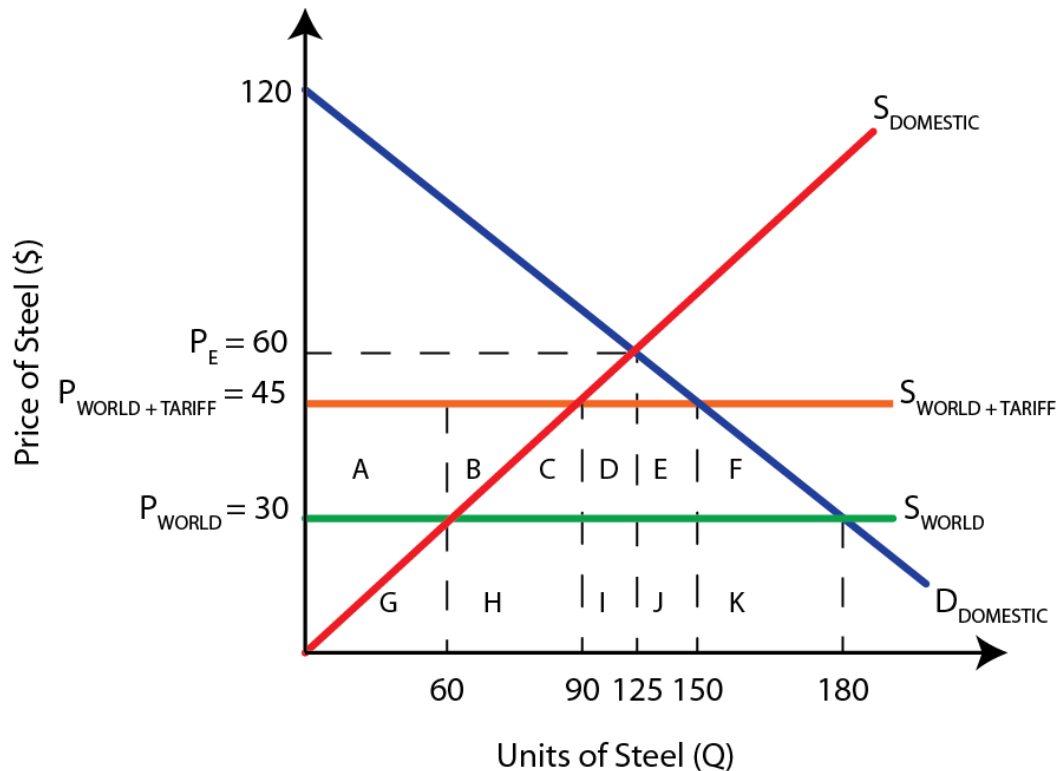


# Calculating the Effects of Protectionist Policies

# Tariffs

- When given specific values for price and quantity, we can calculate the effects of protectionist policies on all relevant stakeholders: domestic and foreign producers, consumers, and the government
- Example;** The diagram below shows a tariff of \$15 per unit placed on steel. Calculate the following before and after the tariff was implemented.



- A. Domestic revenue
- B. Foreign revenue
- C. Consumer surplus
- D. Government revenue
- E. Welfare loss

- **A. Domestic revenue**

- **Before:**  $P_{\text{WORLD}} \times Q_{\text{DOMESTIC}} = \$30 \times 60 = \$1800$

- **After:**  $P_{\text{TARIFF}} \times Q_{\text{NEW DOMESTIC}} = \$45 \times 90 = \$4050$

- **B. Foreign revenue**

- **Before:**  $P_{\text{WORLD}} \times Q_{\text{IMPORTS}} = \$30 \times (180 - 60) = \$3600$

- **After:**  $P_{\text{WORLD}} \times Q_{\text{NEW IMPORTS}} = \$30 \times (150 - 90) = \$1800$

- **C. Consumer surplus**

- **Before:**  $\frac{1}{2}(\text{Highest price} - P_{\text{WORLD}}) \times Q_{\text{WORLD}} = 0.5(120 - 30) \times 180 = \$8100$

- **After:**  $\frac{1}{2}(\text{Highest price} - P_{\text{TARIFF}}) \times Q_{\text{TARIFF}} = 0.5(120 - 45) \times 150 = \$5625$

- **D. Government revenue**

- **Before:**  $\$0 = \text{No tax collected}$

- **After:**  $(P_{\text{TARIFF}} - P_{\text{WORLD}}) \times Q_{\text{NEW IMPORTS}} = (\$45 - \$30) \times (150 - 90) = \$900$

