

Lecture 11 Trade Policy Analysis: Quotas

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Reference: Feenstra and Taylor, 2017, International Trade

CH8.5 Import Quotas Under Perfect Competition

CH9.1 Import Quotas with Home Monopoly

CH10.6 Export Quota in a Large Country

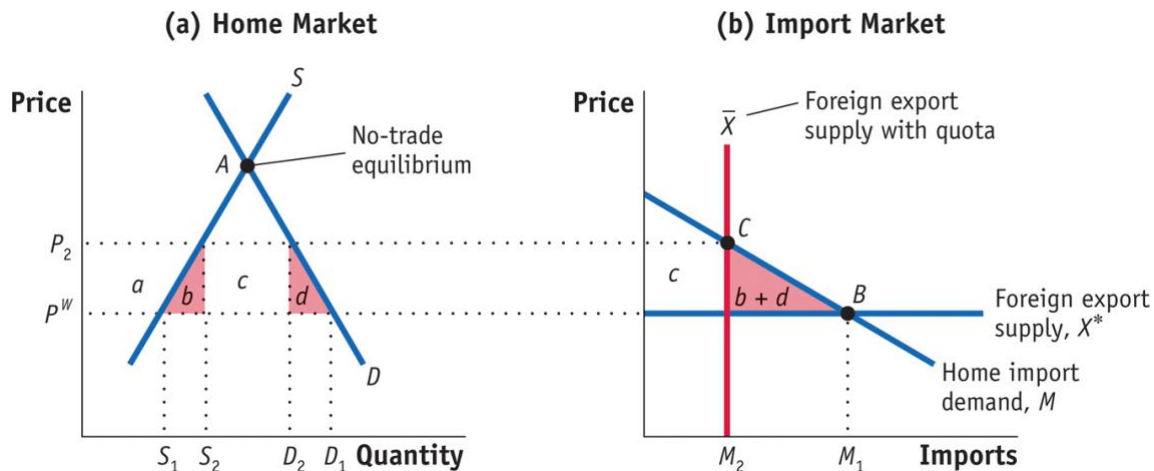
Import quotas restrict the quantity of a particular import, thereby increasing the domestic price, increasing domestic production, and creating a benefit for those who are allowed to import the quantity allotted. These benefits are called “quota rents.” Assume perfectly competitive markets for goods, quotas are similar to tariffs since the restriction in the amount imported leads to a higher domestic price. However, the welfare implications of quotas are different from those of tariffs depending on who earns the quota rents. These rents might be earned by firms in the importing country (if they have the licenses to import the good), or by firms in the exporting country (if the foreign government administers the quota), or by the government in the importing country (if it auctions off the quota licenses). The last case is most similar to a tariff, since the importing government earns the revenue.

I. Import Quotas

1. On January 1, 2005, China was poised to become the world’s largest exporter of textiles and apparel. On that date, a system of worldwide import quotas known as the Multifibre Arrangement (MFA) was abolished.
2. Since 1993 Europe had a quota on the imports of bananas that allowed for a greater number of bananas to enter from its former colonies in Africa than from Latin America.
3. Under negotiations for the Trans-Pacific Partnership, Australia asked the United States to reconsider this quota and allow more exports from Australia.
4. During the 1980s, the U.S. limited the imports of cars from Japan via “voluntary” export restraint.

II. Import Quota Models under Perfect Competition (small country case)

1. Under free trade, the Foreign export supply curve is horizontal at the world price P^W , and the free-trade equilibrium is at point B with imports of M_1 . Applying an import quota of $M_2 < M_1$ leads to the vertical export supply curve \bar{X} —with the equilibrium at point C . The quota increases the import price from P^W to P_2 . There would be the same impact on price and quantities if instead of the quota, a tariff of $t = P_2 - P^W$ had been used.
2. The quota and tariff differ in terms of area c , which would be collected as government revenue under a tariff. Under the quota, this area equals the difference between the domestic price P_2 and the world price P^W , times the quantity of imports M_2 .
3. The difference between the world price P^W and the resulting higher Home price P_2 is called the *rent associated with the quota*, and hence the area c represents the total **quota rents**.



