

# ECC1000: Principles of Microeconomics

## Lecture 5 International Trade



# Outline

- Comparative advantage and gains from trade again
- Production possibilities and consumption possibilities
- Pattern of trade, losers and winners
  - Welfare implications of import
  - Welfare implications of export
- Protectionist trade policies
  - Import tariff
  - Quota

# Australia's trade structure in 2015 (\$billion)

(Source: Dept. of Foreign Affairs and Trade)

|                |              |
|----------------|--------------|
| <b>Exports</b> | <b>316.6</b> |
| <b>Imports</b> | <b>352.7</b> |
| <b>Total</b>   | <b>669.3</b> |

| <b>Largest Trading Partners</b> | <b>Exports</b> | <b>Imports</b> | <b>Total</b> |
|---------------------------------|----------------|----------------|--------------|
| <b>China</b>                    | <b>91.3</b>    | <b>64.2</b>    | <b>155.5</b> |
| <b>US</b>                       | <b>22.1</b>    | <b>48.1</b>    | <b>70.2</b>  |
| <b>Japan</b>                    | <b>42.4</b>    | <b>22.7</b>    | <b>65.1</b>  |
| <b>South Korea</b>              | <b>20.0</b>    | <b>15.9</b>    | <b>35.9</b>  |
| <b>Singapore</b>                | <b>11.0</b>    | <b>14.7</b>    | <b>25.7</b>  |



Examples of Openness Index: (export + import)/GDP  
(Source: [data.worldbank.org/indicator/NE.TRD.GNFS.ZS](http://data.worldbank.org/indicator/NE.TRD.GNFS.ZS))

|                    |            |
|--------------------|------------|
| <b>Australia</b>   | <b>41%</b> |
| <b>China</b>       | <b>40</b>  |
| <b>US</b>          | <b>28</b>  |
| <b>Japan</b>       | <b>36</b>  |
| <b>South Korea</b> | <b>85</b>  |
| <b>Singapore</b>   | <b>326</b> |
| <b>Hong Kong</b>   | <b>401</b> |
| <b>Belgium</b>     | <b>160</b> |
| <b>Netherlands</b> | <b>154</b> |
| <b>Luxembourg</b>  | <b>390</b> |



# Australia's trade structure in 2015 (\$billion)

(Source: Dept. of Foreign Affairs and Trade)

| <b>Top 5 exports</b>                 | <b>Amount</b> | <b>Top 5 Imports</b>            | <b>Amount</b> |
|--------------------------------------|---------------|---------------------------------|---------------|
| <b>Iron ores</b>                     | <b>49.1</b>   | <b>Tourism</b>                  | <b>26.7</b>   |
| <b>Coal</b>                          | <b>37.0</b>   | <b>Passenger motor vehicles</b> | <b>20.4</b>   |
| <b>Education (+ related travels)</b> | <b>18.8</b>   | <b>Refined petroleum</b>        | <b>18.4</b>   |
| <b>Natural gas</b>                   | <b>16.5</b>   | <b>Telco equipment</b>          | <b>11.7</b>   |
| <b>Tourism</b>                       | <b>16.0</b>   | <b>Freight services</b>         | <b>10.2</b>   |



# Comparative advantage and gains from trade

- Specialization based on comparative advantage is a source of gains from trade.
- Comparative advantage is derived from lower opportunity costs.
- This principle is true for trade between any two individuals, as much as trade between any two countries.



