

LECTURE 14

SUPPLY AND DEMAND MODEL OF INTERNATIONAL TRADE AND TRADE POLICY

March 10, 2020

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 - B. How much does a country want to specialize?
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- III. SUPPLY AND DEMAND ANALYSIS OF INTERNATIONAL TRADE
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- IV. PRICE AND EMPLOYMENT EFFECTS OF TRADE
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 - C. Jobs for particular workers
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LECTURE 14

Supply and Demand Model of International Trade and Trade Policy



March 10, 2020

Announcements

- Course capture of lecture is available on CalCentral (under “My Academics”) or on the Econ 2 bCourses page (under “Course Captures”).
- Section will meet via Zoom. Your GSI will email you with instructions.
- Problem Set 3 is to be submitted electronically through Gradescope. (Details on how to do it were sent in an email yesterday.)
- Office hours will be via Zoom.

Announcements (Continued)

- Please keep up!
- You will need to be working just as hard as before (if not harder).
- We will likely be changing problem set frequency to nudge you in that direction.

I. OVERVIEW

Topics

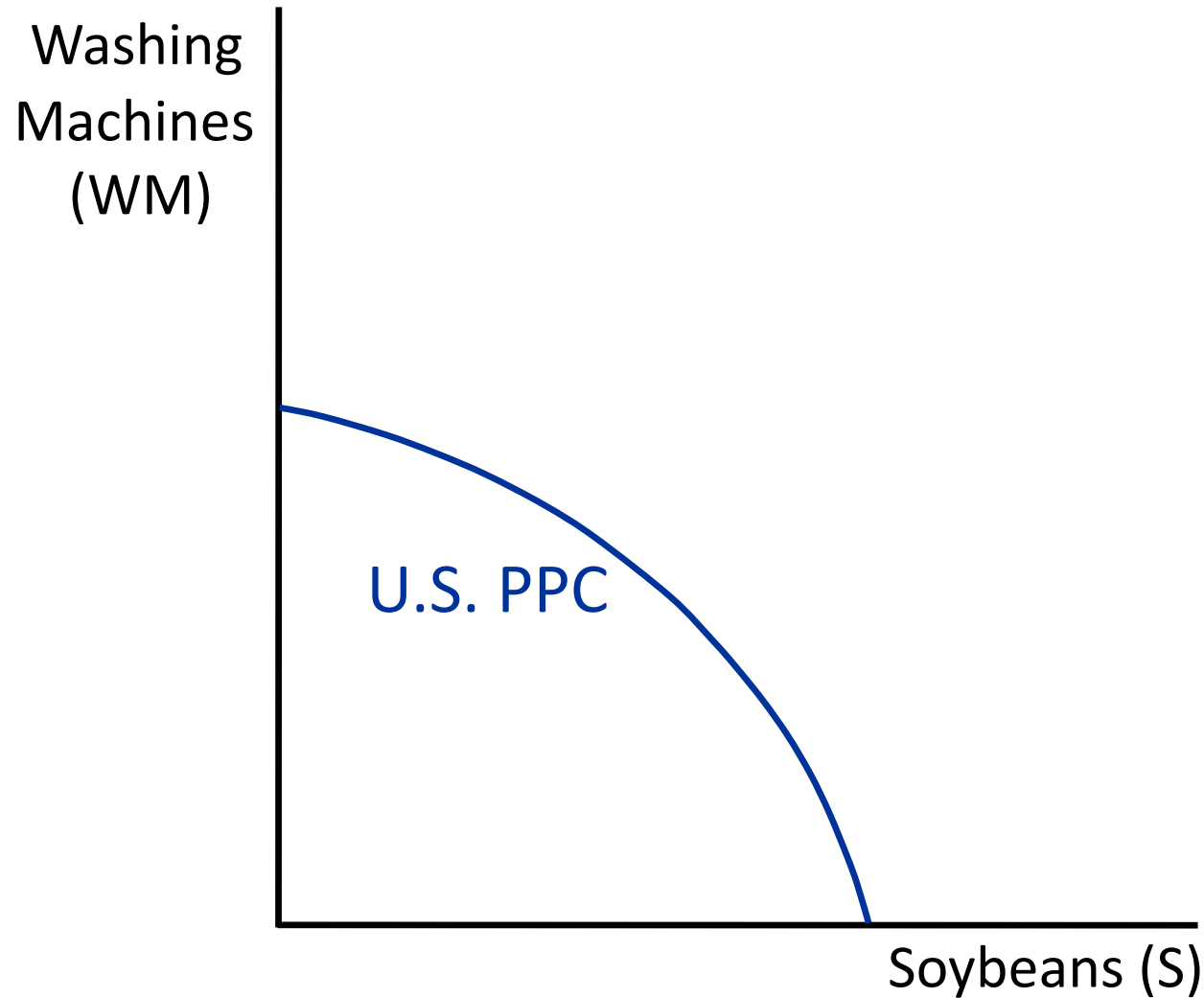
- Supply and demand framework with international trade.
- Price and employment effects of trade.
- How does a country go about limiting trade?
- Are there good reasons for limiting trade?

II. REVIEW OF THE GAINS FROM SPECIALIZATION

Example

- Suppose the U.S. makes two goods (soybeans and washing machines).
- Assume that the PPC for the U.S. is curved (there is rising opportunity cost).

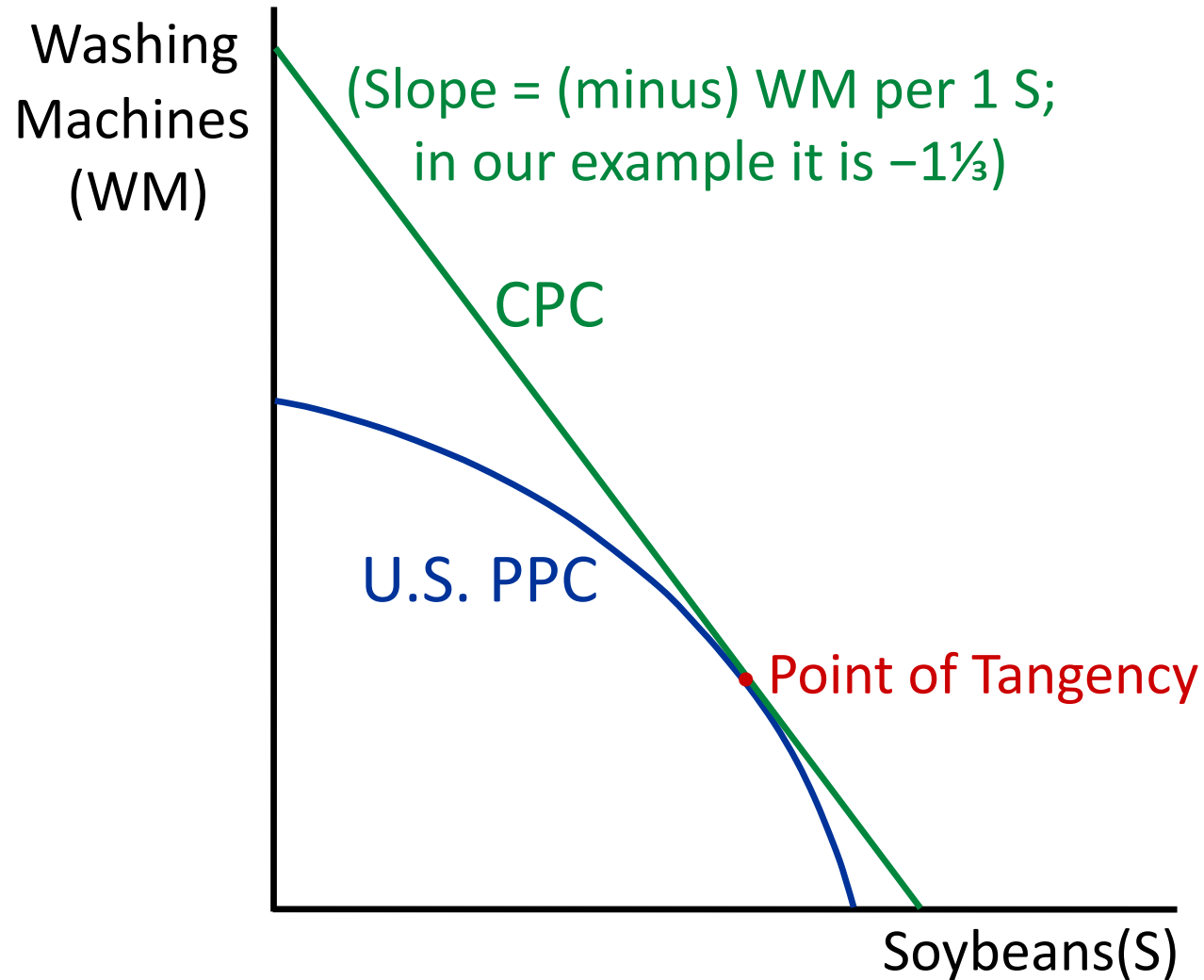
Optimal Specialization when the PPC is Curved



Example (continued)

- Assume the world price of soybeans is \$400 and the world price of washing machines is \$300 (in the same currency), so **the terms of trade is $1\frac{1}{3}$ washing machines per 1 ton of soybeans.**
- Another name for the terms of trade is the world relative price ($P_{\text{soybeans}} / P_{\text{Washing Machines}}$).

