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24-10-2022

Exam name: International Economics (BINBO1129E)

International Economics

Task 1 Hecksher-Ohlin:

1.1

Subscript K marks Kenia and subscript M marks Malaysia

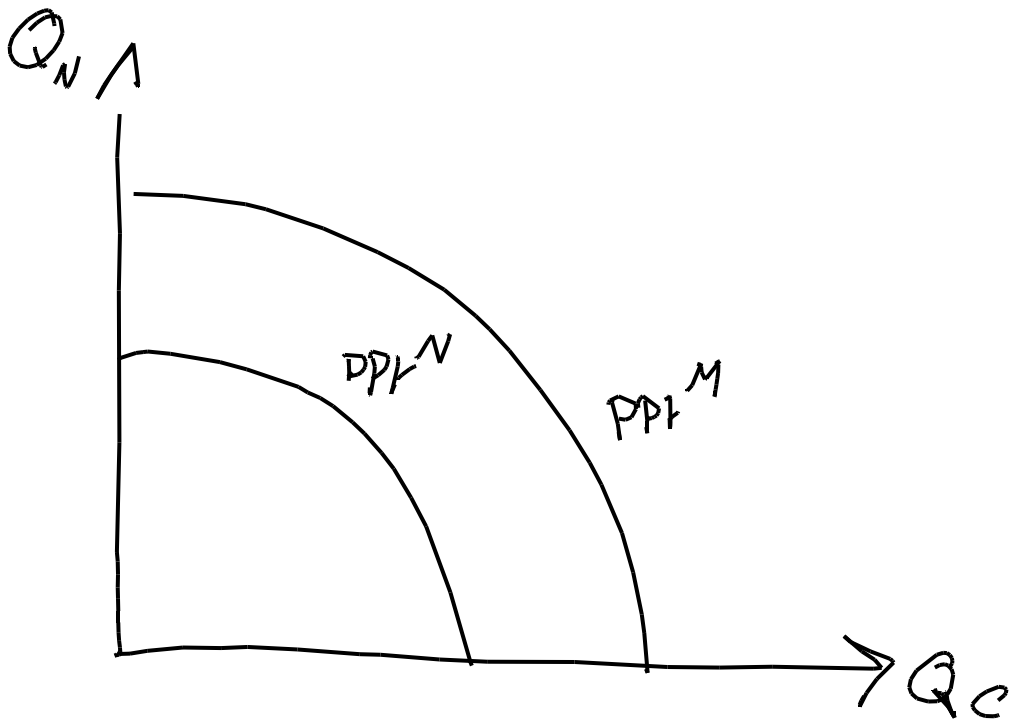
$$\frac{L_K}{K_K} = \frac{25}{5} = 5$$

$$\frac{L_M}{K_M} = \frac{80}{20} = 4$$

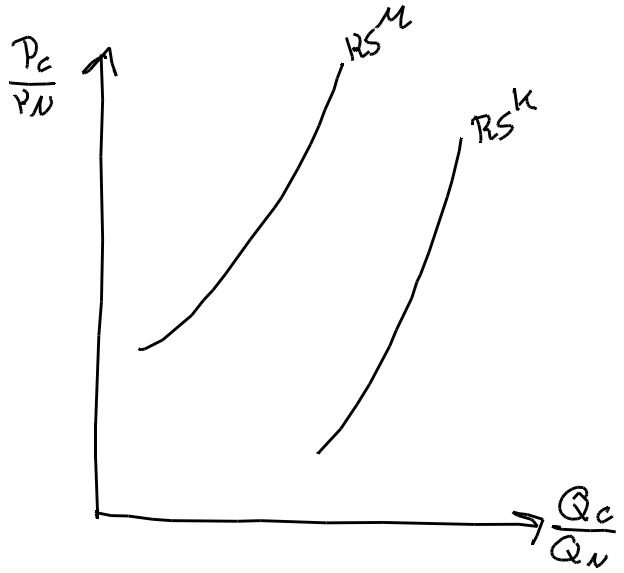
As $\frac{L_K}{K_K} > \frac{L_M}{K_M}$, Kenia is abundant in labor. Conversely, this makes Malaysia abundant in capital.

