

Consumer's Equilibrium in Indifference Curves

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Abstract-- Two English economists, J.R. Hicks and R.G.D. Allen in their now well-known paper 'A Re-consideration of the Theory of Value' severely criticized Marshall's cardinal utility analysis based upon cardinal measurement of utility and put forward the indifference curve approach based on the notion of ordinal utility to explain consumer's behaviour. In 1939 Hicks reproduced the indifference curve theory of consumer's demand in his book 'Value and Capital' modifying somewhat the version of the original paper.

For deriving the theory of consumer's behaviour, it is sufficient to assume that the consumer is able to rank his preferences consistently. Thus, the basis of indifference curve analysis of demand is the preference-indifference hypothesis. This means that if the consumer is presented with a number of various combinations of goods, he can order or rank them in 'scale of preference'. If the various combinations are marked A, B, C, D, E etc. the consumer can tell whether he prefers A to B, or B to A, or is indifferent between them. Similarly, he can indicate his preference or indifference between any other pair of combinations. The concept of ordinal utility implies that the consumer cannot go beyond stating his preference or indifference. In other words, if a consumer happens to prefer A to B he cannot tell by how much he prefers A to B. Thus, under ordinal utility hypothesis, the consumer cannot tell the 'quantitative differences' between various level of satisfaction; he can simply compare them 'qualitatively', that is, he can merely judge whether one level of satisfaction is higher than, lower than or equal to another. Further, according to the supporters of indifference curve method, by 'how much' one combination of goods is preferred to another is not even needed for deriving laws concerning consumer's behaviour. It is sufficient to assume that the consumer is able to tell whether one combination of goods gives him greater, equal, or less satisfaction than another.

It may be noted that the consumer formulates his scale of preferences independently of the market prices of goods keeping in view only the satisfaction which he hopes to get from various combinations of goods. In consumer's scale of preferences some combinations will occupy the same place, i.e., the consumer will be indifferent among them. Combinations occupying a higher place in the scale will be preferred to the combinations occupying lower places in the scale. Moreover, the indifference curve analysis assumes that the preference and indifference relations are 'transitive'. The transitivity of preference or indifference relations means that if a consumer prefers A to B, and B to C, then he will also prefer A to C and likewise, if he is indifferent between A and B, and between B and C, then he will also be indifferent between A and C.

Keywords-- Consumer Behaviour, Satisfaction, Scale of Preference, Transitive, Ordinal Utility. Convex to Origin.

I. INTRODUCTION

Indifference curve analysis is developed as an alternative to marginal utility analysis Alfred Marshall, to explain the behaviour of the consumer. J.R. Hicks and R.G.D. Allen have introduced indifference curve analysis based on the assumption of 'ordinal utility'. In this analysis, the nature of indifference curves and how consumer attains equilibrium are explained.

Indifference curve analysis rejects the assumption that utility is cardinally measurable and also constancy of marginal utility of money which are the fundamental assumptions of cardinal utility analysis. With the help of indifference curve analysis. The indifference curve analysis is based on the following assumptions.

II. ASSUMPTIONS

The consumer acts rationally so as to maximize satisfaction.

1. These are two good X and Y.
2. The consumer has full knowledge of prices of Goods
3. The price of the two goods is given.
4. The consumer's taste habits and income remain the same throughout the analysis.
5. He prefers more of X to less of Y which implies a negatively inclined downward sloping indifference curve.
6. The consumer arranges the two goods in a scale of preference which means that he has both preference and indifference for the goods.
7. Both preference and indifference are transitive it means that if combination A is preferable to B, and B to C, then A is preferable to C.

The consumer is in a position to order all possible combination of the two goods

The indifference curve is a geometrical device that has been used to replace the neo – classical cardinal utility concept. Prof. Hicks presented its comprehensive version in terms of his preference or ranking for different combinations of two goods say X and Y.

An indifference curve is drawn from the indifference schedule of the consumer. The list being so arranged that a consumer is indifferent to the combinations preferring none of any other.

