Econ 340
Lecture 5
Tariffs

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)

Who Uses Tariffs?
• Virtually all countries
• How big are tariffs?
  – In US, today, average only 2-3% (before Trump)
  – In developing countries, often around 20%
  – Both used to be much higher
  – Some particular tariffs are still much higher
  – And President Trump has put tariffs of
    • 25% on steel
    • 10% on aluminum
    • Up to 25% so far on well over $250 billion of Chinese exports, with more coming on most of the rest

Sample US tariffs
– Cars: 2.5%
– Trucks: 25%
– Men’s cotton shirts: 19.7%
– Women’s blouses: 26.9%
– Blankets: 8.5%
– Pullover apparel: 14.9%
– Tariffs facing exports of developing countries:
  • Nepal: 13.2%
  • Bangladesh: 13.6%

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
Who Uses Tariffs?

• Aside: Schavey, “The Catch-22 of U.S. Trade”
  – US tariffs are much larger against developing countries than against developed countries
  – Who gains and loses?
    • Some 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. (It did.)
  – Why “Catch-22”?
    • Countries can only develop by exporting
    • But if they do, we raise tariffs!

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

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

Effects of Tariffs: Small Country

\[
\begin{align*}
\text{Autarky price} & = P_a \\
\text{Free trade price} & = P_W \\
\end{align*}
\]

Effects on Quantities

\[
\begin{align*}
\text{Before Tariff:} & \quad Q_D^0, Q_S^0 \\
\text{After Tariff:} & \quad Q_D^1, Q_S^1 \\
\end{align*}
\]

Effect on Price

\[
\begin{align*}
\text{Before Tariff:} & \quad P_S, P_D \\
\text{After Tariff:} & \quad P_S^W + t, P_D^W \\
\end{align*}
\]
Effects of Tariffs: Small Country

- Why the price increase?
  - On imports
    - Tariff is simply added to the price paid to foreign exporters
  - On domestically produced goods
    - Buyers don’t pay the tariff
    - But if price stayed below $P_w + t$, demand for the domestically produced good would be greater than supply
    - This shortage would drive up price

- Thus: what happens due to a tariff:
  - Domestic price rises (by full amount of tariff)
  - Domestic output rises (Employment also rises in this industry)
  - Domestic demand falls
  - Imports ($=D–S$) fall
  - Suppliers gain
  - Demanders lose
  - Gov’t gets tariff revenue
  - World sells less to us (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...

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
Lecture 5: Tariffs

Effects of Tariffs: Small Country

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

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

Dead Weight Loss:
- Why?
- Because demanders and suppliers both are misled 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 $P_W$. 

Country loses from tariff:
- Net for country: Loss = -(a+b+c+d)
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

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.

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)
Lecture 5: Tariffs

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

- 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

Effects of Tariffs: Large Country

- 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

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 “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

Is the US Large

- One would think so
- But evidence from Trump’s tariffs in 2018 (see Foy) found
  - US prices rose by full amount of tariffs
  - No fall in prices for foreign exporters
- Apparently,
  - Even though US appears to be large
  - Our share of the world market is not that big

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

• 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

• 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

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

Addenda on Tariffs

• Three more things:
  1. The model we are using makes several assumptions:
     • Perfect competition:
       – All buyers and sellers are too small, individually, to affect price (even if the country is large). Answers could be different otherwise
     • Partial equilibrium
       – Market is small part of large economy, so that effects on other markets can be ignored
     • Homogeneous products
       – The imported good is a perfect substitute for domestically produced good

• 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. Then both lose.

• 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 the industry
    • The Effective Rate of Protection takes account of tariffs on both inputs and outputs to gauge the level of protection in an industry:
      \[
      ERP = \frac{(t_o - a t_i)}{(1 - a)}
      \]
    where
    \[
    t_o = \text{ad valorem tariff on output}
    \]
    \[
    t_i = \text{ad valorem tariff on input}
    \]
    \[
    a = \text{value of input as share of value of output}
    \]
Next Time

- Nontariff Barriers
  - Quotas, etc.
  - Subsidies