1.2

As coffee is labor-intensive, this makes Kenia have a comparative advantage in coffee as they are abundant in labor. Conversely, this makes Malaysia have a comparative advantage in nutmeg.

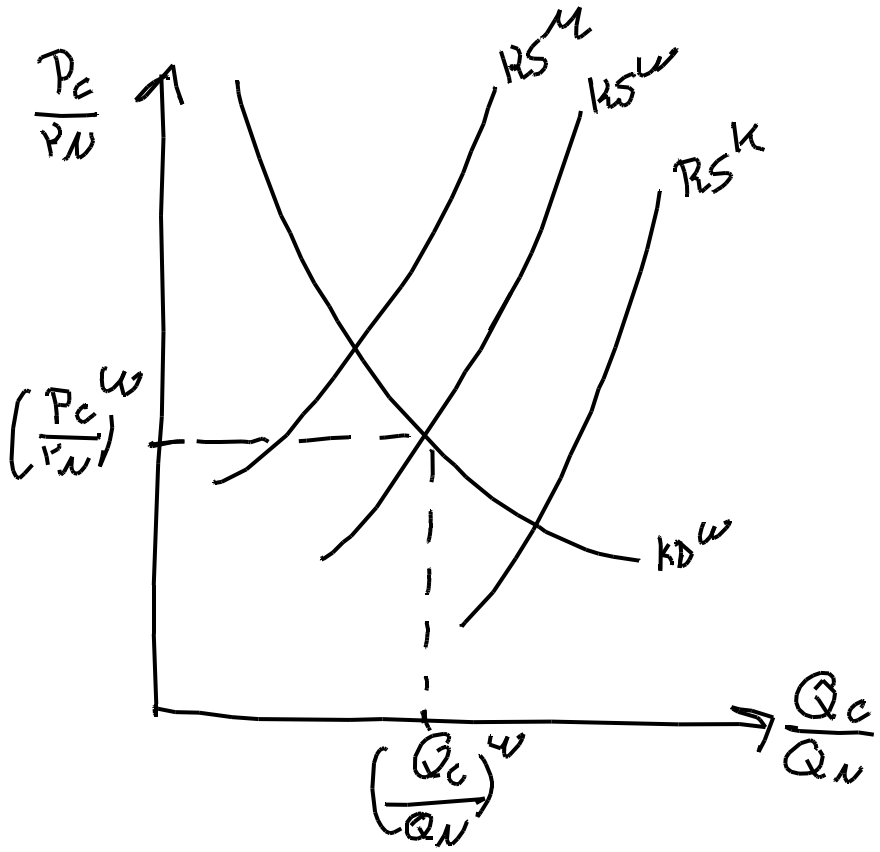


Each production possibility curve is marked by PPF and its corresponding country-initial. As Malaysia has both more capital and more labor its production possibility frontier is placed to the right of Kenia's.



As Kenia is labor abundant and coffee is labor-intensive, Kenia will produce relatively more coffee in terms of nutmeg than Malaysia at any given price. Consequently, Kenia's relative supply curve is placed to the right of Malaysia's.

