

Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

ECON 243 – International Trade

Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

© 2021 Worth Publishers
International Economics, 5e | Feenstra/Taylor



1

Questions to Consider

1. Can governments use trade policy to give home firms a strategic advantage in their markets?
2. Why would foreign firms dump their products by exporting them at a price below their costs?
3. Is there an argument for using infant industry protection, and has it worked in practice?

9 - 2

2

Introduction

- Do the effects of trade policies differ when an industry is young and there are only a small number of producers, so markets are imperfectly competitive? In mature industries with only a small number of producers, can a government help these firms gain an advantage in international markets?
- These questions received a lot of attention from trade economists in the 1980s, in a body of research that became known as strategic trade policy.
- In this chapter, we use the extreme case of a single producer—a Home or Foreign monopoly—to see how tariffs and quotas affect prices, trade, and welfare.

9 - 3

3

Introduction

- A specific example of a Foreign monopolist is the Foreign discriminating monopoly, which charges a lower price to Home than to firms in its own local market and is, therefore, dumping its product into the Home market.
- A tariff applied against a Foreign discriminating monopoly is called an antidumping duty.
- The final case we analyze is an infant industry at Home, by which we mean an industry that is too young to have achieved its lowest costs.

9 - 4

4

Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

Tariffs and Quotas with Home Monopoly

- Tariffs and quotas affect the trade equilibrium differently because of their impact on the Home monopoly's market power, the extent to which a firm can set its price.
- With a tariff, the Home monopolist still competes against a large number of importers, and so its market power is limited.
- With an import quota, once the quota limit is reached, the monopolist is the only producer able to sell in the Home market. The monopolist is again able to exercise its market power.
- This section describes the Home equilibrium with and without trade and explains the difference between tariffs and quotas.

9 - 5

5

Tariffs and Quotas with Home Monopoly

No-Trade Equilibrium

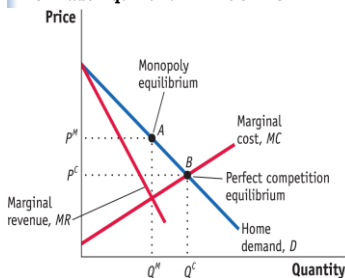
- The extra revenue earned from selling one more unit is the marginal revenue.
- To maximize its profits, the monopolist produces at the point where the marginal revenue, MR, earned from selling one more unit equals the marginal cost, MC, of producing one more unit.

9 - 6

6

Tariffs and Quotas with Home Monopoly

No-Trade Equilibrium - FIGURE 9-1



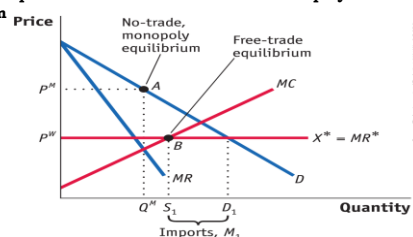
Comparison with Perfect Competition - In the absence of trade, the monopolist restricts its quantity sold to increase the market price. Under free trade, however, the monopolist cannot limit quantity and raise price.

9 - 7

7

Tariffs and Quotas with Home Monopoly

Free-Trade Equilibrium - FIGURE 9-2 Home Monopoly's Free-Trade Equilibrium



Under free trade at the fixed world price P^W , Home faces Foreign export supply of X^* at that price.

Because the Home firm cannot raise its price above P^W without losing all of its customers to imports, X^* is now also the demand curve faced by the Home monopolist.

Because the price is fixed, the marginal revenue MR^* is the same as the demand curve. Profits are maximized at point B, where marginal revenue equals marginal costs.

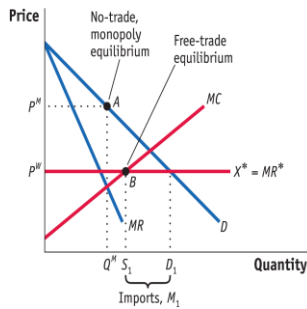
9 - 8

8

Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

Tariffs and Quotas with Home Monopoly

Free-Trade Equilibrium - FIGURE 9-2
Equilibrium



Home Monopoly's Free-Trade

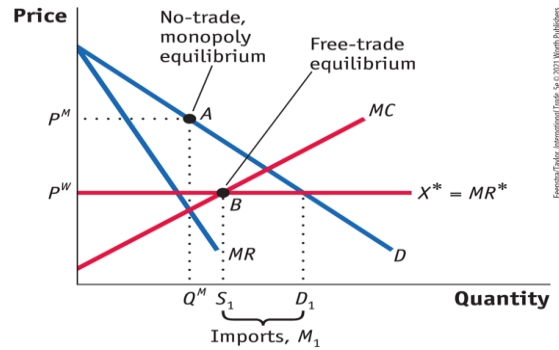
The Home firm supplies S_1 , and Home consumers demand D_1 . The difference between these is imports, $M_1 = D_1 - S_1$.

