

EIGHT

International Economics

8

Trade Restrictions: Tariffs



- **Resulting Effects of Tariff: Costs and Benefits of a Tariff**
- **When Nation 2 imposes a 100 percent import tariff T ,**
 - ✓ The price of commodity X increases from $P_X = \$1$ to $P_X = \$2$,
 - ✓ **Consumption** falls from $AB = 70X$ to $GH = 50X$,
 - ✓ **Production** increases from $AC = 10X$ to $GJ = 20X$,
 - ✓ **Imports** decline from $CB = 60X$ to $JH = 30X$,
 - ✓ The **government** of Nation 2 collects $MJHN = \$30$ in import duties.
 - ✓ **Consumer surplus** declines by $AGHB = \$60 = a+b+c+d$,
 - ✓ **Producer surplus** increases by $AGJC = \$15 = a$.

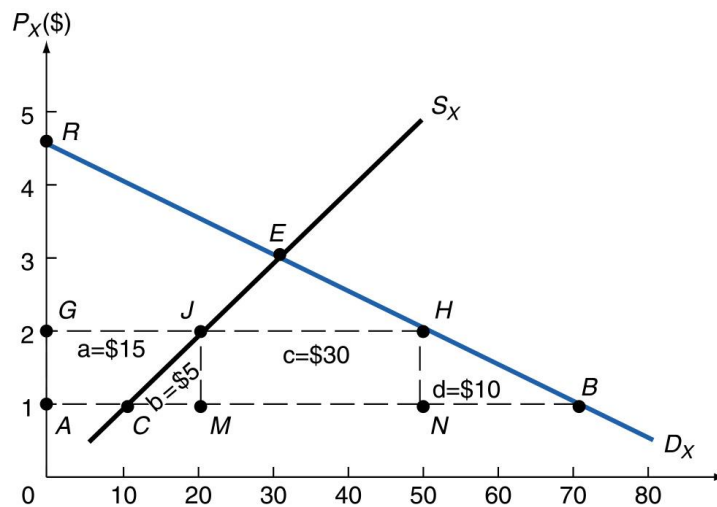
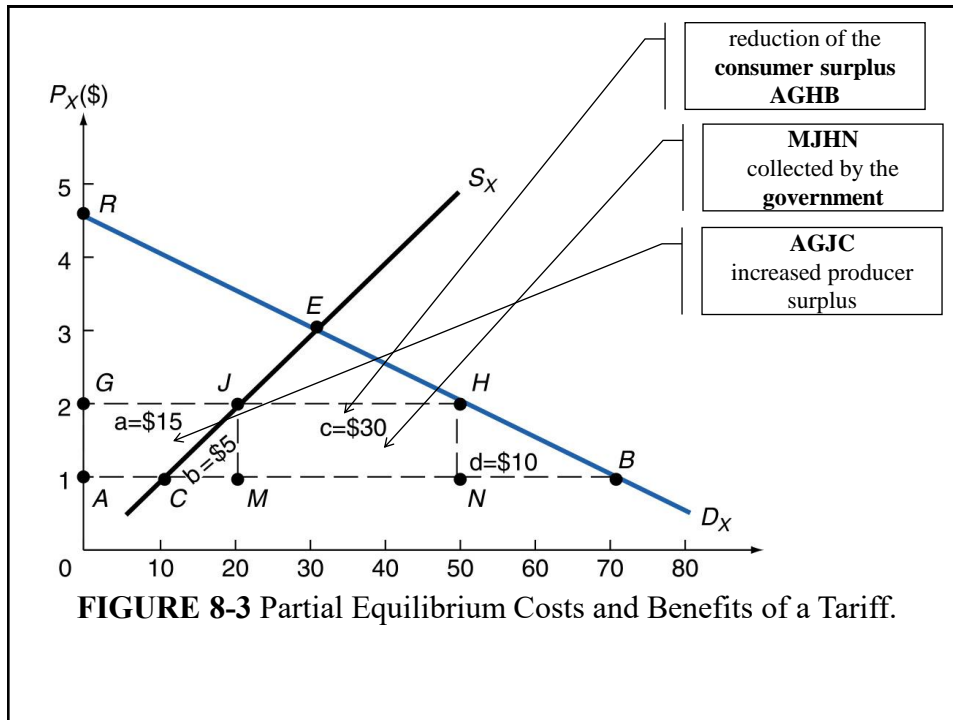


FIGURE 8-3 Partial Equilibrium Costs and Benefits of a Tariff.



