

LECTURE 12

SUPPLY AND DEMAND MODEL OF INTERNATIONAL TRADE AND TRADE POLICY

February 27, 2018

- I. OVERVIEW
- II. REVIEW OF THE GAINS FROM SPECIALIZATION
 - A. The case of rising opportunity cost
 - B. How much does a country want to specialize?
 - C. Consumption possibilities with trade
- III. SUPPLY AND DEMAND ANALYSIS OF INTERNATIONAL TRADE
 - A. Export good
 - B. Import good
- IV. WELFARE AND EMPLOYMENT EFFECTS OF TRADE
 - A. Welfare analysis of trade for an import good
 - B. Employment effects of trade
- V. TRADE POLICY
 - A. Some definitions
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 - C. Welfare analysis of a tariff
- VI. POSSIBLE ARGUMENTS FOR PROTECTION
 - A. National security
 - B. Diversification
 - C. Rearranging jobs
 - D. Positive externality
 - E. Others?

LECTURE 12

Supply and Demand Model of International Trade and Trade Policy



February 27, 2018

Announcements

- We handed out Problem Set 3:
 - It is due next Tuesday (March 6).
 - Problem set work session, Thursday (March 1st), 4–6 p.m. in 648 Evans
- Journal article reading for next time:
 - David Card, “The Impact of the Mariel Boatlift on the Miami Labor Market.”

I. OVERVIEW

Topics

- Supply and demand framework with international trade.
- Welfare 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

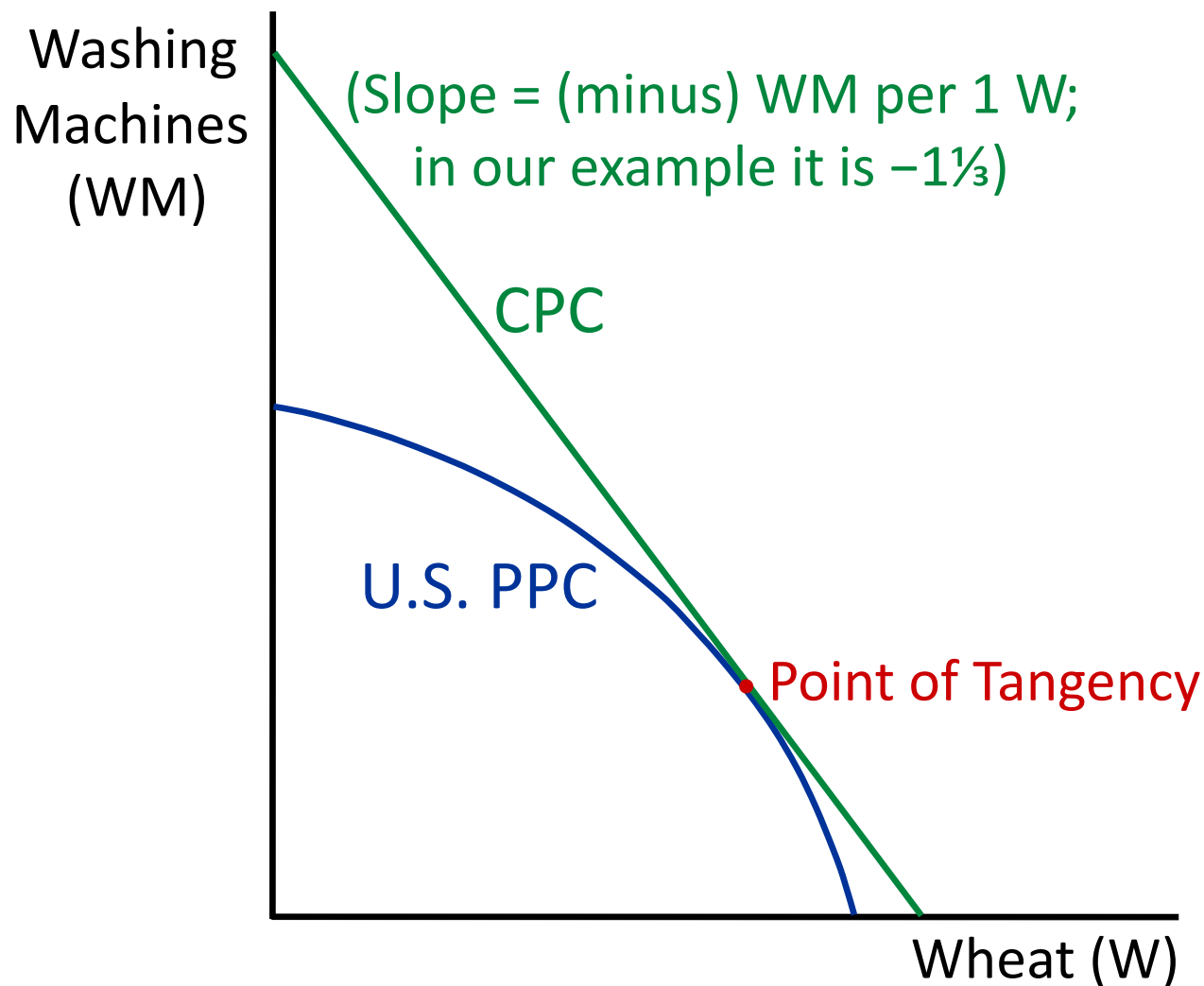
Example

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

Example (continued)

- Assume the world price of wheat is \$400 and the world price of washing machines is \$300 (in the same currency), so the terms of trade (also called the world relative price) is $1\frac{1}{3}$ washing machines per ton of wheat.

