THE HECKSCHER-OHLIN SAMUELSON THEORY

Short notes

The H-O-S theorem

"A country exports the good that is produced with an intensive use of the country's relatively abundant factor of production"

Model assumptions

1. 2 countries, 2 factors of production, 2 goods (2x2x2)
2. Country A (B) is capital (labour) abundant:

$$\left(\frac{K}{L}\right)^A > \left(\frac{K}{L}\right)^B \quad o \quad \left(\frac{w}{r}\right)^A > \left(\frac{w}{r}\right)^B$$

3. A and B have the same production function (technology)
   - constant returns to scale
   - diminishing marginal returns to factors of production

Model assumptions

4. Good X (Y) is *capital (labour) intensive*

5. Given all observable wage/rent ratios (w/r) there is no factor intensity reversal

6. Consumers preferences in countries A e B are identical and *homothetic*

   - marginal rate of substitution in consumption is constant

Model assumptions

7. There is perfect competition in both goods and factor markets

8. Factors of production are mobile between sectors in each country but do not move between countries

9. There is international free trade without transportation costs or trade barriers.

There is not factor intensity reversal if isoquant lines intersect just once

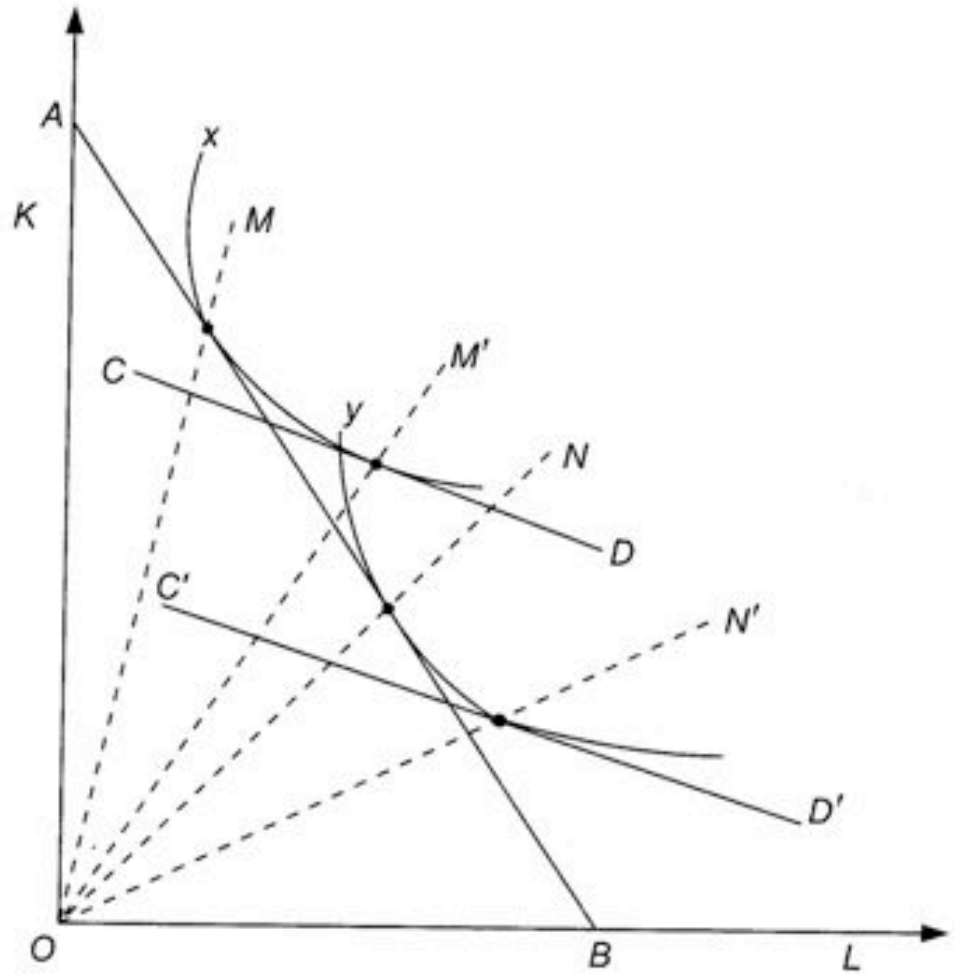


Figure 8.1

Autarkic equilibrium

- When production of good X increases:
  1. demand for K growths more rapidly than its supply
  2. the w/r ratio goes down [r increases, w decreases]
  3. firms substitute labour for capital in production in both X and Y sectors so that

