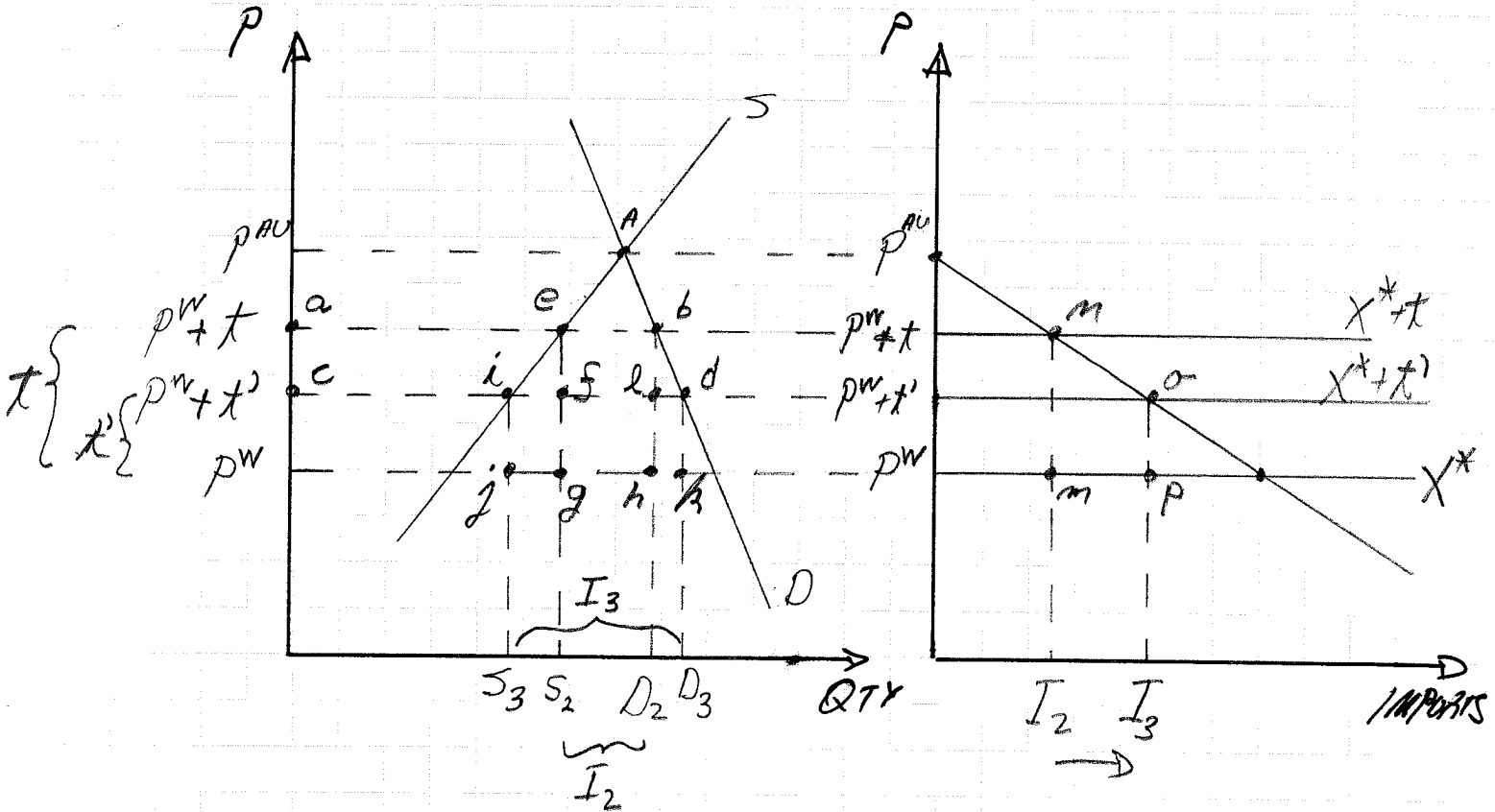


#2) Small country case  
 tariff reduction from  $t$  to  $t' < t$ .



a) The drop in tariff from  $t$  to  $t'$  causes imports to increase from  $I_2$  to  $I_3$ .

The price of goods at Home drops from  $P^W + t$  to  $P^W + t'$ .

b) The tariff drop causes consumption to increase from  $D_2$  to  $D_3$  and a price drop from  $P^W + t$  to  $P^W + t'$ . Consumer surplus thus increases by area  $abcd$ .