Optimal Specialization when the PPC is Curved



Consumption Possibilities Curve with Trade

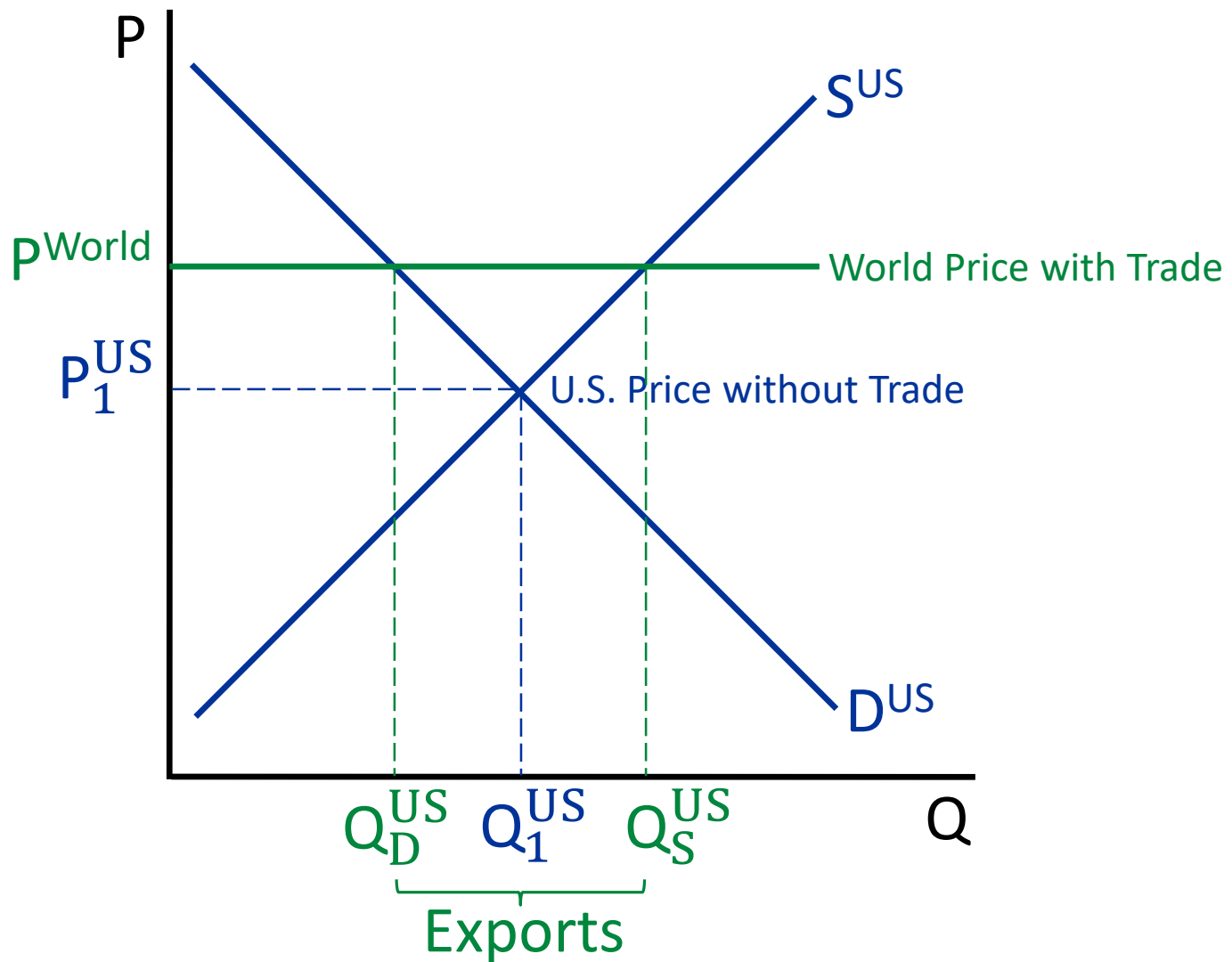
- Graphically, it is a line with slope (minus) the terms of trade (expressed as per 1 of the good on the horizontal axis) that is just tangent to the PPC.
- Intuitively, it shows the combinations of the two goods that the country can consume if it makes the bundle at the point of tangency and then trades at world prices.

III. SUPPLY AND DEMAND MODEL OF INTERNATIONAL TRADE

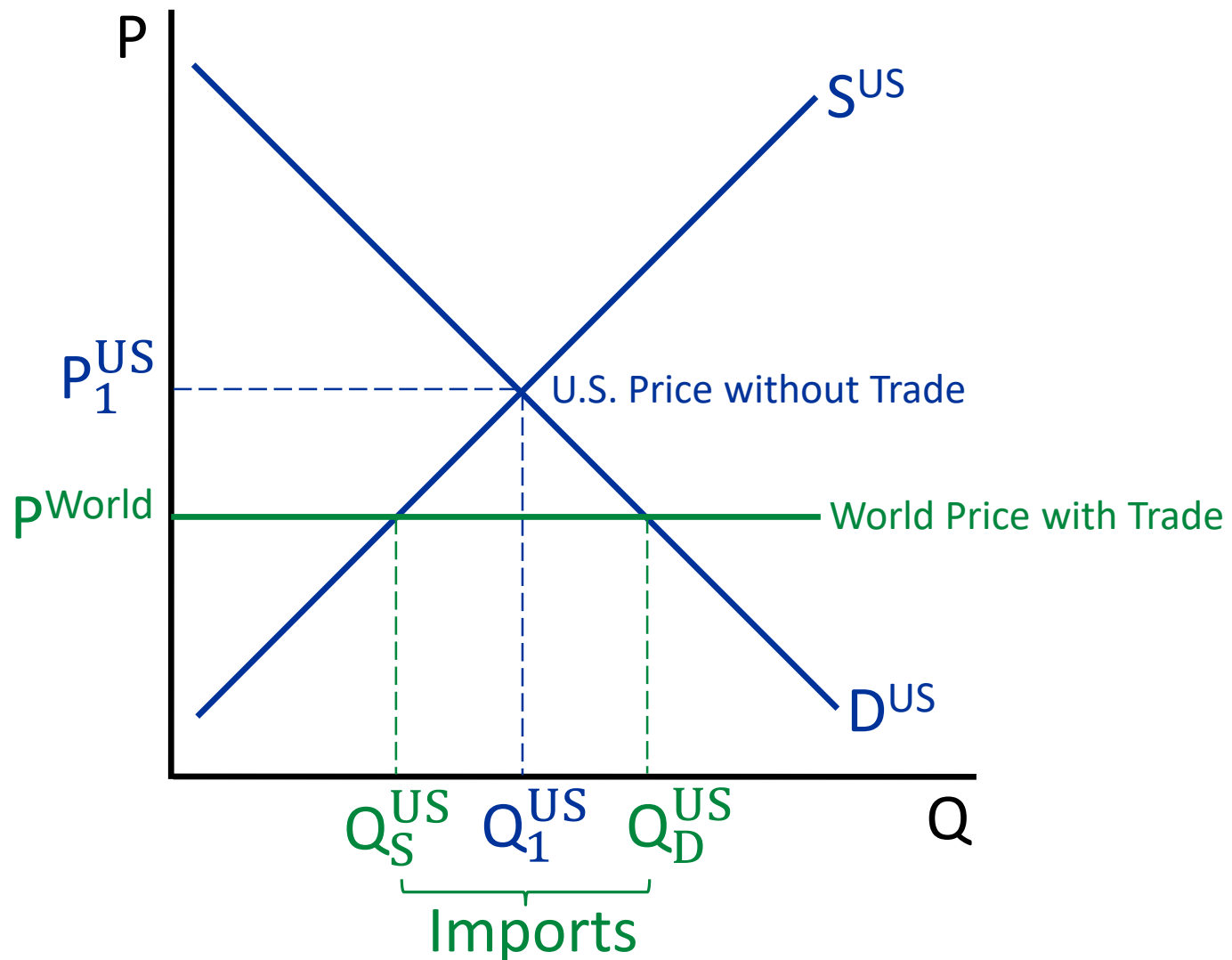
Some Notes on the Interpretation of the Supply and Demand Diagram with Trade