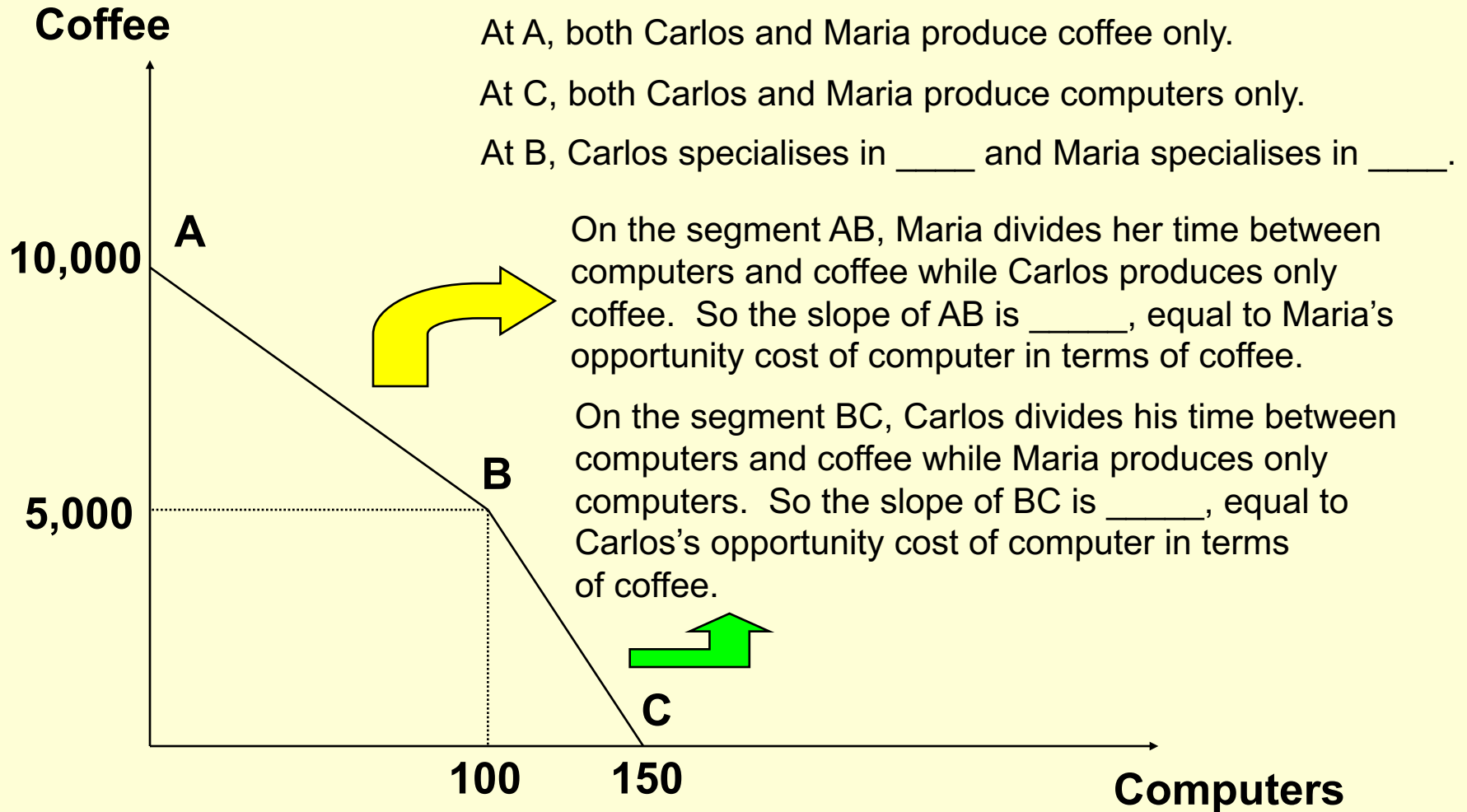
# PPF for a two-worker economy

- Production possibilities frontier (PPF): a graph showing the maximum amount of one good that can be produced for every possible level of production of the other good.
- Brazil has two workers: Carlos and Maria
- Each works 50 weeks a year, producing coffee and computers.
  - Carlos can produce 100 kg of coffee or 1 computer per week.
  - Maria can produce 100 kg of coffee or 2 computers per week.
- What is the PPF for Brazil?
  - Who has a comparative advantage in coffee?
  - What should be the pattern of specialisation in Brazil?