When Nation 2 imposes a 100 percent import tariff T,

- The reduction of the **consumer surplus** equals to **AGHB** = $a + b + c + d = \$60$, of which:
 - ✓ $MJHN = c = \$30$ is collected by the **government** as **tariff revenue**,
 - ✓ $AGJC = a = \$15$ is redistributed to domestic producers of commodity X in the form of **increased producer surplus** or rent,
 - ✓ While the remaining \$15 (the sum of the areas of triangles **CJM** = $b = \$5$ and **BHN** = $d = \$10$) represents the **protection cost**, or **deadweight loss**, to the economy.

- The **production** component ($CJM = b = \$5$) of the protection cost, or **deadweight loss**, arises because, with the tariff, some domestic resources are **transferred** from the more **efficient production** of exportable commodity Y to the **less efficient production** of importable commodity X in Nation 2.
- The **consumption** component ($BHN = d = \$10$) of the protection cost, or deadweight loss, arises because the **tariff** artificially **increases** P_X in relation to P_Y and **distorts** the **pattern of consumption** in Nation 2.



➤ **Tariff redistributes income:**

- ✓ From **domestic consumers** (who pay higher price for the commodity) to domestic producers (who receive the higher price)
- ✓ From nation's **abundant factor** (producing exports) to the **scarce factor** (producing imports).

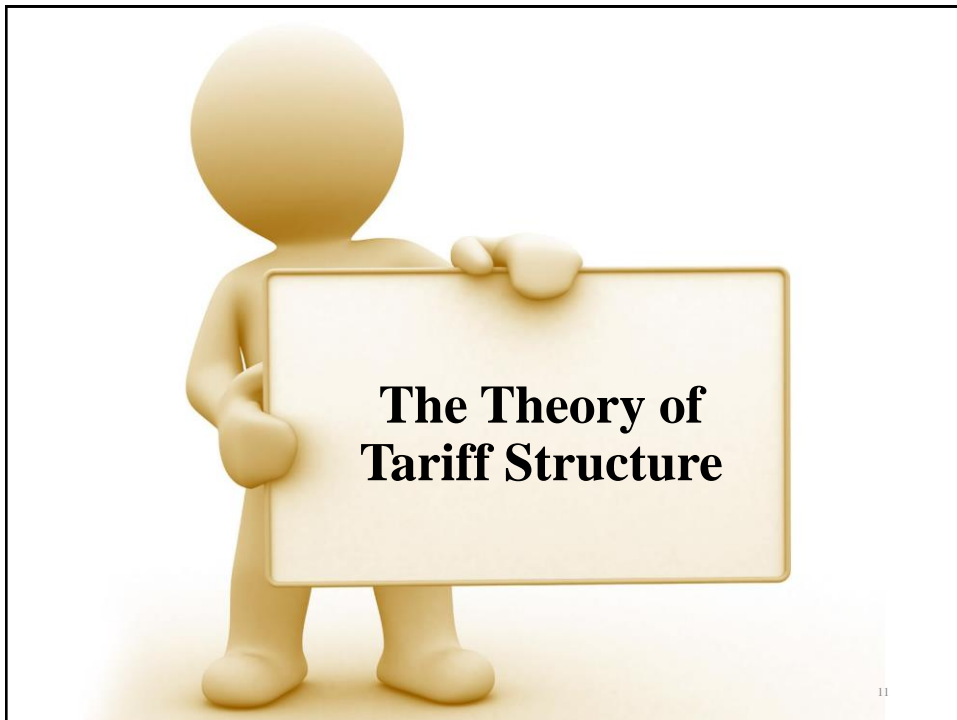
This leads to **inefficiencies**, or protection costs (*deadweight losses*).

✓ However it also, **by increasing domestic production, save jobs**.

(By **dividing** the loss of consumer surplus **by** the number of jobs “saved” in the industry because of the tariff (or equivalent rate of protection), we can calculate **the cost per domestic job saved**).

