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MID-TERM I
ECOSM - TRADE
SOLUTIONS TO LONG QUESTIONS

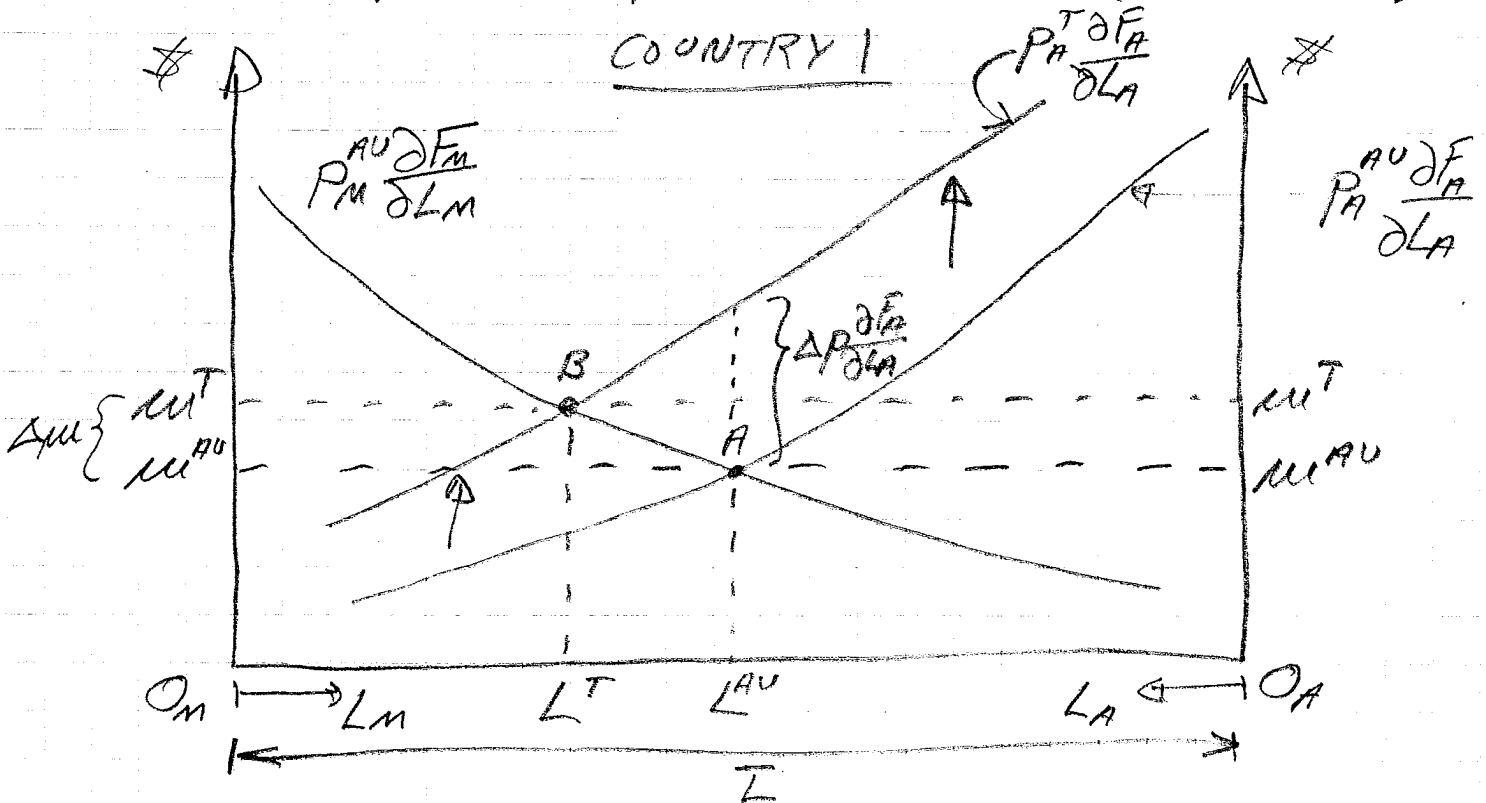
Q1) ASSUMPTIONS:

- 2 goods: Agricultural (A) & Manufactured (M)
- 3 factors: Labor (L), Capital (K), Land (T)
- T is specific to A goods.
- K is specific to M goods.
- L is mobile between sectors.
- 2 countries: 1 & 2
- 1 is land abundant.

Compare autarky with trade for country 1:

Since country 1 is land abundant and land is specific to the production of A-goods, opening to trade will increase the relative price of A-goods in country 1:

$$\frac{P_A^T}{P_M^T} > \frac{P_A^A}{P_M^A} \quad (\text{NB I am using the same notation as used in class.})$$



To simplify, let $\begin{cases} P_{MI}^T = P_{MI}^{AU} \\ P_{AI}^T > P_{AI}^{AU} \end{cases}$

The autarky equilibrium is at point A, with $L_M^{AU} = \overline{O_M L^{AU}}$ & $L_A^{AU} = \overline{O_A L^{AU}}$.