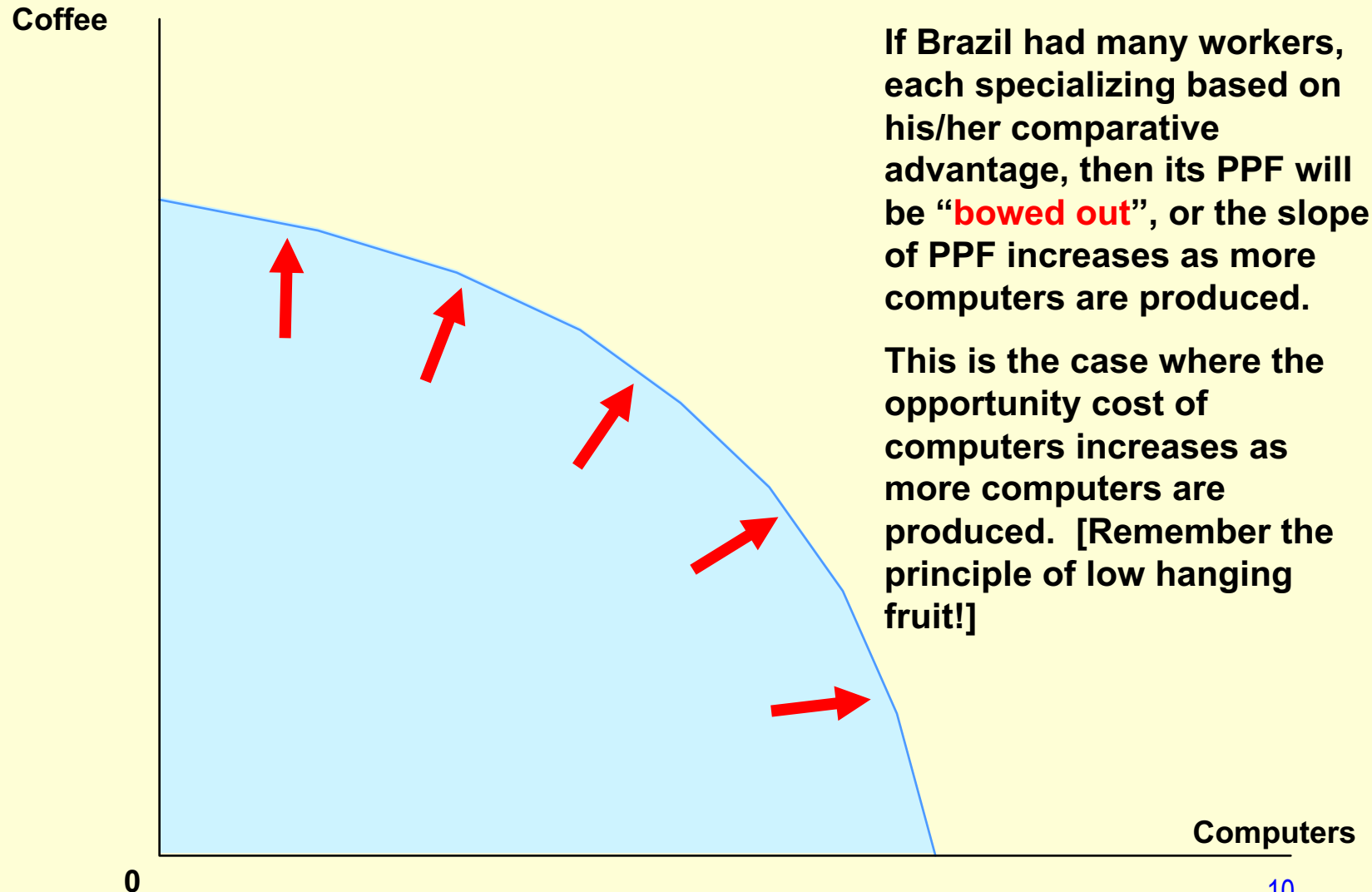
# Brazil's PPF

- If both produce only coffee, Brazil can produce \_\_\_\_\_ kg of coffee.
- If both produce only computers, Brazil can produce \_\_\_\_\_ computers.
- But how about a mix of these two goods?
- Starting from all coffee, if Brazil wants to produce its first computer, who should do it? Why?
- Opportunity cost of a computer in terms of coffee is \_\_\_\_\_ kg for Carlos and \_\_\_\_\_ kg for Maria.
- So \_\_\_\_\_ has a comparative advantage in computer and \_\_\_\_\_ has a comparative advantage in coffee.
- If each specializes in what (s)he has a comparative advantage in, then Brazil can produce \_\_\_\_\_ computers by and \_\_\_\_\_ kg of coffee.

# Brazil's PPF



# PPF for a many-worker economy





# Consumption possibilities

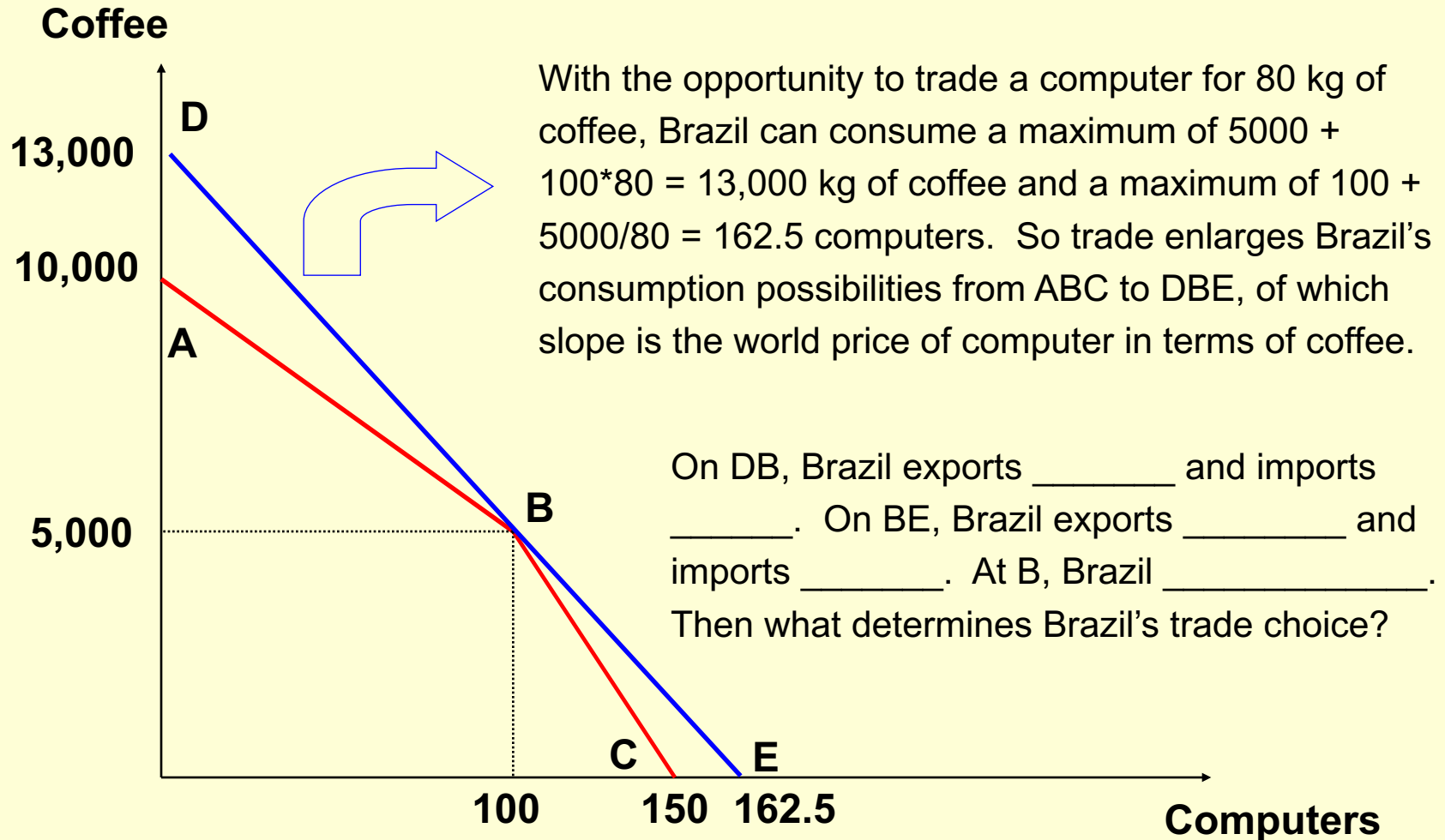
- Consumption possibilities show the maximum combinations of goods and services an economy can choose to consume.
- In a closed economy (called autarky), production possibilities = consumption possibilities.
- In an open economy, trade typically enlarges an economy's consumption possibilities.



# Brazil's consumption possibilities with trade

- Suppose Brazil opens up to trade when the world price of a computer is 80 kg of coffee.
  - Carlos's opportunity cost of a computer is 100 kg of coffee.
  - Maria's opportunity cost of a computer is 50 kg of coffee.
- So trade leads Maria to specialize in \_\_\_\_\_, Carlos to specialize in \_\_\_\_\_.
  - Maria produces 100 computers a year.
  - Carlos produces 5000 kg of coffee a year.
  - And Brazil can trade as many computers as it wants for coffee at the world price of 1:80.
  - After trade, Brazil can consume a maximum of \_\_\_\_\_ kg of coffee, or a maximum of \_\_\_\_\_ computers.

