EIGHT

International Economics

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Trade Restrictions: Tariffs

In this chapter:

- Introduction
- **Partial Equilibrium Analysis** of a Tariff
- The Theory of **Tariff Structure**
- **General Equilibrium** Analysis of a Tariff in a **Small** Country

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- While it is generally accepted that free trade **maximizes** world **output** and benefits all nations, most nations impose some **restrictions** on the **free flow** of international trade.
- Trade or **commercial policies** are restrictions and regulations deal with the **nation's** trade or commerce,
- **Trade policies** are advocated by **special** groups that **stand** to benefit from trade **restrictions**.

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Types of trade restrictions

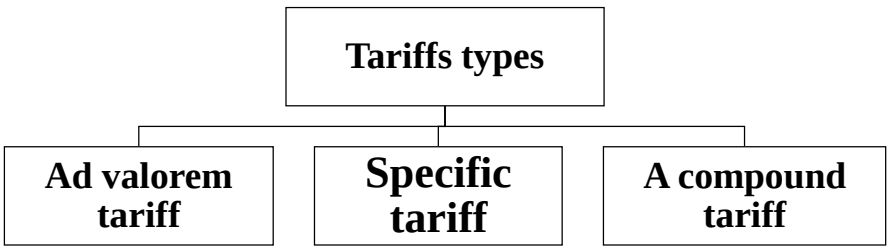
I- Tariffs:

A tariff is a **tax** or duty levied on the traded **commodity** as it crosses a national **boundary**.

II- Non tariff barriers:

As **Quotas** and **Voluntary** export restrains.

- **Import vs. Export tariffs**
- An **import tariff** is a tax or duty levied on imported commodities.
  - This is the most common form of tariff.
- An **export tariff** is a tax on exported commodities.
  - Prohibited by the U.S. Constitution, but occasionally practiced in developing countries to get better prices and raise revenues.
  - Developing nations rely heavily on export tariffs to raise revenues because of their ease of collection.

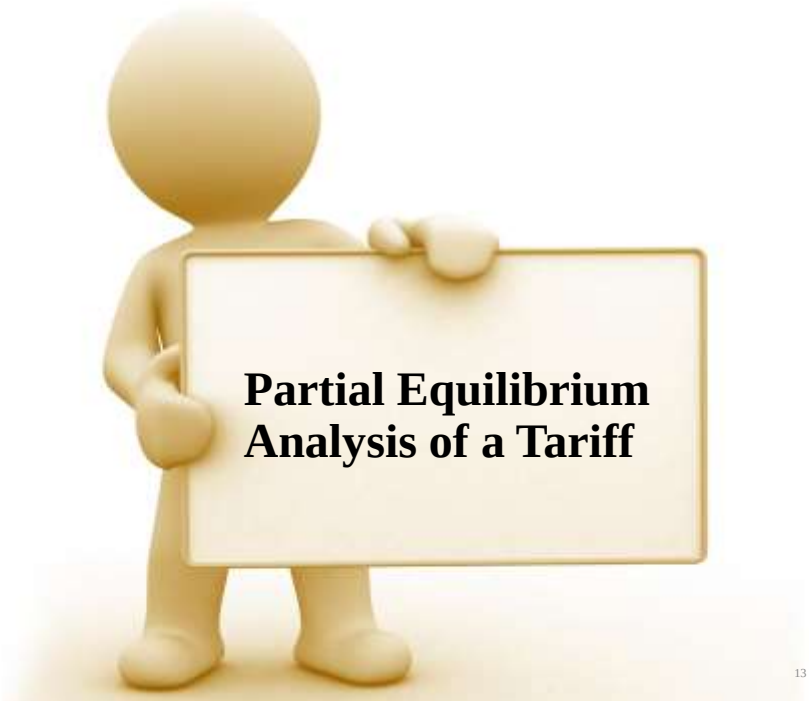


- **Ad valorem tariff**
  - A *fixed percentage* on the value of the traded commodity.
  - For example, a 10 percent tariff on value of the good.
- **Specific tariff**
  - A *fixed sum* per physical unit of a traded commodity.
  - fixed sum of $10 on each imported unit of the good regardless of its price.
- **A compound tariff**
  - A combination of an ad valorem and specific tariff.
  - 5 percent ad valorem on value of imported good and a specific duty of $10 on each unit of imported good.

Notes

- In practice since World War II Tariffs on non agriculture products have been sharply reduced all over the world.
- Tariffs average 5 percent or less on industrial products in developed nations, but are much higher in developing nations.
- Trade in agricultural products are still subject to relatively high trade barriers.

- We analyze the effects of a **tariff** in the nation imposing the tariff and on its trade partner(s) on
  - ✓ production,
  - ✓ consumption,
  - ✓ trade,
  - ✓ and welfare
- We will do this through
  - ✓ **Partial equilibrium** analysis (demand and supply curves)
  - ✓ The more complex **general equilibrium analysis** (production possibility frontiers and community indifference curves, or offer curves).



- We examine the case of a **small nation** imposes a **tariff** on imports competing with the **output** of a small domestic industry.

