INTERNATIONAL TRADE

Chapter 9: The Instruments of Trade Policy: Tariff

Preview

- Basis Tariff Analysis
- Supply, Demand and Trade in a single economy
- Costs and Benefits of a Tariff in a Small Country case
- Costs and Benefits of a Tariff in a Large Country case
- Effective Rate of Protection

Basic Tariff Analysis

- A tariff, the simplest of trade policies, is a tax levied when a good is imported.
- A **specific tariff** is levied as a fixed charge for each unit of imported goods.

  For example, $1 per kg of cheese
- An **ad valorem tariff** is levied as a fraction of the value of imported goods.

  For example, a 25 percent U.S. tariff on imported wine

Basic Tariff Analysis

- **Tariffs** are the oldest form of trade policy and been used as a source of government income
- Purpose: to provide revenue and to protect particular domestic sectors.
- For example:

- The United Kingdom used tariffs (the famous Corn Laws) to protect its agriculture from import competition.

- In the late 19th century, both Germany and the United States protected their new industrial sectors by imposing tariffs on imports of manufactured goods.

How tariffs affect the economy???

https://www.youtube.com/watch?v=LKCMnCZyxiQ

Supply, Demand and Trade in a Single Industry

- Let's construct a model measuring how a tariff affects a single market, say that of wheat.
- Suppose that in the absence of trade, the price of wheat in the foreign country is lower than that in the domestic country.

1. With trade the foreign country will export: construct an export supply curve
2. With trade the domestic country will import: construct an import demand curve

Supply, Demand and Trade in a Single Industry

- An **export supply curve** is the difference between the quantity that foreign producers supply minus the quantity that foreign consumers demand, at each price.

- An **import demand curve** is the difference between the quantity that domestic consumers demand minus the quantity that domestic producers supply, at each price.