# Brazil's PPF and consumption possibilities

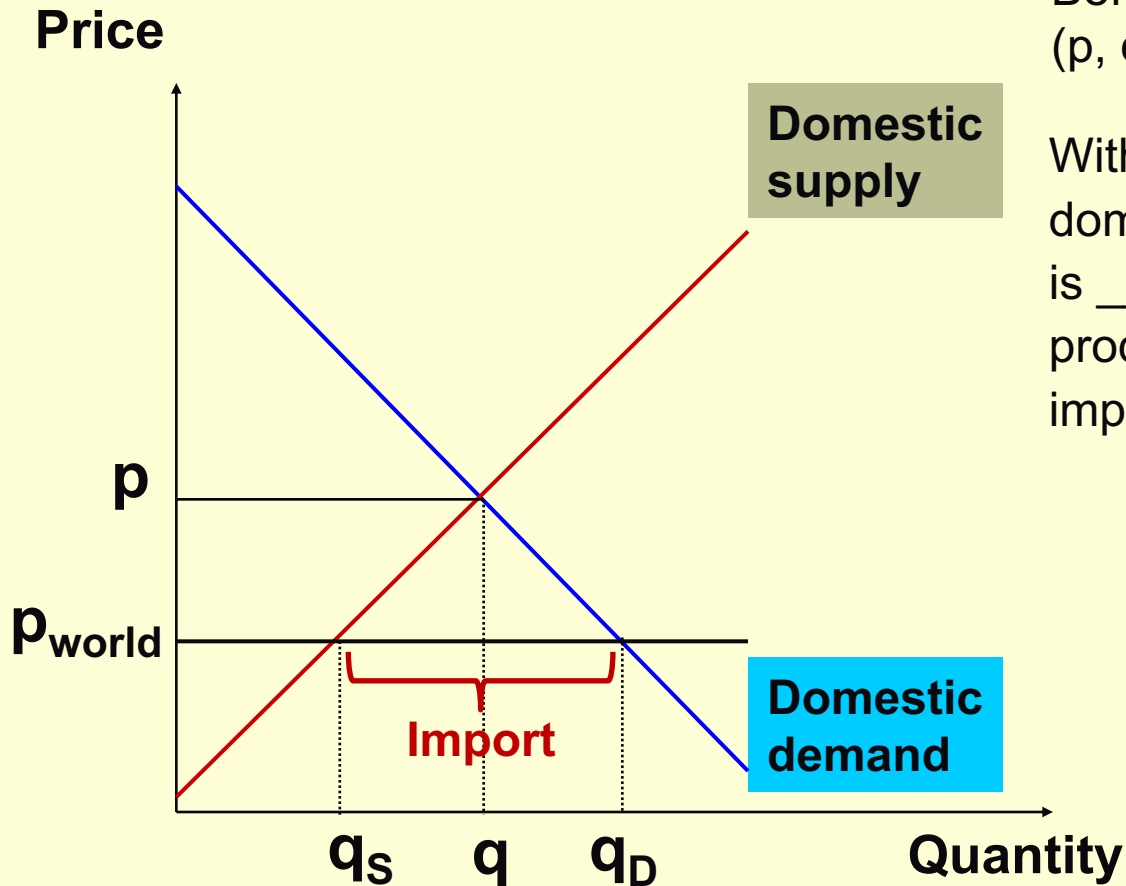




# Determination of export and import: supply and demand again

- Suppose the world price of computers is lower than the domestic price of computers in Brazil.
- Then consumers in Brazil benefit from importing computers at the world price.
- If the price of a good or service in a closed economy is *greater* than the world price, and that economy opens itself to trade, the economy will tend to become an *importer* of that good or service.

# Brazil, coffee importer



Before trade, equilibrium is  $(p, q)$ .

