



THIRD EDITION ECONOMICS and MICROECONOMICS

Paul Krugman | Robin Wells

Chapter 8 International Trade

WHAT YOU WILL LEARN IN THIS CHAPTER

- How comparative advantage leads to mutually beneficial international trade
- The sources of international comparative advantage
- Who gains and who loses from international trade, and why the gains exceed the losses
- How tariffs and import quotas cause inefficiency and reduce total surplus
- Why governments often engage in trade protection to shelter domestic industries from imports and how international trade agreements counteract this

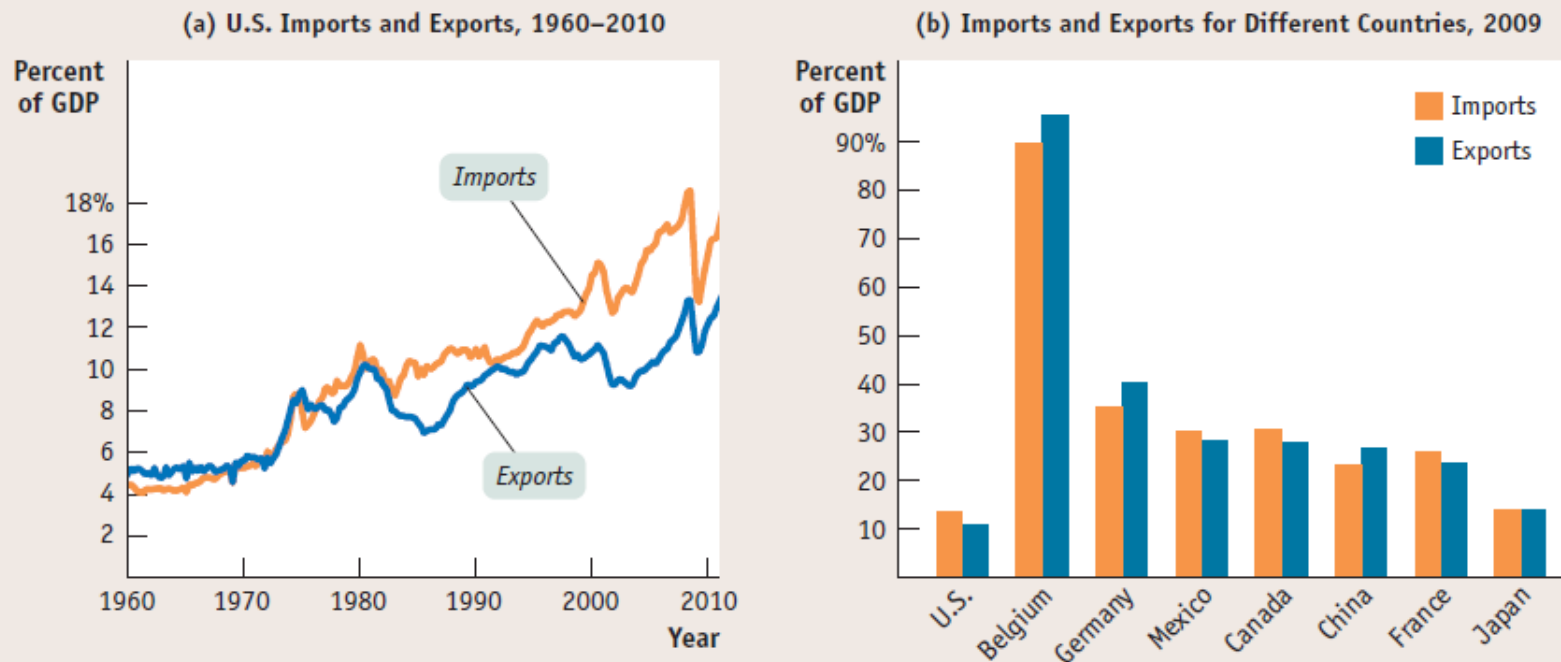


Comparative Advantage and International Trade

- Goods and services purchased from other countries are **imports**; goods and services sold to other countries are **exports**.
- **Globalization** is the phenomenon of growing economic linkages among countries.
- To understand why international trade occurs and why economists believe it is beneficial to the economy, we will first review the concept of *comparative advantage*.
- The following graph illustrates the growing importance of international trade.

Increasing Global Trade

FIGURE 8-1 The Growing Importance of International Trade



Panel (a) illustrates the fact that over the past 50 years, the United States has exported a steadily growing share of its GDP to other countries and imported a growing share of what it consumes. Panel (b) demonstrates that international

trade is significantly more important to many other countries than it is to the United States, with the exception of Japan.

Source: Bureau of Economic Analysis [panel (a)] and World Trade Organization [panel (b)].

Production Possibilities and Comparative Advantage, Revisited

- Let's repeat the definition of comparative advantage from earlier: *A country has a comparative advantage in producing a good or service if the opportunity cost of producing the good or service is lower for that country than for other countries.*
- The **Ricardian model of international trade** analyzes international trade under the assumption that opportunity costs are constant.

Production Possibilities and Comparative Advantage, Revisited

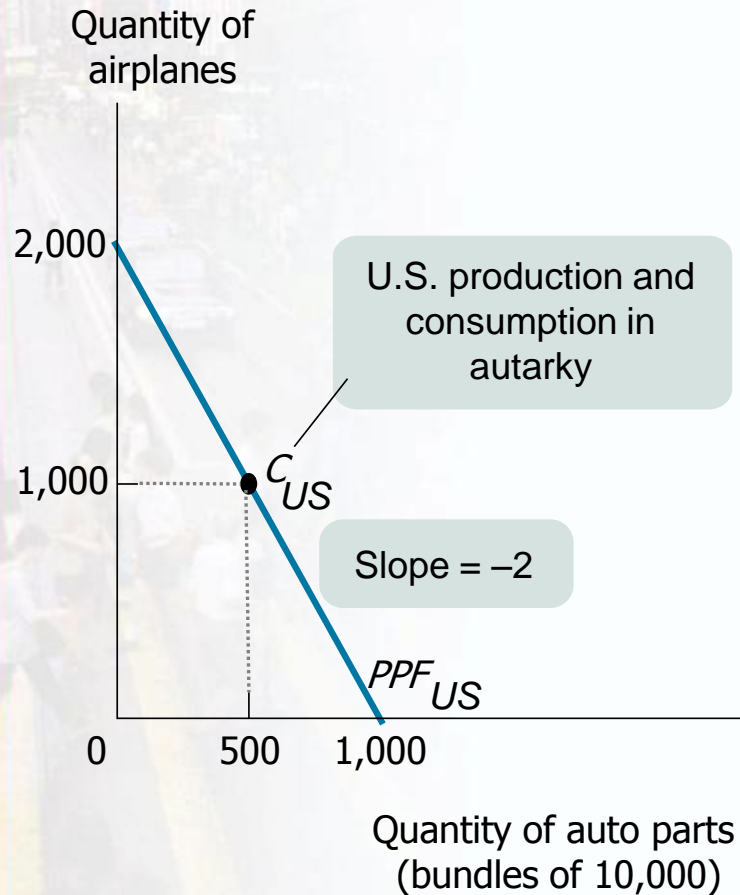
- **Autarky** is a situation in which a country cannot trade with other countries.
- The following figure shows hypothetical production possibility frontiers for the United States and Colombia.