$$\frac{K}{L}X \downarrow \quad \frac{K}{L}Y \downarrow$$

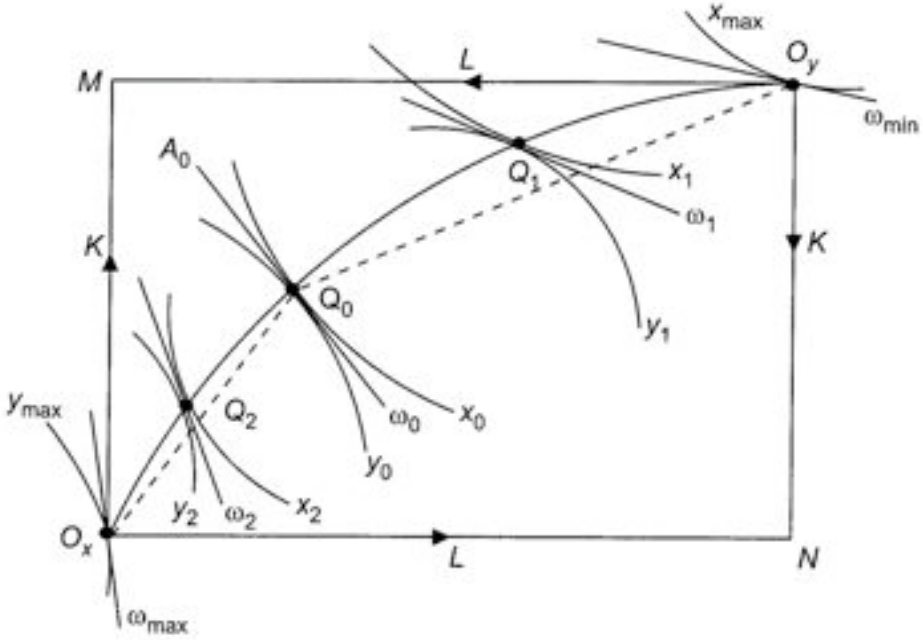
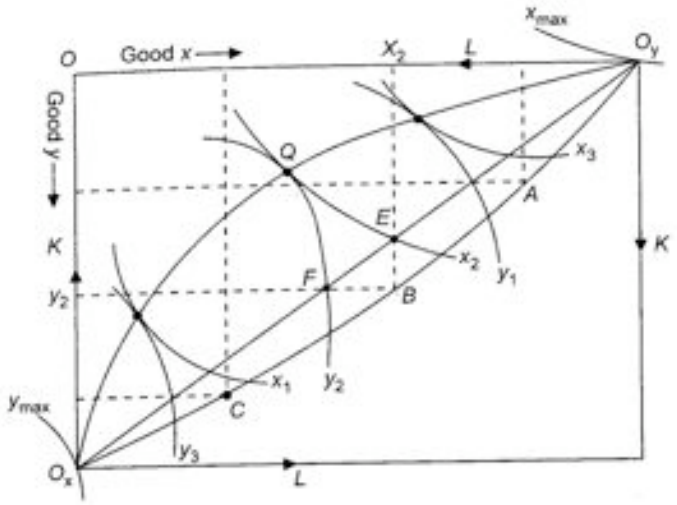
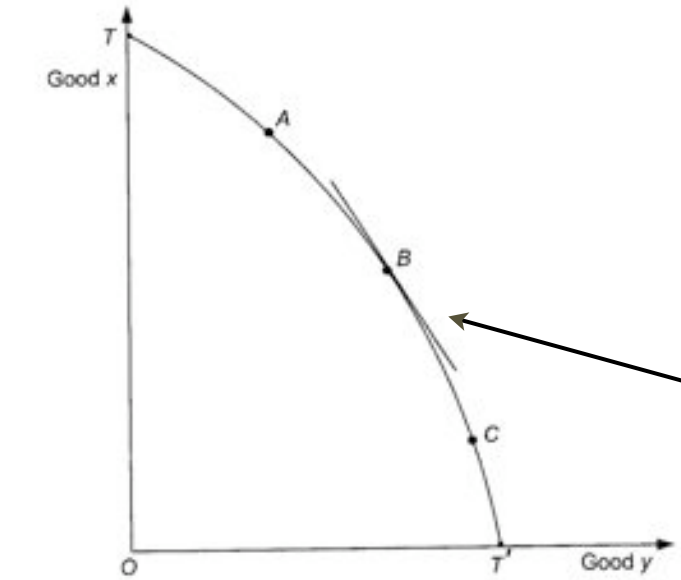


Figure 8.3

From Edgworth box to the production possibility frontier (PPF)



8.4(a)



: 8.4(b)

1. Take point Q on the contract line

2. Take the two tangent isoquants that pass through Q and observe where they intersect the box diagonal

3. The intersections of such isoquant lines with the diagonal represent the same production quantities of equilibrium point Q (i.e: point Q with F or Q with E)

