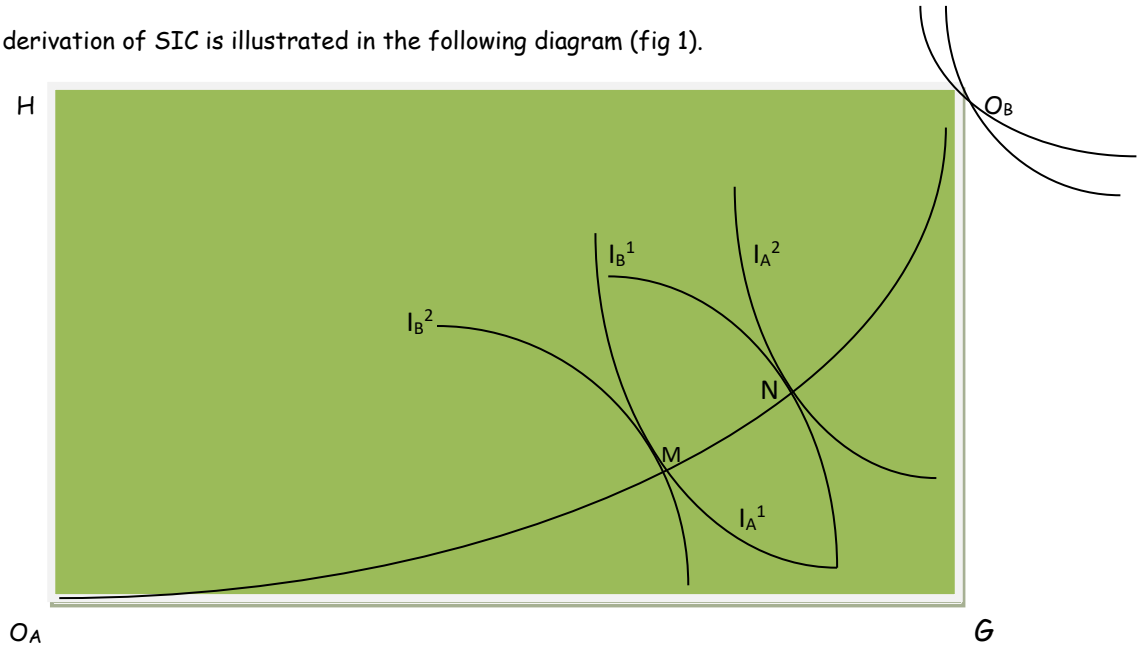
The Building Blocks of Trade Theory

Lesson objectives: *To explain the concept of community indifference curve - Justification and properties*

We are acquainted with the concept of **social indifference curves or community indifference curves (in the context of welfare theory).** They portray tastes and preferences of the society in general. These curves are also widely used in various trade models. But before using them, we should know how they are derived and what the limitations associated with these curves are.

Scitovsky (1942) defines a social indifference curve (SIC) as the locus of the minimal combinations of two goods X and Y that are capable of putting each and every consumer in a society on a predetermined welfare level.

The derivation of SIC is illustrated in the following diagram (fig 1).



Let us assume that there are two individuals A and B in the society. Individual indifference curves (ICs) for A and B have been drawn with respect to origins O_A and O_B respectively. **Both are convex to their respective origins, but the indifference curves of person B look like concave to us at first glance.** The locus of the tangency points is the contract curve shown by the curved line joining the two origins O_A and O_B. M and N are two such tangency points. Let us consider tangency point M.

What are the minimal combinations of X and Y those will keep A on I_A^1 and B on I_B^2 ? Measuring with respect to the origin O_A the point O_B denotes one such combination. [Note that O_B denotes HO_B amount of X and GO_B amount of Y which have been distributed between A and B in such a way at point M so that A is on I_B^1 and B is on I_B^2].

Now the question is: are other combinations of X and Y which will be on the same SIC with **O_B** ?

Let us slide the indifference curve I_B^2 along A's IC so that they are always tangent to each other. With fixed origin of A (O_A), this implies shifting of O_B .In other words, the endowments of X and Y must be suitably changed. The path of O_B will be the social indifference curve we are looking for (like SIC$_M$ in the

figure). The slope of SIC_M at a particular point is necessarily equal to the slope of I_B^1 and I_B^2 because the two ICs must always be kept tangent to each other.

Problem with SIC: Non-intersecting SICs cannot be drawn

Let us consider any other point N on the contract curve. From N another SIC can be generated (using the same process described above) which passes through O_B. SIC_M will intersect this new SIC at O_B. So, there will be an infinite number of SICs passing through O_B, each curve being associated with a certain distribution of welfare between the two individuals (in other words, a point on the contract curve).