Supply, Demand and Trade in a Single Industry

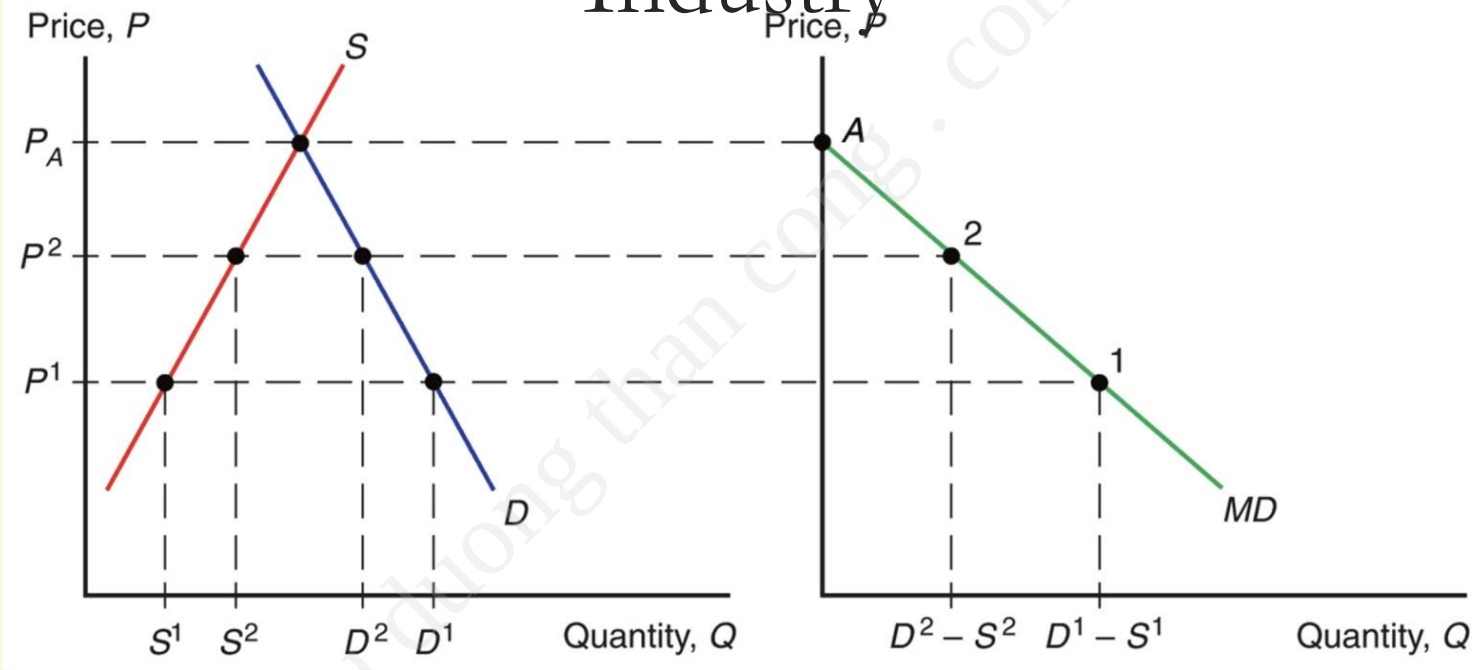


Figure 8-1

Deriving Home's Import Demand Curve

As the price of the good increases, Home consumers demand less, while Home producers supply more, so that the demand for imports declines.

Supply, Demand and Trade in a Single Industry

Figure 8-2

Deriving Foreign's Export Supply Curve

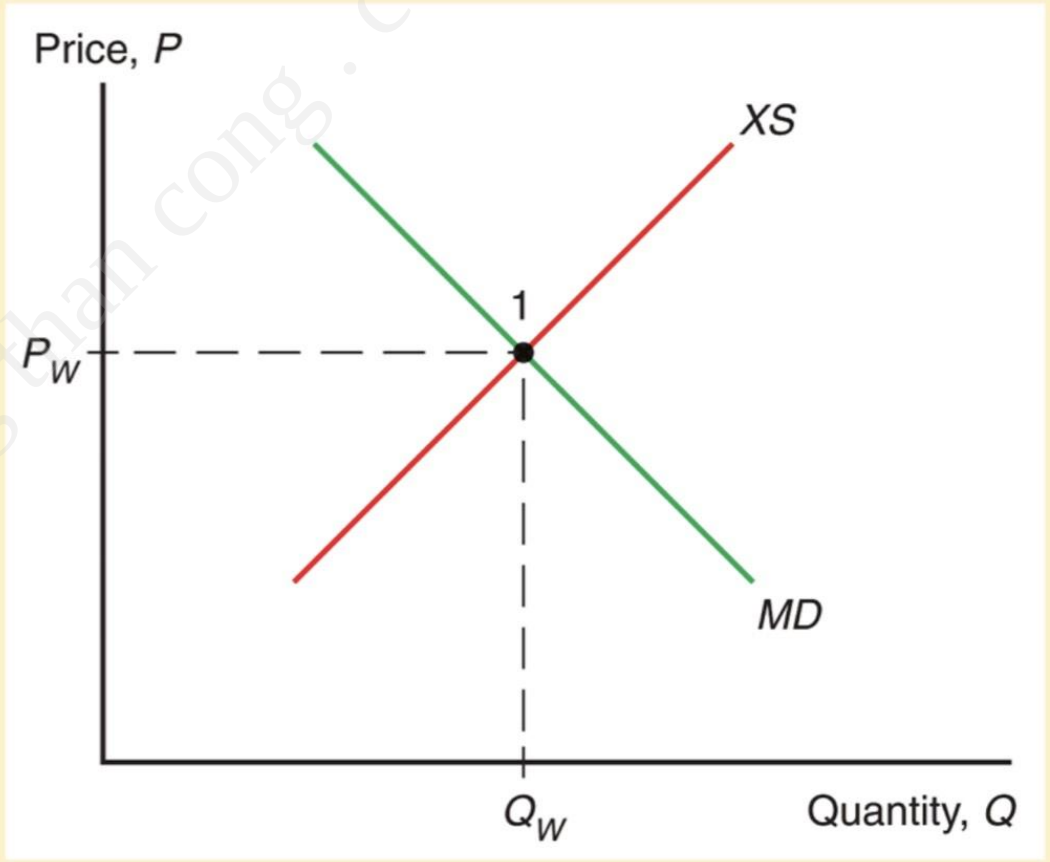
As the price of the good rises, Foreign producers supply more while Foreign consumers demand less, so that the supply available for export rises.