Domestic producers see their output reduced by  $S_2 - S_3$  and also

receive a lower price. This causes their surplus to decrease by area  $aeic$ .

With the initial high tariff  $t$ , govt revenues are given by  $t \cdot I_2$ . With the lower tariff, govt revenues become equal to  $t' I_3$ .

Since  $I_3 > I_2$  and  $t' < t$ , we cannot tell a priori whether govt revenues increase or decrease, i.e.

$$gebh \stackrel{?}{=} jidk$$

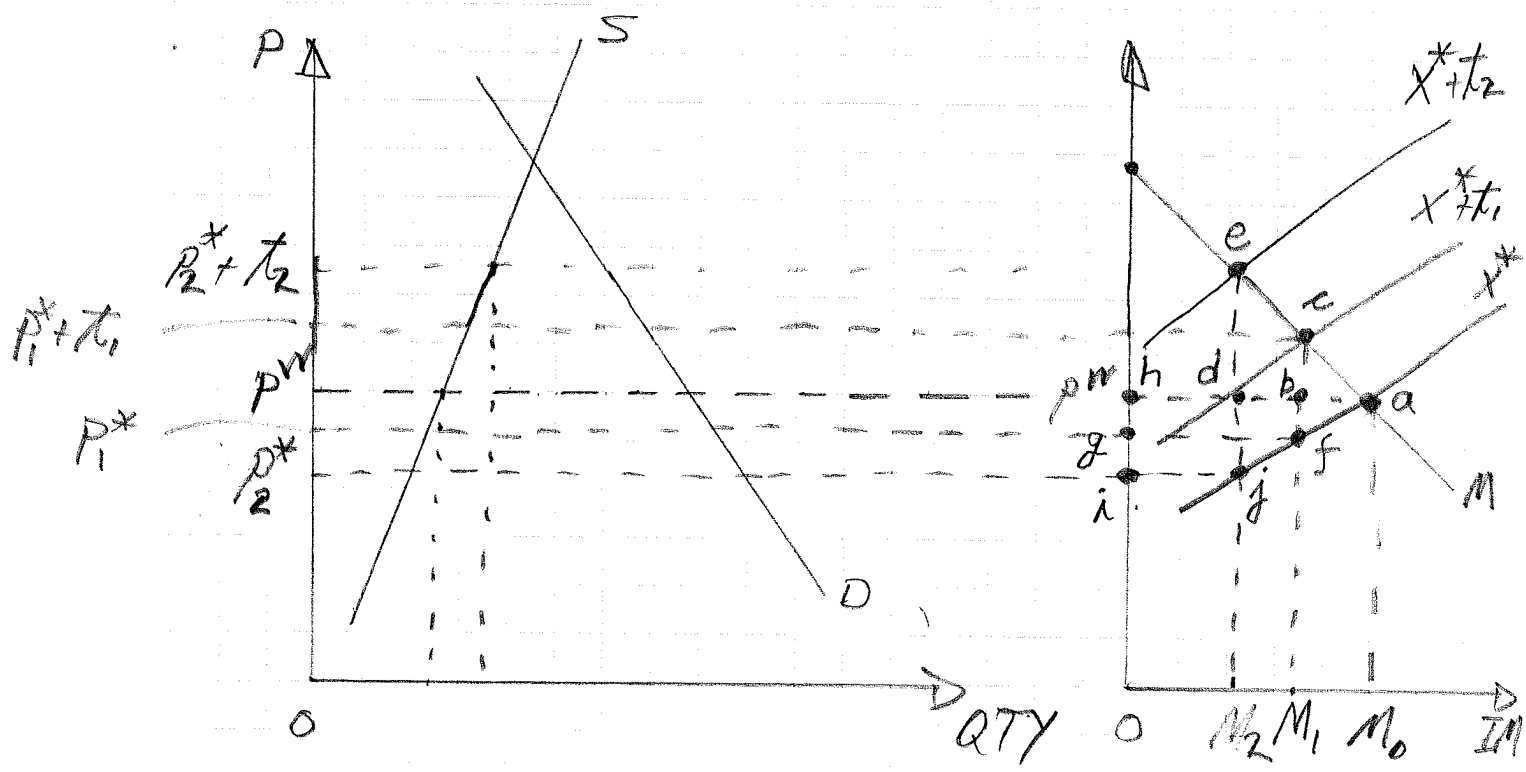
a) The overall change in welfare is given by

$$\begin{aligned}
&+ abdc - aeic + jidk - gebh \\
&= +ief + lbd + jifg + hldk > 0 \\
&= mnop > 0.
\end{aligned}$$

The overall effect of the tariff reduction is to increase welfare.