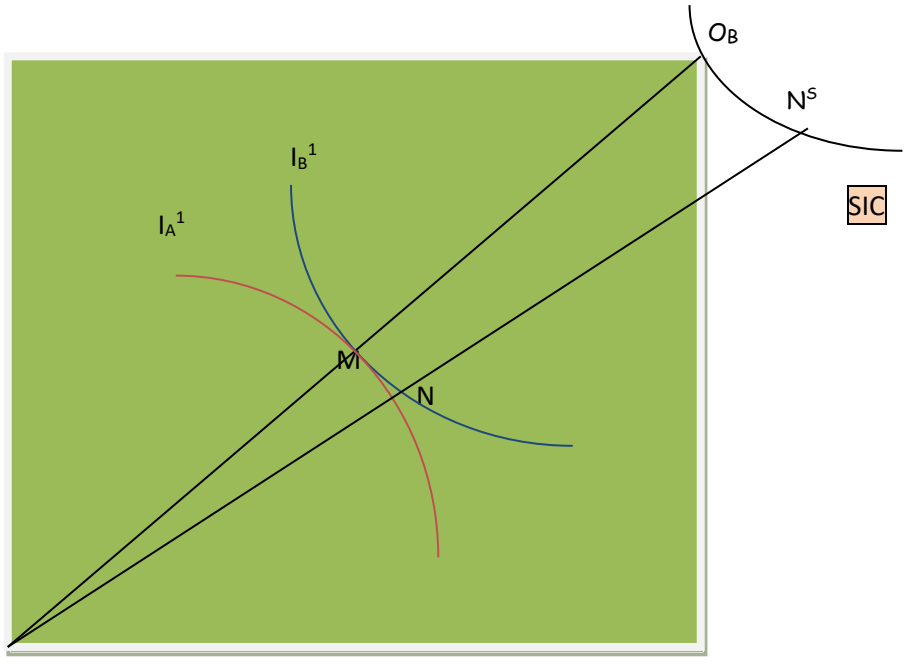
Thus, in general, **non-intersecting SICs cannot be drawn**. Accordingly, an infinite number of SICs pass through any point of the positive quadrant. **This makes it impossible to assign a single social utility index to any given combination of X and Y available to the society.**

From what is written above, it may appear that a Scitovsky SIC has little or no use in economic theory. Let us now discuss the issue of the usefulness of the SIC.

A totalitarian State: In this case the indifference map of a dictator (or the planning bureau) becomes the social indifference map. The problem of aggregation does not arise here.

Identical Tastes and Factor Endowments: We will now consider a more realistic case where the society is composed of two individuals (A & B) with identical taste pattern and with equal factor endowments. **Equal factor endowments signify that A and B have same income and they share available bundle of goods X and Y equally. Equal income and identical taste pattern imply that at equilibrium they will consume same bundle and derive same utility.**

Now look at the following box diagram (FIG 1).The total endowments of X and Y in the society are X_0 and Y_0 respectively. O_A and O_B are origins of A and B respectively. M is the midpoint of the diagonal O_A O_B . M is a point on the contract curve, because at M, both consumers consume the same bundle of commodities and therefore have same marginal rates of substitution.



O_A

Keeping O_A fixed, O_B is a point on SIC (the Scitovsky social indifference curve corresponding to I_A^1 and I_B^1). To find the other points we need to follow the same procedure as before (explained in previous diagram). But with equal income and identical tastes, now tangency between I_A^1 and I_B^1 is possible if and only if:

A and B consume same bundle or available basket of X and Y is shared equally. Therefore if N^S is another point on SIC, N is the midpoint of O_A N^S.

The above analysis shows that under the assumptions of identical tastes and factor endowments, SIC can be constructed as follows:

Draw a ray through origin intersecting the IC of consumer B at a point such as N. Then determine a point on the ray whose distance from the origin is twice (in case of two consumers) as long as that of N. Repeating the same experiment for all points on the chosen indifference curves, we can construct the desired social indifference curve. In this way for each IC we will get a SIC, without any common point with any other SIC.

Samuelson's Social Indifference Curves

Samuelson has defined Social indifference curves in a different way. He has shown that, if social welfare functions exist and if income is always reallocated among individuals in such a way as to maximise social welfare, it is possible to derive a social indifference map with all the usual properties of individual consumer's indifference map.

The method for drawing Samuelson's SIC will be discussed in the next lesson.