

M.A. & B.A., Economics, International Economics

Determination of Terms of Trade and Offer Curves

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Dr. Bharti Pandey

Head, Department of Economics, SJNMPG

College, Lucknow



- To understand how offer curves are derived and how with their help determination of the terms of trade is explained, we shall first explain how a country reaches its equilibrium position about the amounts of goods to be produced and consumed. For this purpose, modern economists usually employ the tools of production possibility curve and the community indifference curves. The production possibility curve represents the combinations of two commodities which a country, given its resources and technology, can produce.

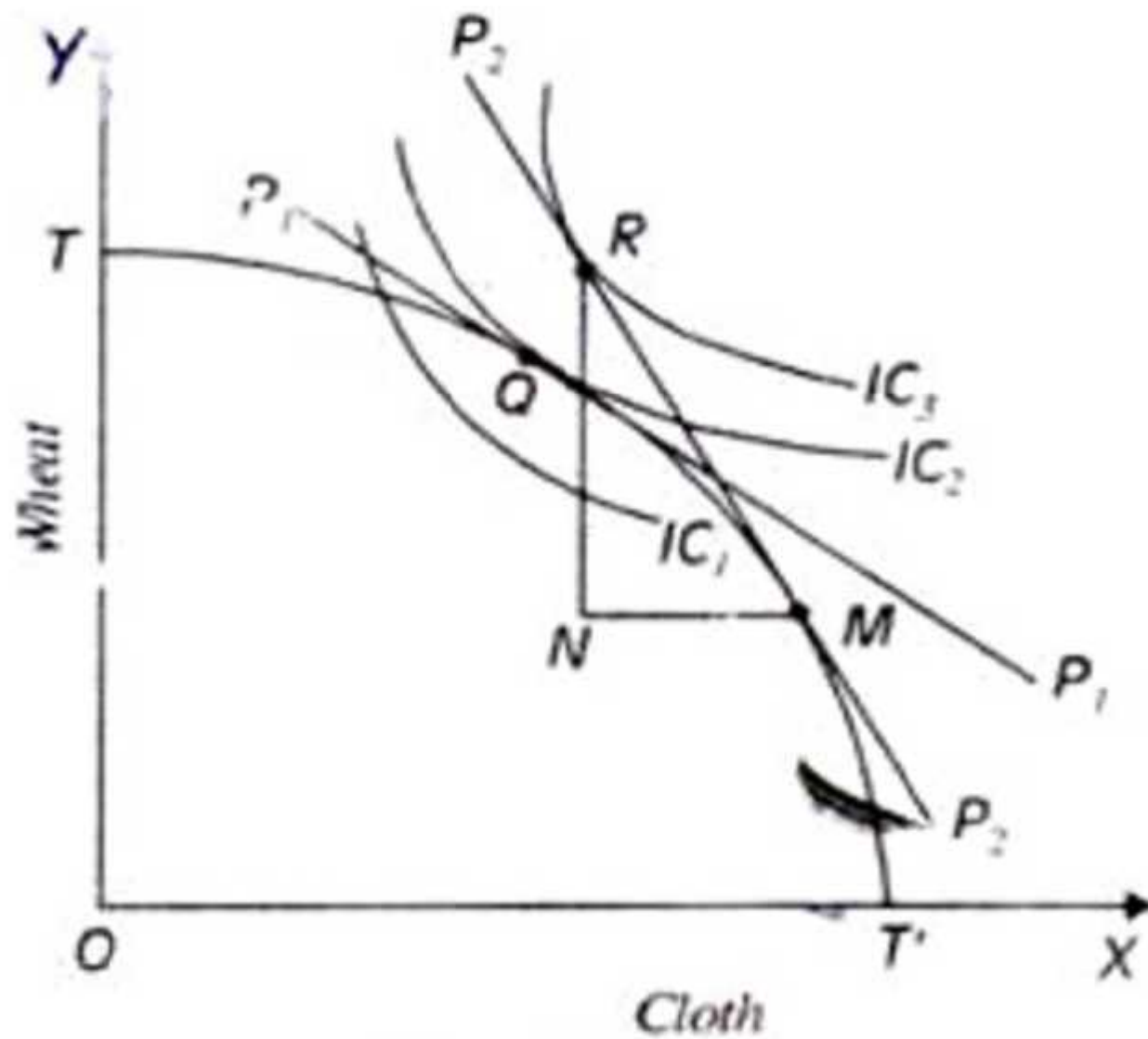
- A community indifference curve shows the combinations of two goods which provide same satisfaction to the community as a whole. A map of community indifference curves portrays the tastes and demand pattern of a community for the two goods.