1.3



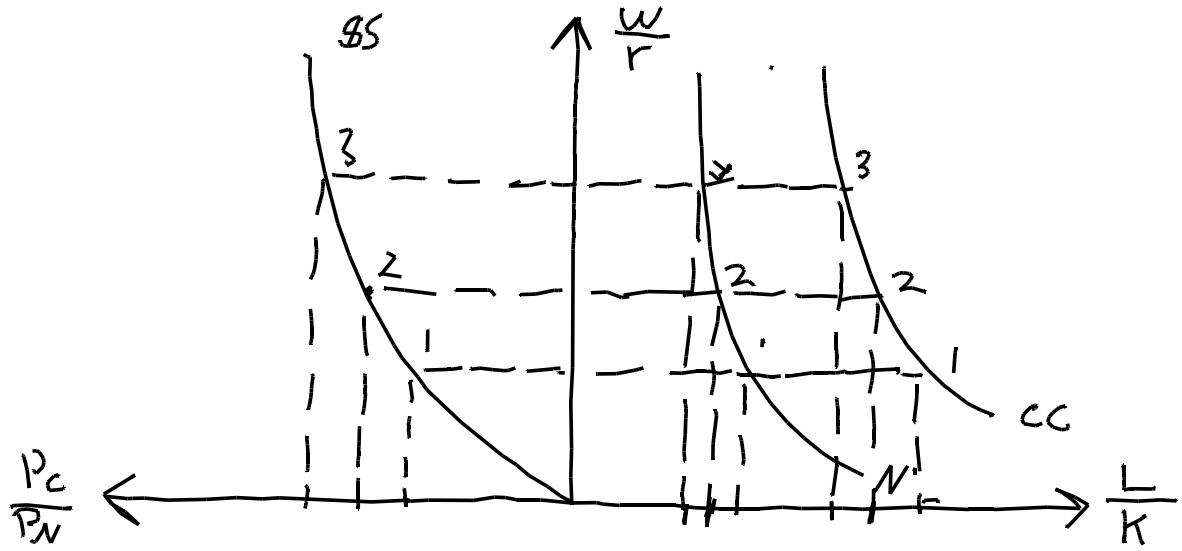
The free-trade equilibrium prices and relative quantities are determined by the intersection of the relative demand-curve for the world and the relative supply curve for the world. The relative supply curve for the world will lie between the two countries' supply curves. As a consequence, the free-

trade relative price will lie between each country's autarky relative prices as Kenia will export coffee and Malaysia will export nutmeg.

$$\left(\frac{P_C}{P_N}\right)^K < \left(\frac{P_C}{P_N}\right)^W < \left(\frac{P_C}{P_N}\right)^M$$
$$\left(\frac{Q_C}{Q_N}\right)^K > \left(\frac{Q_C}{Q_N}\right)^W > \left(\frac{Q_C}{Q_N}\right)^M$$

1.4

Due to the natural limitations of the digital pen, the notations are difficult to correctly load in so each point in point is instead marked by a number.



Point 1 marks Kenia's autarky equilibrium.

Point 2 marks free-trade equilibrium.

Point 3 marks Malaysia's autarky equilibrium.

$$\left(\frac{w}{r}\right)^M > \left(\frac{w}{r}\right)^W > \left(\frac{w}{r}\right)^K$$
$$\left(\frac{P_C}{P_N}\right)^K < \left(\frac{P_C}{P_N}\right)^W < \left(\frac{P_C}{P_N}\right)^M$$

As Kenia has a comparative advantage in the production of coffee, this leads to relatively lower prices of coffee in terms of nutmeg than in Malaysia in autarky. As a consequence of free-trade, the price of coffee in terms of nutmeg increases from Kenia's perspective leading to an increase in the relative wage, as coffee is labor-intensive. As an effect of the increased demand for labor, relatively less labor to capital is employed in both industries in Kenia compared to the autarky equilibrium. The reason for the relatively less labor to capital employed is the increase in the relative wage to rent. This is also called the substitution effect as firms try to cost minimize.

The opposite happens in Malaysia. As the relative price of coffee decreases from autarky to equilibrium, the relative wage decreases leading to relatively more labor being employed in each sector in free-trade equilibrium compared to autarky equilibrium.

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Task 2 Internal increasing returns:

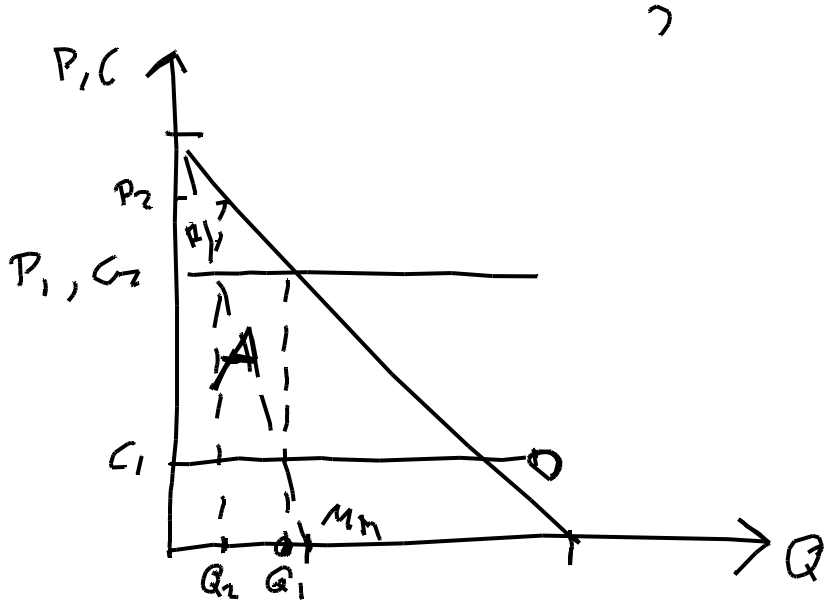
2.1

When going from autarky to trade using the monopolistic-competition model one can illustrate the change by the change in S. As S tells you the size of the market, S will increase when going from autarky to free trade as the number of consumers increases. Consequently, the CC-curve pivots down leading to a lower intercept with the PP-curve → Thus, having a lower price in free trade than in autarky and a larger number of firms $P^A > P^W$ and $n^A < n^W$. As there are more firms in the market and the monopolistic-competition market assumes production differentiation, the consumers will have a larger product variety to choose from.

2.2

Given firm productivity differences in the monopolistic-competition model, going from autarky to trade leads to an improvement of the competitive environment as more competitive firms, lower costs, outcompete the less productive firms. As a result of the intensification of the market, the more productive firms will gain larger market shares, leading to even lower AC as their fixed costs are divided by a larger number of units sold, Q. Resultingly, the less productive firms will lose or even exit their market as they make negative profits. As a result of the trade, consumers will experience much lower prices than in autarky as only the most productive firms are left, as well as the firms reaping larger benefits from their increase in Q associated with the increase in S.

2.3



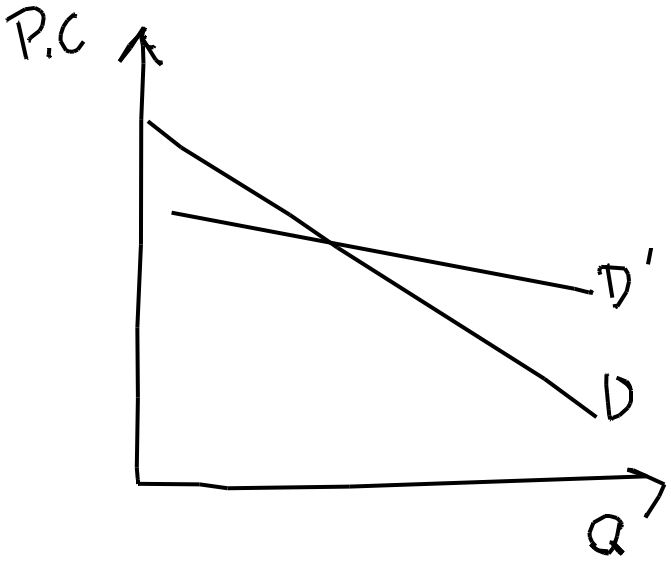
As illustrated by above plot (despite the struggling pen), the firm with the lower marginal cost, market c1 sets its price lower than the firm with the higher marginal cost c2. The more productive firm does not only set a lower price, but also sells a higher quantity as seen by $Q_1 > Q_2$