- The U.S. supply curve is upward sloping to reflect the notion of rising opportunity cost (the curved PPC).
- The world price is the world *relative* price:
 - The price in a supply and demand diagram is always the price relative to other prices in the economy.
- We assume that the world demand and world supply at that world relative price is perfectly elastic.

Supply and Demand Diagram for an Export Good



Supply and Demand Diagram for an Import Good

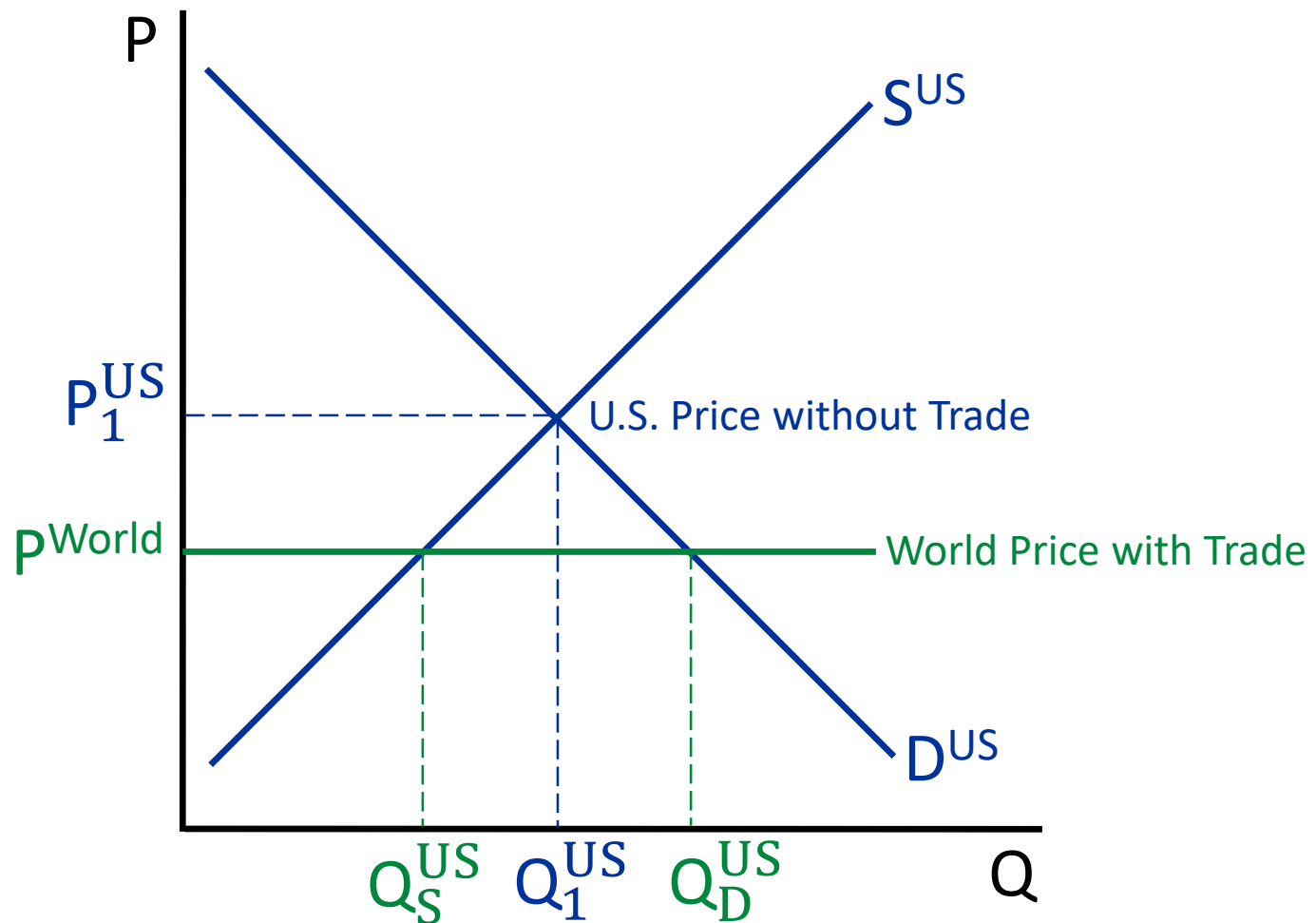


Supply and Demand Diagram with Trade Shows Some Useful Points

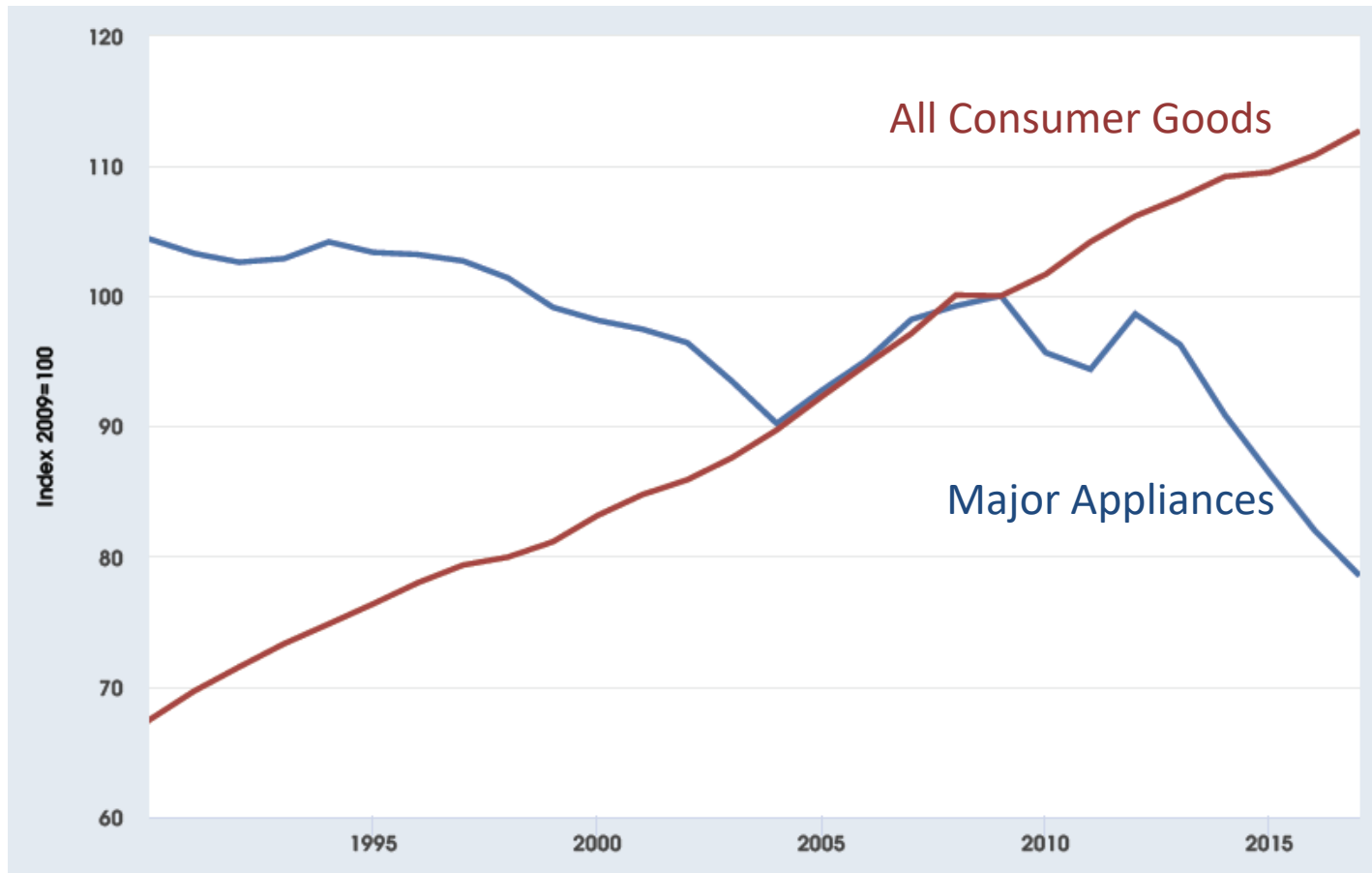
- With rising opportunity cost, we get incomplete specialization.
- The intersection between the world price line and S^{US} corresponds to the point of tangency in the PPC/CPC diagram.
- The intersection between the world price line and D^{US} shows the point we choose on our CPC.

