

## CONTENTS

Introduction to the Series	iv
1 Introduction to Economics	5
2 GDP and its Determinants	17
3 Aggregate Demand and Aggregate Supply	28
4 The Macroeconomic Objectives	47
5 Fiscal Policy	73
6 Monetary and Supply-side Policies	84
7 Free Trade and Protectionism	102
8 Exchange Rates	119
9 Balance of Payments	131
Macroeconomics Glossary	142

## Chapter 7 – Free Trade and Protectionism

### Free Trade

- The benefits of trade
- Absolute and comparative advantage

### Restrictions on Free Trade: Protectionism

- Types of trade protection
  - Tariffs
  - Quotas
  - Subsidies
  - Administrative barriers
- Arguments for and against protectionism (arguments for and against free trade)
  - Arguments for: protection of domestic jobs, national security, infant industries, protect against dumping, environmental protection, overcoming BoP deficits, source of government revenue
  - Arguments against: misallocation of resources, threat or retaliation, increased costs, higher prices, reduced competitiveness

### Introduction to International Trade

The expansion of voluntary trade between nations has been a defining characteristic of the global economic system since the Second World War. But peoples' views on trade were not always so liberal.

Key Questions about International Trade	
Why do nations trade?	What are the gains from trade between nations?
How does a nation determine what it should produce?	What are the obstacles to free trade?

### Specialization based on Comparative Advantage

Because the world's productive resources are not distributed evenly between nations, it does not make sense that every nation tries to produce the same goods. Rather, nations tend to specialize in goods for which their natural, human and capital resources are particularly appropriate to produce. These may be...

Labor-intensive goods		Land-intensive goods	
<b>Examples:</b> Textiles Low-skilled manufactured	<b>Where?</b> China Latin America	<b>Examples:</b> Agricultural products Minerals	<b>Where?</b> North America Russia

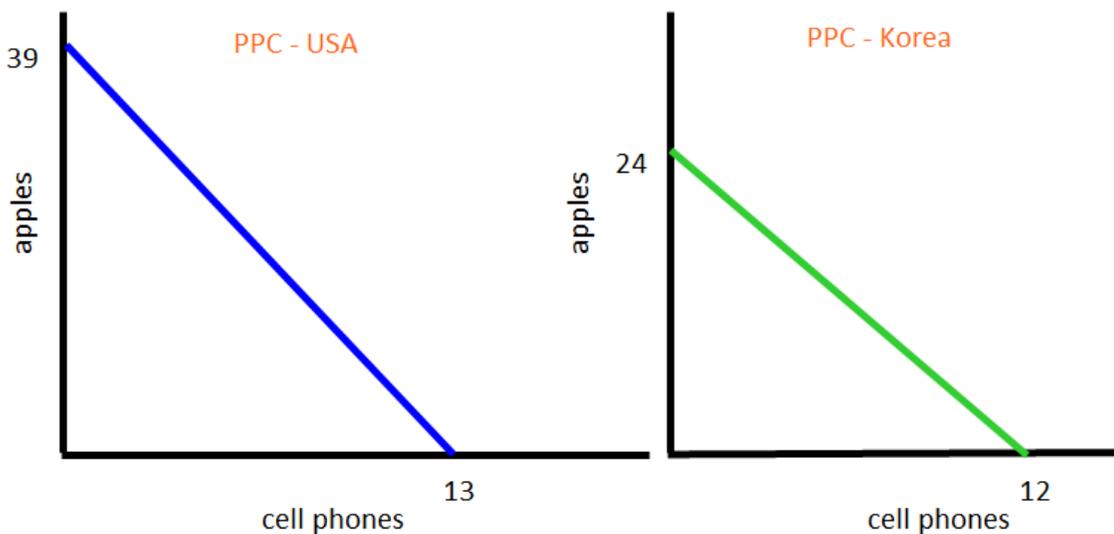
goods	Low-wage countries	Timber resources	Australia
<b>Capital-intensive goods</b>			
<b>Examples:</b> Airplanes Automobiles Microchips		<b>Where?</b> Western Europe Japan South Korea	

What a particular nation should produce and trade is based on what the country has a comparative advantage in the production of.

**Comparative Advantage:** A country has a comparative advantage in production of a certain product when it can produce that product at a lower relative opportunity cost than another country.

### Production Possibilities Analysis of Comparative Advantage

Consider two countries, South Korea and the United States.



Determining comparative advantage:

How much do apples "cost" each country to produce?

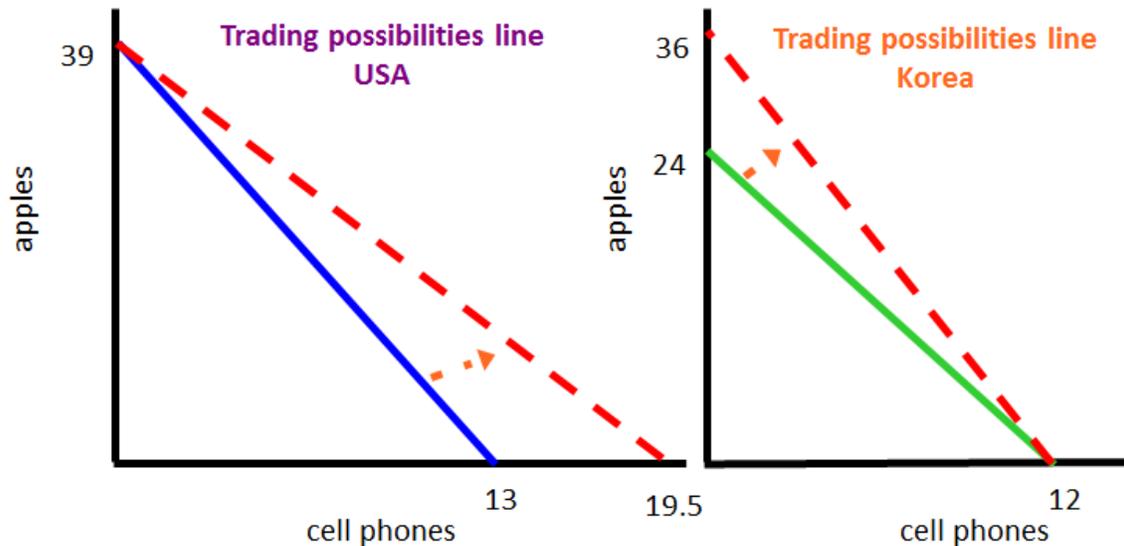
- The US can produce *either* 39 apples *or* 13 cell phones.
- 1 apple =  $\frac{1}{3}$  cell phone
- S. Korea can produce *either* 24 apples *or* 12 cell phones.
- 1 apple =  $\frac{1}{2}$  cell phone

How much do cell phones "cost"?