Area A marks firm 1's operating profit $(P_1 - c_1)Q_1$

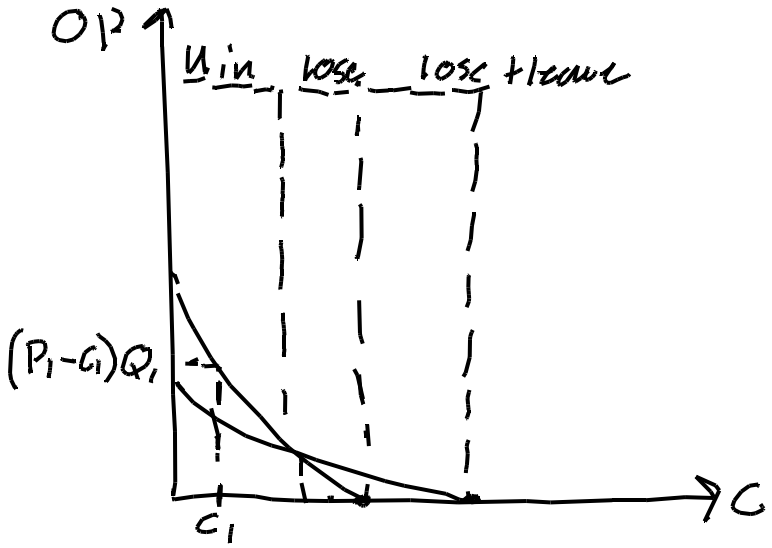
Area B markets firm 2's operating profit and is located above firm 2's marginal cost line, beneath price times the quantity produced by firm 2: $(P_2 - c_2)Q_2$

As less productive firms internalize part of their high marginal cost, their markups are lower than less produce firms' markup.

2.4



As is illustrated in the graph above, as a consequence of the market expansion and increased competition the demand curve shifts down and pivots out (making it flatter). The shift down marks the increased competition as an effect of the productivity differences leading to only the most productive firms, those with the lowest marginal costs, to remain in the market. The pivot out, making the demand curve flatter, is an effect of the increased market size, S.



In the above graph, it is illustrated how the difference in productivity affects firms differently. The y-axis indicates operational profit and x-axis denotes marginal cost. As an effect of the described effect in the prior graph, highlighting the shift in the demand curve we the operational profit curve shifts. As market by the three different areas, various marginal costs are affected differently by this case.

The left-most rectangle marks the firms with the lowest marginal costs. These firms' operational profits increase. The rectangle in the center marks losers still making a profit and the right-most rectangle highlights the firms which lose and now make a negative profit. As an effect, the firms in the right-most rectangle will leave the industry as a consequence

Task 3 Specific Factors:

$$MPL_B = 200 - L_B$$
$$MPL_F = 120 - L_F$$
$$MPL_j^* = 120 - L_j$$
$$L = L^* = 100$$
$$T = T^* = 50$$
$$I = I^* = 50$$

3.1

$$P_B^W = 1$$
$$P_F^W = 1$$

As workers move freely across sectors within each country the wages will be equal in each country.

$$w_B = w_F$$
$$w_B = P_B^W MPL_B$$
$$w_F = P_F^W MPL_F$$
$$P_B^W MPL_B = P_F^W MPL_F$$
$$P_B^W(200 - L_B) = P_F^W(120 - L_F)$$

As both prices are equal to 1

$$200 - L_B = 120 - L_F$$
$$80 - L_B = -L_F$$
$$80 + L_F = L_B$$

As we assume full factor utilization

$$L = L_B + L_F$$
$$100 = L_B + L_F$$

Inserting the found relationship between labor in each sector found earlier

$$100 = L_B + L_F$$
$$100 = (80 + L_F) + L_F$$
$$100 = 80 + 2L_F$$
$$20 = 2L_F$$
$$\frac{20}{2} = L_F$$
$$\boldsymbol{L_F = 10}$$
$$100 = L_B + L_F$$
$$100 = L_B + 10$$
$$\boldsymbol{90 = L_B}$$