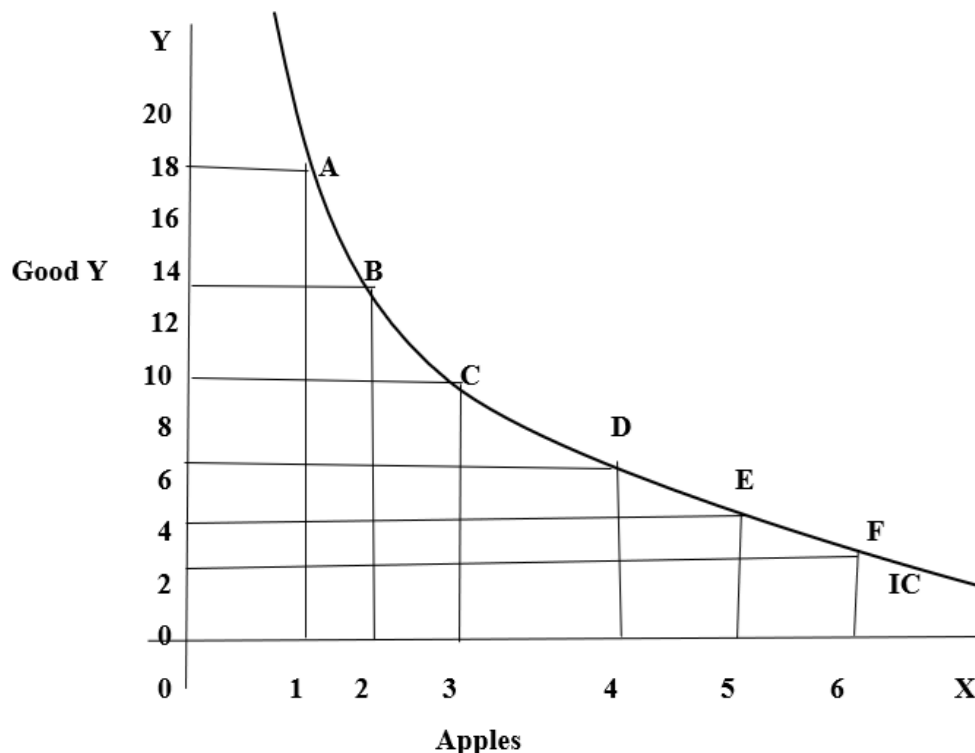
1. The combination is measurable in scale of preference
 “with the help of the scale of preference we can draw an example.

Combination	Good X	Good Y	MRS X for Y
A	1	18	-
B	2	13	5:1
C	3	9	4:1
D	4	6	3:1
E	5	4	2:1
F	6	3	1:1

The indifference curve analysis measures utility ordinarily, it explains consumer behaviour in terms of his preference or ranking.

The above table the consumer is indifference whether he buys the first combination of units of Y 18 + 1 unit of X or

the fifth combination of 4 units of Y + 5 units of X or nay other combination A all combinations give him equal satisfaction but any number of schedules can be taken for the two commodities. They may represent higher or lower satisfaction of the consumer.

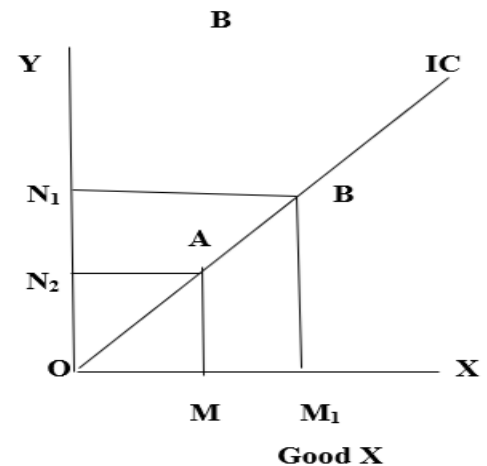
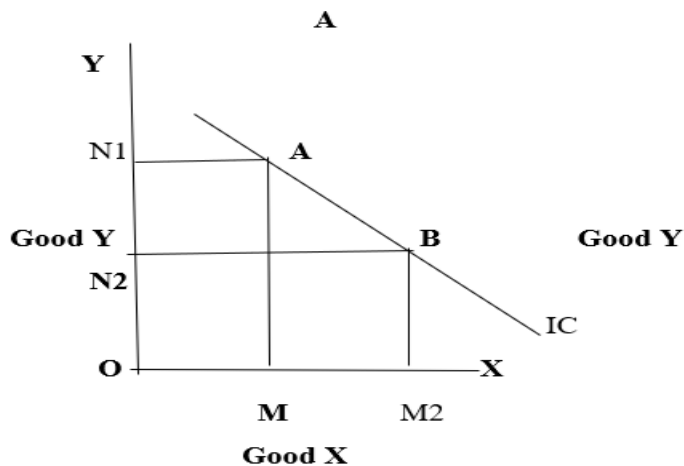


