

ECONOMICS 243 - 03
INTERNATIONAL TRADE
Spring 2010

Solutions to Problem Set 2
(Due Wed., Feb. 17, 2010)
(10 points in total)

5.
a.

Answer: Rental on land can be calculated as follows:

$$\frac{\Delta R_T}{R_T} = \frac{(\Delta P_A / P_A) \cdot P_A \cdot Q_A - (\Delta W / W) \cdot W \cdot L_A}{R_T \cdot T}$$

$$\frac{\Delta R_T}{R_T} = \frac{10\% \cdot 150 - 5\% \cdot 50\%}{100} = 12.5\%$$

Recalling that the price of manufacturing remained constant, we get the rental on capital as

$$\Delta R_K = \frac{0 \cdot Q_M - \Delta W \cdot L_M}{K}$$

$$\frac{\Delta R_K}{R_K} = \frac{\Delta W}{W} \left(\frac{W \cdot L_M}{R_K \cdot K} \right)$$

$$\frac{\Delta R_K}{R_K} = -5\% \cdot \left(\frac{100}{50} \right) = -10\%.$$

b.

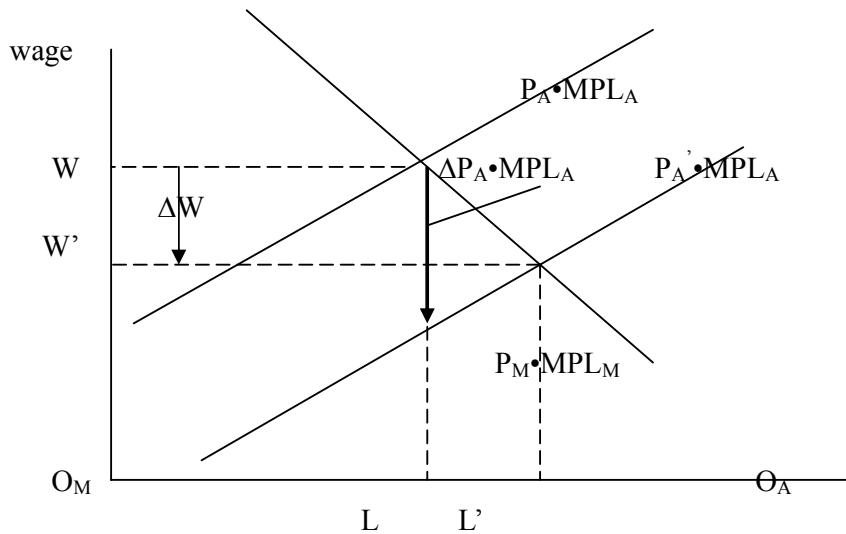
Answer: Because of the 10% increase in the price of agriculture, the real rental on land rose whereas the real rental on capital fell. Therefore, landowners are better off because the percentage increase in the rental on land is greater than the percentage increase in the price of agriculture, whereas the price of manufacture is constant. Capital owners are worse off in terms of their ability to purchase both manufacture and agriculture because the rental to capital has fallen.

$$\underbrace{\Delta R_K / R_K}_{\text{Real rental on capital falls}} < 0 < \underbrace{\Delta W / W}_{\text{Change in the real wage is ambiguous}} < \underbrace{\Delta P_A / P_A}_{\text{Real rental on land rises}} < \underbrace{\Delta R_T / R_T}_{\text{Real rental on land rises}}$$

8.

Answer: It helps to separate this exercise into two parts. The first part is to arrange the percentage changes in wages and good prices. From the following figure we can get that $|\Delta W| < |\Delta P_A \cdot MPL_A|$. Divide both sides by $W = P_A \cdot MPL_A$, we get $|\Delta W/W| < |\Delta P_A/P_A|$. Since both ΔW and ΔP_A are negative, we have

$$\Delta P_A/P_A < \Delta W/W < 0 = \Delta P_M/P_M$$



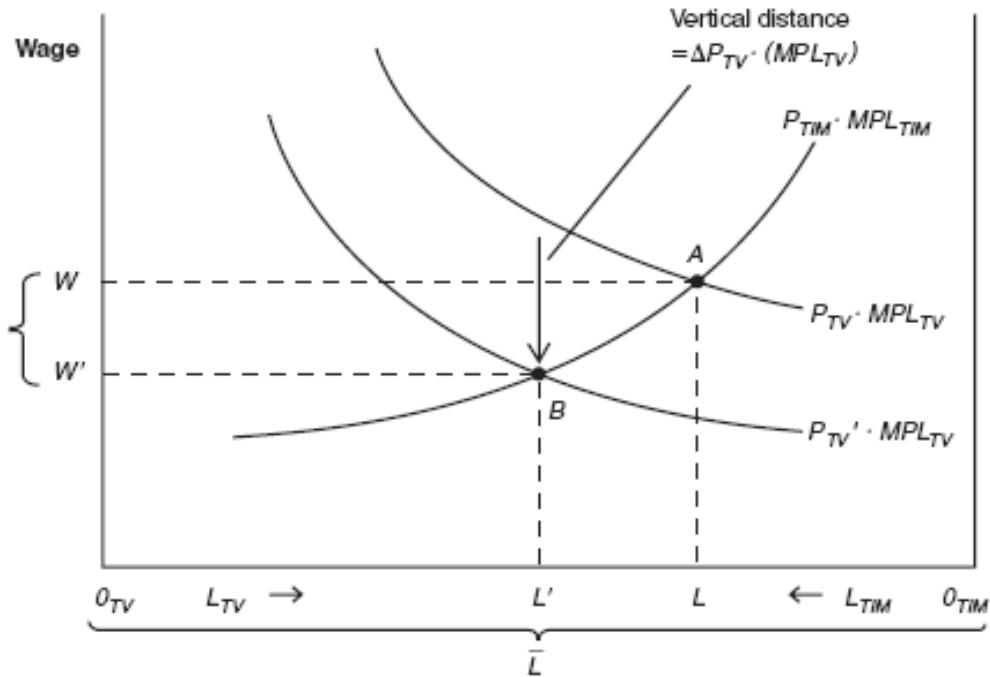
For the second part, adding the percentage changes in specific-factors rental rates. Recall that in this model, although the real return to labor is ambiguous (which means that more agriculture products but fewer manufactured goods can be purchased by labor), the real return to capital and land can both be determined and move in opposite directions. The specific-factors model implies that a decrease in the relative price of an industry leads to a real loss of the factor specific in that industry, and a real gain to the specific factor in the other industry. This means that the percentage change in losses to land is greater than both price changes, and that the percentage change in gains to capital is greater than both price changes. That is to say, fewer of both goods can be purchased by landowners though more of both goods can be purchased by capital owners. Thus we have

$$\Delta R_T/R_T < \Delta P_A/P_A < \Delta W/W < 0 = \Delta P_M/P_M < \Delta R_K/R_K$$

9.

a.

Answer: As shown by the following figure, wage falls but by less than the percentage decrease in the price of television. Thus real wage in terms of television increases, and the real wage in terms of timber decreases.



b.

Answer: Because capital is specific to the television sector, the drop in the relative price of television will lead to a fall in the rental on capital. With Canada exporting timber, rental on land will rise because land is specific to the timber industry.

c.

Answer: Through the exports of televisions, the relative price of televisions will rise in Mexico, which will lead to an increase in the rental on capital. By contrast, the rental on land will fall.

d.

Answer: In both cases, the specific factor in the export industry (i.e., land in Canada and capital in Mexico) gained whereas the factor specified to the import industry (i.e., capital in Canada and land in Mexico) loses when the two countries engage in trade.