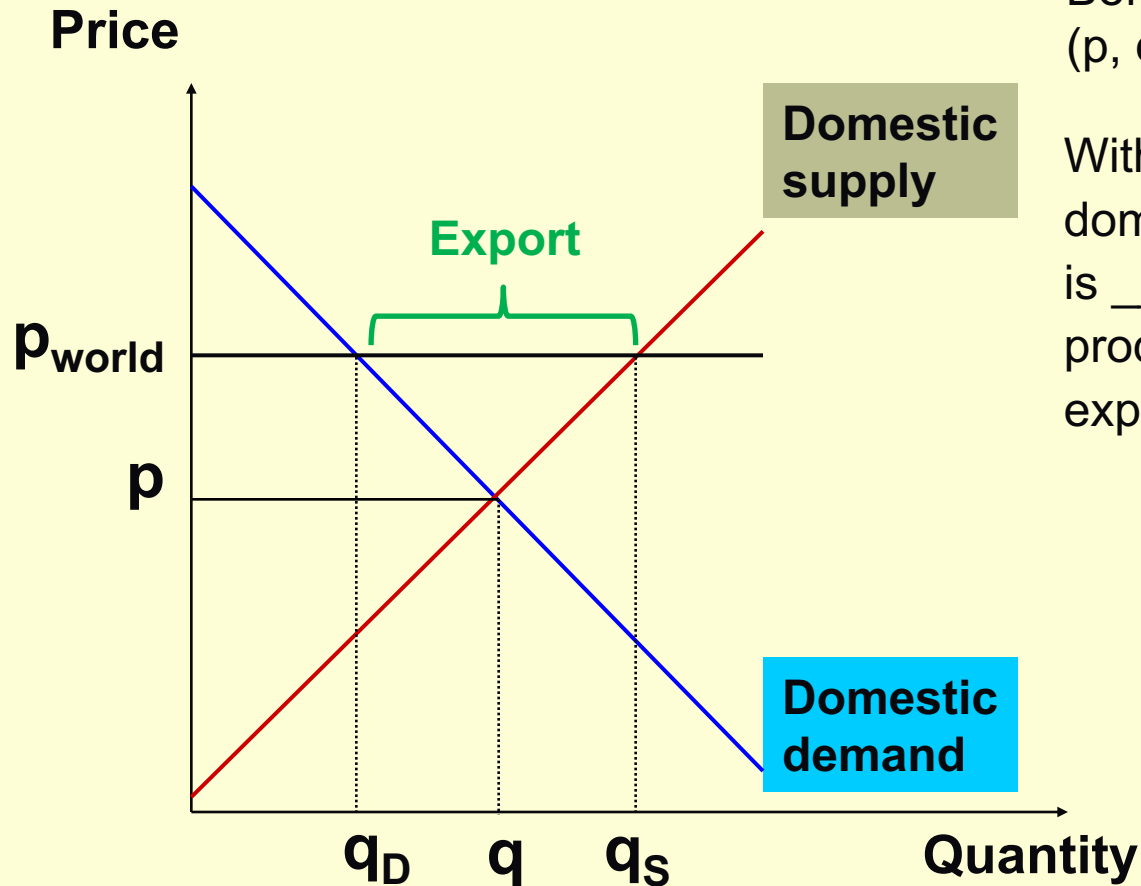
With the world price at  $p_{\text{world}}$ , domestic quantity demanded is \_\_\_\_\_, and domestic production is \_\_\_\_\_. So total import is \_\_\_\_\_.



# Determination of export and import: supply and demand again

- Suppose the world price of coffee is higher than the domestic price of coffee in Brazil.
- Then coffee producers in Brazil benefit from exporting coffee at the world price.
- If the price of a good or service in a closed economy is *lower* than the world price, and that economy opens itself for trade, the economy will tend to become an *exporter* of that good or service.

# Brazil, coffee exporter



Before trade, equilibrium is  $(p, q)$ .

With the world price at  $p_{\text{world}}$ , domestic quantity demanded is \_\_\_\_\_, and domestic production is \_\_\_\_\_. So total export is \_\_\_\_\_.



# Gains from trade revisited

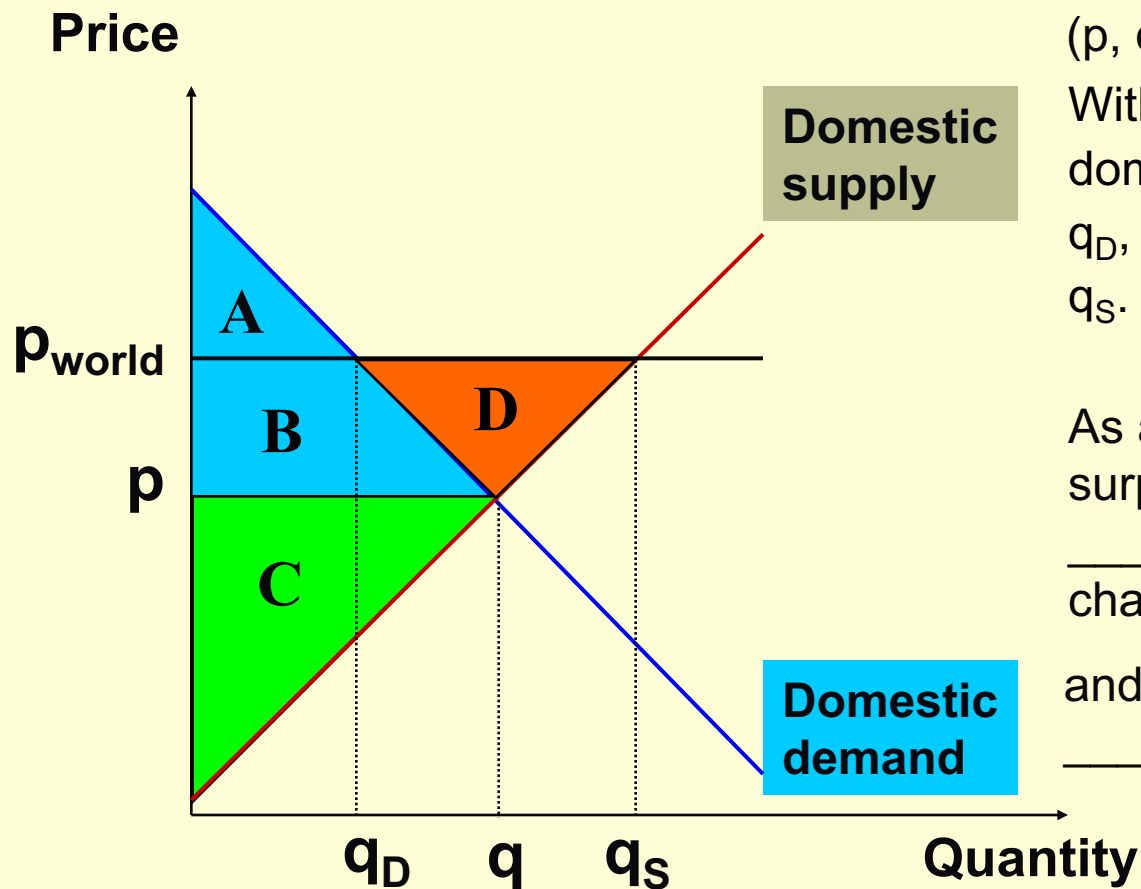
- Q: Where do they come from?
- A: Specialization based on comparative advantage leads to increased consumption possibilities.
- Q: How to secure them?
- A: Produce and export goods and services in which the economy has a comparative advantage; import goods and services in which the economy does not have a comparative advantage.