In the above diagram OX axis good X and OY axis good Y this becomes an indifference curve as IC₂ is the locus of the points A, B, C, D, E and F showing the combination of two goods between which the consumer is indifferent. As Eastham has pointed it is the locus of the points representing pairs of quantities between which the individual is indifferent. So, it is termed an indifference curve.

It is in fact an Iso utility curve showing equal satisfaction at all its points.

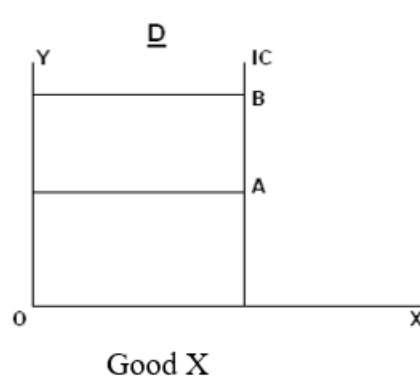
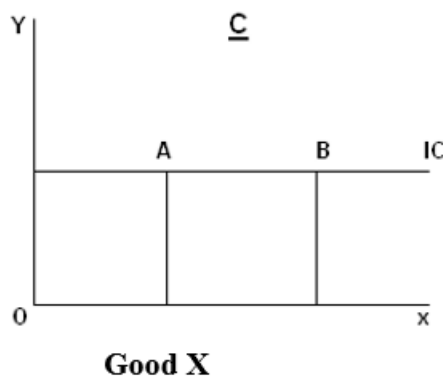
III. PROPERTIES OF INDIFFERENCE CURVES

1. They slope negatively or slope down wards from left to right.



The slope of an indifference curve is negative down word sloping from left to right. It means that the consumers to be indifferent to all the combinations on the indifference curves must curve less unit of good Y in order to have more of good X.

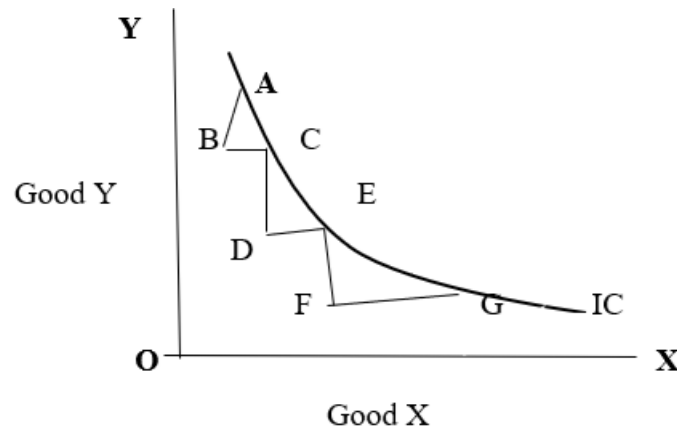
Where A and B combinations give equal satisfaction to the consumer as the moves from combination on A to B he gives us less quantity of Y in order to have more of X.



C. Combination B is preferable to combination A, for combination B has more of X and the same quantity of Y so the indifference curve cannot be horizontal.

1. The IC shows Y as vertical and again combination IC is preferred to B consumer has more of Y and some quantity of X. So, IC will be negative slope in this figured.

