International Trade

Krugman/Wells Economics
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...
The Growing Importance of International Trade

(a) U.S. Imports and Exports 1960-2006

(b) Imports and Exports for Different Countries, 2005
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.

• Autarky is a situation in which a country cannot trade with other countries.

• The following figure shows hypothetical production possibility frontiers for the US and Vietnam and we assume that: there are only two goods and the production possibility frontiers are straight lines.
Comparative Advantage and the Production Possibility Frontier

(a) U.S. Production Possibility Frontier

Quantity of computers

0 500 1,000 2,000

Quantity of shrimp (tons)

Slope = -2

U.S. production and consumption in autarky

(b) Vietnamese Production Possibility Frontier

Quantity of computers

0 1,000 2,000

Quantity of shrimp (tons)

Slope = -0.5

Vietnamese production and consumption in autarky
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 figure illustrates 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

<table>
<thead>
<tr>
<th></th>
<th>Production</th>
<th>Consumption</th>
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<tbody>
<tr>
<td><strong>(a) United States</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity of shrimp (tons)</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Quantity of computers</td>
<td>1,000</td>
<td>1,000</td>
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<tr>
<td><strong>(b) Vietnam</strong></td>
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<td></td>
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<tr>
<td>Quantity of shrimp (tons)</td>
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<td>Quantity of computers</td>
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<td>500</td>
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<tr>
<td><strong>(c) World (United States and Vietnam)</strong></td>
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<tr>
<td>Quantity of shrimp (tons)</td>
<td>1,500</td>
<td>1,500</td>
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<tr>
<td>Quantity of computers</td>
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### Production and Consumption After Specialization and Trade

<table>
<thead>
<tr>
<th></th>
<th>Production</th>
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<tbody>
<tr>
<td>(a) United States</td>
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<tr>
<td>Quantity of shrimp (tons)</td>
<td>0</td>
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<tr>
<td>Quantity of computers</td>
<td>2,000</td>
<td>1,250</td>
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<tr>
<td>(b) Vietnam</td>
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<tr>
<td>Quantity of shrimp (tons)</td>
<td>2,000</td>
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<td>2,000</td>
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</tbody>
</table>
The Gains from International Trade

(a) U.S. Production and Consumption

- U.S. production and consumption in autarky
- U.S. production and consumption with trade

(b) Vietnamese Production and Consumption

- Vietnamese production and consumption in autarky
- Vietnamese production and consumption with trade
Sources of Comparative Advantage

The main sources of comparative advantage are:

- **International differences in climate**
  - e.g. winter deliveries of Chilean grapes to the US

- **Differences in technology**

- **Factor endowments**
  - The relationship between comparative advantage and factor availability is found in an influential model of international trade, the Heckscher–Ohlin model.
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.

• However, economists have also pointed out another reason for international trade: the role of increasing returns to scale.

• 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.
Increasing Returns to Scale and International Trade

• But 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.

• A common example is the North American auto industry where both the U.S and Canada produce automobiles and components but a particular model or component is produced in only one of the two countries and exported to the other.

• 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 to 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 The 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.
- According to his paradox, U.S exports aren’t intensive in physical capital-machines and buildings. Instead, they are skill intensive- intensive in human capital.
- U.S. exporting industries use a substantially higher ratio of highly educated workers compared to 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.
The Effects of Imports

- **domestic demand curve**: shows how the quantity of a good demanded by domestic consumers depends on the price of that good.
- **domestic supply curve**: shows how the quantity of a good supplied by domestic producers depends on the price of that good.
- **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 to the world price.

• There are overall gains from trade because consumer gains exceed the producer losses.
Consumer and Producer Surplus in Autarky

Price of shrimp

Domestic supply

Domestic demand

Consumer surplus is represented by the blue-shaded area.

Producer surplus is represented by the red-shaded area.
The Domestic Market with Imports

- Autarky price: $P_A$
- World price: $P_W$
- Domestic supply curve
- Domestic demand curve
- Quantity of Shrimp
- Domestic quantity supplied with trade
- Imports
- Domestic quantity demanded with trade
The Effects of Imports on Surplus

<table>
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<tr>
<th>Changes in surplus</th>
<th>Gain</th>
<th>Loss</th>
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<tr>
<td>Consumer surplus</td>
<td>$X+Z$</td>
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<tr>
<td>Producer surplus</td>
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<td>$-X$</td>
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<tr>
<td>Change in total surplus</td>
<td></td>
<td>$+Z$</td>
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Price of shrimp

- $P_A$: Domestic supply price
- $P_W$: Domestic demand price

Quantity of Shrimp

- $Q_S$: Domestic supply quantity
- $Q_A$: Imports
- $Q_D$: Domestic demand quantity

Diagram showing the effects of imports on surplus with changes in consumer surplus, producer surplus, and total surplus.
The Effects of Exports

• If the world price is higher than the autarky price, trade leads to exports and arise in the domestic price compared to 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

