


## Chapter 8 The Instruments of Trade Policy



Prepared by **Jordanis Petsas**  
To Accompany  
**International Economics: Theory and Policy, Sixth Edition**  
by **Paul R. Krugman and Maurice Obstfeld**

## Chapter Organization

- Basic Tariff Analysis
- Costs and Benefits of a Tariff
- Other Instruments of Trade Policy
- The Effects of Trade Policy: A Summary
- Summary
- Appendix I: Tariff Analysis in General Equilibrium
- Appendix II: Tariffs and Import Quotas in the Presence of Monopoly

Copyright © 2003 Pearson Education, Inc. Slide 8-2

## Introduction

- This chapter is focused on the following questions:
  - What are the effects of various trade policy instruments?
    - Who will benefit and who will lose from these trade policy instruments?
  - What are the costs and benefits of protection?
    - Will the benefits outweigh the costs?
  - What should a nation's trade policy be?
    - For example, should the United States use a tariff or an import quota to protect its automobile industry against competition from Japan and South Korea?

Copyright © 2003 Pearson Education, Inc. Slide 8-3

## Basic Tariff Analysis

- **Supply, Demand, and Trade in a Single Industry**
  - Suppose that there are two countries (Home and Foreign).
  - Both countries consume and produce wheat, which can be costless transported between the countries.
  - In each country, wheat is a competitive industry.
  - Suppose that in the absence of trade the price of wheat at Home exceeds the corresponding price at Foreign.
    - This implies that shippers begin to move wheat from Foreign to Home.
    - The export of wheat raises its price in Foreign and lowers its price in Home until the initial difference in prices has been eliminated.

Copyright © 2003 Pearson Education, Inc. Slide 8-4

## Basic Tariff Analysis

- To determine the world price ( $P_w$ ) and the quantity trade ( $Q_w$ ), two curves are defined:
  - **Home import demand curve**
    - Shows the maximum quantity of imports the Home country would like to consume at each price of the imported good.
    - That is, the excess of what Home consumers demand over what Home producers supply:  $MD = D(P) - S(P)$
  - **Foreign export supply curve**
    - Shows the maximum quantity of exports Foreign would like to provide the rest of the world at each price.
    - That is, the excess of what Foreign producers supply over what foreign consumers demand:  $XS = S^*(P^*) - D^*(P^*)$

Copyright © 2003 Pearson Education, Inc. Slide 8-5

## Basic Tariff Analysis

**Figure 8-1: Deriving Home's Import Demand Curve**

Copyright © 2003 Pearson Education, Inc. Slide 8-6

## Basic Tariff Analysis

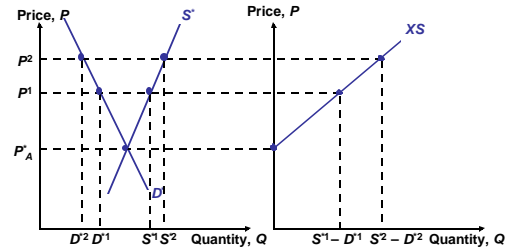
- Properties of the **import demand curve**:
  - It intersects the vertical axis at the closed economy price of the importing country.
  - It is downward sloping.
  - It is flatter than the domestic demand curve in the importing country.

Copyright © 2003 Pearson Education, Inc.

Slide 8-7

## Basic Tariff Analysis

Figure 8-2: Deriving Foreign's Export Supply Curve



Copyright © 2003 Pearson Education, Inc.

Slide 8-8

## Basic Tariff Analysis

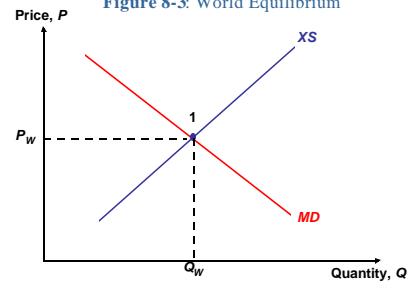
- Properties of the **export supply curve**:
  - It intersects the vertical axis at the closed economy price of the exporting country.
  - It is upward sloping.
  - It is flatter than the domestic supply curve in the exporting country.

Copyright © 2003 Pearson Education, Inc.

Slide 8-9

## Basic Tariff Analysis

Figure 8-3: World Equilibrium



Copyright © 2003 Pearson Education, Inc.

Slide 8-10

## Basic Tariff Analysis

- Useful definitions:
  - The **terms of trade** is the relative price of the exportable good expressed in units of the importable good.
  - A **small country** is a country that cannot affect its terms of trade no matter how much it trades with the rest of the world.
- The analytical framework will be based on either of the following:
  - Two large countries trading with each other
  - A small country trading with the rest of the world

Copyright © 2003 Pearson Education, Inc.