Because the Home monopoly now sets its price at marginal cost, the same free-trade equilibrium holds under perfect competition.

Comparison with Perfect Competition Under free trade for a small country, then, a Home monopolist produces the same quantity and charges the same price as a perfectly competitive industry. The reason for this result is that free trade for a small country eliminates the monopolist's control over price, that is, its market power.

9 - 9

A Closer Look



Freeman/Pfeiffer, International Trade, 4e © 2012 Worth Publishers

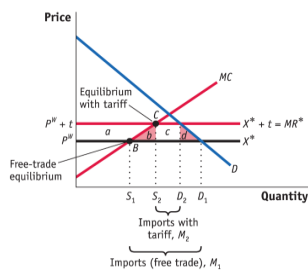
9 - 10

9

10

Tariffs and Quotas with Home Monopoly

Effect of a Home Tariff - FIGURE 9-3 Tariff with Home Monopoly



The result is fewer imports, M_2 , because Home supply S increases and Home demand D decreases. The deadweight loss of the tariff is measured by the area $(b + d)$. This result is the same as would have been obtained under perfect competition because the Home monopolist is still charging a price equal to its marginal cost.

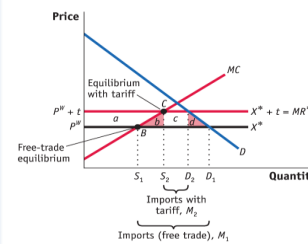
Comparison with Perfect Competition Because the monopolist has limited control over its price, it behaves in the same way a competitive industry would when facing the tariff.

9 - 11

11

Tariffs and Quotas with Home Monopoly

Effect of a Home Tariff - FIGURE 9-3 Tariff with Home Monopoly



Initially, under free trade at the fixed world price P^W , the monopolist faces the horizontal demand curve X^* (and marginal revenue curve MR^*), and profits are maximized at point B.

When a tariff t is imposed, the export supply curve shifts up since Foreign firms must charge $P^W + t$ in the Home market to earn P^W . This allows the Home monopolist to increase its domestic price to $P^W + t$, but no higher, since otherwise it would lose all of its customers to imports.

Home Loss Due to the Tariff

Fall in consumer surplus: $-(a + b + c + d)$

Rise in producer surplus: $+a$

Rise in government revenue: $+c$

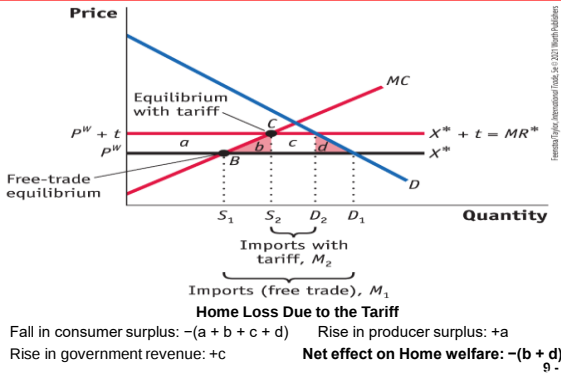
Net effect on Home welfare: $-(b + d)$

9 - 12

12

Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

A Closer View



13

Tariffs and Quotas with Home Monopoly

Effect of a Home Quota

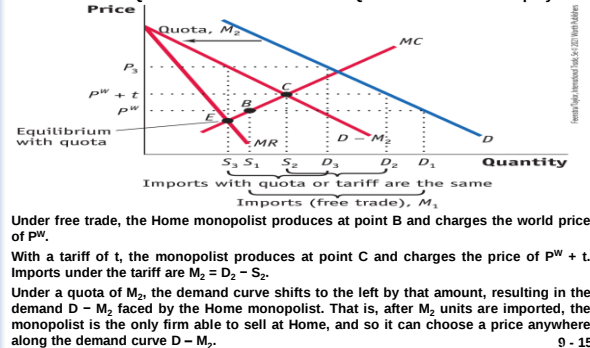
- Now we can look at the effect of an import quota and compare it to the effect of a tariff.
- The quota results in a higher price for Home consumers because it creates a "sheltered" market for the Home firm, allowing it to exercise its monopoly power, which leads to higher prices than under a tariff.
- This is another reason why the World Trade Organization has encouraged countries to replace many quotas with tariffs.

