We have many models where trade is “good.”
Then why are so many people opposed to it?
Two parts:
  - What policy instruments are there to limit trade (KO ch. 8)
  - What determines the pattern of protection (KO ch. 9)
1. Tariffs (KO 8)
2. Other Trade Instruments (KO 8)
3. Efficiency Arguments for Protection (KO 9)
4. Political Economy of Protection (KO 9)
5. International Trade Negotiations (KO 9)
Introduction

- Tariffs
  - large country
  - small country
- Quotas
  - large country
  - small country
- Export subsidies
- Voluntary export restraints (VER), local content requirements, etc
Tariffs: Definitions

- **Specific tariff**: tax levied as a fixed charge for each unit imported
- **Ad-valorem tariff**: tax levied as a fraction of the value being imported
- **Compound duty**: mixture of specific and ad-valorem tariff
- Much like taxes, tariffs introduce a wedge between price paid by consumers and price received by producers.
Tariffs and Quotas: Tariffs

- Average rate for Canada in 2000: 7.1%
- Average European tariff in 2002:
  - Manufacturing: 6.4%
  - Agriculture: 16.4%
- Average rate for Mexico in 2002: 16.5%

- Who gains? Who loses?
U.S. customs tax revenue as a percentage of merchandise imports

Source US Department of Commerce and Bureau of Census
Consumer and Producer Surplus: Definitions

- **Consumer surplus**: how much a consumer gains from a purchase as measured by the difference between the willingness to pay of this consumer and the price actually paid.

- **Producer surplus**: how much a producer gains from a sale as measured by the difference between the price being received and the lowest price at which the producer would be willing to provide the good.
Supply and demand in a competitive industry:
Consumer surplus: The area between the demand curve and the price
Producer surplus: The area between the supply curve and the price
Total surplus is the sum of producer and consumer surplus. Note that:

- Surpluses can be added.
- In the History of Thought on Social Welfare this is the Utilitarian View of Social Welfare - it ignores distributional issues.
  - Is this reasonable?
  - We will see later that the main difference in practice is that producers are much better organized to defend their interests than consumers.
Analysis of a Tariff in a Large Country

Consider two countries, Home and Foreign, and a good that (i) is produced competitively and (ii) traded costlessly. Assume that Home imports the good from Foreign.

Two new concepts needed:
- **Import demand** (= Demand - Supply)
- **Export supply** (= Supply - Demand)
- Note: With two goods, Home will export the other good under balanced trade.

*Import demand* measures for each price, the excess of what Home consumers demand over what Home producers supply.
Deriving the Import Demand Curve
Properties of the **import demand curve**:  
- measures for each price, the excess of what consumers demand over what producers supply.  
- It intersects the vertical axis at the closed economy price of the importing country.  
- It is downward sloping.  
- Its slope depends on slopes of demand and supply.  
  - For example, if supply and demand have slope $1/2$ and $-2/3$, then import demand has slope $1/3.5$.  
  - If demand and supply have equal linear slope, then import demand has half that slope.  
- Foreign’s **export supply curve** is the excess of what foreign producers supply over what foreign consumers demand.
Deriving the Export Supply Curve

\[ \text{Foreign} \]

\[ \begin{align*}
    p & \quad S \\
    Q_{\text{closed}} & \quad Q
\end{align*} \]

\[ \begin{align*}
    p_{\text{closed}} & \quad \text{EX}
\end{align*} \]
In principle, each country has both an export supply and import demand curve for each good.

But each country is either exporter or importer of a good (we are focusing on a world of perfect competition in a homogenous product).
Consider the 2 country-case where Home imports good X
  
  ▶ then we need to consider domestic import demand and foreign export supply.

▶ Under free trade, prices are equalized across countries at, say, \( P^W \).
When Home imposes a tariff:
  
  ▶ the price in Home rises to \( P^H \) and - if Home is large - it falls to \( P^F \) in Foreign.

▶ Home producers supply more and consumers demand less.
▶ Foreign producers supply less and consumers demand more.
Effect of a tariff (from Home’s point of view)
If Home is large, the increase in $p^H$ is less than the tariff, because part of the tariff is reflected in a decline in $p^F$.