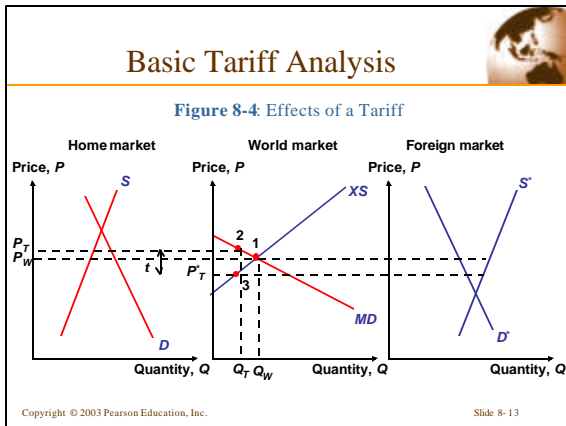
Slide 8-11

## Basic Tariff Analysis

- **Effects of a Tariff**
  - Assume that two large countries trade with each other.
  - Suppose Home imposes a tax of \$2 on every bushel of wheat imported.
    - Then shippers will be unwilling to move the wheat unless the price difference between the two markets is at least \$2.
  - Figure 8-4 illustrates the effects of a specific tariff of \$t per unit of wheat.

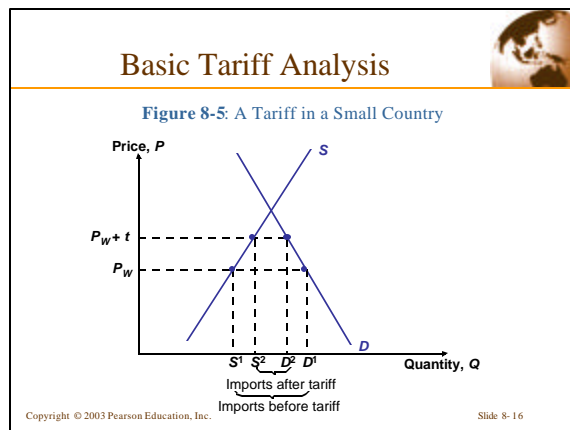
Copyright © 2003 Pearson Education, Inc.

Slide 8-12



- ### Basic Tariff Analysis
- In the absence of tariff, the world price of wheat ( $P_w$ ) would be equalized in both countries.
  - With the tariff in place, the price of wheat rises to  $P_T$  at Home and falls to  $P_T^* (= P_T - t)$  at Foreign until the price difference is  $\$t$ .
    - In Home: producers supply more and consumers demand less due to the higher price, so that fewer imports are demanded.
    - In Foreign: producers supply less and consumers demand more due to the lower price, so that fewer exports are supplied.
    - Thus, the volume of wheat traded declines due to the imposition of the tariff.
- Copyright © 2003 Pearson Education, Inc. Slide 8-14

- ### Basic Tariff Analysis
- The increase in the domestic Home price is less than the tariff, because part of the tariff is reflected in a decline in Foreign's export price.
    - If Home is a small country and imposes a tariff, the foreign export prices are unaffected and the domestic price at Home (the importing country) rises by the full amount of the tariff.
- Copyright © 2003 Pearson Education, Inc. Slide 8-15



- ### Basic Tariff Analysis
- **Measuring the Amount of Protection**
    - In analyzing trade policy in practice, it is important to know how much protection a trade policy actually provides.
      - One can express the amount of protection as a percentage of the price that would prevail under free trade.
        - Two problems arise from this method of measurement:
          - » In the large country case, the tariff will lower the foreign export price.
          - » Tariffs may have different effects on different stages of production of a good.
- Copyright © 2003 Pearson Education, Inc. Slide 8-17

- ### Basic Tariff Analysis
- **Effective rate of protection**
    - One must consider both the effects of tariffs on the final price of a good, and the effects of tariffs on the costs of inputs used in production.
      - The actual protection provided by a tariff will not equal the tariff rate if imported intermediate goods are used in the production of the protected good.
        - Example: A European airplane that sells for \$50 million has cost \$60 million to produce. Half of the purchase price of the aircraft represents the cost of components purchased from other countries. A subsidy of \$10 million from the European government cuts the cost of the value added to purchasers of the airplane from \$30 to \$20 million. Thus, the effective rate of protection is  $(30-20)/20 = 50\%$ .
- Copyright © 2003 Pearson Education, Inc. Slide 8-18

## Costs and Benefits of a Tariff

- A tariff raises the price of a good in the importing country and lowers it in the exporting country.
- As a result of these price changes:
  - Consumers lose in the importing country and gain in the exporting country
  - Producers gain in the importing country and lose in the exporting country
  - Government imposing the tariff gains revenue
- To measure and compare these costs and benefits, we need to define consumer and producer surplus.

