

International Trade

9. Import Tariffs and Quotas under Imperfect Competition

Dr. Christa Brunnschweiler

1. Introduction

- In 2005, China overtook Japan as the second largest automobile market in the world.
- Strong competition between foreign firms located in China, local producers, and import sales have resulted in new models and a fall in prices.
 - China's middle class can now afford cars.
 - Of 5.9 million cars sold in China in 2005, 5.76 million were produced domestically.
 - In 1985, only 5200 cars were produced.

1. Introduction

- When China joined WTO, it lowered tariffs on autos from as high as 80-100% to 25%.
- Quotas were revisited as well.
- To fully understand effects of import tariffs and quotas on the automobile market, we have to allow for imperfect competition.
 - We will assume here the extreme case of a monopoly producer to see how trade policies affect welfare.

1. Introduction

- We will first assume a **Home monopoly** and show how quotas and tariffs have different effects on Home prices.
- We will then consider an **infant industry**.
 - An industry too young to have achieved its lowest costs.
 - Again assume one firm.
 - By increasing its output today, the firm will learn how to produce more efficiently and have lower costs in the future.
 - Address question: should a government impose a temporary tariff or quota today to protect an infant industry from competition, keeping it in business long enough to learn how to achieve lower costs in the future?

1. Introduction

- We then consider a Foreign monopoly and the effect of an import tariff applied by the Home country.
 - Similar to large-country case in Chapter 8.
- A specific example of a foreign monopolist is the Foreign **discriminating monopoly**.
 - Charges a lower price in Home than in its local market.
 - Dumps its product into the Home market.
- In this case, we might see an **anti-dumping duty**.
 - A tariff applied against a Foreign discriminating monopoly.
- Tariffs in this situation are unlikely to result in gains for the Home country.

2. Tariffs and quotas with Home monopoly

- We will assume a Home monopolist.
 - Single firm selling homogeneous good; charges prices above marginal costs.
- Free trade introduces many new firms into the market, which eliminates the monopolist's ability to charge a price greater than MC.
 - Free trade results in perfectly competitive Home market.
- However, because the firm has market power, tariffs and quotas affect the trade equilibrium differently.

2. Tariffs and quotas with Home monopoly

- With a tariff, the Home monopolist still competes against a large number of importers, limiting its market power.
- With a quota, once the quota is reached, the monopolist is the only producer able to sell in the Home market.
 - Market power is retained.
- This section looks at Home equilibrium with and without trade, and explains the difference between tariffs and quotas.

2. Tariffs and quotas with Home monopoly

No-trade equilibrium (Figure 9.1)

- Standard monopoly graph with upward-sloping marginal costs.
- Because the demand the monopolist faces is downward-sloping, he must lower price to sell more.
- This means that the marginal revenue, the revenue received from selling the next unit, will always be lower than the price.
- Monopolist maximizes profits at the quantity where $MR = MC$.
- Price is then determined from the demand curve.

2. Tariffs and quotas with Home monopoly

- Comparison with perfect competition
 - Suppose there are many firms in the industry and they all have the same cost conditions as the monopolist. We can show where this market would produce if it were perfectly competitive.
 - The no-trade equilibrium with perfect competition occurs where supply (MC) equals demand.
 - We can see in figure 9.1 that the competitive price, P^C is lower than the monopoly price, P^M .
 - Also the competitive quantity, Q^C , is higher than the monopoly quantity, Q^M .

2. Tariffs and quotas with Home monopoly

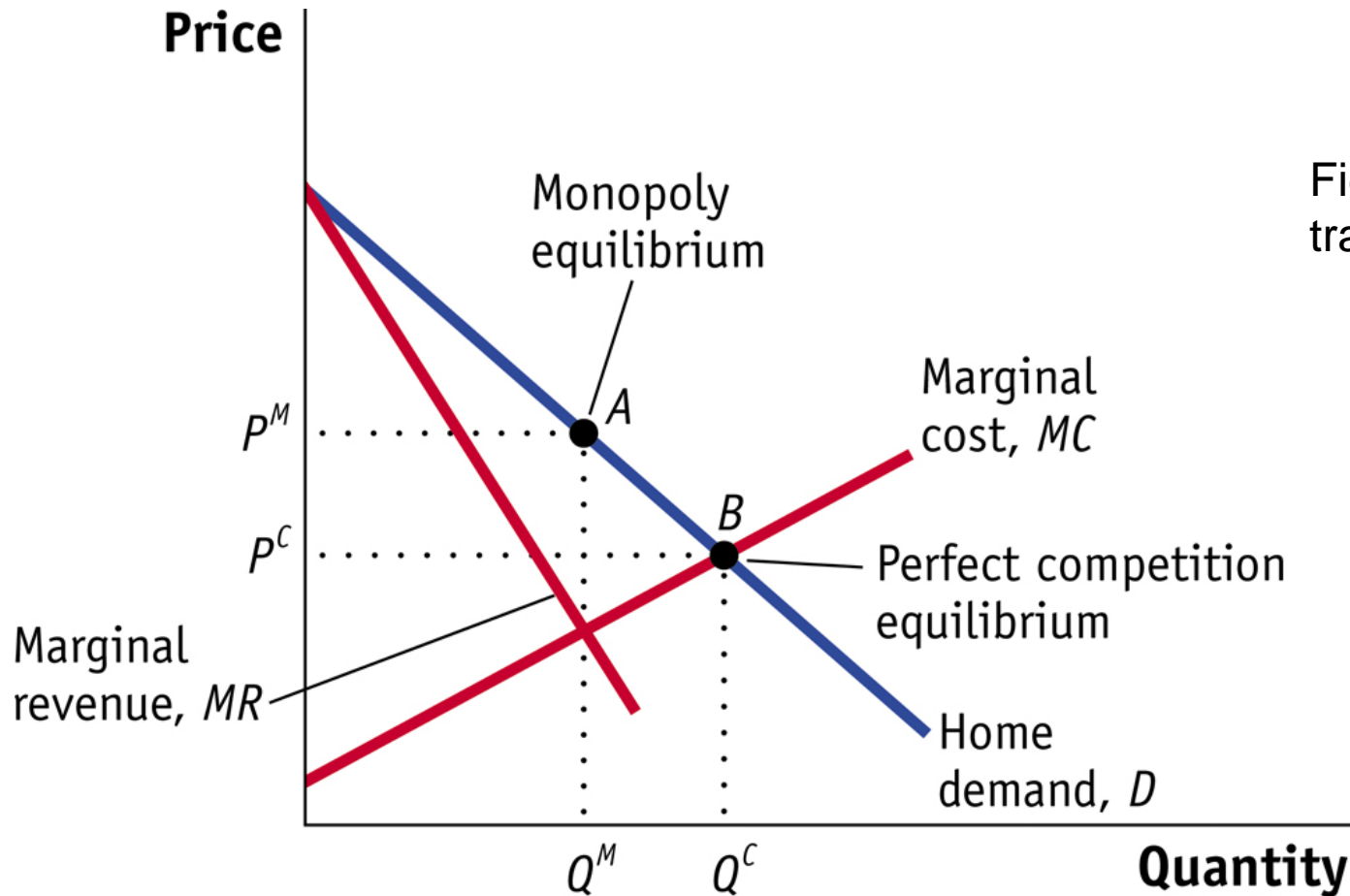


Figure 9.1 No-trade equilibrium

2. Tariffs and quotas with Home monopoly

Free trade equilibrium

- Assume Home is a small country, facing a fixed world price of P^W .
- Figure 9.2 shows the horizontal world price line, X^* , which gives the Foreign export supply curve.
- This is also the new demand curve facing the Home monopolist, since the original home demand, D , no longer applies.
- Home's new MR is the same as the new demand curve, so $X^* = MR^*$.
- $MR^* = MC$ at point B, supplying S_1 .
- Home consumers demand D_1 , leading to Home imports of $M_1 = D_1 - S_1$.

2. Tariffs and quotas with Home monopoly

- Comparison with perfect competition
 - We again assume the cost conditions facing the competitive firms are the same as for monopolist.
 - A perfectly competitive industry will take P^W and supply where that price intersects the marginal cost curve, at S_1 with consumers demanding D_1 .
 - Under free trade for a small country, a Home monopolist produces the same quantity and charges the same price as would a perfectly competitive industry.
 - The monopolist loses his control over price and behaves the same as a perfectly competitive industry with the same marginal costs.

