocative efficiency is achieved.
- Alternatively, the government could impose a quota at  $Q_{p'}$  which is equal to the socially optimum output of  $Q_s$ , thus causing the MPC to be perfectly inelastic at this output level i.e.  $MPC''$
- In extreme cases where the negative externalities are so large such that the marginal social cost curve  $MSC'$  intersects the  $MSB$  at the vertical axis, then socially optimum output level is zero
- In this situation, it is socially optimal for the government to ban the production of the good where a ban is equivalent to setting the quota at output zero
- For example some countries ban the production of nuclear energy because of the potential extreme environmental devastation that could arise if there was a serious radiation leak

How can government intervention worsen outcomes?

- When the externalities are not that severe, banning the good might involve a greater welfare loss as compared to no intervention
- If the marginal social costs was at  $MSC$  (rather than  $MSC'$ ), imposing a ban causes a welfare loss of shaded area B which is more than area A, the welfare loss generated by free market provision
- Since the post intervention outcome is worse than pre-intervention, government failure arises.

## Conclusion

- The markets for most goods and services generally exhibit little or no market failure and government intervention in such markets is actually distortionary
- Even when there is significant market failure, due to imperfect information, governments may wrongly estimate the social cost or benefits, hence resulting in excessive intervention which can worsen rather than improve outcomes.
- **In reality government failure is not uncommon** as policy decisions are often influenced by not only economic but also social and political considerations.
- Hence I would argue that it is not always necessary for governments to intervene in markets for efficient allocation of resources to be achieved.

L1: Define allocative efficiency and a relevant type of market failure [1-2]

L2: Explain how free markets can result in efficient and inefficient outcomes [3-6]

L3: Analyse how government intervention can improve but also worsen resource allocation [7-11]

E: Evaluate whether such government intervention is always necessary to ensure efficient resource allocation [+4]