- The US must give up 3 apples for each cell phone it produces.
- S. Korea must give up only 2 apples for each cell phone it produces.

*The US has a comparative advantage in apples, South Korea in cell phones*

Because the US has a lower opportunity cost for apples than S. Korea, and S. Korea has a lower opportunity cost for cell phones than the US, these two countries can benefit from specializing and trading with one another.



United States:

- Specialize in apples -> trade apples for cell phones with Korea. Korea should be willing to trade 1 apple for anything up to, but not beyond, 1/2 cell phone. Before trade, 1 apple could only get America 1/3 cell phone.
- The US has *gained from trade*.

South Korea:

- Specialize in cell phones -> trade cell phones for apples with the US. The US should be willing to exchange up to three apples for one cell phone. Before trade, Korea could only get two apples for each cell phone it gave up.
- South Korea has *gained from trade*.

*The dashed lines represent the maximum amount of output the two countries could hope to consume as a result of trade with one another. This is the trading possibilities line. Trade allows each nation to consume beyond its own production possibilities.*

Specialization is defined as “the use of the resources of an individual, a firm, a region, **or a nation** to concentrate production on one or a small number of goods and services.”

- What a person, company or country should specialize in depends on the task for which it has the lowest opportunity costs.
- Countries should specialize based on the products for which they have a comparative advantage

### Gains from Specialization and Trade

Specialization based on comparative advantage improves global resource allocation.

*Specialization and trade based on comparative advantage increases the productivity of a nation's resources and allows for greater total output than would otherwise be possible.*

Specialization and Trade based on Production Possibilities Tables

The PPC provides a graphical means of displaying a nation's potential output of two goods. The same information can be shown in a table as well. These tables come in two types, Output and Input tables.

### Output table

Given a fixed amount of resources, Mexico and the USA can choose between the following alternatives

	Soybeans	Avocados
Mexico	15	60
USA	30	90

In Mexico:

- Mexico can produce 15 soybeans or 60 avocados.
- For each soybean it produces, Mexico is giving up 4 avocados.
- The cost of EACH soybean, therefore, is 4 avocados (60/15).

$$1 \text{ soybean} = 4 \text{ avocados}$$

$$1 \text{ avocado} = \frac{1}{4} \text{ soybean}$$

In the United States

- The US can produce 30 soybeans or 90 avocados.
- For each soybean it produces, it is giving up 3 avocados.
- The cost of EACH soybean is 3 avocados (90/30).

$$1 \text{ soybean} = 3 \text{ avocados}$$

$$1 \text{ avocado} = \frac{1}{3} \text{ soybean}$$

*The US has a comparative advantage in soybeans and Mexico has a comparative advantage in avocados.*

### Input table

In order to produce one ton of output, Mexico and the USA must use the following amount of resources. (in acres of land)

	Soybeans	Avocados
Mexico	16	8
USA	8	6

In Mexico:

- To produce 1 ton of soybeans, 16 acres of land must be used.
- On those same 16 acres, Mexico could produce 2 tons of avocados (16/8).
- Each soybean costs Mexico 2 avocados (16/8).

$$1 \text{ soybean} = 2 \text{ avocados}$$

$$1 \text{ avocado} = \frac{1}{2} \text{ soybean}$$

In the United States:

- To produce 1 ton of soybeans, 8 acres of land must be used.
- On those same 16 acres, the US could only have produced 1.33 avocados (8/6).
- Each soybean costs the US 1.33 avocados (8/6).

$$1 \text{ soybean} = 1.33 \text{ avocados}$$

$$1 \text{ avocado} = 0.75 \text{ soybeans}$$

*The US has a comparative advantage in soybeans and Mexico has a comparative advantage in avocados*

How to determine specialization and trade based on a production possibilities table

1. Identify the opportunity costs of the two goods in each country
2. The countries should specialize in the good for which they have the lower opportunity cost.
3. The countries should trade with each other to get the good that they are not producing.

**Cross-multiplication trick.**

For an output problem, simply cross multiply and then choose the highest level of output.

**Output Problem**

	Soybeans	Avocados
Mexico	15	60 = 1800
USA	30	90 = 1350

X

Based on the table above, Mexico has the comparative advantage in avocados and the US in soy beans. The two countries should specialize and trade with one another based on these advantages.

*Output is maximized when the US specializes in soybeans and Mexico in avocados.*

For an input problem, cross-multiply and then choose the combination that uses the least amount of inputs.

**Input Problem**

	Soybeans	Avocados
Mexico	16	8 = 64
USA	8	6 = 96

X

*Inputs are minimized when the US specializes in soybeans and Mexico in avocados.*

**Absolute Advantage versus Comparative Advantage**

Having put the data into a PPC, it is clear that the US is, in fact, better at producing BOTH avocados and soybeans. The US has an **absolute advantage** in both goods

- Absolute Advantage: When a nation can produce a certain good more efficiently than another nation.
- How is this different from comparative advantage? Having an absolute advantage in a product, as the US does in both soybeans and avocados, does not mean a country has a lower opportunity costs in both products. The US should still only specialize in what it has a *comparative advantage* in.