9 - 14

14

Tariffs and Quotas with Home Monopoly

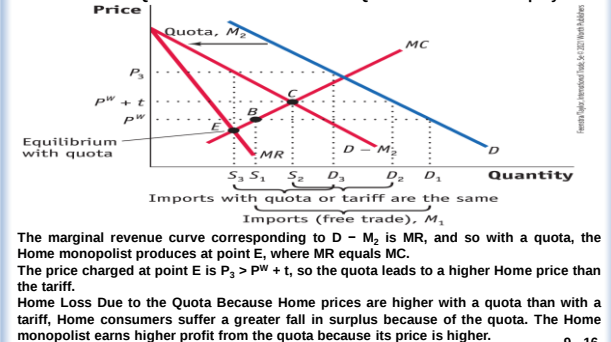
Effect of a Home Quota - FIGURE 9-4 Effect of Quota with Home Monopoly



15

Tariffs and Quotas with Home Monopoly

Effect of a Home Quota - FIGURE 9-4 Effect of Quota with Home Monopoly



16

17



9 - 18

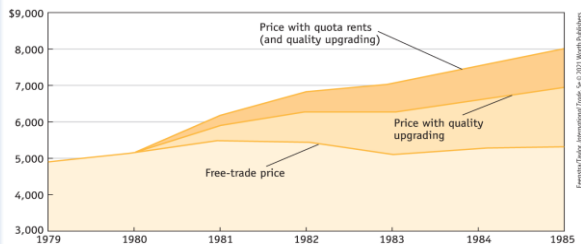
- 9 - 19

9 - 20

Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

APPLICATION: U.S. Imports of Japanese Automobiles

Price and Quality of Imports - FIGURE 9-5 Prices of Japanese Car Imports



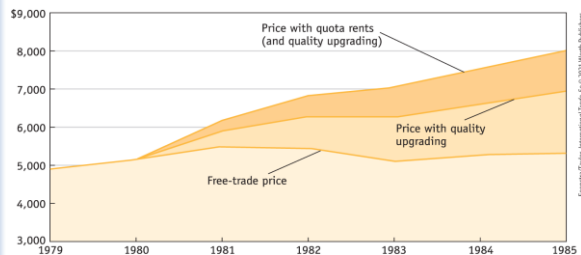
Under the "voluntary" export restraint (VER) on Japanese car imports, the average price rose from \$5,150 to \$8,050 between 1980 and 1985. Of that \$2,900 increase, \$1,100 was the result of quota rent increases earned by Japanese producers.

9 - 21

21

APPLICATION: U.S. Imports of Japanese Automobiles

Price and Quality of Imports - FIGURE 9-5 Prices of Japanese Car Imports



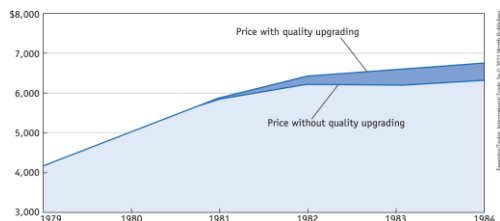
Another \$1,650 was the result of quality improvements in the Japanese cars, which became heavier and wider, with improved horsepower, transmissions, and so on. The remaining \$150 is the amount that import prices would have risen under free trade.

9 - 22

22

APPLICATION: U.S. Imports of Japanese Automobiles

Quota Rents, Price of U.S. Cars, The GATT and WTO - FIGURE 9-6



Prices of American Small Cars Under the VER on Japanese car imports, the average price of U.S. cars rose very rapidly when the quota was first imposed: from \$4,200 in 1979 to \$6,000 in 1981, or a 43% increase over two years.