2. Tariffs and quotas with Home monopoly

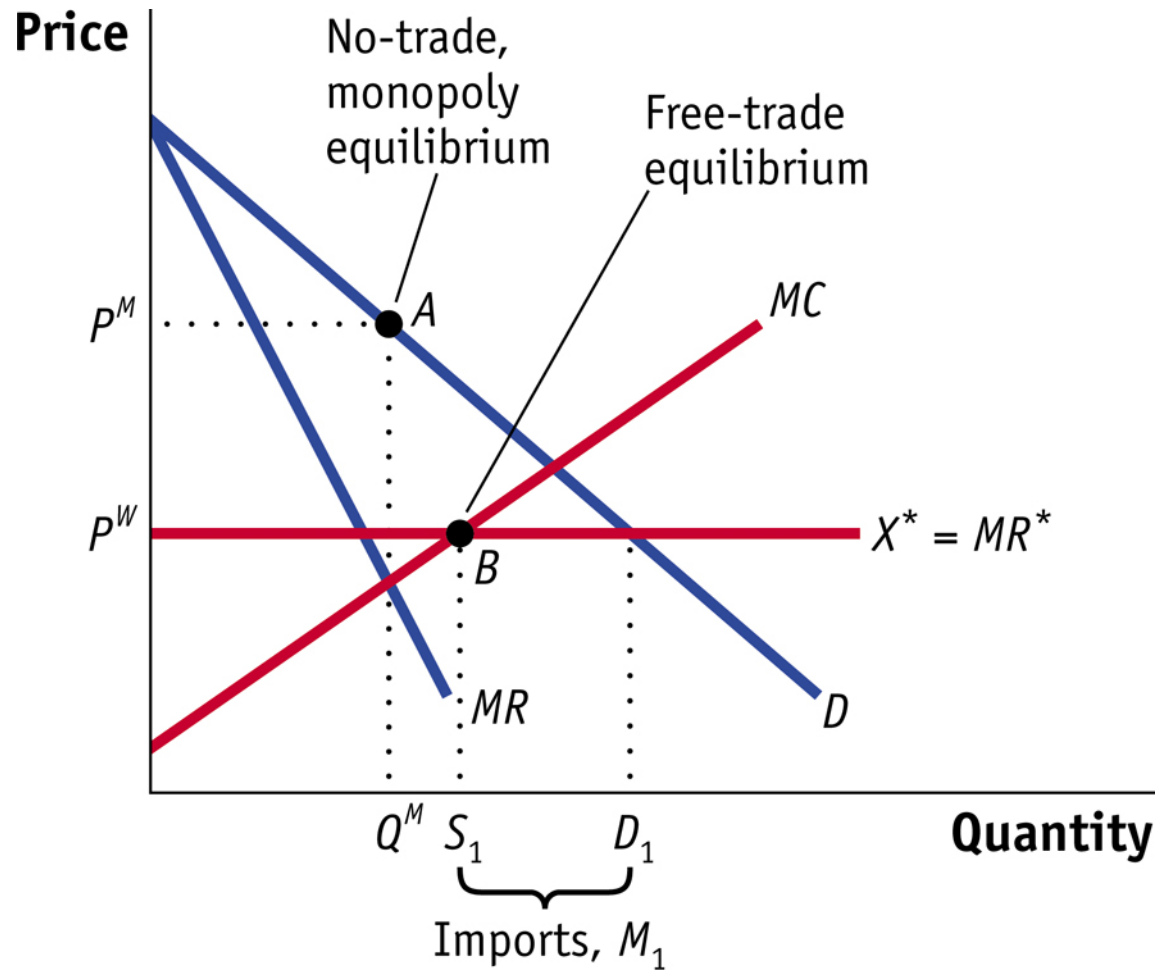


Figure 9.2 Home monopoly's free-trade equilibrium

2. Tariffs and quotas with Home monopoly

Suppose Home imposes a tariff, t , on imports:

- Price at Home increase from P^W to P^W+t .
- The foreign export supply curve shifts up to X^*+t .
- Again this is the new demand curve and marginal revenue curve for the monopolist.
- Maximizing profits where $MR=MC$ at point C gives Home supply of S_2 and a Home demand of D_2 .
- Since Home production increases and Home demand falls, imports fall to $M_2 = D_2 - S_2$.

2. Tariffs and quotas with Home monopoly

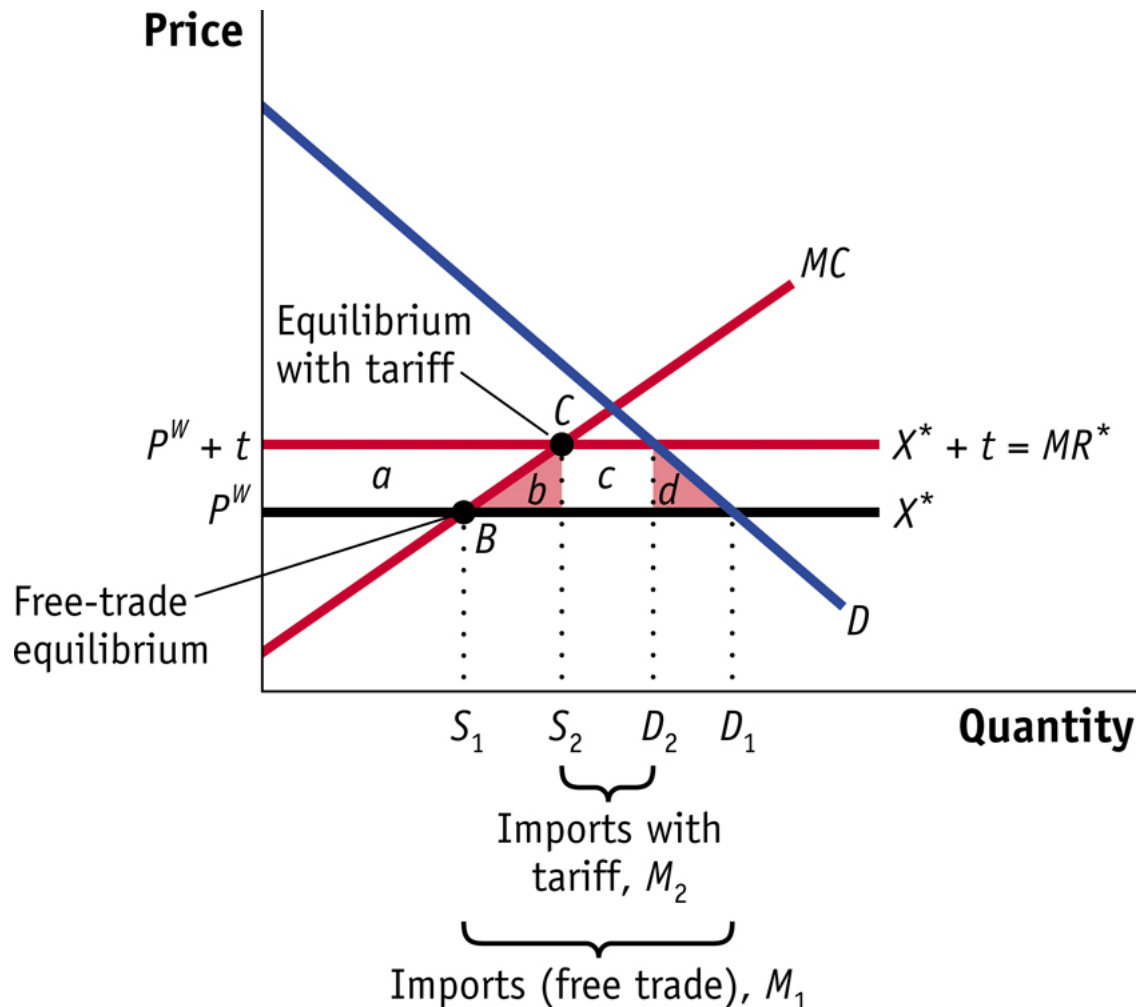


Figure 9.3 Tariff with Home monopoly

2. Tariffs and quotas with Home monopoly

- Comparison with perfect competition
 - Again assuming $S=MC$, the competitive equilibrium will be where $P=MC$, which gives the quantity S_2 at P^W+t .
 - With a tariff, a Home monopolist will produce the same quantity at the same price as a perfectly competitive industry.
- Home loss due to the tariff
 - Since the equilibrium outcomes under a tariff are the same for a monopolist and a perfect competitor, we would expect that the losses would be the same as well.

2. Tariffs and quotas with Home monopoly

- Home loss due to the tariff (cont'd)
 - As before, we look at the changes in surplus to both producers and consumers, and the gain to government in the form of tax revenue.
 - With a higher price, consumer surplus falls by the amount $(a+b+c+d)$, and producer surplus rises by (a) .
 - The government gains revenue equal to the tariff times the amount of imports, $t \cdot M_2$, giving the area (c) .
 - As before that leads to a deadweight loss of $(b+d)$.
 - We can see this again in Figure 9.3.

2. Tariffs and quotas with Home monopoly

Effect of Home quota

- In Figure 9.4 we begin with the free trade equilibrium at B and the tariff equilibrium at C.
- We choose a quota that will give us the same imports as the tariff, M_2 .
- The effective demand curve facing the Home monopolist under the quota is now the old demand curve, D , minus the quota, M_2 .
- The monopolist still retains the ability to influence price and will choose its profit-maximizing price along $D-M_2$.

2. Tariffs and quotas with Home monopoly

Effect of Home quota (cont'd)

- Adding the MR curve for the effective demand curve $D-M_2$ allows us to find the profit maximizing price and quantity for the Monopolist.
- $MR=MC$ at point E with S_3 and a price of P_3 .
- Comparing the tariff equilibrium at C with the quota equilibrium at E shows us the differences.
- The price is higher: $P_3 > P^W + t$.
 - This reflects the ability of the monopolist to raise his price once the quota amount has been imported.
 - This occurs even though the quota allows the same amount of imports that were brought in under that tariff.

2. Tariffs and quotas with Home monopoly

Effect of Home quota (cont'd)

- Since the price is higher under the quota, the monopolist will definitely produce a lower quantity under the quota, $S_3 < S_2$.
- In fact, it is even possible for the quantity under the quota to fall below the no-trade quantity. This will depend on the demand, and therefore, the MR curve.
- If $S_3 < S_1$ is possible, then workers would not even be protected under a quota, which is typically one of the expectations of a trade restriction.
 - Employment would actually fall under this type of quota.