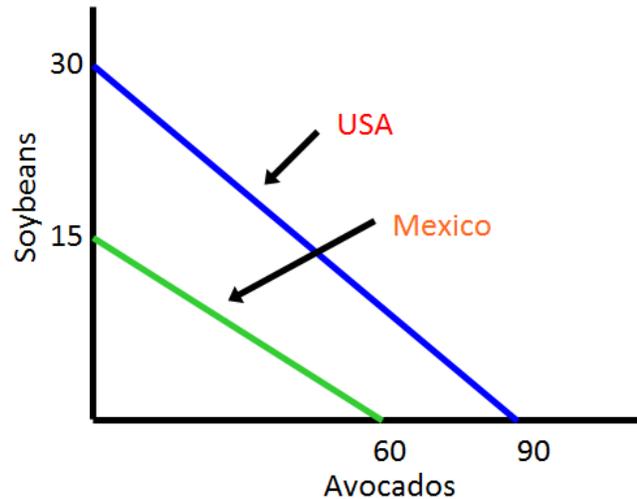
Soybeans:

- In the US:  $1s = 3a$
- In Mexico:  $1s = 4a$

Avocados

- In the US:  $1a = 1/3s$
- In Mexico:  $1a = 1/4s$

The USA has an *absolute advantage* in both soybeans and avocados, because, given a certain amount of resources, it can *produce more* of both goods.



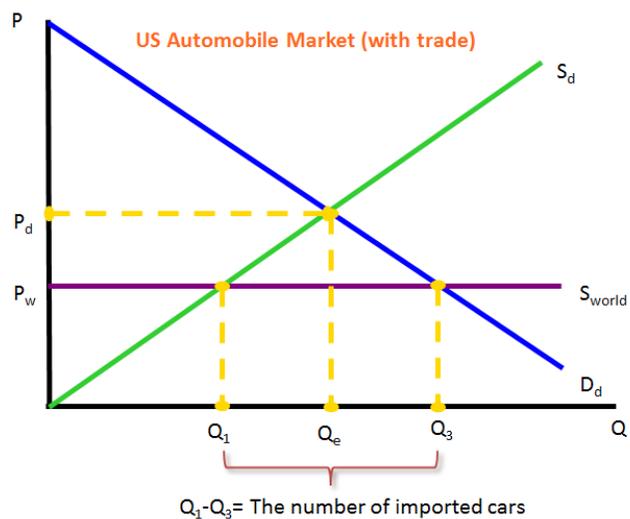
But Mexico has a *comparative advantage* in avocados, because it has to give up only  $1/4$  soybean versus America's  $1/3$  soybean. Mexico's opportunity cost of avocados is lower than America's, therefore both countries could gain from trade if Mexico specialized in avocados and America in soybeans, and trade took place.

### The Gains from Trade in a Supply and Demand Diagram

The gains from free trade can be illustrated in a diagram showing the supply and demand of a particular good that is being traded between two nations.

The graph shows the market for cars in the United States under free trade:

- $S_d$ : The domestic supply of cars
- $D_d$ : The domestic demand for cars
- $P_d$  and  $Q_e$ : Equilibrium price and quantity before free trade
- $S_{world}$ : The world supply of cars
  - Since the US is just one of nearly two hundred countries buying cars, American consumers can buy as many as they wish without affecting the price, so world supply is perfectly elastic
- $P_w$ : The world price of cars
- $Q_1$ : The domestic quantity supplied with trade:
- $Q_3$ : The domestic quantity demanded with trade



There are winners and losers from free trade in the US automobile market, but overall

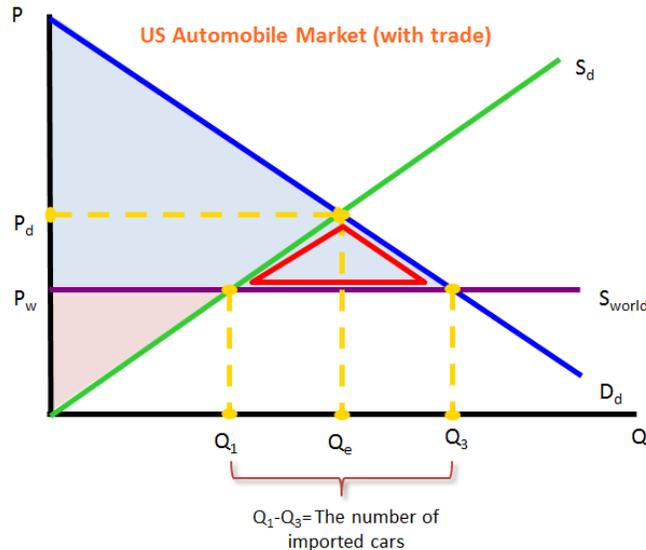
society is better off than it would be without trade.

The losers from free trade:

- Notice that  $Q_1$  is less than  $Q_e$ . This means that *fewer cars are produced in the US* than would be without trade. Domestic producers suffer due to the lower prices of imported cars. Domestic producer surplus is less than it would be without trade.
- Workers in domestic factories may lose their jobs, as output of American cars declines

The winners from free trade

- $Q_3$  is greater than  $Q_1$ , indicating that consumers buy more cars after trade than they would without trade.
- $P_w$  is lower, indicating that consumers enjoy a lower price and more consumer surplus than before trade



*Effect of trade on total welfare: Because of free trade, total welfare in the car market has increased by the triangle outlined in gray.*

### Introduction to Protectionism

Despite the gains from trade we have explained and illustrated using both PPCs and supply and demand diagrams, almost every country still chooses to engage in some degree of *protectionism*.