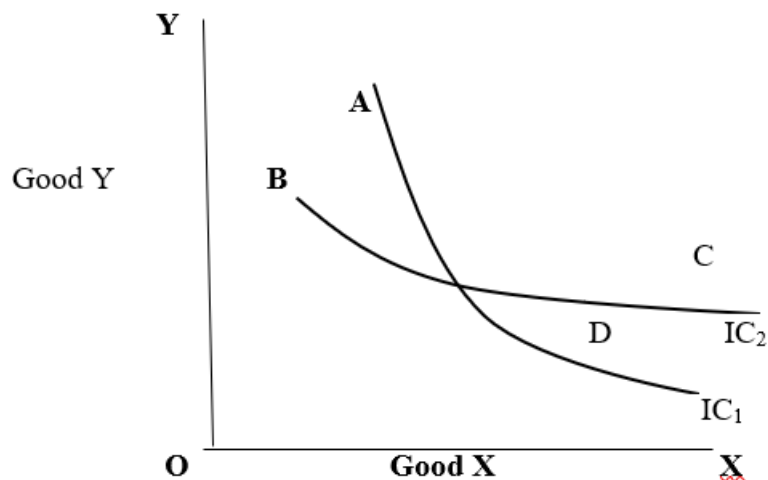
D. They are convex to the origin of axis.



In this diagram IC is convex to the origin from A to B, then becomes curve from B to C and once again become

convex from C to O. from A to B the marginal rate of substitution is declining.

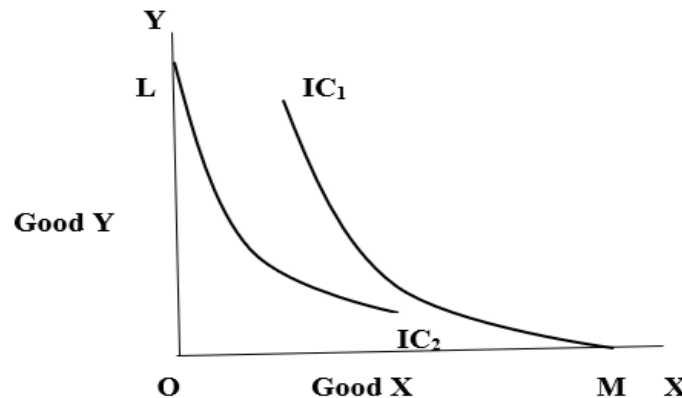
IC can intersect each other



Where the two curves IC, and IC₂ cut each other on the curve IC₂ combination 'C' is preferable to combination 'D' on IC₁ curve because 'D' is at a higher level and to the right

of 'D' as per our property above therefore no two indifference curves can intersect each other.

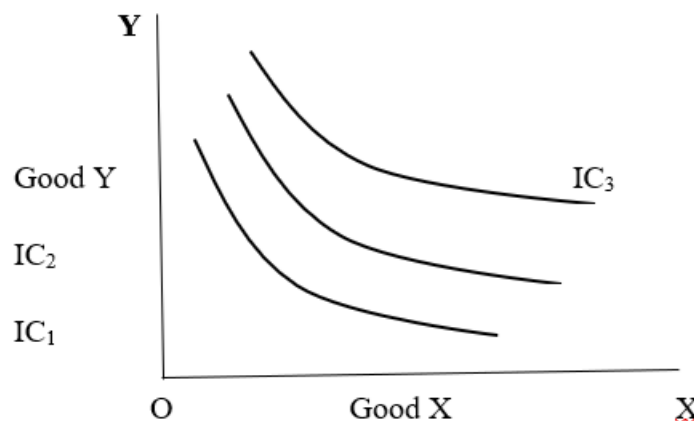
IC cannot touch either axis



If it touches 'X' axis as IC, at M, the consumer will be having OM quantity of good X and none of Y. and IC₁, IC₂ touches they Y axis at L the consumer will have OL of Y

good and No amount of X, the consumer buys two goods in combinations.

They can be a number of IC curves



In the above diagram on OX axis good Y and OY axis good Y, IC is the indifference of the consumer, there are three indifference curves. IC₁ is the lower satisfaction curve and IC₃ is the higher satisfaction curve.

Consumers Equilibrium

Now we will examine the equilibrium of the consumer in terms of the IC analysis. For this we must know the budget line or price line.

Budget Line or Price Line

The consumer chooses a combination of goods which gives him maximum satisfaction.

In this context he faces two important constraints, (1) the prices of goods and (2) the money income which he is prepared to spend on the goods. Let us try to understand about the budget line more clearly.

Y= The income which the consumer is prepared to spend on goods.