2. Tariffs and quotas with Home monopoly

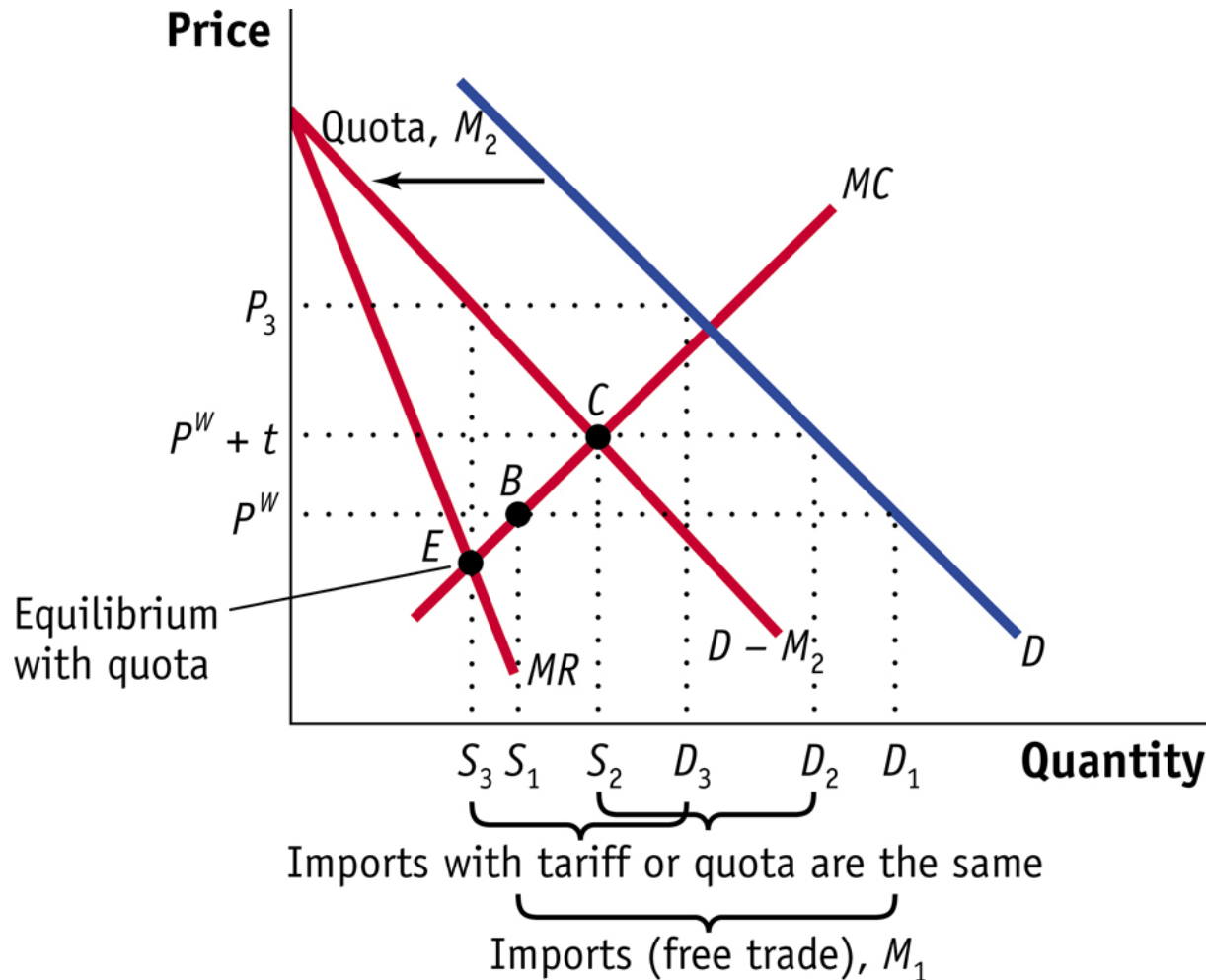


Figure 9.4
Effect of quota with Home monopoly

2. Tariffs and quotas with Home monopoly

- Home loss due to the quota
 - Since price rises more with a quota than a tariff, it is clear that consumers will lose more surplus under a quota than they would under a tariff.
 - Although we will not make a detailed calculation, you can expect that the deadweight loss will always be higher for a quota than for a tariff.
 - The higher price benefits the monopolist but harms the Home consumers and creates an extra deadweight loss, due to the exercise of the Home producer's monopoly power.

2. Tariffs and quotas with Home monopoly

- Home loss due to the quota (cont'd)
 - Given that the monopolist is charging a higher price, quota rents will increase as well.
 - Quota rents are measured by the difference between P_3 and P^W times the number of imports, M_2 .
 - In the case of a Home monopoly, quota rents are higher than the tax revenue would be under a tariff.
 - Remember that quota rents often go to the Foreign producers or are just wasted on rent-seeking activities.

2.1 U.S. imports of Japanese automobiles

- A well-known VER occurred in the 1980s when the U.S. limited the imports of cars from Japan.
- In the early 1980s, the U.S. suffered a deep recession and unemployment in the auto industry rose sharply.
- In 1980, the United Automobile Workers and Ford Motor Company applied to the International Trade Commission (ITC) for protection under Article XIX of GATT and Section 201 of U.S. trade laws.
- The ITC determined that the U.S. recession was a more important cause of injury to the auto industry than increased imports.
 - It did not recommend that the auto industry receive protection.

2.1 U.S. imports of Japanese automobiles

- In response, several congressmen from states with auto plants pursued other means.
- A bill was introduced in the U.S. Senate to restrict imports.
- Aware of this, the Japanese government announced it would “voluntarily” limit Japan’s export of autos to the U.S.
 - By 1988, Japanese exports were below the VER because Japanese firms were producing their cars in the U.S.

2.1 U.S. imports of Japanese automobiles

- Price and Quality of Imports
 - Under the VER, the average price rose \$2,900 from 1980 and 1985.
 - Of that, \$1,100 was due to quota rents earned by Japanese producers.
 - \$1,650 was due to quality improvements in Japanese cars.
 - \$150 reflects the amount that prices would have risen under free trade.

2.1 U.S. imports of Japanese automobiles

- Quota Rents
 - If we take the quota rents per car and multiply it by the number of imports, we can estimate the total rents to be about \$2.2 billion.
 - This is the lower estimate of the annual cost of quota rents for autos we saw in Table 8.4.
 - The Japanese firms' stock prices rose during the VER period, after it was clear that the Japanese government would distribute the quotas to each producer.
 - Japanese firms had a strong incentive to export the more expensive models (quality upgrading).

2.1 U.S. imports of Japanese automobiles

- Price of U.S. Cars
 - Under the VER, the average price of U.S. cars rose very rapidly – 43% increase from 1979 to 1981.
 - This was due to the exercise of market power by the U.S. producers, who were sheltered by the quota.
 - The quality of U.S. cars did not rise by as much as the quality of Japanese imports, seen in Figure 9.5.
 - The fact that the U.S. and Japanese firms were both able to raise prices substantially indicates the policy was VERY costly to U.S. consumers.