Supply, Demand and Trade in a Single Industry

Figure 8-3

World Equilibrium

The equilibrium world price is where Home import demand (*MD* curve) equals Foreign export supply (*XS* curve).



Supply, Demand and Trade in a Single Industry

- In equilibrium, **Import demand = Export supply**

Domestic demand – Domestic supply = Foreign supply – Foreign demand

- In equilibrium, **World demand = World supply**

The Effects of a Tariff

- A tariff acts as an added cost of transportation, making shippers unwilling to ship goods unless the price difference between the domestic and foreign markets exceeds the tariff.
- If shippers are unwilling to ship wheat, there is excess demand for wheat in the domestic market and excess supply in the foreign market.

1. The price of wheat will tend to **rise** in the **domestic** market.
2. The price of wheat will tend to **fall** in the **foreign** market.

=> Thus the price in Home will rise and that in Foreign will fall <u>until the price difference is t.</u>

The Effects of a Tariff

- Thus, a tariff will make the price of a good rise in the domestic market to $\mathbf{P_T}$ and will make the price of a good fall in the foreign market to $\mathbf{P^*_T}$, until the price difference equals the tariff **t.**

$$\mathbf{P_T - P^*_T = t}$$

$$\mathbf{P_T = P^*_T + t}$$

- The price of the good in foreign (world) markets should fall if there is a significant drop in the quantity demanded of the good caused by the domestic tariff.