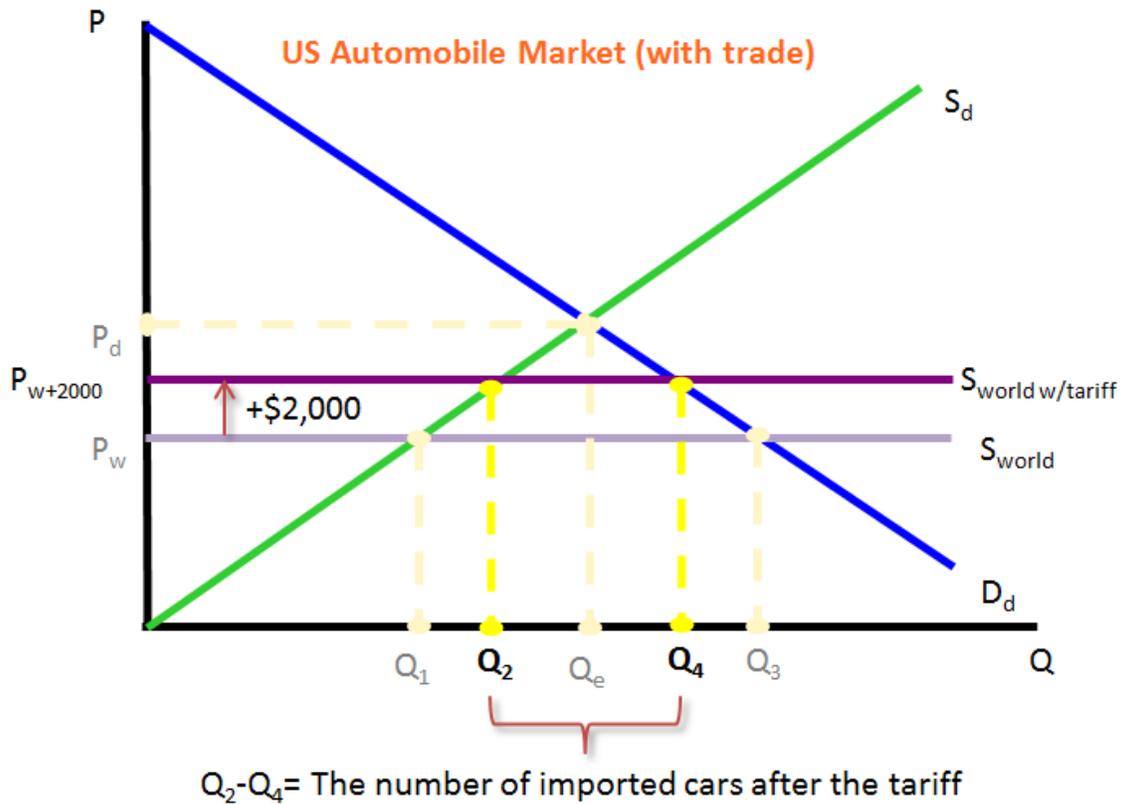
Protectionism: The use of tariffs, quotas, subsidies or administrative measures aimed at making domestic producers more competitive with foreign producers by limiting the quantity of imports into the nation.

- **Tariffs:** Taxes placed on imported goods, services or resources. A tariff increases the cost of imported goods, reducing their supply and causing the price paid by domestic consumers to rise. Therefore, the domestic quantity supplied is greater than it would be without the tariff.
- **Quotas:** A physical limit on the quantity of a good, service or resource that may be imported. A quota on a particular good will result in a shortage of imports in the short-run, which drives up the domestic price and leads domestic producers to increase their quantity supplied.
- **Protective subsidies:** Payments from the government to domestic producers meant to either increase domestic consumption of their goods or to promote the export of their goods to the rest of the world. The subsidy increases the domestic supply of a good and therefore increases the quantity consumed by domestic consumers.

*All forms of protectionism lead to a misallocation of society's resources and ultimately reduce total welfare. However, there are several arguments for protectionism that must be evaluated*

### Protectionist Tariffs

A tariff on an imported good reduces its supply and drives the price up for domestic consumers and producers. Consider the market for cars in the United States once again.

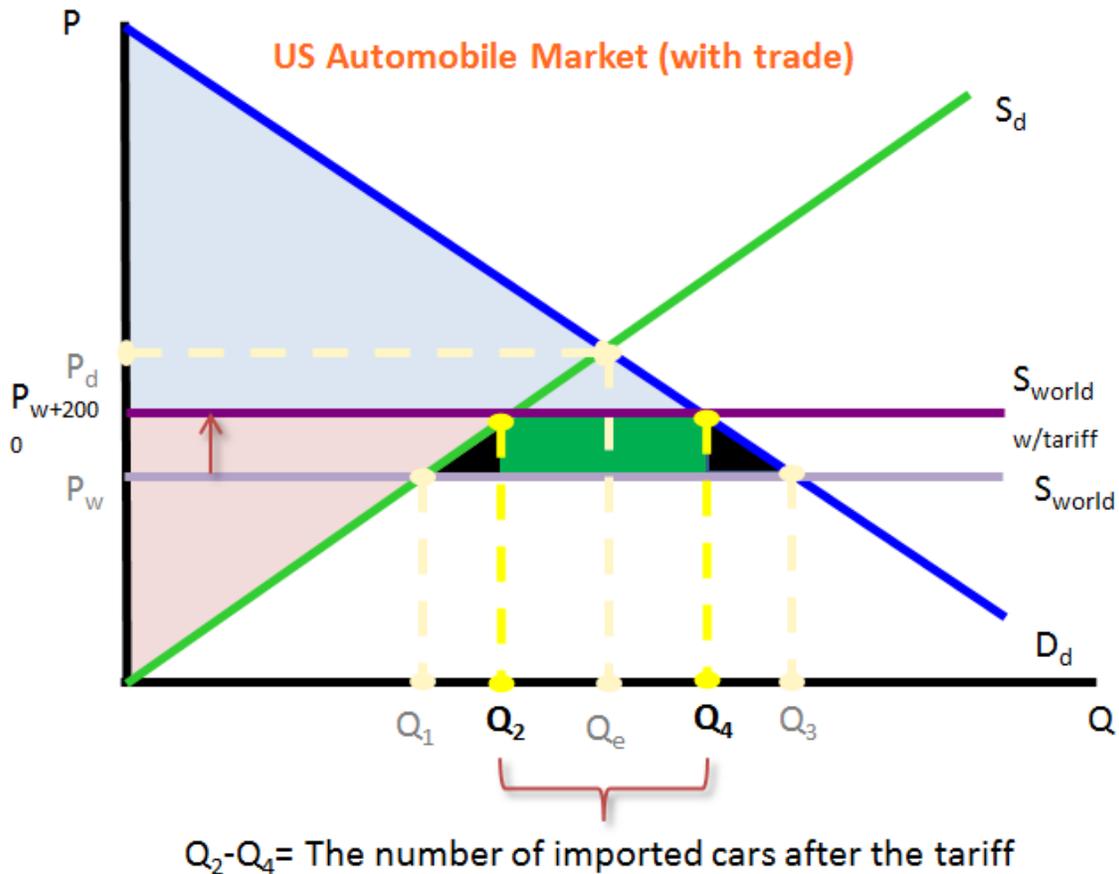


Assume the US government places a tariff of \$2,000 on all imported cars.

