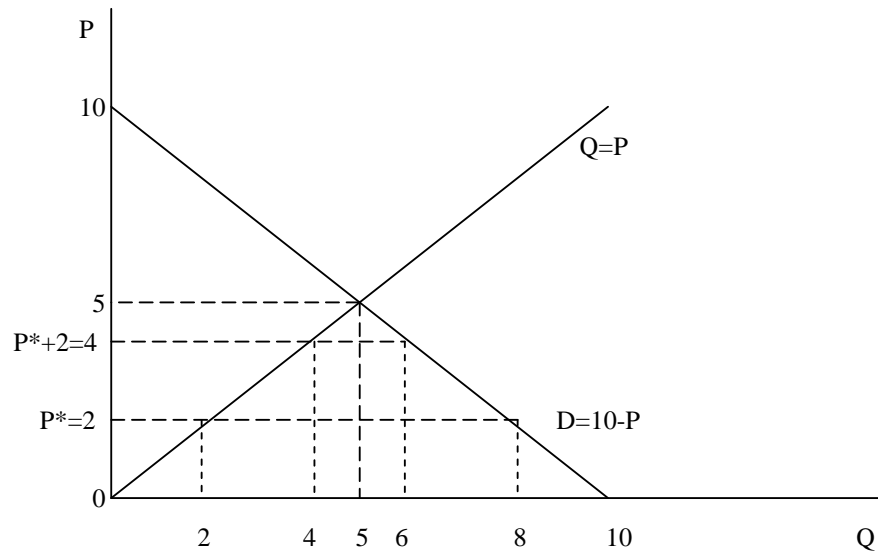


ECONOMICS 243 - 03
INTERNATIONAL TRADE
Spring 2010

Solutions to Problem Set 4
(Due Mon., March 29, 2010)
(10 points in total)

1.



(1) In autarky, $Q = D$, which implies that $P = 10 - P$, and hence $P = 5$

Thus $D = 10 - P = 5$, $Q = P = 5$

Consumer Surplus (CS) = $(1/2) * 5 * (10 - 5) = 12.5$

Producer Surplus (PS) = $(1/2) * 5 * 5 = 12.5$

Total Welfare = $CS + PS = 12.5 + 12.5 = 25$

(2) In free trade, $P = P^* = 2$

Thus $D = 10 - P = 8$, $Q = P = 2$

$CS = (1/2) * 8 * (10 - 2) = 32$, $PS = (1/2) * 2 * 2 = 2$

Total Welfare = $CS + PS = 32 + 2 = 34$

(3) Given $P^* = 2$ and specific tariff $t=2$, $P = P^* + t = 2 + 2 = 4$

Thus $D = 10 - P = 6$, $Q = P = 4$

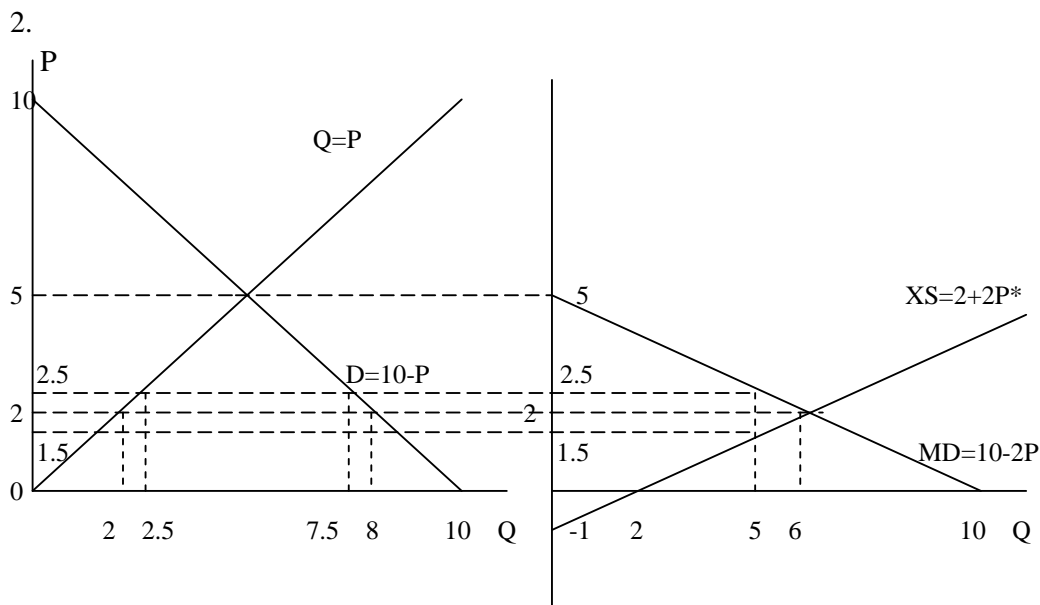
$CS = (1/2) * 6 * (10 - 4) = 18$, $PS = (1/2) * 4 * 4 = 8$

Tariff Revenue (TR) = $t * (D - Q) = 2 * (6 - 4) = 4$

Total Welfare = $CS + PS + TR = 18 + 8 + 4 = 30$

(4) Free trade (34) > Tariff (30) > Autarky (25)

Efficiency loss = $[(1/2) * (4 - 2) * (4 - 2)] * 2 = 4$



(1) Home import demand curve: $MD = D - Q = (10 - P) - P = 10 - 2P$. See the figure above.