The Effects of a Tariff

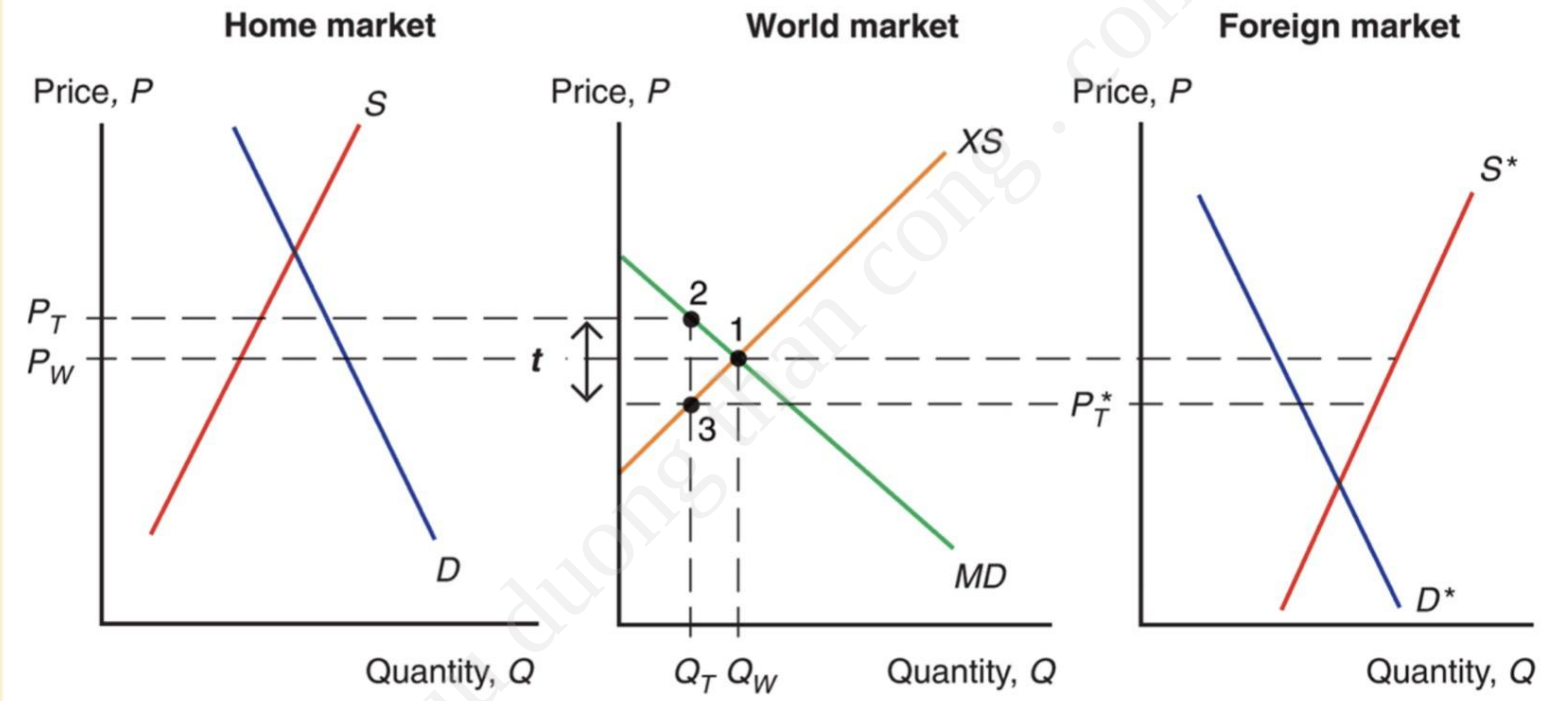


Figure 8-4

Effects of a Tariff

A tariff raises the price in Home while lowering the price in Foreign. The volume traded declines.

The Effects of a Tariff

- Because the price in domestic markets rises (to P_T), domestic producers should supply more and domestic consumers should demand less.

  The quantity of **imports falls from Q_W to Q_T**.

- Because the price in foreign markets falls (to P^*_T), foreign producers should supply less and foreign consumers should demand more.

  The quantity of **exports falls from Q_W to Q_T**

The Effects of a Tariff

- The quantity of domestic import demand equals the quantity of foreign export supply when $\mathbf{P_T - P^*_T = t}$
- In this case, the increase in the price of the good in the domestic country is less than the amount of the tariff.

- Part of the tariff is reflected in a decline of the foreign country's export price, and thus is not passed on to domestic consumers.

- But this effect is often not very significant.

The Effects of a Tariff on a Small Country

- When a country is “small”, it has no effect on the foreign (world) price of a good, because its demand for the good is an insignificant part of world demand.

- The foreign price will not fall, but will remain at **Pw**
- The price in the domestic market, however, will rise to

