Theory of Reciprocal Demand

Background & Meaning

- The Ricardian (Comparative Advantage Theory) failure to determine the exact rate of international exchange between the two countries
- It was on account of an excessive emphasis upon the supply aspect and a complete neglect of demand aspect.
- It was J.S. Mill, who attempted to remove this lacuna in the Ricardian comparative costs theory.
- J.S. Mill explains that, the actual ratio at which commodities are transacted between two countries depends crucially upon the strength and elasticity of each country's demand for the product of the other or the reciprocal demand.
- The reciprocal demand means the quantities of exports that a country would offer at different terms of trade, in return for varying quantities of imports.
- In other words, reciprocal demand refers to the intensity of demand for the product of one country in the other country.

Assumption

I. The trade takes place between two countries, A and B.
II. The trade is in two commodities, X and Y.
III. In both the countries, the production is governed by constant return to scale.
IV. The trade between two countries is governed by the principle of comparative costs.
V. The pattern of demand is similar in two countries.
VI. There are perfectly competitive conditions in the market.
VII. There is no restriction on trade and government follows a policy of laissez faire.
VIII. There is full employment of resources in both the countries.
IX. There is an absence of transport costs.
X. The exports of each country are sufficient to pay for its imports.

Change in Supply and Demand Condition

- **Changes in Supply Conditions:** Changes in supply conditions as a result of cost-reducing improvements in technology bring changes in terms of trade.
- An improvement in the cloth industry of England increases the productivity in that industry, makes cloth cheaper in terms of Indian wheat (i. e., the same amount of wheat is exchanged for more cloth) and
- It makes the terms of trade in favour of India, the importer of cloth in exchange for wheat.

- **Changes in Demand Conditions:** The extent to which the barter terms of trade change depends not only on the increased production in exporting country, but also on the importing country's elasticity of demand for imports in terms of its exports.
- (i) If India's elasticity of demand for England's cloth in terms of its own wheat is more elastic, then the barter terms of trade will change in favour of India more than the fall in price of cloth in terms of wheat.
- (ii) If India's demand for cloth in terms of wheat is unitary elastic, then the barter terms of trade turn in favour of India equal to the fall in the price of cloth in terms of wheat.
- (iii) If India's demand for cloth in terms of wheat is less elastic, then the barter terms of trade will change in favour of India less than the fall in the price of cloth in terms of wheat.

Reciprocal Demand Elasticity:

- The reciprocal demand elasticity refers to the ratio of proportional change in the quantity of imports demanded to the proportional change in the price of exports relative to the price of imports.
- Thus, the elasticity of reciprocal demand-

$$= \frac{\text{(Percentage change in imports)}}{\left(\dfrac{\text{percentage change in price of export}}{\text{percentage change in price of imports}}\right)}$$

$$e = \frac{(\%\,\Delta M)}{\left(\dfrac{\%\,\Delta P_x}{\%\,\Delta P_m}\right)}$$

where, e = Elasticity of reciprocal demand

ΔM = Change in quantity of imports

ΔP_x = Change in price of exports

ΔP_m = Change in price of imports

- If e > 1, then terms of trade will be favourable for the concerned country and its share of gain will be larger;
- if e < 1, terms of trade will less favourable for the concerned country and the share of gain will be relatively less;
- if e = 1, the gain from trade will be equally distributed between the two countries.

Example

- **According to this table, the pre-trade exchange ratio between X and Y commodities in the two countries are:**
- **Country A:** 1 unit of X = 0.63 unit of Y
- **Country B:** 1 unit of X = 0.80 units of Y
- If trade commences between them, country A specialises in the production of X while B specialises in the production of Y.
- But the basic issue is concerned with the rate at which they will exchange their goods. The international rate of exchange will be settled within the two limits of domestic exchange ratio on the basis of reciprocal demand or the relative intensity of demand for the products of each other.
- If the demand for X commodity is less elastic in country B but the demand for Y commodity in country A is more elastic, the country B will be willing to give more units of Y for importing a given number of units of X and the international rate of exchange will be closer to the domestic exchange ratio of country B. It means the exchange ratio or terms of trade are more favourable to country A and she will obtain a larger share out of the total gain from trade.

Offer Curve Approach:

- The determination of equilibrium terms of trade can be graphically illustrated with the help of an offer curve – a geometrical technique developed by Marshall.
- The offer curve is a typical demand curve as it shows the demand for one commodity (imports) in terms of the supply of another commodity (exports).
- we take up two countries, India and England. India produces only wheat and England only cloth.
- India's offer curve indicating India's demand for cloth in terms of wheat. It represents the quantities of wheat that India is willing to offer in exchange for English cloth.

