Consumer's Surplus

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Meaning of Consumer’s Surplus

- ***A.J. Dupuit*** introduced the concept of consumer’s surplus in 1844.
- It was further developed by ***Alfred Marshall*** in his famous book “Principles of Economics” in 1890.
- Prof. Boulding named it ‘Buyer’s Surplus”. In general, consumer’s surplus is realized in highly useful but relatively cheap commodities.
- Consumer’s surplus is defined as the difference between what a consumer has prepared to pay and what actually s/he pays for a commodity in the market.

Meaning of Consumer's Surplus

- Consumer surplus is the benefit that consumer receives over what he is willing to pay for a product and what he actually pays.
- Consumer surplus is thus the gap between willingness to pay and the actual price of the product. Willingness to pay is the maximum amount that a buyer will pay for a good. The willingness to pay for a consumer is based on the need or worth or utility of any product.

- Therefore, it measures the benefit buyers receive from participating in a market. It can be calculated by using the given formula;

Consumer Surplus (C.S) = Value of Buyers or Willingness to Pay- Amount Paid by Buyers or Actual Price Paid by Consumer

Meaning of Consumer’s Surplus

- For example, if a consumer wants to buy a car and he is ready to pay Rs. 40, 00,000 for that car. But the actual price of the car in the market is Rs. 35, 00,000. Here, the consumer’s surplus is Rs. (40, 00,000 – 35, 00,000) = Rs. 500,000.
- So, consumer’s surplus is the difference between total utility of a commodity and actual price paid to it.
- The concept of consumer surplus is based on the law of diminishing marginal utility. As the consumer buys more units of a commodity, its marginal utility goes on diminishing. The consumer is in equilibrium when marginal utility becomes equal to the given price.

Consumer's Surplus: Assumptions

The concept of consumer's surplus is based on the following assumptions.

- Consumer is rational
- Utility can be measured cardinally
- Marginal utility of money remains constant
- The expected price should be more than actual price of the good
- All units of the commodity should be homogeneous
- Actual Price of the commodity should be constant

Consumer’s Surplus: Example

The concept of consumer’s surplus can be clearly elaborated with the help of the following hypothetical table