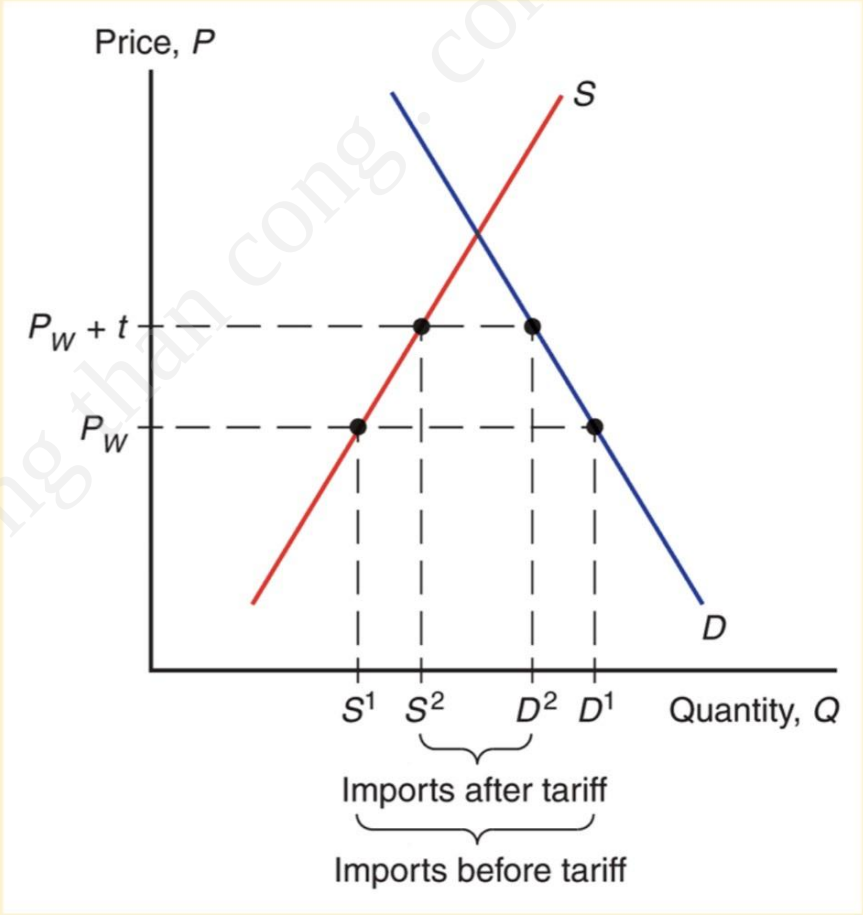
$$P_T = P_w + t$$

The Effects of a Tariff on a Small Country

Figure 8-5

A Tariff in a Small Country

When a country is small, a tariff it imposes cannot lower the foreign price of the good it imports. As a result, the price of the import rises from P_W to $P_W + t$ and the quantity of imports demanded falls from $D^1 - S^1$ to $D^2 - S^2$.



The Effective Rate of Protection

- The **effective rate of protection** measures how much protection a tariff or other trade policy provides domestic producers.

- It represents the change in value that an industry adds to the production process when trade policy changes.

- The change in value that an industry provides depends on the change in prices when trade policies change.

- Effective rates of protection often differ from tariff rates because tariffs affect sectors other than the protected sector, a fact which affects the prices and value added for the protected sector.

The Effective Rate of Protection

- For example, suppose that an automobile sells on the world market for $8000, and the parts that made it are worth $6000.

  The value added of the auto production is **$8000-$6000**

- Suppose that a country puts a **25% tariff** on imported autos so that domestic auto assembly firms can now charge up to **$10000**

- Now auto assembly will occur if the value added is up to **$10000-$6000.**

Costs and Benefits of a Tariff

- A tariff **raises** the price of a good in the importing country, so we expect it to hurt consumers and benefit producers there.
- In addition, the government **gains** tariff revenue from a tariff.
- How to measure these costs and benefits?
- We use the concepts of **consumer surplus** and **producer surplus.**

Consumer Surplus

- **Consumer surplus** measures the amount that a consumer gains from a purchase by computing the difference between the price he actually pays and the price he would have been willing to pay.

  - For example, a consumer would have been willing to pay $8 for a box of apple but the price is only $3, the consumer surplus gained by the purchase is $5.

  - The price he would have been willing to pay is determined by a demand (willingness to buy) curve.

  - When the price increases, the quantity demanded decreases as well as the consumer surplus

Consumer Surplus

Figure 8-7

Geometry of Consumer Surplus

Consumer surplus is equal to the area under the demand curve and above the price.

Producer Surplus

- **Producer surplus** measures the amount that a producer gains from a sale by the difference between the price he receives and the price he would have been willing to sell at.