We assume that:

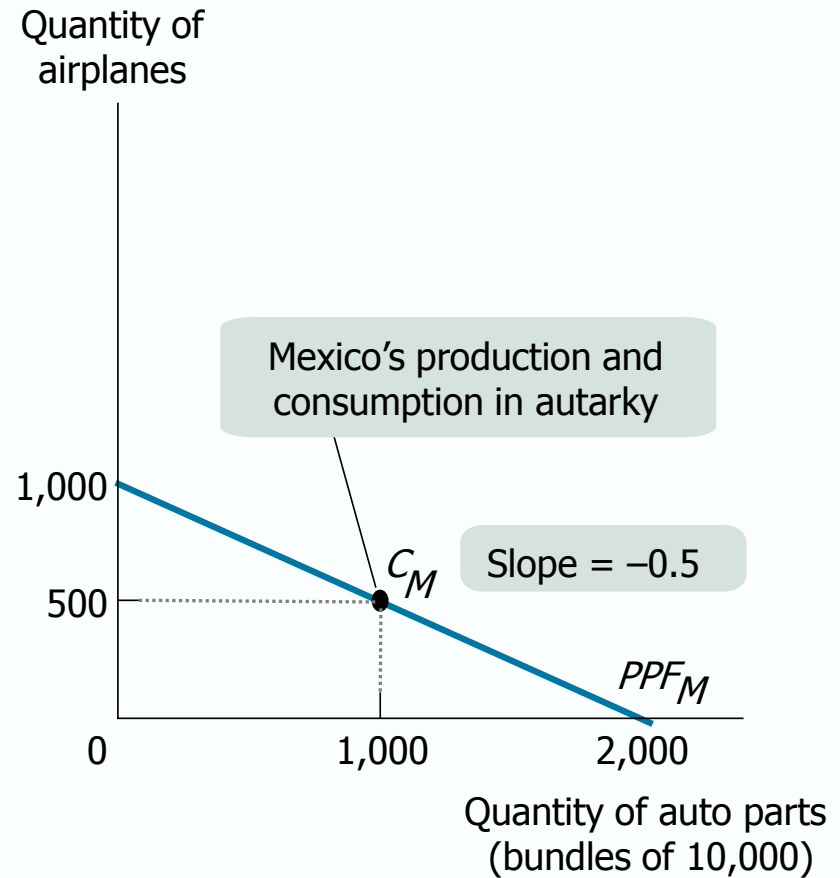
- (1) there are only two goods and
- (2) the production possibility frontiers are straight lines.

Comparative Advantage and the Production Possibility Frontier

(a) U.S. Production Possibility Frontier



(b) Mexico's Production Possibility Frontier



Production Possibilities

TABLE 8-1 U.S. and Mexican Opportunity Costs of Auto Parts and Airplanes

	U.S. Opportunity Cost		Mexican Opportunity Cost
1 bundle of auto parts	2 airplanes	>	1/2 airplane
1 airplane	1/2 bundle of auto parts	<	2 bundles of auto parts

The Gains from International Trade

- The *Ricardian model of international trade* shows that trade between two countries makes both countries better off than they would be in *autarky*—that is, there are gains from trade.
- The following tables and figures illustrate that specialization has the effect of increasing total world production of *both* goods and that each country can consume more of *both* goods than it did under autarky.

Production and Consumption Under Autarky

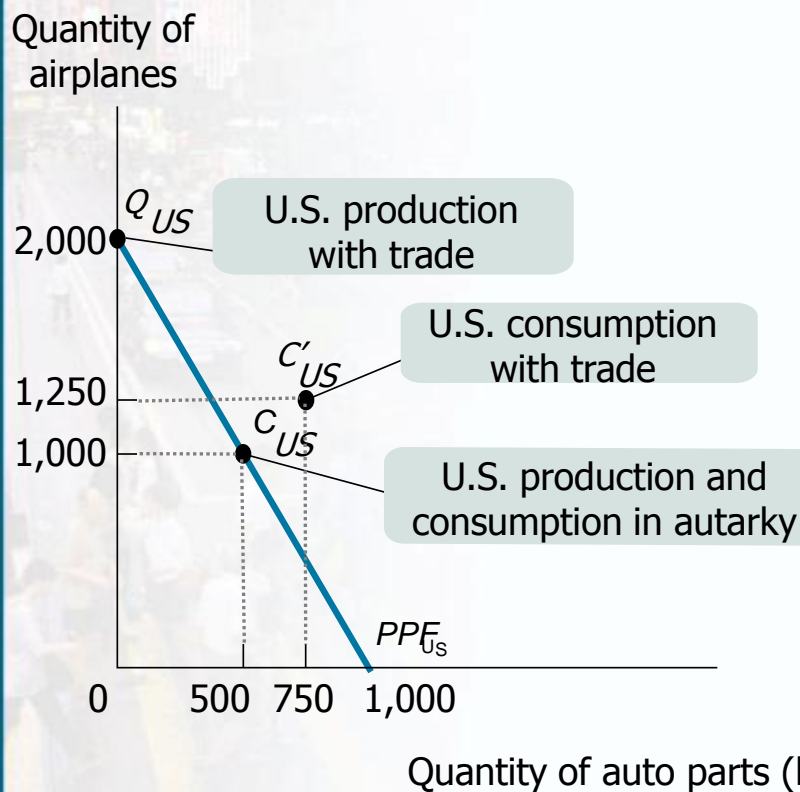
(a) United States	Production	Consumption
Quantity of auto parts (bundles)	500	500
Quantity of airplanes	1,000	1,000
(b) Mexico	Production	Consumption
Quantity of auto parts (bundles)	1,000	1,000
Quantity of airplanes	500	500
(c) World (United States and Mexico)	Production	Consumption
Quantity of auto parts (bundles)	1,500	1,500
Quantity of airplanes	1,500	1,500

Production and Consumption After Specialization and Trade

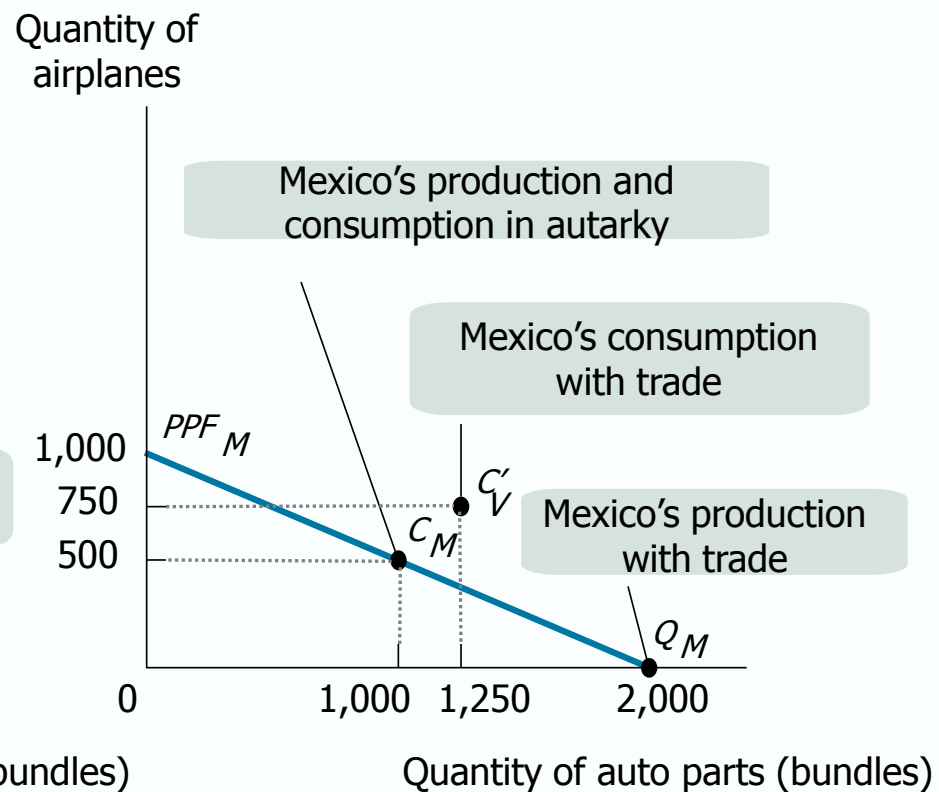
(a) United States	Production	Consumption
Quantity of auto parts (bundles)	0	750
Quantity of airplanes	2,000	1,250
(b) Mexico	Production	Consumption
Quantity of auto parts (bundles)	2,000	1,250
Quantity of airplanes	0	750
(c) World (United States and Mexico)	Production	Consumption
Quantity of auto parts (bundles)	2,000	2,000
Quantity of airplanes	2,000	2,000

The Gains from International Trade

(a) U.S. Production and Consumption



(b) Mexico's Production and Consumption



Production and Consumption

TABLE 8-2 How the United States and Mexico Gain from Trade

		In Autarky		With Trade		
		Production	Consumption	Production	Consumption	Gains from trade
United States	Bundles of auto parts	500	500	0	750	+250
	Airplanes	1,000	1,000	2,000	1,250	+250
Mexico	Bundles of auto parts	1,000	1,000	2,000	1,250	+250
	Airplanes	500	500	0	750	+250