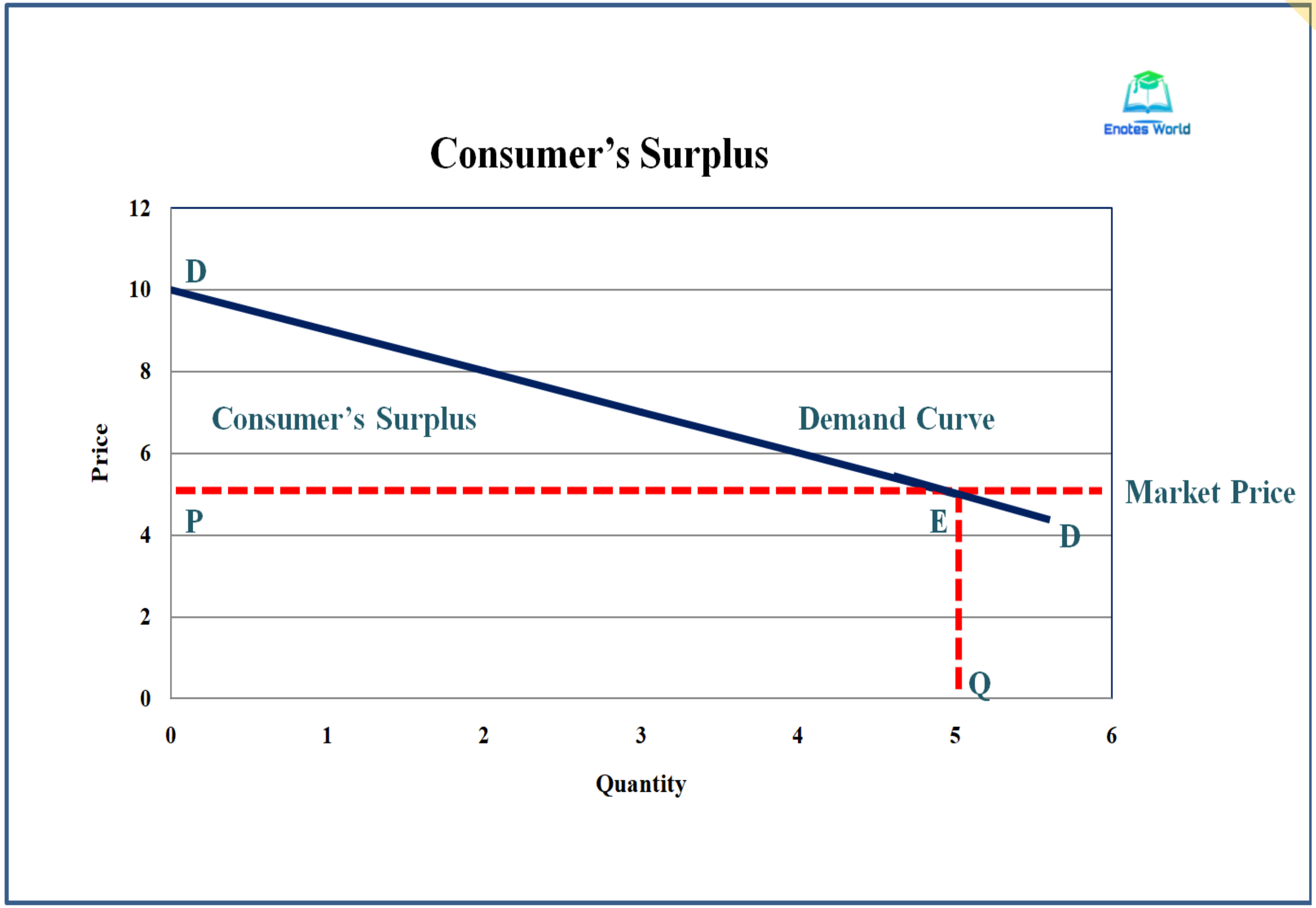
Units	Willingness to Pay or Expected Price	Actual Price Paid or Market Price	Consumer’s Surplus
1	120	60	60
2	100	60	40
3	80	60	20
4	70	60	10
5	60	60	0
Total	**430**	**300**	**130**

Consumer's Surplus: Example

- Here the consumer is ready to pay Rs. 120 for the first unit of goods. The consumer actually does pay only Rs. 60 and s/he get Rs. 60 as her/his surplus.
- In the same way, the consumer is ready to pay Rs. 100, Rs. 80, Rs. 70 and Rs. 60 for the second, third, fourth, and fifth unit, respectively. But actually, s/he pays only Rs. 60 to each and he gets a surplus equal to Rs. 60, Rs. 40, Rs. 20 and Rs. 0.
- Therefore, total consumer surplus= 120+100+80+70+60-5×60= 130

Consumer's Surplus: Measurement

- For the measurement of consumer surplus, we use the demand curve.
- The given figure helps us to understand the measurement of consumer surplus.



Consumer’s Surplus: Example

In the figure, DD is the downward sloping demand curve that shows the willingness to pay of the consumer. This is also known as the marginal utility curve for consumers that reflects the law of diminishing marginal utility. The market price of the commodity is Rs. 5 but the consumer wants to pay different prices for different 5 units of the commodity. At the fifth unit of the commodity, the consumer wants to pay Rs. 5 and thus he gets no consumer surplus. Thus the total area beyond the market price line (PED) is the consumer’s surplus.

In the diagram,

Willingness to Pay= Area of ODEQ; Actual Market Price= Area of OPEQ. Thus, Consumer Surplus (C.S) = Area (ODEQ-OPEQ) = Area PED

In the figure triangle, PED is the consumer’s surplus and the area of triangle PED can be measured by using the following formula.

