The Law of Diminishing Marginal Utility GOSSEN First law

One of the characteristics of human wants is their limited intensity. As we have more of anything in succession, our intensity for its subsequent units diminishes. This generalization of satiable wants is known as the Law of Diminishing Marginal Utility.

Hermann Heinrich Gossen was the first to formulate this law in 1854 though the name was given by Marshall. Jevons called it Gossen's First Law.

Assumptions of Law of Diminishing Marginal Utility:

1. Cardinal measurement of utility: It is assumed that utility can be measured and a consumer can express his satisfaction in quantitative terms such as 1, 2, 3, etc.
2. Monetary measurement of utility:
3. Consumption of reasonable quantity:
4. Continuous consumption:
5. No change in Quality:
6. Rational consumer:
7. Independent utilities:
8. MU of money remains constant:
9. Fixed Income and prices:

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Gossen stated it thus:

"The magnitude of one and the same satisfaction, when we continue to enjoy it without interruption, continually decreases until satiation is reached."

Taking the example of apples as shown in column (3) of Table 1, when our hypothetical consumer takes the first apple he derives the maximum satisfaction in terms of 20 utils. As he continues to consume the second, third and the fourth units in succession, he derives less and less satisfaction 15, 10 and 5 utils respectively.

With the consumption of the 5th apple he reaches the satiety point because the satisfaction derived from that unit is zero.

Diagrammatically, the curve MU is the diminishing utility curve in Figure 1. It shows that marginal utility diminishes as more and more units of the commodity (apple) are consumed till the satiety point C is reached. Consumption of further units gives disutility, as shown by the movement of the MU curve from point C downward below the X-axis.

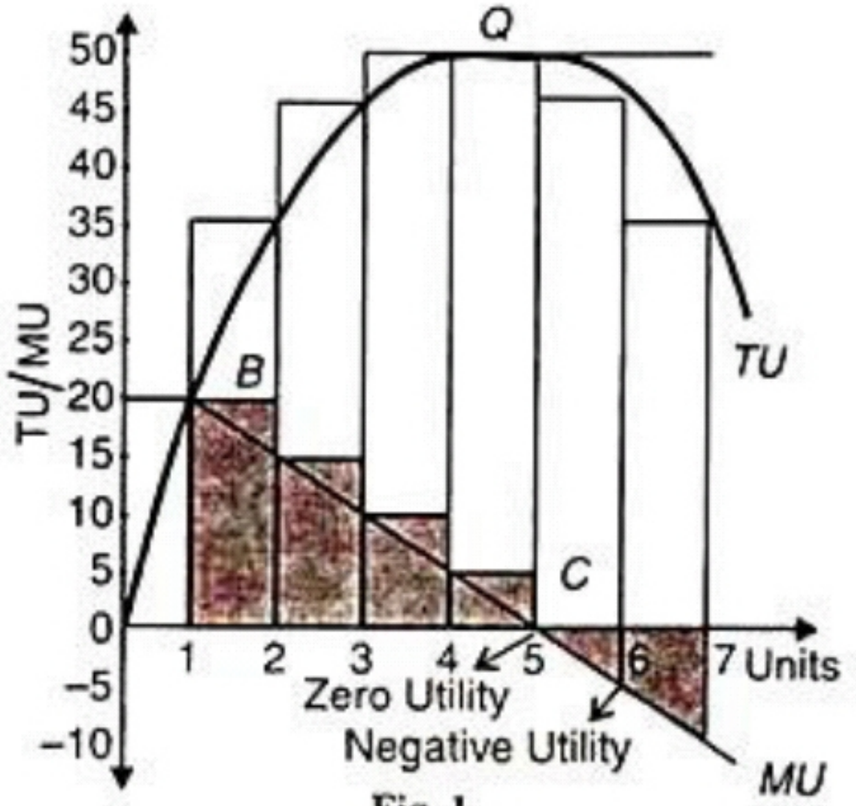

Q
50
45
40
35
30
25
20
15
10
5
0
−5
−10
TU/MU
B
C
TU
1
2
3
4
5
6
7 Units
Zero Utility
Negative Utility
MU

Fig. 1

Its Limitations:

This is a universal law and holds true in the case of physiological, social or artificial wants. It is another thing that in the case of certain commodities the limit of satiety is soon reached, while others take some time.