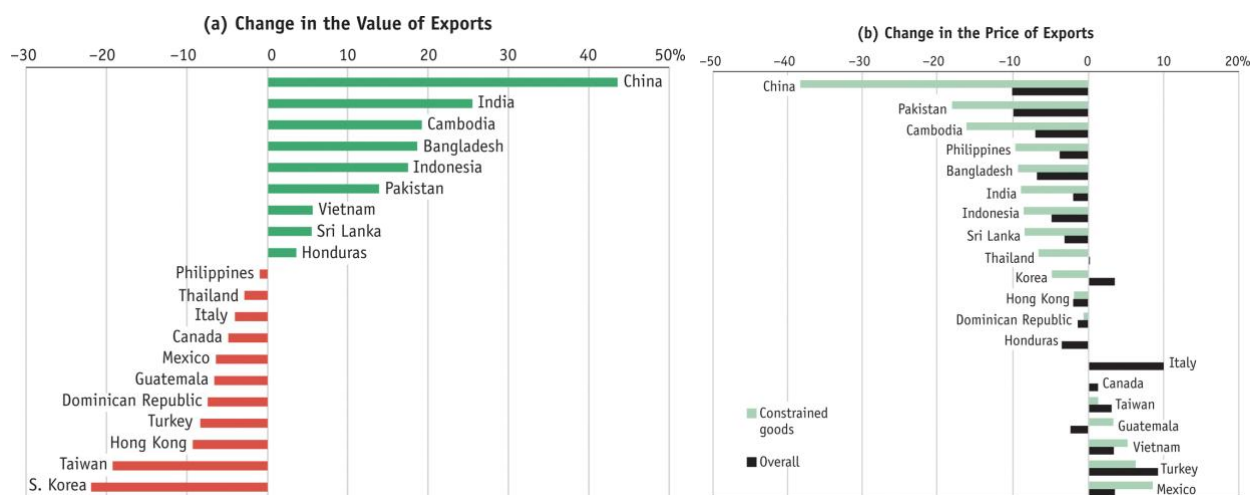
4. Four possible ways that these quota rents can be allocated
- 1) **Quota licenses** (i.e., permits to import the quantity allowed under the quota system) can be given to Home firms: With home firms earning the rents c , the net effect of the quota on Home welfare is $-(b+d)$
 - 2) **Rent Seeking** If licenses for the imported chemicals are allocated in proportion to each firm's production in the previous years, then the Home firms will likely produce more than they can sell (and at lower quality) *just to obtain the import licenses for the following year*. Alternatively, firms might engage in bribery or other lobbying activities to obtain the licenses. Such inefficient activities done to obtain quota licenses are called **rent seeking**. If rent seeking occurs, the home welfare loss due to the quota would be $-(b+c+d)$
 - 3) **Auctioning the Quota** In a well-organized, competitive auction, the revenue collected should exactly equal the value of the rents, so that area c would be earned by the Home government. Using the auction method to allocate quota rents, the net loss in domestic welfare due to the quota becomes $-(b+d)$
 - 4) **"Voluntary" Export Restraint** The government of the importing country to give authority for implementing the quota to the government of the *exporting* country. In this case, the quota rents are earned by foreign producers, so the loss in Home welfare equals $-(b+c+d)$
5. Annual Cost of U.S. Import Protection (\$ billions) Shown here are estimates of the dead weight losses and quota rents due to U.S. import quotas in the 1980s, for the years around 1985. Many of these quotas are no longer in place today.

	U.S. Deadweight Loss (area $b + d$)	Quota Rents (area c)
Automobiles	0.2–1.2	2.2–7.9
Dairy	1.4	0.25*
Steel	0.1–0.3	0.7–2.0
Sugar	0.1	0.4–1.3
Textiles and apparel	4.9–5.9	4.0–6.1
Import tariffs	1.2–3.4	0
Total	7.9–12.3	7.3–17.3

(Note: import quota placed by a large H country will lower the world price and potentially benefit the H country.)