Copyright © 2003 Pearson Education, Inc.

Slide 8-19

## Costs and Benefits of a Tariff

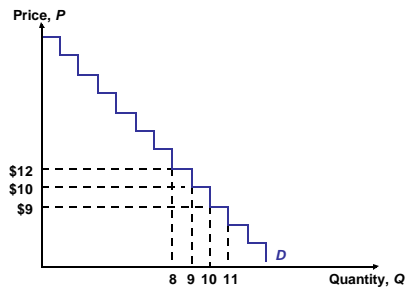
- **Consumer and Producer Surplus**
  - **Consumer surplus**
    - It measures the amount a consumer gains from a purchase by the difference between the price he actually pays and the price he would have been willing to pay.
    - It can be derived from the market demand curve.
    - Graphically, it is equal to the area under the demand curve and above the price.
    - Example: Suppose a person is willing to pay \$20 per packet of pills, but the price is only \$5. Then, the consumer surplus gained by the purchase of a packet of pills is \$15.

Copyright © 2003 Pearson Education, Inc.

Slide 8-20

## Costs and Benefits of a Tariff

Figure 8-6: Deriving Consumer Surplus from the Demand Curve

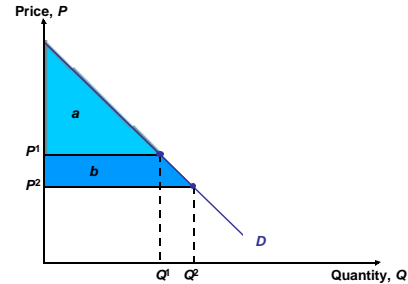


Copyright © 2003 Pearson Education, Inc.

Slide 8-21

## Costs and Benefits of a Tariff

Figure 8-7: Geometry of Consumer Surplus



Copyright © 2003 Pearson Education, Inc.

Slide 8-22

## Costs and Benefits of a Tariff

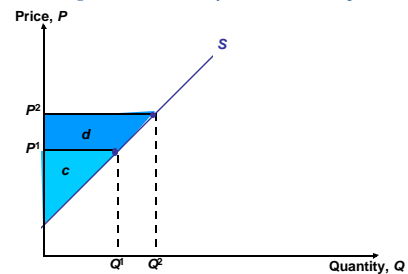
- **Producer surplus**
  - It measures the amount a producer gains from a sale by the difference between the price he actually receives and the price at which he would have been willing to sell.
  - It can be derived from the market supply curve.
  - Graphically, it is equal to the area above the supply curve and below the price.
  - Example: A producer willing to sell a good for \$2 but receiving a price of \$5 gains a producer surplus of \$3.

Copyright © 2003 Pearson Education, Inc.

Slide 8-23

## Costs and Benefits of a Tariff

Figure 8-8: Geometry of Producer Surplus



Copyright © 2003 Pearson Education, Inc.

Slide 8-24

## Costs and Benefits of a Tariff

- **Measuring the Cost and Benefits**
  - Is it possible to add consumer and producer surplus?
    - We can (algebraically) add consumer and producer surplus because any change in price affects each individual in two ways:
      - As a consumer
      - As a worker
    - We assume that at the margin a dollar's worth of gain or loss to each group is of the same social worth.

Copyright © 2003 Pearson Education, Inc. Slide 8-25

## Costs and Benefits of a Tariff

**Figure 8-9: Costs and Benefits of a Tariff for the Importing Country**

Copyright © 2003 Pearson Education, Inc. Slide 8-26

## Costs and Benefits of a Tariff

- The areas of the two triangles *b* and *d* measure the loss to the nation as a whole (efficiency loss) and the area of the rectangle *e* measures an offsetting gain (terms of trade gain).
  - The **efficiency loss** arises because a tariff distorts incentives to consume and produce.
    - Producers and consumers act as if imports were more expensive than they actually are.
    - Triangle *b* is the **production distortion loss** and triangle *d* is the **consumption distortion loss**.
  - The **terms of trade gain** arises because a tariff lowers foreign export prices.

Copyright © 2003 Pearson Education, Inc. Slide 8-27

## Costs and Benefits of a Tariff

- If the terms of trade gain is greater than the efficiency loss, the tariff increases welfare for the importing country.
  - In the case of a small country, the tariff reduces welfare for the importing country.

Copyright © 2003 Pearson Education, Inc. Slide 8-28

## Costs and Benefits of a Tariff

**Figure 8-10: Net Welfare Effects of a Tariff**

Copyright © 2003 Pearson Education, Inc. Slide 8-29

## Other Instruments of Trade Policy

**Figure 8-13: Effects of the U.S. Import Quota on Sugar**

Copyright © 2003 Pearson Education, Inc. Slide 8-30