A production possibility curve TT' and a set of community indifference curves IC_1 , IC_2 and IC_3 of country A have been drawn in Fig 1. The country reaches its equilibrium position with regard to production and consumption of cloth and wheat at the point Q where the production possibility curve TT' is tangent to the highest possible indifference curve IC_2 at which marginal rate of transformation of cloth for wheat (MRT_{CW}) equals marginal rate of substitution of cloth for wheat (MRS_{CW}) as well as the price ratio of the two commodities P_c/P_w as shown by the slope of the price line P_1P_1 .



Fig 1: Production and Consumption of Country A in the absence and with Trade



Thus, tangency point Q in Fig 1 depicts the equilibrium position of country in the absence of trade. Suppose country A enters into trade relation with country B and price of cloth rises relative to wheat so that new price-ratio line becomes P_2P_2 .

It will be observed from Fig. 45.1 that with price-ratio line P_2P_2 production equilibrium of country is at point M, its consumption equilibrium is at point R. This shows that with price-ratio line PP_2 country A will offer or export MN of cloth for RN imports of wheat.

Similarly, if price of cloth further rises relative to wheat, price-ratio line will become more steep, then for the same quantity offered of export of cloth, the or import of wheat will increase. With such information gathered from Fig 1, we can derive offer curve of country A in Fig 2.



The tangent line in Fig 1 shows the domestic price ratio of the two commodities and has a negative slope. In the analysis of the offer curve, the price line is drawn with a positive slope from the origin. This is because in the drawing of an offer curve we are interested only in knowing the quantity of one commodity which can be exchanged for a certain quantity of another commodity.

In other words, in the analysis of terms of trade what we are really interested is the absolute slope of the curve, i.e., the price ratio. In Fig 2 the positively sloping price line OP_1 from the origin, which in absolute terms, has the same slope as P_1P_1 of Fig 1 has been drawn. In Fig 2 at price ratio line O_1P_1 no trade occurs.

When price of cloth rises and price ratio line shifts to OP_2 as will be from Fig 2, country A offers ON_1 of cloth (exports) for RN_1 of wheat (imports). (Note that at a given price ratio how much quantity of a commodity, a country will offer for imports from the other country is determined by production possibility curve and community's indifference curves as illustrated in Fig 1).