- The world supply shifts *up* by the amount of the tariff. All cars now cost \$2000 more
- The domestic quantity supplied increases from  $Q_1$  to  $Q_2$
- The domestic quantity demanded decreases from  $Q_3$  to  $Q_4$
- The quantity of cars imported decreases from  $Q_1 - Q_3$  to  $Q_2 - Q_4$

*The tariff leads to more cars being produced domestically, but fewer consumed and higher prices for consumers!*

Tariffs cause the price of the taxed good to rise and domestic output to increase. But to evaluate the overall effect of the tariff, more factors must be considered.

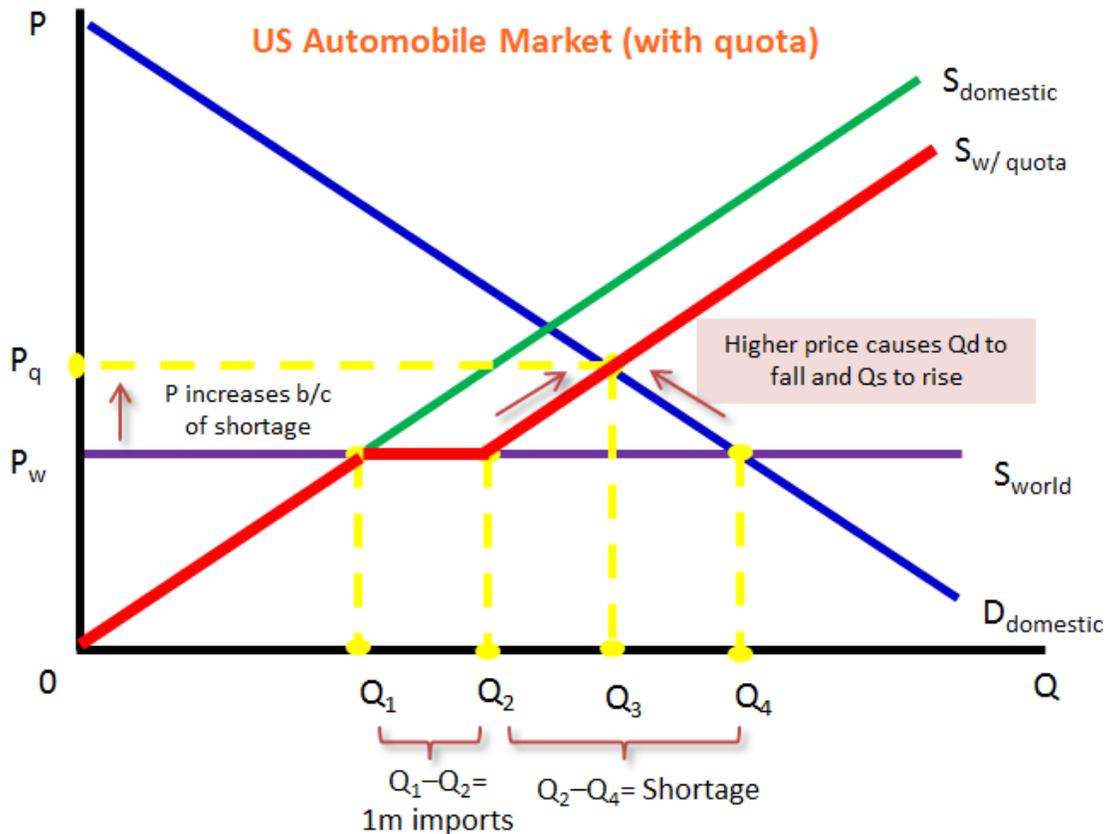


Effect of the tariff on all stakeholders

- On consumers: Consumer surplus (the triangle below  $D_d$  and above  $P_{w+200}$ ) is now a smaller area, since the price is higher and quantity lower.
- On domestic producers: Producer surplus is now greater, since domestic producers sell more cars at a higher price
- On foreign producers: Foreign producers are worse off. They sell fewer cars and earn less revenue ( $(Q_2 - Q_4) * P_w$ ) than they did before the tariff
- On the government: The government levying the tariff earns revenue equal to the rectangle between  $Q_2$  and  $Q_4$ , below  $P_{w+200}$  and  $P_w$ .
- On total welfare: There is a *net loss of total welfare* equal to the two black triangles. Society as a whole is *worse off* because fewer cars are consumed but the relatively inefficient domestic producers produce more cars.

### Protectionist Quotas

A quota is a physical limit on the quantity of a particular good (or goods) that may be imported. Assume that rather than taxing imported cars, the US government places a quota of just 1 million imports per year.

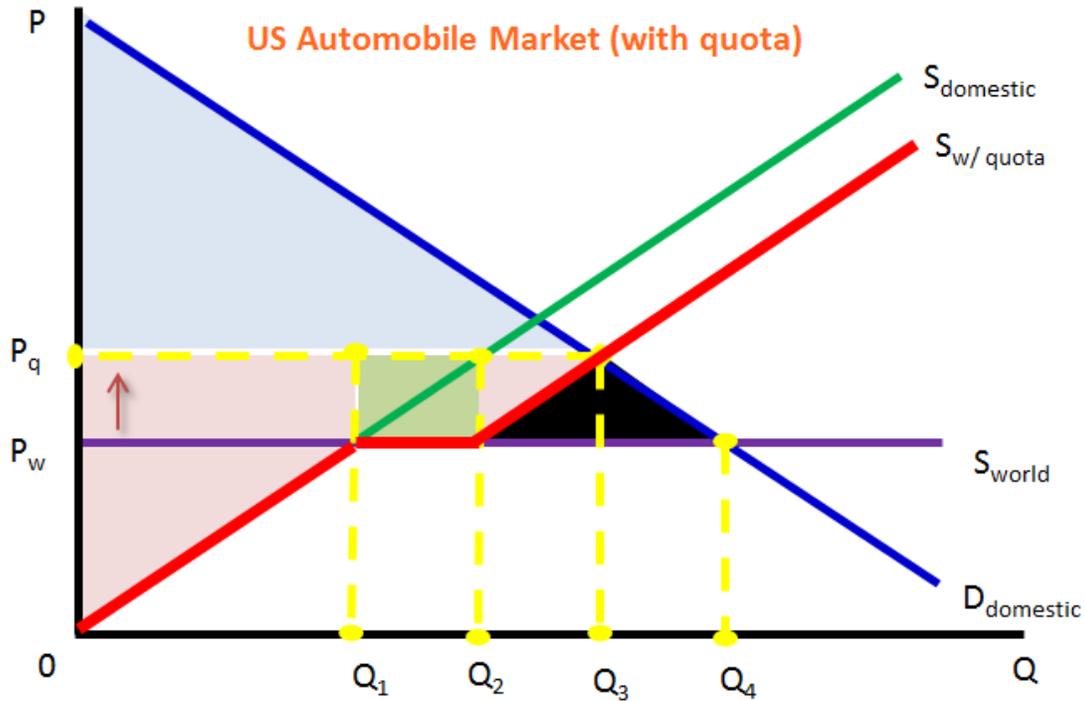


The effects of the quota:

- Before the quota,  $Q_1 - Q_4$  cars were imported. After the quota, only  $Q_1 - Q_2$  cars can be imported.
- The quota creates a shortage at the world price of  $Q_2 - Q_4$  cars.
- Because of the shortage, the price of cars rises from  $P_w$  to  $P_q$ .
- At the higher price, domestic quantity supplied increases from  $Q_1$  to  $0 - Q_1$  and  $Q_2 - Q_3$ .
- Total quantity demanded at the higher price is  $Q_3$ , but  $Q_1 - Q_2$  will be imported.

*The new domestic supply curve is the bold line*

A quota on imported cars caused the price to rise and the domestic quantity supplied to increase. But to determine the net effect of the quota we must examine its effect on various stakeholders.

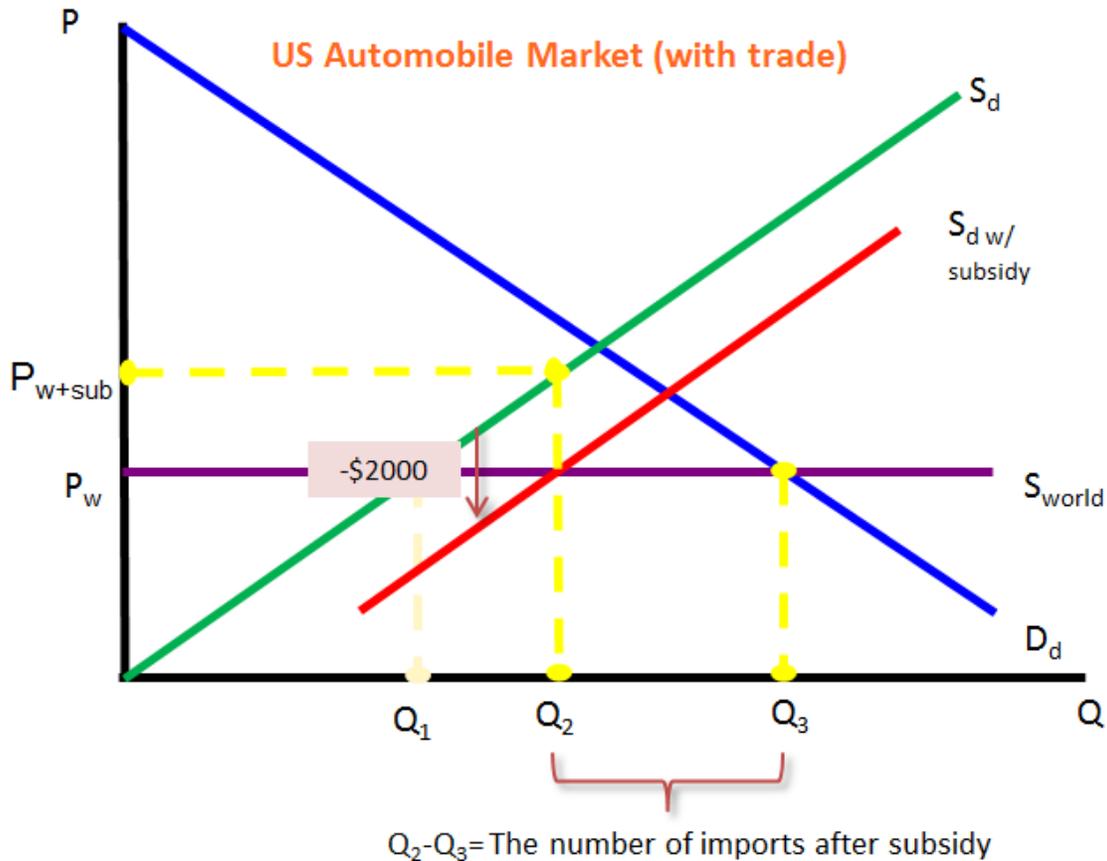


Effect of the quota on all stakeholders

- On consumers: The quantity of cars falls and the price rises, so consumer surplus is reduced to the triangle above  $P_q$  and below  $D_{\text{domestic}}$
- On domestic producers: Output and price have increases, so producer surplus increases to the areas below  $P_q$  and above  $S_{w/\text{quota}}$  between  $0 - Q_1$  and  $Q_2 - Q_3$
- On foreign producers: There will be fewer imports (only  $Q_1 - Q_2$ ) but they will sell for higher prices, but overall revenues fall for foreign producers.
- On the government: Unlike a tariff, no revenues are collected from a quota.
- On total welfare: Total welfare decreases due to fewer cars being sold and more being produced by relatively inefficient domestic producers. The black triangle is the area of welfare loss

### Protectionist Subsidies

A third form of protectionism is government subsidies to domestic producers. Assume the US government provided a \$2,000 subsidy to American auto manufacturers for every car produced.