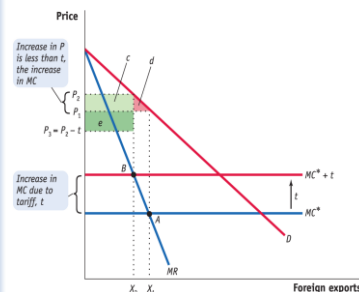
Only a very small part of that increase was explained by quality improvements, and in the later years of the quota, quality in U.S. cars did not rise by as much as it did in the Japanese imports.

9 - 23

23

Tariffs with Foreign Monopoly

Foreign Monopoly - Free-Trade Equilibrium, Effect of a Tariff on Home Price
FIGURE 9-7



Under free trade, the Foreign monopolist charges prices P_1 and exports X_1 , where marginal revenue MR equals marginal cost MC .

When an antidumping duty of t is applied, the firm's marginal cost rises to $MC^* + t$, so the exports fall to X_2 and the Home price rises to P_2 .

The decrease in consumer surplus is shown by the area $c + d$, of which c is collected as a portion of tax revenues.

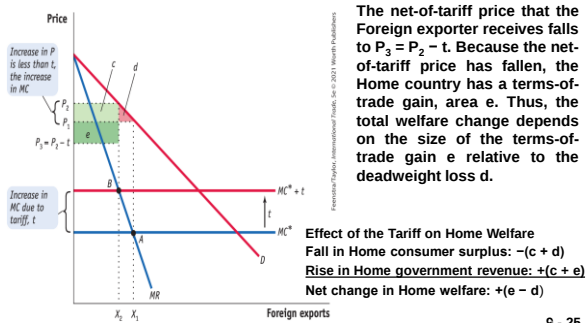
9 - 24

24

Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

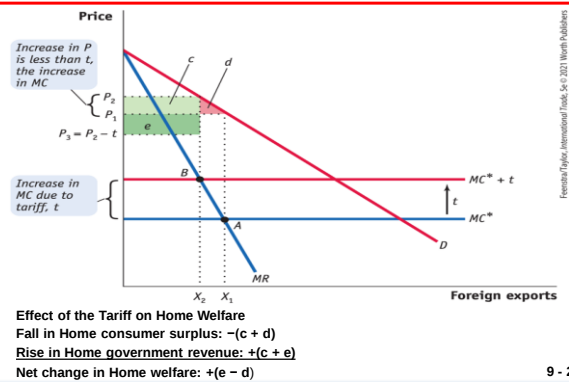
Tariffs with Foreign Monopoly

Foreign Monopoly - Free-Trade Equilibrium, Effect of a Tariff on Home Price
FIGURE 9-7



25

A Closer Look



26

APPLICATION: Import Tariffs on Japanese Trucks

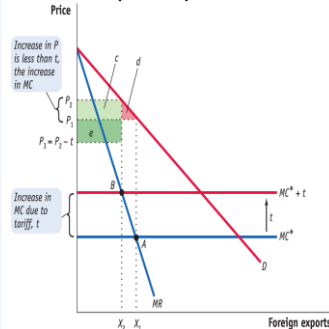
- In the case of a Foreign monopolist, Home will experience a terms-of-trade gain from a small tariff. The reason for this gain is that the Foreign firm will lower its net-of-tariff price to avoid too large an increase in the price paid by consumers in the importing country.
- To what extent do Foreign exporters actually behave that way?
- We can look at the effects of a 25% tariff on imported Japanese compact trucks imposed by the United States in the early 1980s and still in place today.

9 - 27

27

APPLICATION: Import Tariffs on Japanese Trucks

FIGURE 9-7 (revisited)



If the terms-of-trade gain, measured by the area e in Figure 9-7, exceeds the deadweight loss d, then the Home country gains from the tariff.

This is our first example of strategic trade policy that leads to a potential gain for Home.

In principle, this potential gain arises from the tariff that the United States has applied on imports of compact trucks, which is still in place today.

9 - 28

28

Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

APPLICATION: Import Tariffs on Japanese Trucks

- Some economists feel that this tariff has the undesirable side effect of encouraging the U.S. automobile industry to focus on the sales of trucks since compact trucks have higher prices due to the tariff.
- That strategy by U.S. producers can work when gasoline prices are low and so consumers are willing to buy trucks. At times of high gasoline prices, however, consumers instead want fuel-efficient cars, which have not been the focus of the American industry.
- So high fuel prices can lead to a surge in imports and fewer domestic sales, exactly what happened in 1979 and 2008.

