Some additional notes

• Growth, welfare and terms of trade

Growth, whether biased towards export or import good will result in an increase in welfare as the new PPF is drawn beyond the old one.

In addition, there will be some T/T effects which could result in welfare improvement (growth biased towards the import good - T/T improve) or welfare deterioration (growth biased towards the export good - T/T worsen).

If we only consider supply conditions (not a Bagwhati-Prebisch case), the general welfare effects due to growth - i.e. the outward shift of the PPF - dominates the T/T effects and growth will result overall in an increase in welfare. Obviously the increase in welfare will be greater if growth is compounded by favorable T/T effects than if it triggers adverse T/T effects.
Growth in export good
T/T worsen from 1 to 2
(slope $P_x/P_m$ flatter)
Welfare improves from $C$ to $C'$ only. The difference between $C'$ and $C''$ represent the deterioration in welfare due to the worsening of the T/T
Growth in import good
T/T improve from 1 to 2
(slope $P_x/P_m$ steeper)
Welfare improves from $C$ to $C'$. The difference between $C'$ and $C''$ represent a further improvement in welfare due to the increase in the T/T
• This also applies if, instead of biased growth, the country experiences some disaster affecting specifically either the import or the export sector. If the import sector is destroyed, the welfare losses will not be recouped by an improvement in the T/T.
• Trade, monopolistic competition and varieties

The gains from trade in this case are due to the fact that there will be fewer firms in each country producing larger quantities and thus taking advantage of IRTS.

But overall there will be more varieties available to the consumers.

In this model each firm produces a specific variety (its monopolistic edge), so the number of firms = the number of varieties.
Before trade, Sweden has 3 firms/varieties and Germany has 5 firms/varieties. After, the larger market Sweden+ Germany has 7 varieties.

<table>
<thead>
<tr>
<th>Varieties in Sweden</th>
<th>Red sedan</th>
<th>Red station wagon</th>
<th>Red sport car</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Varieties in Germany</td>
<td>Red sedan</td>
<td>Red station wagon</td>
<td>Red sport car</td>
<td>Blue sedan</td>
<td>Blue station wagon</td>
<td></td>
</tr>
<tr>
<td>Varieties with trade</td>
<td>Red sedan</td>
<td>Red station wagon</td>
<td>Red sport car</td>
<td>Blue sedan</td>
<td>Blue station wagon</td>
<td>Yellow sport car</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yellow sedan</td>
</tr>
</tbody>
</table>
Unfortunately, the model will not determine which firm will stay in business in either country, but it is clear that if one firm, in either country, produces all the red sedans, it will have lower average cost with IRTS.

<table>
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<tr>
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</tbody>
</table>
• In the red car line, one of the 2 firms producing sedan, sport car and station wagon will have to go as production is consolidated in the larger market. Which one - we don’t know. So 3 firms shut down and 2 new firms are created producing the yellow line of cars. So in this example the total number of firms drops from 8 to 7.

• The adjustment is not as painful as with the SF or the H-O model, because we can easily assume that the red sedan and the red sport car firms can retool their production towards yellow sedan and yellow sport car. The resources in the third firm that has to shut down can be easily reallocated among the other expanding firms.
Monopolistic competition model with IRTS
Equations needed to solve problems.
Total cost: \( C = F + cQ \) e.g. \( C = 2,000 + 5Q \)
The fixed costs \( F \) are 2,000
The variable unit costs \( c \) are 5
and \( Q \) is \# of units produced
Average cost: \( AC = \frac{C}{Q} = \frac{(F/Q) + c}{1} = \frac{2,000}{Q} + 5 \)
The firm’s share of the market (and production) is \( S/n \) in equilibrium (where \( P = \bar{P} \)) - \( S \) is total market and \( n \) \# of firms
So replacing \( Q \) by \( S/n \), we get
\[ AC = \frac{F}{(S/n)} + c \] i.e. the equation of the CC curve.
(it shifts to the right when \( S \) increases)
The equation of the PP curve is derived on p. 6.7 as
\[ P = (1/bn) + c \]
Note that \((-b)\) is the price “difference” elasticity of demand (i.e. the coefficient of \(P - \bar{P}\) in the firm’s demand function)

In equilibrium \(AC = P\) determining \(\bar{P}\) and \(n\)
\[ [F/(S/n)] + c = (1/bn) + c \quad \text{(CC and PP intersects)} \]
So
\[ n = \sqrt{S/bF} \]

By replacing \(n\) in either the CC or the PP curve we can derive the equilibrium price for \(AC = P\) and the equilibrium quantity \(Q\) for the firm as \(S/n\).