

4.1

SOLUTIONS
PROBLEMS CHAP. 4
ECO 3111 TRADE
THE H-O MODEL

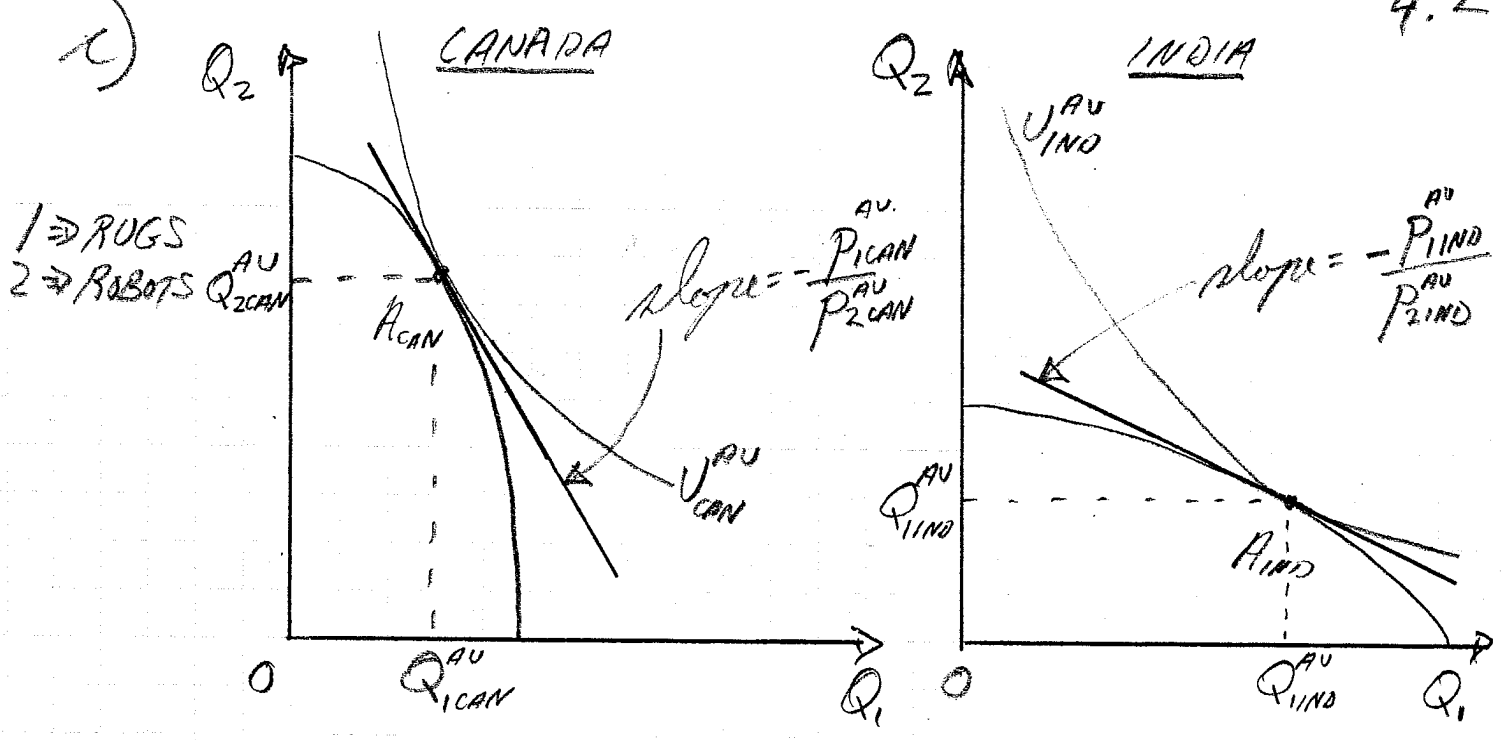
5.1) a) Relative to India, Canada is surely capital-abundant. Indeed, in per-capita terms, Canadian workers have access to a lot more equipment such as roads, bridges, buildings, laboratories, machines, etc, in order to produce goods and services. Formally, we have:

$$\frac{\bar{K}_{CAN}}{\bar{L}_{CAN}} > \frac{\bar{K}_{IND}}{\bar{L}_{IND}}, \text{ where } \bar{K}_i \text{ and } \bar{L}_i \text{ denote the factor endowment in country } i.$$

b) Certainly, the production of handmade rugs is much more labor-intensive than that of assembly-line robots. Robots require a lot of sophisticated tools and computers for their production. Handmade rugs require almost only labor. We thus have

