Salvatore, chapter 5, questions 1 and 2

A small country imposes a $1.50 tariff. Since the world price is $1.00, the new domestic price of the good is $2.50.

Note that the supply curve (in red) is $Q_s = 20 P$, and the demand curve (in blue) is $Q_d = 120 - 20 P$. A schedule of prices will help understand what is going on here:

<table>
<thead>
<tr>
<th>Price</th>
<th>Domestic Supply</th>
<th>Domestic Demand</th>
<th>Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>20</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>1.75</td>
<td>35</td>
<td>85</td>
<td>50</td>
</tr>
<tr>
<td>2.00</td>
<td>40</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>2.50</td>
<td>50</td>
<td>70</td>
<td>20</td>
</tr>
</tbody>
</table>

The tariff revenue area is $(70 - 50) * 1.50 = 30$
Deadweight loss area 1 $= 0.5 * (50 - 20) * 1.50 = 22.50$
Deadweight loss area 2 $= 0.5 * (100 - 70) * 1.50 = 22.50$ so total DWL $= 45$
Added producer surplus $= $ sum of two areas $= 20 * 1.50 = 30 +$ triangular area $0.5 * (50 - 20) * 1.50 = 52.50$
Loss of consumer surplus $= $ sum of all the above areas $= 127.50$

Note that in the text problem p.123 the deadweight loss was only 20; the deadweight loss has more than doubled – it is proportional to the square of the tariff.
The large country case is illustrated below:

The tariff revenue area is now \((80 - 40) * 1.50 = 60\);
The producer deadweight loss area is \(0.5 * (40 - 20) * 1 = 10\);
The consumer deadweight loss area is \(0.5 * (100 - 80) * 1 = 10\) for a total DWL of 20;
The producer gain in surplus is the rectangular area of 20 + the triangular area of \(0.5 * (40 - 20) = 10\) for a total producer gain of 30.

Total loss in consumer surplus includes only the upper rectangle of the tariff revenue area.
The lower rectangle is the tariff which is “paid” by the rest of the world in lower world prices, and is equal to \((80 - 40) * (1.0 - 0.50) = 20\).

Note that this exactly offsets the total deadweight loss, and hence the country is no worse off after the tariff (although consumers are).