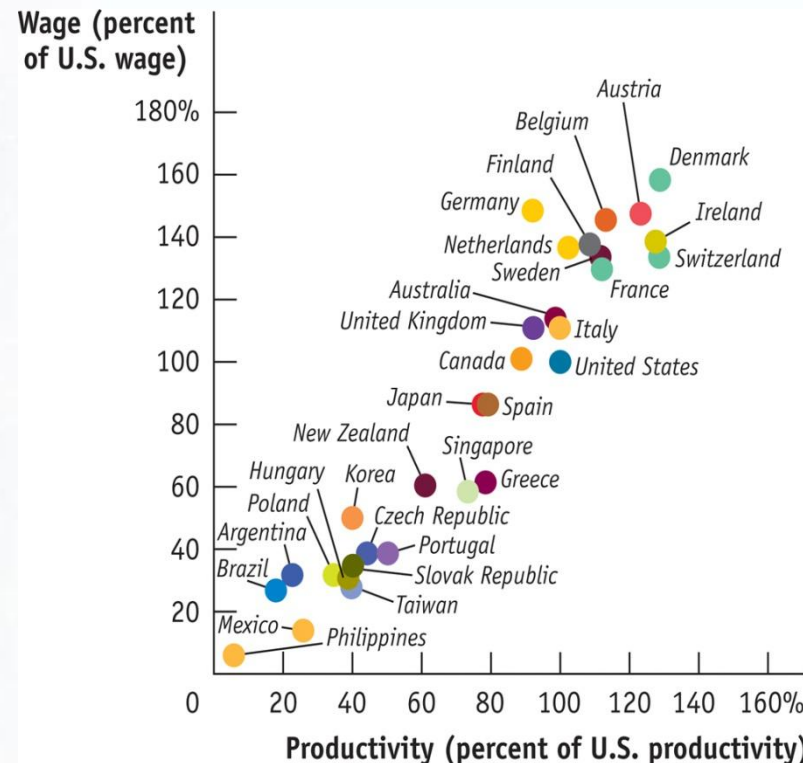


Global Comparison: Productivity and Wages Around the World

- Is it true that both the pauper labor argument and the sweatshop labor argument are fallacies? ***Yes, it is.***
- The real explanation for low wages in poor countries is low overall productivity.

Global Comparison: Productivity and Wages Around the World

- The graph shows estimates of labor productivity, as measured by the value of output per worker, and wages, measured by the monthly compensation of the average worker, in 2008.



- Note that both productivity and wages are expressed as percentages of U.S. productivity and wages.
- You can see the strong relationship between productivity and wages.



Sources of Comparative Advantage

The main sources of comparative advantage are:

- ***International differences in climate***
 - For example: winter deliveries of Chilean grapes to the United States
- ***Differences in technology***
- ***Differences in factor endowments***
 - The relationship between comparative advantage and factor availability is found in an influential model of international trade: the Heckscher–Ohlin model.



FOR INQUIRING MINDS

Increasing Returns to Scale and International Trade

- Most analysis of international trade focuses on how differences between countries—differences in climate, factor endowments, and technology—create national comparative advantage.
- Economists have also pointed out another reason for international trade: the role of increasing returns to scale.



FOR INQUIRING MINDS

Increasing Returns to Scale and International Trade

- Production of a good is characterized by increasing returns to scale if the productivity of labor and other resources used in production rises with the quantity of output.
- Increasing returns to scale can give rise to monopoly, a situation in which an industry is composed of only one producer, because they give large firms an advantage over small ones.

FOR INQUIRING MINDS

Increasing Returns to Scale and International Trade

- Increasing returns to scale can also give rise to international trade.
 - If production of a good is characterized by increasing returns to scale, it makes sense to concentrate production in only a few locations, so as to achieve a high level of production in each location.
- But that also means that the good is produced in only a few countries.



FOR INQUIRING MINDS

Increasing Returns to Scale and International Trade

- A common example is the North American auto industry.
- Increasing returns to scale probably play a large role in the trade in manufactured goods between advanced countries, which is about 25% of the total value of world trade.

Heckscher-Ohlin Model

- According to the **Heckscher-Ohlin model**, a country has a comparative advantage in a good whose production is intensive in the factors that are abundantly available in that country.
- A key concept in the model is **factor intensity**.
- The factor intensity of production of a good is a measure of which factor is used in relatively greater quantities than other factors in production.
 - Oil refining is capital-intensive compared with clothing manufacture, because oil refiners use a higher ratio of capital to labor than clothing producers.

Heckscher-Ohlin Model

- The Heckscher–Ohlin model shows how comparative advantage can arise from differences in factory endowments:
 - goods differ in their factor intensity, and countries tend to export goods that are intensive in the factors they have in abundance.
- Trade in manufactured goods amongst developed countries is best explained by increasing returns to production.

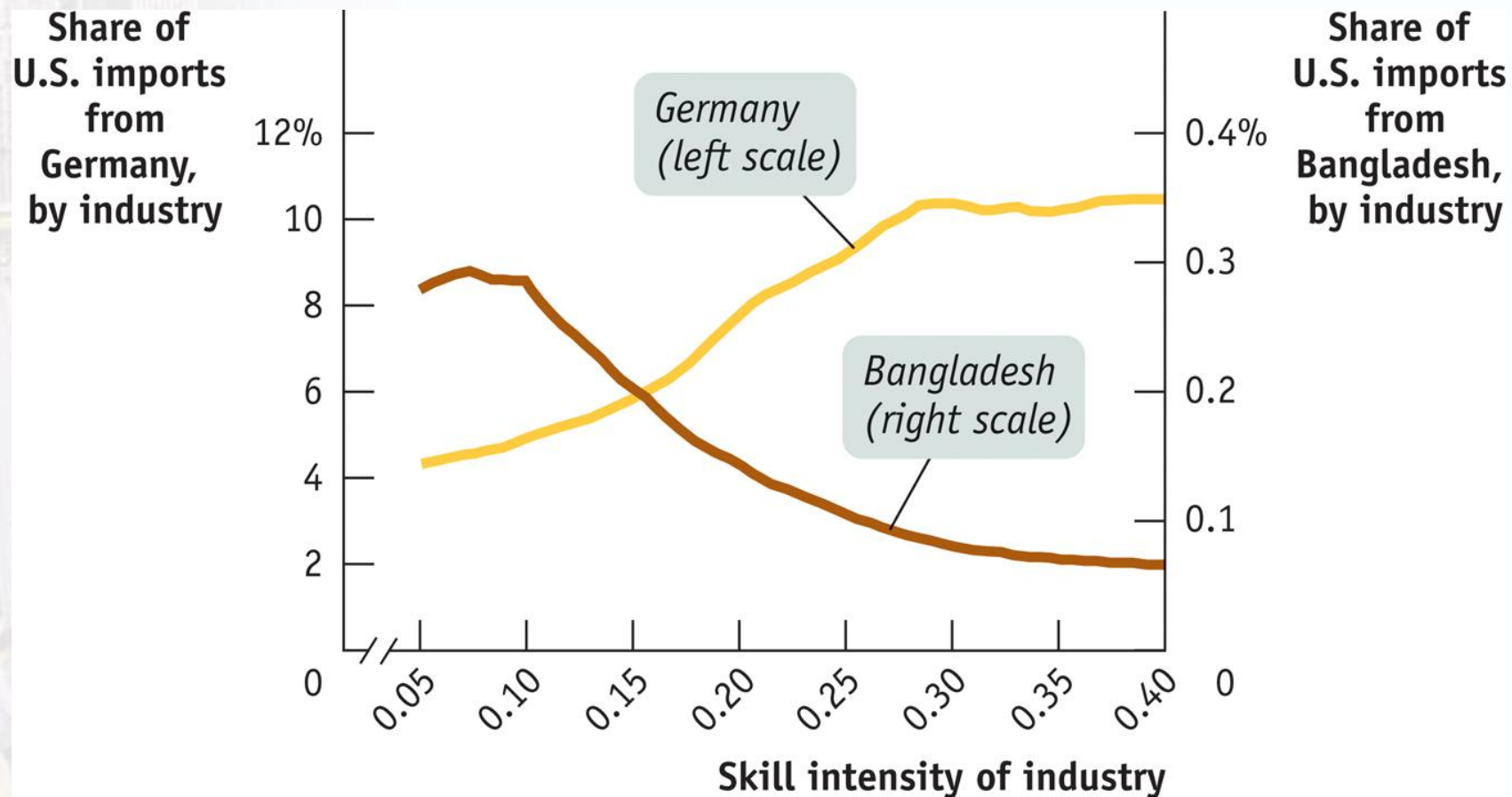
Skill and Comparative Advantage

- In 1953, most economists thought that America's comparative advantage lay in capital-intensive goods, but Wassily Leontif discovered that this was not true.
- The main resolution of this paradox, it turns out, depends on the definition of capital. U.S. exports aren't intensive in *physical* capital—machines and buildings. Instead, they are skill-intensive—intensive in *human* capital.