6. China and the Multifibre Arrangement

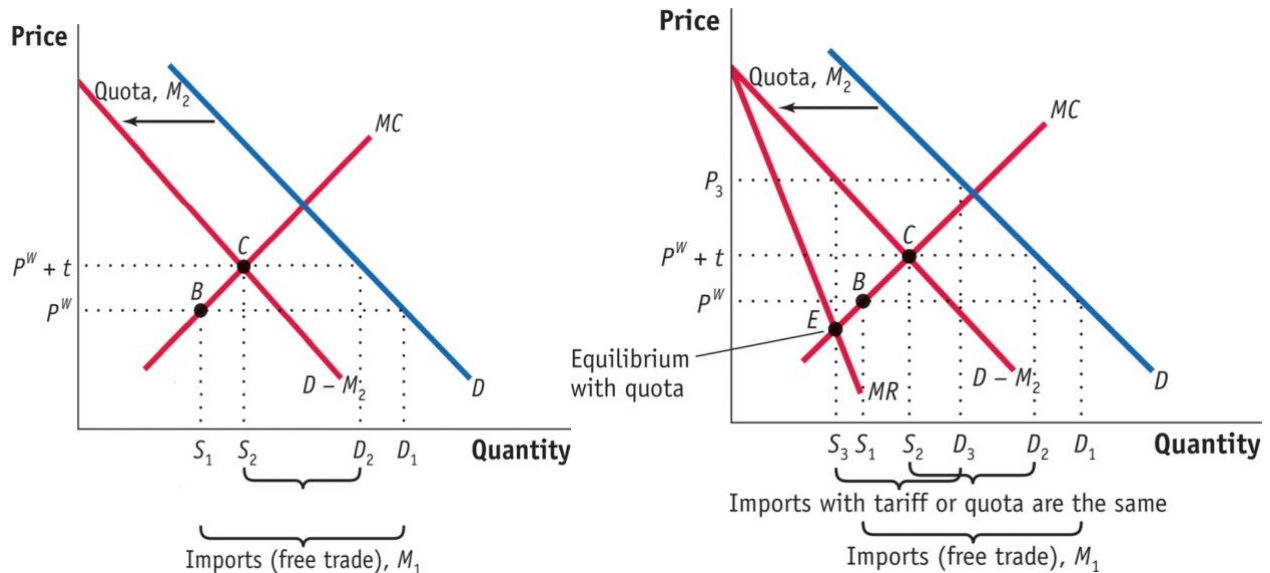
- 1) One of the founding principles of GATT was that countries should not use quotas to restrict imports. The Multifibre Arrangement (MFA), organized under the auspices of the GATT in 1974, was a major exception to that principle and allowed the industrial countries to restrict imports of textile and apparel products from the developing countries. Importing countries could join the MFA and arrange quotas bilaterally (via negotiation) or unilaterally.
- 2) The MFA expired on January 1, 2005. The biggest potential supplier of textile and apparel products was China. Immediately, exports of textiles and apparel from China grew rapidly. Given the drop in prices in 2005 from countries selling to the United States, it is possible to estimate the welfare loss due to the MFA. The United States did not auction the quota licenses for textiles and apparel, so the quota rents were earned by foreign exporting firms.



- 3) After the expiration of the Multifibre Arrangement (MFA), the value of clothing and textiles exports from China rose dramatically, as shown in panel (a). This reflects the surge in the quantity of exports that were formerly constrained under the MFA as well as a shift to Chinese exports from other, higher-cost producers such as Hong Kong, Taiwan, and South Korea. In panel (b), we see that the prices of goods constrained by the MFA typically fell by more than the average change in export prices after the MFA's expiry. This is exactly what our theory of quotas predicts: The removal of quotas lowers import prices for consumers.
- 4) Quality effect: the prices of textile and apparel products dropped the most (in percentage terms) for the lower-priced items. So an inexpensive T-shirt coming from China and priced at \$1 had a price drop of more than 38% (more than 38¢), whereas a more expensive item priced at \$10 experienced a price drop of less than 38% (less than \$3.80). As a result, U.S. demand shifted toward the lower-priced items imported from China: There was "quality downgrading" in the exports from China. (Imposing import quota can improve the quality of the imports.)
- 5) The European Union threatened to impose new quotas on Chinese exports, and in response, China agreed on June 11, 2005, to "voluntary" export restraints. Due to the worldwide recession, Chinese exports in this industry were much lower in 2009 than they had been in earlier years. China indicated that it would not accept any further limitation on its ability to export textile and apparel products to the U.S. and to Europe, and both these quotas expired.