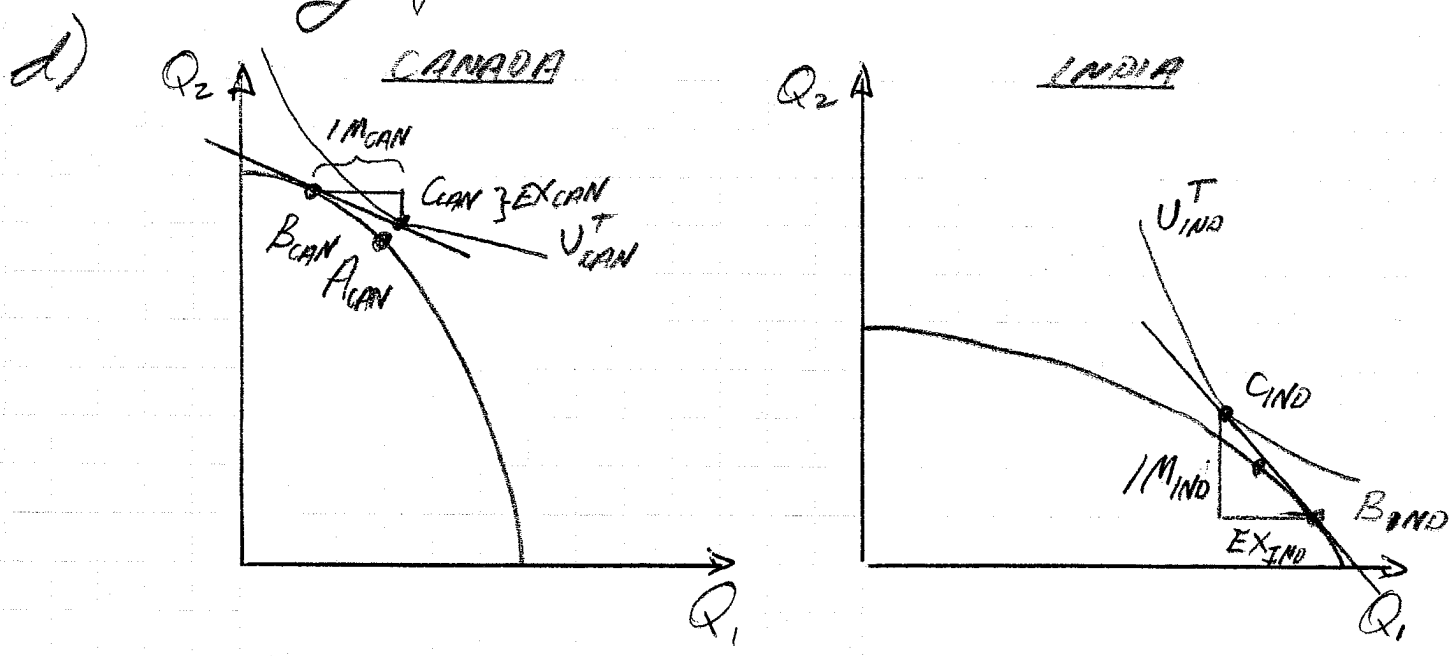
$$\frac{K_{ROBOT}}{L_{ROBOT}} > \frac{K_{RUG}}{L_{RUG}},$$

where K_j and L_j denote the factors used in sector j .



Point A_i is the autarky equil. for country i .

The steeper price slope in Canada implies that rugs are more expensive in terms of robots than in India. Conversely, robots are cheaper in Canada than India in terms of rugs. This suggests that Canada will export robots and import rugs, and conversely for India.



With trade, the slope of the relative price must fall between that of autarky prices, i.e. flatter for Canada and steeper for India.

Canada will thus specialise further into robot production and India into rug production, as illustrated by points B_{CAN} and B_{IND} .

This will allow consumers in each country to reach higher welfare levels under trade, i.e. $U_j^T > U_j^{AU}$ at consumption points C_j .

The trade triangles indicate that Canada will export robots and import rugs. Note that my drawings should have been such that:

$$I_{MIND} = EX_{CAN}$$

$$I_{MCAN} = EX_{IND}$$

The scale is obviously off.