1) Homogeneous Units:

(2) No Change in Tastes:

(3) Continuity:

(4) Suitable Size Units:

Units of the commodity should be of a suitable size. Giving water to a thirsty person by spoons will increase the utility of the subsequent spoons of water.

(5) Constant Prices:

(6) Indivisible Goods:

The commodity should not be indivisible. In the case of durable consumer goods it is not possible to calculate their utility because their use is spread over a period of time. Moreover, a consumer does not buy five scooters, six television sets or even three sewing machines for his personal consumption.

(7) Rational Consumers:

(8) Ordinary Goods:

(9) MU of Money not Constant:

This law is of great importance in economics.
1. The Law of Diminishing Marginal Utility is the basic law of consumption.
2. The famous **"diamond-water paradox"** of Smith can be explained with the help of this law. Because of their relative scarcity, diamonds possess **high marginal utility and so a high price.** Since water is relatively abundant, it possesses low marginal utility and hence low price even though its total utility is high. That is why water has low price as compared to a diamond though it is more useful than the latter.

These exceptions are discussed as follows:

- **Hobbies:**
- **Misers:**
- **Drunkards**
- **Initial units**

Introduction to the Law of Equi-Marginal Utility: *The Second Law of Gossen*

To explain this point, the law of Equi-marginal Utility has been given by Marshall. This law is one of the basic principles of Economics. It is also known as the Law of Substitution and the Law of Maximum Satisfaction. This concept is also known as "***The Second Law of Gossen".***

Definition of the Law of Equi-Marginal Utility:

According to Prof. Hicks – "Utility can be maximum only when equal utility is received from the ***marginal unit of expenses in all the cases.***

Regarding this Prof. Marshall has said that – "If a person has a thing which he can put to several uses he will distribute it among these uses in such a way that it has the same marginal utility in all."

If it has a great marginal utility, in one use than in another, he would gain by taking some of it from the second use and applying it to first. He has further stated that the total utility to be maximum a given income must be so divided between different articles of consumption, so as to yield equal marginal satisfaction along each line of expenditure.

Assumptions of the Law of Equi-Marginal Utility:

The important assumptions of this law are as follows:

(1) Consumer is a rational being, it means he wants to get maximum satisfaction with the limited means which he has got, and therefore, he spends his money very cautiously and after examining all Pros and Cons of his expenditure.

(2) It has been considered essential to measure the utility in terms of money.

(3) There must be perfect competition in the market.

(4) Goods must be divided as per need and requirement.

(5) Marginal utility of money must be stable.

(6) There need not be any change in the income, taste, fashion etc. in the make this law applicable.

(7) Consumer should spend his income gradually and in small quantity.

(8) Price of the goods should be stable and the consumer should know available.