2.1 U.S. imports of Japanese automobiles

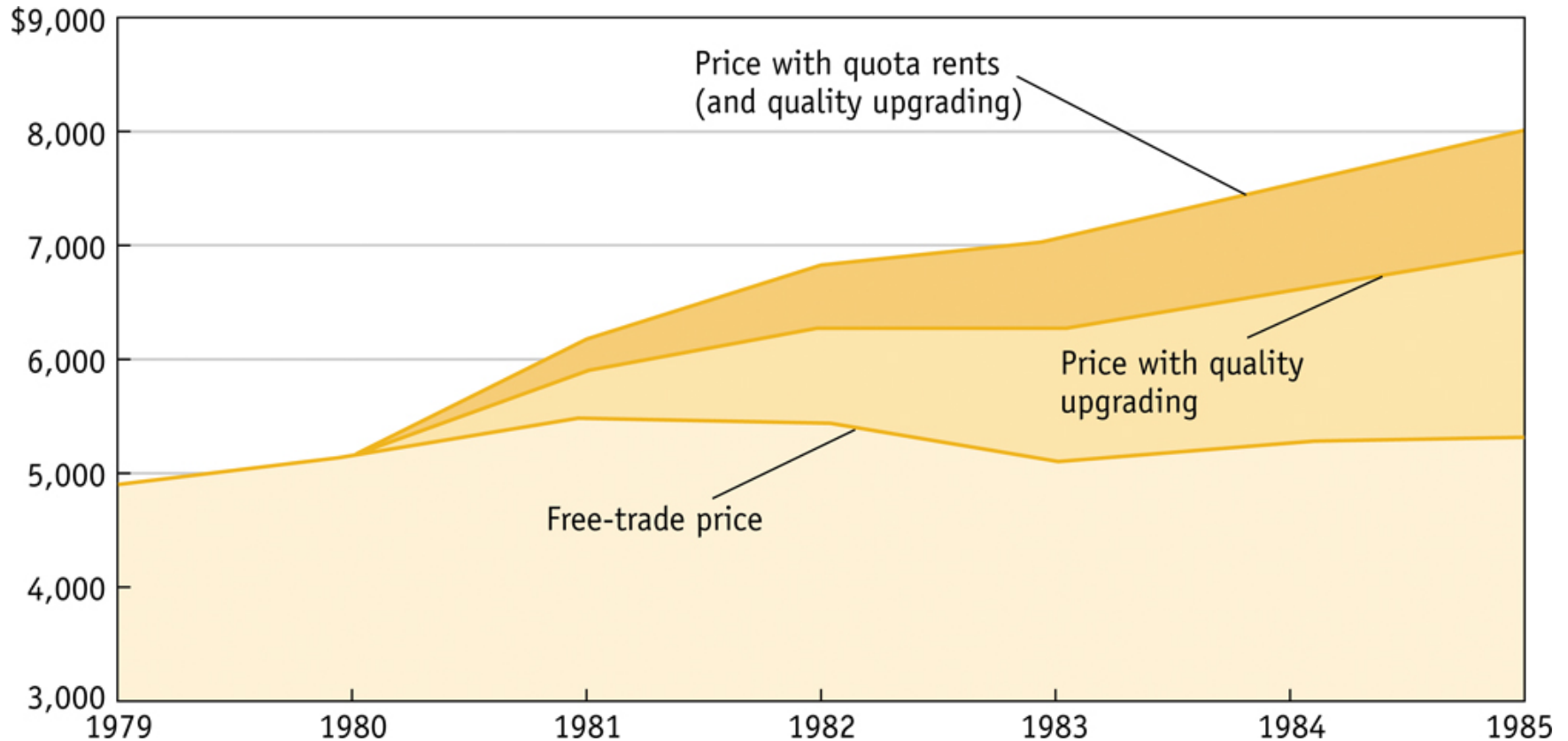


Figure 9.5 Prices of Japanese car imports

2.1 U.S. imports of Japanese automobiles

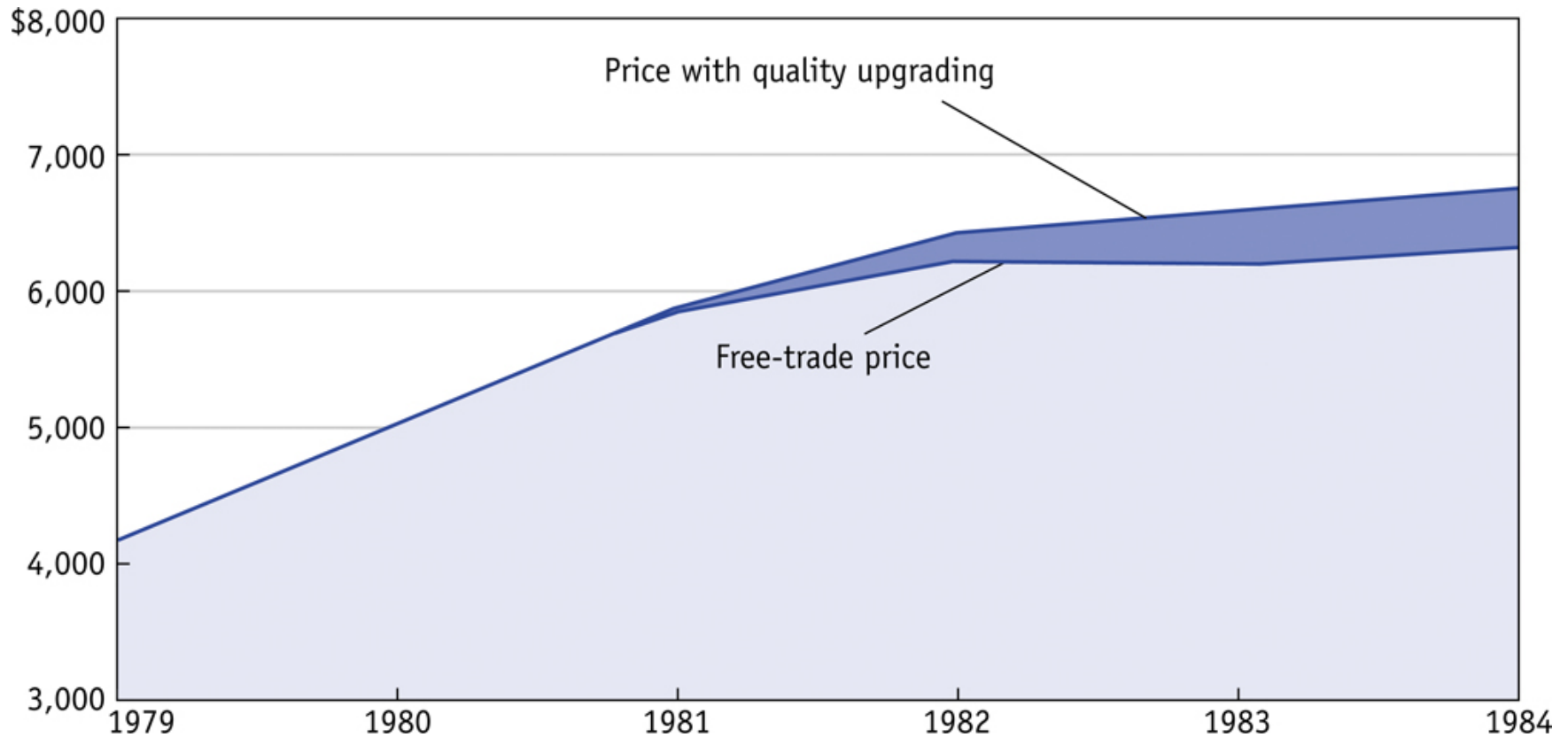


Figure 9.6 Prices of American small cars

2.1 U.S. imports of Japanese automobiles

- The GATT and WTO
 - Because the export restraint was enforced by the Japanese instead of the U.S., it did not necessarily violate Article XI of GATT.
 - Countries should not use quotas to restrict imports, but this was not a quota.
 - This loophole was closed when the WTO was established.
 - As a result of this rule, VERs can no longer be used unless they are a part of some other agreement in the WTO.

3. Infant industry protection

- Despite losses, nearly all countries use tariffs in the early stages of economic development, often in industries composed of a small number of firms.
 - This means they are more often acting under conditions of imperfect competition.
- Why? They argue that their industries are too young to withstand foreign competition.
 - If given time to grow, the industries will be able to compete in the future.
 - Some short-term protection from imports is needed.
- Called the *infant industry case* for protection.

3. Infant industry protection

- In this case, we will assume only one Home firm.
- Increasing output today should lead to lower costs in the future through learning-by-doing.
- Should the Home government intervene with protection?
We will consider two cases where it is potentially justified.
 1. A tariff today increases Home production and lowers future costs.
 2. A tariff today increases output and reduces future costs for other firms in the industry or other industries.

3. Infant industry protection

- Case 1: assume that if a firm is protected today, we will get an increase in Home output.
- This will then help the firm to learn better production techniques and reduce costs in the future.
- For infant industry protection to be justified, the firm's learning has to shift down the entire average cost curve to the point where it is competitive at world prices, even without a tariff.

3. Infant industry protection

- But, if the firm's costs are going to fall in the future, why doesn't it just borrow today against future profits?
- An essential piece of the infant industry argument is that the firm needs to earn non-negative profits each period to avoid bankruptcy.
 - There must be some reason the firm cannot cover losses by borrowing against future profits.
- In this case, the trade protection is just offsetting an imperfection in the capital market.

3. Infant industry protection

- Case 2: a tariff in one period will lead to an increase in output and reductions in future costs for other firms in the industry, or even for firms in other industries.
 - A type of externality that exists when firms learn from each other's successes: an innovation in one area helps lower costs in other areas.
- Also called knowledge spillover – firms mimic the successful innovations of other firms.

3. Infant industry protection

- When there are spillovers, the tariff is promoting a positive externality.
- Because firms learn from each other, each firm on its own does not have much incentive to invest in learning through increasing production today, because part of the benefits is lost to other firms.
- A tariff is needed to offset this externality by increasing production, allowing for these spillovers to occur between firms - leading to cost reductions.

3. Infant industry protection

- In both cases, infant industry argument supporting trade restrictions depends on existence of some form of market failure.
- This market failure creates a potential role for government policy.
- However, if capital market will not provide loan to the firm, it must not believe the firm will be profitable in the future.
 - If that is true, why would the government have better information about that firm's future prospects?

3. Infant industry protection

- Similarly, can we expect the government to know the extent of spillovers and determine if they are enough to justify trade protection?
- Room for skepticism regarding the ability of government to distinguish industries that deserve infant-industry protection from those that do not.
- Market failures alone do not guarantee that protection is worthwhile.
 - Compare costs of protection today with benefits of protection in the future.

3. Infant industry protection

Free-Trade Equilibrium

- Figure 9.7 shows Home firm with current and proposed future situation.
- Assume Home is a small country and therefore faces fixed world prices for its imports.
- Also assume that increasing output today will lead to reduction in costs in future.
- Equilibrium today
 - With free trade Home firm faces $P^W = MR$, producing where P^W crosses its MC , supplying S_1 .
 - At S_1 average costs are higher than P^W , so firm is suffering losses and would shut down today instead of producing S_1 .

3. Infant industry protection

Tariff Equilibrium

- To prevent firm from shutting down, Home government could apply import tariff or quota to raise Home price.
- Assume increased output allows firm to learn better production techniques so its future costs are reduced.
- We know Home government should choose tariff, since under quota the home firm will produce less and raise prices more (see previous section).

3. Infant industry protection

- Tariff equilibrium today
 - If tariff t is applied Home price rises to P^W+t .
 - Assume that P^W+t just covers firm's average costs.
 - The firm produces S_2 , and since P^W+t equals AC at that quantity, the firm makes zero profits.
- Equilibrium in the future
 - At S_2 , the firm can lower its costs in the future.
 - The effect of learning on production costs is shown by a downward shift in the AC curve to AC' .
 - This means firm can produce S_3 without tariff protection at P^W and still cover its AC .