Optimal Specialization when the PPC is Curved



Consumption Possibilities Curve with Trade

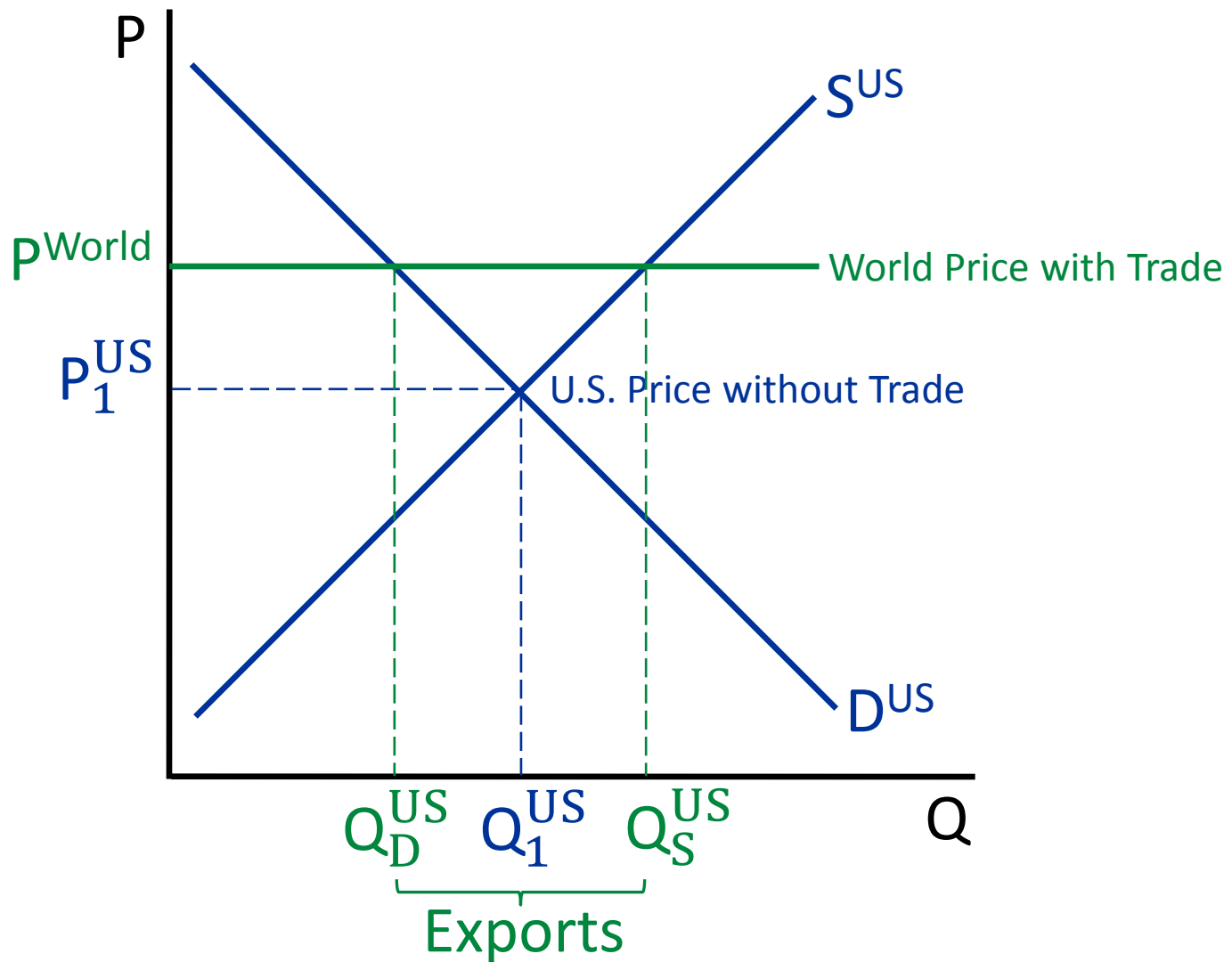
- Graphically, it is a line with slope (minus) the world relative price of the good on the horizontal axis that is tangent to the PPC.
- Intuitively, it shows the combinations of the two goods that the country can consume if it makes the bundle at the point of tangency and then trades at world prices.