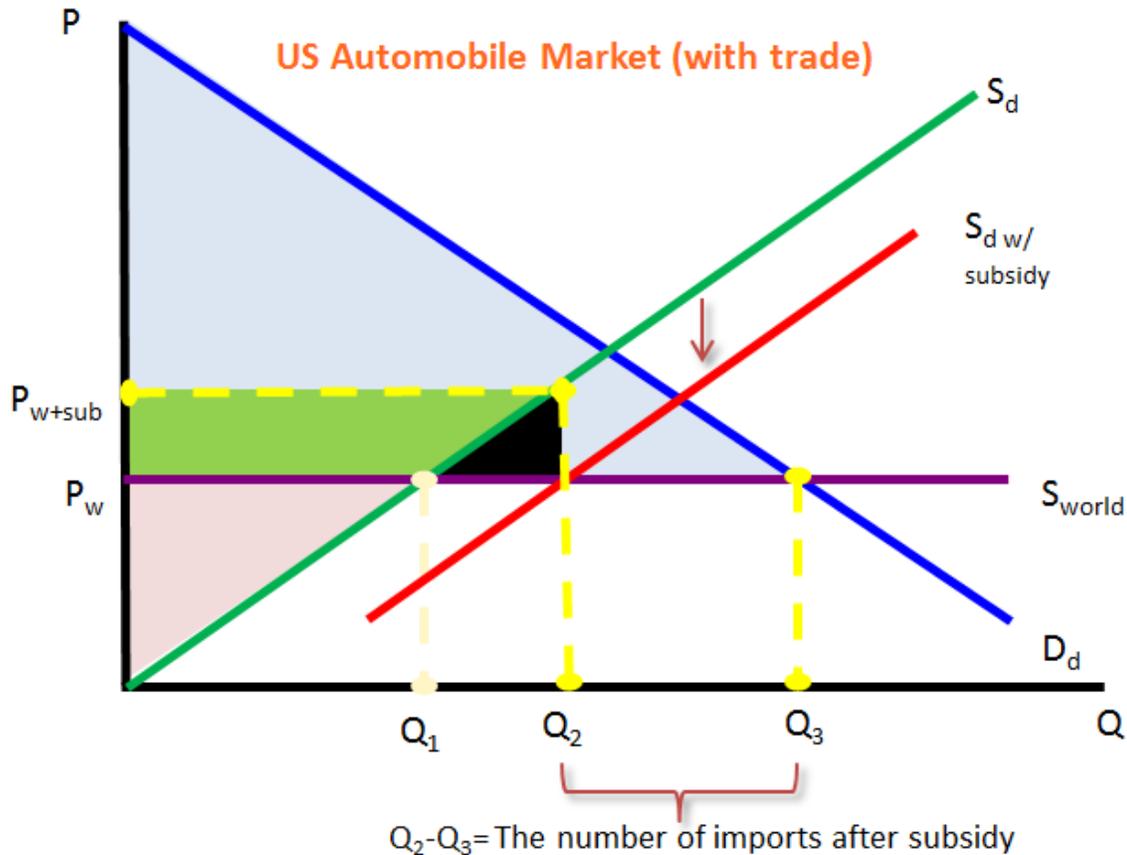


The effects of a protectionist subsidy:

- The domestic supply increases from  $S_d$  to  $S_{d w/ subsidy}$ , a 'downward' shift of \$2,000
- The world price is still below the domestic price, so consumers will still pay the price  $P_w$  for cars. Producers receive  $P_{w+sub}$  (the world price plus the subsidy)
- Because of the increased supply, domestic output will increase from  $Q_1$  to  $Q_2$ .
- Imports will decrease from  $Q_1 - Q_3$  to  $Q_2 - Q_3$ .

*The subsidy leads to more cars being produced domestically, and fewer cars being imported, making it a form of protectionism*

From the analysis above, it appears at first glance that a protectionist subsidy will help domestic producers without harming domestic consumers (who still pay the world price). However, this conclusion is incomplete because it does not include *all stakeholders*.



Effect of a subsidy on all stakeholders

- On car consumers: No effect. The price is still  $P_w$ , they still buy  $Q_3$  cars, and consumer surplus equals the area below  $D_d$  and above  $P_w$ .
- On domestic producers: They receive a higher price ( $P_{w+sub}$ ) and produce a greater quantity ( $Q_2$ ) so producer surplus increases to area below  $P_{w+sub}$  and above  $S_d$ .
- On foreign producers: They are clearly worse off; since fewer cars are imported, their revenues fall.
- On taxpayers and the government: The cost of the subsidy to taxpayers (the amount of the subsidy multiplied by the quantity of cars produced) is a rectangle on the graph between  $P_w$  and  $P_{w+sub}$  and  $Q_2$ .
- On total welfare: The total cost of the subsidy is greater than the total increase in producer surplus. The black area is the loss of total welfare created by the subsidy.

### Calculating the Effects of Protectionist Policies

Up to this point we have analyzed the general effects on consumers, producers, the government and taxpayers and total welfare of protectionist policies. But if we are given linear demand and supply equations, we can actually *calculate* the effects of these policies.

Assume domestic demand and supply of cars in the US are expressed as:

$$Q_d = 30,000 - 0.5P \text{ and } Q_s = -5,000 + 0.75P$$

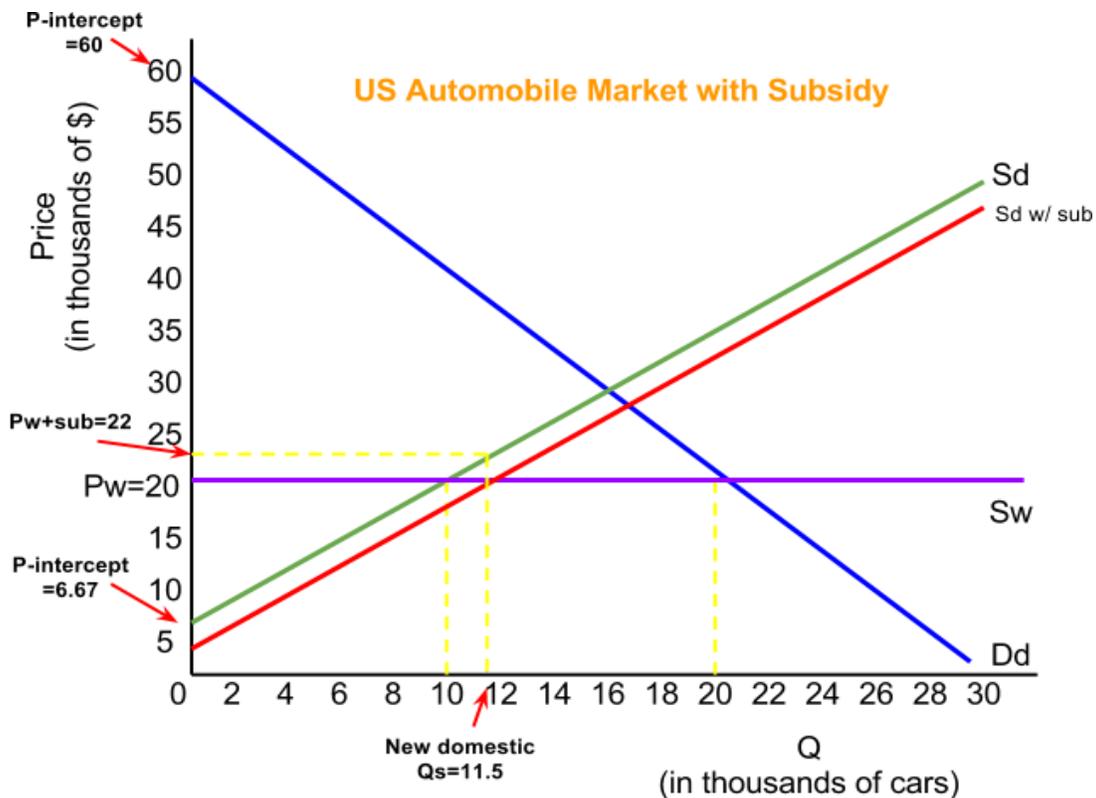
- Assume the world price of cars is \$20,000
  - Domestic  $Q_d = 30,000 - 0.5(20,000) = 20,000$  cars
  - Domestic  $Q_s = -5,000 + 0.75(20,000) = 10,000$  cars
  - Quantity of imports =  $20,000 - 10,000 = 10,000$  cars

