

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

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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% (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

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Who Uses Tariffs?

- 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%

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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!

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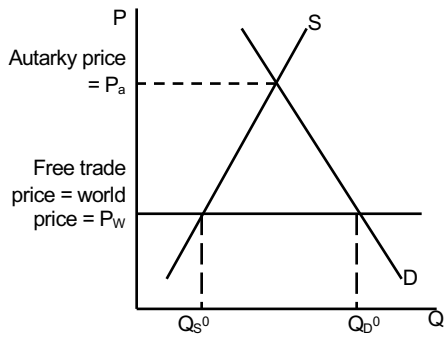
Effects of Tariffs

- 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

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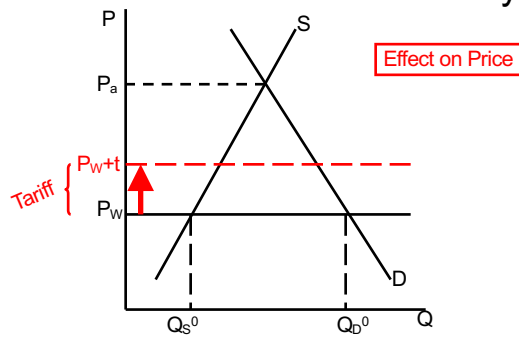
Effects of Tariffs: Small Country



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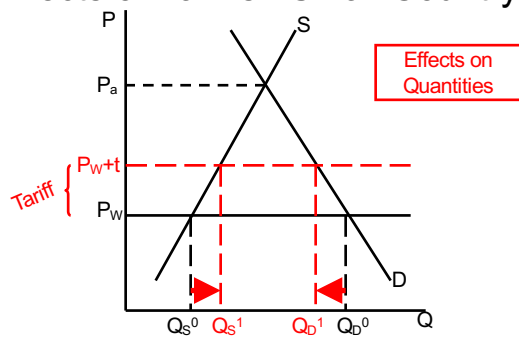
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Effects of Tariffs: Small Country



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Effects of Tariffs: Small Country

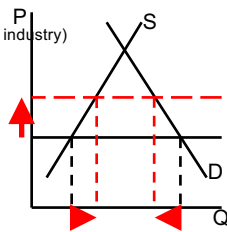
- Why the price increase?
 - On imports
 - Tariff is simply added to the price paid to foreign exporters
 - On domestically produced goods
 - Buyers don't pay the tariff
 - But if price stayed below $P_w + t$, demand for the domestically produced good would be greater than supply
 - This shortage would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

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Effects of Tariffs: Small Country

- 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)



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Effects of Tariffs: Small Country

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

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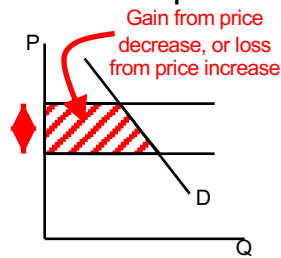
Reminder: Change in Consumer Surplus

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...



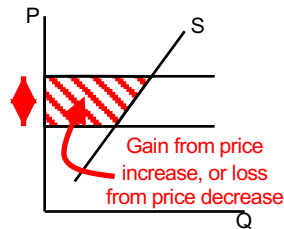
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Reminder: Change in Producer Surplus

Producers

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



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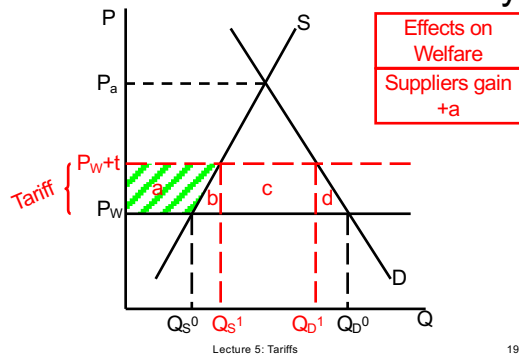
Effects of Tariffs: Small Country

- 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

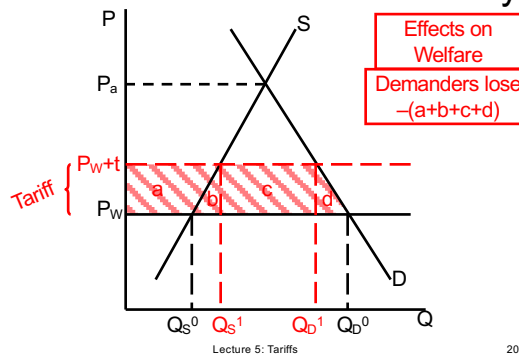
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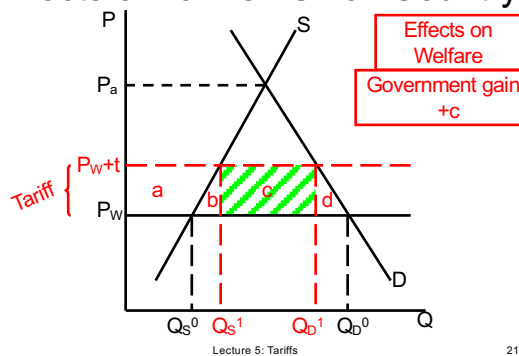
Effects of Tariffs: Small Country