4. Connect x and y coordinates of points E and F in order to get point B

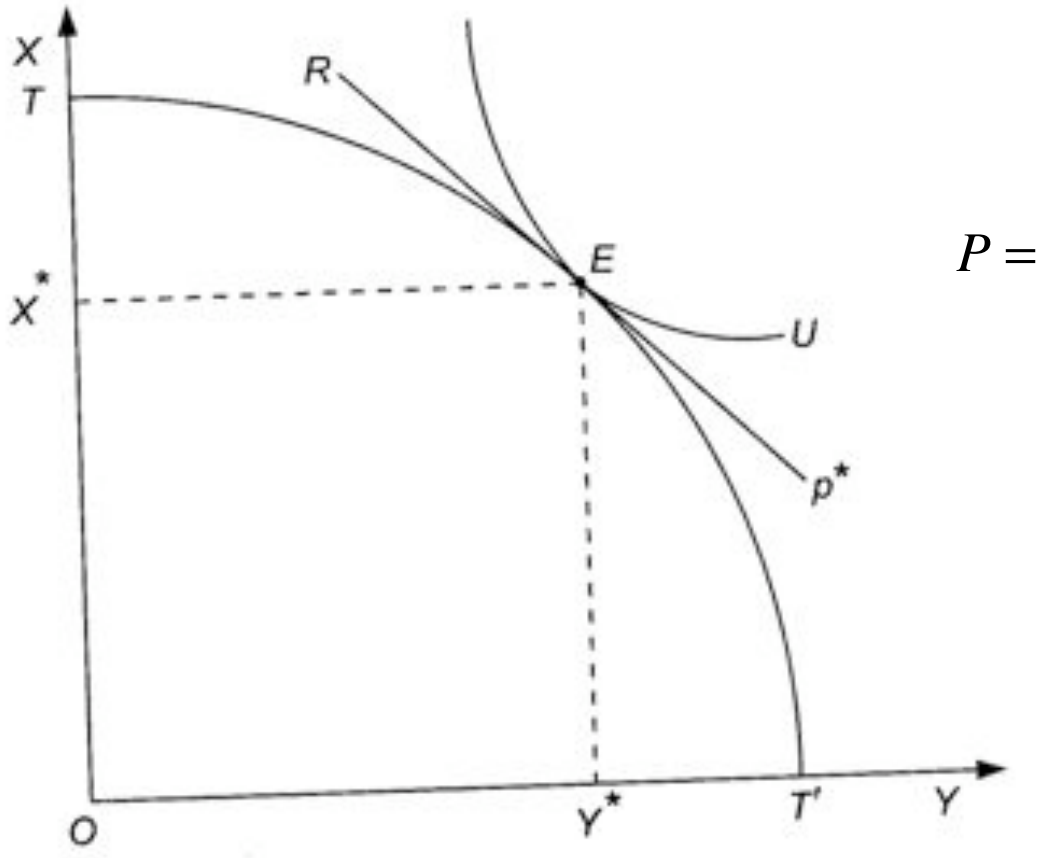
5. Point B is a point of the PPF

6.Repeating steps 1-5 we may get A e C (and so on...)

7. By rotating leftwards the box by 45° we get a line that goes through A, B e C

8. Such a line is the PPF!

Autarkic equilibrium and relative prices



$$P = \frac{P_y}{P_x}$$

Stability of market equilibrium

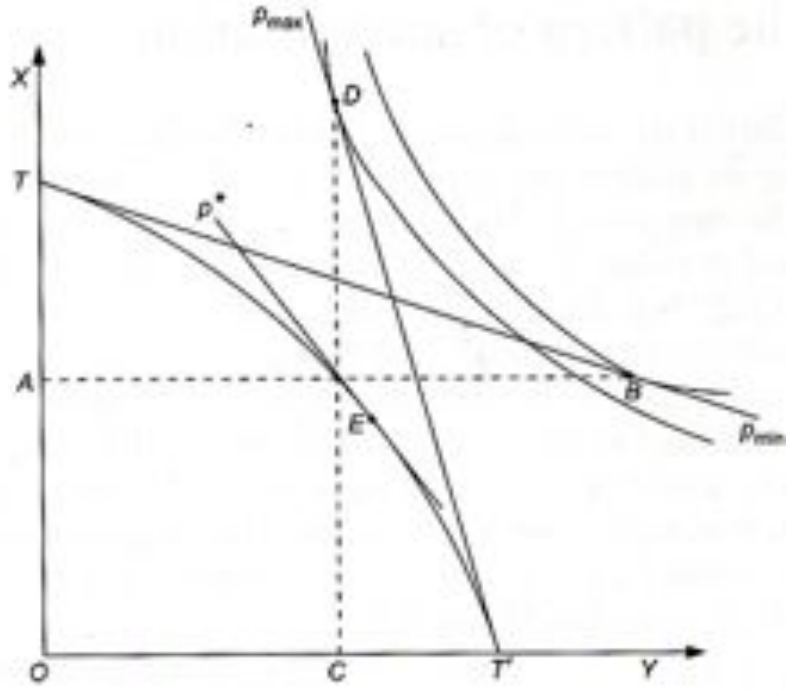
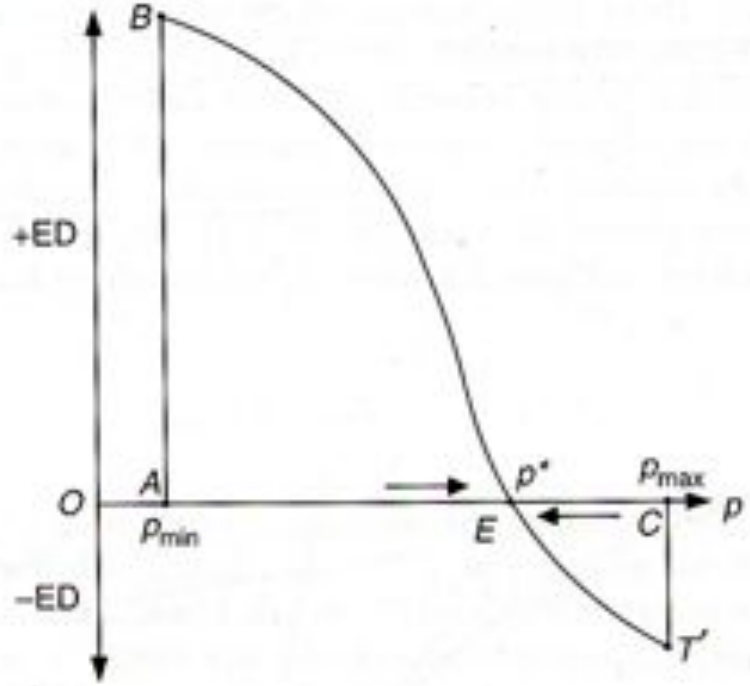


Figure 8.6 (a)



$$P = \frac{P_y}{P_x}$$

Relative price and specialization in production

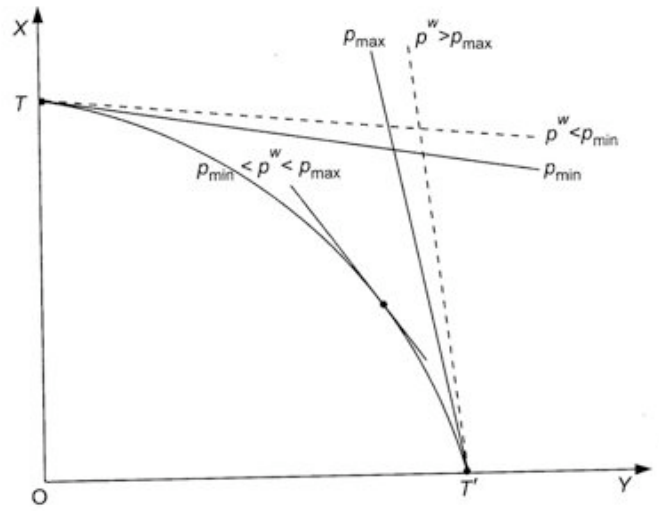


Figure 8.7

$$P = \frac{P_y}{P_x}$$

- If $P^w \leq P_{min}$ a country completely specializes in X production
- If $P^w \geq P_{MAX}$ a country completely specializes in Y production
- If $P_{min} < P^w < P_{MAX}$ a country produces both X and Y

