

**Subject: Microeconomic Theory I**

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### **Theory of Consumer Behavior**

#### **Axioms of Rationality**

The consumer is assumed to be rational. Given his income and the market prices of the various commodities, he plans the spending of his income so as to attain the highest possible satisfaction or utility. This is the axiom of utility maximization. In the traditional theory it is assumed that the consumer has full knowledge of all the information relevant to his decision, that is he has complete knowledge of all the available commodities, their prices and his income. In order to attain this objective the consumer must be able to compare the utility (satisfaction) of the various 'baskets of goods' which he can buy with his income. There are two basic approaches to the problem of comparison of utilities, the cardinalist approach and the ordinalist approach.

The cardinalist school postulated that utility can be measured. Various suggestions have been made for the measurement of utility. Under certainty (complete knowledge of market conditions and income levels over the planning period) some economists have suggested that utility can be measured in monetary units, by the amount of money the consumer is willing to sacrifice for another unit of a commodity. Others suggested the measurement of utility in subjective units, called utils.

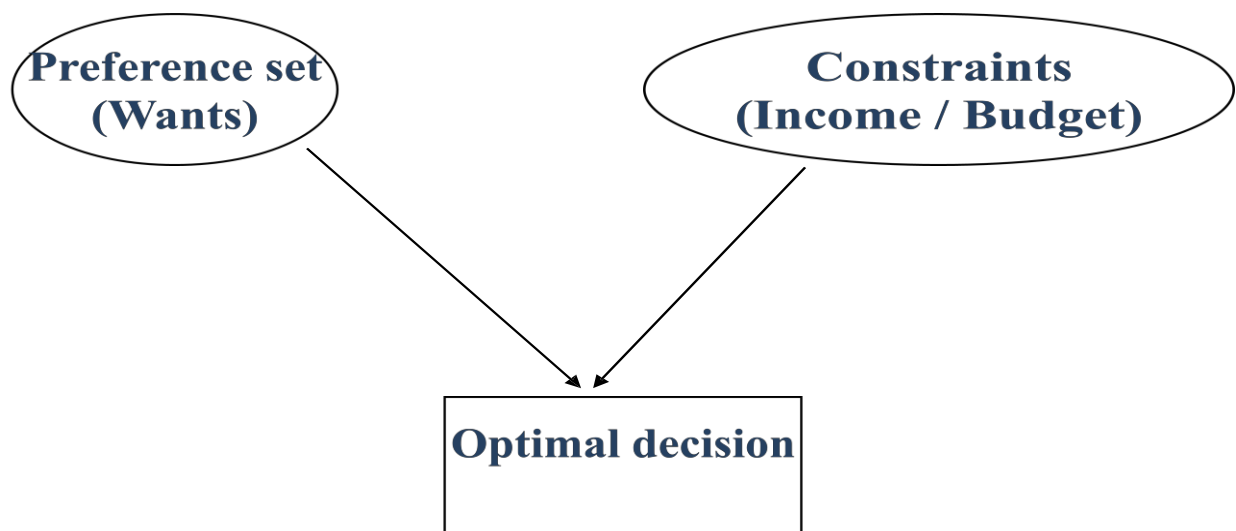
The ordinalist school postulated that utility is not measurable, but is an ordinal magnitude. The consumer need not know in specific units the utility of various commodities. The utility function and its Arguments, Law of diminishing marginal and equi marginal utility, Indifference curves, Marginal Rate of (commodity) substitution (MRCS).

#### **CONSUMER BEHAVIOR**

The principle assumption upon which the theory of consumer behavior and demand is built is; a consumer attempts to allocate his/her limited money income among available goods and services so as to maximize his/her utility (satisfaction)

“Consumer behavior refers to the study of consumer while engaged in the process of consumption. The theory of consumer behavior is based on the assumption that the consumer is a rational human being” Ekelund and Robert (1994.) Given his income and the market prices of the various

commodities, he plans the spending of his income so as to attain the highest possible satisfaction of utility. Utility is the extent of satisfaction obtained from the consumption of products and services by consumers. There are two basic approaches to the problem of comparison of utilities and hence to determine consumer's equilibrium namely Cardinal Approach and Ordinal Approach. In economic sense, consumer behavior theory explains the relationship between the changes in price and consumer demand. It explains various assumptions of utility theory: consumers are rational, they always prefer more quantity, and they are ready to make tradeoffs, there is also the diminishing marginal rate of substitution and the concept of total utility and marginal utility. "An individual has to play his role in two markets: Factor market where he decides how much of his resources he should sell to the firm and Product market where he decides how much of a product to buy and at what price" Frank, R.H. (1991). Demand is determined by the behavior of consumers. It is of utmost importance for managers to understand the dynamics of demand in the market for the particular product. Consumers have unlimited wants which are constrained by limited resources / limited income. Due to scarcity of resources and unlimited wants, consumer has to allocate scarce resources to attain maximum possible satisfaction.