9 - 29

29

DUMPING

DUMPING is a business strategy followed by exporters while determining export price for international trade. In dumping, the exporting country drops the selling price (sometimes even below cost) to destroy local competition. Later on, when there is no local competition, the exporting nation raises the price.

EXAMPLE

Chinese manufacturer sells a mobile in U.S. for \$200, but in China for \$350. Production cost of this mobile is \$250. Such tactic could disrupt U.S. mobile industry.

WHY DUMPING ?

- Helps to gain market share
- Destroying Local Market
- Minimizing Investment Risk (through larger market share)
- Helps to clear unsold stock
- Helps to reduce the price in domestic market
- Benefits in terms of export incentives, recognition, and cheap funds for exports.

TYPES OF DUMPING

SPORADIC
is practiced if company has large unsold inventory. It is temporary.

PREDATORY
is where company regularly sell in foreign market at lower price

PERSISTENT
is more permanent than predatory, where sales is consistently at lower price

REVERSE
Company dumps in home market while selling at a higher price in foreign.

Imposing Tariff duty, import quotas, import embargo, voluntary export restraint, & international stance are some of the **ANTI DUMPING MEASURES** practiced to protect local market.

9 - 30

30

Dumping

- With international trade, not only can firms charge a price that is higher than their marginal cost, but they can also choose to charge different prices in their domestic market as compared with their export market (this implies a firm has some ability to influence the export market).
- This pricing strategy is called price discrimination because the firm can choose how much different groups of customers pay.

9 - 31

31

Dumping

Discriminating Monopoly

We assume that the monopolist is able to charge different prices in the two markets; this market structure is sometimes called a discriminating monopoly.

Equilibrium Condition

For the discriminating monopoly, profits are maximized when the following condition holds:

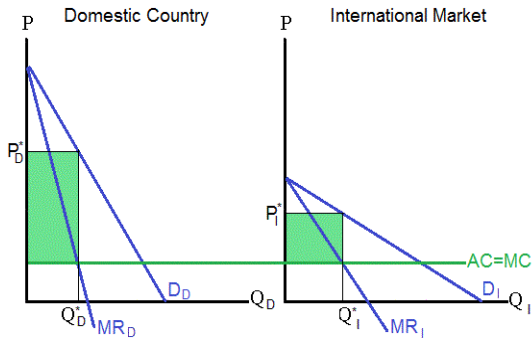
$$MR = MR^* = MC^*$$

9 - 32

32

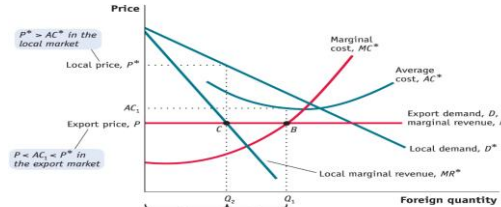
Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

Dumping = Price Discrimination



Dumping

FIGURE 9-8 Foreign Discriminating Monopoly



The Foreign monopoly faces different demand curves and charges different prices in its local and export markets. Locally, its demand curve is D^* with marginal revenue MR^* . Abroad, its demand curve is horizontal at the export price P , which is also its marginal revenue of MR .

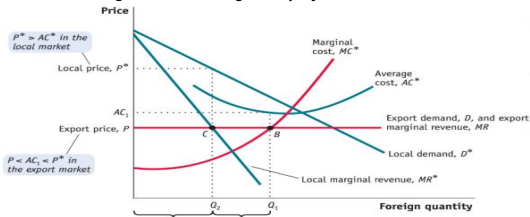
To maximize profits, the Foreign monopolist chooses to produce the quantity Q_1 at point B, where local marginal cost equals marginal revenue in the export market, $MC^* = MR_B = MR$.

33

34

Dumping

FIGURE 9-8 Foreign Discriminating Monopoly



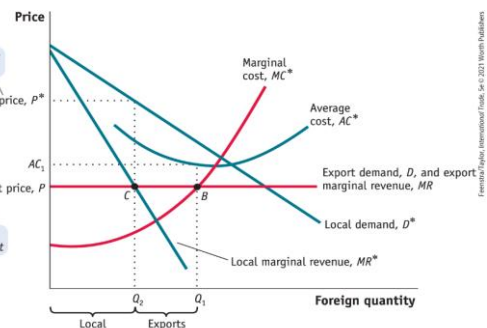
The quantity sold in the local market, Q_2 (at point C), is determined where local marginal revenue equals export marginal revenue, $MR^* = MR$.