III. Import Quota under Monopoly (CH9.1)

1. The model (quota v.s. equivalent tariff)

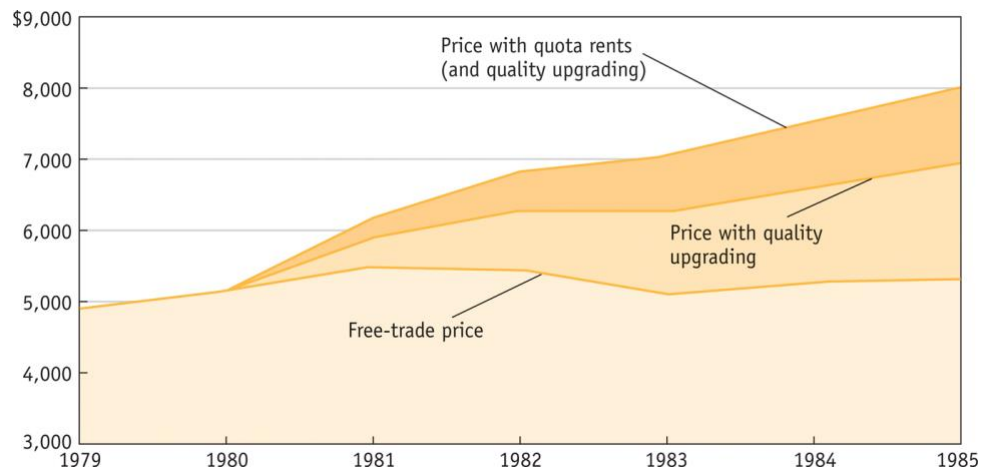


- 1) Under free trade, the Home monopolist produces at point B and charges the world price of P^W .
- 2) Under a quota of M_2 , the demand curve shifts to the left by that amount, resulting in the demand $D - M_2$ faced by the Home monopolist. That is, after M_2 units are imported, the monopolist is the only firm able to sell at Home, and so it can choose a price anywhere along the demand curve $D - M_2$. By F.O.C. for profit maximization $MC = MR$, the Home monopolist produces at $E(P_3, S_3)$.
- 3) What is the equivalent tariff resulting in the same quantity import? With a tariff of t , the monopolist produces at point C and charges the price of $P^W + t$. Imports under the tariff are $M_2 = (D_2 - S_2)$.
- 4) The price charged at point E is $P_3 > P^W + t$, so the quota leads to a higher Home price than the tariff. 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. Thus, the import quota leads to higher costs for Home consumers than the tariff. (A home monopoly would not be able to affect the world price.)

2. Case study: U.S. imports of Japanese automobiles

A well-known case of a "voluntary" export restraint (VER) for the United States occurred during the 1980s, when the United States limited the imports of cars from Japan. A recession led to less spending on durable goods (such as automobiles), and as a result, 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 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. In response, several congressional representatives with auto plants in their states pursued other means. A bill was introduced in the U.S. Senate to restrict imports. Aware of its potential consequences, the Japanese government announced it would "voluntarily" limit Japan's export of autos to the United States. By 1988, Japanese exports were below the VER because Japanese firms were producing their cars in the United States.

Under the VER, the average price of U.S. cars rose very rapidly—there was a 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. The fact that the U.S. and Japanese firms were both able to raise prices substantially indicates that the policy was very costly to U.S. consumers.