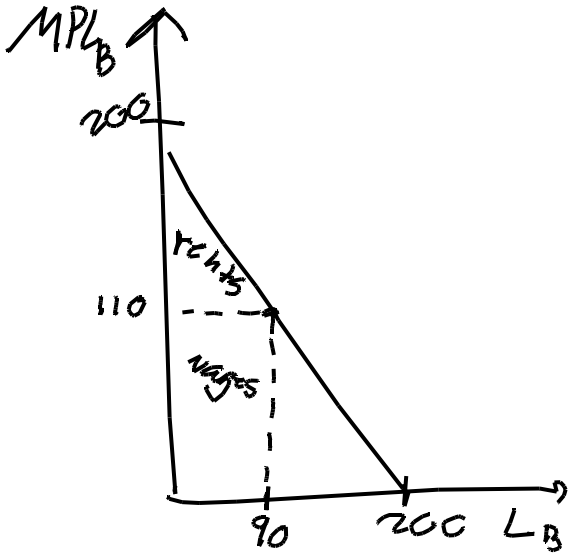
Calculating for Slovenia (We exclude prices as they are equal)

$$MPL_j^* = MPL_j^*$$
$$120 - L_F^* = 120 - L_B^*$$
$$L_B^* = L_F^*$$
$$L^* = 100$$
$$100 = L_B^* + L_F^*$$
$$\boldsymbol{L_B^* = L_F^* = 50}$$

3.2

Total quantity produced equal to the total wages and the capitalist owners' factor rents

$$Q_B = w + r$$



$Total\ wages\ are\ equal\ to\ the\ marginal\ product\ of\ labor\ times\ the\ labor\ in\ that\ sector$
Thus, total wages in quantity is equal to $MPL_B * L_B = 110 * 90 = 9{,}900Q_B$

Rents are equal to the area above the rents in the shown graph, consequently rents are equal to:

$$\frac{(200 - 110) * 90}{2} = \frac{90 * 90}{2} = 4{,}050Q_B$$

$$110 * 90 + \frac{\big((200 - 110) * 90\big)}{2} = 9{,}900 + 4{,}050 = \boldsymbol{13{,}950Q_B}$$

Repeating this process for the other quantities:

$$Q_F = (110 * 10) + \frac{(120 - 110) * 10}{2} = 1{,}100 + 50 = \boldsymbol{1{,}150Q_F}$$

$$Q_B^* = (70 * 50) + \frac{(120 - 70) * 50}{2} = 3{,}500 + 1{,}250 = \boldsymbol{3{,}750Q_B^*}$$