Skill and Comparative Advantage

- U.S. exporting industries use a substantially higher ratio of highly educated workers than other industries that compete against imports.
- In general, countries with highly educated workforces tend to export skill-intensive goods, while countries with less educated workforces tend to export goods whose production requires little skilled labor.

ECONOMICS IN ACTION



Source: John Romalis, "Factor Proportions and the Structure of Commodity Trade," *American Economic Review* 94, no. 1 (2004): 67–97.



Supply, Demand, and International Trade

The Effects of Imports

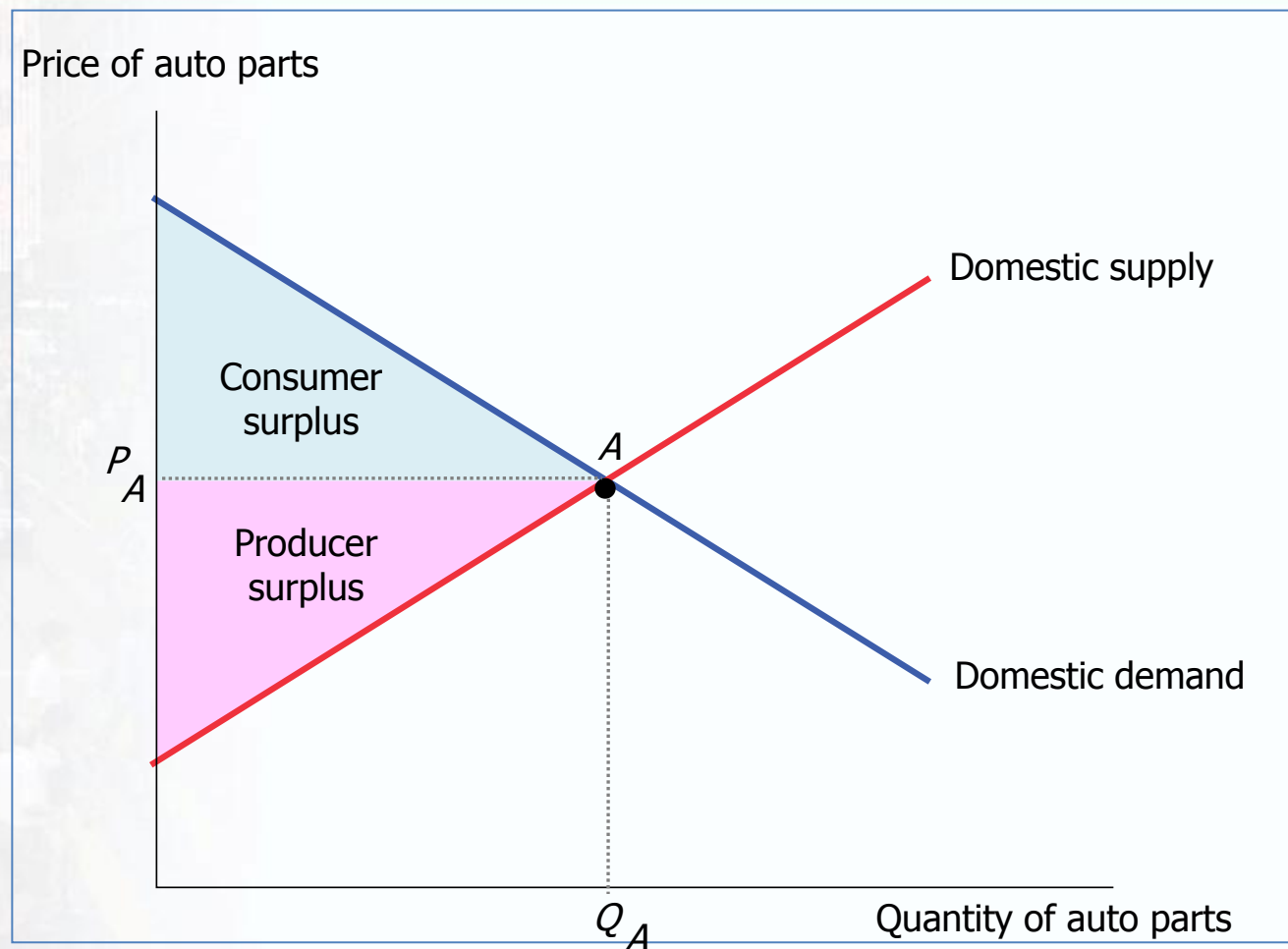
- The **domestic demand curve** shows how the quantity of a good demanded by domestic consumers depends on the price of that good.
- The **domestic supply curve** shows how the quantity of a good supplied by domestic producers depends on the price of that good.
- The **world price** of a good is the price at which that good can be bought or sold abroad.



The Effects of Imports

- When a market is opened to trade, competition among importers or exporters drives the domestic price to equality with the **world price**.
- If the world price is lower than the autarky price, trade leads to imports and a fall in the domestic price compared with the world price.
- There are overall gains from trade because consumer gains exceed the producer losses.

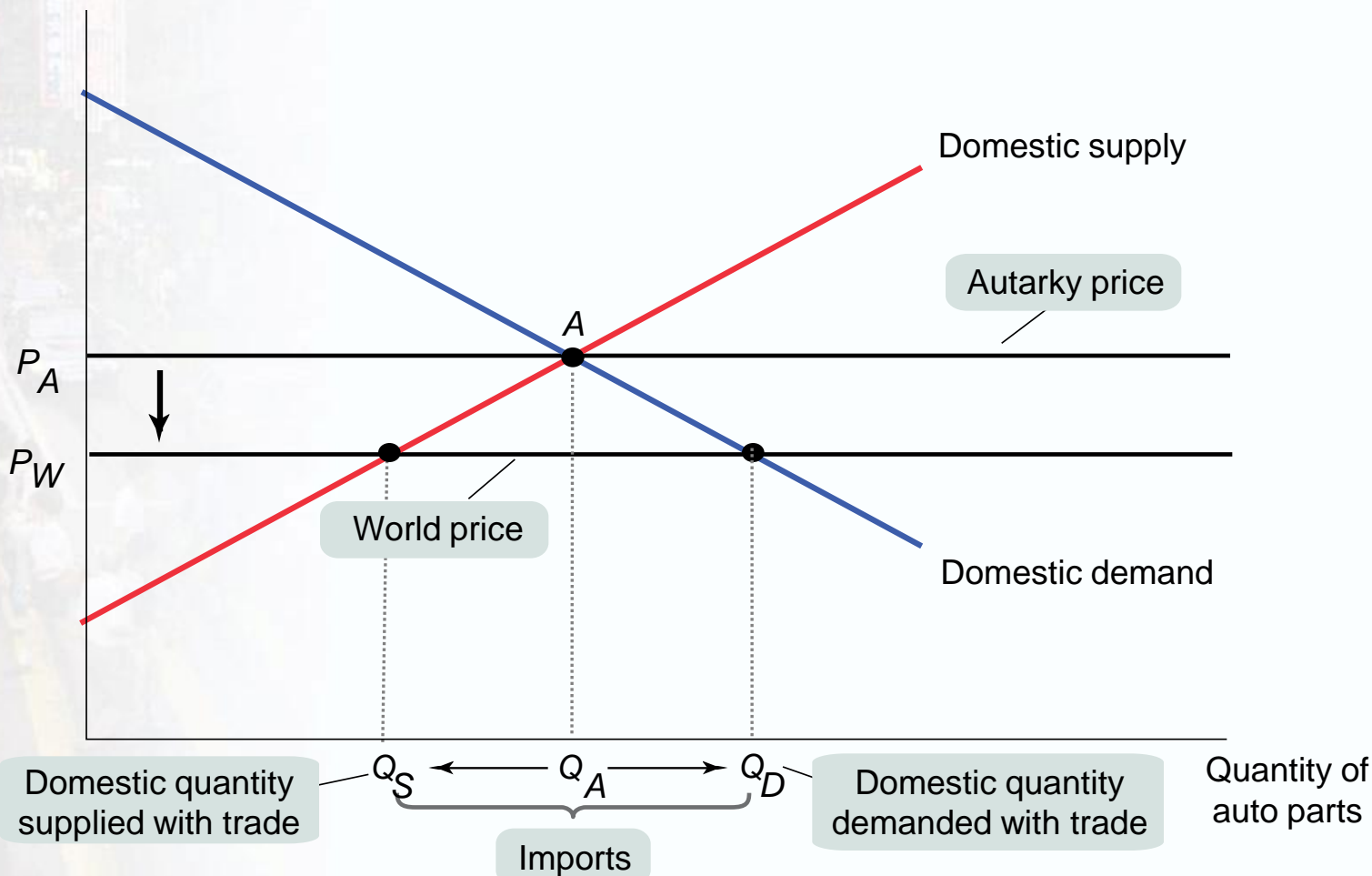
Consumer and Producer Surplus in Autarky