The effect depends on the elasticities of demand and supply

- Remember your Introductory Economics Course (or any course on taxation)?
- Two extremes: Perfectly elastic means horizontal, perfectly inelastic means vertical.
- The less elastic demand is relative to supply, the larger will be the increase in $p^H$ and the smaller the decrease in $p^F$. 
How can we solve for prices under free trade?

1. Calculate autarky free trade prices for each country. The country with the lower autarky price will be the exporter.
2. Set excess/export supply for the exporter \( S^*(p^W) - D^*(p^W) \) equal to excess/import demand for the importer \( D(p^W) - S(p^W) \). Solve for \( p^W \). This is the world free trade equilibrium price.
3. Substitute equilibrium world prices back into the export supply and import demand functions to solve for equilibrium quantities of trade.
How can we solve for prices under trade with tariffs?

1. Define $p^F$ as the world price that foreign suppliers receive.
2. The home price will be $p^F + \tau$ where $\tau$ is the specific tariff.
3. Set excess/export supply for the exporter $(S^*(p^F) - D^*(p^F))$ equal to excess/import demand for the importer $(D(p^F + \tau) - S(p^F + \tau))$.

Solve for $p^F$ where $p^F$ will be the world price that foreign exporters receive and $p^F + \tau$ will be the home price.
This method gives us the algebraic solution to prices and trade-volumes with and without tariffs.

What are the welfare effects of such a tariff?

What follows is the graphical analysis of this question.
Free Trade (importing country’s point of view)
Ambiguous net effect of Tariffs in a large country.
Interpretation
Following a tariff:

- Producer surplus increases (a)
- Consumers surplus decreases (a+b+c+d)
- Government surplus arises (c+e)
- Total change in surplus (e-b-d)
- Relate this back to elasticities:
  - The more elastic (flatter) foreign export supply is relative to domestic import demand, the larger \((p^H - p^W)\) is to \((p^W - p^F)\)
  - and the larger are \((b+d)\) relative to \(e\)
  - with more elastic foreign export supply, Home carries a larger portion of the burden of its own tariff.
A tariff in a large country:

- has its incidence born *jointly* by both the home and foreign countries,
- raises the price of the good in the importing country,
  - Consumers lose in that country
  - Producers gain in that country
- creates tariff revenue in the importing country,
- lowers the price of the good in the exporting country.
  - Consumers gain in that country
  - Producers lose in that country
Overall in the importing country:

- gain in production,
- loss in consumption,
- term of trade gain,
- net effect is ambiguous.

- Depends on the slope of the export supply curve for Foreign. The tariff may benefit the importing country if the terms of trade effect is strong enough (steep export supply curve).
Overall in the exporting country:

▶ producers lose,
▶ consumers gain,
▶ deadweight loss.
▶ welfare falls for the foreign country.
Analysis of a tariff in a small open economy
Equilibrium with a tariff
Welfare gain/loss with a tariff
- A small country cannot influence the price because foreign export supply is perfectly elastic relative to its demand.
- Because the world price is now fixed, home consumers absorb the entire incidence (burden) of the tariff.
- Deadweight loss no longer offset by terms of trade appreciation.
  - Net Welfare Loss.
- Optimal tariff for a small country is 0%.
Optimal Tariffs Under Perfect Competition for a Large Country

- With equations for demand and supply for Home and Foreign countries, we can calculate the optimal tariff.
- We can derive the deadweight loss areas and the terms of trade gain in terms of model parameters.
With equations for demand and supply for Home and Foreign countries, we can calculate the optimal tariff.

The net gain from the tariff will look like $tU - t^2V$. Consequently, it will be quadratic, and the optimal tariff is where the slope and derivative are equal to zero.

Note: This is solved out explicitly in the appendix to Ch. 9 and appears on the tariffs practice problems.
An *export subsidy* is a payment (ad-valorem or specific) by the government to a firm that sells a good abroad.

Net welfare effect of an export subsidy in a large country.
The home price increases, consumers lose $a + b$, producers gain $a + b + c$.

Net effect on domestic consumers and producers is positive and equal to $c$.

But this is financed by the government which pays $b + e + c + f + d + g$.

To finance this, government needs to raise taxes by that amount so that the next effect (ignoring further distortions induced by taxation) is negative and equal to $b + e + f + g + d$.

Of this $e + f + g$ go directly to subsidizing consumption in the foreign country (where the price falls)!

Overall effect negative even in a large country.