Utility reflects a rank ordering of preferences and is a magnitude indicating the direction of preferences. As an individual move towards the most preferred state, he moves towards maximization of utility / satisfaction.

## UTILITY

“Utility is the scientific contrast that economists use to understand how rational consumers divide their limited resources among the commodities that provide them with satisfaction” (Samuelson, 2005). Utility is the satisfaction or pleasure a consumer derives from the consumption or possession of a good (or service) or an activity (or lack thereof), over a certain span of time. An economic “bad” is an object, a condition, or an activity that brings on harm or displeasure to a consumer. A consumer derives utility from having an economic “bad” reduced or eliminated.

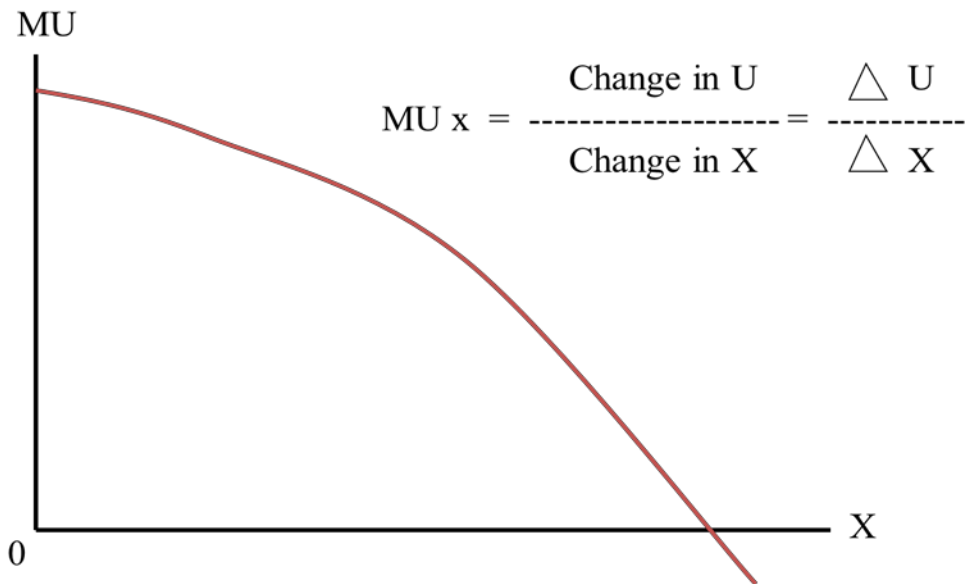
## CARDINAL APPROACH

“Consumer’s equilibrium is a situation in which a consumer has allocated his given income on different available commodities in such a manner that he gets the highest possible utility. Utility can be measured in monetary units (i.e. the amount of money) that the consumer is prepared to pay for another unit of the from unit to unit, place to place and time to time.” Samuelson, P.A. (1965). Utility varies we measure utility in units called utils, and as utils are not defined properly, so, it is not possible to measure utility in terms of units but it helps to understand consumers behavior. Utility is cardinally measurable and the objective is to maximize utility. It is possible to make interpersonal comparisons of utility.

There are mainly two concepts of utility: The Total utility which refers to the sum total of satisfaction which a consumer receives by consuming the various units of the commodity and Marginal Utility which is defined as the change in the total utility resulting from 1 unit of change in the consumption of good, i.e.

$$MU_x = dTU / dQ_x$$

# Marginal Utility



There are also some Assumptions of Cardinal Utility Theory:

