

E-Learning Module

B.A./ B.Sc. ECONOMICS (GENERAL)

SEMESTER-I

Course: ECON—G-CC-T-01, ECON—G-GE- T-01

Course Title: Principles of Microeconomics - I

Module-I: Demand Analysis

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1.1 Marshallian Analysis

Out of the three basic approaches to the theory of consumer behavior, the earliest approach is known as the ‘Cardinal utility analysis’. This theory was perfected and presented as a full-fledged theory of demand by Alfred Marshall.

1.1.1 Features of Cardinal utility analysis:

Utility means the satisfaction a consumer derives from the goods he consumes. Marshallian analysis rests on the concept of utility. There are two ways of indicating the magnitudes in respect of utility. Suppose a consumer is asked to express his preferences in regard to four baskets of goods- A, B, C and D. He may say that he prefers A to B, B to C and C to D. Now he has only ranked them as $A > B > C > D$. He has not said anything more than that. This is known as ‘Ordinal measurement’. The numbers, first, second, third and so on are ordinal numbers. If the consumer could say that basket A gives him twice as much utility as basket B and that basket B gives twice as much utility as basket C, then it implies that utility lends itself to ‘Cardinal measurement’. 1, 2, 3, ... are cardinal numbers; we can not only say that 2 is greater than 1 but also that it is twice as great as 1. The difference between any two cardinal numbers can be specified. Marshallian theory of demand is based upon the concept of cardinal utility.

1.1.2 Main difference between Ordinal and Cardinal Measurements:

The first and second derivatives of the utility function have meaning if utility is cardinally measurable up to a linear transformation. The first derivative of the total utility function tells us whether the marginal utility is positive or negative. The second derivative

indicates whether the marginal utility is increasing or diminishing. That accounts for the importance of the law of diminishing marginal utility in Marshallian analysis.

1.1.3 Characteristics of Marshallian analysis:

1. If utility is cardinally measurable we can know whether
 - i. Marginal utility is positive or negative, also whether
 - ii. Marginal utility is increasing or diminishing.
2. The Marginal utility function is additive.
3. Marginal utility is diminishing i.e. marginal utility of a commodity diminishes with every increase in the amount of it already has. The law postulates an inverse relationship between the stock of a commodity a person has and the addition to total utility he derives by acquiring one more unit of it.
4. Constancy of the marginal utility of money.

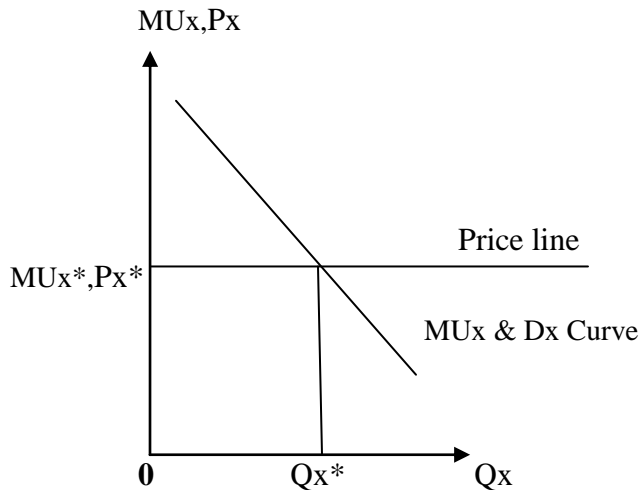
1.2 Marshallian Theory of Demand:

Marshallian argument proceeds from the notion of maximizing total utility, by way of the law of diminishing marginal utility, to the conclusion that the marginal utilities of commodities bought must be proportional to their prices. The concept of utility used in Marshallian theory is known as 'cardinal utility'. It means that quantitative measurements of utility are meaningful. One can say that he gets twice as much utility from a cup of coffee as from a cup of tea. Utility of good can be measured, though indirectly, with the help of money, which is assumed to have a constant marginal utility. Total utility represents the total or aggregate satisfaction a consumer has derived from the total stock of a commodity he has acquired. Marginal utility refers to the addition in total utility obtained from a one-unit change in consumption. If a consumer has a total utility of 100 units or 'utils' (an imaginary unit) to begin with, acquiring one more unit of the good, suppose, increase in the Total Utility (TU) to 105 units; then it means that the utility of the unit at the margin- the marginal unit= $105-100=5$; in other words, the Marginal Utility (MU) is equal to 5.