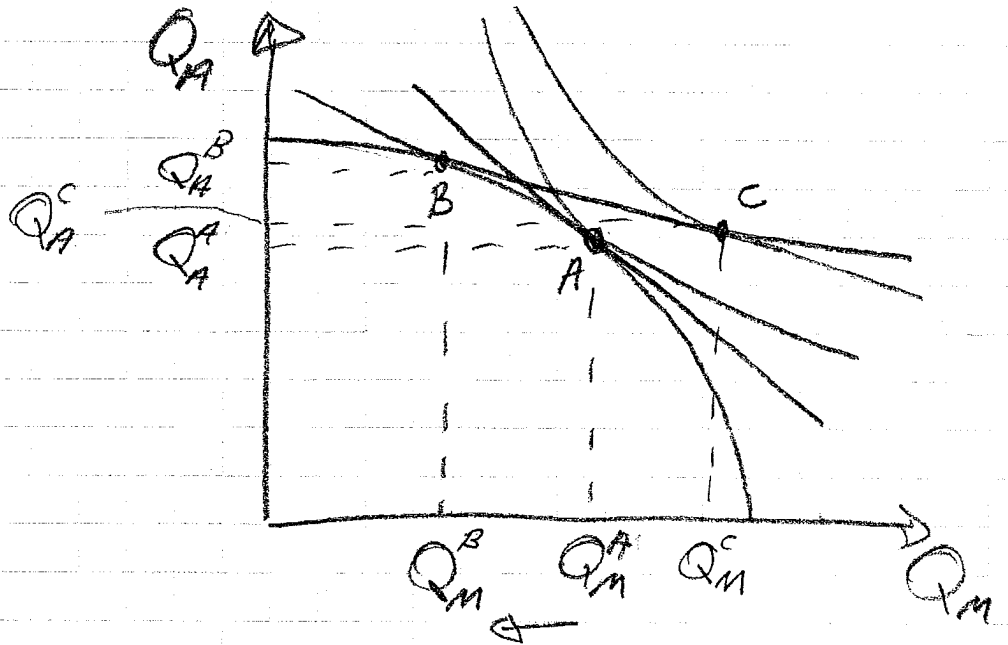
w^{AU} is the nominal wage in autarky.

With trade, the value of the MPL shifts up to $P_A^T \frac{\partial F_A}{\partial L_A}$.

The trade equilibrium is at point B, with $L_M^T = \overline{O_M L^T}$ & $L_A^T = \overline{O_A L^T}$

and w^T is the nominal wage under trade.

We first note that for land abundant country 1, trade increases L_{Q1} and reduces L_{M1} , which means that more of A-goods are being produced and less of M-goods, as represented by the following graph:



EXPORTS = $Q_A^B - Q_A^C$

IMPORTS = $Q_M^C - Q_M^B$

Regarding real wages, we have

$$\frac{\Delta w}{w^{AU}} < \frac{\Delta P}{P_A} \quad (\text{This can be deduced by graphical inspection.})$$

⇒ The real wage decreases in terms of A-goods.

$$\text{However, } \frac{w^T}{P_M} > \frac{w^{AU}}{P_M^{AU}}.$$

⇒ The real wage increases in terms of M-goods.

The net welfare effect of trade on workers is thus ambiguous.

Regarding the returns to land (q), since $L_A^T > L_A^{AU}$, we have $MPT^T > MPT^{AU}$,

$$\Rightarrow \frac{q^T}{P_A} > \frac{q^{AU}}{P_A^{AU}} \quad (\text{since } MPT = \frac{q}{P_A})$$

$$\Rightarrow \frac{q^T}{P_M^T} > \frac{q^{AU}}{P_M^{AU}} \quad (\text{since } q^T > q^{AU} \times \frac{P_M^T}{P_M^{AU}} = q^{AU})$$

Hence, land returns increase in real terms of both goods.

Regarding returns to capital, we have the opposite of land since $L_M^T < L_M^{AU}$.

Q2) a) 2 countries: 1 & 2

2 goods: A & B

Differing relative labor endowments: $\frac{\bar{L}_1}{\bar{K}_1} > \frac{\bar{L}_2}{\bar{K}_2}$

Differing labor intensities in production:

$$\frac{L_A}{K_A} > \frac{L_B}{K_B}$$

Labor & capital are both mobile between sectors A and B.

b) The Heckscher-Ohlin theorem states that a country will export the good for which production is intensive in its abundant factor and import the other.

If Canada imports labor-intensive goods, this would imply that Canada is capital abundant.

c) The Stolper-Samuelson theorem states that if trade increases the price of good A, then the wage will increase if good A is labor-intensive, and conversely for the capital-intensive good.

If Canada imports the labor-intensive good, its price must go down with trade. Hence, the wage must go down also.

d) According to the Stolper-Samuelson theorem, stated above, the real return to capital must go up with trade since the capital-intensive good is being exported, which suggests that its price is increasing.

e) One cannot say that trade is generally undesirable since some groups gain and others lose from trade. Moreover, since there are overall gains from trade, it would be possible to compensate the losers in order to make everyone better off with trade.