III. SUPPLY AND DEMAND MODEL OF INTERNATIONAL TRADE

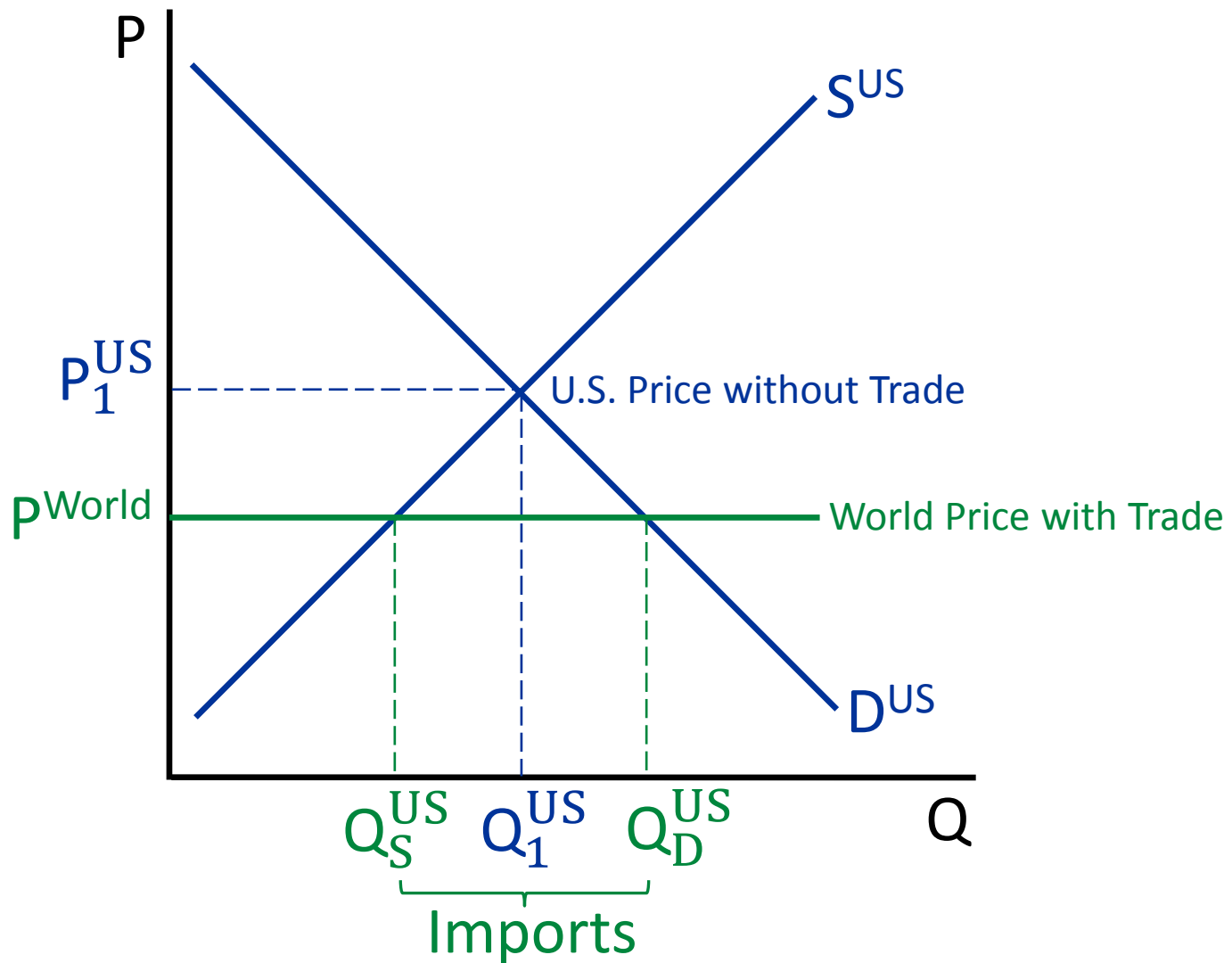
Some Notes on the Interpretation of the Supply and Demand Diagram with Trade

- The U.S. supply curve is upward sloping to capture 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