P_x = Price of the good X

P_Y = Price of good Y

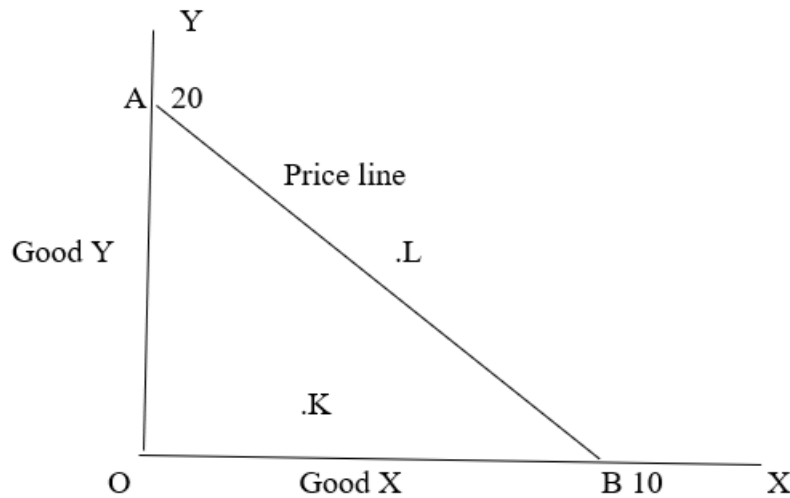
Q_X = Quantity of good X

Q_Y = Quantity of Y

Therefore $Y = QP + QPY$

If the consumer spends whole of his income on good X, he can purchase 10 units of X (Y/P_X), and zero units of good Y. in the same way, if spends all his money income on good Y, he can purchase 20 units of good Y (Y/P_Y) and zero units of good X. below diagram shows these details.

A straight line joining the maximum possible units of the two goods which the consumer can purchase is drawn and this line called budget line or price line.



The budget line or price line shows all combinations of the two goods which the consumer can buy by spending his given income on the goods at their given prices. In the above diagram the consumer can purchase maximum OA units (20 units) of good y and OB units (10 units) of good X. it should be carefully noted that the consumer can purchase any combination inside the budget line given by point K. in the diagram. He cannot purchase any combination lying outside the budget line like point L in the diagram. The slope of the budget line $AB = OA/OB = Y/P/Y_P = P/P$. The line slope of the budget line gives the price ratio of X and Y. therefore, this is also called the price line.

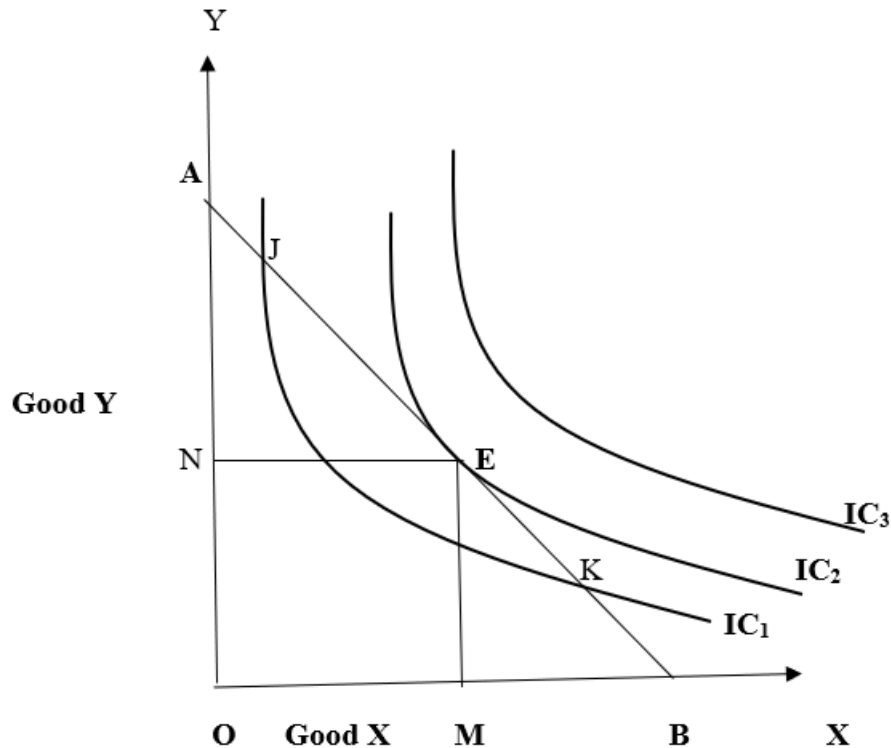
Consumer's Equilibrium

The consumer will be in equilibrium when he maximizes his satisfaction by purchasing a combination of goods X and Y with his given income and prices of two goods. Two conditions need to be satisfied for the equilibrium in indifference curve analysis. One necessary condition and the other is sufficient condition.