➤ **A tariff also has a balance-of-payments effect**

✓ Increases in tariff lead to **decreases in imports** therefore **deficits of BOP decreases**.



The Rate of Effective Protection

- What we have been talking about so far is the *nominal tariff rate*.
- The nominal tariff rate is calculated on the **value** the **final commodity**.
- Which is important to consumers because it **indicates** by how much the **price** of the final commodity **increases** as a result of the **tariff**.

- While *the effective tariff rate* is important to **producers** because it indicates how much **protection** is actually **provided** to the domestic **processing** of the **import-competing** commodity.
- The rate of effective protection is calculated on **the domestic value added**, or processing, that takes place in the nation.
- **Domestic value added** equals **the price of the final commodity** **minus** the **cost** of the **imported inputs** going into the production of the commodity.

➤ *The rate of effective protection exceeds the nominal tariff rate.*

- ✓ Because nations often **imports a raw material duty free** or imposes a lower tariff rate on the importation of the input than on the importation of the final commodity produced with the imported input.
- ✓ The nation usually does this in order to encourage domestic processing and employment.
- ✓ For example, a nation may import wool duty free but impose a tariff on the importation of cloth in order to stimulate the domestic production of cloth and domestic employment.

- **The Rate of Effective Protection:** An example will clarify the distinction between the nominal and effective tariff rates.
 - \$80 of imported wool goes into the domestic production of a suit.
 - the free trade price of the suit is \$100
 - the nation imposes a 10 percent nominal tariff on each imported suit.
 - The price of suits to domestic consumers would then be \$110. Of this,
 - ✓ \$80 represents imported wool,
 - ✓ \$20 is domestic value added,
 - ✓ and \$10 is the tariff.
 - The \$10 tariff collected on each imported suit
 - ✓ represents a 10 percent nominal tariff rate since the nominal tariff is calculated on the price of the final commodity (i.e., $\$10/\$100 = 10$ percent)
 - ✓ but corresponds to a 50 percent effective tariff rate because the effective tariff is calculated on the value added domestically to the suit (i.e., $\$10/\$20 = 50$ percent).

- **The Rate of Effective Protection:** An example will clarify the distinction between the nominal and effective tariff rates.
 - While **consumers** are only concerned with the fact that the \$10 tariff increases the price of the suits they purchase by \$10 or 10 percent,
 - **producers** view this \$10 tariff as being 50 percent of the \$20 portion of the suit produced domestically. To them, the \$10 tariff provides 50 percent of the value of domestic processing. This represents a much greater degree of protection (five times more) than the 10 percent nominal tariff rate seems to indicate.

The Rate of Effective Protection:

- It is this effective rate of tariff protection that is important to producers in stimulating the domestic production of suits in competition with imported suits.
- Whenever the imported input is admitted duty free or a lower tariff rate is imposed on the imported input than on the final commodity produced with the imported input, the effective rate of protection will exceed the nominal tariff rate.

The Rate of Effective Protection: Calculation

$$g = \frac{t - a_i t_i}{1 - a_i}$$

g = rate of effective protection

t = nominal tariff rate on final commodity

a_i = ratio of cost of imported input to price of final commodity with no tariff

t_i = nominal tariff rate on imported input

The Theory of Tariff Structure

➤ Case 1:

In the preceding suit example, $t = 10$ percent or 0.1 , $a_i = \$80/\$100 = 0.8$, and $t_i = 0$

• Thus,

$$g = (0.1 - (0.8)(0)) / (1 - 0.8) \\ = 0.1 / 0.2 = 0.5 \text{ or } 50\%$$

➤ Case 2:

If a 5 percent nominal tariff is imposed on the imported input (i.e., with $t_i = 0.05$)

$$g = (0.1 - (0.8)(0.05)) / (1 - 0.8) = (0.1 - 0.04) / 0.2 = 0.06 / 0.2 = 0.3 \text{ or } 30\%$$

➤ Case 3:

If $t_i = 10$ percent instead

$$g = (0.1 - (0.8)(0.1)) / (1 - 0.8) = (0.1 - 0.08) / 0.2 \\ = 0.02 / 0.2 \\ = 0.1 \text{ or } 10\%$$