4.2) Leontief's Paradox

4.4

	EXPORTS	IMPORTS
K (\$ millions)	2.55	3.1
L (person-year)	182	170
$\frac{K}{L}$ (\$/person)	14,000	18,200

With 100 person-years per million \$ of exports, the capital-intensity of exports jumps above that of imports, i.e.

$$25,500 \text{ \$/person} > 18,200 \text{ \$/person.}$$

Since the USA is considered a K -abundant country, this result would not contradict the H-O model anymore.

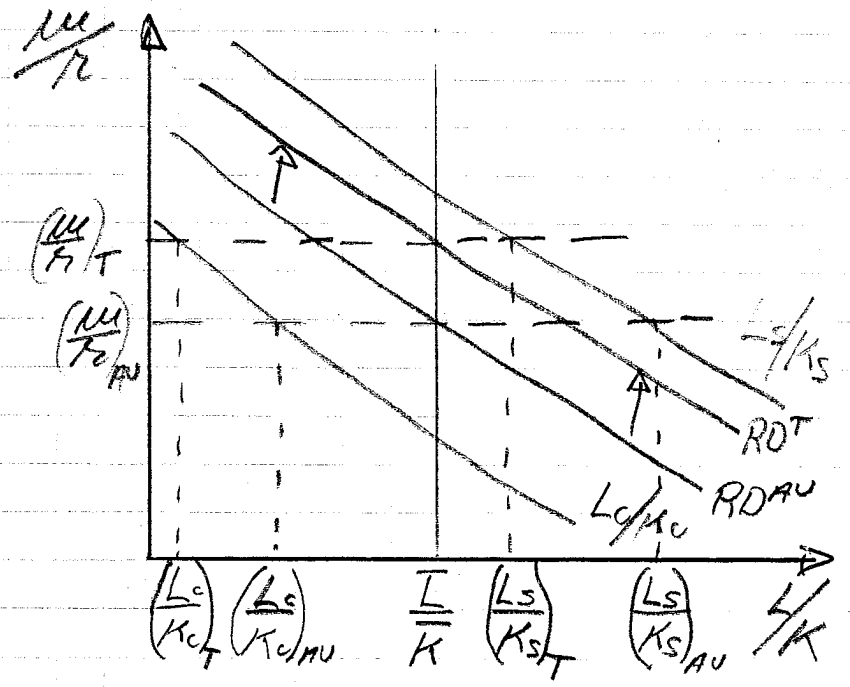
4.5) A trade induces a drop in the relative price of computers in Foreign, then the country will shift resources in order to produce more shoes and less computers. We thus have:

$$\frac{K_C^T}{K} < \frac{K_C^{AU}}{K} \quad \text{and} \quad \frac{K_S^T}{K} > \frac{K_S^{AU}}{K}$$

$$\Rightarrow \frac{L_C}{K_C} \left(\frac{K_C^T}{K} \right) + \frac{L_S}{K_S} \left(\frac{K_S^T}{K} \right) > \frac{L_C}{K_C} \left(\frac{K_C^{AU}}{K} \right) + \frac{L_S}{K_S} \left(\frac{K_S^{AU}}{K} \right)$$

since $\frac{L_S}{K_S} > \frac{L_C}{K_C}$.

Hence, the RD curve shifts up down to L_S/K_S .



A drop in the relative price of computers causes the wage to increase relative to the cost of capital. This is intuitive since the relative price of shoes has

increased and shoe production is assumed labor intensive.

Consistent with the fact that labor is relatively more costly than capital, there is a drop in the labor/capital ratio in both sectors, i.e.

$$\left(\frac{L_c}{K_c}\right)_T < \left(\frac{L_c}{K_c}\right)_{AU} \quad \& \quad \left(\frac{L_s}{K_s}\right)_T < \left(\frac{L_s}{K_s}\right)_{AU}$$

- 5.6) a) According to the H-O theorem, a country will import the good whose production is intensive in the scarce factor. Since automobiles are K -intensive, Russia must be L -abundant.
- b) According to the Stolper-Samuelson theorem, the abundant factor gains from trade in real terms. If Russia is L -abundant, the real wage must increase with trade.
- c) The S-S theorem predicts that the scarce factor will lose from trade. Hence, the real return to K should decrease with trade.
- d) According to the S-S theorem, Russian workers should be in favor of trade while capital owners should oppose trade, given the results in (b) and (c).