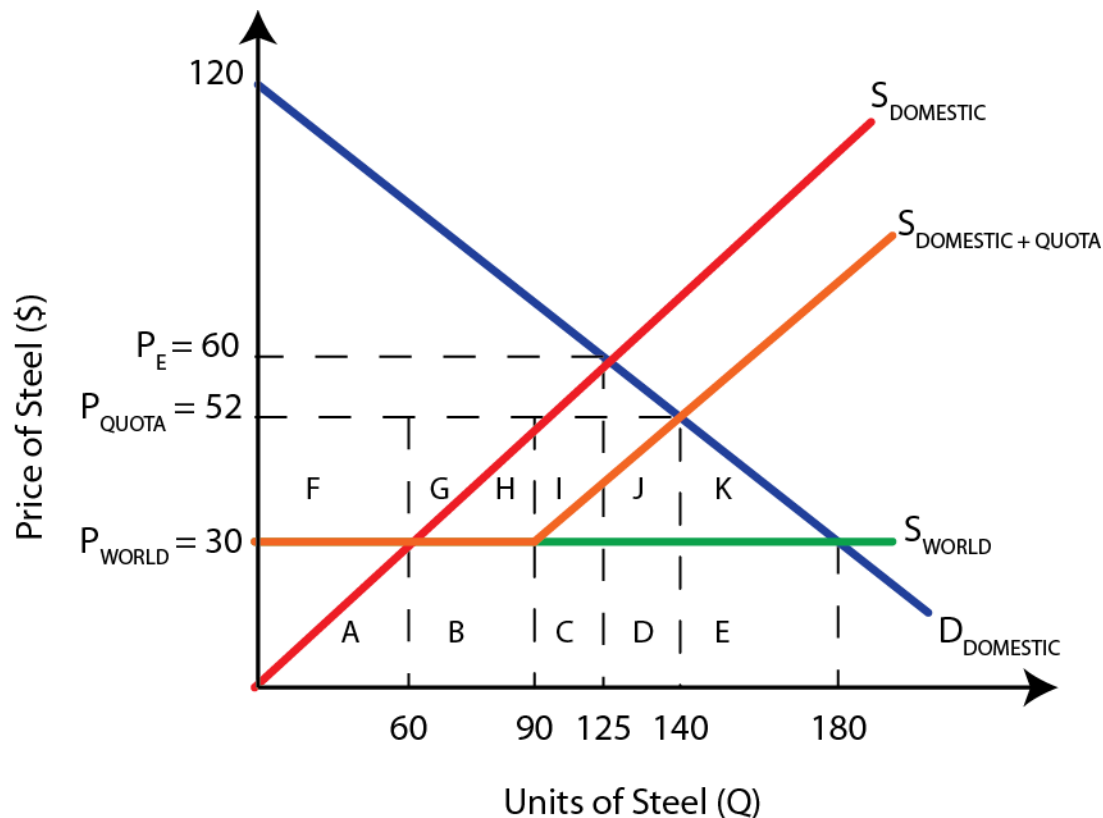
- **E. Welfare loss: (Area C + F)**

- **After:**  $2(0.5(30 \times 15)) = 2 \times 225 = \$450$

# Quotas

- **Example;** The diagram below shows a quota of 30 imported units of steel. Domestic producers previously sold 60 units at the world price of \$30. After the quota, they are paid \$52 and sell 110.

- Calculate the following before and after the quota was implemented.



- A. Domestic revenue
- B. Foreign revenue
- C. Consumer surplus
- D. Government revenue
- E. Welfare loss

- **A. Domestic revenue**

- **Before:**  $P_{\text{WORLD}} \times Q_{\text{DOMESTIC}} = \$30 \times 60 = \$1800$

- **After:**  $P_{\text{QUOTA}} \times Q_{\text{NEW DOMESTIC}} = \$52 \times ((60 - 0) + (140 - 90)) = \$5720$

- **B. Foreign revenue**

- **Before:**  $P_{\text{WORLD}} \times Q_{\text{IMPORTS}} = \$30 \times (180 - 60) = \$3600$

- **After:**  $P_{\text{WORLD}} \times Q_{\text{NEW IMPORTS}} = \$52 \times (90 - 60) = \$1560$

- **C. Consumer surplus**

- **Before:**  $\frac{1}{2}(\text{Highest price} - P_{\text{WORLD}}) \times Q_{\text{WORLD}} = 0.5(120 - 30) \times 180 = \$8100$

- **After:**  $\frac{1}{2}(\text{Highest price} - P_{\text{QUOTA}}) \times Q_{\text{QUOTA}} = 0.5(120 - 52) \times 140 = \$4760$