Accordingly, The tariff**:**

- ✓**Will not affect world prices** (because the nation is small)
- ✓**Will not affect** the rest of the economy (because the industry is small).

- **Let's assume the followings:**
  - $\boldsymbol{D_X}$ is the demand curve and $\boldsymbol{S_X}$ is the supply curve of commodity ***X*** in **Nation 2**.
  - Assume:
    - ✓**Nation 2** is a **small nation**.
    - ✓**Industry X** is a small industry.
- ***In the absence of trade,***
  - ✓The intersection of $\boldsymbol{D_X}$ and $\boldsymbol{S_X}$ defines equilibrium point **E** , at which **30X** is demanded and supplied at PX = **$3** in Nation 2.

❑ **With free trade**

- ✓ At the world price of P_X = \$1,
- ✓ The horizontal dashed line SF represents the infinitely elastic **free trade foreign supply curve** of commodity X to Nation 2.
- ✓ Nation 2 will consume **70X** (AB), of which 10X (AC) is **produced domestically** and the remainder of **60**X (CB) is **<u>imported</u>**.

If Nation 2 imposes a 100 percent ad valorem tariff on the imports of commodity X,

- ✓ P_X in Nation 2 will rise to **\$2 [**At P_X = \$2**]**,
- ✓ Nation 2 will consume **50X** (GH), of which 20X (GJ) is produced **domestically** and the remainder of **30X** (JH) is imported.
- ✓ The horizontal dashed line SF + T represents the new **tariff-inclusive** foreign supply curve of commodity X to Nation 2.

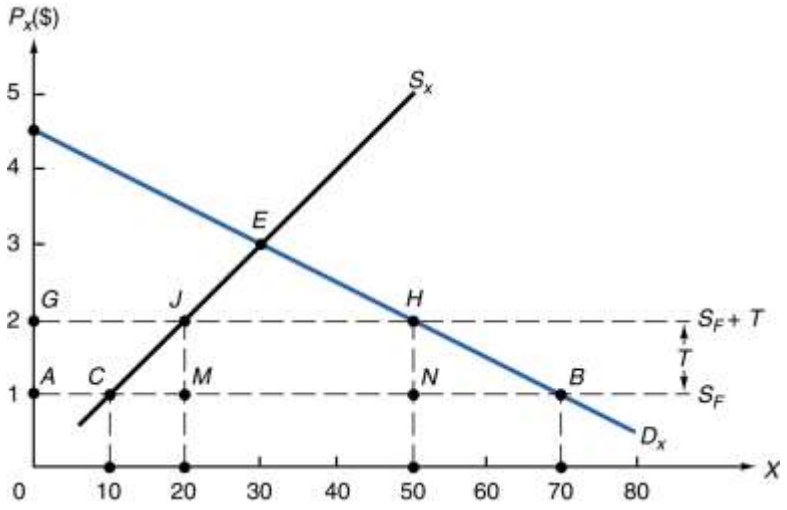


FIGURE 8-1 Partial Equilibrium Effects of a Tariff.

Resulting Effects of Tariff

Consumption effect

Reduction in domestic consumption equals 20X (BN)

Production effect

- Expansion of domestic production equals 10X (CM)

Trade effect

- Decline in imports 30X (BN + CM)

Revenue effect

- Revenue collected by the government equals $30 ($1 on each of the 30X imported, or MJHN).

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- **For the same \$1 increase in P_X in Nation 2 as a result of the tariff, the following results are expected:**
  1. The more **elastic** the **demand curve**, the greater the **consumption effect**.
  2. The more **elastic** the **domestic supply curve**, the greater the **production effect**.
  3. The more **elastic** the **demand** and **domestic supply** curves, the greater **the trade effect**.
  4. The more **elastic** the **demand** and **domestic supply** curves, the **smaller** the **revenue effect**.

- **Resulting Effects of Tariff: Consumer and Producer Surplus**
- The increase in the price of commodity X from P_X = \$1 to P_X = \$2 as a result of the 100 percent tariff that Nation 2 imposes on the importation of commodity X leads to
  - ✓ A reduction in **consumer surplus** and
  - ✓ An increase in **producer surplus**.
- These are used to measure **the costs and benefits** of the tariff.

- ***CS*** is the **difference** between what consumers would be **willing** to pay for each unit of the commodity and what they **actually** pay.
- **Graphically**, consumer surplus is measured by **the area under the demand curve** above the going **price**.
- ***For example***
  - **For the 30th unit of commodity X**, consumers in Nation 2 would be willing to pay *LE* = 3 $ Since they only pay $1, they receive a consumer surplus of *KE* = $2 on the 30th unit of commodity X that they purchase.
  - **for the 50th unit of commodity X,** consumers would be willing to pay *ZH* = $2. Since they only pay *ZN* = $1, they receive a consumer surplus of *NH* = $1 on the 50th unit of X.
  - **For the 70th unit of commodity X,** consumers would be willing to pay *WB* = $1. Since this is equal to the price that they **actually pay**, the consumer surplus for the 70th unit of X is zero.