Note how the drop in govt tariff income  $(t-t')I_2 = febl$  is completely transferred to consumers' surplus.

4) Tariff with a large country.



The DL under tariff  $t_1$  is equal to area  $abc$ . It unambiguously increases to area  $ade$  under the higher tariff  $t_2$ .

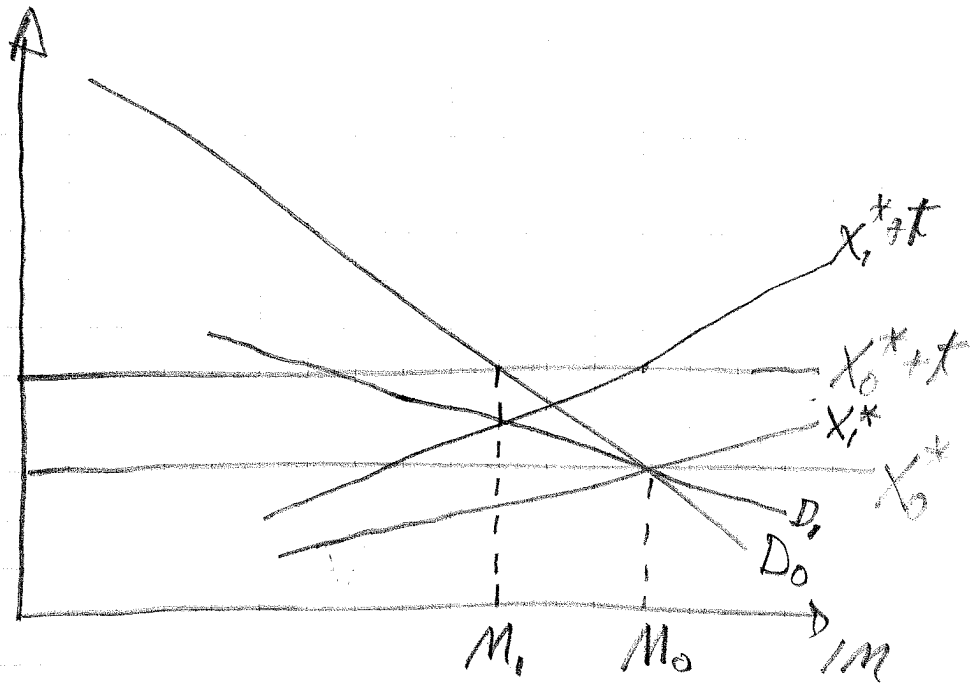
The terms-of-trade gain under tariff  $t_1$  is given by area  $gf bh$  and it is equal to area  $ij dh$  with tariff  $t_2$ . We cannot tell which of the two is larger, i.e.

$$gf bh \stackrel{?}{\approx} ij dh$$

This ambiguity is due to the tradeoff between a higher import price gain and a lower import quantity loss.