- **D. Government revenue**

- **Before:**  $\$0 = \text{No tax collected}$

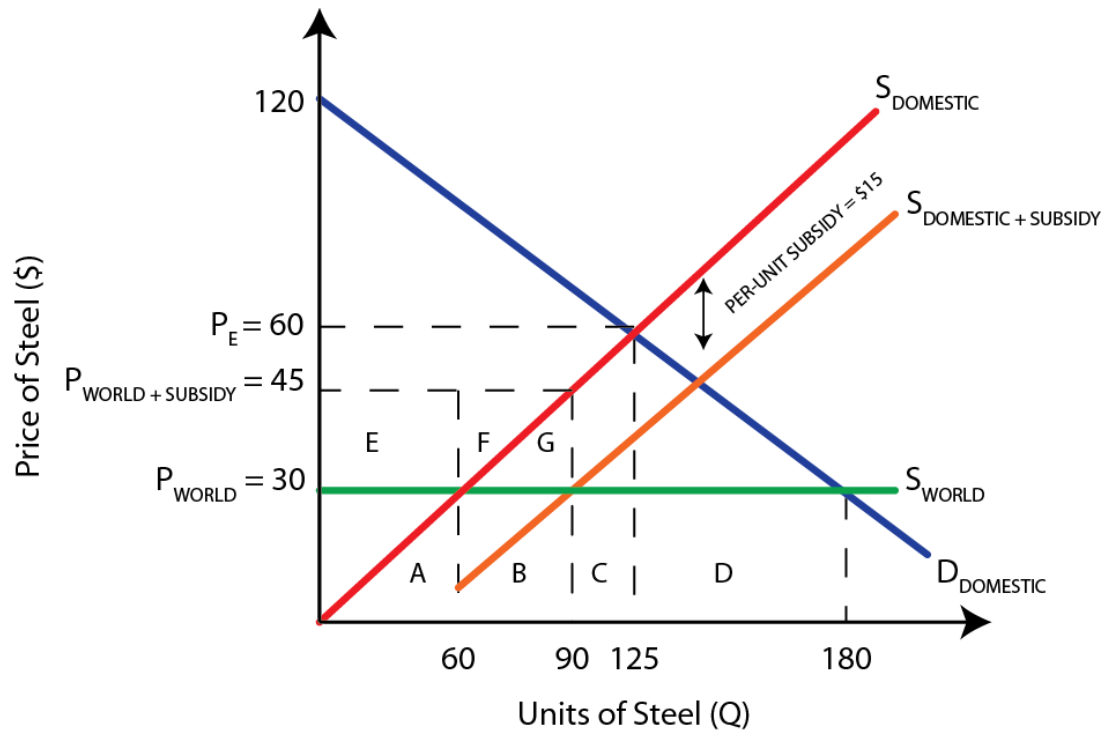
- **After:**  $\$0 = \text{No tax collected}$

- **E. Welfare loss: (Area J + K)**

- **After:**  $0.5(50 \times 22) + 0.5(40 \times 22) = \$990$

# Subsidy

- **Example;** The diagram below shows a per-unit subsidy of \$15, the same value as the per unit tariff above. The subsidy is designed to reduce the number of imports
  - Calculate the following before and after the subsidy was implemented.



- A. Domestic revenue
- B. Foreign revenue
- C. Consumer surplus
- D. Government revenue
- E. Welfare loss

- **A. Domestic revenue**

- **Before:**  $P_{\text{WORLD}} \times Q_{\text{DOMESTIC}} = \$30 \times 60 = \$1800$

- **After:**  $P_{\text{QUOTA}} \times Q_{\text{NEW DOMESTIC}} = \$45 \times 90 = \$4050$

- **B. Foreign revenue**

- **Before:**  $P_{\text{WORLD}} \times Q_{\text{IMPORTS}} = \$30 \times (180 - 60) = \$3600$

- **After:**  $P_{\text{WORLD}} \times Q_{\text{NEW IMPORTS}} = \$30 \times (180 - 90) = \$2700$

- **C. Consumer surplus**

- **Before:**  $\frac{1}{2}(\text{Highest price} - P_{\text{WORLD}}) \times Q_{\text{WORLD}} = 0.5(120 - 30) \times 180 = \$8100$

- **After:**  $\frac{1}{2}(\text{Highest price} - P_{\text{QUOTA}}) \times Q_{\text{QUOTA}} = 0.5(120 - 30) \times 180 = \$8100$

- **D. Government revenue**

- **Before:**  $\$0 = \text{No subsidy paid}$

- **After:**  $\text{Per-unit subsidy} \times Q_{\text{DOMESTIC}} = \$15 \times 90 = \$1350$

- **E. Welfare loss: (Area G)**

- **After:**  $0.5(15 \times 30) = \$225$

# Study Questions

- **1.** Create a free trade diagram that has the following values
  - A supply curve with quantities 45 units at \$15 and 30 units at \$10
  - A demand curve with quantities 15 units at \$15 and 30 units at \$10
  - World price of \$5 and domestic price of \$10
  - At the world price, domestic quantity of 15
  - At the world price, foreign imports of 30
  
- **1b.** Impose a tariff of \$3. Draw the expected results for domestic/import quantities on your diagram. Based on your diagram calculate the following
  - Domestic producer revenue before & after the tariff
  - Foreign revenue before and after the tariff
  - Total tariff amount
  - Areas of inefficiency and welfare loss