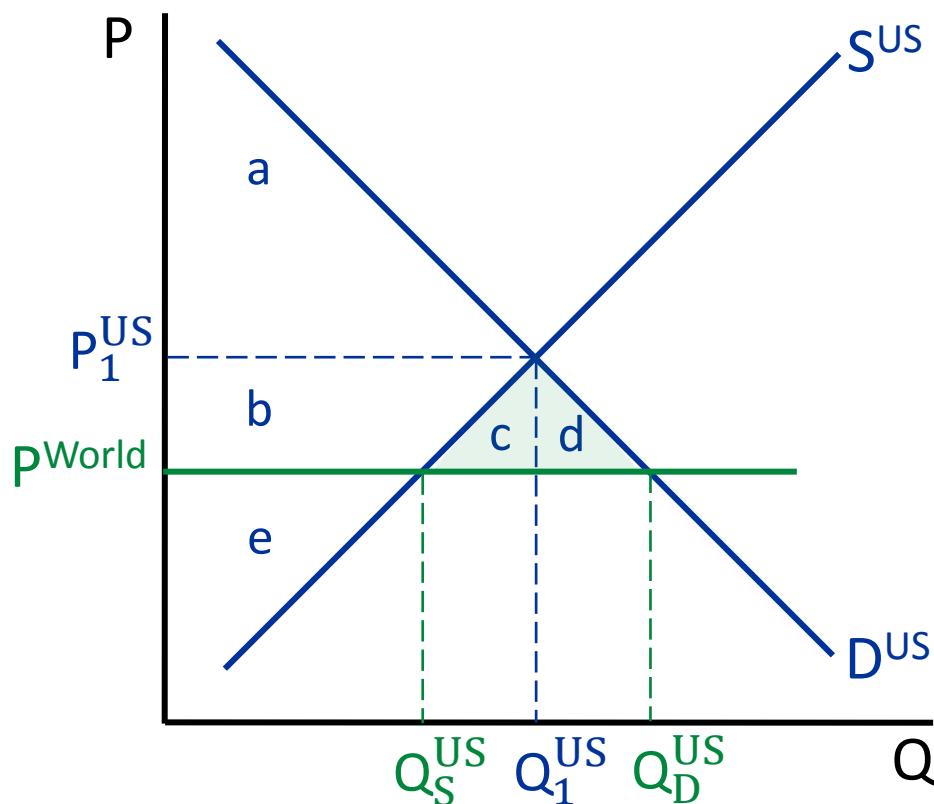


Supply and Demand Diagram for an Import Good



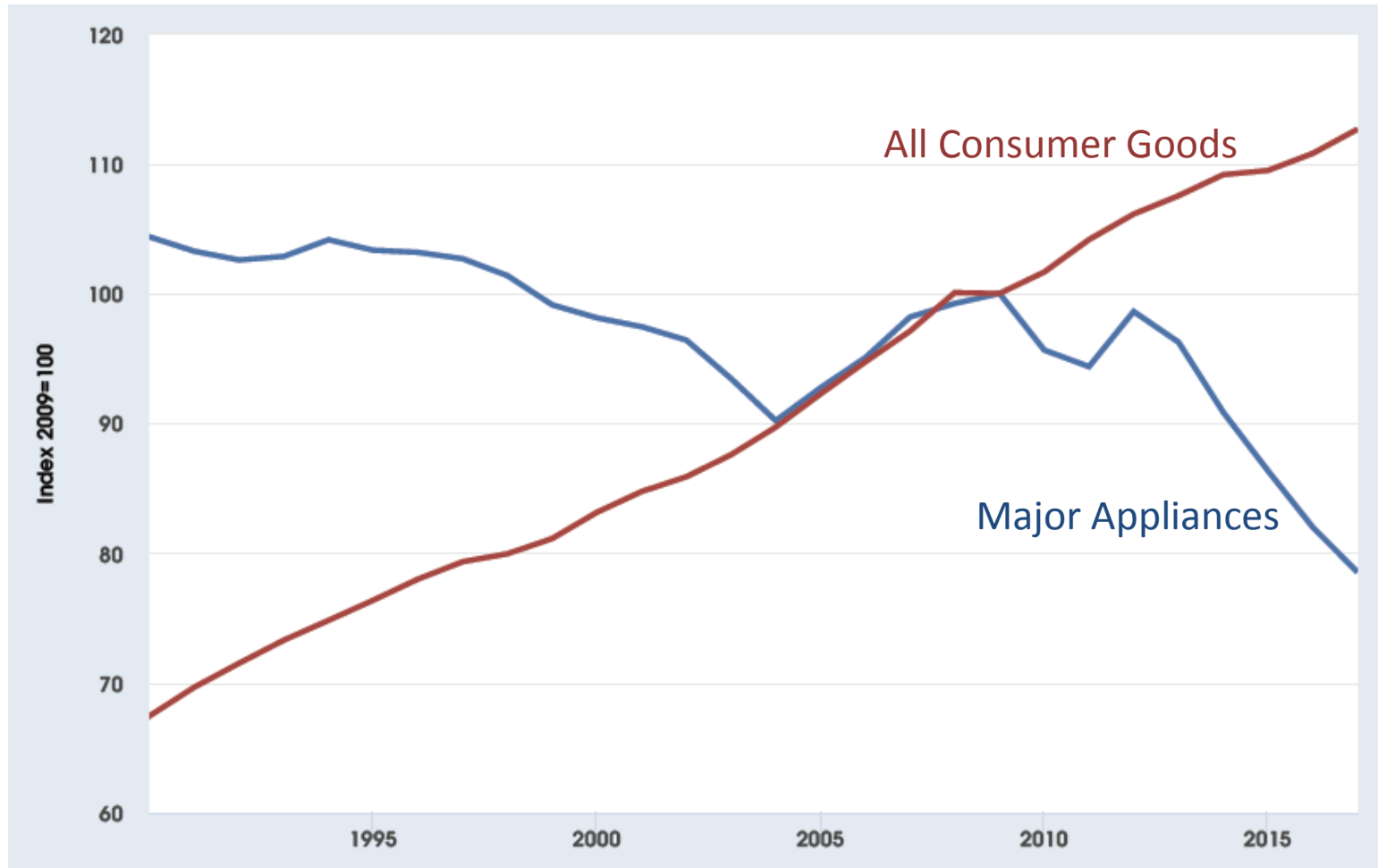
IV. WELFARE AND EMPLOYMENT EFFECTS OF TRADE

Welfare Analysis of Trade (Import Good)