There is a direct link between factor intensity and the wage/rent ratio

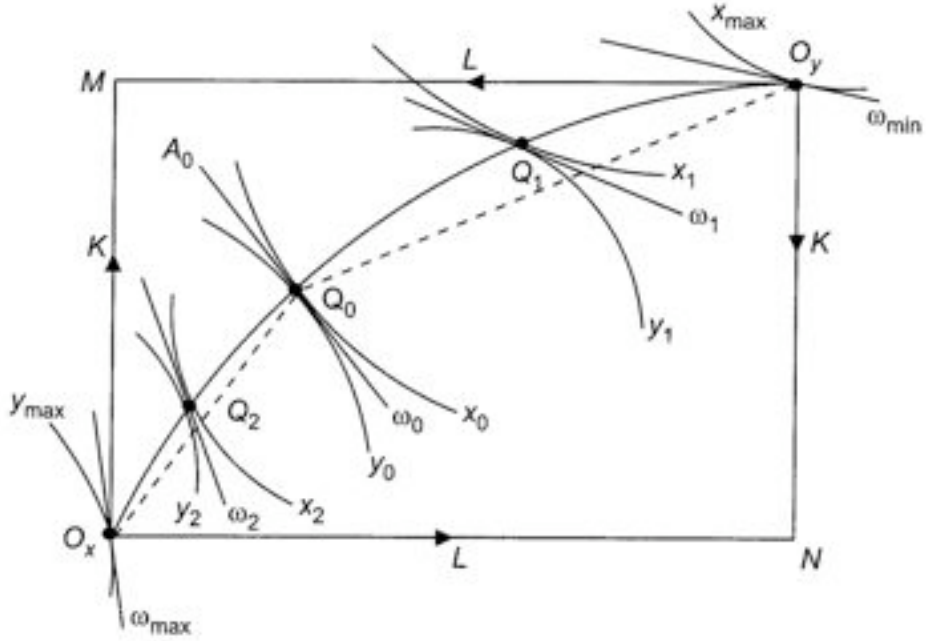
$$\omega = \frac{w}{r} \quad , \quad k = \frac{K}{L}$$

There is a direct link between relative price p and the wage/rent ratio

$$\omega = \frac{w}{r} \quad , \quad p = \frac{P_y}{P_x}$$

The three ratios move together in the same direction

$$p = \frac{P_y}{P_x} \uparrow \quad \rightarrow \quad \omega = \frac{w}{r} \uparrow \quad \rightarrow \quad k = \frac{K}{L} \uparrow$$