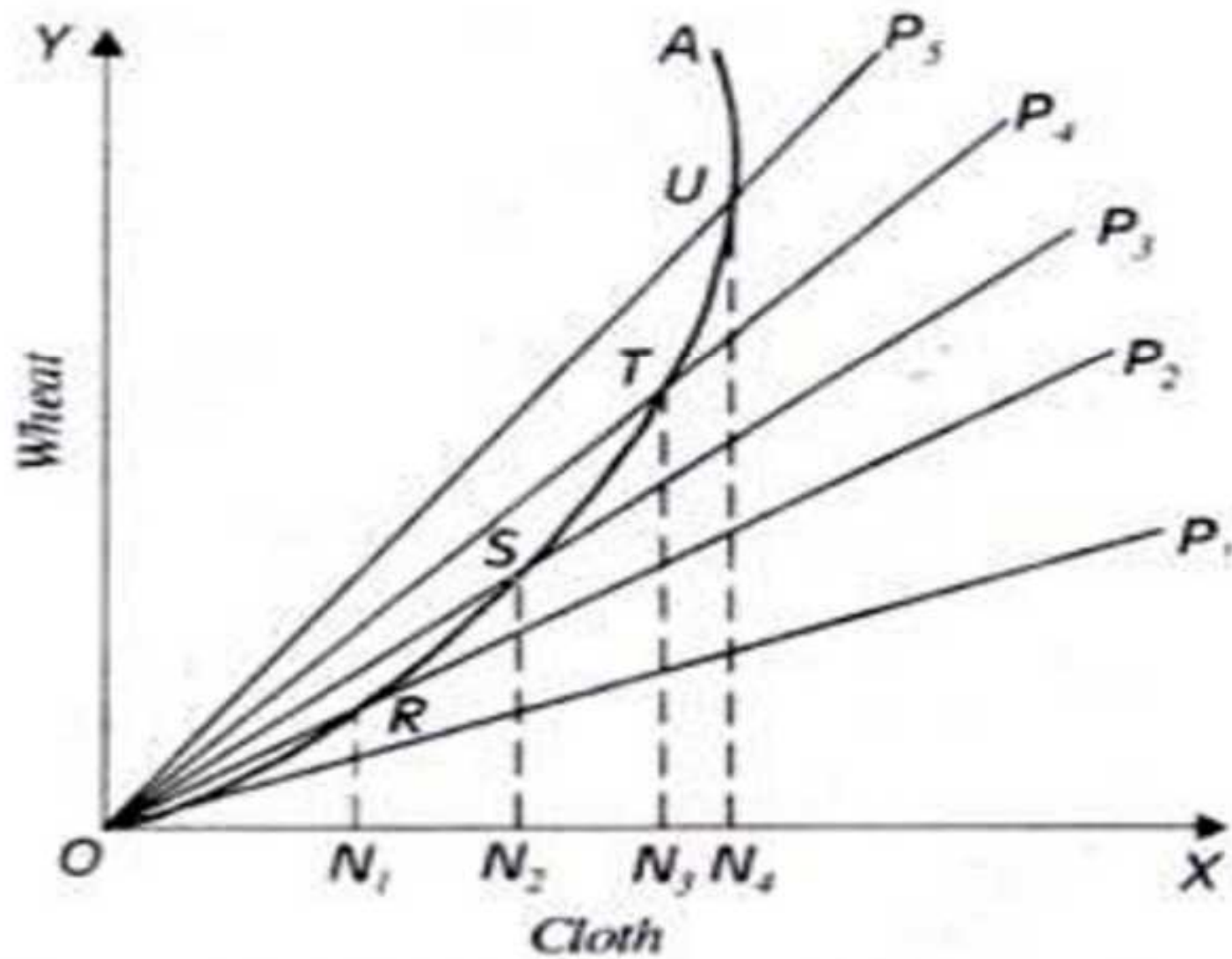


Fig 2: Offer curve of Country A



Suppose the price of cloth further rises relatively to that of wheat causing the price line to shift to the position OP_3 . It will be seen that with the price line OP_3 , country A is willing to offer for export ON_2 quantity of cloth for SN_2 of wheat.

Likewise, Fig 2 portrays the exports and imports of the country A as price of cloth in terms of wheat increases further and consequently price line shifts further above to OP_4 and OP and the new offers of export of cloth for import of wheat are determined by equilibrium points T and U. If points such as R, S, T and U representing the country A's offers of cloth for wheat are joined we get its offer curve.

It is important to note that the offer curve may be regarded as the supply curve in the international trade as it shows amounts of cloth which the country A is willing to offer for certain amounts of imports of wheat at various price ratios.