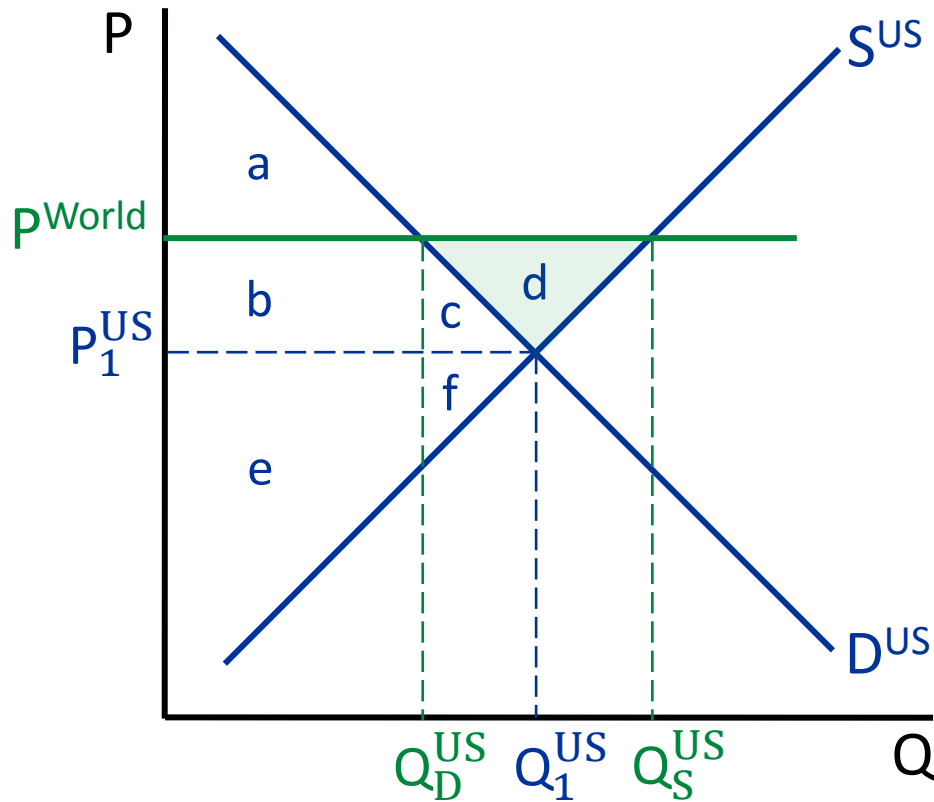
	Without Trade(Q_1^{US})	With Trade(Q_D^{US}, Q_S^{US})
Consumer Surplus	a	a+b+c+d
Producer Surplus	b+e	e
Total Surplus	a+b+e	a+b+c+d+e
Gains from Trade		c+d

U.S. Price Index for All Goods and Appliances



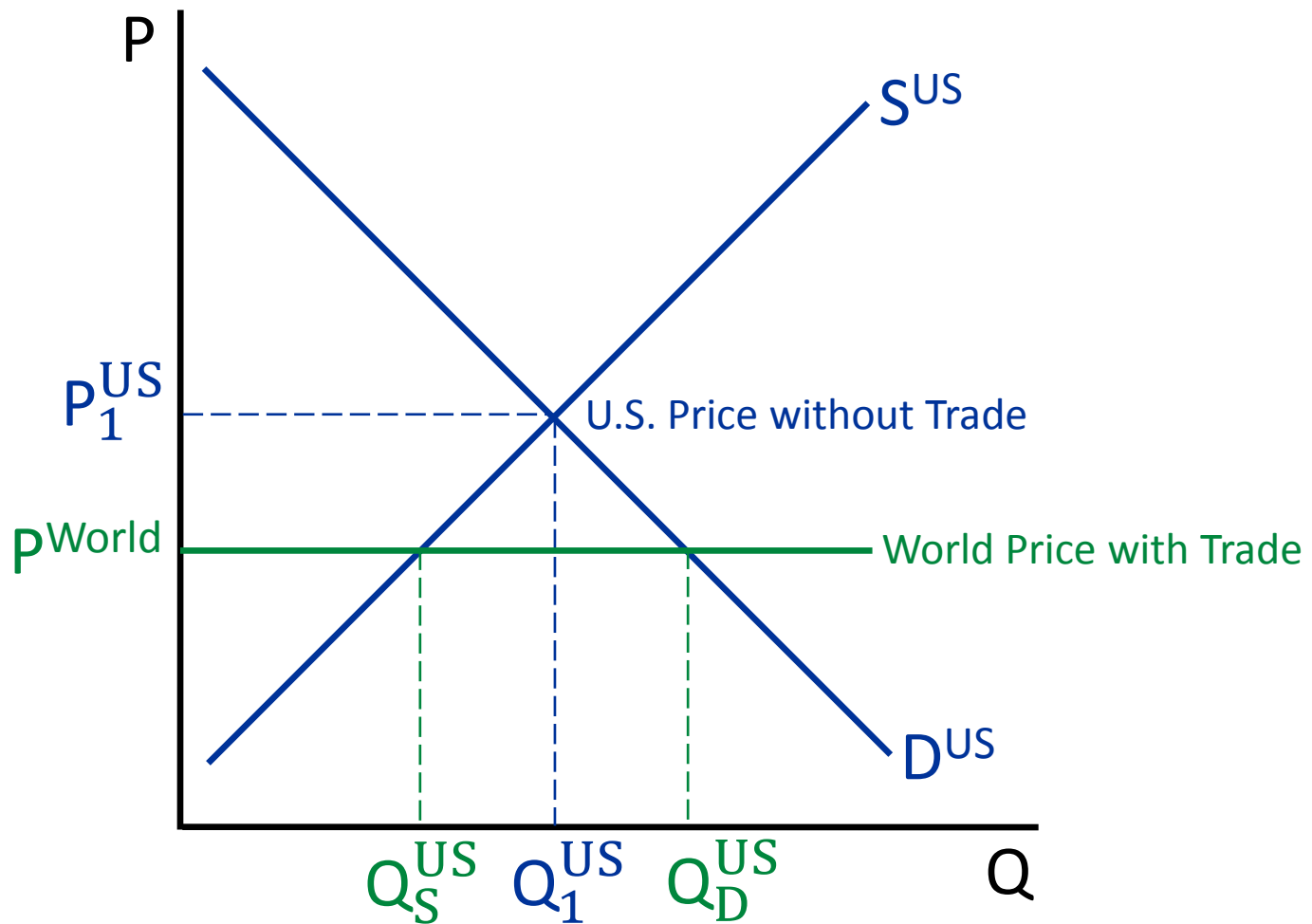
Source: FRED, Federal Reserve Bank of St. Louis.