  - For example, a producer willing to sell a good for $2 but receiving a price of $5 gains a producer surplus of $3.

  - The price he would have been willing to sell at is determined by a supply (willingness to sell) curve.

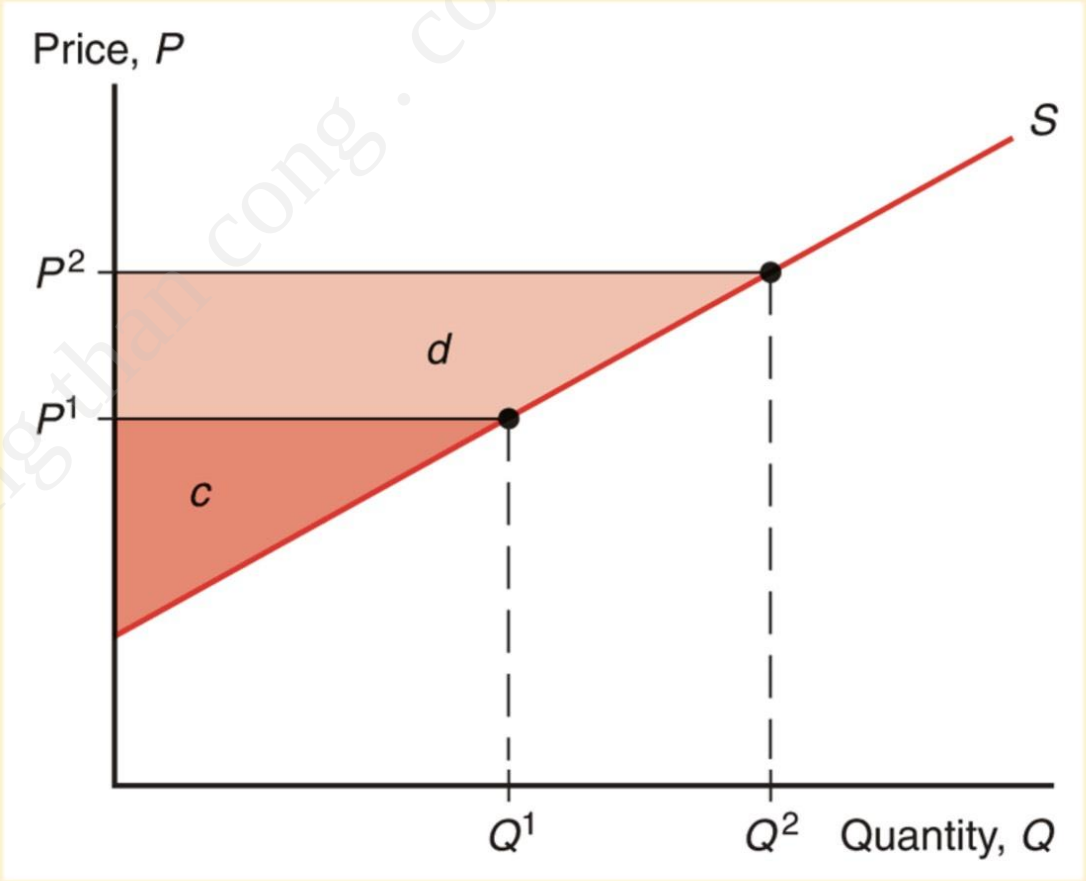
  - When price increases, the quantity supplied increases as well as the producer surplus.

Producer Surplus

Figure 8-8

Geometry of Producer Surplus

Producer surplus is equal to the area above the supply curve and below the price.



Costs and Benefits of a Tariff

- A tariff raises the price of a good in the importing country, making its **consumer surplus decrease** (making its consumers worse off) and making its **producer surplus increase** (making its producers better off).