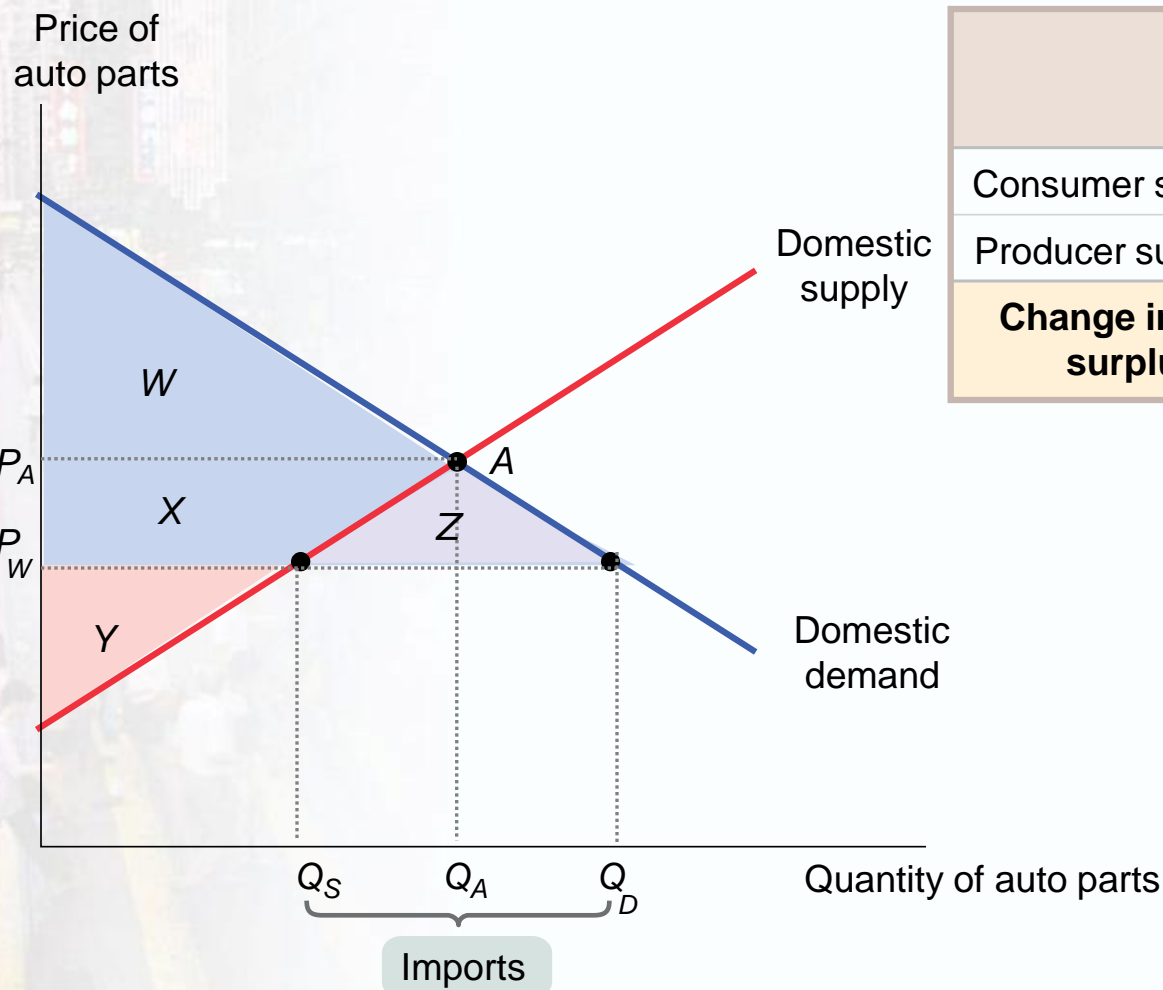
Producer surplus is represented by the pink-shaded area.

The Domestic Market with Imports

Price of auto parts



The Effects of Imports on Surplus

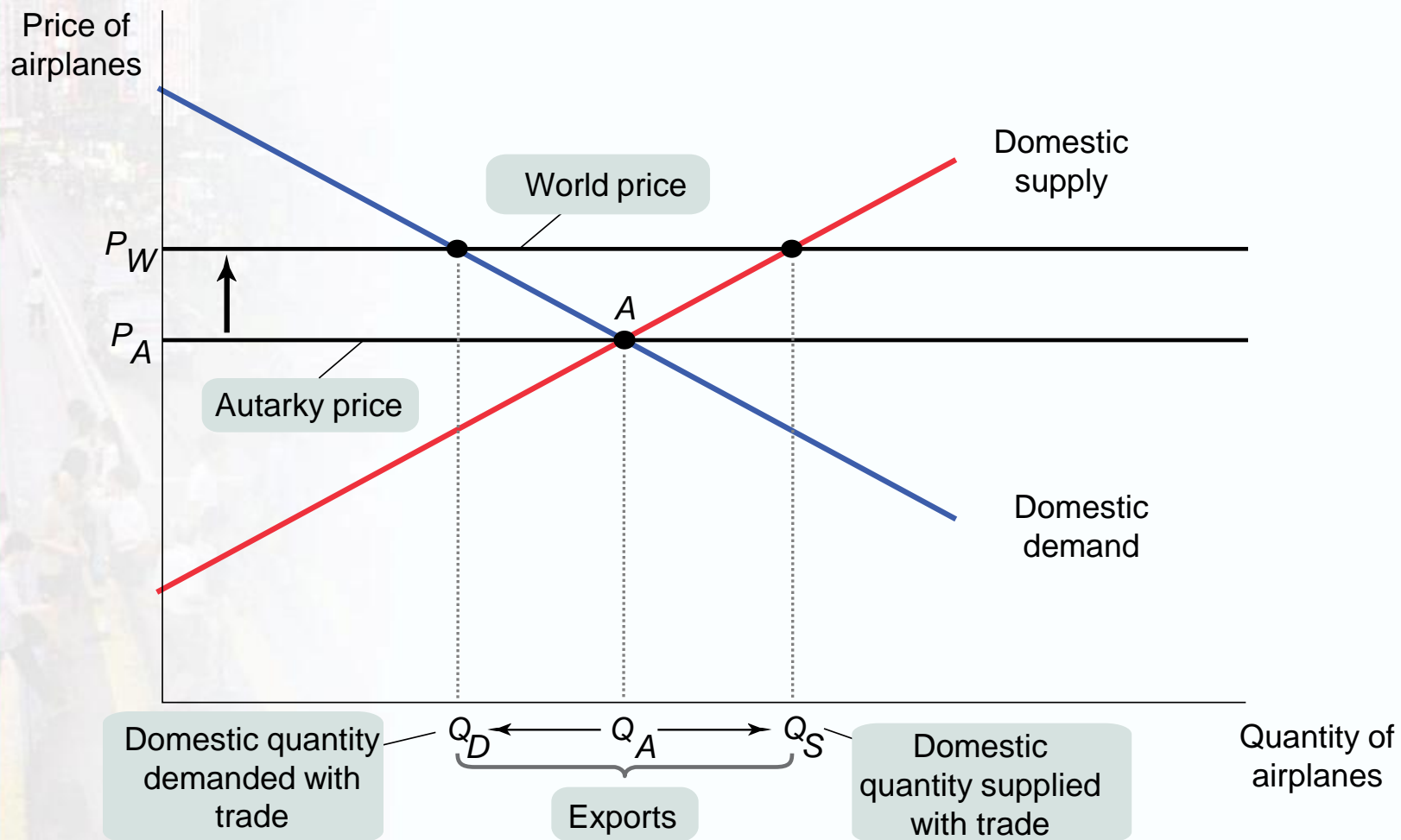


	Changes in surplus	
	Gain	Loss
Consumer surplus	$X + Z$	
Producer surplus		$- X$
Change in total surplus	$+ Z$	