Welfare Analysis of Trade (Export Good)



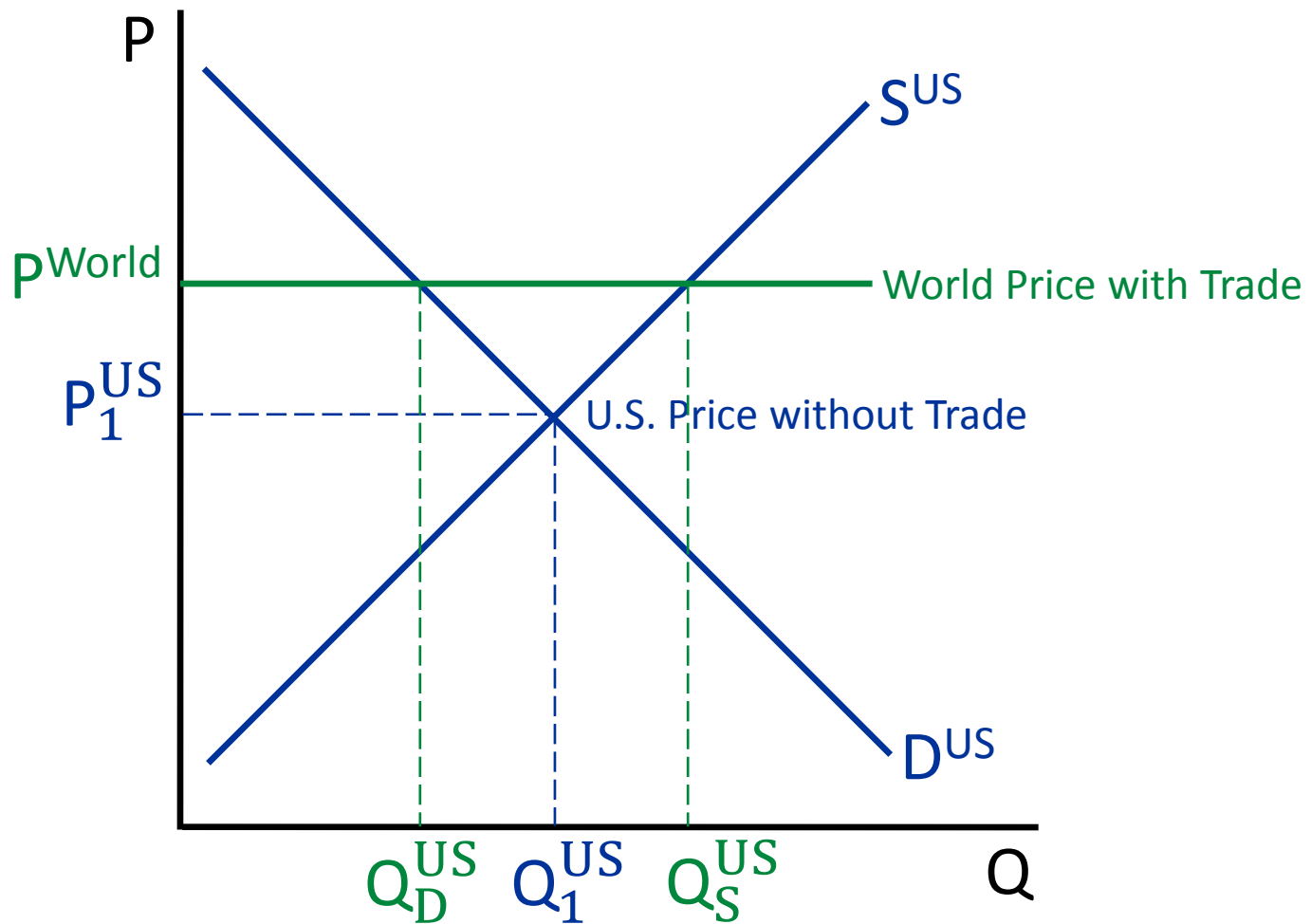
	Without Trade(Q_1^{US})	With Trade(Q_D^{US}, Q_S^{US})
Consumer Surplus	a+b+c	a
Producer Surplus	e+f	b+c+d+e+f
Total Surplus	a+b+c+e+f	a+b+c+d+e+f
Gains from Trade		d

Supply and Demand Diagram for an Import Good



The decrease in US production after trade implies less employment in this industry.

Supply and Demand Diagram for an Export Good



The increase in US production after trade implies more employment in this industry.

Employment Effects of Trade

- When a country goes from no trade to free trade, it will produce less of the good it imports and more of the good it exports.
- Employment will tend to fall in the import industry and rise in the export industry.
- Trade tends to rearrange jobs, rather than raise or lower employment overall.
- 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.

