

[Academic Script]

[Tariff: Types, Partial Equilibrium Analysis Tariff and Effects of Tariff on Consumer and Producer Surplus]

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1: Tariff: Types, Partial Equilibrium Analysis Tariff and Effects of Tariff on Consumer and Producer Surplus

Tariff:

Types, Partial Equilibrium Analysis of Tariff and Effects of a Tariff on consumer and producer surplus.

Introduction:

International trade will take place if it gives benefits to all. If trade is free, benefit would be maximized. It means that free flow of trade leads to more benefits. But nations protect domestic industries through restrictions and regulations. The set of these restrictions and regulations is known as trade policy. Governments may impose tariffs to raise revenue or to protect domestic industries from foreign competition. Such policy affects the flow of international trade.

[A] Tariff:

A tariff is a tax imposed on imported or exported goods and services. It is a tax levied on a commodity when it crosses a national border. An **import tariff** is a tax imposed on an imported commodity. An **export tariff** is a tax on the exported commodity. An import tariff is a common tariff and an export tariff is a less common tariff.

[B] Types of Tariff:

- (1) <u>Ad Valorem Duty</u>: This tax is legally specified as a fixed percentage of the value of the commodity imported or exported. In other words, it is a fixed percentage of the value of the traded commodity.
 - E.g. suppose that an ad valorem duty is 10% and the value of imports is \$ 200. Therefore, an importer of commodities must pay a \$ 20 (10% of \$ 200) import duty to the government. If import prices rise, ad Valorem duties also rise and this aggravates the protective effect. If prices fall the protective effect will be reduced.
- (2) <u>Specific Duty</u>: This tax is legally specified as a fixed sum of money per unit imported or exported. In other words, it is a fixed sum per physical unit of the traded commodity.

E.g. An Indian importer of a Japanese car may be required to pay \$ 2000 import duty to the government of India irrespective of the price of the car. Specific duties are not affected directly due to increase or decrease in the prices.

Ad valorem duty is more progressive in nature than specific duty. The specific tax is regressive in the sense that it imposes higher burden on the cheaper commodities. The specific duty is easy to apply whereas an ad valorem duty can be calculated after the value of commodity is determined.

- (3) <u>Compound Duty</u>: This is a combination of an ad valorem duty and specified duty.
 - E.g. An Indian importer of a Japanese car may be required to pay \$ 2000 plus 2% of the value of the car.

[C] Partial Equilibrium Analysis of a Tariff:

We assume that the nation which imposes an import tariff is a small nation. It means that tariff cannot affect the international price of the commodity. The nation is a price taker in world markets.

The effect of an import tariff can be explained as follows:

Increase in domestic price of imports

An imposition of a tariff on imports

The domestic output of import-competing industry expands and domestic consumption of imports contract

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Imports fall because the gap between domestic consumption and domestic production reduces

It means that an imposition of tariff on imports reduces the domestic consumption. The tariff revenue will be collected by the government, and income is redistributed from consumers to producers. The partial equilibrium analysis is explained in Figure-1.

We measure quantity of commodity X on X-axis and price of commodity X on Y-axis.

- (1) Dx is a demand curve of commodity X which has a negative slope. It shows the domestic demand for commodity X in a particular nation, say A.
- (2) S_X is a supply curve of commodity X which has a positive slope. It shows the domestic supply of commodity X in nation A.

Figure-1: The effects of an import tariff



Autarky situation:

- (3) E is the autarky equilibrium point at which the price of commodity X is \$25/unit.
- (4) We assume that international price is \$ 10/unit. This is shown by the P_w line. This is the perfectly elastic foreign supply curve of commodity X to nation A under free trade conditions. It means that nation A cannot affect the international price.
- **(5)** At international price \$ 10, the domestic consumption is 150X (AH). At this price domestic production is 30X (AC). The remainder of 120X (CH) is imported.

Effect of an import tariff:

Suppose nation A imposes a tariff of \$ 5, or 50 %, on the imports of commodity X. As a result, domestic price of commodity X rises. This is depicted by the upward shifted price line P_W + T. Therefore, price increases from \$ 10 to \$ 15.

(6) At the price of \$ 15, the domestic consumption is 125X (BG). Nation A produces 45X (BD) domestically. The remainder 80X (DG) is imported.