Price of computer

$P_W$

$P_A$

World price

Domestic supply

Domestic demand

Autarky price

Domestic quantity demanded with trade

Exports

Domestic quantity supplied with trade

Quantity of computers

$Q_D$

$Q_A$

$Q_S$
The Effects of Exports on Surplus

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<td>X + Z</td>
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<tr>
<td>Change in total surplus</td>
<td>+ Z</td>
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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 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 which enabled faster movement of goods across the ocean and by rail from the interior to ports.
- The result was that land-abundant countries such as Canada, U.S, Argentina etc began shipping large quantities of agricultural goods to the densely populated, land-scarce countries of Europe.
- 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 U.S, the reverse happened.
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

Price of shrimp

Domestic supply

Domestic demand

Tariff

$P_T$

$P_W$

Price with tariff

World price

Imports before tariff

Imports after tariff

$Q_S$  $Q_{ST}$  $Q_{DT}$  $Q_D$
A Tariff Reduces Total Surplus

Changes in surplus

<table>
<thead>
<tr>
<th></th>
<th>Gain</th>
<th>Loss</th>
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<tbody>
<tr>
<td>Consumer surplus</td>
<td></td>
<td>$-(A+B+C+D)$</td>
</tr>
<tr>
<td>Producer surplus</td>
<td>$A$</td>
<td></td>
</tr>
<tr>
<td>Government revenue</td>
<td>$C$</td>
<td></td>
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<tr>
<td>Change in total surplus</td>
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<td>$-(B+D)$</td>
</tr>
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</table>

Price of shrimp

Domestic supply

Tariff

Imports after tariff

Imports before tariff

Domestic demand

Imports before tariff

Imports after tariff

Quantity of Shrimp
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...
Trade Protection in the United States

- The United States today generally follows a policy of free trade, at least in comparison with other countries and also in comparison with its own past. Most manufactured goods are subject either to no or a low tariff.

- There are two areas where imports are limited:
  - Agriculture: A certain amount of imports are subject to low a 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 which had otherwise been removed at the start of 2005.

- In most cases, quota licenses are assigned to foreign governments. Quota rents greatly go overseas increasing the cost to the U.S of foreign imports.
Trade Protection in the United States Contd.

- There isn’t much of U.S trade protection.
- According to official U.S estimates, the total economic cost of all quantifiable restrictions on imports is about $3.7 billion a year, or around one-fortieth of a percent on national income. Of this, about $1.9 billion comes from restrictions on clothing imports, $0.8 billion from restrictions on sugar, and $0.6 billion from restrictions on dairy. Everything else is small change.
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,* and
  – *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.
Chinese Pants Explosion

• From 1973 onwards, most world trade in clothing was regulated by a complex system of export and import quotas known as the Multifiber Agreement.
• In 1994 and 2004, the WTO put an end to these restrictions on clothing trade.
• As a result, clothing exports from China to the U.S in January 2005 were more than twice their level a year earlier. Chinese exports of cotton trousers were up more than 1,000%.
  – This provided evidence that quotas had previously been restricting trade.
• Within a few months, both the United States and European Union imposed new restrictions on China’s exports to counteract the flood.
• Importing countries were granted the right to impose temporary limits on Chinese clothing exports in the event of an import surge also known as a “safeguard mechanism”.
“Declining Tariffs”

• The United States began basing its trade policy on international agreements in the 1930s, and global trade negotiations began soon after World War II. The success of these agreements in reducing trade protection is illustrated by the following figure.

• U.S. tariff rates were very high in the early 1930s but have steadily fallen since then. This move toward relatively free trade has been achieved in large part through international trade agreements.
Tariffs reached a peak in the early 1930s. From then on, tariff rates have steadily ratcheted down, with U.S. moves matched in other advanced countries.

At this point world trade in manufactured goods is subject to low tariffs and relatively few import quotas, with clothing the main exception.

Agricultural products are subject to many more restrictions, reflecting the political power of farmers in advanced countries.
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.
The Doha Deadlock

- Since the end of World War II, there have been nine rounds of global trade negotiations. A trade round is a multiyear process in which negotiators from many countries cut complex deals on trade policy.
- The Doha Round started off in Doha, Qatar in 2001 and then moved to Geneva, Switzerland but by late 2007, talks appeared deadlocked. Poorer countries, which still have substantial trade protection in manufactured goods, refused to reduce that protection without an agreement by rich countries—Europeans and Americans—to reduce the substantial subsidies they give farmers. Because the farm lobbies in rich countries have a lot of political power, however, these countries weren’t willing to make sufficient concessions.
- Even if the Doha Round fails, previous trade agreements will remain in force.
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.
3. The **Heckscher–Ohlin** model shows how differences in factor endowments determine comparative advantage.
   - Goods differ in **factor intensity**
   - 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.
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.
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. Although several popular arguments have been made in favor of trade protection, in practice the main reason for protection is probably political: import-competing industries are well organized and well informed about how they gain from trade protection, while consumers are unaware of the costs they pay.
10. Many concerns have been raised about the effects of globalization:

- Income inequality due to the surge in imports from relatively poor countries
- *Offshore outsourcing*