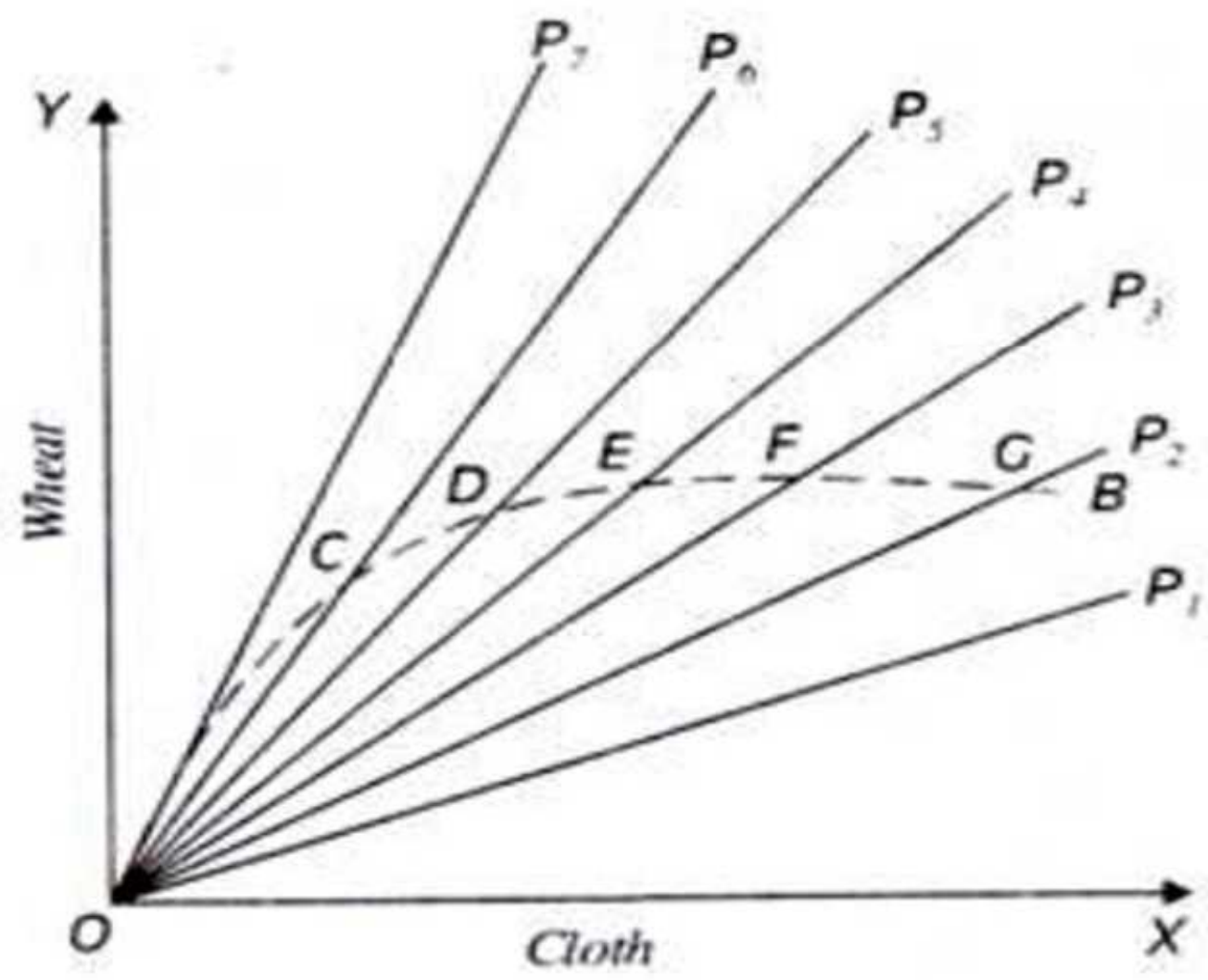


Another important point to be noted is that the offer curve cannot go below the price line OP, which represents the domestic exchange ratio determined by the tangency point Q of production possibility curve and community indifference curve of country A as shown in Fig 1. This is because, as stated above, no country will be willing to export its product for the quantity of the imported product which is smaller than that it can produce at home.