The effects of increase in price can be explained as follows:

<u>Consumption Effect:</u>

An increase in the price of commodity X reduces consumption of domestic consumers from 150X to 125X. The reduction of 25X is shown by IH. This is the consumption effect.

Production Effect:

An increase in the price of commodity X increases the domestic production by 15X i.e. from 30X to 45X. This is depicted by CF. This is the production effect.

<u> Trade Effect:</u>

An imposition of tariff causes imports to fall from 120X to 80X. It means that imports have fallen by 40X (HI+CF) which are equal to increase in domestic production by 15X (CF) and decrease in domestic consumption by 25X (HI). This is known as trade effect.

<u>Revenue effect:</u>

After the imposition of the tariff, the government collects $5 \times 80X = 400$ as depicted by area (DGIF). This is known as the revenue effect of the tariff.

[D] Consumer Surplus:

Consumer surplus is the difference between the willingness to pay and actual payment of a consumer. Graphically, consumer surplus is measured by the area under the demand curve above the market price.

E.g. If consumer is ready to pay \$10 for one unit of commodity X and actual price is \$ 4 then, the consumer surplus \$10 - \$4= \$6. An increase in price reduces the consumer surplus.

The effect of tariff on consumer surplus is shown n Figure-2.

Figure 2: Effects of Tariff on Consumer Surplus



We measure quantity of commodity X on X-axis and price of commodity X is on Yaxis.

- (1) Before the imposition of tariff consumer in nation A consume 150X at $P_W =$ \$10.
- (2) At point R, consumers in nation A would be willing to pay NR=\$ 32 for the 45th unit of commodity X. But under free trade conditions they pay only NT = \$10. In this situation C.S. = \$ 32 \$ 10 = \$ 22.
- (3) Similarly, for the 125th unit of commodity X, consumers would be willing to pay GK= \$15. Since they only pay IK= \$10. They receive a consumer surplus of IG= \$5.

- (4) For the 150th unit of commodity X consumers would be willing to pay HL= \$10. This is equal to the price they actually pay. Therefore, the consumer surplus for the 150th unit is zero.
- (5) Before imposition of tariff, Consumer surplus is equal to AMH = ½ (\$30 x 150X)
 = \$ 2250. This is the difference between what consumers would be willing to pay OMHL and actual payment of OAHL i.e. AMH.
- (6) When nation A imposes an import tariff, the price of commodity X rises from \$10 to \$15. The domestic consumption decreases from 150X to 120X. Therefore, consumer surplus falls from AMH to BMG. In this situation (consumer surplus is equal to BMG = $\frac{1}{2}$ (\$25 x 125X) = \$1562.5. Thus, consumer surplus reduced from \$2250 to \$1562.5 i.e. by \$687.5. It is shown by the shaded area ABGH in Figure-2.)

[D] Producer Surplus:

Producer surplus is the difference between the amount a producer of a good receives and the minimum amount the producer is willing to accept for the good. The difference is the benefit the producer receives for selling the good in the market. This difference is known as producer surplus. Graphically, producer surplus is measured by the area above the supply curve and below the market price.

E.g. A producer is willing to sell 50 units at \$5 each and consumers are willing to purchase these for \$8 each. If the producer sells all of the units to consumers for \$8, it receives \$400. Producer surplus is the difference between the amount the producer received by the minimal amount it was willing to accept, in this case \$250. Therefore, the producer surplus = \$400 - \$250 = \$150.

The effect of producer surplus is shown in Figure-3:





We measure quantity of commodity X on X-axis and price of commodity X on Yaxis.

- (1) At free trade, price of X is \$ 10. Domestic producers produce 30X and receiveOACR = \$10 x 30X = \$ 300.
- (2) An imposition of tariff increases the domestic price of X from \$ 10 to \$ 15. This will increase the domestic production from 30X to 45X. They receive OBDS = \$15 x 45X = \$ 675. An increase of revenue by \$ 375 is decomposed in two parts: RCDS and ABDC. RCDS shows the increase in their production cost whereas ABDC is producer surplus.

Summary:

Tariff is an instrument to protect domestic industries from foreign industries. There are mainly three types of tariffs. Import tariff is most common among nations. Tariff affects the nation's domestic consumption and production. An imposition of tariff by a small nation reduces the domestic consumption of importable commodity and increases the production of domestic production. An import tariff also reduces the imports of the nation. An imposition of a tariff decreases the consumer surplus and raises producer surplus.