IV. PRICE AND EMPLOYMENT EFFECTS OF TRADE

Supply and Demand Diagram for an Import Good



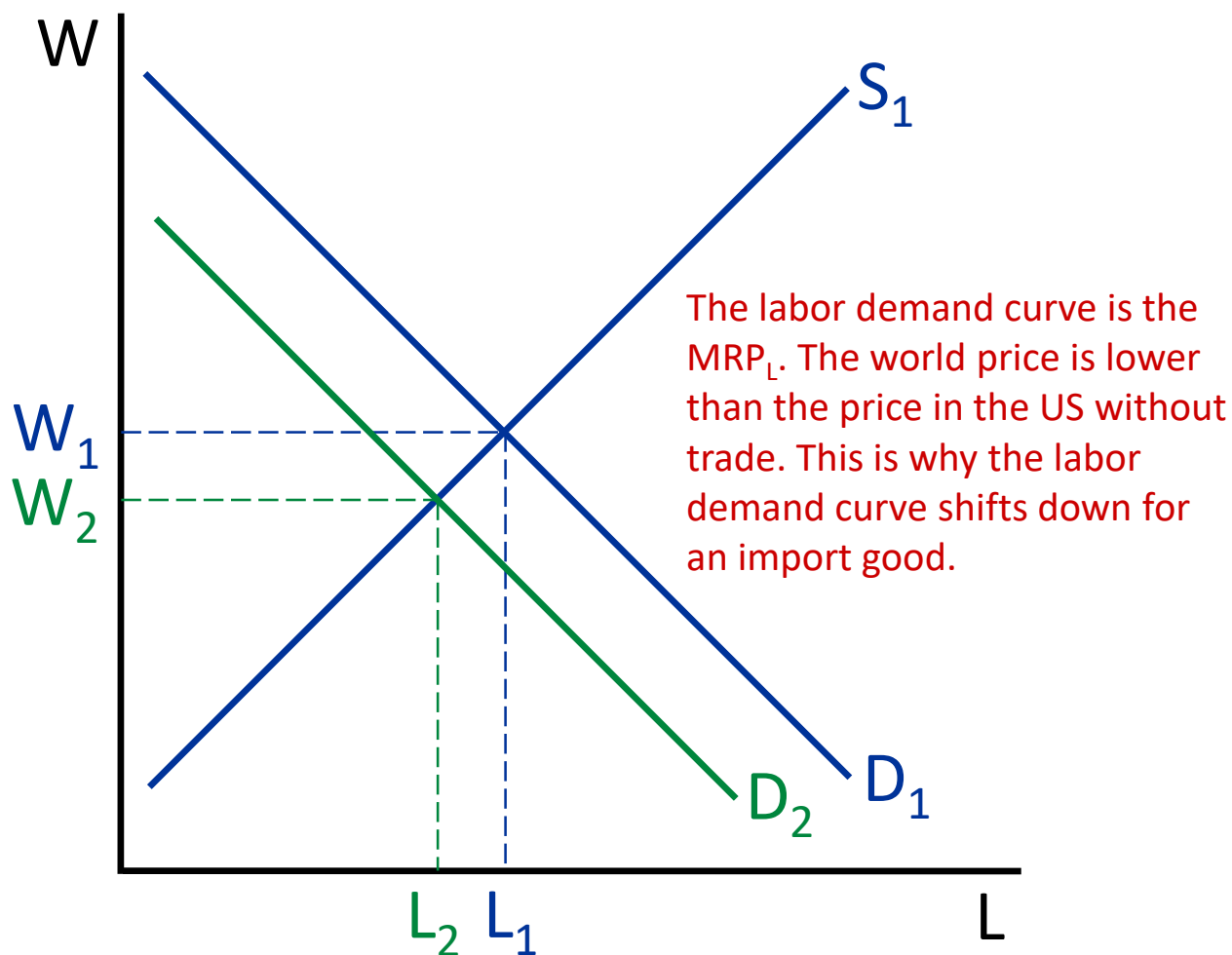
U.S. Price Index for All Goods and Appliances



Source: FRED, Federal Reserve Bank of St. Louis.

