International Economic Cooperation

Lecture III

Terms-of-Trade Estimates

- The **commodity terms of trade** (also referred to as the *barter terms of trade*) is a frequently used measure of the international exchange ratio.
- It measures the relation between the prices a nation gets for its exports and the prices it pays for its imports.
- This is calculated by dividing a nation's export price index by its import price index, multiplied by 100 to express the terms of trade in percentages:

$$Terms\ of\ Trade = \frac{Export\ Price\ Index}{Import\ Price\ Index} \times 100$$

- An *improvement* in a nation's terms of trade requires that the prices of its exports rise relative to the prices of its imports over the given time period.
- A smaller quantity of export goods sold abroad is required to obtain a given quantity of imports. Conversely, a *deterioration* in a nation's terms of trade is due to a rise in its import prices relative to its export prices over a time period.

Commodity Terms of Trade, 2008 (2000 = 100)

Country	Export Price Index	Import Price Index	Terms of Trade
Australia	273	149	183
Canada	185	146	127
United States	167	147	114
Denmark	189	182	104
Switzerland	194	194	100
Germany	174	192	91
China	102	159	64
Japan	103	182	57

Factors Influencing terms of trade

1. Elasticity of Demand
2. Elasticity of Supply
3. Nature of Goods
4. Economic Development
5. Rate of Exchange
6. Tariff Policy
7. Size of Population
8. Size of Country
9. Degree of Competition

Types of terms of trade

Based on commodities exchange:

- Net Barter Terms of Trade
- Gross Barter Terms of Trade
- Income Terms of Trade

Based on productive resources exchange:

- Single factorial Terms of Trade
- Double Factorial Terms of Trade

Based on gains from trade in terms of Utility analysis

- Real Cost Terms of Trade
- Utility Terms of Trade

Net Barter Terms of Trade:

- Net Barter Terms of Trade also called commodity Terms of Trade is defined as a ratio of export prices to import prices.
- In symbolic terms: NBTT= P_x/P_m

Where;

- NBTT stands for net barter terms of trade.
- P_x stands for price of exports (x)
- P_m stands for price of imports (m)
- If $P_x > P_m$: favourable terms of trade
- If $P_x < P_m$: unfavourable terms of trade

- Measure the changes in terms of trade over a period, the formula is:
- NBTT= $Px_1/Pm_1:Px_0/Pm_0$
- Where, 1 and 0 stands for current year and base year respectively.
- The base year price index of imports and exports will be always equal to 100 i.e., Px_0/Pm_0 =100/100=1
- If the current price index of exports (Px_1) is 160 and current price index of imports (Pm_1) is 120, the ToT will be:
- 160/120:100/100=1.33:1

Net Barter Terms of Trade

- Drawbacks:
  - Changes in the composition of trade
  - Changes in the productivity of exports industries
  - Unilateral payments

Gross Barter Terms of Trade:

- Gross Barter Terms of Trade, introduced by Prof. Taussing, is the ratio of physical quantity of import to physical quantity of export.
- Symbolically, GBTT= Q_m/Q_x
- Where,
- Q_m= Total quantity of import
- Q_x= Total quantity of exports
- If $Q_m > Q_x$: unfavourable terms of trade
- If $Q_m < Q_x$: favourable terms of trade
- Measure the changes in terms of trade over a period, the formula is:

  $Qm_1/Qx_1 : Qm_0/Qx_0$
- Where, 1 and 0 stands for current year and base year respectively

Gross Barter Terms of Trade:

- Drawbacks:
  - It takes into account unilateral payments which are unaffected by trade relations among countries.
  - It reflects less price movements than changes in the balance of payments.

Income Terms of Trade

- G.S. Dorrance the concept of income Terms of Trade as an improved version of net barter terms of trade.
- The income terms of trade refer to the ratio between the **value of exports to the import prices**. In other words, income terms of trade are the net terms of trade multiplied by volume of exports.

$$ITT = \frac{P_x Q_x}{P_m} = \left(\frac{P_x}{P_m}\right) Q_x = NBTT.Q_x$$

Income Terms of Trade

- Where, ITT= income terms of trade

  Q_x=Volume of exports

  P_x= Price of exports

  P_m=Price of imports

- The **income terms of trade** (ITT) is an index of the value of exports divided by the unit value (price) of imports—the value of exports measured in **terms** of import goods.

Income Terms of Trade

- **Drawbacks:**
  - The income terms trade only indicates the export-based capacity and not the country's total capacity to import.
  - A change in the income terms of trade need not necessarily reflect the real gains from trade.

Single Factorial Terms of Trade

- Single factor Terms of Trade is calculated by multiplying Net Barter Terms of Trade with productivity index of domestic export sector.
- It measures “how much quantity of imports can be obtained per unit of factor-input used in the production of exportable.”
- $SFTT=NBTT.Z_x$
- Where, SFTT= Single factor term of trade

  Z_x= Export productivity index
- A rise in SFTT implies that a greater quantity of imports can be obtained per unit of factor input used in the production of exportable.

Double Factorial Terms of Trade

- Double Factorial Terms of Trade is calculated by multiplying Net Barter Terms of Trade with the ratio of factor productivity of domestic industry and foreign export industry.

$$DFTT = NBTT.\frac{Z_x}{Z_m}$$

- Where, Z_m=import productivity index
- A rise in DFTT implies that one unit of domestic factor embodied in exports can now be exchanged for more units of the foreign factors embodied in imports.

Real Cost Terms of Trade

- The concept of real cost terms of trade measures the gain from international trade in utility term.
- It is measured by multiplying the single factor Term of Trade by the index of the amount of disutility per unit of productive resources used in producing exports.
- $RCTT=SFTT.R_x$
- Where, R_x= Index of the amount of disutility per unit of productive resources used in producing exports.
- A rise in RCTT indicates that the amount of imports obtained per unit of real cost is greater.

Utility Terms of Trade

- The concept of utility terms of trade is an index of relative utility of imports and domestic commodities foregone to produce exports.
- The utility terms of trade is calculated by multiplying real cost terms of trade with an index of the relative utility of imports as compared with the commodities that could have been produced for internal consumption with those productive factors which are at present used in the production of export goods.
- $UTT=RCTT.U_m=NBTT.Z_x.R_X.U_m$
- Where, U_m=Index of relative utility of imports and domestic commodities foregone to produce exports