The Foreign monopolist sells Q_2 to its local market at P^* , and $Q_1 - Q_2$ to its export market at P .

Because $P < P^*$ (or alternatively, $P < AC_1$), the firm is dumping.

9 - 35

A Closer Look



35

36

Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

Dumping

Numerical Example of Dumping

Suppose the Foreign firm has the following cost and demand data:

Fixed costs	= \$100	Marginal costs	= \$10 per unit
Local price	= \$25	Local quantity	= 10
Export price	= \$15	Export quantity	= 10

The profits earned from selling in its local market are

$$(\$25 \times 10) - \$10 \times 10 - \$100 = \$50$$

Revenue Variable cost Fixed cost Profits

Notice that the average costs for the firms are Average costs = $\frac{\$200}{10} = \20

Now suppose that this firm sells an additional 10 units abroad at the price of \$15, which is less than its average costs of production. It is still worthwhile to sell these extra units because profits become

$$(\$25 \times 10 + \$15 \times 10) - \$10 \times 20 - \$100 = \$100$$

Revenue Variable cost Fixed cost Profits

9 - 37

37

Policy Response to Dumping

Antidumping Duties

- Under the rules of the WTO, an importing country is entitled to apply a tariff, called an antidumping duty, any time that a foreign firm is dumping its product.
- An imported product is being dumped if its price is below the price that the exporter charges in its own local market.
- If the exporter's local price is not available, then dumping is determined by comparing the import price with:
 - A price charged for the product in a third market, or
 - The exporter's average costs of production.

9 - 38

38

Policy Response to Dumping

Antidumping Duties

Strategic Trade Policy?

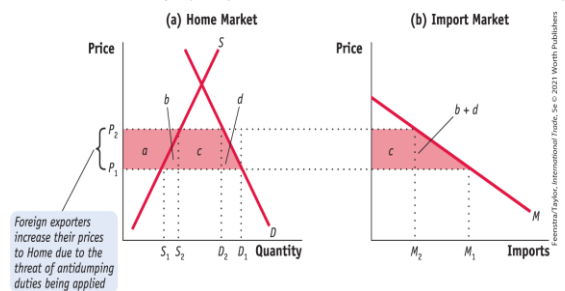
- Does the application of antidumping duties lead to a terms-of-trade gain for the Home country, making this another example of a strategic trade policy that can potentially benefit the Home country?
- The answer to this question is often "no," because the antidumping provisions of U.S. trade law are overused. These provisions create a much greater cost for consumers and larger welfare loss than does the less frequent application of tariffs under Sections 201, 232, or 301 of U.S. trade law.

9 - 39

39

Policy Response to Dumping

Calculation of Antidumping Duty FIGURE 9-9 Home Loss Due to Threat of Duty



A charge of dumping can sometimes lead Foreign firms to increase their prices, even without an antidumping duty being applied.

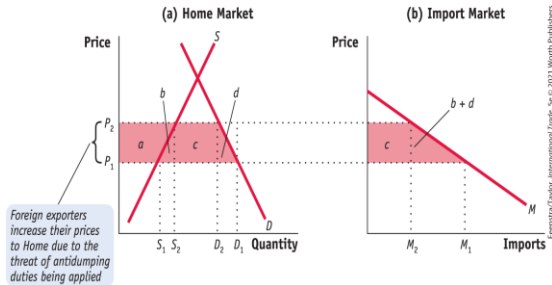
9 - 40

40

Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

Policy Response to Dumping

Calculation of Antidumping Duty FIGURE 9-9 Home Loss Due to Threat of Duty



In that case, there is a loss for Home consumers ($a + b + c + d$) and a gain for Home producers (a). The net loss for the Home country is area $(b + c + d)$.