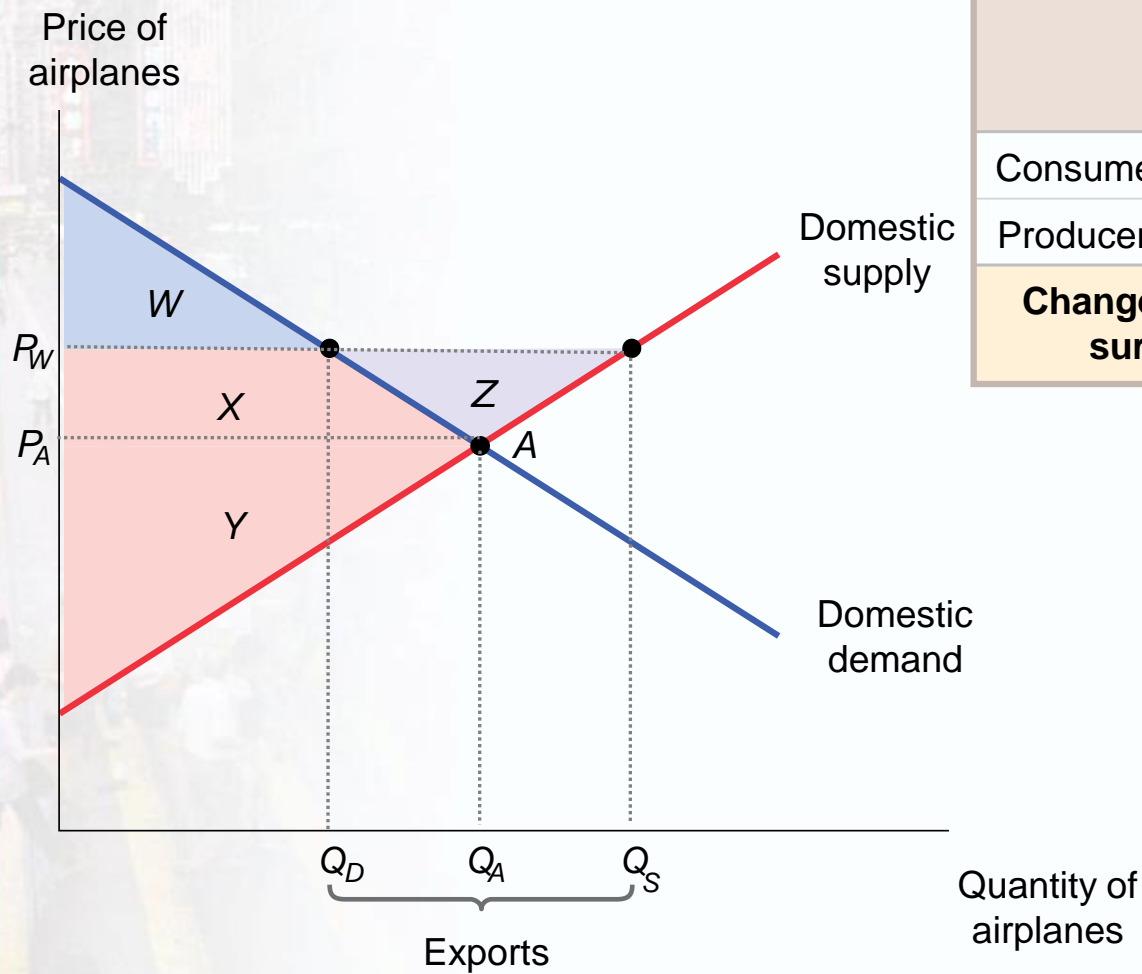
The Effects of Exports

- If the world price is higher than the autarky price, trade leads to exports and a rise in the domestic price compared with the world price.
- There are overall gains from trade because producer gains exceed the consumer losses.
- The graph that follows shows the domestic market with exports.

The Domestic Market with Exports



The Effects of Exports on Surplus



	Changes in surplus	
	Gain	Loss
Consumer surplus		- X
Producer surplus	X + Z	
Change in total surplus	+ Z	

International Trade and Wages

- **Exporting industries** produce goods and services that are sold abroad.
- **Import-competing industries** produce goods and services that are also imported.

International Trade and Wages

- International trade tends to increase the demand for factors that are abundant in our country compared with other countries, and to decrease the demand for factors that are scarce in our country compared with other countries.
- As a result, the prices of abundant factors tend to rise, and the prices of scarce factors tend to fall as international trade grows.

Trade, Wages and Land Prices in the Nineteenth Century

- Beginning around 1870, there was an explosive growth of world trade in agricultural products based largely on the steam engine — it enabled faster movement of goods across the ocean and by rail.
- The result was that land-abundant countries such as Canada, the United States, and Argentina began shipping large quantities of agricultural goods to the densely populated, land-scarce countries of Europe.

Trade, Wages and Land Prices in the Nineteenth Century

- This opening up of international trade led to higher prices of agricultural products in exporting countries and a decline in their prices in importing countries.
 - These changes in prices brought about changes in factor prices as land prices fell by half compared with average wages in England.
 - This reduced the land owners' purchasing power as workers benefitted from cheaper food. In the United States, the reverse happened.
 - Land owners did well, but workers' purchasing power reduced as food prices rose.