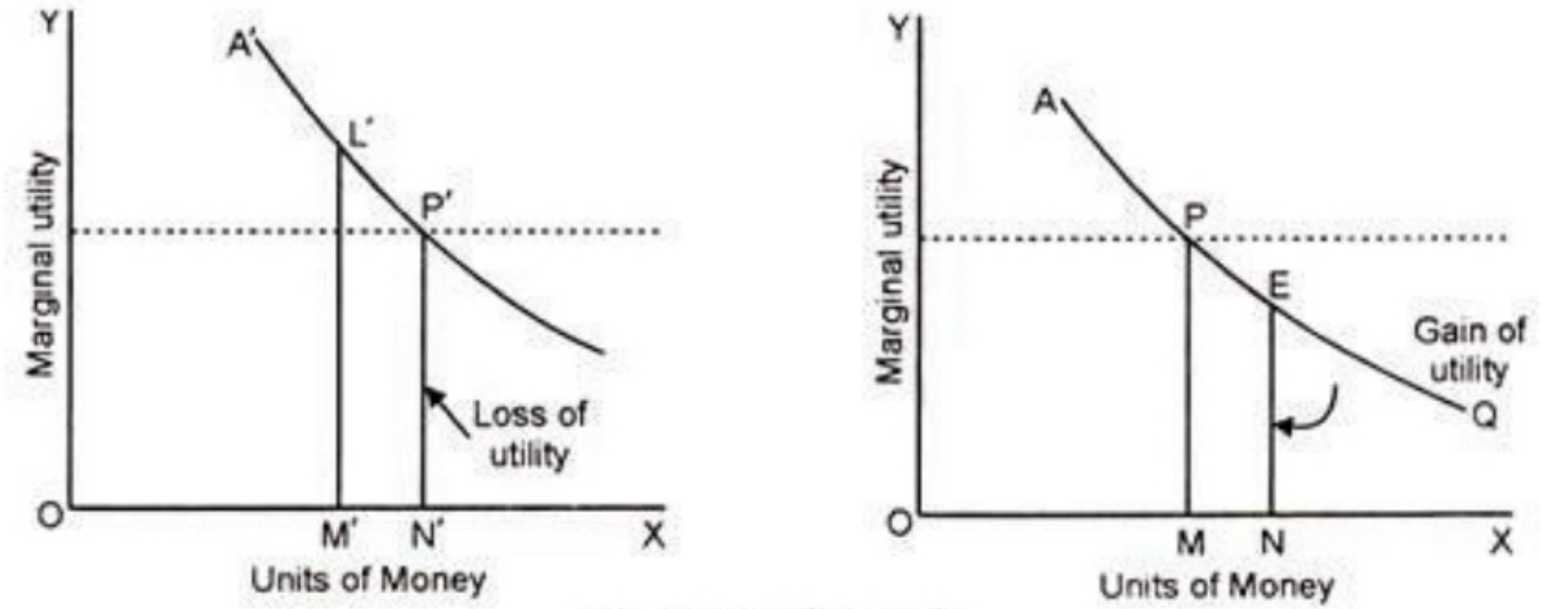
Explanation of the Law of Equi-Marginal Utility:

In order to get the maximum satisfaction out of the funds which the man has, he carefully weighted the satisfaction which he derives from each rupee which he has spent. If he finds that a rupee spend on any one item has greater utility than the other he prefers to spend on the former item till the utilities derived from the last rupee spent in the two cases are equal.

Units	Marginal Utility of Mangoes	Marginal Utility of Apples
1	20	16
2	16	12
3	12	8
4	8	4
5	4	0
6	0	– 4
7	– 4	– 8
8	– 8	– 12

The total utility of 8 mangoes would be 20 + 16 + 12 + 8 = 56 and six apples 16 + 12 + 8 = 36 which gives us a total utility of 56 + 36 = 92. The satisfaction given by 8 mangoes and 6 applies at one rupee each is greater than could be obtained by any other combination of apples and mangoes. In no other case does this utility will be 92. From this example the conclusion can be drawn will be that we can obtain maximum satisfaction when we equalize marginal utilities by substituting the more useful for the less useful commodity, this can be shown with the help of a diagram as follows:

Diagrammatic Representation of the Law of Equi-Marginal Utility:



Equi. Marginal Utility

Modern Interpretation of the Law, Law of Proportionality:

Modern economists have discussed the Law of Equi-marginal Utility in a different and new way. The new methods and systems have been given the name—"Law of Proportionality". Their view is that we can get maximum satisfaction from a commodity only when there is perfect co-relation and co-ordination between the price of each commodity and its Marginal Utility.

This can be shown in the following manner:

$$\frac{\text{Marginal Utility of A}}{\text{Price of A}} = \frac{\text{Marginal Utility of B}}{\text{Price of B}} = \frac{\text{Marginal Utility of C}}{\text{Price of C}}$$

If there is rise in the price of the commodity A people will start the use of commodity B and if there is rise in the price of B people will start the use of commodity C and in the end such a situation will come where the demand and supply will be in proportion of all the three goods and will be equal and here the situation of maximum satisfaction will come up. Because of this approach and opinion of the modern economists there will be no need to measure the utility of each unit of the commodity.