9 - 41

Infant Industry Protection

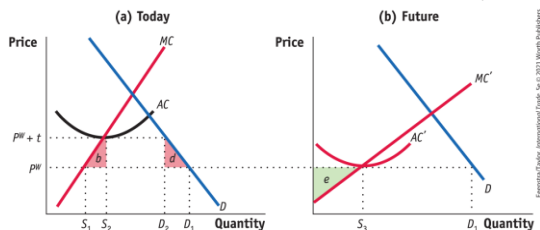
There are two cases in which infant industry protection is potentially justified.

- First, protection may be justified if a tariff today leads to an increase in Home output that, in turn, helps the firm learn better production techniques and reduce costs in the future.
- A second case in which import protection is potentially justified is when a tariff in one period leads to an increase in output and reductions in future costs for other firms in the industry, or even for firms in other industries. This type of externality occurs when firms learn from each other's successes.
- In the semiconductor industry, it is not unusual for firms to mimic the successful innovations of other firms and benefit from a knowledge spillover.
- As both of these cases show, the infant industry argument supporting tariffs or quotas depends on the existence of some form of market failure.

9 - 42

Infant Industry Protection

Free-Trade Equilibrium, Tariff Equilibrium - Equilibrium Today, Equilibrium in the Future, Effect of the Tariff on Welfare FIGURE 9-10 Infant Industry Protection

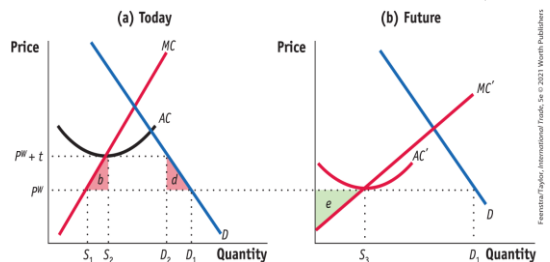


In the situation today (panel a), the industry would produce S_1 , the quantity at which $MC = P^W$. Because P^W is less than average costs at S_1 , the industry would incur losses at the world price of P^W and would be forced to shut down. A tariff increases the price from P^W to $P^W + t$, allowing the industry to produce at S_2 (and survive) with the net loss in welfare of $(b + d)$.

9 - 43

Infant Industry Protection

Free-Trade Equilibrium, Tariff Equilibrium - Equilibrium Today, Equilibrium in the Future, Effect of the Tariff on Welfare FIGURE 9-10 Infant Industry Protection



In panel (b), producing today allows the average cost curve to fall through learning to AC' . In the future, the firm can produce the quantity S_3 at the price P^W without tariff protection and earn producer surplus of e .

9 - 44

Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

APPLICATION: Example of Infant Industry Protection

In 2009 China overtook the United States as the largest automobile market in the world. Strong competition among foreign firms located in China, local producers, and import sales have resulted in new models and falling prices.

Production in China

- Beginning in the early 1980s, China permitted a number of joint ventures between foreign firms and local Chinese partners.
- Various regulations, combined with high tariff duties, helped at least some of the new joint ventures achieve success.

9 - 45

45

APPLICATION: Examples of Infant Industry Protection

Protecting the Automobile Industry in China Cost to Consumers

Quotas have a particularly large impact on domestic prices when the Home firm is a monopoly. That situation applied to the sales of Volkswagen's joint venture in Shanghai, which enjoyed a local monopoly on the sales of its vehicles. The effect of this local monopoly was to substantially increase prices in the Shanghai market, an average of 42% for the period 1995-2001.

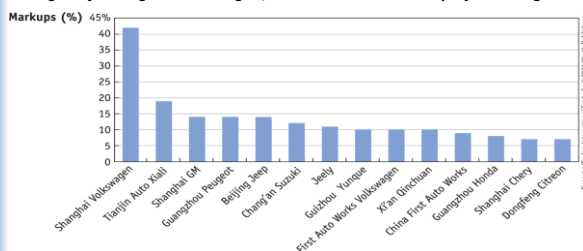
9 - 46

46

APPLICATION: Examples of Infant Industry Protection

Protecting the Automobile Industry in China - FIGURE 9-12

Automobile Markups by Firms in China, 1995-2001 This diagram shows the percentage markups (price over marginal cost) applied to automobiles sold in China from 1995 to 2001, by various producers. The highest markup was charged by Shanghai Volkswagen, which had a local monopoly in Shanghai.



7

47

APPLICATION: Examples of Infant Industry Protection

Protecting the Automobile Industry in China Foreign Production in China

The local monopoly held by Shanghai Volkswagen has been eroded by the entry of other foreign firms, such as General Motors, Ford, Hyundai, and Tesla, into the Chinese market.