3. Infant industry protection

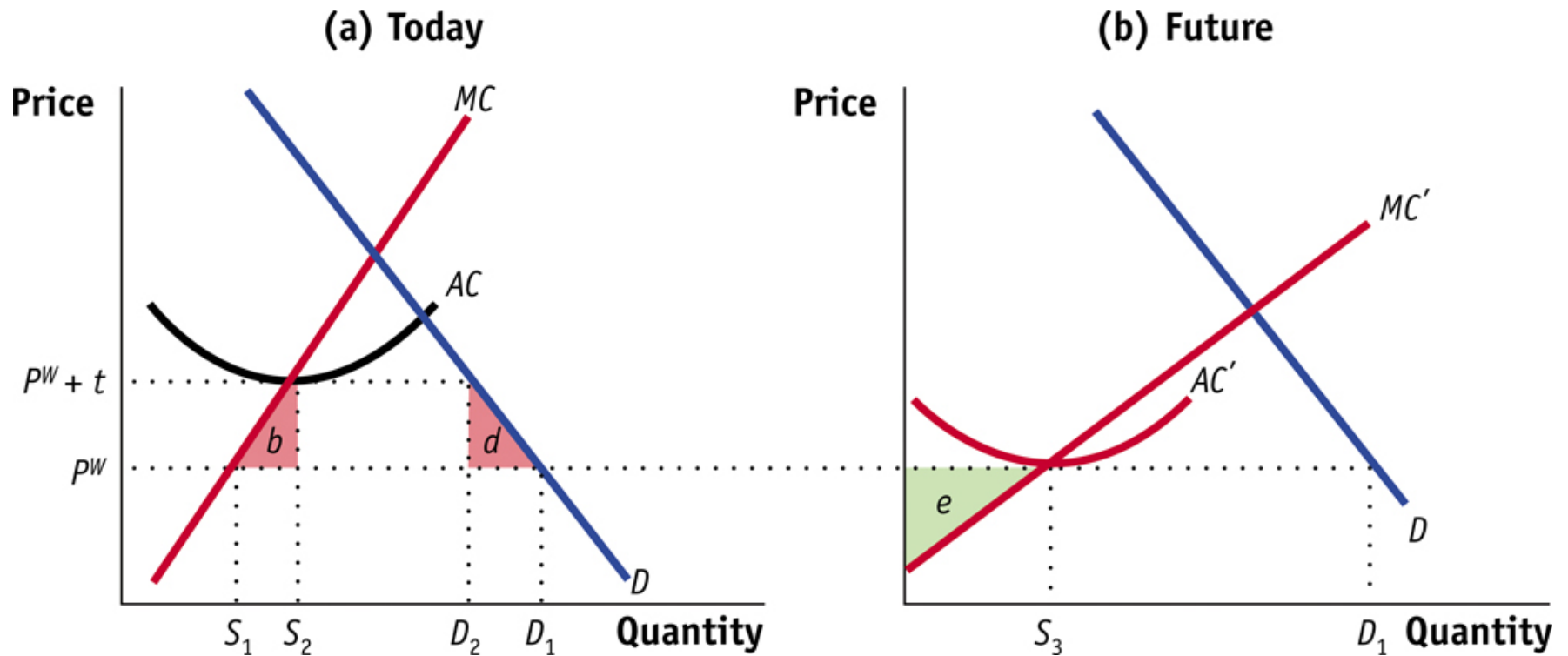


Figure 9.7 Infant industry protection

3. Infant industry protection

- Effect of tariff on welfare
 - The tariff leads to deadweight loss measured by $(b+d)$.
 - To determine welfare, we also have to consider the gain from having firm operating in the future.
 - We do this by measuring producer surplus in panel (b), area e .
 - This is present value of firm's future producer surplus: amount that would be forgone if firm shut down today.

3. Infant industry protection

- Effect of tariff on welfare (cont'd)
 - To evaluate success of tariff, compare future gain with present losses → compare e with $(b+d)$.
 - If $e > (b+d)$, then tariff was worthwhile.
 - If $e < (b+d)$, then costs of protection today do not justify future benefits.
 - The challenge for government policy is to distinguish worthwhile cases from those that are not.

3.1 Examples of infant industry protection

- We will consider three examples of infant industry protection:
 - The automobile industry in China
 - The computer industry in Brazil
 - Harley-Davidson motorcycles in the U.S.
 - Harley-Davidson not classical infant industry case since it had been in operation for about 80 years before it was in trouble.
 - However, it allows a precise calculation of effect of tariff on consumers and producers to determine if infant industry protection was successful.
- Infant industry argument is not only used by developing countries.

3.1 Examples of infant industry protection

Protecting the automobile industry in China

- Until China joined WTO in 2001 it had protected many of its industries with strict tariffs and quotas.
- Tariffs on autos were as high as 260% in early 1980s, and fell to 80–100% by 1996.
- By 2006, tariffs on autos had been reduced to 25% and import quotas had been eliminated.
- Is China's success in the automobile industry a case of successful infant industry protection?

3.1 Examples of infant industry protection

Protecting the automobile industry in China (cont'd)

- In 1980s, China permitted a number of joint ventures between foreign firms and local Chinese partners.
- Window for foreign manufacturers to tap Chinese market, but there were limits on their participation.
 - Foreign manufacturers could not own majority stake in local manufacturing plant.
 - Chinese kept control of distribution networks for jointly-produced autos.

3.1 Examples of infant industry protection

Protecting the automobile industry in China (cont'd)

- These regulations combined with high tariffs helped achieve success for some of joint ventures.
 - Volkswagen's Shanghai plant was by far the winner under these rules.
 - It produced over 200,000 vehicles per year—more than twice as much as any other plant.
 - Other local restrictions on engine size also helped ensure that only Volkswagen's models could be sold in the Shanghai market.

3.1 Examples of infant industry protection

Protecting the automobile industry in China (cont'd)

- Volkswagen's competitors did not fare as well.
 - Beijing Jeep never produced more than 20,000 vehicles.
 - Peugeot ended up withdrawing.
- Volkswagen has since opened new plant, and other factories reached agreements with Honda and Daihatsu.
- Toyota, General Motors, and Ford were recently either producing or planning on producing in China.

3.1 Examples of infant industry protection

- Costs to consumers of Chinese auto protection
 - Tariffs and quotas in China kept imports fairly low throughout 1990s (between 27,500 - 222,000 autos).
 - Given high tariffs, import prices nearly doubled.
 - Quotas had at least as great an impact on prices of imports *and* domestically produced cars.

3.1 Examples of infant industry protection

- Costs to consumers of Chinese auto protection (cont'd)
 - Remember analysis of quotas and local monopolies and that VW enjoyed local monopoly in Shanghai.
 - This caused prices in the Shanghai market to increase substantially.
 - Figure 9.8 shows estimated markups of price over average costs for autos sold in China from 1995 to 2001.
 - The ones for Shanghai VW were the highest.
 - It is clear monopoly power allowed VW to substantially raise prices – as predicted by theory.

3.1 Examples of infant industry protection

- Costs to consumers of Chinese auto protection (cont'd)
 - Some models produced by Shanghai VW during 1990s were outdated models.
 - That plant had highest production through 2001, despite high prices and outdated models.
 - A large number of consumers in Shanghai area bore costs of local protection.
 - Home monopoly benefited from protection, but at expense of consumers.
 - Additionally, protection created disincentives for innovation.

3.1 Examples of infant industry protection

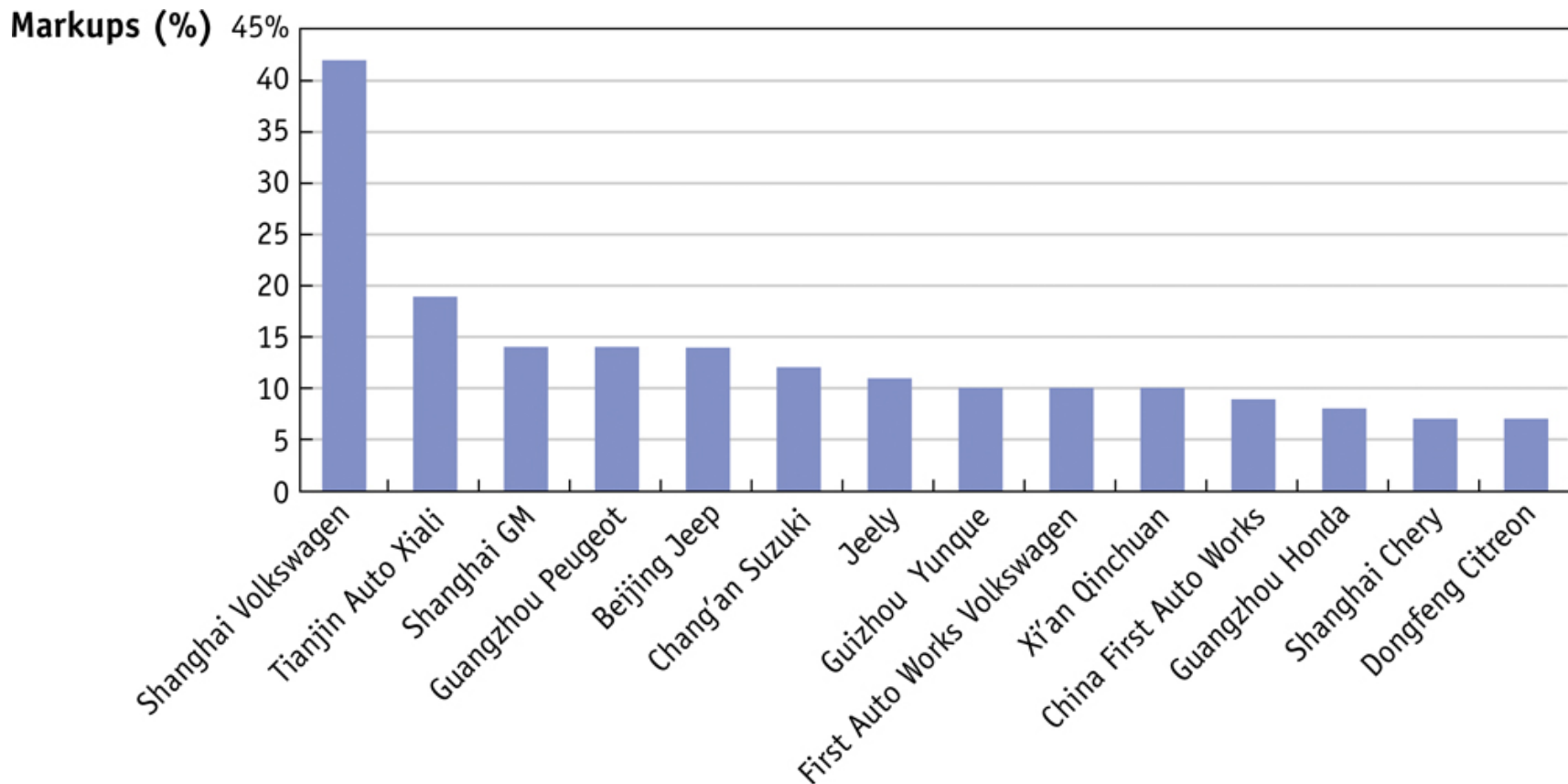


Figure 9.8 Automobile markups by firms in China, 1995-2001

3.1 Examples of infant industry protection

- Gains to Producers
 - In order to justify protective measures in auto industry, they should lead to large enough drop in future production costs that protection is no longer needed.
 - There is some evidence that measures did help:
 - Tariffs are now only at 25%.
 - Some producers are making plans to export cars from China → average costs must have fallen enough to reach world prices.