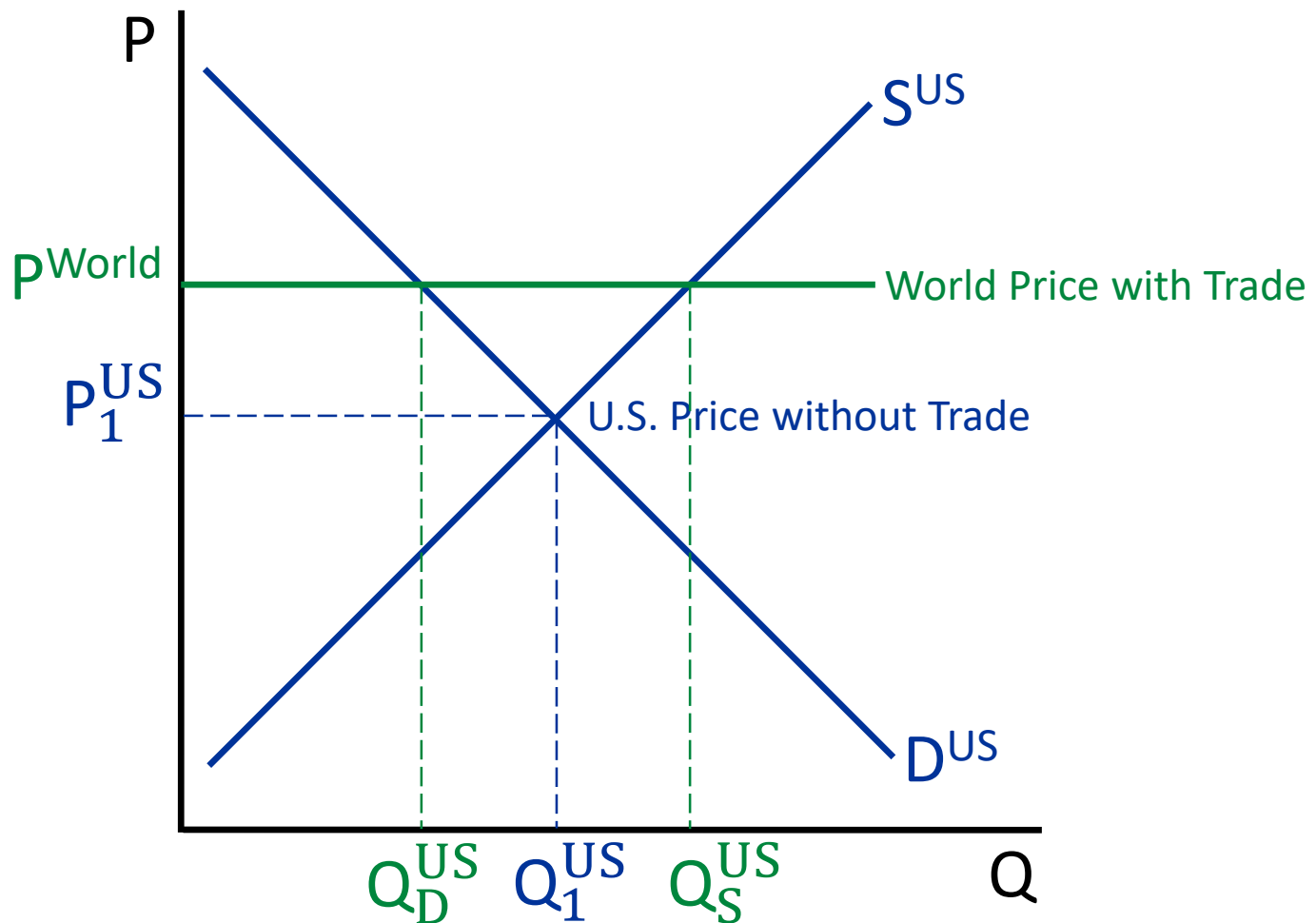
Effect of Increased Trade

Market for Workers in an Import Industry



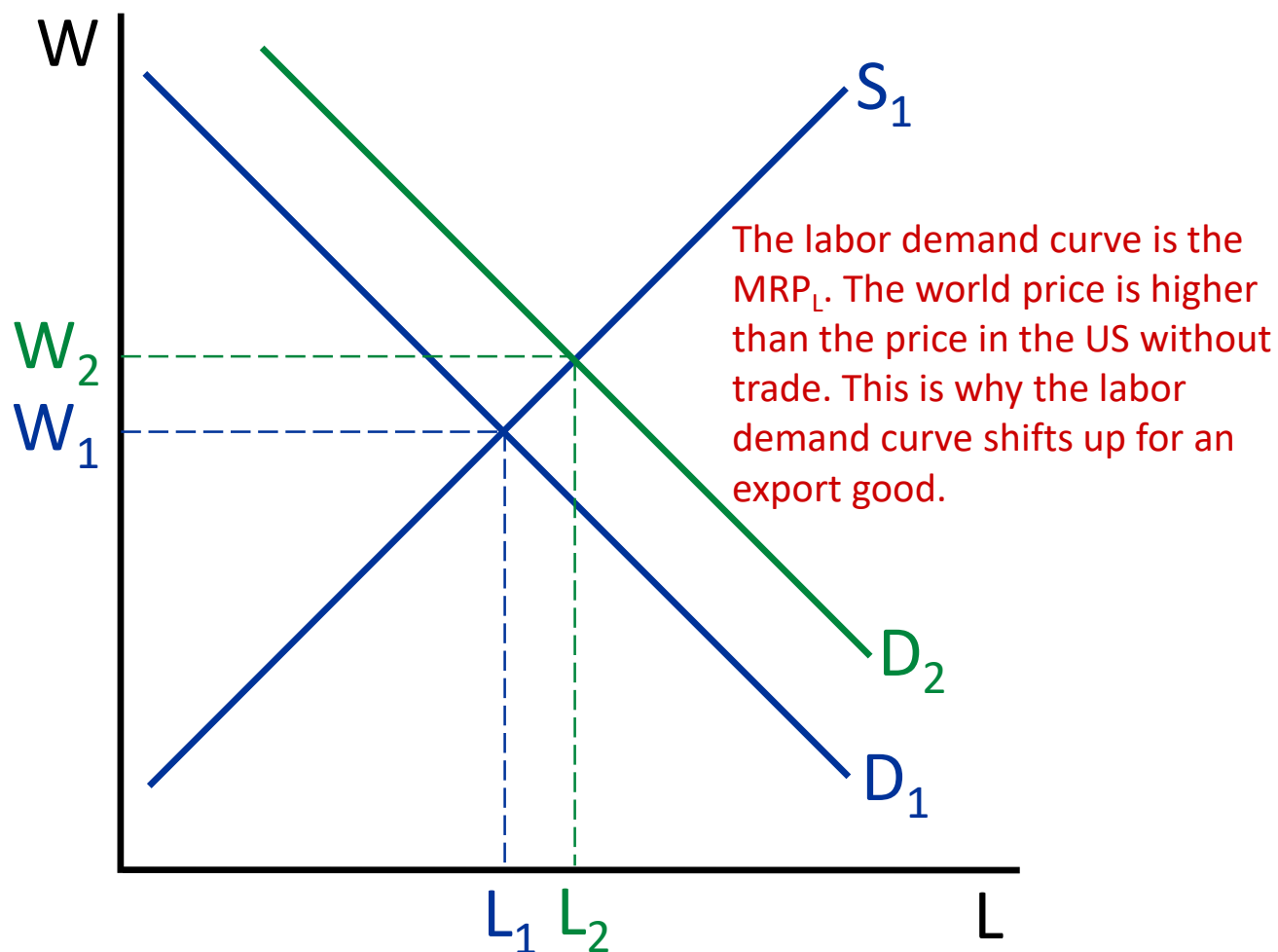
D_1 is labor demand before the increase in trade; D_2 is labor demand after the trade increase.

Supply and Demand Diagram for an Export Good



Effect of Increased Trade

Market for Workers in an Export Industry



D_1 is labor demand before the increase in trade; D_2 is labor demand after the trade increase.

Employment Effects of Trade

- Trade tends to rearrange jobs, rather than raise or lower employment overall.
 - Employment expands in export industries and contracts in import industries.
- But, the rearrangement can be very painful for workers who lose their jobs (and who may not have the skills needed to move to the industries where jobs are available).

V. TRADE POLICY

Some Definitions

- **Free trade:** A country puts no barriers to international trade.
- **Protection:** A country puts limits on trade.
- **Trade policy:** A country's policies toward trade.

Trade Policy is Not the Only Determinant of Trade

- Shipping costs matter.
- Improved logistics can make trade easier.
- Better communication makes trade in services possible.