Infant Industry Protection?

For the tariffs and quotas used in China to be justified as infant industry protection, they should lead to a large enough drop in future costs so that the protection is no longer needed. China has not yet reached that point entirely, since it still imposes a 15% tariff on automobiles, so it is premature to point to the Chinese auto industry as a successful case of infant industry protection.

9 - 48

48

Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

Conclusions

- Under conditions of imperfect competition, the effects of a tariff and quota are very different for a Home monopoly.
- With a tariff, the Home monopolist can increase its price by the amount of the tariff but cannot exercise its monopoly power.
- With an import quota, the Home firm is able to charge a higher price than it could with a tariff because it enjoys a “sheltered” market. So the import quota leads to higher costs for Home consumers than the tariff, and these two policies are no longer “equivalent” as they were under perfect competition.
- Under Foreign monopoly, the tariff leads to a fall in the price received by the Foreign monopolist, so the price paid by Home consumers rises by less than the full amount of the tariff.

9 - 49

Conclusions

- The tariff is shared between an increase in the Home price and a decrease in the Foreign price, and the Home importer obtains a terms-of-trade gain. For small tariffs, the terms-of-trade gain exceeds the deadweight loss, and the Home country gains from the tariff.
- This is an example of the use of a tariff as a strategic trade policy that can benefit the Home country at the expense of the Foreign firm.
- A specific example applied against a Foreign monopoly occurs when the Foreign firm is a discriminating monopoly and dumps its output into Home at a lower price than it charges in its own local market.

9 - 50

49

50

Conclusions

- When dumping occurs, the importing company is permitted by WTO rules to respond with a tariff, called an antidumping duty.
- The expected outcome from antidumping duties is that Foreign exporters raise prices even when a duty is not applied, leading to Home losses. Because of these losses, the use of antidumping duties as a strategic trade policy is not effective.
- Infant industry protection can allow a young industry to mature and compete in the future. Successful infant industry protection requires that the cost of temporary protection is less than the gains from having the industry continue (without protection).

9 - 51

KEY POINTS

1. Free trade will lead a Home monopoly in a small country to act in the same way as a perfectly competitive industry and charge a price equal to marginal cost. Therefore, competition from imports eliminates the monopoly power of the Home firm.
2. Quotas are not equivalent to tariffs when the Home firm is a monopolist. Because a quota limits the number of imports, the Home monopolist can charge higher prices than under a tariff, which results in greater costs to consumers.

9 - 52

51

52

Chapter 9 - Import Tariffs and Quotas Under Imperfect Competition

KEY POINTS

- When a tariff is applied against a Foreign monopolist, the results are similar to those of the large-country case analyzed in the previous chapter: the Foreign monopolist increases the price in the importing country by less than the full amount of the tariff and allows its own net-of-tariff price to fall. Hence, the tariff is shared between an increase in the Home price and a decrease in the Foreign price, a terms-of-trade gain for Home.
- Dumping is the practice of a Foreign firm exporting goods at a price that is below its own domestic price or below its average cost of production. If the price charged for the exported good is above the firm's marginal cost, then dumping is profitable. We expect to observe dumping when the Foreign firm is acting as a discriminating monopolist.

9 - 53

KEY POINTS

- Countries respond to dumping by imposing antidumping duties on imports. Antidumping duties are calculated as the difference between a Foreign firm's local price (or average costs) and its export price. To reduce or avoid the antidumping duties, Foreign firms can raise their export prices. That increase in price is a terms-of-trade loss for the importer and occurs because the Foreign firm can influence the duty.
- In the United States and other countries, the use of antidumping tariffs far exceeds the use of tariffs under Section 201 and other trade laws. It is easy for domestic firms to bring a charge of dumping, and in many cases upholding the charge results in an increase in foreign prices and a decrease in competition for the domestic firm. The excessive use of antidumping cases also invites other countries to respond with their own charges of dumping.

9 - 54

53

54

KEY POINTS

- An infant industry is a firm that requires protection to compete at world prices today. When a government applies a temporary tariff, it expects that costs for the firm or the industry overall will fall due to learning, thereby allowing it to compete at world prices in the future.



9 - 55

55



9 - 56

56