3.1 Examples of infant industry protection

- Gains to Producers (cont'd)
 - Was fall in average costs due to protection or did it happen for some other reason?
 - The early firms entered China because that was the only way to sell in China since protection levels were so high.
 - Local costs did fall as Chinese partners learned from technology transferred from foreign partners.

3.1 Examples of infant industry protection

- Gains to Producers (cont'd)
 - Shanghai Automotive, previous partner of VW and General Motors, will soon begin building and selling own brand of car in China.
 - Technology transfer obviously helped local firms, and foreign firms might not have come into China without high protection levels.
 - Some current firms such as Lifan Group are purchasing ready-made plants from other countries for first mass production and export of cars.
 - This shows that first exports from China will not come from firms that benefited from technology transfer.

3.1 Examples of infant industry protection

- Gains to Producers (cont'd)
 - Other reasons why China is doing so well in auto industry:
 - At least as important as tariffs is rapid growth in China's income level.
 - This has increased domestic sales and number of firms entering market.
 - Consumers are demanding newest models built with most efficient techniques.
- In the end, contradictory evidence: too early to say whether trade restrictions were responsible for China's current successes in auto industry.

3.1 Examples of infant industry protection

Computers in Brazil

- Case where infant industry protection has not been successful is computer industry in Brazil.
- In 1977, Brazilian government began program to protect domestic computer firms.
- It was thought that achieving national autonomy in computer industry was essential for strategic military reasons.
 - Imports of PCs were banned.
 - Domestic firms had to buy from local suppliers whenever possible.
 - Foreign producers of PCs not allowed to operate in Brazil.

3.1 Examples of infant industry protection

Computers in Brazil (cont'd)

- Ban lasted until early 1990s.
- Period of rapid innovation in computer industry worldwide with large drops in cost of computing power.
- Figure 9.9 shows effective price of computing power in U.S. and Brazil from 1982 - 1992, which fell rapidly in both countries.
 - This is effective price because it reflects improvements over time in PC.

3.1 Examples of infant industry protection

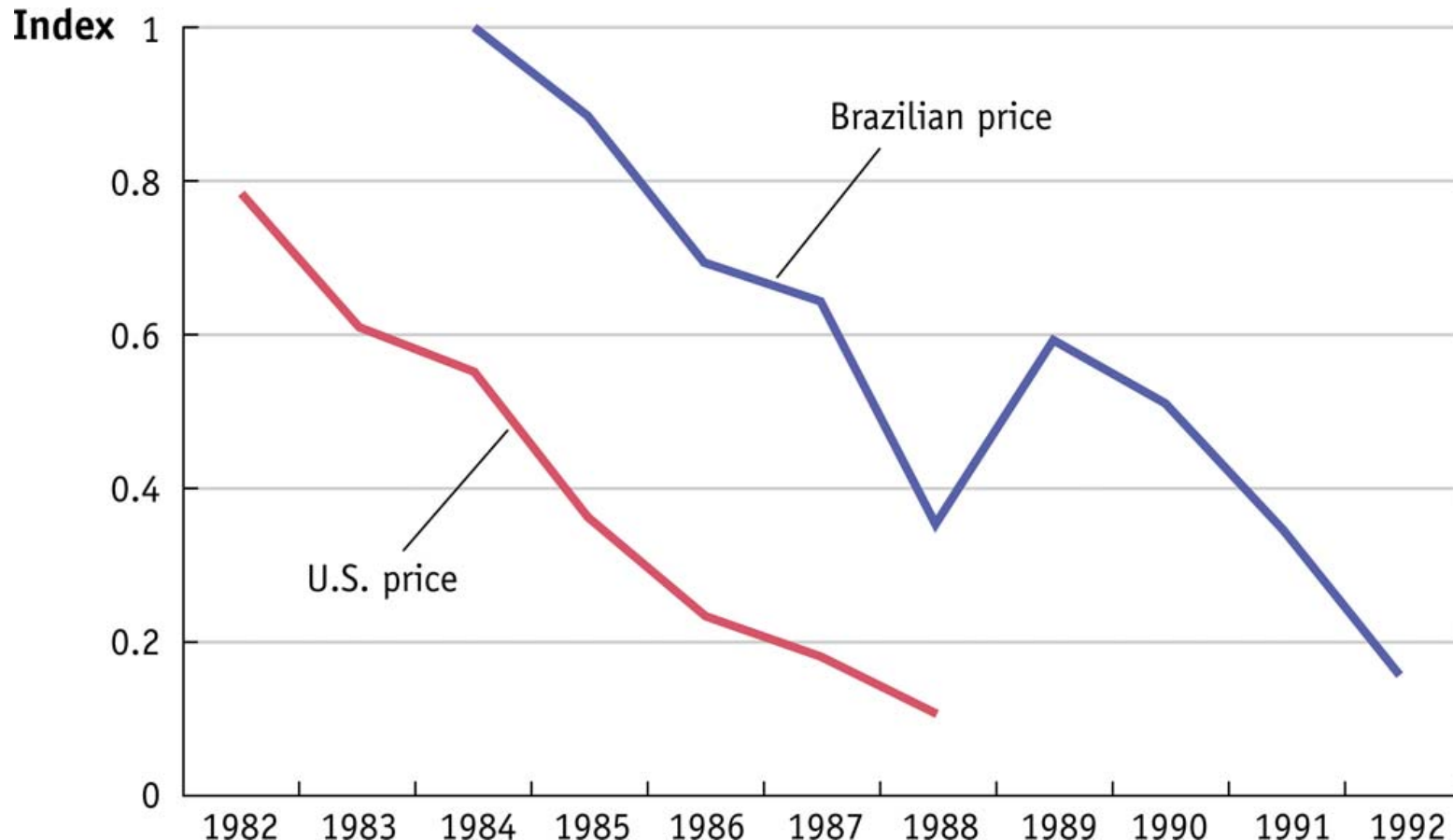


Figure 9.9 Computer prices in the U.S. and Brazil, 1982-1992

3.1 Examples of infant industry protection

- Prices in Brazil
 - Brazilian firms were very good at reverse engineering IBM PCs sold from U.S.
 - Took time, and since Brazilian firms had to use local suppliers for many parts, it added to costs of production.
 - Figure 9.9 shows that Brazil never achieved same low prices as U.S.
 - Brazil was never able to produce computers at competitive prices without tariff protection.
 - That alone tells us infant industry protection failed.

3.1 Examples of infant industry protection

- Consumer and Producer Surplus
 - Table 9.1 shows welfare calculation for Brazil and other details of PC industry.
 - In 1984 Brazil's price almost twice that of U.S.
 - Although this lead to increased producer surplus, loss in consumer surplus led to net loss of about \$51 million.
 - The industry was never able to produce in absence of tariffs, so there are no future gains (like area e) that can be used to counter losses.

3.1 Examples of infant industry protection

Year	Sales (\$ millions)	Brazil/U.S. Price (%)	Producer Surplus Gain (\$ millions)	Consumer Surplus Loss (\$ millions)	Net Loss (\$ millions)	Net Loss (% GDP)
1984	\$126	189%	\$29	\$80	\$51	0.02%
1985	384	159	70	179	109	0.04
1986	746	143	113	277	164	0.06
1987	644	119	50	112	62	0.02
1988	279	127	29	68	39	0.01

Table 9.1 Brazilian computer industry

3.1 Examples of infant industry protection

- Other Losses
 - Higher prices in Brazil imposed costs on industries that relied on computers, and they became increasingly dissatisfied with government policies.
 - President Fernando Collor de Mello abolished infant industry protection immediately after he was elected in 1990.

3.1 Examples of infant industry protection

- Other Losses (cont'd)
 - A number of reasons have been given for failure of this policy to develop efficient industry in Brazil.
 1. Imported materials such as silicon chips were expensive to obtain.
 2. Domestically-produced parts that local firms were required to use also expensive.
 3. Local regulations limited entry of new firms in industry.
 - Clearly difficult to successfully nurture infant industry using tariffs.

3.1 Examples of infant industry protection

U.S. tariff on heavyweight motorcycles

- In 1983, Harley-Davidson was suffering losses due to long period of lagging productivity and intense competition from Japanese producers.
- In early 1980s, foreign firms engaged in global price war that spilled over into U.S. market.
- Inventories of imported heavyweight motorcycles rose dramatically.
- Harley-Davidson applied to ITC for Section 201 protection.

3.1 Examples of infant industry protection

U.S. tariff on heavyweight motorcycles (cont'd)

- ITC determined that there were over 9 months worth of inventory of Japanese motorcycles already in U.S. and recommended to President Reagan that import protection be placed on heavyweight motorcycles.
- One of few times that *threat* of injury by imports used as justification for tariffs under Section 201 of U.S. trade law.
- President Reagan approved tariffs.
 - Tariffs initially very high, but declined over five years.

3.1 Examples of infant industry protection

U.S. tariff on heavyweight motorcycles (cont'd)

- Tariff scheduled to end in April 1988.
- Harley-Davidson petitioned ITC to end tariff one year early.
- By that time, they had cut costs and introduced new and popular products so profitability had been restored.
- President Reagan declared that tariff had been successful case of protection.

3.1 Examples of infant industry protection

- Calculation of deadweight loss
 - Compare deadweight loss of tariff with future gain in producer surplus.
 - Use formula derived in Chapter 8, measuring deadweight loss relative to import value:

$$\frac{DWL}{PM} = \frac{1}{2} \left(\frac{t}{P^W} \right) \% \Delta M$$

3.1 Examples of infant industry protection

- Calculation of deadweight loss (cont'd)
 - Table 9.2 gives information on imports of heavyweight cycles.
 - Percentage drop in import quantity between 1982 and 1983 about 17% with tariff of 45%.
 - Deadweight loss relative to input value:

$$\frac{DWL}{PM} = \frac{1}{2} \left(\frac{t}{P^W} \right) \% \Delta M = \frac{1}{2} (0.45 * 0.17) = 3.8\%$$

3.1 Examples of infant industry protection

- Calculation of deadweight loss (cont'd)
 - Average import sales over that time were \$431 million. Multiplying percentage loss by average imports, we get deadweight loss in 1983 of \$16.3 million.
 - Adding up all DWLs, we obtain total loss of \$112.5 million over 4 years of tariff.