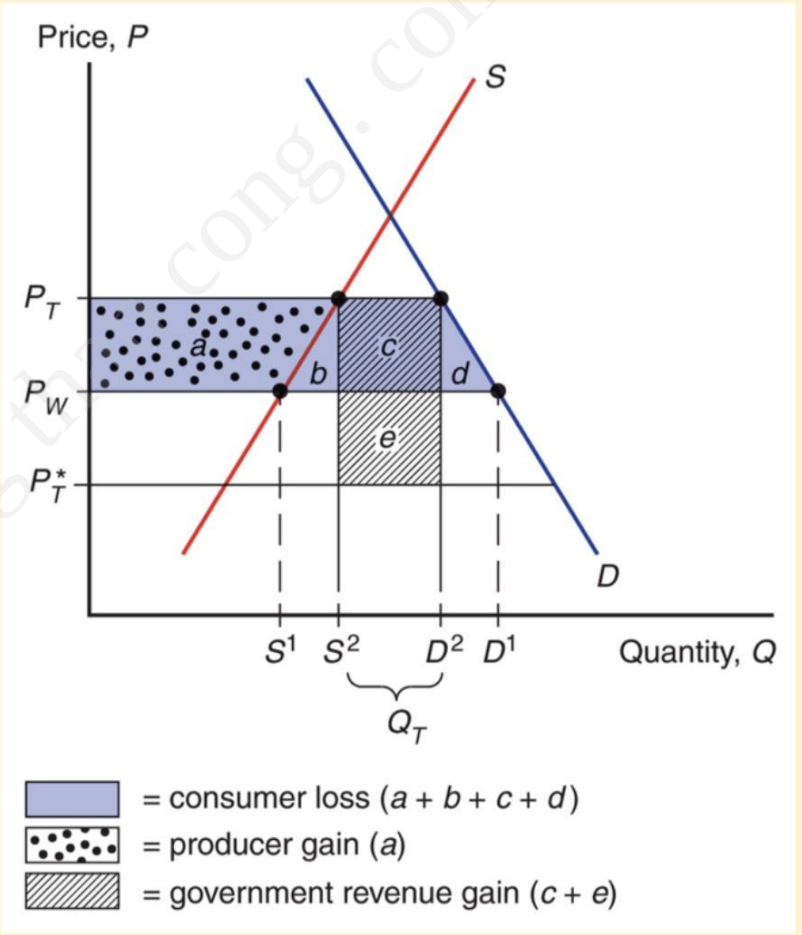
- Also, **government revenue** will increase.

Costs and Benefits of a Tariff

Figure 8-9

Costs and Benefits of a Tariff for the Importing Country

The costs and benefits to different groups can be represented as sums of the five areas *a*, *b*, *c*, *d*, and *e*.



Costs and Benefits of a Tariff

- For a "large" country that can affect foreign (world) prices, the welfare effect of a tariff is **ambiguous.**
- The triangles b and d represent the efficiency loss.

  - The tariff distorts production and consumption decisions: producers produce too much and consumers consume too little compared to the market outcome.

- The rectangle e represents the terms of trade gain.

  - The terms of trade increases because the tariff lowers foreign export (domestic import) prices.

Costs and Benefits of a Tariff

- Government revenue from the tariff equals the tariff rate times the quantity of imports.

$$t = PT - P^*T$$

$$QT = D2 - S2$$

=> Government revenue = t x QT = c + e

- Part of government revenue (rectangle e) represents the terms of trade gain, and part (rectangle c) represents part of the value of lost consumer surplus.

The government gains at the expense of consumers and foreigners.