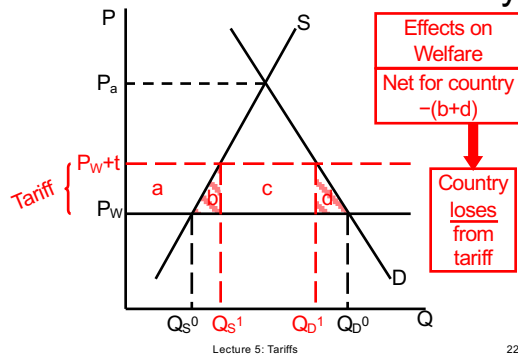
Effects of Tariffs: Small Country



Effects of Tariffs: Small Country



Effects of Tariffs: Small Country

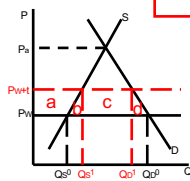


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Effects of Tariffs: Small Country

Summary:

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



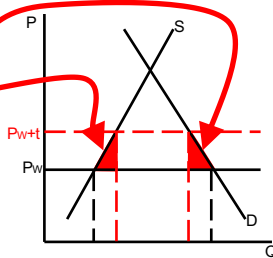
"Dead Weight Loss" = $-(b+d)$

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Effects of Tariffs: Small Country

- 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 .



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Outline: Tariffs

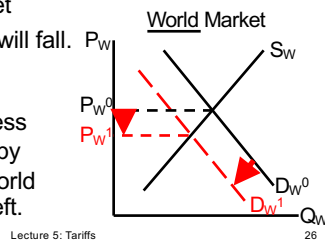
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Effects of Tariffs: Large Country

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



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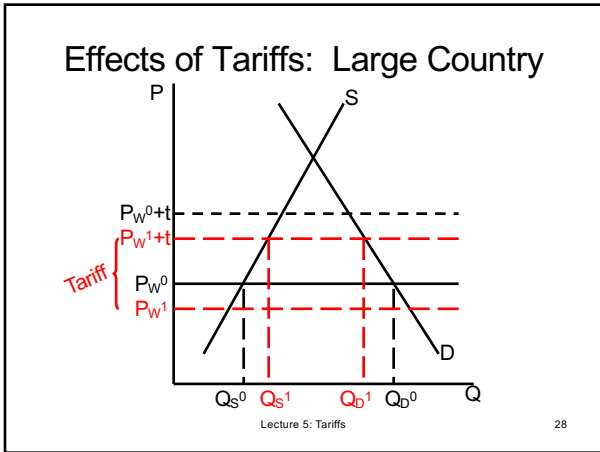
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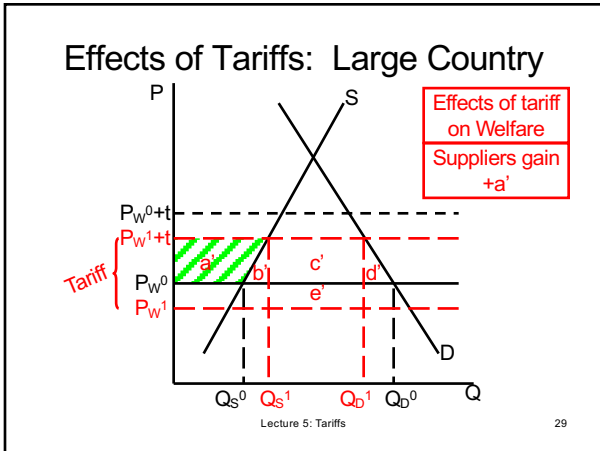
Effects of Tariffs: Large Country

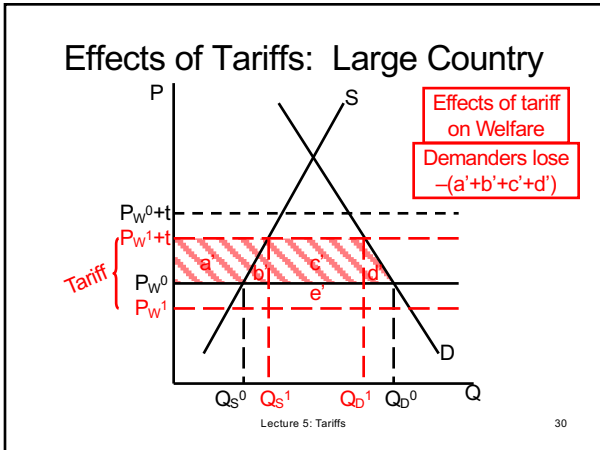
- Results due to tariff and fall in world price:
 - Domestic price rises, but by less than the tariff
 - Thus, compared to the same tariff in a small country
 - Output (and employment) rises by less
 - Thus the benefit to suppliers is smaller
 - Demand falls by less
 - Thus the harm to demanders is smaller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

