Lecture 8b:

Tariffs in a large economy

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C181 – International Trade
Spring 2018
2- Tariffs in a small economy

Effect of tariffs?

Conclusion for a small open economy:

- Tariffs $\rightarrow$ net welfare loss

Next lectures:

- Tariffs in a large economy
- Why small economies would still have tariffs?
- How to constraint large economies to reduce tariffs?
2- Tariffs in a small economy

**Effect of tariffs?**

NET effect \( = - (b+d) \)

\[ = - \frac{1}{2} [(S_2 - S_1) + (D_1 - D_2)] \cdot t \]

\[ = - \frac{1}{2} (M_1 - M_2) \cdot t \]

(a) Home Market

(b) Import Market

![Graph showing the effect of tariffs on the home and import markets](image-url)
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NOTES: Prices in a small economy:

- World price $P^W$ taken as given
- Imports depend on price (“M” curve = import demand)
- but export curve is flat: The price stays at $P^W$ (+ added tax)
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“Large” economy

Definition:

- A large economy has an effect on world price:
  - Lower imports lead to lower prices
  - Larger imports lead to higher prices

→ Upward-sloping export curve

→ Tariffs lead to a decrease imports and lower $P^W$
"Large" economy

Foreign supply is no longer "infinitely elastic"
(i.e. foreign supply curve no longer flat, world price no longer constant)
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**clicker question:**

In a large economy, an increase in tariffs leads to:

a) A *smaller* loss in consumer surplus but *a smaller* gain in producer surplus (compared to a small economy)

b) A *smaller* loss in consumer surplus and *a larger* gain in producer surplus

c) A *larger* loss in consumer surplus but *a larger* gain in producer surplus

d) A *larger* loss in consumer surplus and *a smaller* gain in producer surplus
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“Large” economy

Effect of tariffs on prices:

- **Tariffs** lead to a decrease in imports and lower $P_W$
- Hence the price for consumers does not increase as much as for a small economy
  - Smaller loss in consumer surplus
- Hence the price for consumers does not increase as much as for a small economy
  - Smaller gain in producer surplus
- Q: Can it be beneficial to have a tariff after all?
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It’s all in this graph:

(a) Home Market

(b) World Market
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- For **consumers**:  
  \[ \text{price goes from } P^W \text{ to } P^* + t \]
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- For **consumers**:  
  → price goes from $P^W$ to $P^*+t$  
  → Consumer surplus decreases by $(a+b+c+d)$
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- For local **producers**:
  - price goes from $P^W$ to $P^* + t$
  - Producer surplus increases by: $a$

![Graph of Home Market and World Market](image)
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- Tariff revenues?
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- Tariff revenues?
  → Revenues = $t \times (D_2 - S_2) = t \times M_2$
  → area: $(c + e)$
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- Net effect on Home?
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Consumer loss: \(- (a+b+c+d)\)
Producer gain: \(+ a\)
Tariff revenues: \(+ (c + e)\)

\[\text{Net effect on Home} = e - (b+d)\]
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Effect of a tariffs on prices:

• Deadweight loss “b+d” as in a small economy
• But terms of trade gain “e” dues to change in world price
• Which one wins?
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Effect of a tariffs on prices:

When “t” is small:

- Terms of trade gain are proportional to “t” (product of “t” and current imports)
- Deadweight loss proportional to “t^2” (product of “t” and the *change* in imports)

→ Terms of trade wins when t is small
→ Gains from having a small tariff
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Effect of a tariffs on prices:

When “t” is large:

• If price is now back to autarky:
  → Terms of trade gains are zero!
  (No imports! No tariff revenues)

• Large deadweight loss

→ Negative net effect
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Optimal tariff:

- Not zero, not too large either
- High elasticity of export supply → lower optimal tariff
- **Formula:** Optimal tariff \( = \frac{1}{E^*_x} \)

*depends on the inverse of the export supply elasticity*
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Optimal tariff \( \frac{1}{E^*_X} \)

Terms-of-trade gain exceeds deadweight loss

Terms-of-trade gain is less than deadweight loss
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Link to monopsony pricing:

• a “small” buyer has no incentives to deviate from market price: it is “price taker” (=small country)

• A large buyer wants to limit its demand in order to lower the price = large economy which can affect $P^W$

• The smaller the price elasticity, the larger the distortions
### Application to the steel industry in the US: *Tariffs imposed in 2002-03*

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Elasticity of Export Supply</th>
<th>Optimal Tariff (%)</th>
<th>Actual Tariff (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alloy steel flat-rolled products</td>
<td>0.27</td>
<td>370</td>
<td>30</td>
</tr>
<tr>
<td>Iron and steel rails and railway track</td>
<td>0.80</td>
<td>125</td>
<td>0</td>
</tr>
<tr>
<td>Iron and steel bars, rods, angles, shapes</td>
<td>0.80</td>
<td>125</td>
<td>15–30</td>
</tr>
<tr>
<td>Ferrous waste and scrap</td>
<td>17</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Iron and steel tubes, pipes, and fittings</td>
<td>90</td>
<td>1</td>
<td>13–15</td>
</tr>
<tr>
<td>Iron and nonalloy steel flat-rolled products</td>
<td>750</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
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“Large” economy

Effect on Foreign:

How do tariffs at home affect foreign economies?

a) Gains for Foreign

b) Loss for Foreign, smaller than gains at Home

c) Loss for Foreign exceeds gains at Home
Home gains = e - (b + d)
Foreign gains?
Foreign gains = - (e + f) < 0
(i.e. loss: decrease in exporter surplus!)
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Effect of tariff:

• Home gains:
  \[= e - (b + d)\]

• Foreign loss:
  \[= - (e + f)\]

• Net GLOBAL gains if both apply tariffs on imports:
  \[= - (f + b + d) < 0\]
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Effect on Foreign:

How do tariffs at home affect foreign economies?

Large losses: the loss for foreign economies exceed the gains for the home country

➡️ Overall gains from reducing tariffs on a bilateral or multilateral basis
“Tariffied” – Planet Money

Link: (or google search “planet money tariffed”):
Lollipop War – Planet Money

Link: (or google search “planet money lollipop”):
http://www.npr.org/sections/money/2013/04/26/179295426/episode-454-the-lollipop-war