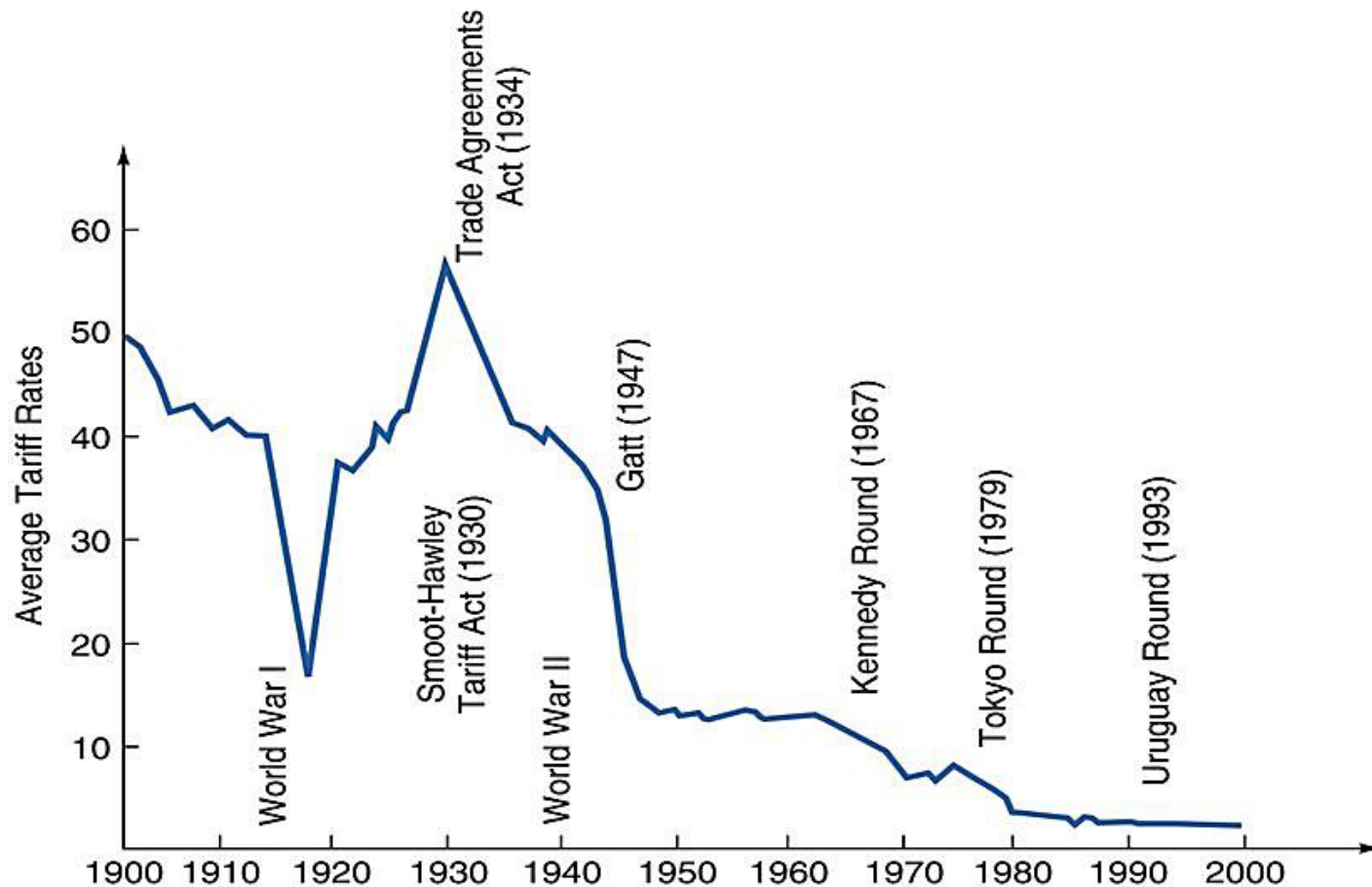
The Advent of the Container Ship



Methods of Protection

- **Tariff:** A tax on imports.
- **Quota:** A limit on the quantity of imports.
- **Subsidies for domestic production.**

Average U.S. Tariff Rates on Dutiable Imports



Tariffs on washing machines, solar cells

Tariff-rate quotas on washers

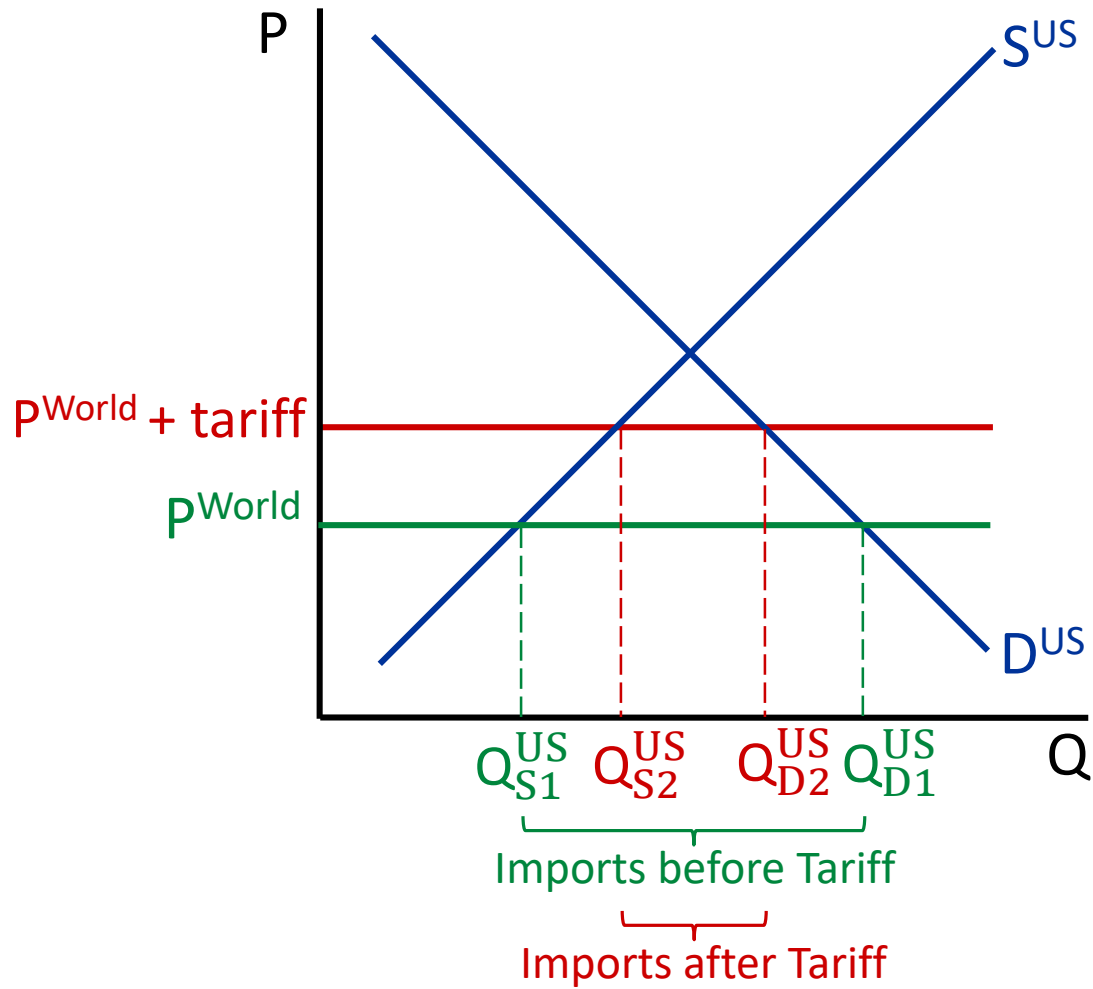
	Year 1	Year 2	Year 3
First 1.2 million units of imported finished washers	20%	18%	16%
All subsequent imports of finished washers	50%	45%	40%

Tariff-rate quotas on imported solar cells and modules

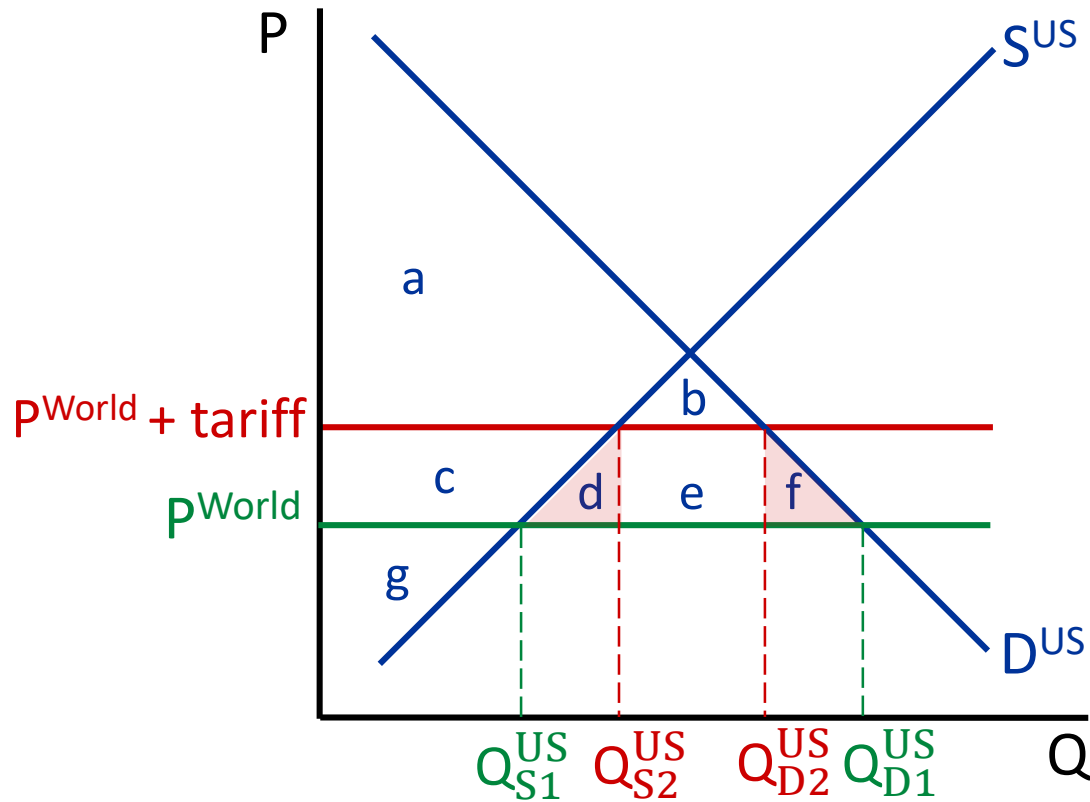
	Year 1	Year 2	Year 3	Year 4
Tariff increase	30%	25%	20%	15%