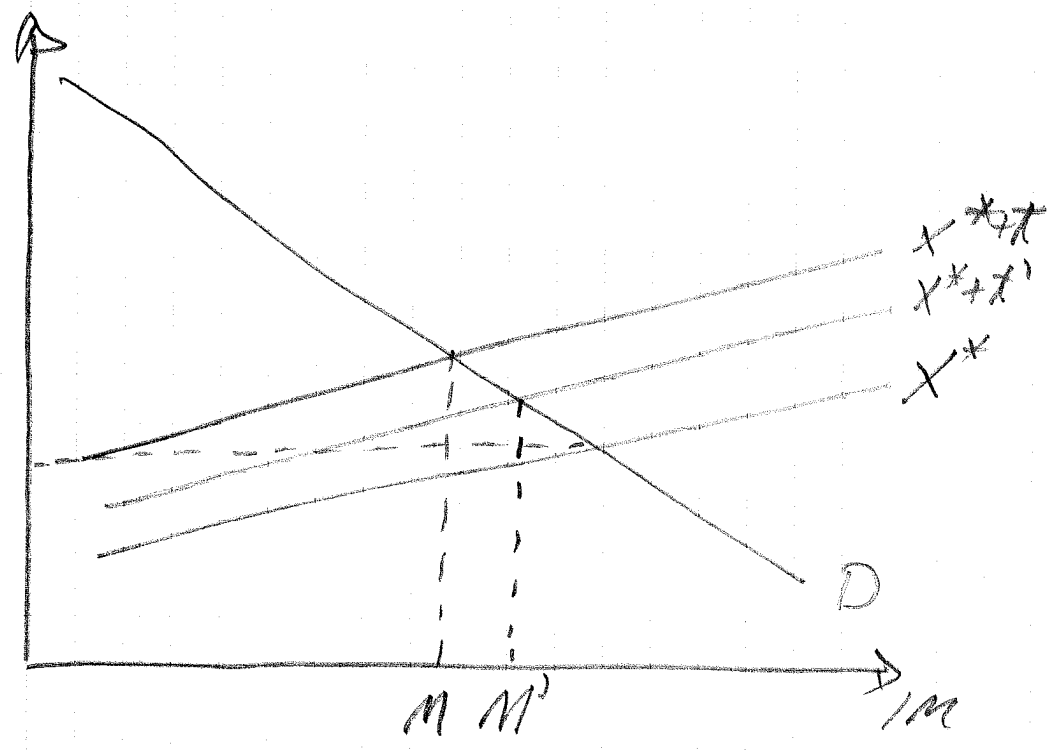
6)

I am having difficulties comparing welfare at  $a)$  and  $b)$  because if one assumes the same import  $M$  under the same tariff  $t$ , then one must assume different demand schedules, as per the following graph:



It does not seem appropriate to make welfare comparisons when the demand schedules are different.

c) (cont'd) large country  
 $M' > M$  and  $t' \neq t$ .



$M' > M \Rightarrow t' < t$ .

The DL is lower under  $t'$  than  $t$ .

It is however a priori not possible to tell under which tariff the terms-of-trade gain is largest.

The welfare comparison is thus again ambiguous.

7) For a small country, quotas are equivalent to tariffs as long as the quota rents are not dissipated or given to foreign exporters. This means that cases (a), (b) and (c) are equivalent in terms of welfare. Note however that income distribution is different. In cases (a) and (b), the govt collects the extra revenues from increased prices. In case (c), it is the Home firms that collect the rents.

Cases (d) and (e) are equivalent in welfare terms and lead to lower welfare than the previous three. In case (d), the quota rents are given to foreign producers while in case (e), they are simply wasted through rent seeking.

11) Trade and tariffs:

a) No trade:  $P^{AU} = 9$ ,  $Q^{AU} = 5$

$$\left. \begin{aligned} CS &= 5 \cdot (14 - 9) / 2 = 12.5 \\ PS &= 5 \cdot (9 - 4) / 2 = 12.5 \end{aligned} \right\} \text{TOTAL} = 25$$

b) free trade:  $P^* = 6$ ,  $D_1 = 8$ ,  $S_1 = 2$

$$\left. \begin{aligned} CS &= 8 \cdot (14 - 6) / 2 = 32 \\ PS &= 2 \cdot (6 - 4) / 2 = 2 \end{aligned} \right\} \text{TOTAL} = 34$$

Home benefits from trade since the total surplus increases by  $34 - 25 = 9$ .

c) trade with a \$2 tariff:

$$P^* + t = 8, \quad D_2 = 6, \quad S_2 = 4$$

$$\left. \begin{aligned} CS &= 6 \cdot (14 - 8) / 2 = 18 \\ PS &= 4 \cdot (8 - 6) / 2 = 4 \\ RG &= t \cdot (D_2 - S_2) = 2(6 - 4) = 4 \end{aligned} \right\} \text{TOTAL} = 26$$

The tariff lowers welfare as compared to free trade, but it is still higher than under autarky.

12) Trade and quotas:

a) The effect on total surplus would be the same as with case c) in question 11. The only difference is with income distribution; in the case of quota licenses, the firms collect the rents instead of the govt.

b) If foreign producers collect the quota rents, then the total surplus is now

$$CS + PS = 18 + 4 = 22.$$

The welfare level is not only lower than under free trade, it is now lower than under autarky!!!