Areal of triangle PED= ½ * base* height =1/2*PE*PD

Consumer's Surplus: Example

Suppose the given market demand function is Q=500-20P. If the price of the product in the market is Rs. 5, then calculate the consumer's surplus.

Solution:

Here we can measure the consumer surplus from the given infiltration as;

Given demand function is Q=500-20P and the market price is Rs. 5

- When P=5, then Q= 500-20*5= 400 Units
- To calculate the consumer's surplus, we have to calculate the highest price of the product. At the highest price consumers, demand will be zero. Therefore, calculating maximum price requires,

Consumer's Surplus: Example

0=500-20P

Or, 20P=500

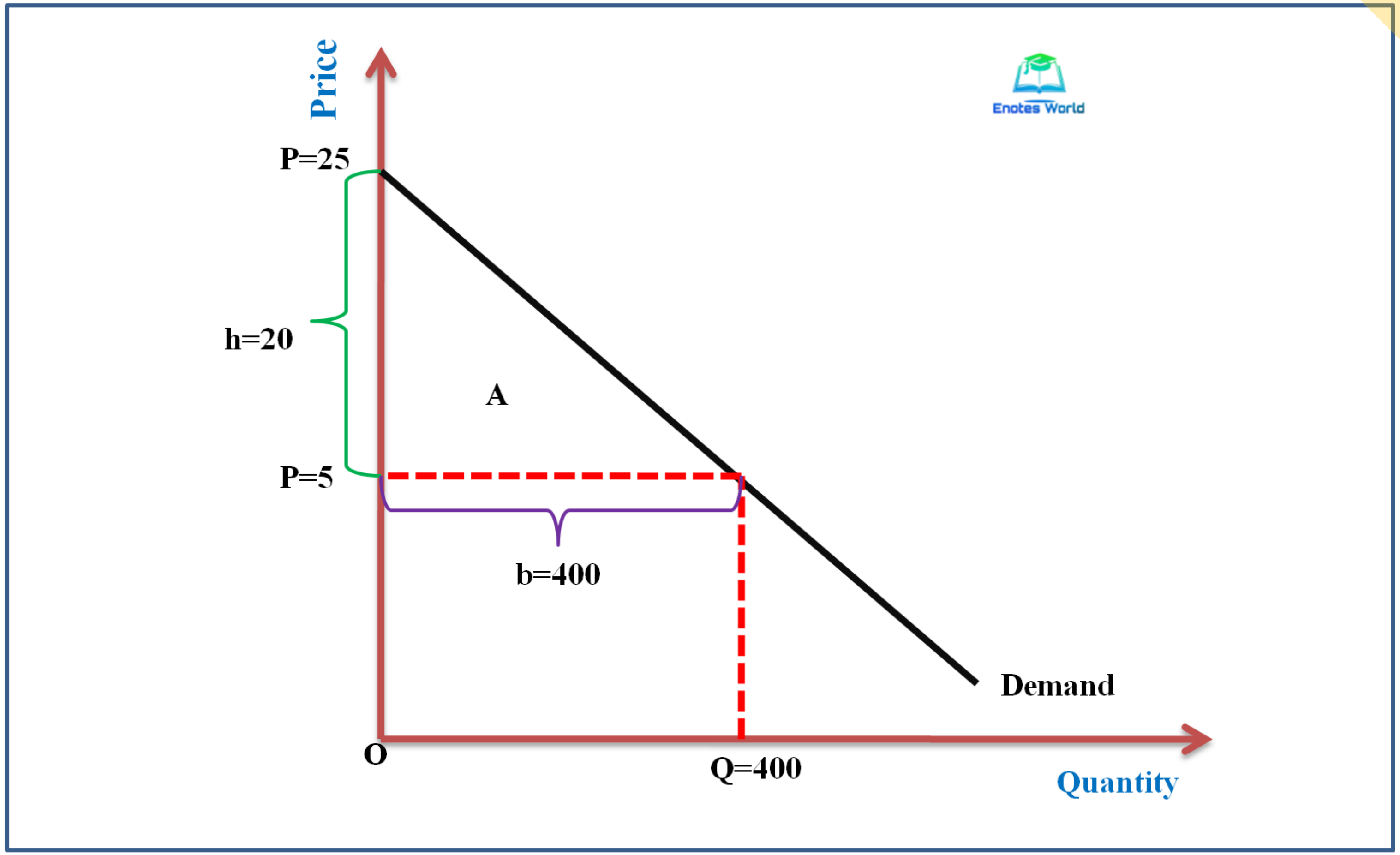
Or, P=25

Thus, the maximum price is Rs. 25. The information obtained here can be shown in the following diagram.

From the diagram we can calculate the consumer's surplus as;

C.S= Area of triangle A= ½*b*h= ½*400*20= 400

Thus the value of consumer surplus is 400 when the market price is Rs.5 and the demand function is Q=500-20P.



Consumer’s Surplus: Example

- The value of consumer surplus is never negative. Whenever the market price of the commodity is higher than the willingness to pay of the consumer or the expected benefit of the consumer, he will leave the market without purchasing the product.

- If the market is below the expected marginal benefit/willingness to pay then more consumers will participate in the market. Thus, consumer surplus will increase if the market price is lower than a willingness to pay and vice versa.

- The higher the gap between willingness to pay and the actual market price of the product, higher will be the value of consumer surplus and accordingly higher will be the participation of consumers in the market.

Consumer's Surplus: Criticisms

This law of consumer surplus is criticized by several economists including Nicholas Kaldor, J.R. Hicks, and P.A. Samuelson on the following several grounds.

- The marginal utility of money is not constant as assumed by this theory.
- The actual price may be greater than the expected price. This theory assumes that the expected price is greater than the actual price and this is the imaginary concept as nobody wants to pay more price than the actual price.

Consumer's Surplus: Criticisms

- It is not applicable to the necessary goods of human life. In the case of necessities like salt, medicine, etc. consumer surplus is immeasurable.