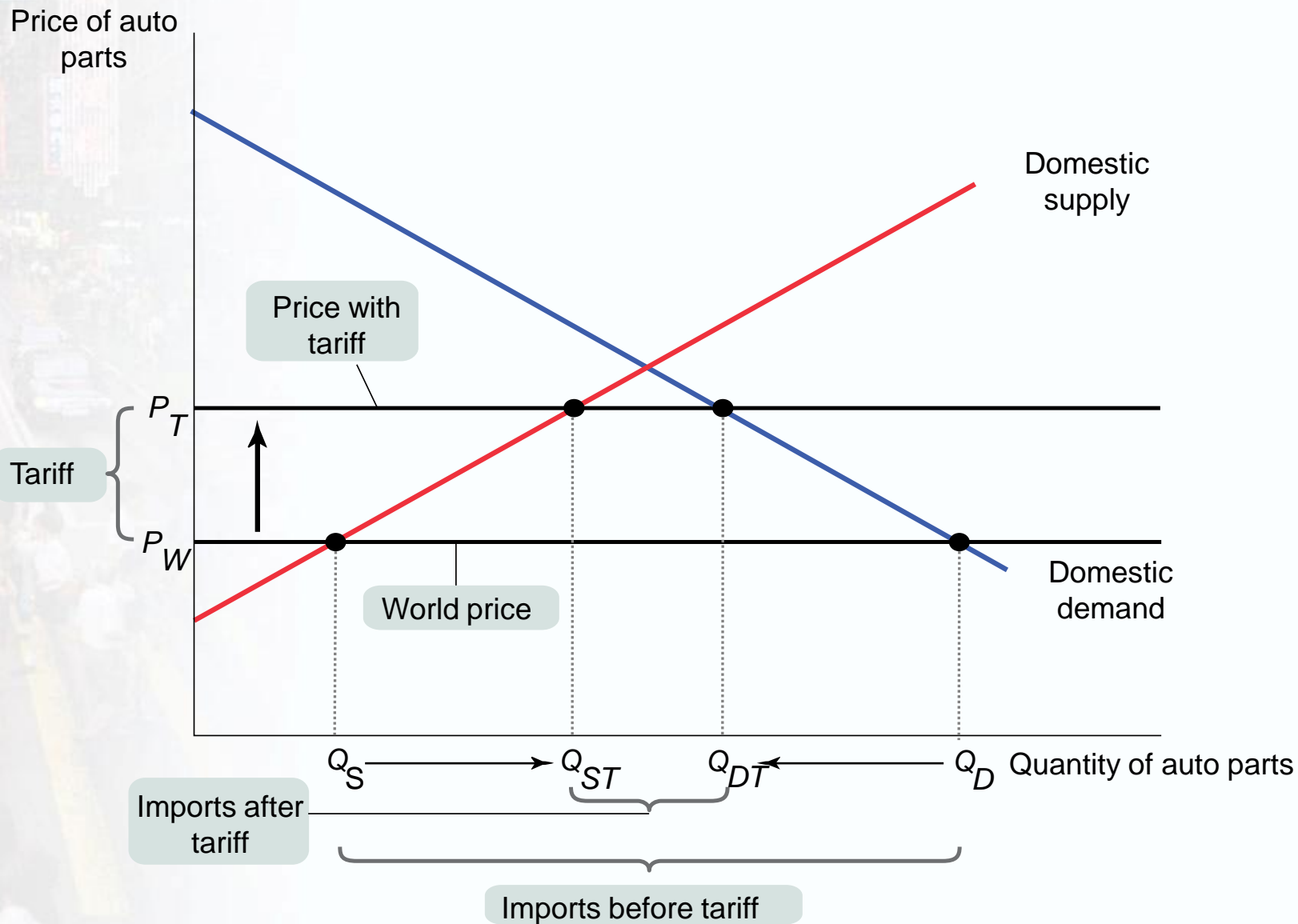
Effects of Trade Protection

- An economy has **free trade** when the government does not attempt either to reduce or to increase the levels of exports and imports that occur naturally as a result of supply and demand.
 - Policies that limit imports are known as **trade protection** or simply as **protection**.
- Most economists advocate free trade, although many governments engage in trade protection of import-competing industries.
 - The two most common protectionist policies are tariffs and import quotas. In rare instances, governments subsidize export industries.

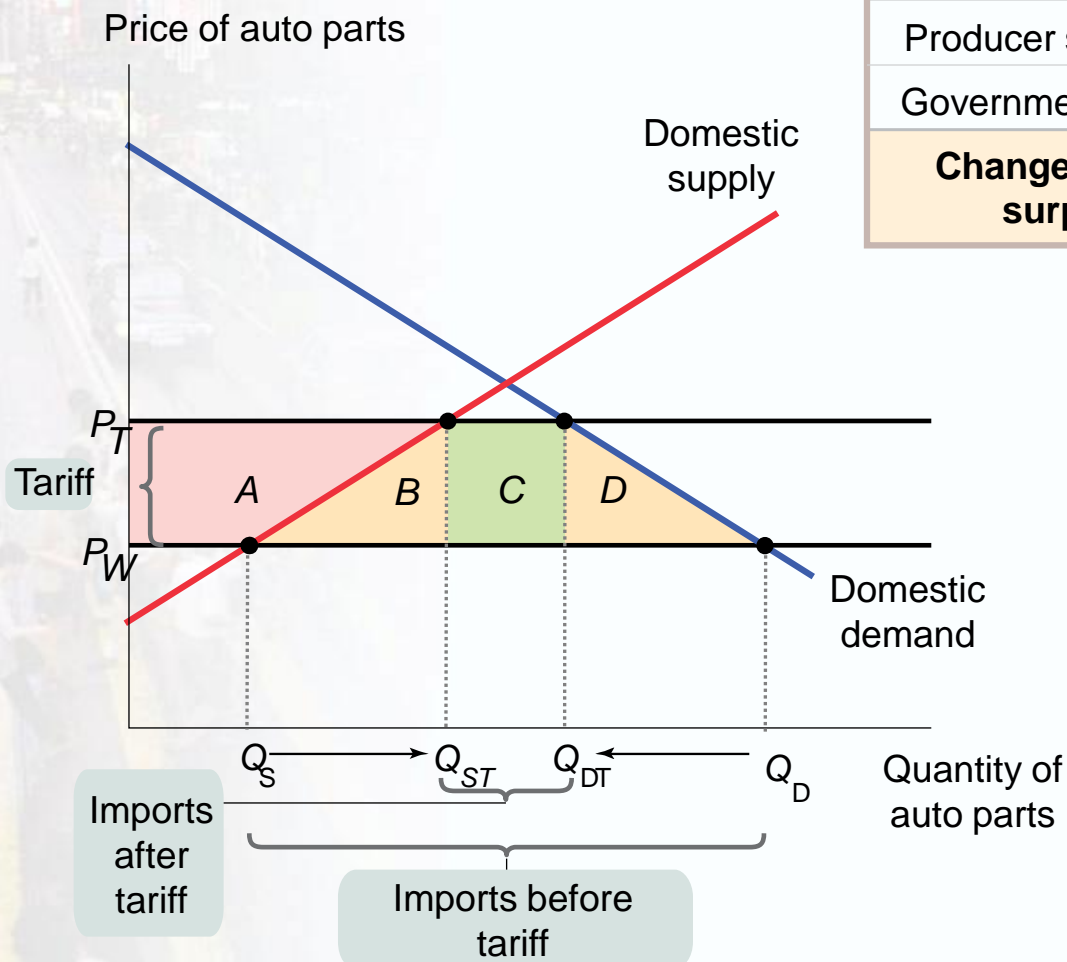
Effects of a Tariff

- A **tariff** is a tax levied on imports.
- It raises the domestic price above the world price, leading to a fall in trade and total consumption and a rise in domestic production.
- Domestic producers and the government gain, but consumer losses more than offset this gain, leading to deadweight loss in total surplus.

The Effect of a Tariff



A Tariff Reduces Total Surplus



	Changes in surplus	
	Gain	Loss
Consumer surplus		$-(A + B + C + D)$
Producer surplus	A	
Government revenue	C	
Change in total surplus		$-(B + D)$



Effects of an Import Quota

- An **import quota** is a legal limit on the quantity of a good that can be imported.
- Its effect is like that of a tariff, except that revenues—the quota rents—accrue to the license-holder, not to the government.
- Now, let's move on to the political economy of trade protection.

ECONOMICS IN ACTION

Trade Protection in the United States

- The United States today generally follows a policy of free trade. Most manufactured goods are subject either to no tariff or a low tariff.



ECONOMICS IN ACTION

Trade Protection in the United States

- There are two areas where imports are limited:
 - **Agriculture:** A certain amount of imports are subject to a low tariff rate and this acts like an import quota because only importers that are license holders are allowed to pay the low rate.
 - Any additional imports are subject to a higher tariff.
 - **Clothing and Textiles:** A surge of clothing from China led to a partial re-imposition of import quotas that had otherwise been removed at the start of 2005.

