

## Central Problem of Economics

Explain rational decision making achieving an efficient outcome

Rational decision making involves **thinking at the margin** and **undertaking actions to maximise welfare**. Both producers and consumers make rational decisions to **maximise their self-interest**: producers maximise their profits while consumers maximise their utility

- In deciding whether or not to consume and produce, firms and consumers **weigh their marginal benefit** against their **marginal cost**
- Allocative efficiency is achieved when society produces and consumes a combination of goods and services to **maximise their welfare**
- In a PC market without externalities, allocative efficiency occurs when  $MB=MC$ , or  $P=MC$ . In other words, the **value society places on the last unit of good** is equal to the **opportunity cost of producing it**.

Consumers:

Consumers make choices on goods and services to consume within a limited income. The marginal benefit is the utility or satisfaction the consumer gains from the consumption of a good, while the marginal cost is the cost to pay for the good.

- Marginal benefit is downwards sloping due to the Law of Diminishing marginal Utility, which states that as consumers consume more units of a given item, they enjoy less **additional** utility from subsequent units and the maximum price they are willing and able to pay for additional units will fall.
- At each given price  $P_e$ , consumers will consume up to  $Q_e$  and stop consumption. At quantity levels below  $Q_e$ , the marginal benefit of consuming 1 additional unit of good exceeds the marginal cost of purchasing the good, hence the rational consumer purchases additional units of good. At quantity levels above  $Q_e$ , the marginal benefit from consuming 1 additional unit of good is less than the marginal cost of purchasing good, hence the rational consumer should consume less
- Hence the consumer consumes at  $Q_e$ , which maximises consumer surplus, the difference between what the consumer is willing and able to pay and what consumers pay. It is reflected as area  $AE P_e$ .

Firms:

Rational firms have limited factors of production and seek to maximise profits by allocating their resources to produce goods and services which they deem most profitable. The marginal benefit from the sale of the good is the price of the good, while the marginal cost is the **opportunity cost** incurred in producing an additional unit of the good.

- Marginal cost is upwards sloping due to the Law of Diminishing Marginal Return to factors of production. Increase in production of output results in higher marginal cost. Hence the **minimum price** firms are willing and able to accept for the good increases.
- At each given price  $P_e$ , firms will produce up to  $Q_e$  and stop production. At quantity levels below  $Q_e$ , the marginal cost to the rational firm from supplying 1 additional unit of the good, is less than the price of the good, and producing the last unit of good adds more to revenue than to cost, causing firm to increase production. At quantity levels above  $Q_e$ , the marginal cost to the rational firm from supplying the last unit of good is more than the price of the good, and producing the last unit of good adds less to revenue than to cost. Hence the rational firm should produce less to maximise their profits.
- Hence the producer produces at  $Q_e$  to maximise producer surplus, the difference between the minimum price the producer is willing and able to supply the good at and what producers receive. It is reflected as area  $BE P_e$ .

The market demand curve shows the maximum price consumers are willing and able to pay for given quantity of good and market supply curve shows minimum price that producers are willing and able to accept for sale of given quantity.

At prices below equilibrium price, a shortage in the market occurs as the quantity demanded exceeds the quantity supplied  $Q_s$ . As such, consumers are unable to purchase all the goods they would like, leading to upwards pressure in prices as consumers bid up prices

- Rise in price is a signal to consumers to decrease their quantity demanded along the DD curve. Using the marginalist principle whereby the consumer consumes goods until marginal benefit derived from consumption is equal to marginal cost, MC is now more than MB and consumers reduce their quantity demanded until  $P=MB$
- Rise in price is a signal to firms to increase the quantity supplied along the SS curve. Using the marginalist principle, as prices increase, producers increase production until the marginal benefit or revenue is equal to the opportunity cost from production, leading to more resources allocated into the industry
- As prices are adjusted upwards, shortage is finally eliminated when the market reaches a new equilibrium  $P_e Q_e$  where quantity demanded = quantity supplied. At new equilibrium,  $P=MC=MB$  and the outcome is allocatively efficient since the consumer and producer surplus is maximised as the area ABE.

Similarly, at prices above the equilibrium prices, a surplus in the market occurs as the quantity supplied for goods exceeds the quantity demanded for goods. As such, producers have stockpiling of stocks and inventories, leading to downwards pressure on prices as firms lower prices to clear of excess stock. As prices fall, through the marginalist principle, producers and consumers increase quantity demanded and lower quantity supplied along the DD and SS curves respectively. Prices are adjusted downwards, surplus finally eliminated back at equilibrium  $P_e Q_e$ , leading to an efficient outcome.

### Explain opportunity cost in rational decision making

When making a decision, opportunity cost is the next best alternative forgone, and includes both explicit and implicit costs. In rational decision making, firms maximise welfare given constraints on income (as consumers) and on factors of production (for firms).

### Firms

Firms consider opportunity costs in decision making in order to maximise its profits given limited resources, given that profit is the total revenue – total cost, firms need at least normal profits to survive in the long run. Rational profit maximising firms produce until  $MR=MC$ .

Firms' costs include both their explicit costs and implicit costs in order to determine their marginal costs. For example in a car manufacturing firm, the explicit costs would be the prices of the raw materials and labour, while the implicit costs would be the potential interest payments of funds in banks or potential returns if the funds had been spent in another industry. The total opportunity cost includes monetary costs and the forgone potential profits.

The marginal cost is upwards sloping due to factors of production where increased production of output results in marginal costs increasing. Minimum price producers are willing and able to accept increases. [Explain less than Q, more than Q]

At any other quantity than Q firms make lesser profits and hence have greater chance of shutting down at Q. Opportunity costs help firms determine their profit maximising costs and output to maximise firms' chances of surviving in a competitive environment.

### Consumers

Consumers maximise their utility within the constraints of their income, and determine utility maximising price and output by weighing their marginal costs against their marginal benefits.

To determine their marginal costs, the rational consumer considers both their explicit and implicit costs, utilising the concept of marginal costs. For instance, the total opportunity costs to buy a car include explicit costs, the price of the car, as well as implicit costs, the time spent buying the car, forgone luxuries like holidays with the money or interest forgone from putting money in bank.

As long as  $\text{benefits} > \text{opportunity cost}$ , consumers decide to buy additional unit of car; if  $\text{benefits} < \text{opportunity cost}$ , consumer does not buy the car. Marginal benefits for consumer is the satisfaction/benefits consumers derive from consumption of last unit of output, such as convenience of buying and using car. Rational consumers determine utility maximising output Q and consume until  $MB = MC$ .

#### Factors affecting demand

- Taste and preferences
- Expectations of future prices
- Income (YED)
- Related good (CED)/Derived Demand
- Interest Rates (Macro)
- Exchange Rates (Macro)

#### Factors affecting supply

- COP/ Price of FOP
- Innovation
- Joint supply/Competitive Supply
- Government Policies

#### PED

- Interpretation of PED (Negative)
- Substitutes
- Habituality
- Income
- Time

#### PES

- Interpretation of PES (Positive)
- Level of stock and inventories
- Availability of spare capacity
- Mobility of factors of production
- Time Horizon
- Length of production

#### CED

- Interpretation of CED
- Strong/Weak Substitutes ( $CED > 0$ )
- Strong/Weak Complements ( $CED < 0$ )

#### YED

- Interpretation of YED
- Inferior good, Normal good, Luxury good
- Degree of necessity (Different stages of economic development)

#### Graphs

- Taxes/Subsidies and Incidence
- Price floor/ceiling
- Quotas
- Changes in PED/PES