(2) In free trade: $MD = XS$, that is, $10 - 2P = 2 + 2P^*$

On the other hand, $P = P^*$

Combining these two equations, we get: $P = P^* = 2$, $MD = XS = 6$

Thus $D = 10 - P = 8$, $Q = P = 2$

$CS = (1/2) * 8 * (10 - 2) = 32$, $PS = (1/2) * 2 * 2 = 2$

Total Welfare = $CS + PS = 32 + 2 = 34$

(3) Given $XS = 2 + 2P$, $MD = 10 - 2P$, and $t = 1$,

$P = 2 + 0.5 = 2.5$, $P^* = 2 - 0.5 = 1.5$.

(Note: In this special case the tariff is divided half-half between domestic consumers and foreign exporters, because the XS supply curve has slope 2, the MD demand curve has slope -2 , and thus they are symmetric around the horizontal line $P=2$. If they are not symmetric, do you know how the tariff will be divided? Think about this!)

Thus $D = 10 - P = 7.5$, $Q = P = 2.5$

$CS = (1/2) * 7.5 * (10 - 2.5) = 28.125$, $PS = (1/2) * 2.5 * 2.5 = 3.125$

$TR = t * (D - Q) = 1 * (7.5 - 2.5) = 5$

Total Welfare = $CS + PS + TR = 28.125 + 3.125 + 5 = 36.25$

(4) Tariff (36.25) > Free trade (34) > Autarky (25)

Efficiency loss = $[(1/2) * (2.5 - 2) * (2.5 - 2)] * 2 = 0.25$

Terms-of-trade gain = $(7.5 - 2.5) * 0.5 = 2.5$

(Note: net gain from tariffs = terms-of-trade gain - efficiency loss = $2.5 - 0.25 = 2.25$, which is also equal to the total welfare with tariff - total welfare in free trade = $36.25 - 34$.)

7.2

a.

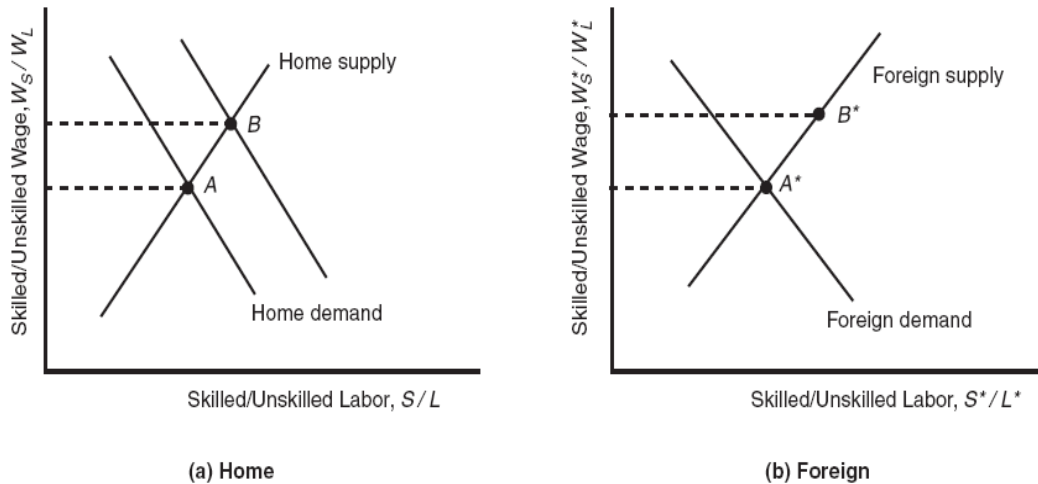
Answer: The high relative wage of Home skilled labor makes skilled-labor-intensive activities more expensive at Home relative to Foreign. Equivalently, the low relative wage of unskilled labor makes unskilled-labor-intensive activities less expensive at Home relative to Foreign. As a result, Home will undertake production activities lower on the value chain while outsourcing higher value activities to Foreign.

b.