The Rate of Effective Protection: Conclusions

$$g = \frac{t - a_i t_i}{1 - a_i}$$

- ✓ If $a_i = 0$, $g = t$, *no imported materials*.
- ✓ For given values of a_i and t_i , g is larger the greater is t
- ✓ For given values of t and t_i , g is larger the greater is a_i
- ✓ The value of g is $>$, $=$ or $<$ t , as $t_i <$, $=$ or $>$ t
- ✓ When $a_i t_i > t$, the rate of effective protection is negative

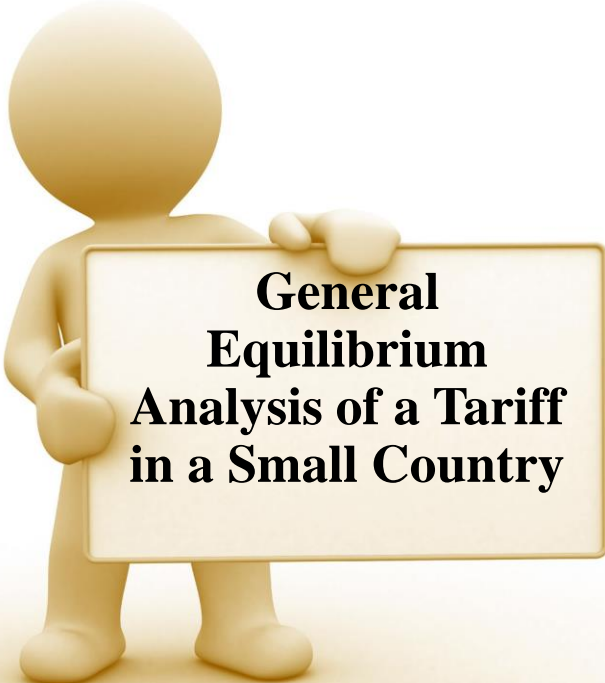
The Rate of Effective Protection: Remarks:

- A tariff on imported inputs is a tax on domestic producers that increases their costs of production, reduces the rate of effective protection provided by a given nominal tariff on the final commodity, and therefore discourages domestic production. In some cases (see conclusion 5 above), even with a positive nominal tariff on the final commodity, less of the commodity is produced domestically than would be under free trade.
- Clearly, the nominal tariff rate can be very deceptive and does not give even a rough idea of the degree of protection actually provided to domestic producers of the import-competing product.

- Furthermore, most industrial nations have a “cascading” tariff structure with very low or zero nominal tariffs on raw materials and higher and higher rates the greater is the degree of processing. This “tariff escalation” makes the rate of effective protection on a final commodity with imported inputs much greater than the nominal tariff rate would indicate.

- The concept of effective protection must be used cautiously, however, because of its partial equilibrium nature that assumes
 - ✓ that the international prices of the commodity and of imported inputs are not affected by tariffs
 - ✓ that inputs are used in fixed proportions in production.
- Both assumptions are of doubtful validity. For example, when the price of an imported input rises for domestic producers as a result of an import tariff, they are likely to substitute cheaper domestic or imported inputs in production.

- Despite these shortcomings, the rate of effective protection is definitely superior to the nominal tariff rate in estimating the degree of protection actually granted to domestic producers of the import-competing product and played a crucial role during the Uruguay Round trade negotiations (discussed in Section 9.6b).



**General
Equilibrium
Analysis of a Tariff
in a Small Country**

Stolper-Samuelson Theorem

- Effect of tariff on returns of factors of production.
- An increase in the relative price of a commodity (for example, as the result of a tariff) raises the return of the factor used intensively in production of the commodity.
- Thus, the real return to the nation's scarce factor of production will rise with the imposition of a tariff.

For example,

- When **Nation 2** (the K -abundant nation) imposes an import tariff on commodity X (its L -intensive commodity),
 - ✓ P_X / P_Y rises for domestic producers and consumers,
 - ✓ **Production of X** increases
 - ✓ **Demand for labor** increases
 - ✓ and so will the **real wage** of labor (Nation 2's scarce factor).

The End