# Winners and losers from trade: export

- If an economy exports goods and services at the world price higher than domestic prices, then
- Domestic consumers are worse off: consumer surplus decreases.
- Domestic producers of the export sector are better off: producer surplus increases.
  - Australian wine industry and the 'Robert Parker' effect

# Winners and losers from trade: export



Before trade, equilibrium is  $(p, q)$ .

With the world price at  $p_{\text{world}}$ , domestic quantity demanded is  $q_D$ , and domestic production is  $q_S$ . So total export is  $q_S - q_D$ .

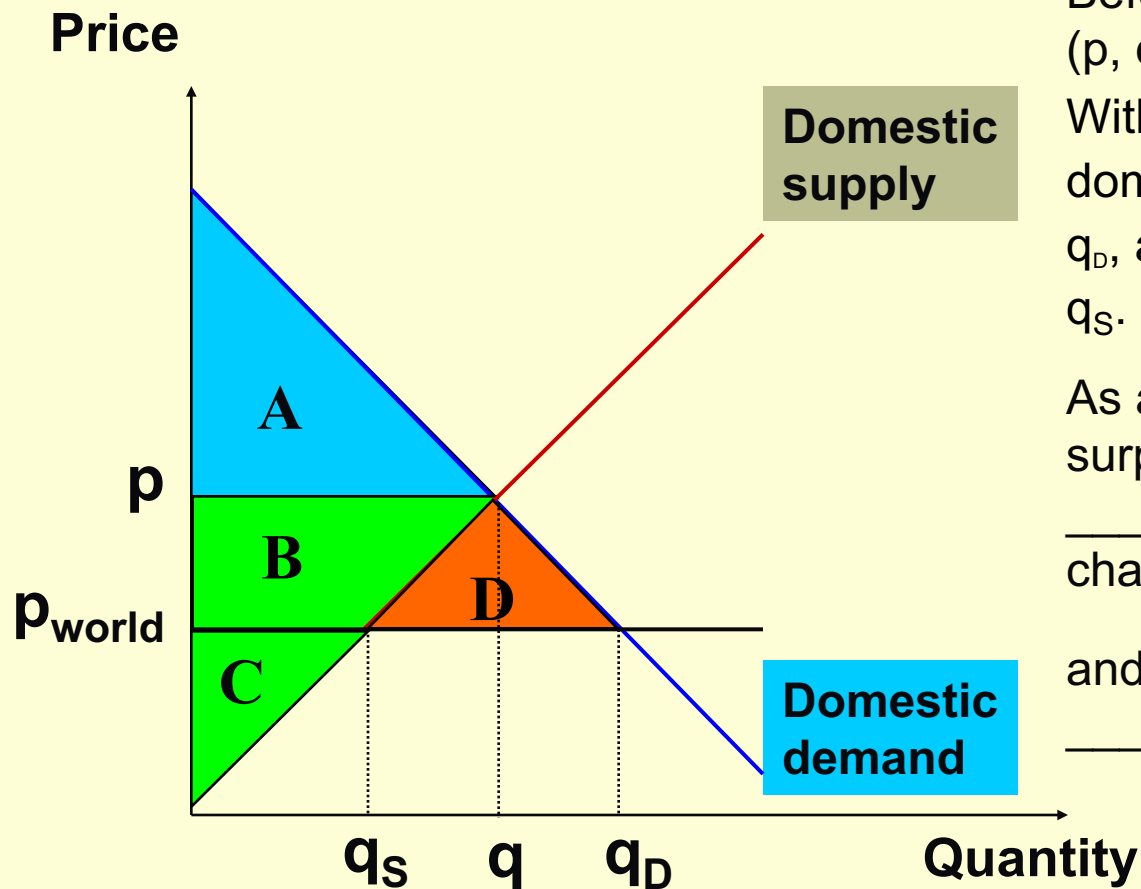
As a result of trade, producer surplus changes from \_\_\_\_\_ to \_\_\_\_\_, consumer surplus changes from \_\_\_\_\_ to \_\_\_\_\_, and total surplus changes from \_\_\_\_\_ to \_\_\_\_\_.



# Winners and losers from trade: import

- If an economy imports goods and services at the world price lower than domestic prices, then
- Domestic consumers are better off: consumer surplus increases.
- Domestic producers of the import sector are worse off: producer surplus decreases.
  - Australian automobile industry, textile industry
  - Wine industry in the UK, Japan, (many states in the) US

# Winners and losers from trade: import



Before trade, equilibrium is  $(p, q)$ .

With the world price at  $p_{\text{world}}$ , domestic quantity demanded is  $q_D$ , and domestic production is  $q_s$ . So total import is  $q_D - q_s$ .

As a result of trade, producer surplus changes from \_\_\_\_\_ to \_\_\_\_\_, consumer surplus changes from \_\_\_\_\_ to \_\_\_\_\_, and total surplus changes from \_\_\_\_\_ to \_\_\_\_\_.