Worse in the small country version.
It is easy to show that it is optimal for a BOE to impose a tax on its exporters. The rationale is the exact opposite as for an import tariff:

- A BOE sets an import tariff because it has monopsony power.
- A BOE sets an export tax because it has monopoly power and therefore wants to restrict supply to raise the price.

But we never see export taxes, which indicates that protection is likely not determined by this simple welfare maximizing rationale we explored.
Quotas

- A quota is a direct restriction on the quantity of a good that is imported.
- Licenses are used to implement quotas.
  - Only some are allowed to import.
  - Can be given away or sold.
- Profits (if any) received by the holders of import licenses are known as quota rents.
Welfare effects of a quota in a small country
► Analysis very similar to that of a tariff.
► But choice of quantities rather than prices.
► Leading to a quota rent instead of a tariff revenue.
► A quota is worse than a tariff if quota rent is “given away.”
  ► The welfare loss is $b + c + d$
► A quota is equivalent to a tariff - at least in principle - if quotas are sold to foreign governments/firms.
  ► The welfare loss is $b + d$
A *voluntary export restraint (VER)* is an export quota administered by the exporting country.

- Usually imposed at the request of the importer and are agreed to by the exporter to avoid a tariff or a quota.

A *VER* is a quota with quota rents going to the exporting country.

- Which means it is definitely worse than a quota or a tariff of the “same” magnitude.
Most models predict gains from freer trade:

- Specialization in comparative advantage industries
  - in Heckscher-Ohlin and Ricardian models
- Better exploitation of external economies of scale (agglomeration)
- Consumers gain from more choice/varieties and lower prices
- Producers gain from cheaper inputs
- Productivity gains from increased market access and increased competition
- Any other (possibly in principal better) policy can be manipulated by special interests.
Estimated Benefits of a Move to Worldwide Free Trade

<table>
<thead>
<tr>
<th>Country</th>
<th>Gain (% of GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>0.57</td>
</tr>
<tr>
<td>European Union</td>
<td>0.61</td>
</tr>
<tr>
<td>Japan</td>
<td>0.85</td>
</tr>
<tr>
<td>Developing Countries</td>
<td>1.4</td>
</tr>
<tr>
<td>World</td>
<td>0.93</td>
</tr>
</tbody>
</table>

Source: Cline (2004) as in Krugman and Obstfeld.

Larger or smaller numbers can be derived with more elaborate models but the general magnitudes and patterns are robust.
Aggregate Welfare Maximizing Protection

- **Optimum tariff**
  - Tariffs and quotas can lead to a positive terms of trade gain if a country is large enough
  - But most countries are small

- **Strategic trade policy**
  - With a foreign monopoly, the home government can use trade policy to capture some of the monopoly rents.
  - But other country could retaliate

- **Infant industry Argument**
  - A country may have been locked out of a comparative advantage industry by historic circumstance
  - But in practice, protected industries rarely look like comparative advantage industries
What Drives Protection?

- General agreement that optimal tariffs play a small role in determining tariffs even in large countries.
- We never see export taxes even though they could be optimal in a big country (acting like a monopolist).
- Tariffs are imposed despite retaliation from other countries.
- Infant Industry Arguments seem to be often used as an excuse for rent seeking.
Why does free trade meet so much resistance when most economists agree that there is a good case for it?

- Trade issues are very badly understood by non-economists.
- Most voters don’t vote on trade policy
- Evidence suggests that trade policies is determined by lobbying of special interest groups (SIG)
- Two key questions:
  1. Which SIG like trade and which don’t ? (Stolper Samuelson)
  2. Which SIG can organize and lobby most effectively? (Logic of Collective Action)
Evidence suggests that the Stolper-Samuelson Theorem predicts very well whether an SIG is protectionist or in favor if free trade.

Labor unions are protectionist in (unskilled) labor-scarce countries and for free trade in labor-abundant countries.