Costs and Benefits of a Tariff

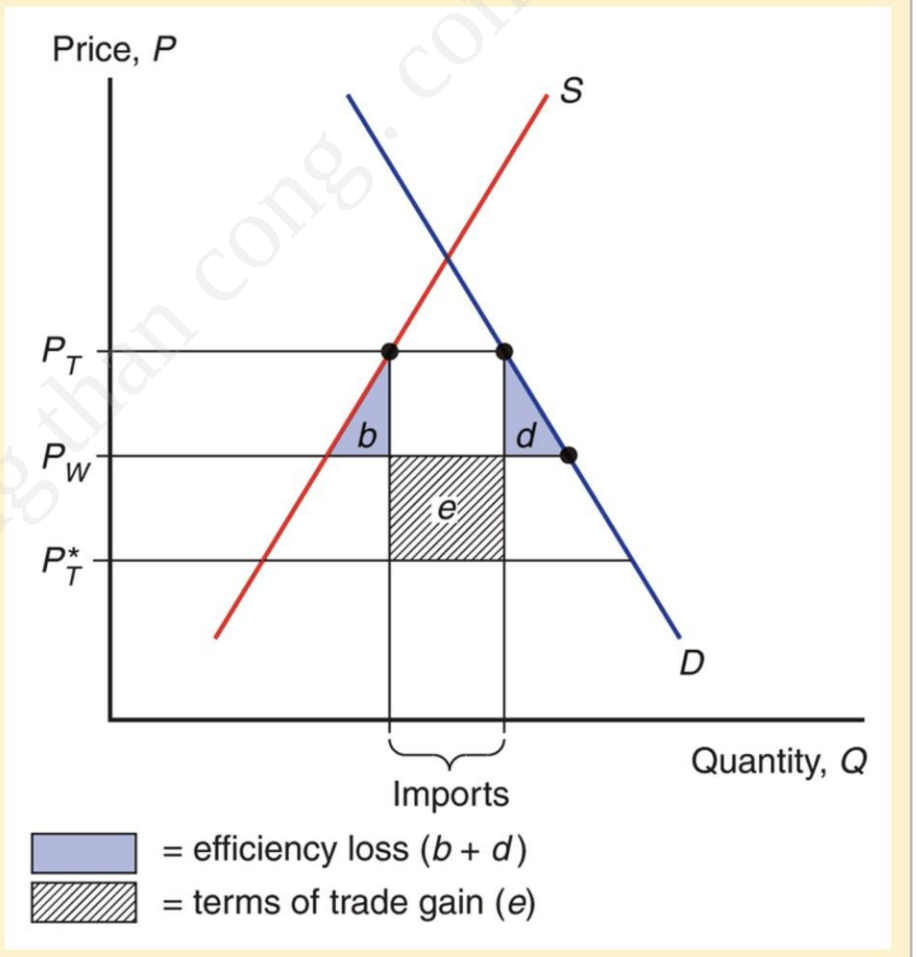
- If the terms of trade gain exceeds the efficiency loss, then national welfare will increase under a tariff, at the expense of foreign countries.
- However, this analysis assumes that the terms of trade does not change due to tariff changes by foreign countries (i.e., due to retaliation).

Costs and Benefits of a Tariff

Figure 8-10

Net Welfare Effects of a Tariff

The colored triangles represent efficiency losses, while the rectangle represents a terms of trade gain.



Summary

- 1. A tariff decreases the world price of the imported good when a country is "large", increases the domestic price of the imported good and reduces the quantity traded.
- 2. A tariff drives a wedge between foreign and domestic prices, raising the domestic price but by less than the tariff rate.
- 3. An important and relevant special case, however, is that of a "small" country that cannot have any substantial influence on foreign prices. In the small country case, a tariff is fully reflected in domestic prices.

Summary

- 4. The costs and benefits of a tariff or other trade policy may be measured using the concepts of consumer surplus and producer surplus:

  The domestic producers of a good gain because a tariff raises the price they receive

  The domestic consumers lose, for the same reason.

  There is also a gain in government revenue.
- 5. If we add together the gains and losses from a tariff, we find that the net effect on national welfare can be separated into two parts: On one hand is an efficiency loss, which results from the distortion in the incentives facing domestic producers and consumers. On the other hand is a terms of trade gain, reflecting the tendency of a tariff to drive down foreign export prices (in case of a large country).