Likewise, we can derive the offer curve of country B. Fig 3 portrays the derivation of the offer curve of country B. representing quantities of wheat which it is willing to exchange for certain quantities of cloth from country A at various prices.



Fig 3: Offer curve of Country B

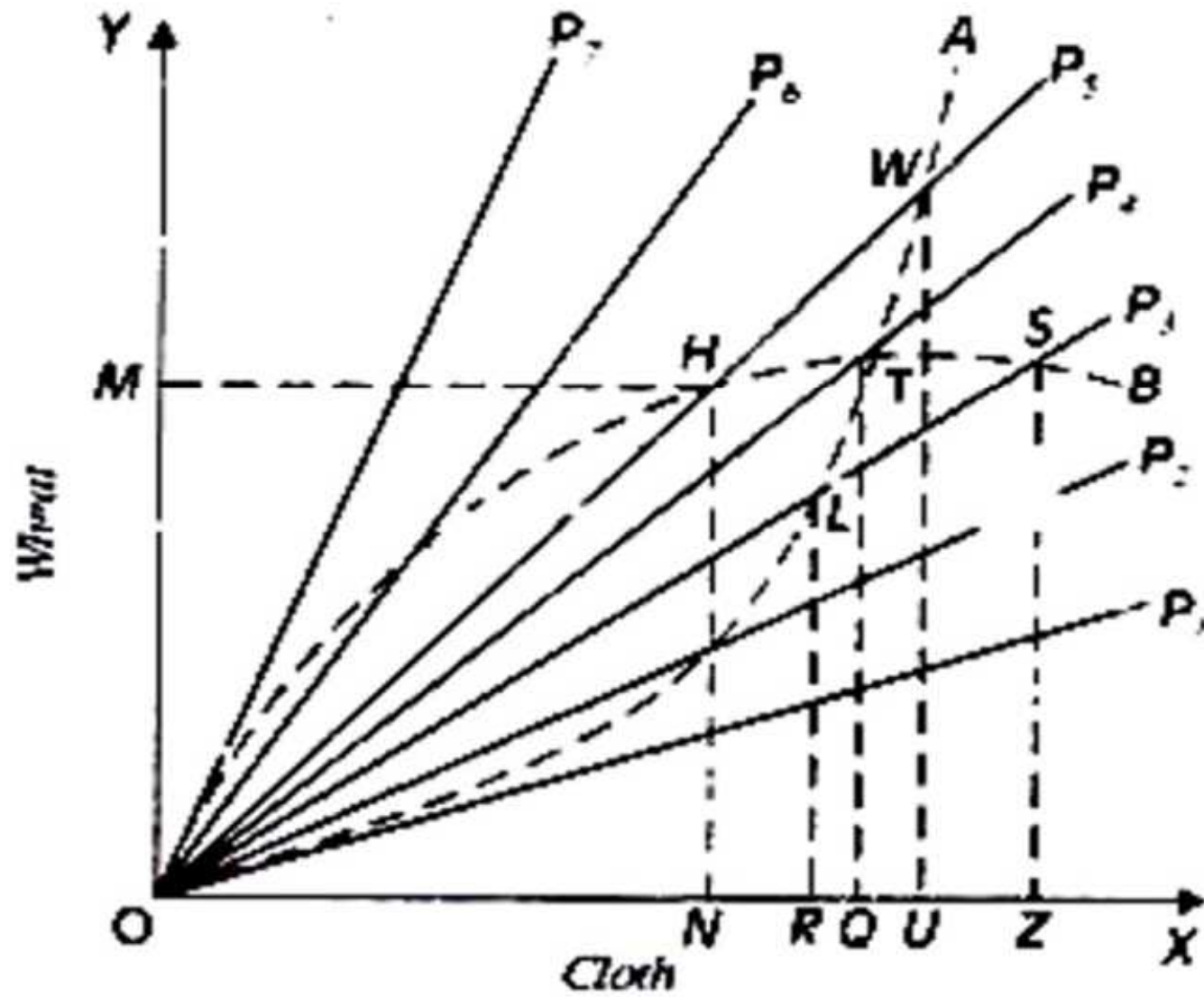


Note that so long as country B is importing a smaller quantity of cloth, it will be willing to offer relatively more wheat for cloth. But as the quantity of imported cloth is increased, it would be prepared to offer relatively less wheat for the given quantity of imports of cloth.

In Fig 3 whose Y-axis represents wheat, the origin for indifference curves of country B will be the North-West Corner. Price lines OP_7, OP_6, OP_5, OP_4 etc., express successively higher price ratios of wheat for cloth. Price line OP_1 represents the domestic price ratio in country B in the absence of trade. The points C, D, E, F, G which has been obtained from the equilibrium or tangency points between the community indifference curves of country B and the various price-ratio lines show the equilibrium offers of wheat by country B for cloth of country A at various prices. By joining together points, C, D, E, F and G we obtain the offer curve of country B indicating its demand for cloth of country A in terms of its own product wheat. It would be observed from Fig 2 and 3 that offer curves OA and OB of the two countries have been drawn with the same origin O (i.e., South-West Corner) as the basis. These offer curves represent reciprocal demand of the two countries for each other's product in terms of their own product. The offer curves OA and OB of the two countries have been brought together in Fig 4.



Fig 4: Determination of Terms of Trade



The intersection of the offer curves of the two countries determines the equilibrium terms of trade. It will be seen from Fig 4 that the offer curves of two countries cross at point T. By joining point T with the origin we get the price-ratio line OT whose slope represents the equilibrium terms of trade which will be finally settled between the two countries.

At any other price-ratio line the offer of a product by country A in exchange for the product of the other would not be equal to the reciprocal offer and demand of the other country B. For instance, at price-ratio line OP^1 , country B would offer OM wheat for MH or ON of cloth from country A (H lies on B's offer curve corresponding to price-ratio line OP_5).