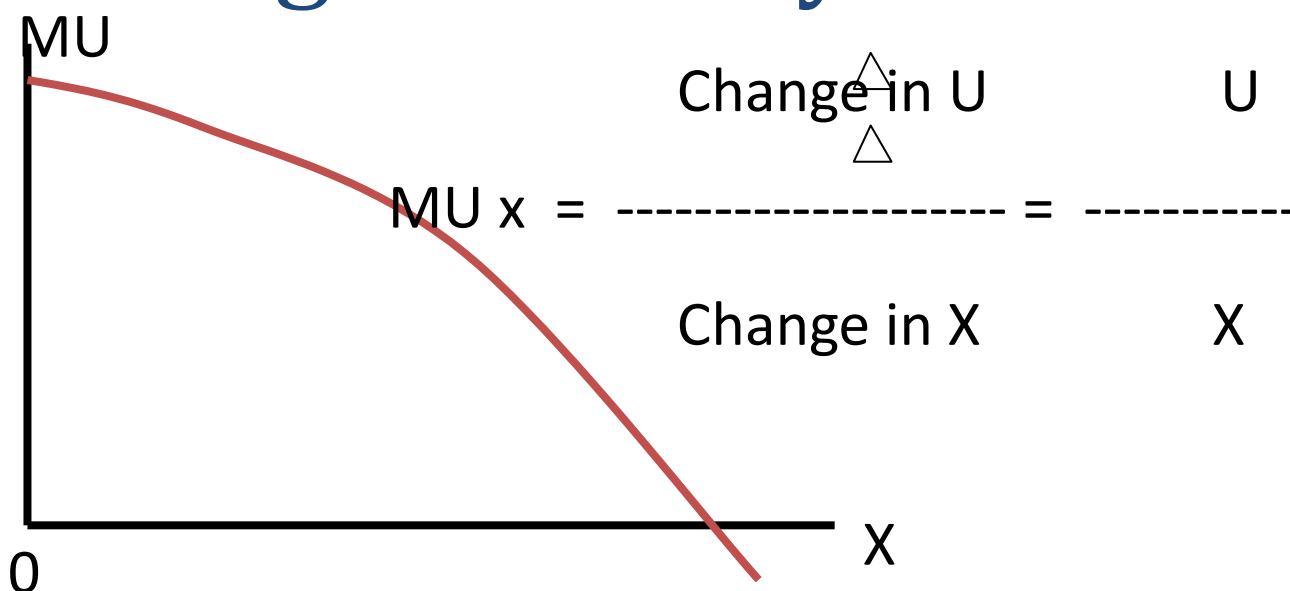
1. Rationality: Consumers are rational & aims at the maximization of his/her utility subject to the given income constraints.
2. Cardinal Utility: The utility of each commodity is measurable.
3. Constant marginal utility of money: If the monetary unit is used as the measure of utility, it should be constant.
4. Diminishing marginal utility: The utility gained from successive units of a commodity diminishes.

The total utility of a 'Basket of goods' depends on the individual commodities, i.e. if there are  $n$  commodities in the bundle with quantities  $X_1, X_2, \dots, X_n$  the total utility is  $U = f(X_1, X_2, \dots, X_n)$ . As it is assumed that the total utility is additive, so,  $U = U_1(X_1) + U_2(X_2) + \dots + U_n(X_n)$ . This additivity assumption was dropped later.

## Law of Diminishing Marginal Utility

The diagram below shows the diminishing marginal utility.

# Marginal Utility



“The diminishing marginal utility is the basic hypothesis of Cardinal Utility Theory, which states that the Marginal Utility of a good diminishes as an individual consumes more units of a good or the law states that with every successive increase in the consumption of a commodity, the marginal utility of the commodity will fall. Here the marginal Utility Declines and the total utility increases at a decreasing rate. In order to maximize the total utility, consumer will spend his income on a combination of goods.” Katz and Harvey (1991).

The law is based on two important facts: When an individual no longer wants anymore units of goods, marginal utility of the good become zero and the different goods are not perfect substitutes for each other in the satisfaction of various particular wants.

Assumptions: Goods are homogeneous, No time gap between the consumption of the different units, Consumers are rational, Taste, Preferences Fashions remain unchanged and Income of the consumer is constant.

## The optimization rules of cardinal approach

Optimization Rule 1: When only one good is consumed and is available for free, consume till

$$MU_x = 0$$

Optimization Rule 2: When only one good is consumed and is available for a price:

Consume till  $MU_x = P_x$

Optimization Rule 3: Law of Equal Marginal Utility or Law of Substitution: The law states that the consumer will spend his income on different goods in such a way that marginal utility of each good is proportional to its price i.e. when more than one good is consumed and the goods' prices are different:

Consume till  $MU_x/P_x = MU_y/P_y = MU_z/P_z$

Cardinal Approach has some Limitation towards the consumer behavior or theory, which is as follows; Utility cannot be measured cardinally, Utility is not additive, Utility is interdependent and decisions are seldom taken in isolation, and Unrealistic assumption.