# Protectionist trade policies

- Intended to protect domestic industries from foreign competition (or win votes?)
- Sometimes countries use protectionist trade policies to retaliate in trade wars.
  - Examples: import tariff, import quota
- Examples of protectionist trade policies
  - US quota on automobiles imported from Japan, 1981-1983
  - EU-US banana war, 1998-2001
  - US steel tariffs, 2002-2003
- Does protectionism work?
  - Little evidence of productivity improvement in protected industry
  - Evidence of competition-driven productivity growth



# Case: EU-US banana war, 1998-2001

- US complained at the World Trade Organization (WTO) against the EU in giving preferential access to the European market to banana growers in African, Caribbean and Pacific nations (former European colonies); the European market share by the US companies (Chiquita and Dole) shrank by 50%
- US retaliation
  - 100 percent tariffs on selected European imports that would gain the US a 'maximum leverage' against Europe (i.e., British, French, Italian) and have a 'minimum impact' on American consumers
  - Selected items: Pecorino cheese (Italian), English sweaters (English), Louis Vuitton handbags (French), etc.
- War ends in April 2001
  - EU ceases the preferential treatment of banana growers.
  - US suspends sanctions on EU imports.



# Import tariff

- Tariff: a tax on imported goods
  - Government collects tariff revenue.
- Objectives: protection of domestic producers (or to satisfy voters, or to retaliate?)
- Outcome:
  - Consumer surplus decreases.
  - Producer surplus increases.
  - Government collects tariff revenue.
  - Overall, total surplus decreases.

# Examples of Oz tariff rates (2015)

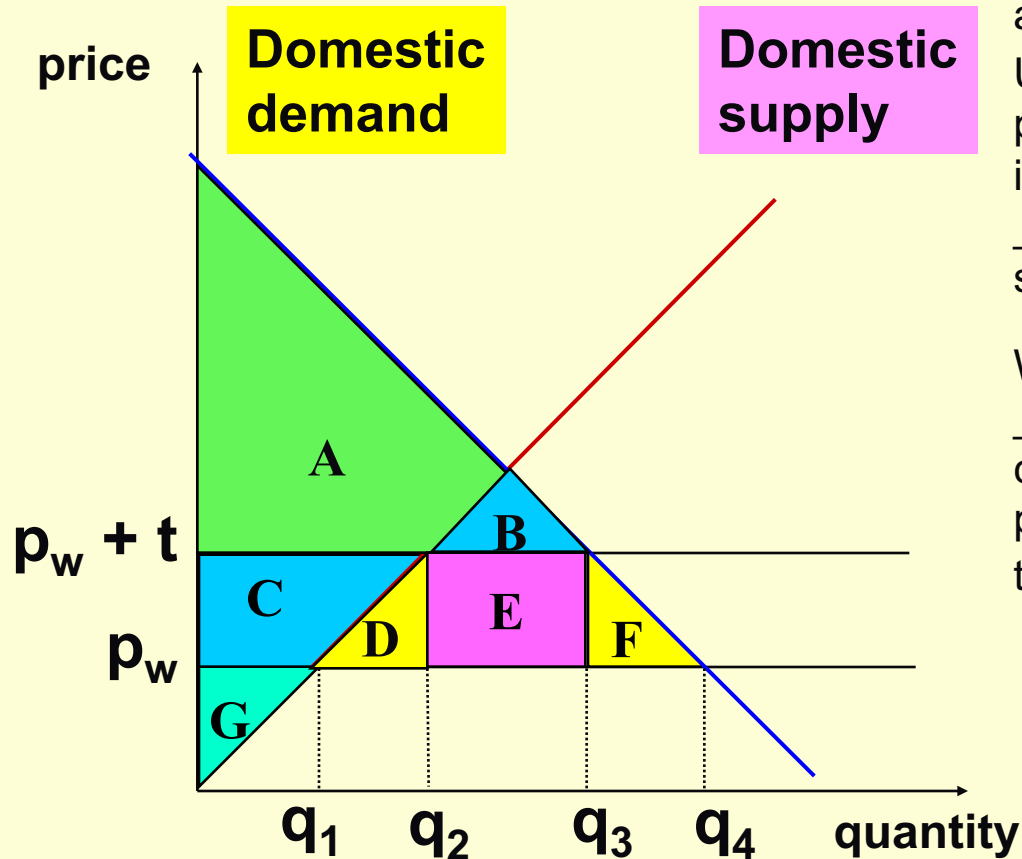
|                                                                       |                                     |
|-----------------------------------------------------------------------|-------------------------------------|
| <b>Most agricultural and fishery products (rice, meat, fish, etc)</b> | <b>0%</b>                           |
| <b>Some vegetable (potatoes, truffles)</b>                            | <b>5%</b>                           |
| <b>Textile, clothing and footwear</b>                                 | <b>5%</b>                           |
| <b>Small electric appliances</b>                                      | <b>5%</b>                           |
| <b>New and used passenger motor vehicles</b>                          | <b>5%</b>                           |
| <b>Alcohol (depending on alcohol content – it's complicated!)</b>     | <b>\$47.85 per litre of alcohol</b> |
| <b>Wine</b>                                                           | <b>5%</b>                           |



# Import quota

- Quota: a limit on the amount of import
  - Quota license is usually given to domestic importers.
  - The importer gains the difference between import price and domestic price, called quota rent.
- Objectives: protection of domestic producers (or to satisfy voters, or to retaliate?)
- Outcome:
  - Consumer surplus decreases.
  - Producer surplus increases.
  - Quota licensees collect quota rent.
  - Overall, total surplus decreases.