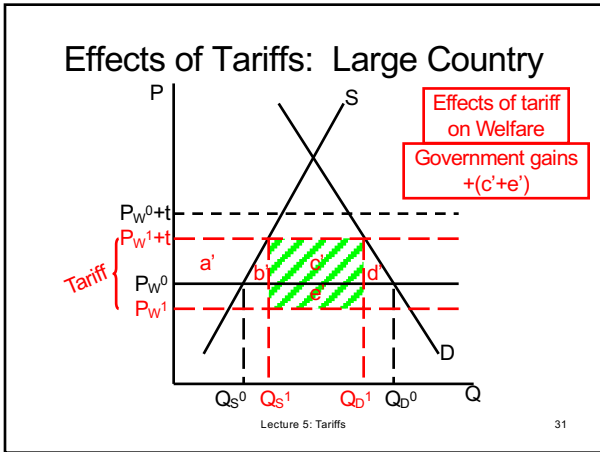
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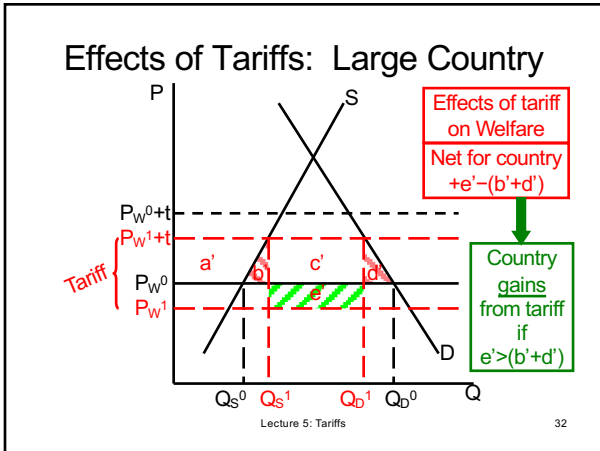
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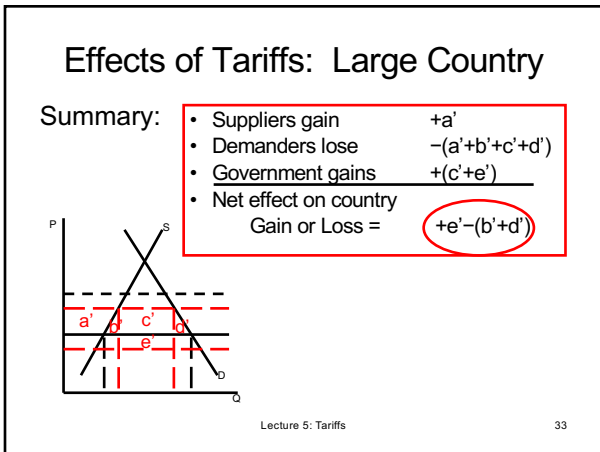












Effects of Tariffs: Large Country

- 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”

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Effects of Tariffs: Large Country

- The “Terms of Trade” Effect
 - Definition:  $TOT = \frac{P_{\text{exports}}}{P_{\text{imports}}}$
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

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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 (Not in recent years, but it keeps trying)

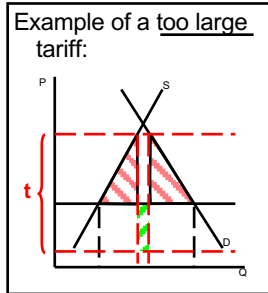
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(Not in recent years, but it keeps trying)

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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

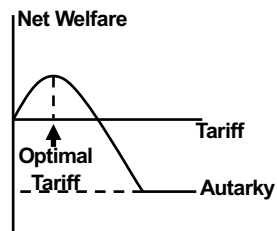


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Effects of Tariffs: Large Country

- The “optimal tariff”



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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

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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.)

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The Size of These Effects

- See Feenstra
 - For 1985, U.S. average tariffs caused dead-weight loss (DWL) for U.S. of

DWL = \$1.2-3.4 billion per year
 - Sounds like a lot! But U.S. 1985 GDP was \$4,181 b. So

DWL = 0.03% of GDP

TINY!

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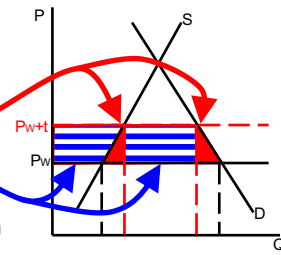
The Size of These Effects

- 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



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The Size of These Effects

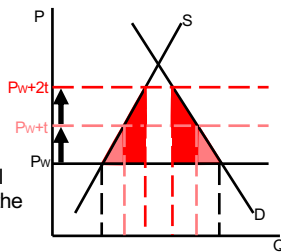
- Why so small?

- 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 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

Lecture 6: NTBs

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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. Then both lose.

Lecture 6: NTBs

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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 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:
$$ERP = (t_o - at_i) / (1 - a)$$
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

Lecture 6: NTBs

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Next Time

- Nontariff Barriers
 - Quotas, etc.
 - Subsidies

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