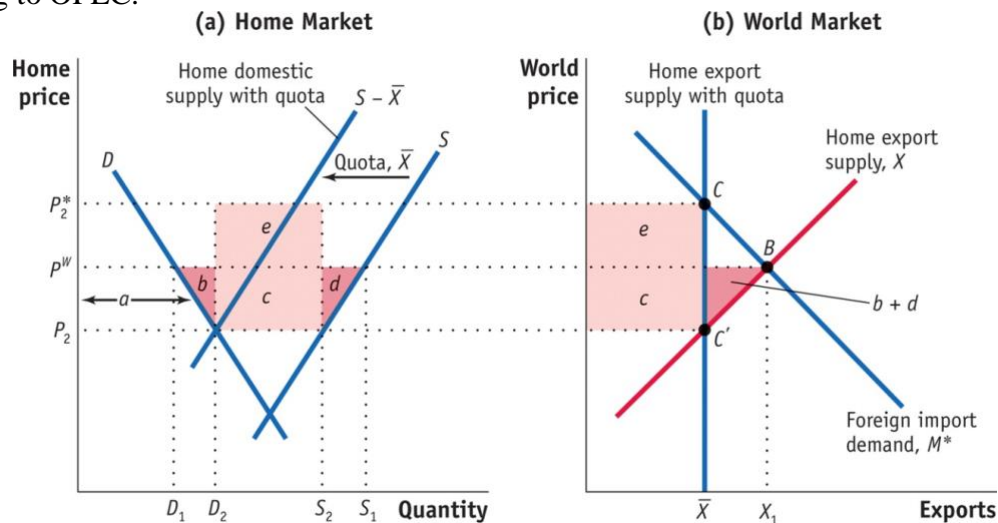
Under the “voluntary” export restraint (VER) on Japanese car imports, the average price rose from \$5,150 to \$8,050 between 1980 and 1985. Of that \$2,900 increase, \$1,100 was the result of quota rent increases earned by Japanese producers. Another \$1,650 was the result of quality improvements in 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.



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.

IV. Export Quota in a Large Country (Note: export quota = $S_2 - D_2 = \bar{X}$)

An export quota is a limit on the amount that firms are allowed to export, benefiting the large country applying it. The most well-known system of export quotas in the world today is the system used by the Organization of Petroleum Exporting Countries (OPEC). OPEC sets limits on the amount of oil that can be exported by each country, and by limiting oil exports in this way, it keeps world petroleum prices high. Those high prices benefit not only OPEC's member countries but also other oil-exporting countries that do not belong to OPEC.