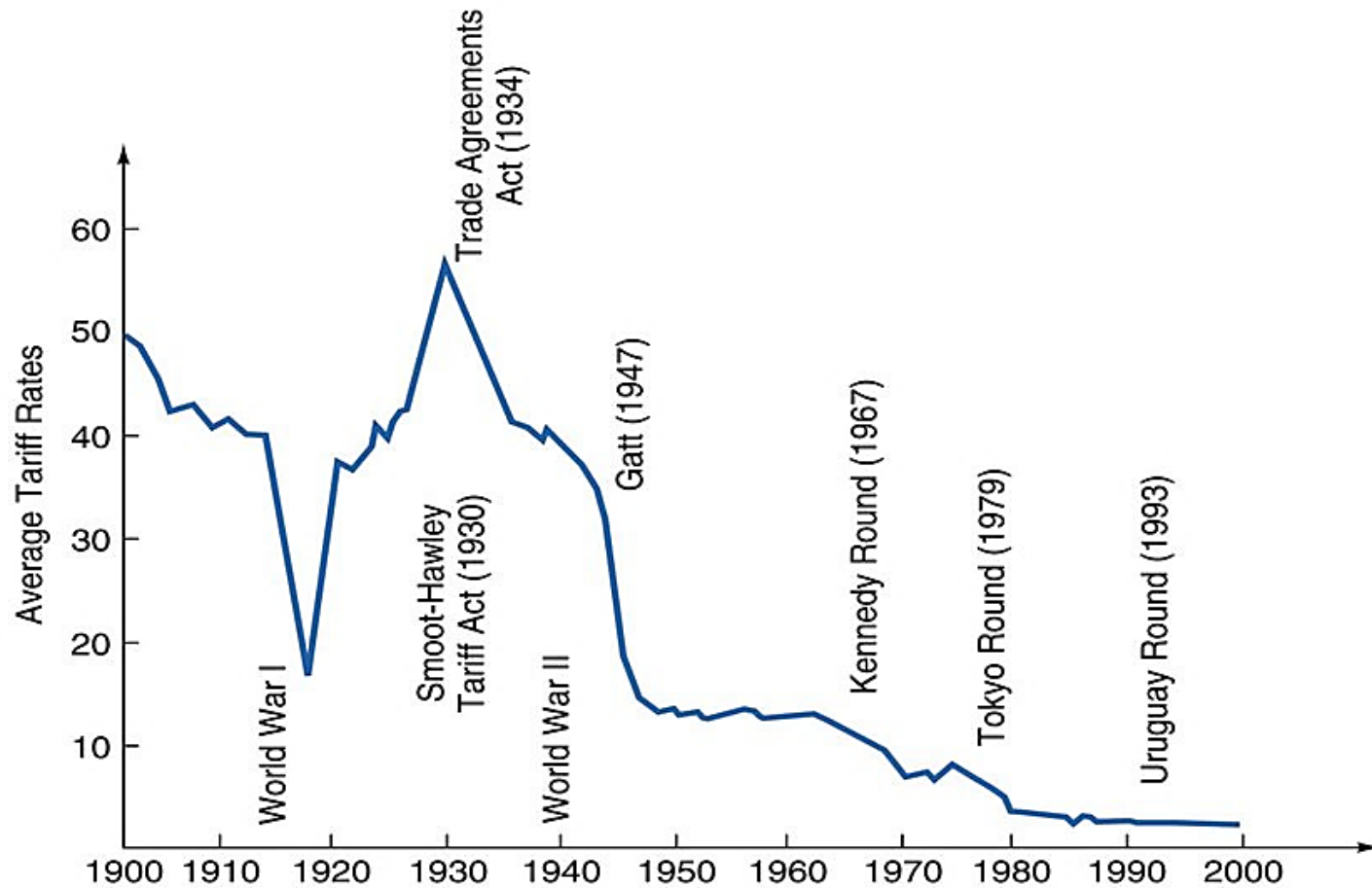
The Advent of the Container Ship



Methods of Protection

- **Tariff:** A tax on imports.
- **Quota:** A limit on the number 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