As the two industries in Slovenia are equal

$$\boldsymbol{Q_B^* = Q_F^* = 3,750}$$

3.3

In autarky, the prices are equal to the opportunity cost

Consequently: $\left(\frac{P_B}{P_F}\right)^A = OC_{B,F}^A$

The superscript A's denote autarky

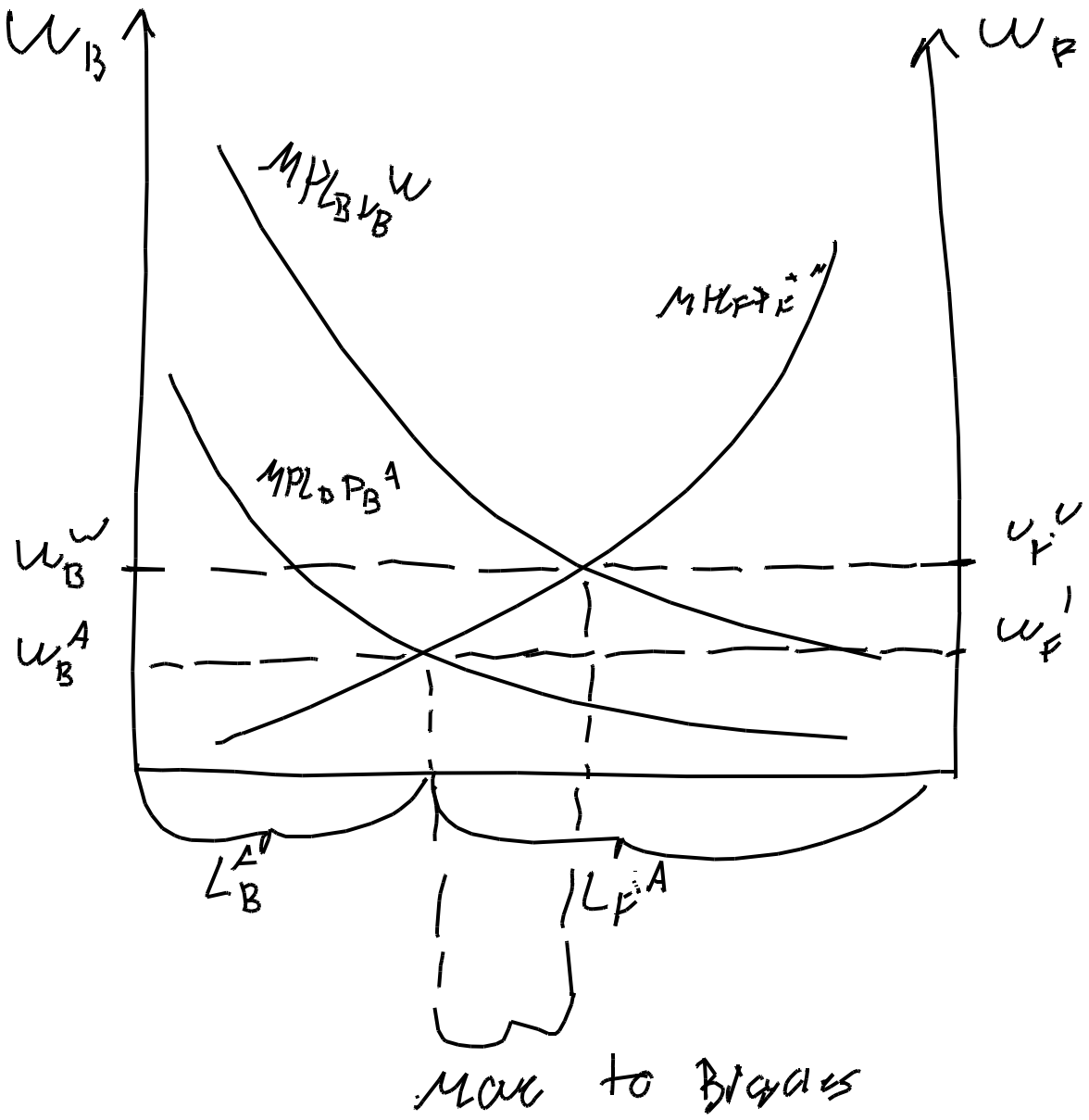
Per definition, this means: $OC_{B,F}^A = \frac{1}{4}$

As there is free mobility between the sectors wages are equal, thus:

$$\begin{aligned}
&w_B^A = w_F^A \\
&P_B^A MPL_B^A = P_F^A MPL_F^A \\
&P_B^A\left(200 - L_B^A\right) = P_F^A\left(120 - L_F^A\right) \\
&\frac{P_B^A}{P_F^A}\left(200 - L_B^A\right) = 120 - L_F^A \\
&\frac{1}{4}\left(200 - L_B^A\right) = 120 - L_F^A \\
&50 - \frac{1}{4}L_B^A = 120 - L_F^A \\
&-\frac{1}{4}L_B^A = 70 - L_F^A \\
&L_F^A = 70 + \frac{1}{4}L_B^A
\end{aligned}$$

Per definition $L = L_B^A + L_F^A$

$$\begin{aligned}
&100 = L_B^A + \left(70 + \frac{1}{4}L_B^A\right) \\
&100 = 1.25L_B^A + 70 \\
&30 = 1.25L_B^A \\
&\frac{30}{1.25} = L_B^A \\
&\boldsymbol{L_B^A = 24} \\
&L = L_B^A + L_F^A \\
&100 = 24 + L_F^A \\
&\boldsymbol{76 = L_F^A}
\end{aligned}$$



NOTE: The two labors written on the x-axis are in autarky and the area with the text "Move to bicycles" is the labor that moves from the film sector to the bicycle sector when moving to free-trade.