SOURCE U.S. Trade Representative
George Petras/USA TODAY

Effects of a Tariff

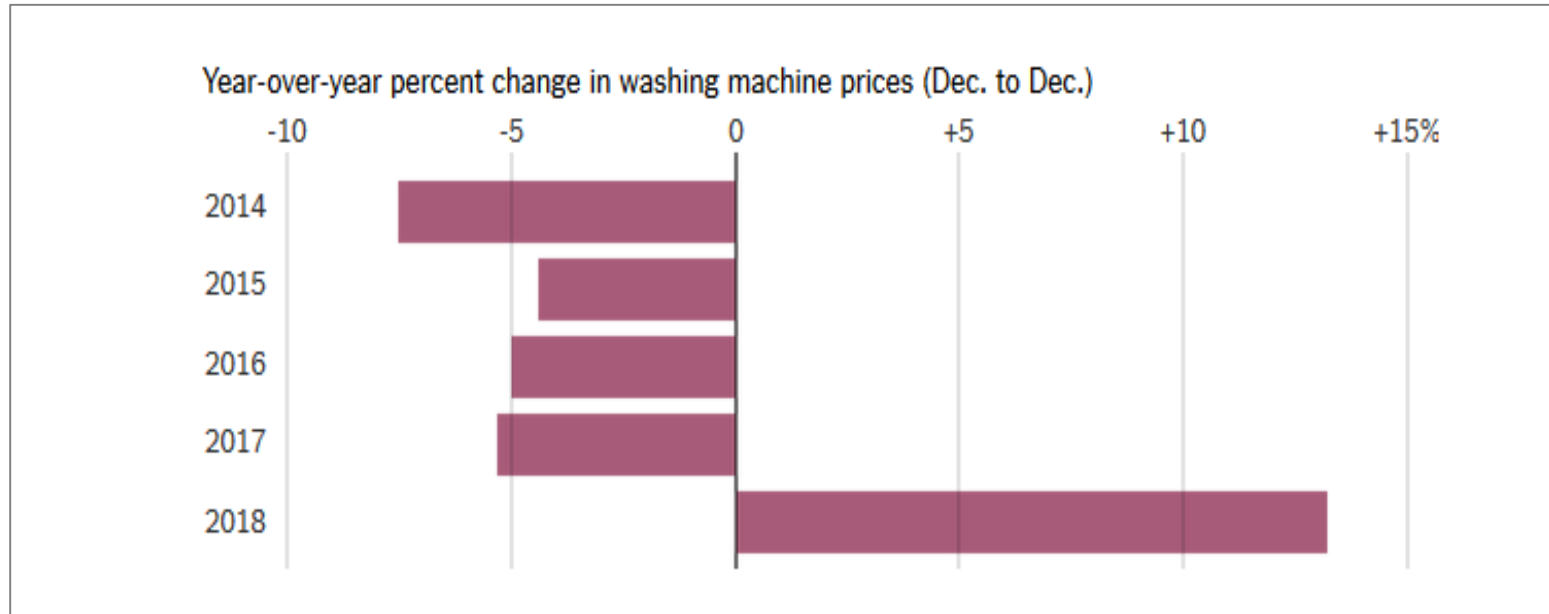


Welfare Analysis of a Tariff



	Before Tariff(Q_{S1}^{US}, Q_{D1}^{US})	After Tariff(Q_{D2}^{US}, Q_{S2}^{US})
Consumer Surplus	$a+b+c+d+e+f$	$a+b$
Producer Surplus	g	$c+g$
Tariff Revenue		e
Total Surplus	$a+b+c+d+e+f+g$	$a+b+c+e+g$
Deadweight Loss		$d+f$

Percent Change in Washing Machine Prices



Source: *The New York Times*, January 25, 2019.

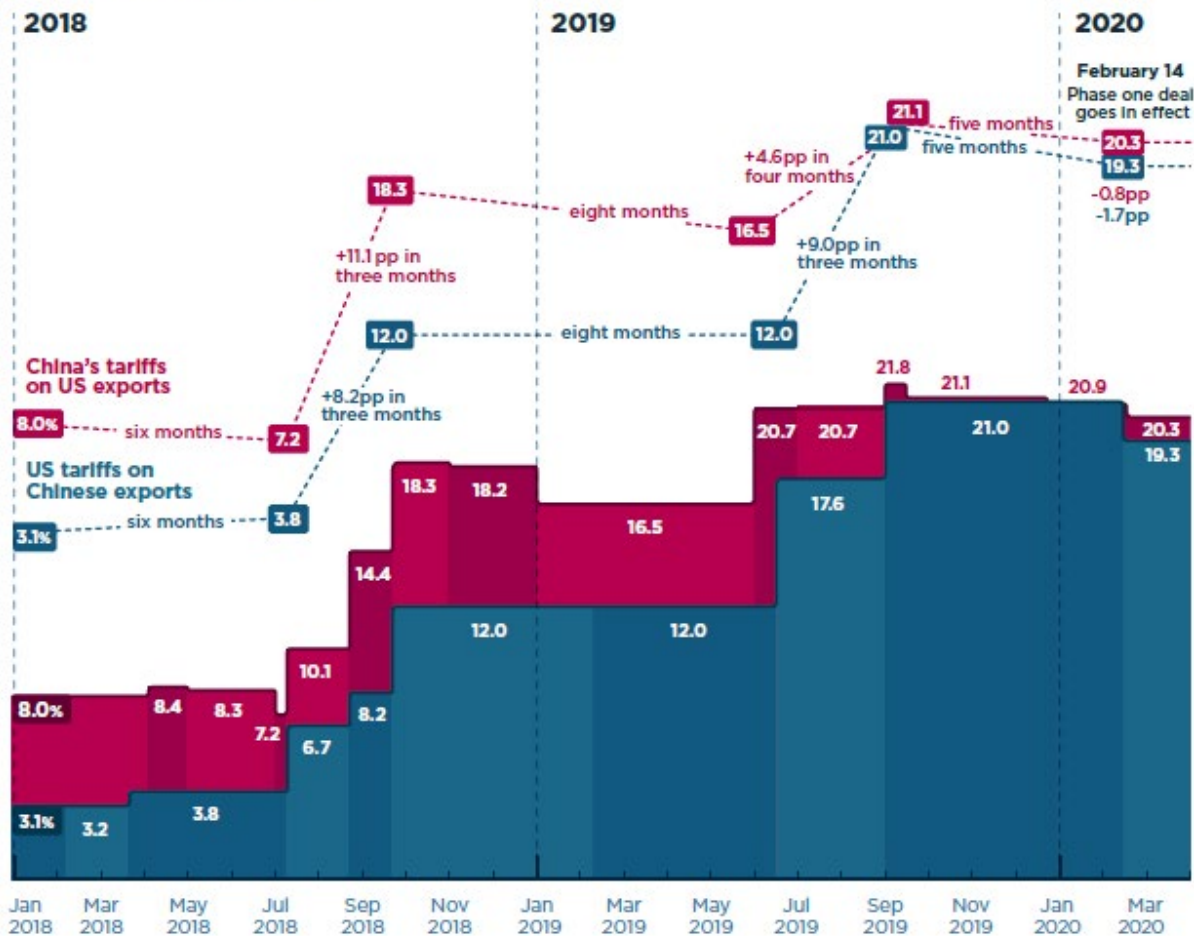
Employment Effects of a Tariff

- It likely raises employment in the protected industry.
- But, it does not raise overall employment.
 - Because of retaliation and induced movements in the exchange rate.
- There may also be unintended effects on workers in other industries.