3.1 Examples of infant industry protection

Year	Import Sales (\$ millions)	Import Quantity	% Fall in Imports (from 1982)	Tariff (%)	Net Loss/ Average Sales (%)	Deadweight Loss (% millions)
1982	\$452	164,000				
1983	410	139,000	17%	45%	3.8%	\$16.3
1984	179	80,000	69	35	12.1	38.4
1985	191	72,000	78	20	7.8	25.2
1986	152	43,000	116	15	8.7	26.4
January–March 1987	59	14,000	98	15	7.3	6.3
Total, 1983–1987						112.5

Table 9.2 U.S. imports of heavyweight motorcycles

3.1 Examples of infant industry protection

- Future gains in producer surplus
 - Evaluate future gains in producer surplus by examining stock market value of firm around time that tariff was removed.
 - During time of tariff, management of Harley-Davidson reduced costs through several methods, many of which were copied from Japanese firms.
 - Changes allowed Harley-Davidson to transform losses in 1981–1982 into profits for 1983 and following years.

3.1 Examples of infant industry protection

- Future gains in producer surplus (cont'd)
 - In July 1986, Harley-Davidson became public corporation and issued stock on American Stock Exchange, as well as debt of \$70 million.
 - 2 million shares at \$11 per share totaling \$22 million.
 - Sum of stock and debt issues is \$112.3 million, which we can interpret as present discounted value of producer surplus of firm.
 - This estimate of area *e* is nearly equal to consumer surplus loss of \$112.5 million.

3.1 Examples of infant industry protection

- Future gains in producer surplus (cont'd)
 - A month after second stock was offered, stock rose from \$16.5 to \$19 per share.
 - Using later price for outstanding stock plus \$70 in repaid debt, we get \$131 million as future producer surplus.
 - By this calculation, future gain in producer surplus from tariff protection to Harley-Davidson exceeds deadweight loss of tariff.
 - Harley-Davidson has grown every year since then and now Japanese firms copy from them.

3.1 Examples of infant industry protection

- Was protection successful?
 - When assuming protection is successful if producer surplus outweighs deadweight loss, we also assume company would not have survived otherwise.
 - H-D was on brink of bankruptcy before tariff.
 - However, if Harley-Davidson had filed for bankruptcy, it might still have emerged to prosper again.
 - Bankruptcy does not mean company must stop producing.

3.1 Examples of infant industry protection

- Was protection successful? (cont'd)
 - If they had gone bankrupt without tariff, some or all of future gains in producer surplus might have been realized.
 - We cannot be certain whether turnaround of Harley-Davidson required use of tariff or not.
 - In general, harm caused by tariff was probably small compared with potential benefits of avoiding bankruptcy, which allowed H-D to become very successful company.

4. Tariffs with foreign monopoly

- Foreign exporting firm treated as monopoly.
- Applying tariff under Foreign monopoly leads to outcome similar to large country case in Chapter 8.
 - Tariff will lower price charged by Foreign exporter.
 - Tariff may now benefit Home country.

4. Tariffs with foreign monopoly

Foreign Monopoly

- Assume no competing Home firm
 - Home demand D in Figure 9.10 is supplied entirely by foreign monopolist.
- Not very realistic, since normally tariff is considered when there is also a Home firm – makes analysis simpler.

Free Trade Equilibrium

- Foreign monopolist maximizes profits in export market where *Home MR = Foreign MC**.
- This is point A in Figure 9.10 showing exports X_1 charging price P_1 .

4. Tariffs with foreign monopoly

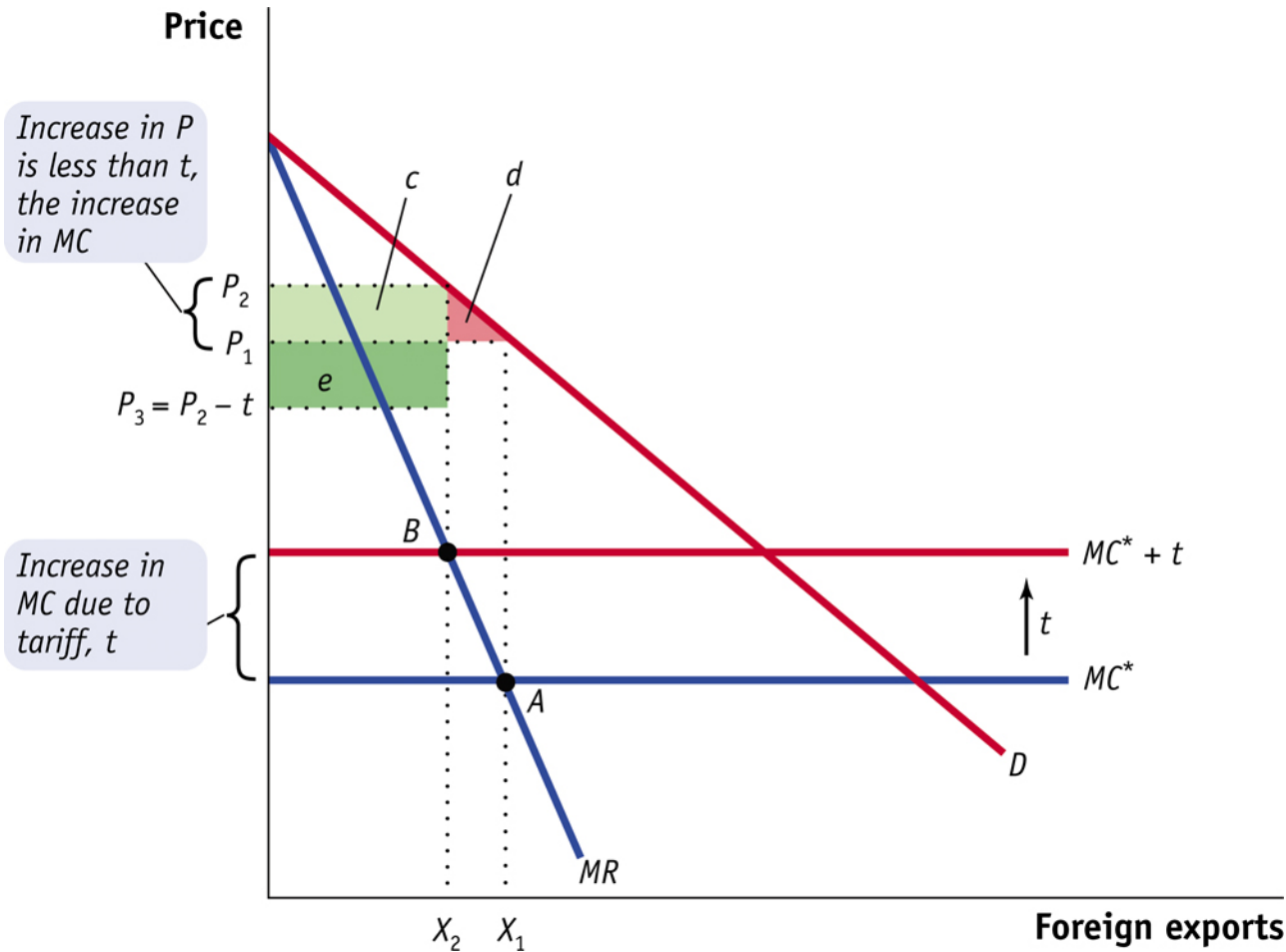


Figure 9.10
Tariff with a
Foreign
monopoly

4. Tariffs with foreign monopoly

Effect of a tariff on Home price

- If tariff t is implemented, then marginal cost for exporter in Home market increases to MC^*+t .
- New profit-maximizing level of output at point B with import prices at P_2 .
- Increase in price from P_1 to P_2 is less than amount of tariff t .
- In this case, net-of-tariff price received by foreign exporter, $P_3 = P_2 - t$, falls from previous level of P_1 since price rises by less than tariff.

4. Tariffs with foreign monopoly

Effect of a tariff on Home price (cont'd)

- Since Home country pays lower net-of-tariff price for imports, it has experienced terms-of-trade gain from tariff.
- Since Foreign firm is facing downward-sloping demand curve, as price increases the quantity demanded falls, so price will not increase by full amount of tariff.
- Foreign firm is making strategic decision to absorb part of tariff itself and pass only a portion of it onto Home market to maximize profits.

4. Tariffs with foreign monopoly

Effect of a tariff on Home price (cont'd)

- With increase in price, consumers are worse off and consumer surplus falls by $(c+d)$.
- Increase in price will benefit Home firms, but we have assumed there are no Home firms.
- Tariff revenue equals tariff t times amount of imports X_2 , which is area $(c+e)$.

Fall in Home consumer surplus	$(c+d)$
<u>Rise in Home government revenue</u>	<u>$(c+e)$</u>
Net change in Home welfare	$(e-d)$

4. Tariffs with foreign monopoly

Effect of a tariff on Home price (cont'd)

- We can interpret area *e* as terms-of-trade gain for Home.
- Area *d* is deadweight loss due to tariff.
- If terms-of-trade gain exceeds deadweight loss, Home is better off due to tariff.
- As in large country case in chapter 8, Home welfare initially rises for small tariffs.
- Again use automobile industry and show how tariff can affect prices charged by Foreign monopolist.

4.1 Import tariffs on Japanese trucks

- Tariff on Foreign monopolist can have positive terms-of-trade effect for Home country. To what extent do Foreign exporters actually behave that way?
- Look at effects of 25% tariff on imported Japanese compact trucks imposed by U.S. in early 1980s and still in place today.
- For cars, VER with Japan was pursued, but for compact trucks, it turned out another form of protection was possible.