1.2.1 Marginal Utility and Demand:

According to Marshall, a consumer attains equilibrium at that point on the demand curve reflecting the opposite relation between price of a commodity and the units of quantity demanded where the money that he pays is equal in value in terms of utility to the marginal utility of that commodity. This can be expressed as an equation: $MU_x = P_x = MU_m$ of money; i.e.

$$MU_x = P_x \cdot MU_m \text{ i.e. } \frac{MU_x}{P_x} = MU_m.$$



Looking at the marginal utility curve we find at $Q_x = Q_x^*$ units, $MU_x = MU_x^*$. At any units consumed below Q_x^* , $MU_x > P_x$; thus, consumer will continue to buy Commodity X. In effect, by the virtue of diminishing marginal utility- MU_x declines until it becomes equal to P_x i.e. $MU_x = P_x \dots (1)$

From equation (1), we can easily deduce the Demand curve for X commodity.

What is given for one commodity is applicable to all commodities. Thus, Marshall extended his analysis to cover all commodities. This extended version of the utility principle is known as the 'Law of Equimarginal Utility'. Then every ratio in respect of every commodity must be equal to the MU of money.

To repeat the equation cited above for all commodities:

$$\frac{MU_x}{P_x} = \frac{MU_y}{P_y} = MU_m.$$

If we consider a two commodity framework, the Equimarginal rule can be stated in the following ways-

1. The ratio of marginal utility to price must have the same value in respect of every commodity consumed. That is, $\frac{MU_x}{P_x} = \frac{MU_y}{P_y} = \dots = \frac{MU_n}{P_n}$.
2. The ratio of marginal utilities must be equal to the ratio of corresponding prices in respect of every pair of goods consumed. That is-

$$\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

3. The last rupee spent on every good must secure for the consumer the same amount of marginal utility.

1.2.2 Defects of the Marginal utility theory:

- Utility, being a state of mind like happiness, cannot be measured in cardinal terms as is required by the approach. It is impossible for anyone to measure the intensity of his preference for a good. All that he can say is that he prefers one bundle of goods to another.
- The additive utility function developed by Marshall implies that the utilities derived from various goods are independent; it means that the utility derived from one good is unaffected by any change in the quantity of any other good consumed. This is contradicted by the fact that many goods are related either as complements- consumed jointly or substitutes- consumed separately. So the marginal utility curve for any good will shift if the consumption of any related good is either increased or decreased. This will greatly complicate the analysis.
- The assumption of constant marginal utility of money is also a flaw. It restricts the scope and usefulness of this theory. By excluding the income effect of a price change it has narrowed the scope of the analysis and ends up with only a partial explanation of demand. It cannot for that reason explain the Giffen Paradox. According to the theory, all goods are normal. It cannot also be used to explain consumer behavior in a world of many commodities and related goods.
- Marshallian hypothesis that utility is measurable in fact, in terms of money turns out to be untenable because the marginal utility of money keeps changing in a world of many commodities.
- The marginal utility analysis cannot explain the composite nature of the price effect. It does not distinguish between substitution effect from income effect.

- The marginal utility theory rests on too many assumptions and so it explains very little.

Possible Questions:

A. Short Answer Type Questions: (Marks: 2)

1. What is utility?
2. Define Demand?
3. Which economist postulated cardinal utility analysis?
4. What do you reckon by ordinal measurement of utility?
5. Define Marginal utility?
6. Explain-‘Law of Equimarginal Utility’.

B. Medium Answer type Question: (Marks: 5)

1. Does utility cardinally measureable? Explain.
2. Discuss the difference between cardinal and ordinal measurement of utility.
3. Discuss the characteristics of Marshallian analysis.
4. What is Marginal utility of money (MUm)? What is the implication of assumption of constancy of MUm?
5. What do you understand by diminishing marginal utility?

C. Essay Types Question: (Marks: 10)

1. What is cardinal utility analysis? Discuss its feature. How could we deduce consumer equilibrium in cardinal utility analysis? Discuss some of demerits of cardinal analysis.

Suggested Readings:

Sl No.	Title	Author	Publisher
1	Microeconomics, 8 th Edition	Robert Pindyck & Daniel Rubinfeld Chapters 3, 4	Pearson Education
2	Microeconomics, 5 th Edition	David Besanko, Ronald Braeutigam	Willy Publication
3	Microeconomics: Theory and Applications	Maddala and Miller	McGraw-Hill Inc.US

Note:

The discipline specific core papers in BA Programme in Economics are offered as Generic Elective course (GE) papers for other subjects (Both Honours and Programme). This means Principles of Microeconomics – I in Semester I in BA Programme in Economics will be offered as GE papers for other subjects in the relevant semesters for both Honours and Programme in other subjects.

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