The necessary condition is at the point of equilibrium the $MRS_{XY} = P_X/P_Y$

The sufficient condition is at the point of equilibrium, the indifference curve must be convex to the origin.

The equilibrium of the consumer is explained diagrammatically by superimposing the budget line on a indifference curve map. This is illustrated in bellow diagram.



In the above diagram AB is the budget line IC_1 , IC_2 , and IC_3 represent the indifference map. Among the three indifference curves, IC_3 gives the highest-level satisfaction, but with the given income of the consumer and prices of goods X and Y, the consumer cannot reach IC_3 . In fact, IC_3 is above the budget line.

Equilibrium will be at that point where the given budget line (AB) line is tangent to the highest indifference curve in the IC map. The above budget line AB is tangent to IC_2 at point E. At point E, the slope of the budget line is equal to the slope of indifference curve (IC_2). The slope of IC_2 indicates MRS_{XY} at E; the slope of the price line gives the price ratio. The first condition of the equilibrium, namely $MRS_{XY} = P_X/P_Y$ is satisfied at E. Further at point E, is also convex to the origin, satisfying the sufficient conditions of equilibrium. Points J and K are not equilibrium points as they are on a lower indifference curve and therefore the consumer will not be maximizing his utility. Further at point J $MRS_{XY} \geq P_X/P_Y$ therefore it is advantageous for the consumer to substitute X for Y. In the same way at point K, $MRS_{XY} \leq P_X/P_Y$ it is advantageous for the consumer to substitute Y for X. Therefore, points J and K are not equilibrium points. Only at point E, $MRS_{XY} = P_X/P_Y$ and therefore E is the point of equilibrium of the consumer. The combination OM of X and ON of Y gives him maximum

The above analysis, shown that corner solution of consumer's equilibrium is possible even that even when his indifference curves between goods are convex. It is worth noting that in case of convex indifference curves, corner equilibrium is however not inevitable; it occurs only when price of a commodity is too high as compared to the marginal rate of substitution of even the first unit of the commodity. However, when the indifference curves are concave, consumer's equilibrium will inevitable be a corner solution. This implies that more of commodity X a consumer has the more useful or significant in terms of satisfaction an extra unit of it becomes. Therefore, the concave indifference curves do not seem to be plausible or realistic. Now, as seen above, the concavity of indifference curves for a consumer implies that the consumer spends his entire income on a commodity and therefore buys only one commodity. However, consumption of one goods only by a consumer which the concavity of indifference curves leads us to believe is quite unrealistic. Observations in the real world reveal that consumers do not spend their entire income on a single commodity and in fact purchase a multitude of different goods and services. This rejects the existence of concave indifference curves.



The indifference curve analysis of inevitability of corner equilibrium in case of concave indifference curves provides us an important economic rationale for indifference curves being convex rather than concave. If indifference curves were predominantly concave the consumers would spend their entire income on a single commodity alone and thus consume only one commodity. This is quite inconsistent with the observed behaviour of consumers. This reinforces our belief that indifference curves of consumers are generally convex.

IV. CRITICISM

1. It supposed that the consumer has complete knowledge of all his scales of preference and carries than in this mind.
2. It is only old mine is new battle it uses the concepts of preference for utility. It only substitution marginal utility.
3. Indifference curves one is imaginary as utility curves.
4. Changes in the tastes and preferences are not taken in to account.
5. The assumptions of perfect completion and homogeneous good are unrealistic.

V. CONCLUSION

In our analysis above, show that corner solution of consumer's equilibrium is possible even when his indifference curves between goods are convex. It is worth noting that in case of convex indifference curves, corner equilibrium is however not inevitable; it occurs only when price of a commodity is too high as compared to the marginal rate of substitution of even the first unit of the commodity.

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