4.1 Import tariffs on Japanese trucks

- At the time, most trucks were imported as cab/chassis with some final assembly needed.
- Classified as “parts of trucks” which carried 4% tariff rate.
- Another category of truck, “complete or unfinished trucks”, faced tariff of 25%.
- Irresistible opportunity to reclassify trucks to get higher tariff: exactly what U.S. Customs Service did.

4.1 Import tariffs on Japanese trucks

- Reclassification raised tariff rates on all Japanese trucks.
- According to one estimate, tariff on trucks only partially reflected in U.S. prices.
 - Of the 21% increase, only 12% passed through to U.S. consumer prices. 9% was absorbed by Japanese producers.
- Therefore, tariff lead to terms-of-trade gain for U.S. predicted by theory.

5. Policy response to dumping

- Dumping occurs when firm exports goods at price below price in local market, or below average cost of production.
- Study policy response in Home importing country.
- Under WTO, importing country is entitled to apply antidumping tariff anytime that foreign firm is dumping its product.
- If exporter's local price not available, then dumping determined by comparing import price to:
 - i. A price charged for the product in a third market, or
 - ii. The exporter's average costs of production

5. Policy response to dumping

Anti-dumping duty

- Amount of antidumping duty calculated as difference between exporter's local price and “dumped” price in importing country.
- Purpose of duty is to raise price of dumped good and protect domestic producers.
- The fact that higher price also raises prices for domestic consumers and causes deadweight loss for importing country is not taken into account when deciding on whether or not to apply tariff.

5. Policy response to dumping

Countervailing duty

- Used when Foreign government subsidizes own exporting firms so they can charge lower prices for exports.
- Export subsidies tend to lower prices charged by exporters (more in next chapter).
- Under WTO rules, importing country can respond to export subsidies with countervailing duty.
 - Again purpose of duty is to raise prices of imports back up to what they would have been without subsidy.

5. Policy response to dumping

Comparison with safeguard tariff

- Tariff on compact trucks was not antidumping duty but safeguard tariff.
- Given that tariff was set over 20 years ago and still holds, it confirms assumption that Foreign firms treat tariff as fixed.
- This assumption does not hold for anti-dumping duties.
- Evidence shows that Foreign firms often do change their prices, and increase price charged in importing country even before an antidumping tariff is applied.

5. Policy response to dumping

Calculation of antidumping duty

- To see why firms increase prices before an antidumping duty is applied we need to see how duty is calculated.
- Duty is based on Foreign firm's local price.
 - For example, if local price is \$10 and export price to Home is \$6, antidumping duty is \$4.
- This method creates incentive for Foreign firm to *raise* its export price even before tariff is applied so duty will be lower.

5. Policy response to dumping

Calculation of antidumping duty (cont'd)

- Using same example, if Foreign charges export price of \$8 instead of \$6 but keeps local price at \$10, duty is now only \$2.
- A price of \$10 would avoid duty all together.
- Increase in import price results in terms-of-trade loss for Home country, illustrated in Figure 9.11.
 - As price rises from P_1 to P_2 result is gain to Home firms of a , but loss to Home consumers of $(a+b+c+d)$.
 - If no duty, then no revenue to Home government.
 - $(b+c+d)$ is now deadweight loss which is higher than tariff.

5. Policy response to dumping

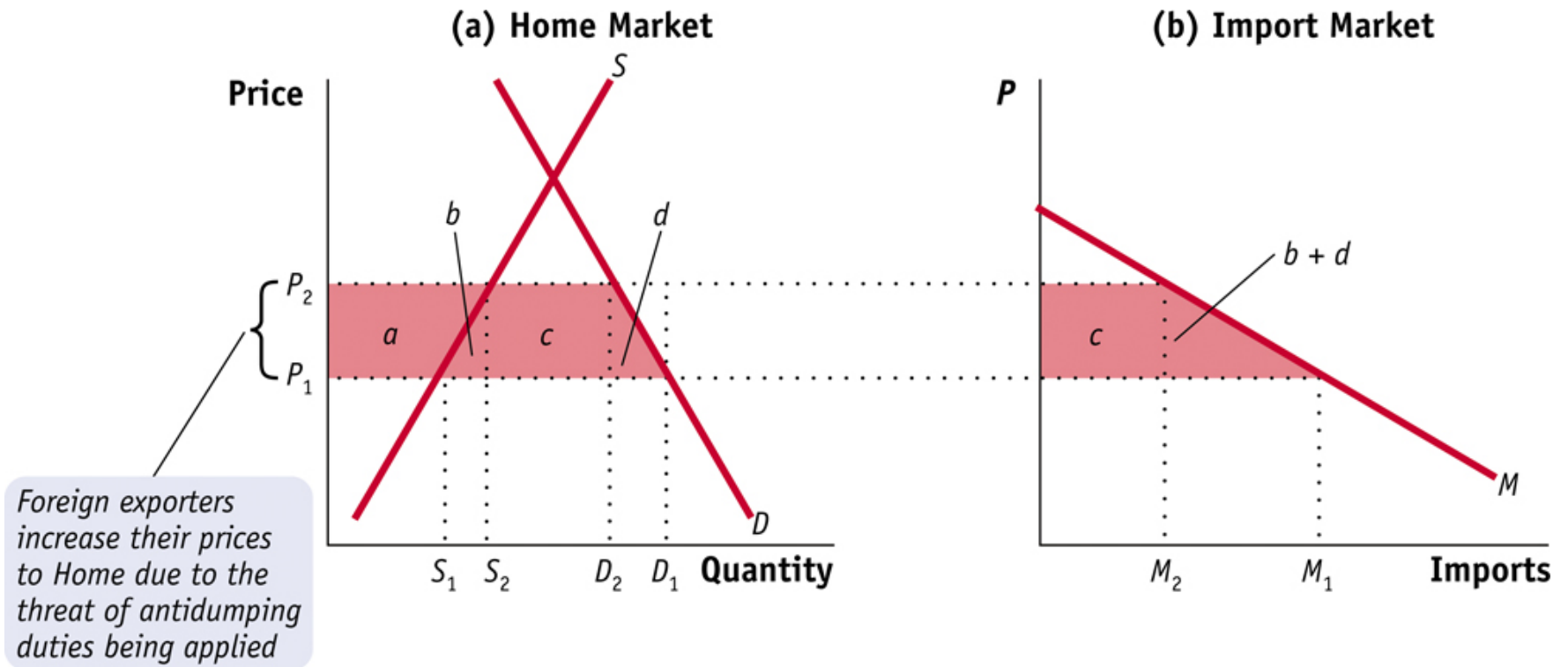


Figure 9.11 Home loss due to threat of duty

5. Policy response to dumping

- Loss of c is extra costs associated with threat of antidumping duty.
- The fact that Foreign firms will raise prices to reduce potential duty gives Home firms incentive to charge Foreign firms with dumping, even if none is occurring.
- Threat of dumping is often enough for Foreign firms to raise prices and therefore reduce competition in market for that good.
- These incentives lead to excessive filings of antidumping and countervailing duty cases.

5.1 Antidumping/countervailing duties vs safeguard tariffs

- In U.S., infrequent use of safeguard provision (chapter 8) contrasted with many cases of antidumping and countervailing duties, also listed in Table 9.3.
- Over 1980–1988 more than 400 antidumping cases filed in U.S. and over 300 countervailing duty cases.
- Of 400 antidumping cases, about 150 were rejected and another 150 had duties levied.
- Remaining cases withdrawn prior to ruling by ITC.

5.1 Antidumping/countervailing duties vs safeguard tariffs

- U.S. antidumping law permits U.S. firms to withdraw case and, acting through intermediary at Department of Commerce, agree with foreign firm on level of prices and market shares.
- As we should expect, withdrawn and settled cases result in significant increases in market prices for importing country.
- Since it seems most cases are either ruled favorably or settled with exporting firm, it is clear why firms make claims of dumping so often.
 - Recent example of calls for tariffs against some Chinese goods whose production is subsidized.

5.1 Antidumping/countervailing duties vs safeguard tariffs

SAFEGUARD OR ESCAPE CLAUSE

Negative ITC	Affirmative ITC	Affirmative President	Total 1980–1988	Total 1989–1994
12	7	5	19	2

ANTIDUMPING

Duty Levied	Case Rejected	Withdrawn	Total 1980–1988	Total 1989–1994
147	156	108	411	301

COUNTERVAILING DUTY

Duty Levied	Case Rejected	Withdrawn	Total 1980–1988	Total 1989–1994
115	113	97	325	77

Table 9.3 Import protection cases in the U.S., 1980-1994

6. Conclusions

- With tariff, Home monopolist can increase its price by amount of tariff, but cannot exercise monopoly power.
- With quota, Home firm is able to charge higher price than it could with tariff, because it enjoys “sheltered” market.
 - Import quota leads to higher costs for Home consumers than tariff.
 - Tariff and Quota are no longer “equivalent” policies as with perfect competition.
- Free trade will lead Home monopoly in small country to act in same way as perfectly competitive industry.

6. Conclusions

- Infant industry argument for implementation of trade policy.
 - An infant industry is a firm that requires protection in order to compete at world prices today.
- Examples automobiles in China, computers in Brazil, and Harley-Davidson motorcycles in U.S.
- Mixed results in determining usefulness of trade policy and whether or not losses justify gains.
- Likely there are other options with less deadweight loss.

6. Conclusions

- With Foreign monopoly, results similar to large country case in Chapter 8.
 - Tariff leads to fall in price received by Foreign monopolist.
 - Price paid at Home rises by less than tariff.
 - Home importer obtains terms-of-trade gain.
 - For small tariffs, Home can gain as deadweight loss is lower than terms-of-trade gain.

6. Conclusions

- Dumping is practice of selling goods abroad at price below firm's domestic price, or below average cost of production.
- WTO allows countries to respond with tariffs if dumping is occurring in their countries (anti-dumping duty, calculated as difference between Foreign monopolist's local price and export price).
 - However, potential for Home gains unlikely to arise, due to way duties are applied.
 - Typical outcome is that Foreign exporters raise prices even when the duty is *not* applied, leading to Home losses.