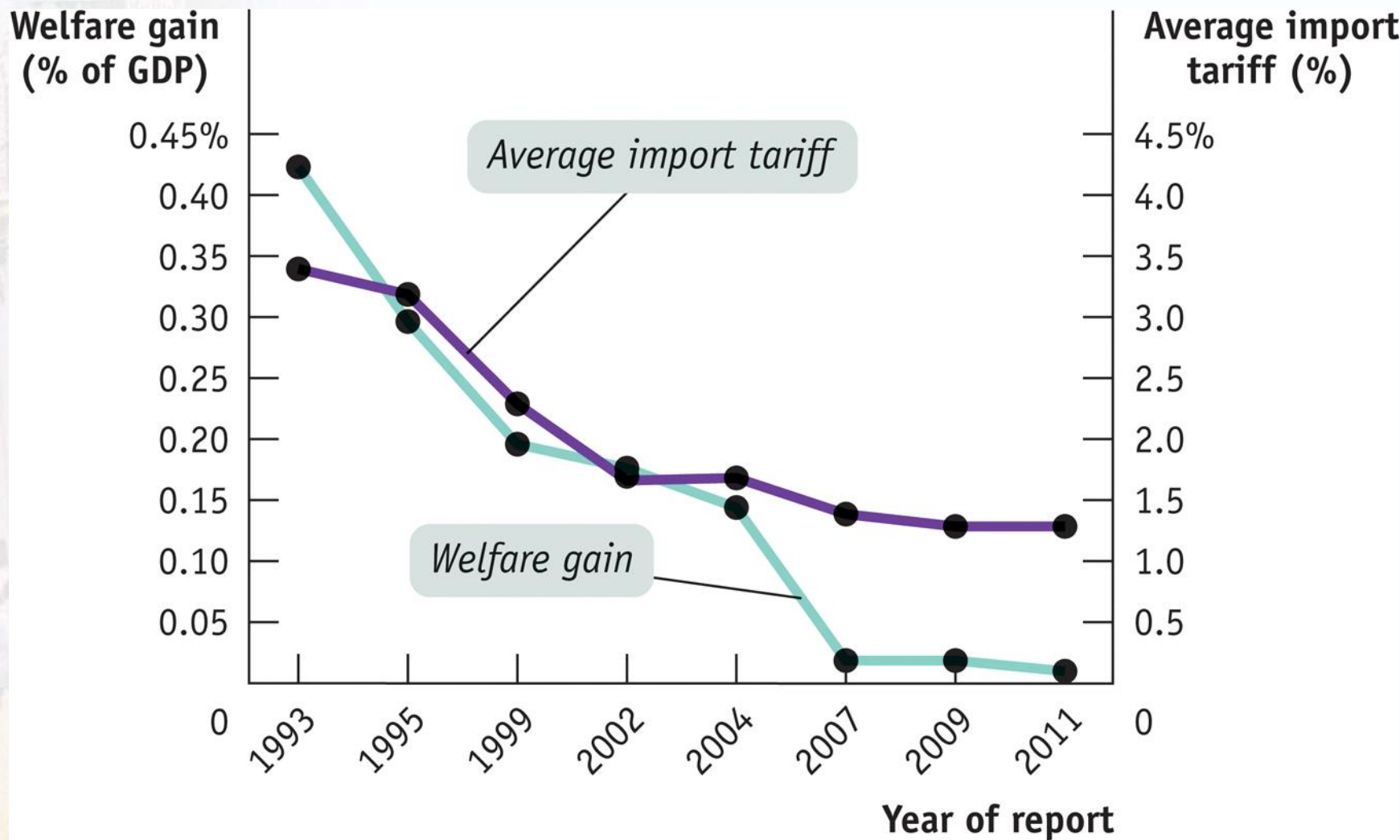


ECONOMICS IN ACTION

Trade Protection in the United States

- There isn't much U.S. trade protection.
- According to official U.S. estimates, the total economic cost of all quantifiable restrictions on imports is about \$4.6 billion a year, or around one-fortieth of a percent on national income.
 - Of this, about \$2.6 billion comes from restrictions on clothing imports, \$0.5 billion from restrictions on sugar, and \$0.7 billion from restrictions on dairy.
 - Everything else is small change.

ECONOMICS IN ACTION



Source: U.S. International Trade Commission (2011), "The Economic Effects of Significant U.S. Import Restraints."

The Political Economy of Trade Protection

Arguments for Trade Protection

- Advocates of tariffs and import quotas offer a variety of arguments. Three common arguments are:
 - *national security*
 - *job creation*
 - *the infant industry argument*
- Despite the deadweight losses, import protections are often imposed because groups representing import-competing industries are smaller and more cohesive than groups of consumers.



International Trade Agreements and the World Trade Organization

- To further trade liberalization, countries engage in **international trade agreements**.
- International trade agreements are treaties in which a country promises to engage in less trade protection against the exports of other countries in return for a promise by other countries to do the same for its own exports.
- Some agreements are for only a small number of countries, such as the North American Free Trade Agreement, which is among the United States, Canada, and Mexico.



International Trade Agreements and the World Trade Organization

- The **World Trade Organization** (WTO) is a multinational organization that seeks to negotiate global trade agreements as well as adjudicate trade disputes between member countries.
- The **European Union**, or EU, is a customs union among 27 European nations.



FOR INQUIRING MINDS

Tires Under Pressure

- In September 2009 the U.S. government imposed steep tariffs on imports of tires from China.
 - The decision imposed tariffs for three years: 35% in the first year, 30% in the second, and 25% in the third.
- The tariff was a response to union complaints about the effects of surging Chinese tire exports: between 2004 and 2008, U.S. imports of automobile tires from China had gone from 15 million to 46 million, and labor groups warned that this was costing American jobs.



FOR INQUIRING MINDS

Tires Under Pressure

- But wasn't the tariff a violation of WTO rules? No, said the Obama administration.
 - When China joined the WTO in 2001, it agreed to what is known, in trade policy jargon, as a “safeguard mechanism”: importing countries were granted the right to impose temporary limits on Chinese exports in the event of an import surge.
- Despite this agreement, the government of China protested the U.S. action and appealed to the WTO to rule the tariff illegal.
 - But in December 2010 the WTO came down on America's side, ruling that the Obama administration had been within its rights.



FOR INQUIRING MINDS

- World trade negotiations have always been based on the principle that half a loaf is better than none, that it's better to have an agreement that allows politically sensitive industries to retain some protection than to insist on free trade purity.
- In spite of such actions as the tire tariff, world trade is, on the whole, remarkably free, and freer in many ways than it was just a few years ago.

New Challenges to Globalization

- There are two concerns shared by economists:
 - worries about the effects of globalization on inequality
 - worries that new developments, in particular the growth in offshore outsourcing, are increasing economic insecurity
- **Offshore outsourcing** takes place when businesses hire people in another country to perform various tasks.

ECONOMICS IN ACTION

Beefing Up Exports

- In December 2010, negotiators from the United States and South Korea reached final agreement on a free trade deal.
 - The deal would phase out many of the tariffs and other restrictions on trade between the two nations.
 - The deal also involved changes in a variety of business regulations that were expected to make it easier for U.S. companies to operate in South Korea.
 - This was, literally, a fairly big deal: South Korea's economy is comparable in size with Mexico's, so this was the most important free trade agreement since NAFTA.
- What made this deal possible?

ECONOMICS IN ACTION

- Estimates by the U.S. International Trade Commission found that the deal would raise average American incomes, although modestly.
 - The commission put the gains at around one-tenth of 1% (not bad when you consider the fact that South Korea, despite its relatively large economy, is still only America's seventh-most-important trading partner).
- However, these overall gains played little role in the politics of the deal, which hinged on losses and gains for particular U.S. constituencies.

ECONOMICS IN ACTION

- It helped, also, that South Korea – unlike Mexico when NAFTA was signed – is both a fairly high-wage country and not right on the U.S. border, which meant less concern about massive shifts of manufacturing.
 - In the end, the balance of interests was just favorable enough to make the deal politically possible.

VIDEO



MAKING SEN\$E WITH PAUL SOLMAN:

- Author Says Modern Life is Good Despite Recession:
<http://www.econedlink.org/interactives/index.php?iid=123>

Summary

1. International trade is of growing importance to the United States and of even greater importance to most other countries. Foreign trade has been growing rapidly, a phenomenon called **globalization**.
2. The **Ricardian model of international trade** assumes that opportunity costs are constant. It shows that there are gains from trade: two countries are better off with trade than in **autarky**.

Summary

3. The **Heckscher–Ohlin model** shows how differences in factor endowments determine comparative advantage.
 1. Goods differ in **factor intensity**.
 2. Countries tend to export goods that are intensive in the factors they have in abundance.
4. The **domestic demand curve** and the **domestic supply curve** determine the price of a good in autarky. When international trade occurs, the domestic price is driven to equality with the **world price**, the price at which the good is bought and sold abroad.

Summary

5. If the world price is below the autarky price, a good is imported. This leads to an increase in consumer surplus, a fall in producer surplus, and a gain in total surplus. If the world price is above the autarky price, a good is exported. This leads to an increase in producer surplus, a fall in consumer surplus, and a gain in total surplus.
6. International trade leads to expansion in **exporting industries** and contraction in **import-competing industries**.

Summary

7. Most economists advocate **free trade**, but in practice many governments engage in **trade protection**.
8. A **tariff** is a tax levied on imports. An **import quota** is a legal limit on the quantity of a good that can be imported.
9. Several popular arguments have been made in favor of trade protection, but in practice the main reason is probably political: import-competing industries are organized and well-informed about trade protection, while consumers are unaware of the costs they pay.

Summary

10. Many concerns have been raised about the effects of globalization:
 1. Income inequality due to the surge in imports from relatively poor countries
 2. **Offshore outsourcing**

KEY TERMS



- Imports
- Exports
- Globalization
- Ricardian model of international trade
- Autarky
- Factor intensity
- Heckscher–Ohlin model
- Domestic demand curve
- Domestic supply curve
- World price
- Exporting industries
- Import-competing industries
- Free trade
- Trade protection
- Protection
- Tariff
- Import quota
- International trade agreements
- North American Free Trade Agreement (NAFTA)
- European Union (EU)
- World Trade Organization (WTO)
- Offshore outsourcing