Outline: Tariffs

- What Are They?
- Who Uses Them?
- Effects of Tariffs
  - Small Country Case
    - Effects on quantities and prices
    - Effects on economic welfare
  - Large Country Case
    - Effect on world price
    - Effect on welfare
    - Size of These Effects
- Addenda on Tariffs

What Are Tariffs?

- Tariffs are Taxes on imports
- Two main types
  - Ad valorem: % of value
  - Specific: $ per unit
- How are they implemented?
  - At the border, by customs officers
  - They determine
    - What good it is
    - What price to use for ad valorem tariffs
  - Customs officers have power that may be abused (e.g., bribery)
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Who Uses Tariffs?

• Virtually all countries
• How big are tariffs?
  – In US, today, average only 2-3%
  – In developing countries, often around 20%
  – Both used to be much higher
  – Some particular tariffs are still much higher

Who Uses Tariffs?

• Sample US tariffs
  – Cars: 2.5%
  – Trucks: 25%
  – Men’s cotton shirts 19.7%
  – Women’s blouses 26.9%
  – Tariffs facing exports of developing countries:
    • Nepal 13.2%
    • Bangladesh 13.6%
Who Uses Tariffs?

  - US tariffs are much larger against developing countries than against developed countries
  - Who gains and loses?
    - US workers gain, but they have social policies to protect them (unemployment insurance, etc.)
    - Developing-country workers lose, and their governments are too poor to help
  - WTO Agreement on Textiles and Clothing (1995) promised to eliminate quotas on these products by 2005, but not tariffs. (If not.)
  - Why “Catch-22”?  
    - Countries can only develop by exporting
    - But if they do, we raise tariffs!

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Effects of Tariffs

- Easy to see from supply and demand
- Consider a good whose price would be above the world price without trade
- We will look at two cases:
  - Small country: Too small for its behavior to matter for the world price
  - Large country: Large enough (in market for this good) that its behavior may change world price
Lecture 5: Tariffs

Effects of Tariffs: Small Country

- **Autarky price**: $P_a$
- **Free trade price**: $P_W$
- **Effect on Price**: $P_W + t$ (where $t$ is the tariff)
- **Effect on Quantities**: $Q_D$ and $Q_S$ before and after the tariff
Effects of Tariffs: Small Country

• Thus: what happens due to a tariff:
  – Domestic output rises
    (Employment also rises in this industry)
  – Domestic demand falls
  – Domestic price rises
    (by full amount of tariff)
  – Imports (=D−S) fall
  – Suppliers gain
  – Demanders lose
  – Gov’t gets tariff revenue
    (but it doesn’t lose, because we’re too small for it to notice)

Effects of Tariffs: Small Country

• How much do we gain and lose?
• Use changes in “consumer surplus” and “producer surplus” from Econ 101

Reminder:
Change in Consumer Surplus

When price changes, Consumers
  – Gain from price decrease
  – Lose from price increase
    • By amount equal to area to the left of the demand curve

while…
Lecture 5: Tariffs

Reminder: Change in Producer Surplus

Producers
- Gain from price increase
- Lose from price decrease
  • By amount equal to area to the left of the supply curve

Effects of Tariffs: Small Country

• Apply these to the effects we found for a tariff
• Also note that the government (and thus the taxpayer) of the country gets benefit of tariff revenue
Effects of Tariffs: Small Country

Effects on Welfare
Demands lose
\[-(a+b+c+d)\]

Effects on Welfare
Government gains
\[+c\]

Effects on Welfare
Net for country
\[-(b+d)\]

Country loses from tariff
Effects of Tariffs: Small Country

Summary:
- Suppliers gain: +a
- Demanders lose: -(a+b+c+d)
- Government gains: +c
- Net effect on country: Loss = -(b+d)

Effects of Tariffs: Small Country

- Dead Weight Loss
- Why?
- Because demanders and suppliers both are led by the tariff to behave as if the good’s value were \( P_W + t \), when in fact the country can buy or sell it for \( P_W \).

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Effects of Tariffs: Large Country

• If the country is not small, but large, then
  – when it reduces its imports of the good from the world market
  – the world price will fall, $P_W$

• Why?
  – Because, with less import demand by large country, world demand shifts left.