But at this price-ratio line OP country A would demand much greater quantity of wheat UW for OU of cloth as determined by point W at which the offer curve of country A intersects the price ratio line OP. This will result in rise in price of wheat and the price-ratio line will shift to the right until it reaches the equilibrium position OT or OP_4 .



➤ On the other hand, if price ratio line lies to the right of O_r (for instance, if it is OP), then, as will be observed from Fig 4, it cuts the offer curve of country A at point L implying thereby that the country A would offer OR of cloth in exchange for RL of wheat. However, with terms of trade implied by the price ratio line OP_4 , the country B would demand OZ of cloth for ZS quantity of wheat as determined by point S.

➤ It therefore follows that only at the terms of trade implied by the price ratio line OT (i.e., OP_4) that the offer of a product by one country will be equal to its demand by the other. We therefore conclude that the intersection of the offer curves of the two countries determines the equilibrium terms of trade.

➤ As explained above, the offer curves of the two countries are determined by their reciprocal demand. Any change in the strength and elasticity of reciprocal demand would cause a change in the offer curves and hence in the equilibrium terms of trade.



- It is worthwhile to note that terms of trade must settle within the price lines OP_1 and OP_7 representing the domestic rates of exchange between the two commodities in the two countries respectively as determined on the basis of production cost and demand conditions existing in them.
- When the terms of trade are settled within these limits set by these price lines OP_1 and OP_7 , both countries would gain from trade, though one may gain relatively more than the other depending on the position of terms of trade line.
- As explained above, the terms of trade cannot settle beyond these domestic prices ratio lines because in case of terms of trade line lying beyond these price lines, it will be advantageous for a country to produce both the goods (wheat and cloth) domestically rather than entering into foreign trade.