# Import tariff



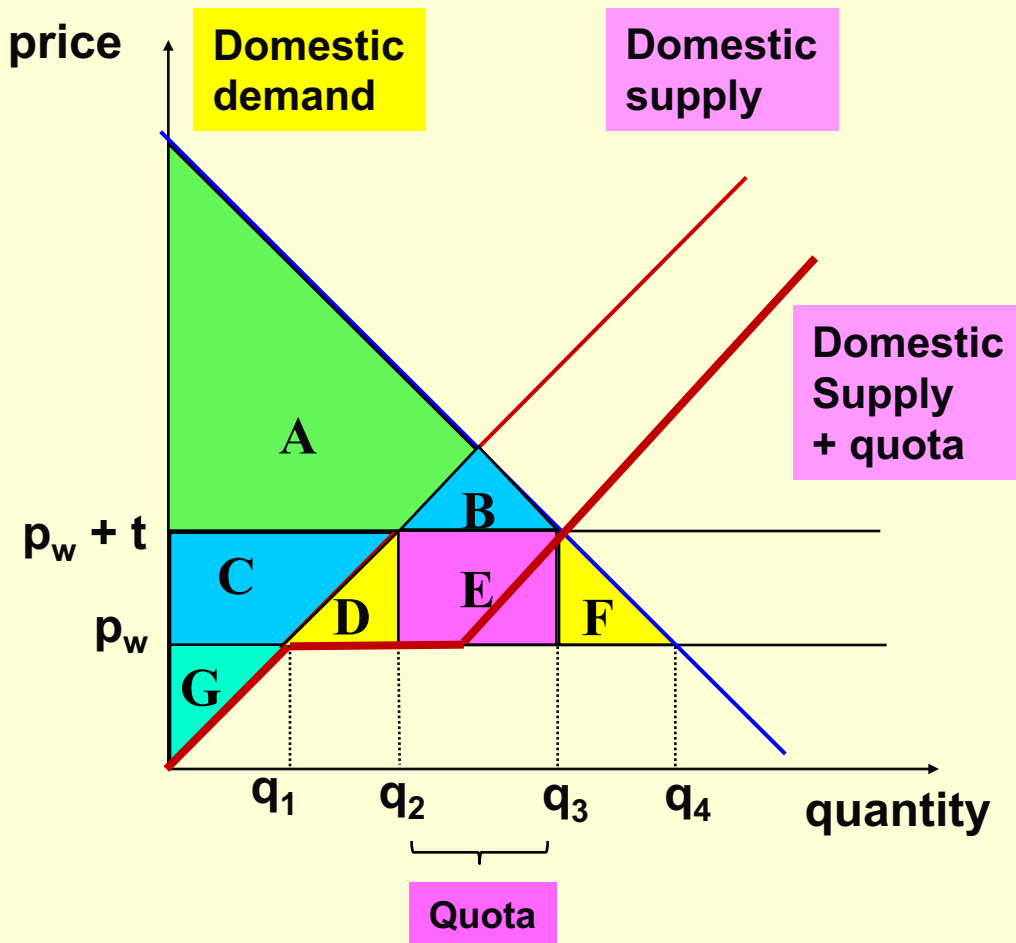
$p_w$  is the world price and  $t$  is a tariff per unit imported.

Under free trade, domestic production is \_\_\_\_\_, the amount of import is \_\_\_\_\_, consumer surplus is \_\_\_\_\_, and producer surplus is \_\_\_\_\_.

With the tariff, domestic production is \_\_\_\_\_, the amount of import is \_\_\_\_\_, consumer surplus is \_\_\_\_\_, producer surplus is \_\_\_\_\_, and tariff revenue is \_\_\_\_\_.

The deadweight loss of the tariff is \_\_\_\_\_, which is the same if there is an import quota of  $q_3 - q_2$ .

# Import tariff



$p_w$  is the world price and  $q_3 - q_2$  is an import quota, which would have been the amount of import when there was a tariff of  $t$  per unit.

With the import quota, domestic supply shifts by the amount of quota, leading to the same equilibrium as when there was a tariff of  $t$  per unit.

Total quota rent is \_\_\_\_\_, and the deadweight loss of the tariff is \_\_\_\_\_.



## Case: US import quotas on Japanese automobiles (link on Moodle)

- 1981 – 1983: US imposed a ‘voluntary restraint agreement’ on Japanese automobile imports of 1.68 million cars a year (reduced from 1.85 million in 1980).
- Estimated costs in 1984
  - Average US car price rose by \$400 (8 million sold in 1984)
  - Average Japanese car price rose by \$1000.
  - Total cost to consumers:  $\$400 \times 8 \text{ million} + \$1000 \times 1.68 \text{ million} = \$4.88 \text{ billion}$  (lost consumer surplus is larger)
- Did the quota work?
  - Productivity of American auto makers still lagging behind Japanese: 200 labour hours per car in the US compared to 100 labour hours per car in Japan
  - Japanese auto manufacturers benefited from the quota (inelastic demand).



## Case: Cost of steel tariffs in the US ([link on Moodle](#))

Higher steel prices following last year's imposition of sweeping import tariffs contributed to the loss of as many as 200,000 American jobs - more than the entire workforce of the US steel industry, a study has found.

"Our businesses have been seriously harmed by steel protection," said the head of CITAC (Consuming Industries Trade Action Coalition), William Gaskin. CITAC's members include major importers such as Nissan and Toyota, as well as domestic giants including Caterpillar and Procter & Gamble.

According to the CITAC study, every US state lost jobs as a result of higher steel prices in 2002. The total national job loss was 197,000 for the year, more than the 187,500 people employed in the US steel industry.



# Food for thought

- So free trade is a good thing for the society as a whole. But there are winners and losers.
- Since free trade increases overall size of the pie, there must be ways to help losers without making winners worse off (compared to the no trade scenario).
- How do we help those who lose out?



# Recap and what is to come

- Specialization based on comparative advantage is a source of gains from trade.
- Trade expands a country's consumption possibilities beyond its PPF.
- Although trade increases total surplus, there are winners and losers.
- Protectionist trade policies such as tariffs or quotas create deadweight loss.
- Next week, there is mid-semester test.
- In the following week, we will study when markets can 'fail' and what government can do in this case.