Effects of Tariffs: Large Country

• Results due to tariff and fall in world price:
  – Domestic price rises, but by less than the tariff
  – Thus, compared to the same tariff in a small country
    • Output (and employment) rises by less
      – Thus the benefit to suppliers is smaller
    • Demand falls by less
      – Thus the harm to demanders is smaller
    • Imports fall by less
    • Tariff revenue is larger (since imports fall less)
Effects of Tariffs: Large Country

Effects of tariff on Welfare
Suppliers gain
+ \( a' \)

Effects of tariff on Welfare
Demanders lose
\(- (a' + b' + c' + d')\)

Effects of tariff on Welfare
Government gains
\( + (c' + e') \)
Effects of Tariffs: Large Country

Summary:
- Suppliers gain: \(+a'\)
- Demanders lose: \(- (a' + b' + c' + d')\)
- Government gains: \(+ (c' + e')\)
- Net effect on country: Gain or Loss = \(+e' - (b' + d')\)

Effects of Tariffs: Large Country

This possibility of gain from a tariff goes under several names:
- The “terms of trade” effect of a tariff
- The “monopoly” effect of a tariff
- The “optimal tariff”
Effects of Tariffs: Large Country

- The "Terms of Trade" Effect
  - Definition:
    A country’s “Terms of Trade” is defined as the price of its exports relative to its imports
  - If TOT rises, the “terms of trade improves”
    - because the country gets more imports in return for its exports
    - A tariff by a large country drives down the world price of its imports
    - and thus improves its terms of trade

- The “monopoly” effect
  - From Econ 101, a monopoly firm increases its profit by
    - Selling less to the market, and hence
    - Raising the price that it gets
  - A large country can increase its welfare by
    - Buying less from the market (via a tariff), and hence
    - Lowering the price that it pays
  - Note: Large country could also gain by restricting exports, as OPEC has done with oil (But not lately!)

- The “optimal tariff”
  - If a large country uses a tariff that is too large, it must lose.
  - Thus there is some level of tariff that is optimal

Example of a too large tariff:
Effects of Tariffs: Large Country

- The "optimal tariff"

Effects of Tariffs: Large Country

<table>
<thead>
<tr>
<th>Tariff</th>
<th>Net Welfare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal Tariff</td>
<td>Autarky</td>
</tr>
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</table>

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The Size of These Effects

- See Feenstra
  - Uses analysis like this one to measure effects of protection
  - Sectors with high US protection in 1985:
    - Automobiles
    - Dairy
    - Steel
    - Sugar
    - Textiles and Apparel
      (All these had quotas and other NTBs as well as tariffs.)
The Size of These Effects

• See Feenstra
  – For 1985, U.S. average tariffs caused dead-weight loss (DWL) for U.S. of
    \[ \text{DWL} = $1.2-3.4 \text{ billion per year} \]
  – Sounds like a lot! But U.S. 1985 GDP was $4,181 b. So
    \[ \text{DWL} = 0.03\% \text{ of GDP} \]
    TINY!

The Size of These Effects

• Why is the loss from tariffs so small?
  – Most U.S. tariffs are small
    But note, this is only the DWL
  – The transfer from consumers, to producers and to government, is much larger

The Size of These Effects

• Why so small?
  – DWL grows with the square of the tariff
    Example:
    • Doubling the tariff
    • Multiplies DWL by 4
    – So DWL due to small tariff is smaller than the tariff itself might suggest
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Addenda on Tariffs

• Three more things:
  1. The model we are using assumes perfect competition. Thus
    • All buyers and sellers are too small, individually, to affect price (even if the country is large)
    • Answers could be different if firms had monopoly power (as they likely would if they had significant economies of scale)

Addenda on Tariffs

• Three more things:
  2. The large-country tariff
    • Harms the other country (or rest of world)
    • Lowers world welfare. Thus the rest-of-world loses more than the tariff-levying country gains
    • The other country may retaliate with its own tariff, so then both lose
Addenda on Tariffs

• Three more things:
  3. Effective Protection
    • Just as a tariff on an industry’s output helps it by raising its price, a tariff on its input hurts it.
    • The Effective Rate of Protection takes account of tariffs on both inputs and outputs to gauge the level of protection in an industry:
      \[ \text{ERP} = \frac{(t_o - at_i)}{(1 - a)} \]
    where
    \( t_o \) = ad valorem tariff on output
    \( t_i \) = ad valorem tariff on input
    \( a \) = value of input as share of value of output

Next Time

• Nontariff Barriers
  – Quotas, etc.
  – Subsidies