gure 8.3

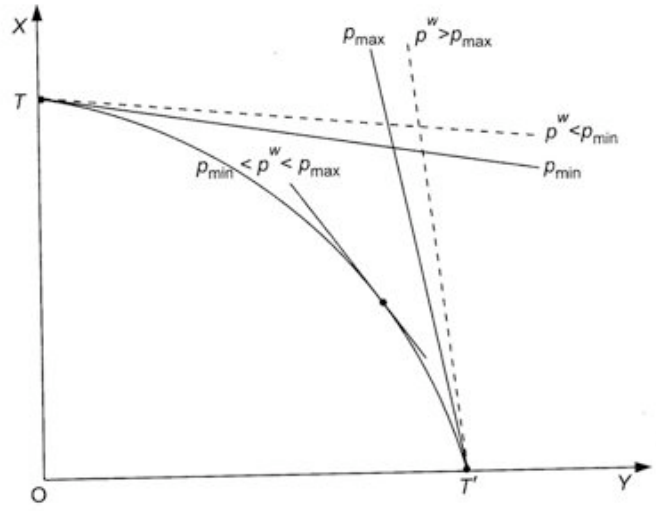
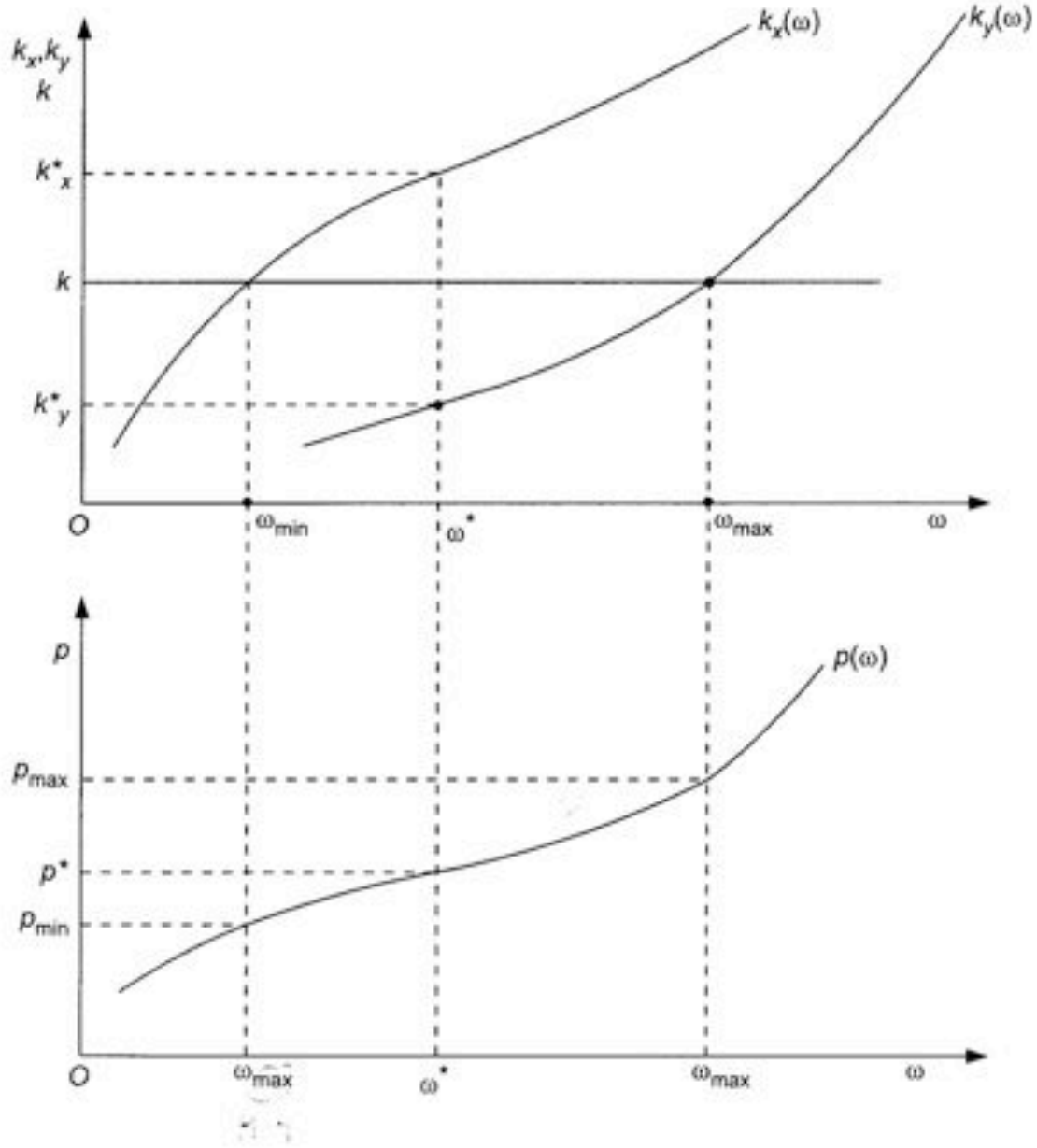


Figure 8.7

$$p = \frac{P_y}{P_x} \uparrow \quad \rightarrow \quad \omega = \frac{w}{r} \uparrow \quad \rightarrow \quad k = \frac{K}{L} \uparrow$$


k_x, k_y
k
$k_x(\omega)$
$k_y(\omega)$
k^*_x
k
k^*_y
O
ω_{min}
ω^*
ω_{max}
ω
p
$p(\omega)$
p_{max}
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O
ω_{max}
ω^*
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Figure 8.8