Rogowski (1987) provides an account of how the first globalization in the late 19th century led to different political alliances along factor-lines in the US, Britain and Germany.
Advanced Economies are capital-abundant
- 1870’s: UK in top-right, Germany in bottom-right

**Figure 2. Predicted Effects of Expanding Exposure to Trade**

<table>
<thead>
<tr>
<th>Land-Labor Ratio</th>
<th>Advanced Economy</th>
<th>Backward Economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Class cleavage:</td>
<td>Urban-rural cleavage:</td>
</tr>
<tr>
<td></td>
<td>Land and capital free-trading, assertive</td>
<td>Capital and labor free-trading, assertive</td>
</tr>
<tr>
<td></td>
<td>Labor defensive, protectionist</td>
<td>Land defensive, protectionist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Radicalism)</td>
</tr>
<tr>
<td>Low</td>
<td>Urban-rural cleavage:</td>
<td>Class cleavage:</td>
</tr>
<tr>
<td></td>
<td>Land free-trading, assertive</td>
<td>Labor free-trading, assertive</td>
</tr>
<tr>
<td></td>
<td>Labor and capital defensive, protectionist</td>
<td>Land and capital defensive, protectionist</td>
</tr>
<tr>
<td></td>
<td>(U.S. Populism)</td>
<td>(Socialism)</td>
</tr>
</tbody>
</table>
Collective Action Problem

- Consumers as a group have an incentive to advocate free trade.
- Why do small groups who are hurt by a policy lobby so hard against the policy and large groups who benefit from it are so unlikely to lobby for it?
- Each individual consumer possesses little incentive to invest in free trade because the individual benefit is small.
- Policies that impose small and diffuse costs are therefore unlikely to face strong opposition.
On the contrary, a group that may suffer a large loss or is more homogenous is more easily organized.

A small group will face lower co-ordination costs ("car drivers for free trade" is more difficult to set up than "car producers for protection")

This is the standard problem of the "tragedy of the commons" and the inefficient provision of public goods because of free-riding.

Agriculture and textile manufacturers are good examples.
  > Read article on "America’s Sugar Daddies"
Even if tariffs are set optimally, we have so far ignored the possibility that other countries can retaliate:

Countries interact when setting trade policy and we might see:
- Cooperative Outcomes (negotiation)
- Non-Cooperative Outcomes ("trade wars")

This is the classic "prisoner's dilemma" from basic game theory.
The “prisoner’s dilemma” is a static model and in repeated interaction, there is always an equilibrium where cooperation can be sustained through reputation-building and punishment (the “folk theorems” of game theory).

This suggests that “institutions” such as the WTO are designed to facilitate cooperative interaction of countries by preventing deviations from cooperative behavior.
A Brief History of Trade Organizations

- The “First Globalization” 1860-1914
  - Great Britain unilaterally initiated substantial liberalization with the 1846 “corn-laws” - the rest of the world followed
  - Britain was the world’s industrial leader and British industry needed cheap raw materials.
- World War I ended the first globalization.
- Inter-War Period was protectionist everywhere:
  - Great Depression and Smoot-Hawley tariff in 1930.
  - Substantial retaliatory tariffs deepened the depression.
Since WW II, the world has clawed its way back toward free trade.

1947: General Agreement on Tariffs and Taxes introduced (GATT).

- An interim agreement while the International Trade Organization (ITO) was being negotiated.
- ITO was negotiated in the Bretton-Woods (1944) agreement that also founded the World Bank and the International Monetary Fund (IMF).
- But ITO was never established and GATT lasted until 1995, when it was replace by the WTO.
WTO Institutional Details

- Allows for dispute resolution and establishes “rules.”
- Allows for tariff cuts to be “binding”
- 2 key principles:
  - **Principle of reciprocity**: unilateral tariff-changes have to leave trade balances unchanged
  - **Principle of non-discrimination** (Most favored nation clause): member countries cannot be treated differently
- Preferential trade agreements are generally illegal between sets of two countries...
- ...but free trade areas (FTA) and customs unions are allowed
Free Trade Areas

- Free trade areas: countries largely remove all tariffs on trade within borders.
  - e.g. North American Free Trade Agreement (NAFTA).
- Customs union: like a free trade area but in addition, all external tariffs are harmonized/equalized.
  - e.g. European Union
- Both violate the most favored nation clause in the WTO and evidence does suggest that FTA’s might undermine the role of the WTO.
Does Membership in WTO Facilitate Trade Among Members?

- Does WTO actually increase trade?
  - Difficult to say.
  - Rose (2004) uses regression analysis and finds that it does not!
  - Key question: how do we define membership?
    - Many non-members act like members.
    - Many members act like non-members.
  - Read the 2 Economist articles on this that have been posted.