Answer: A uniform increase in the tariff level causes fewer activities to be outsourced. The slicing of the value chain reflects this increased cost as a rightward shift; Home expands the set of activities that it does at Home to include incrementally higher value activities, whereas the set of high value outsourced activities shrinks.

c.

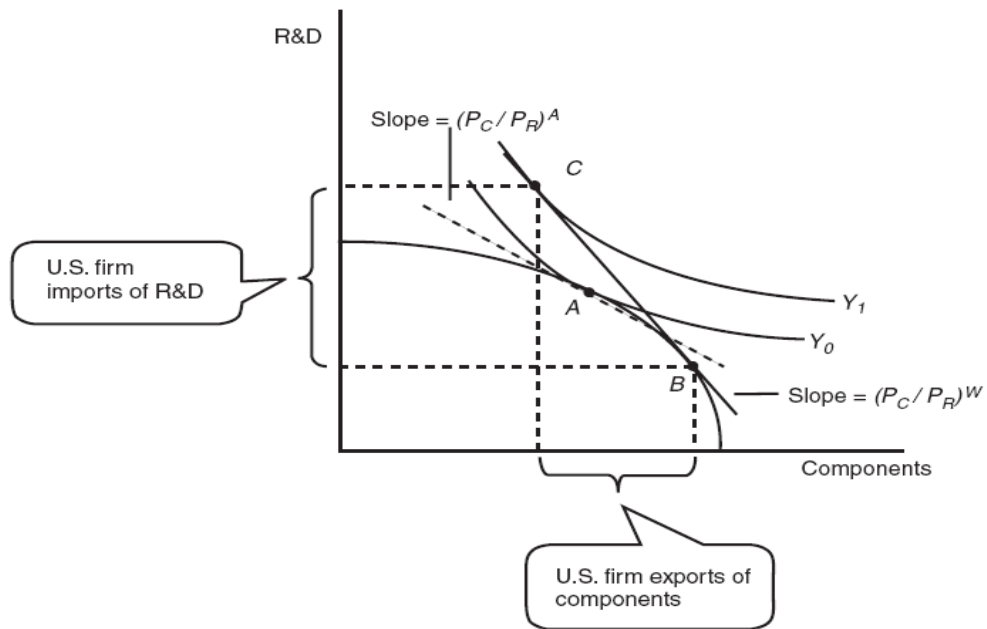
Answer: An expansion in the set of production activities done at Home (to include higher value ones) increases the average skill intensity of Home production. This increases the relative demand for skilled labor at Home. Similarly, because Foreign ceases to do its least skill-intensive activities, the average skill-intensity in Foreign increases and hence the relative demand for skilled labor increases. See the following figure.



7.3.

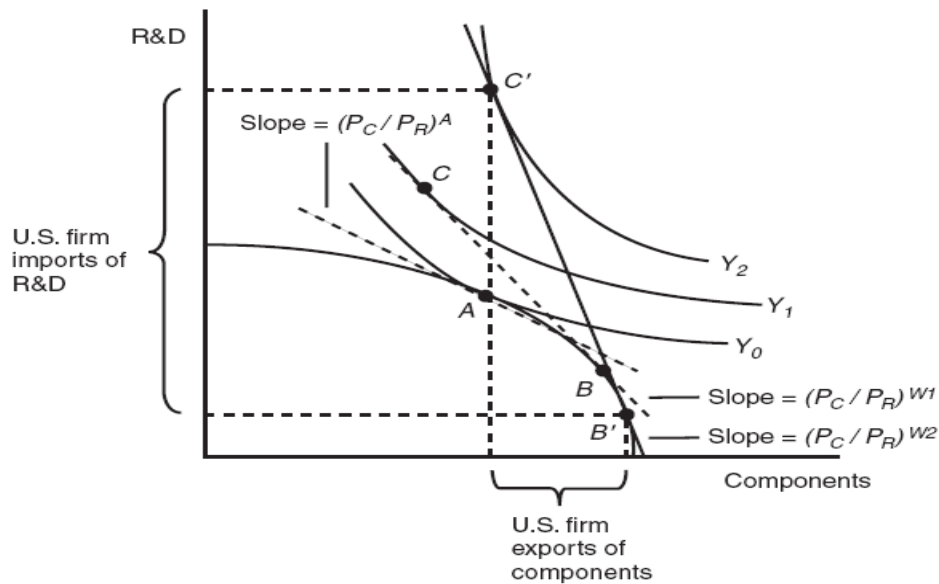
a.

Answer: See the following figure, where the outsourcing equilibrium is B and C .



b.

Answer: See the following figure, where the new equilibrium is B' and C' .



c.

Answer: Because the United States imports R&D and exports components, a decrease in the relative price of R&D abroad represents an improvement in the U.S. terms of trade; as a result, U.S. output increases to Y_2 so there are gains for the United States.