Consequences of factor intensity reversal

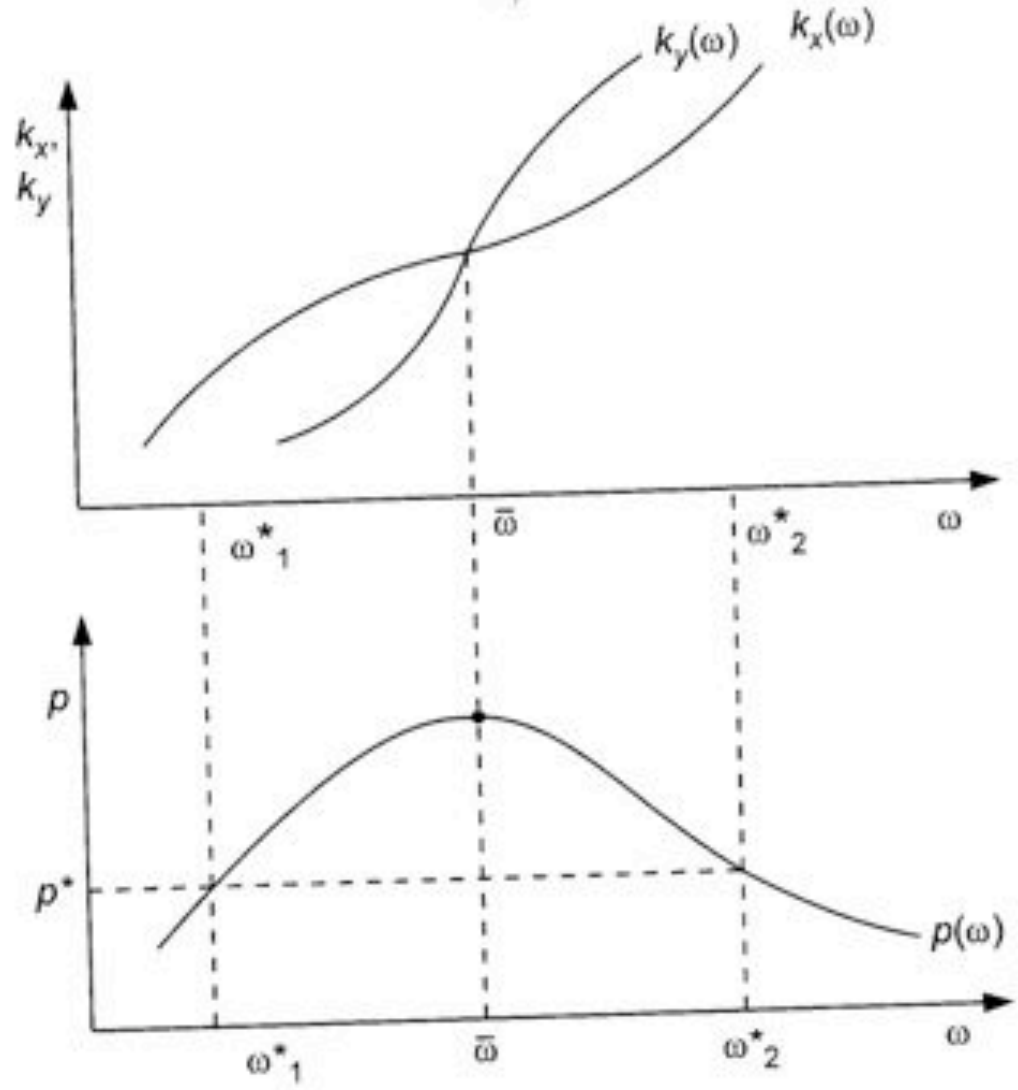
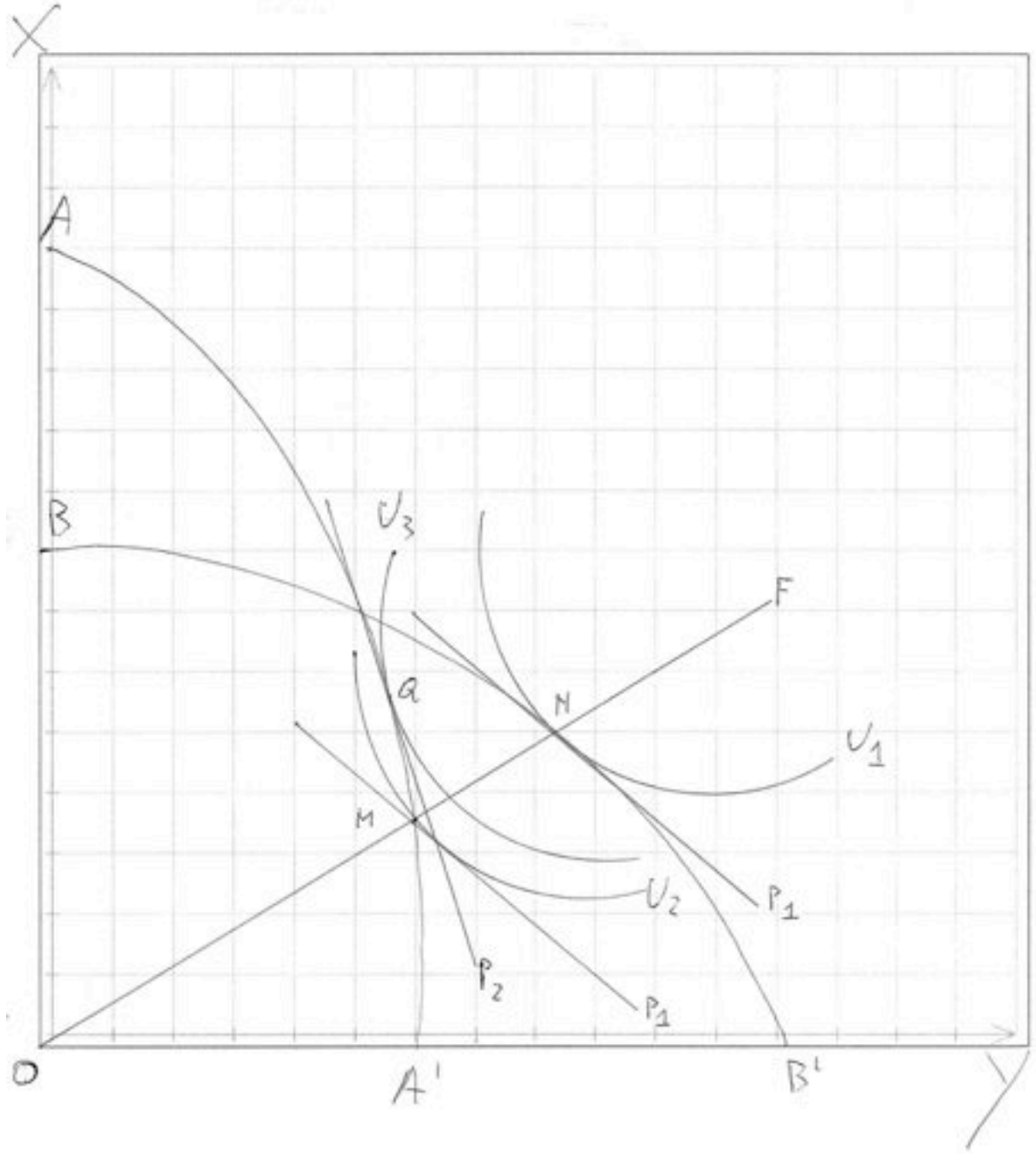
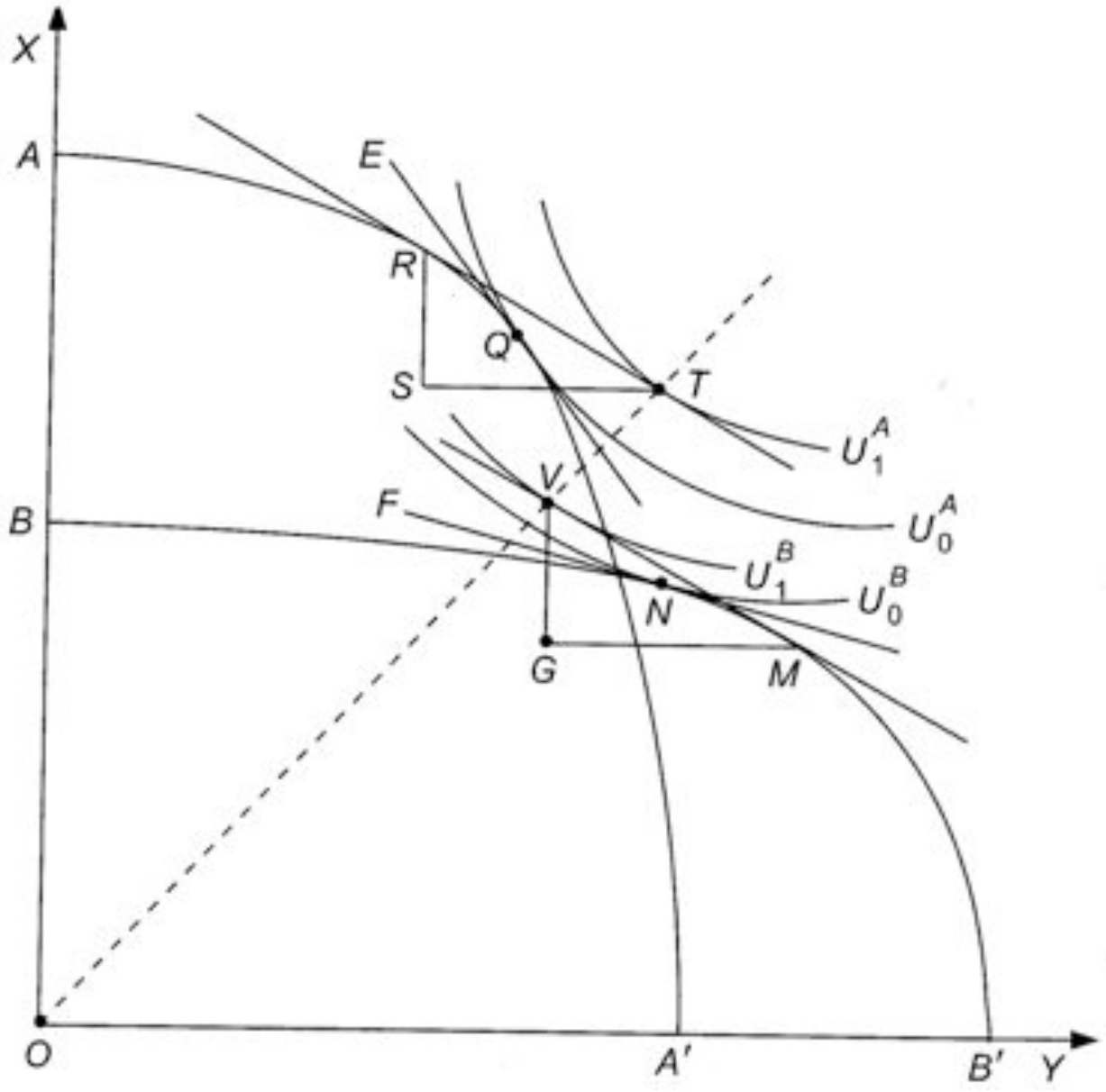