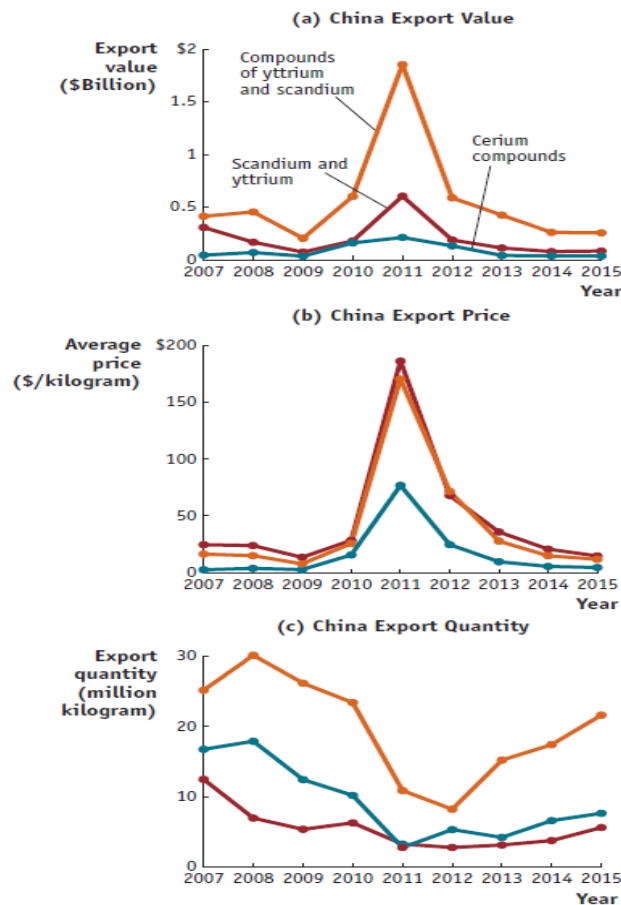
1. The export quota leads to a vertical export supply curve above the quantity \bar{X} in panel (b). The world price increases from P^W to P_2^* . Because Home firms can export only the amount \bar{X} , the remaining home supply curve shifts left by that amount, as shown by $S - \bar{X}$. This remaining Home supply intersects Home demand at the price P_2 , which is lower than the initial world price of P^W .
2. Rise in consumer surplus: $+a$. Fall in producer surplus: $-(a+b+c+d)$. Rise in domestic quota rents: $(c+e)$. Net welfare change at home: **$e - (b+d)$** .
3. The increase in the world price is less than the upward shift in export supply of t . The deadweight loss for Home is the area of triangle $(b + d)$, while Home firms earn the quota rents of area $(c + e)$.
4. Let's compare the welfare effects of the export quota with those of the export tariff. Home consumers gain the same amount of consumer surplus a due to lower domestic prices. If producers earned the lower price of P_2 on *all* their quantity sold, as with the export tariff, then they would lose $(a + b + c + d)$ in producer surplus. Under the export quota they also earn rents of $(c + e)$ on exports, which offsets the loss in producer surplus. These rents equal the difference in prices, $P_2^* - P_2$, times the amount exported \bar{X} .
5. The overall effect of the export quota on the Home welfare is the same as the export tariff, with a net effect on welfare of $e - (b + d)$.

Quotas, even when their rights are auctioned, typically generate less revenue than comparable tariffs. They also, like tariffs, distort consumption decisions whereas domestic production subsidies do not. Finally, binding quotas eliminate some of the market discipline of tariffs when firms have market power.

—M.J. Melitz, 2005

V. Case Study: Chinese Export Policies in Mineral Products

China uses a wide variety of export policies, including tariffs and quotas to its exports of mineral products. In 2009, the United States and other countries filed a case against China at the WTO, charging that the export tariffs and quotas that China applied on many industrial minerals distorted the pattern of international trade. While export restrictions of this type are banned under Article XI of the GATT, there is an exception stating that this rule does not apply to “export prohibitions or restrictions temporarily applied to prevent or relieve critical shortages of foodstuffs or other products essential to the exporting contracting party.”



China claimed that it was restricting its exports of minerals because they were needed by Chinese industries using these products (such as the solar panel industry). But in July 2011, the WTO ruled that this exception did not apply to China’s exports of these products, and that it must remove its export restrictions on industrial minerals.

Shortly after this case was filed, in 2009, China also applied export quotas on other “rare earth” minerals, such as lanthanum (used in batteries and lighting). The price of lanthanum went from \$6 per kilogram in 2009 to \$151 in 2011, then back down to \$36 in 2012. In 2014, however, China lost that case at the WTO and was required to eliminate the quotas used on its exports of rare earth minerals.

The quota system was once a major global trade issue. In 2010, China pushed up the price of global rare-earth sharply. But since the world has reduced its reliance on the minerals from China, China’s exports now frequently fall short of maximum levels under the quota system.

Readings

20180801 PIIE Trade Talks Episode 49: Are Trump's Steel Quotas Worse than His Steel Tariffs?

<https://piie.com/experts/peterson-perspectives/trade-talks-episode-49-are-trumps-steel-quotas-worse-his-steel-tariffs>

20190409 PIIE Trade Talks Episode 80: Zeroing: The Biggest WTO Threat You’ve Never Heard Of

<https://piie.com/experts/peterson-perspectives/trade-talks-episode-80-zeroing-biggest-wto-threat-youve-never-heard>