Updated on February 14, 2020

US-China Trade War Tariffs: An Up-to-Date Chart

Average tariff rate, percent



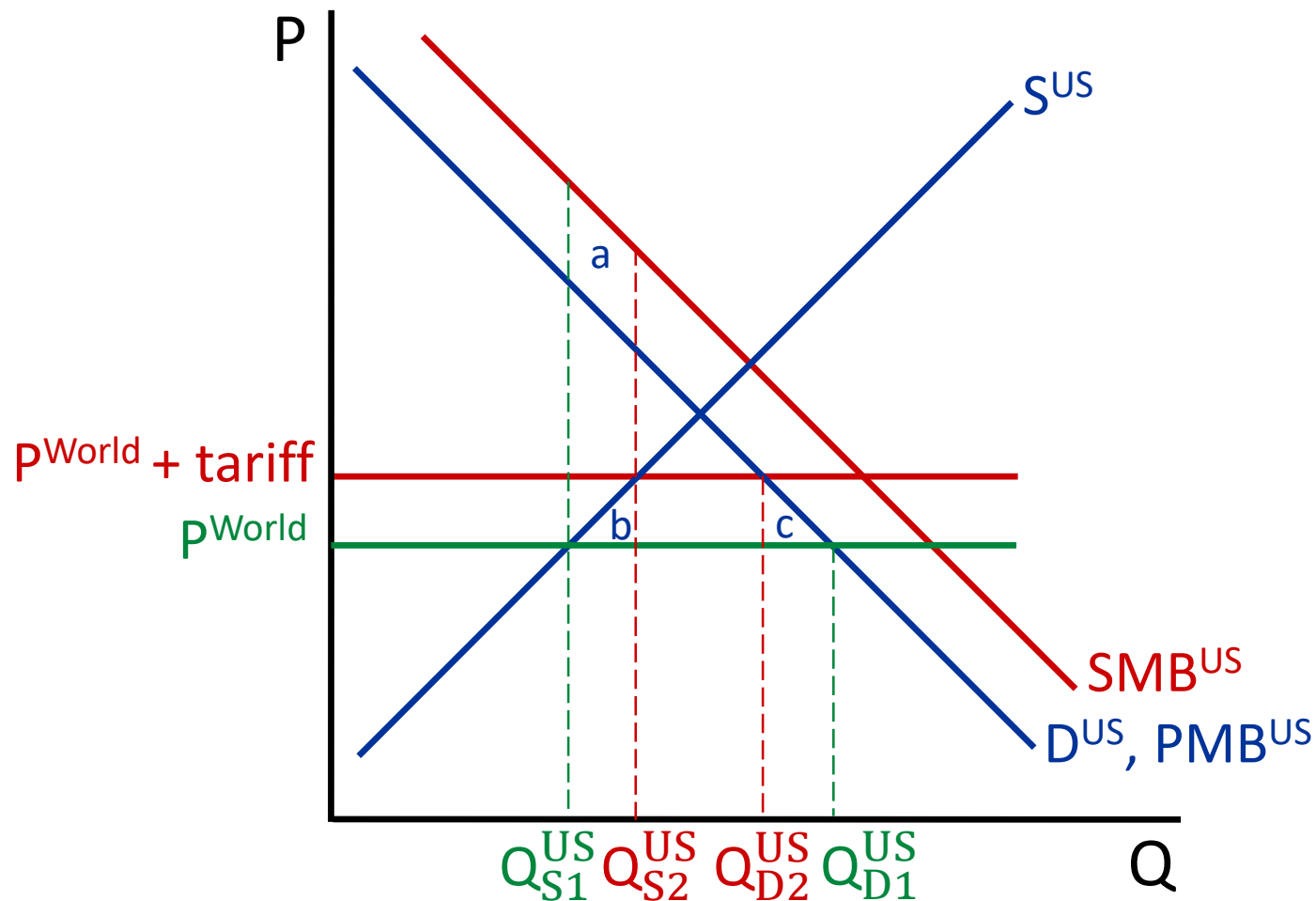
Source: Peterson Institute for International Economics, February 14, 2020.

VI. POSSIBLE ARGUMENTS FOR PROTECTION

Possible Arguments for Protection

- National security
- Diversification
- Infant industry/dynamic comparative advantage
- Jobs for particular workers
- Positive externalities

Positive Externality of Production and a Tariff



Change in the total social surplus due to the tariff: $a - (b+c)$

Note: This is a write-up of the material that was cut off at the end of lecture in the course capture.

VI. POSSIBLE ARGUMENTS FOR PROTECTION

- Now you know some of the consequences of a tariff, particularly the welfare loss.
- Are there countervailing reasons in favor of a tariff on any of the goods we import?

[SLIDE]

A. National Security

1. A country might not want to specialize in agricultural production and let other people make many of its manufactured goods if it worries about national security.

- If a war breaks out, a country that is highly specialized might not be able to get the goods that it needs to sustain itself or to fight a war.
- Therefore, some would argue for protection as a way of keeping the country at least self-sufficient enough that it could defend itself if it needed to.

2. This reason was actually used when the Trump administration put a tariff on steel and aluminum in 2018.

- The Commerce Department issued a report saying that our large steel imports could make it hard for the U.S. to respond to a world war.

3. This is an argument that has gotten a fair amount of pushback.

- a.** U.S. defense manufacturing is much less steel and aluminum based than it was in the 1940s.
- b.** Moreover, the main source of our imported steel and aluminum is Canada.

- One has to wonder how likely it is that we wouldn't be on the same side of a major conflict.

B. A related motivation for limiting trade is diversification.

1. Countries sometimes want to limit trade for insurance purposes.

- If a country specializes very heavily in some good and world tastes change or the price falls dramatically, this could be very painful.
- This point is especially relevant in poor countries that might have a comparative advantage in the production of some agricultural good.

- Agricultural goods are subject to crop failures and large price swings and so specialization can lead to large fluctuations in income.

2. There is certainly some logic to this argument.

- There have been cases where poor countries have faced extreme volatility of income.

3. One question is how likely is it that the government is going to do a good job figuring out what alternative goods will protect the country from large income swings.

C. Infant Industry/Dynamic Comparative Advantage

1. We discussed last time that much comparative advantage is not inherent, but, rather, learned.

- Perhaps by producing something over and over, a country can develop a comparative advantage in its production.

- Economists refer to this as dynamic comparative advantage.

2. This possibility gives rise to another argument for protection.

- A country might choose to protect an industry initially, so that it can reap learning by doing and develop a comparative advantage.

- This is referred to as the “infant industry” argument for protection.

3. **This has been a successful strategy for some countries, but it has risks.**

a. The government may not do a very good job of deciding which industries are likely to experience important learning by doing.

- It may protect an industry (and so experience the welfare loss of protection), but never develop a comparative advantage.

b. Firms and workers in a protected industry often fight the removal of protection, even long after an industry has established itself and could compete on world markets.

- So protection (and the resulting welfare loss) lasts for a long time.

D. Jobs for Particular Workers

1. I described before that a tariff will not raise employment overall.

- But it can increase employment in the protected industry.

2. It is possible that an economy might decide that helping particular workers is useful.
 - Perhaps workers who suffering greatly from trade.
 - Or areas where job loss has been very high.
3. An obvious question is whether there might be a better way to help those workers or places.
 - Trade adjustment assistance.
 - Place-based policies.

E. Positive Externalities

- Another argument that is sometimes made in favor of protection is the existence of a positive externality.

1. Suppose there is a positive externality associated with the production of some good.

[SLIDE]

a. For example, technology spillovers.

- By producing domestically, we get workers who understand some technology.
- They are more likely to come up with related technologies.
- Moreover, they can go off and start more firms and come up with a valuable new industry.
- However, we only get these external benefits on the goods that we produce in the country.

b. We can draw a picture of this.

- Remember, when there is a positive externality, there is a social marginal benefit curve that lies above the private marginal benefit curve.
- In our case where there is international trade, SMB^{US} lies above PMB^{US} .
- The external benefits are the area between SMB^{US} and PMB^{US} up to Q_S^{US} .

2. Notice how a tariff could be helpful.

- ##### **a. If we put on a tariff, we will have more domestic production.**

- So we would get more external benefits.

b. Of course, we would also lose something.

- Some private surplus that would be there under free trade disappears.

c. So, it is a balancing act.

- The welfare change due to the tariff is the increase in the external benefits minus the reduction in the private surplus.

3. Also, externalities are an argument for targeted tariffs.

- Not every good has a positive externality associated with it.

- It might be the case that a subsidy to domestic producers would be an easier way to achieve the same results.