Figure 8.9

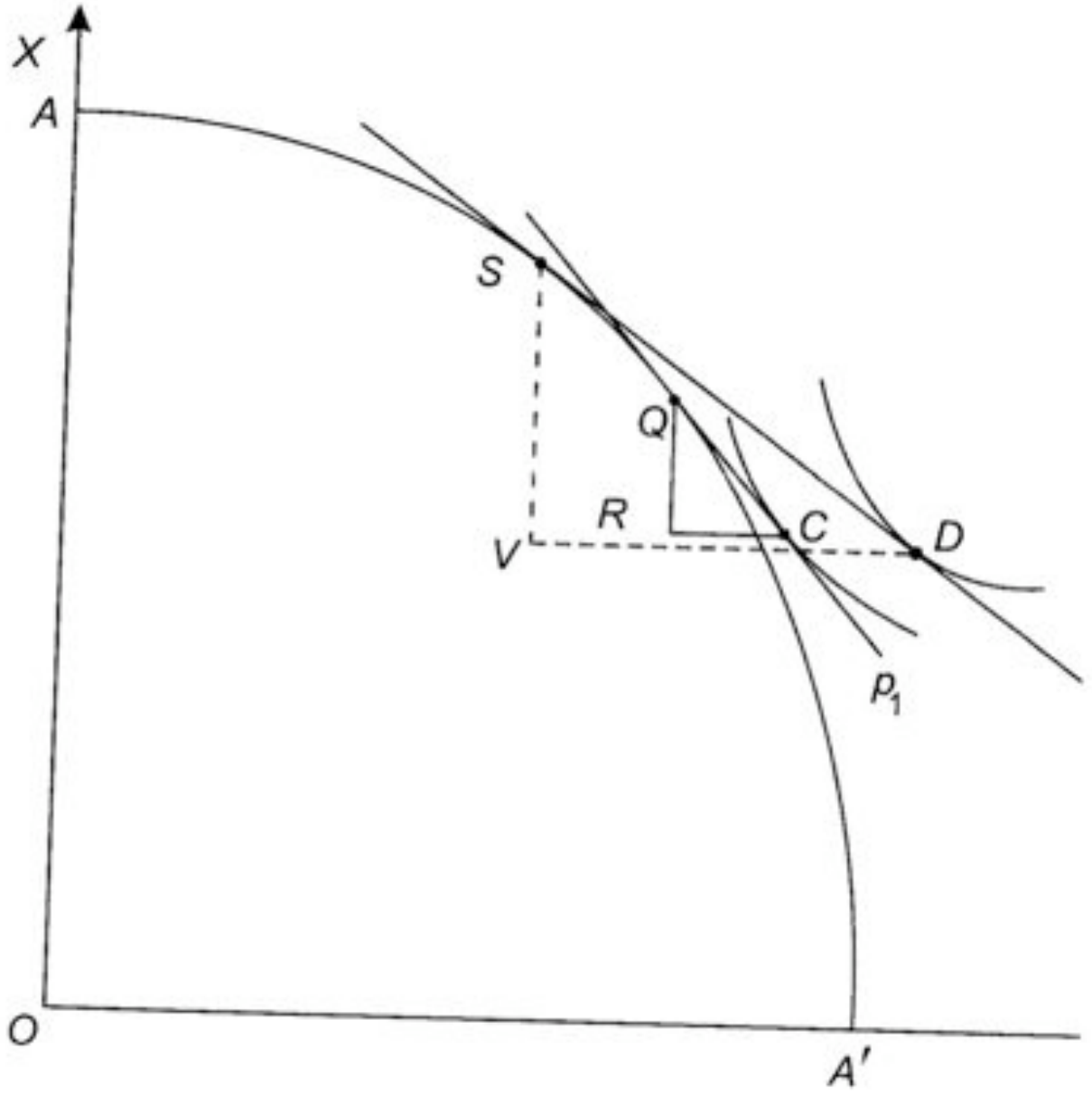
Graphic proof of the Heckscher-Ohlin theorem



