Construction of the world relative supply curve

Trade takes place when

\[ \frac{a_{LB}}{a_{LM}} < \frac{P_B}{P_M} < \frac{a^*_{LB}}{a^*_{LM}} \]

In the previous example with France and Germany, this corresponds to:

\[ 1/3 < \frac{P_B}{P_M} < 2.5 \]

So to derive the world relative supply curve i.e. a relation between \( \frac{B^W}{M^W} \) and \( \frac{P_B}{P_M} \) using these 2 countries, we need to figure out the world relative supply at each relative price level. \( B^W \) and \( M^W \) are respectively the total production of bread and of machines summed over the 2 countries.

There are 2 approaches: we can either compare the autarky prices in each country to potential world prices and figure out the corresponding production levels. Or we can compare the wages in each of the 2 industries in each country.
<table>
<thead>
<tr>
<th>$P_B/P_M$</th>
<th>French Production</th>
<th>German Production</th>
<th>World $B^W/M^W$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$M$</td>
<td>$B^*$</td>
</tr>
<tr>
<td>1</td>
<td>$&lt;1/3$</td>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>2</td>
<td>$=1/3$</td>
<td>some</td>
<td>some</td>
</tr>
<tr>
<td>3</td>
<td>$1/3 &lt; P_B/P_M &lt; 2.5$</td>
<td>450</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>$=2.5$</td>
<td>450</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>$&gt;2.5$</td>
<td>450</td>
<td>0</td>
</tr>
</tbody>
</table>
1. The relative world price for bread is lower than the autarky prices in either countries: no bread is produced - only machines.

2. The relative world price is the French autarky price. France is the large country that produces both bread and machine while Germany only produce machines.

3. The world price lies between the 2 autarky prices: each country specializes in its CA good.

4. The relative world price is the German autarky price. Germany is the large country that produces both bread and machine while France only produces bread.

5. The relative world price for bread is higher than the autarky prices in either countries (alternatively the relative world price for machines is lower than the autarky prices in either country): no machines are produced - only bread.
The same arguments can be put in terms of wages.

1. The relative wage in the bread industry is lower than in the machine industry for both countries as:

\[ \frac{P_B}{P_M} < \frac{a_{LB}}{a_{LM}} = \frac{1}{3} \]

corresponds to

\[ \frac{1}{a_{LB}} * P_B < \frac{1}{a_{LM}} * P_M \]

So no bread is produced in France. Only machines implying

\[ \frac{P_B}{P_M} < \frac{a^*_{LB}}{a^*_{LM}} = 2.5 \]

\[ \frac{1}{a^*_{LB}} * P_B < \frac{1}{a^*_{LM}} * P_M \]

No bread is produced in Germany either.

Exercise: carry out the reasoning in terms of comparing the wages for the other 4 cases.
World relative supply curve

P_B/P_M

2.5

1/3

1.125

B/M