Each downward sloping curve is a function of the marginal product of labor times the price of the product. In the autarky equilibrium, the bottom equilibrium, labor in film totals 76 and 24 in the production of bicycles totaling the wage of 44. As a consequence of the free-trade, the price of bicycles increases to 1 leading to a shift up of the $MPL_B P_B^W$ curve as $P_B^W > P_B^A$. As a consequence of the free labor mobility between sectors, labor from the film sector will move to the bicycle sector because of the price increase. In sum, the new equilibrium will entail a higher wage for both sectors as $w_B^W = w_F^W$ and labor employed in the bicycle sector will be higher.

$$w_B^A = w_F^A$$
$$w_B^A = P_B^A MPL_B^A$$
$$w_B^A = 0.25 * \left(200 - L_B^A\right) = 0.25 * 176 = 44$$
$$\boldsymbol{w_B^A = w_F^A = 44}$$

In free trade

$$w_B = w_F$$
$$w_B = P_B * (200 - L_B) = 1 * 110 = \boldsymbol{110}$$
$$\boldsymbol{w_B = w_F = 110}$$

As one can conclude from the calculations above, free trade raises the wage in Austria from 44 in autarky to 110 in free trade.

Calculating the percentual change in nominal wage

$$\frac{110 - 44}{44} * 100 = 150\%$$

When going from autarky to free trade the nominal wage rises by 150%

Comparatively, the relative price of bicycles rises by 300%

$$\frac{1 - \frac{1}{4}}{\frac{1}{4}} * 100 = 300\%$$

Economically, it makes sense that the nominal wage increases by less than the relative price of bicycles when going from autarky to free trade in the specific factors model. Firstly, Austria has a comparative advantage in the production of bicycles given their MPL_B-curve. Secondly, given the specific factors model's assumption of full factor utilization Austria will produce both goods in both autarky and free-trade leading their nominal income to be affected by both the increase in price of bicycles and the stagnant price of films.

Task 4 Political Economy of Trade Policy:

4.1

If one argues that the American electoral system's division into states is representative of each being a voter it makes sense to apply the median-voter theorem. As per the quote "*…US tariffs may have aimed to protect electorally competitive counties with a 40-60% GOP vote share*", this would consequently illustrate the Trump administration's attempt to capture the median voter → Leading him hopefully winning that county. Three essential assumptions are note worthy when discussing the median-voter theorem: Unidimensional voting, single-peaked preferences, and majority rules. The most essential to discuss in this scenario is the last one. As a consequence of the US' elaborated electoral system where it is divided into states, where the vote-majority not always wins, one may argue that one of the essential assumptions of the median-voter theorem does not apply. Despite this, the US is a great example of the median-voter theorem as many states famously vote for the same party every election leading to the candidates fighting for the so-called "swing-states". One

could thus argue that the “swing-states” are the median-voter in the median-voter theorem, which each candidate seeks to appeal to.

4.2

If instead of the Trump administration being the leading party regarding tariffs, the CEA was the leader one it is unclear whether any import tariffs would have been created. What is clear, is that if any import tariffs were put in place, it would likely have been on very different goods as an import tariff without terms of trade gains negatively affects US social welfare. Considering the US’ significant size, one would imagine that tariffs on other products, where the US has significant market power, may have had a positive effect on social welfare

In relation to the second question, the text mentions: “*We find that US imported goods affected by the tariff have perfectly horizontal foreign export supply curves*”. Consequently, this means that American consumers have no market power in relation to changing the world price. Effectively, this means that the US reaps no terms of trade gains from the tariffs.

4.3

The described “small negative change” is an effect of the production and consumption distortions as an effect of the import tariff. Taking a point of view of the partial-equilibrium analysis discussed in class, there are several important and noteworthy missing points. Firstly, this analysis does not include the effects of foreign countries’ retaliation through tariffs of their own. Secondly, it does not include the effects of increased input prices for US produces that use the goods which are hit by the tariff. One may thus lead to a conclusion that the US aggregate social welfare results are more negative than described in the article.

4.4

I will be referring to the following article quote: “*Our results reveal substantial redistribution from buyers of foreign goods to US producers and the government, and a modest net loss for the US economy as a whole*.”

Looking at the below graph, one can explain the quote as a buyer/consumer surplus loss of A+B+C+D while the US producers gain A. Furthermore, the government gains C as an effect of the tariff. The US economy as a whole loses from the production and consumption distortions equal to B and D.

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