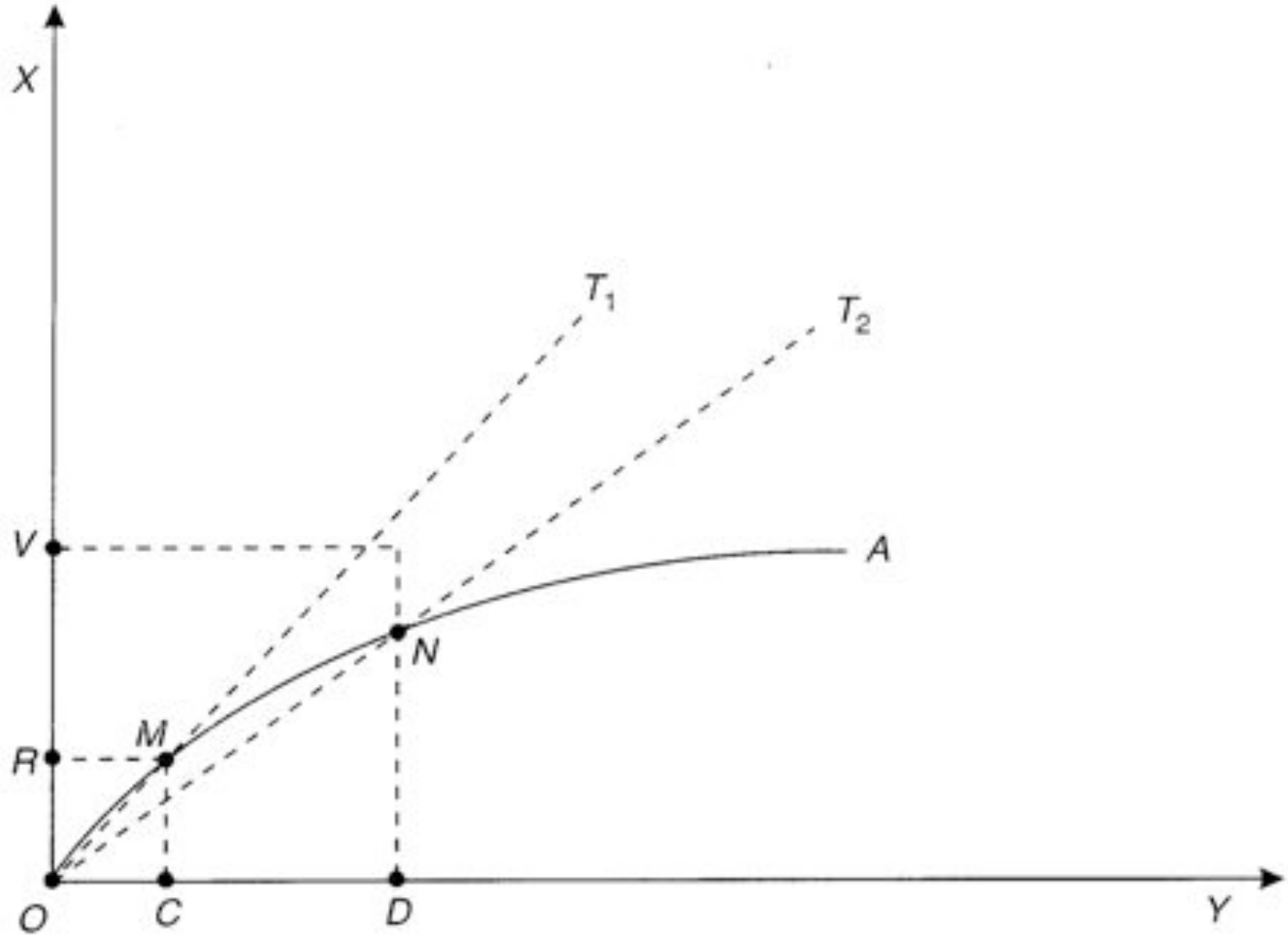
Equilibrium with international trade



Equilibrium terms of trade (international relative price)



Determination of the equilibrium terms of trade



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