## **ORDINAL APPROACH**

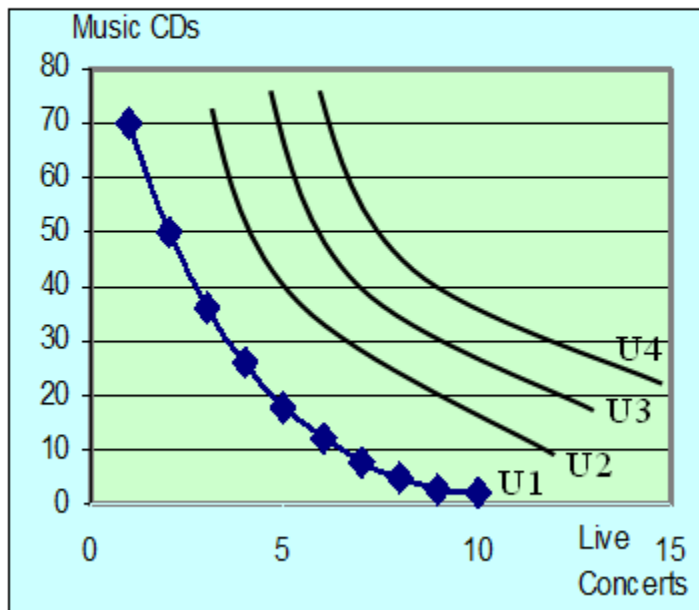
Ordinal Approach or Indifference Curve dispenses with the need of the measurement of utility for the maximization of consumer's satisfaction. As utility is subjective it is not possible to measure it in real life and though cardinal approach prompted economists to give sight into consumer behavior, but due to the limitation economists develop an alternative approach called Ordinal Approach or Ordinal Utility theory. According to High, Jack, and H. Bloch the theory deals with the fact that utility from different goods can be ranked but not measurable" (1989). According to the Ordinal Approach a consumer has a given scale of preferences for different combination of two goods. Ordinal approach states that utility can be measured in order of preferences.

The assumptions of this theory are: Rationality; Aim to maximize utility under condition of certainty, Complete Ordering: All possible goods can be offered into preferred, Consistency: If consumer prefers bundle B to bundle A at the same time he does not prefer bundle A to bundle B, Transitivity: If Commodity basket A is preferred to B is preferred to C implies that, A is preferred to C and Non Satiation: Bigger is preferred to a small bundle. This theory can also be described with the help of Indifference Curve Approach.

According to an Indifference curve is the locus of points indicating particular combinations of goods or the baskets of two commodities from which the consumer derives the same level of utility or satisfaction." The I.C. is the locus of successive indifferent points or combinations which yield equal level of satisfaction. This curve is also known as Iso Utility curve and the different point on the curve represents the same level of satisfaction. Economists following the lead of Hicks, Slutsky and Pareto believe that utility is measurable in an ordinal sense--the utility derived from consuming a good, such as X, is a function of the quantities of X and Y consumed by a consumer.

# Utility and Indifference Curves

A INDIFFERENCE SCHEDULE		
	Lv. Conc	Msc.CDs
	10	2
	9	3
	8	5
	7	8
	6	12
	5	18
	4	26
	3	36
	2	50
	1	70



The equation Indifference curve can be written as:

$$U = f(x, y)$$

Total Differentiation of the equation represents:

- $dU = df/dx \cdot dx + df/dy \cdot dy$
- $= MU_x \cdot dx + MU_y \cdot dy$
- Along in the I.C curve satisfaction is constant, so,
- $dU = 0$ , so  $dy/dx = - (MU_x/MU_y)$ , so slope of the I.C. curve is  $< 0$ .

According to the following are the Properties of Indifference Curve: “Indifference curve is downwards sloping, it is Convex to the origin, and Higher Indifference curve represents higher level of satisfaction, two Indifference curves never intersect each other, Indifference curve never intersect the axis and the collections of Indifference curves are known as indifferent Map.”

## **Books**

1. Pindyck and Rubinfeld with Mehta (2005), Microeconomics- latest available Edition in market.
2. D.N Dwivedi (2016), Microeconomics Theory and Application-- latest available Edition in market.
3. Koutsoyiannis, A., Modern Microeconomics, Macmillan, London.