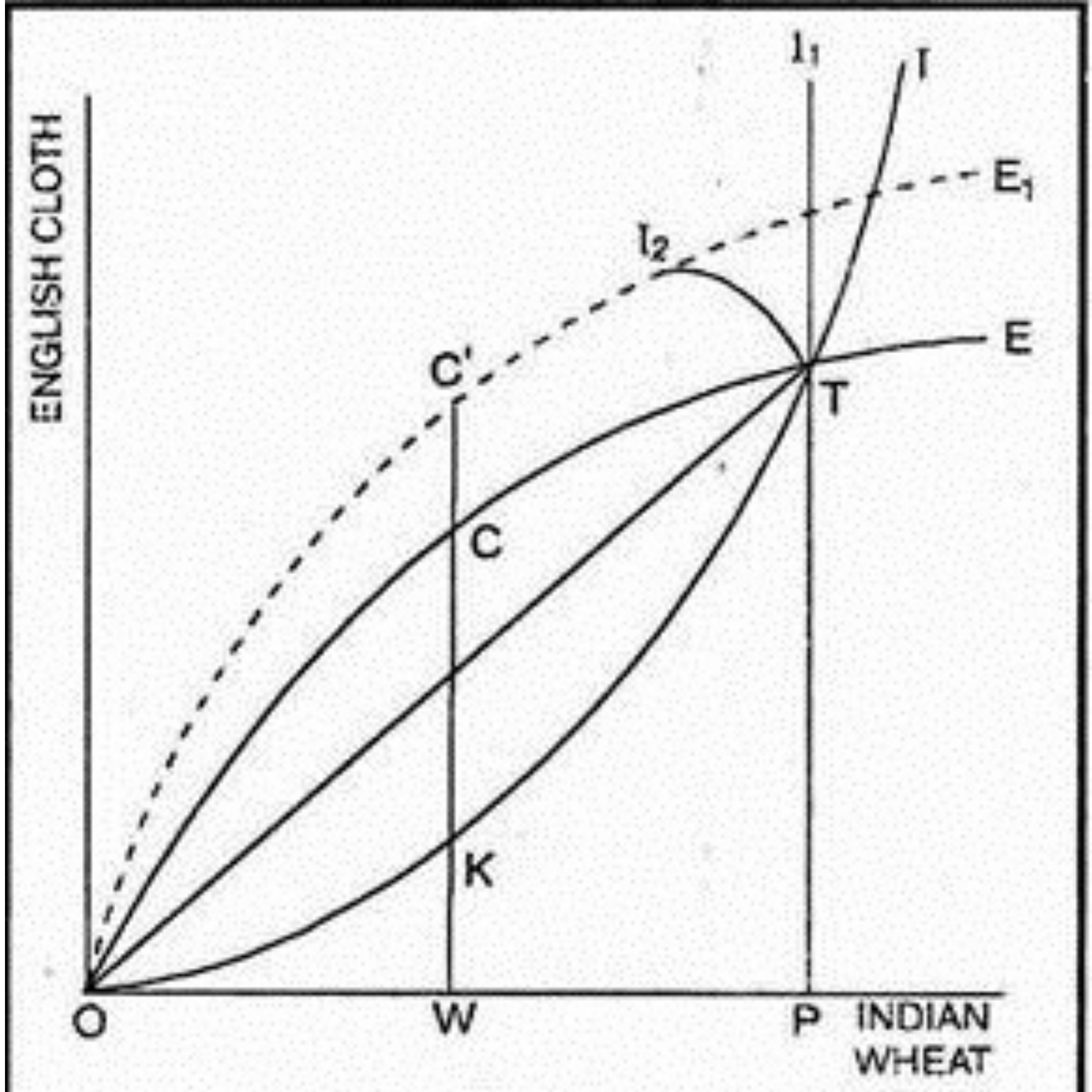

Fig. 3.

- As the quantity of cloth increases, India will be offering lesser and lesser amount of wheat in exchange for cloth. For example, in exchange for KW cloth, India is willing to offer OW wheat.
- Similarly, OE is England's offer curve of cloth for wheat, representing England's demand for Indian wheat. For example, England is willing to offer CW cloth in exchange for OW wheat.
- T is the equilibrium point where TP cloth is exchanged for OP wheat. Here reciprocal demands are equal. Line OT shows the equilibrium terms of trade.
- **Effect of Change in Supply:** As a result of cost reducing improvement in the cloth industry of England, OE_1 is England's new offer curve. Now England is willing to offer C'W cloth for OW wheat, whereas previously she was offering CW cloth for OW wheat. The terms of trade change in favour of India as a result of this improvement.

- **Effect of Change in Demand:** The extent of change in terms of trade will depend upon the slope of India’s offer curve.
- Positively sloping India’s offer curve after point T (i.e., TI) represents India’s more elastic demand for cloth in terms of wheat and makes the terms of trade in favour of India more than the fall in cloth’s price in terms of wheat.
- If India’s offer curve is vertical straight line after point T (i.e., TI_1), it shows unitary elastic demand for cloth in terms of wheat and the terms of trade will change in favour of India equal to the fall in cloth price in terms of wheat.
- If India’s offer curve is backward sloping after point T (i.e., TI_2), then the terms of trade will change in favour of India less than the fall in cloth price in term of wheat.

Mill’s Paradox:

- An important implication of the effect of improvement on the terms of trade is that a developing economy experiences unfavourable terms of trade as a result of technological advancement.
- Edgeworth termed this phenomenon as ‘Mill’s Paradox’ and Bhagwati called it ‘immiserizing growth’. The explanation of this statement is that as consequence of an increase in productivity, the supply of export goods increases and the developing country is faced with a problem of finding foreign markets for it.
- The situation is serious in those developing economies where the technological improvement is confined to the export industry only and foreign demand is inelastic.

Criticisms to Mill's Theory of Reciprocal Demand:

- The theory is based on unrealistic assumptions, such as perfect competition and full employment.
- Actual trade is not restricted to two country, two commodity model.
- Mill concentrates on the elasticity of demand, thus neglecting the impact of elasticity of supply. terms of trade are generally influenced by- (a) elasticity of demand for exports, (b) elasticity of demand for imports, (c) elasticity of supply exports, and (d) elasticity of supply of imports.
- Graham has criticised that, It has exaggerated the role of reciprocal demand and neglected the comparative cost conditions in determining the terms of trade.
- Jacob Viner has criticised the theory as imperfect and inadequate.
- Shadwell has criticised that, the exchange ratio is fixed at a point where the value of imports and exports are in equilibrium as a mere truism. It does not throw any light on the determinants of terms of trade.