Now the US government grants a \$2,000 per car subsidy to US producers. The new supply equation is:

$$Q_s = -5,000 + 0.75(P + 2,000), \text{ or } \dots Q_s = -3,500 + 0.75P$$

- At the world price of \$20,000, American carmakers will now make:
  - $Q_s = -3,500 + 0.75(20,000) = -3,500 + 15,000 = 11,500$  cars
  - The quantity demanded will still be 20,000 cars since  $P_w$  did not change
  - The new quantity of Imports =  $20,000 - 11,500 = 8,500$  cars

The effects of the protectionist subsidy can be graphed and calculated using the numbers on the graph. (The figures below are all in thousands):



Effects of the subsidy on all stakeholders

- Consumer surplus before and after subsidy:  $\frac{(60-20) \times 20}{2} = 400$
- Producer surplus:
  - Before:  $\frac{(20-6.67) \times 10}{2} = 66.65$

- After:  $\frac{(22-6.67) \times 11.5}{2} = 88.15$
- Increase:  $88.15 - 66.65 = 21.5$
- Foreign producer revenues:
  - Before:  $10 \times 20 = 200$
  - After:  $8.5 \times 20 = 170$
- Cost to taxpayers of subsidy:  $11.5 \times 2 = 23$
- Loss of welfare (the difference between the cost of the subsidy and the increase in producer surplus):  $23 - 21.5 = 1.5$

*The cost of the subsidy exceeds the benefit, so it has led to a loss of total welfare of \$1,500*

### Other forms of Protectionism

Besides tariffs, quotas and subsidies, there are other forms of protectionist measures a government can take to shelter domestic firms from foreign competition. These include:

Voluntary Export Restraints (VERs): an agreement between two nations to limit trade in particular commodities so that the producers in one nation can remain in business providing commodities to the domestic market, rather than be forced to compete with more efficient foreign producers.

Administrative obstacles: "the red tape" that governments may erect when free trade agreements limit the imposition of tariffs and quotas.

- May include overly burdensome quality controls, safety regulations, living-wage and other workplace standards to be met by foreign producers.
- If foreign producers cannot meet these standards, their products are forbidden from being sold domestically. May include environmental, health and safety standards.

**DUMPING:** *The act of a manufacturer in one country exporting a product to another country at a price which is either below the price it charges in its home market or is below its costs of production*

### Arguments for and Against Protectionism

Protectionism always leads to a *loss of total welfare (or deadweight loss)* for in the protected industries. So why do countries still practice it? Here are some of the arguments for and against protectionism.

<b>Arguments for:</b>	<ul style="list-style-type: none"> <li>● Protection of domestic employment: More jobs in the export sector</li> <li>● Protection of infant industries: Allows young industries to grow under government protection until they can compete with foreign producers.</li> <li>● To prevent dumping: When foreign producers sell their output at below costs of production in domestic market</li> <li>● To enforce product standards: Protect consumers from low quality, unsafe imports</li> <li>● To raise revenue: Tariffs raise revenue for government, which could</li> </ul>
-----------------------	---

	<p>go towards providing public goods</p> <ul style="list-style-type: none"> <li>● To protect strategic industries: Defense, energy food; key industries may be best left to domestic producers</li> </ul>
<b>Arguments against:</b>	<ul style="list-style-type: none"> <li>● Leads to a misallocation of resources: Too much of the protected good will be produced domestically, not enough by relatively efficient foreign producers</li> <li>● Could lead to a trade war: If trading partners retaliate with their own protections, even worse resource allocation will result.</li> <li>● Higher priced imports: In the case of quotas and tariffs consumers suffer from higher prices and some producers will have to pay more for imported raw materials.</li> <li>● Reduced competitiveness: Industries sheltered by protectionism will become less and less competitive over time, requiring even more protection and a greater loss of welfare.</li> </ul>

Based on all our analysis, some broad conclusions can be made about most forms of protectionism. Ultimately, protectionism creates some winners and losers, but the cost to the losers exceeds the benefits to the winners. Protectionism...

- **Benefits:** Domestic producers may benefit b/c they receive a higher price for their output. The federal government may gain through revenue from tariffs.
- **Harms:** Consumers are harmed because they pay higher prices for goods produced by the protected industry. Foreign producers are hurt because they are not able to sell their as much of their output as they would be able to otherwise, so their profits are reduced.

*Most Economists oppose protectionism: In most cases, the costs of protectionism exceed the benefits. Consumers are hurt by the higher prices they pay, while producers often benefit less. Also, industry employs large amounts of economic resources in “rent-seeking” as they lobby congress to erect barriers to trade. In most cases, protectionism results in deadweight loss for society, meaning economic inefficiency.*