- This law neglects the dependency of the utility of any one commodity on another commodity. So this law has ignored the role of a substitute and complementary goods.
- This law is based on cardinal measurement of utility but the utility is not measurable as it is a subjective phenomenon. It can be ranked by saying more or less but cannot be expressed in number.

Consumer's Surplus: Importance

- ***To determine price of goods and services***: This law is useful to determine the price of goods and services. If the consumer surplus is very high, the producer can raise the price of goods and services and vice versa.
- ***Use in public finance***: The concept of consumer surplus is useful to the government to formulate a tax rate. The government can determine a high rate of tax on goods and services that have more consumer surplus and vice versa.

Consumer's Surplus: Importance

- ***Use in international trade***: The law of consumer surplus is useful to establish the gain from international trade. The government can produce and trade those types of goods and services in the international market which have more consumer surplus.
- ***Guidelines for consumers and producer***: This law can be a guideline for both consumers and producers. It can help the consumer to maximize the surplus. Similarly, it helps the producer to maximize profit by increasing the prices of those goods which have more consumer surplus.

Consumer's Surplus: Importance

- ***Cost-benefit analysis:*** The law of consumer surplus helps in the cost-benefit analysis as well as in project selection. If the expected cost incurred is less and the benefit is more, the project may be selected. On the other hand, if the consumers feel that they are not getting any surplus, the project may not be selected.
- ***The distinction between value-in-use and value-in-exchange***: This law helps us to distinguish between value-in-use and value-in-exchange. Value-in-use means utility and value-in-exchange mean price. Commodities like salt, matchbox, medicine, etc. have a greater value-in-use but very small value-in-exchange. Consumers' surplus from such commodities is very large as we are ready to pay much more for such commodities than we actually pay.

References and Suggested Readings

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- *Market Efficiency Consumer's Surplus and Producer's Surplus*, retrieved from https://enotesworld.com/market-efficiency-consumers-surplus-and-producers-surplus/