- **In the absence of the import tariff, at P_X = \$1**
  - ✓With the total of 70X being purchased, the total consumer surplus in Nation 2 is equal to **ARB** = \$122.50 (\$3.50 times 70 divided by 2).
  - ✓This is the difference between what consumers would have been willing to pay (ORBW = \$192.50) and what they actually pay for 70X (OABW = \$70).

- ***When Nation 2 imposes a 100 percent import tariff***
  - ✓ The price of commodity X rises from P_X = \$1 to P_X = \$2 and purchases of commodity X fall from 70X to 50X.
  - ✓ Consumers pay **OGHZ** = \$100 for 50X. While they were willing to pay **OZHR**.
  - ✓ The consumer surplus thus shrinks from **ARB** = \$122.50 (with P_X = \$1 before the tariff) to **GRH** = \$62.50 (when PX = \$2 with the tariff), or by AGHB = \$60 (the shaded area in the left panel of Figure 8.2).

The imposition of the 100 percent import tariff by Nation 2 thus leads to a reduction in consumer surplus.

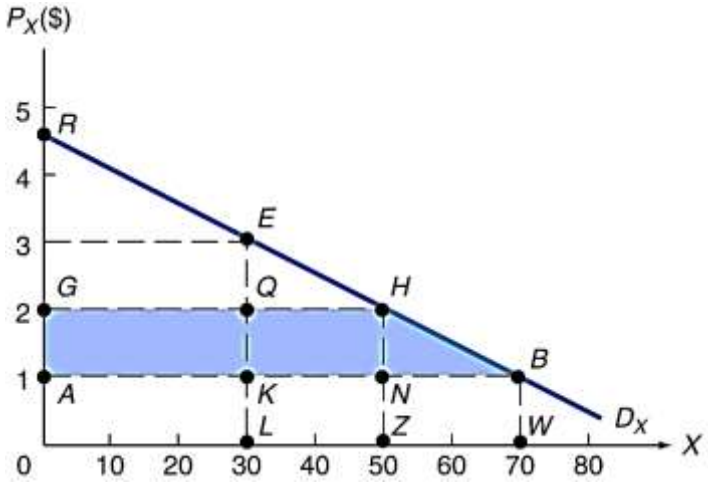

FIGURE 8-2 Effect of Tariff on Consumer Surplus.

- **PS** is the **difference** between what **producers** would be **willing** to receive **for each unit** of the **commodity** and what they **actually get**.
- **Graphically**, producer surplus is measured by the area **above** the **supply** curve **under** the **going price**.

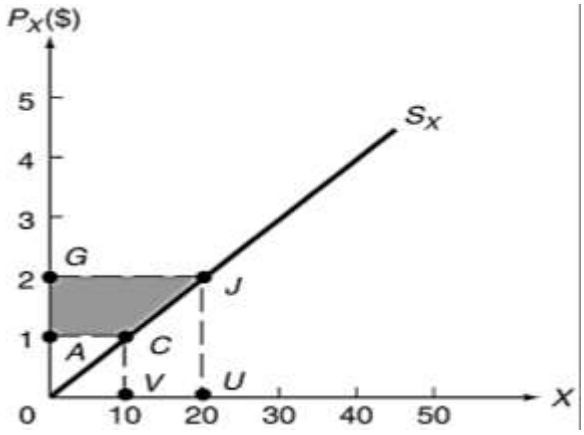

FIGURE 8-2 Effect of Tariff on Producer Surplus.

At Free Trade P_X = \$1,

- Domestic producers produce **10X** and receive **OACV** = **\$10** in **revenues**.
  - ✓**Producer surplus** is **OCA**= \$5 (\$10 times 1 divided by 2).

This is the **difference** between what producers would have been **willing** to **receive** for each unit (**OVC**) and what they **actually get** for (**OVCA**).

With the tariff and P_X = \$2,

- They produce **20X** and receive **OGJU** = \$40 as **revenues**.
- **Producer surplus** is OGJU-OUJ=**OGJ**: [(20 times 2) divided 2].
- **Increase** in the **producer surplus** due to tariff is OGJ- OCA=**ACJG [**\$20 –\$ 5= \$15**]**

The increase in **rent** or producer **surplus** resulting from the tariff is sometimes referred to as the **Subsidy effect** of the tariff.

Out of the $30 increase in the **revenue** of producers due to the **tariff** (AGJC + VCJU), we find:

- ✓ **VCJU** = $15 (the **unshaded** area under the S_X curve between 10X and 20X) represents the **increase** in their **costs** of **production**,
- ✓ While the **remainder** (shaded area AGJC = $15) represents the increase in rent or **producer surplus**.

Thus, we can conclude that imposition of a **tariff:**

- ➢ **Reduces consumer surplus**.
- ➢ **Increase in producer surplus, or rent**,
  - ✓ is defined as the payment that need not be made in the long run to **induce domestic producers** to supply additional goods with the tariff.
  - ✓ Also called ***subsidy effect of tariff***.

The End