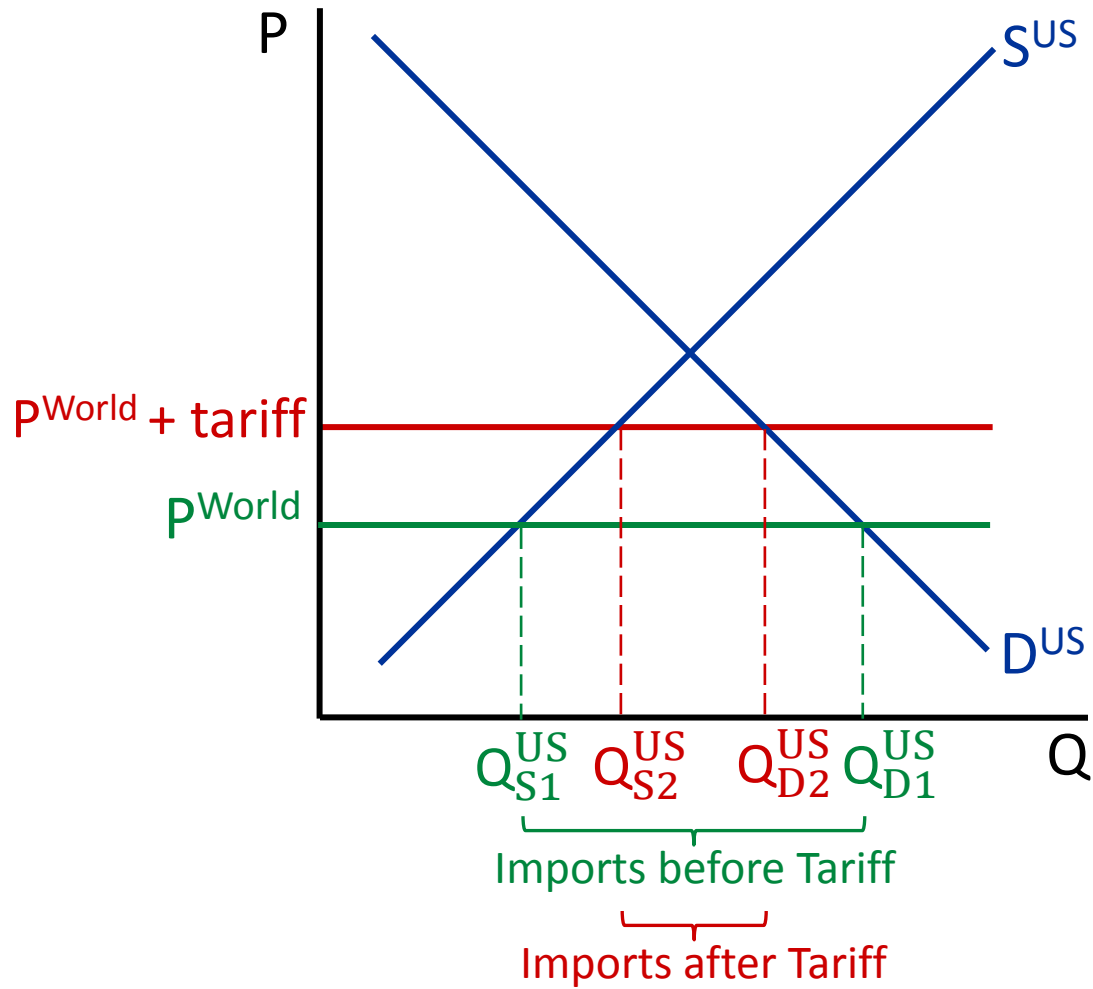
	Year 1	Year 2	Year 3
First 1.2 million units of imported finished washers	20%	18%	16%
All subsequent imports of finished washers	50%	45%	40%

Tariff-rate quotas on imported solar cells and modules

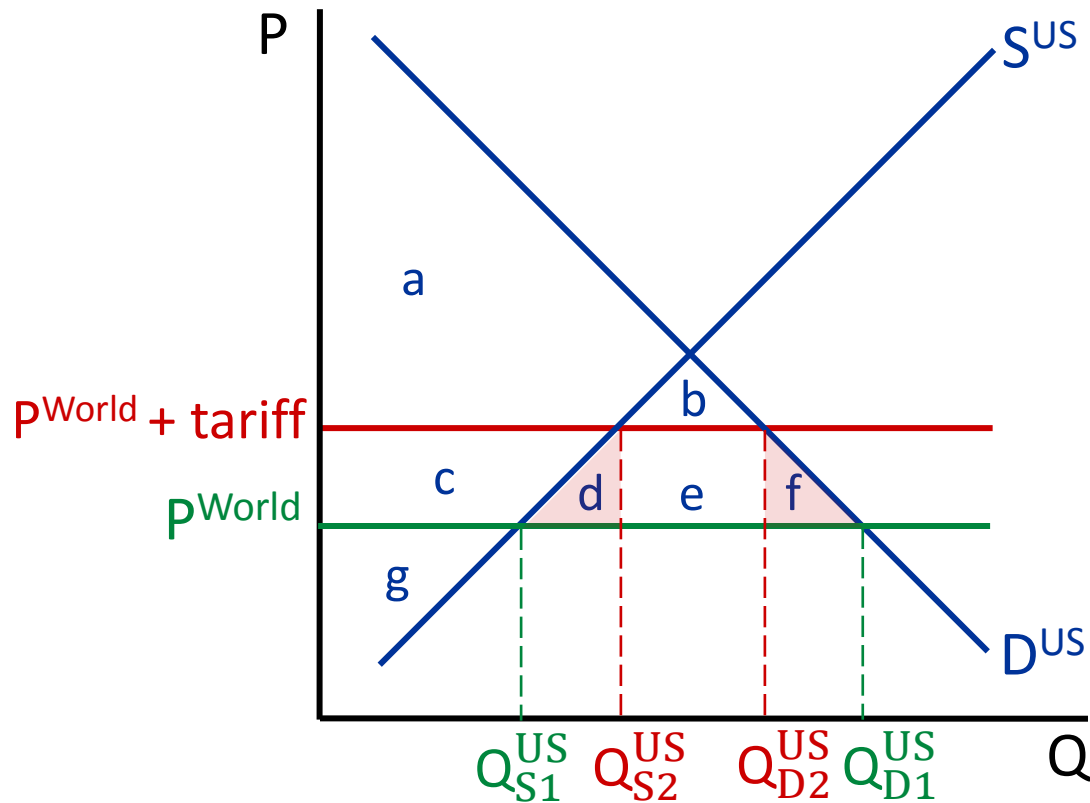
	Year 1	Year 2	Year 3	Year 4
Tariff increase	30%	25%	20%	15%

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		$d+f$

VI. POSSIBLE ARGUMENTS FOR PROTECTION

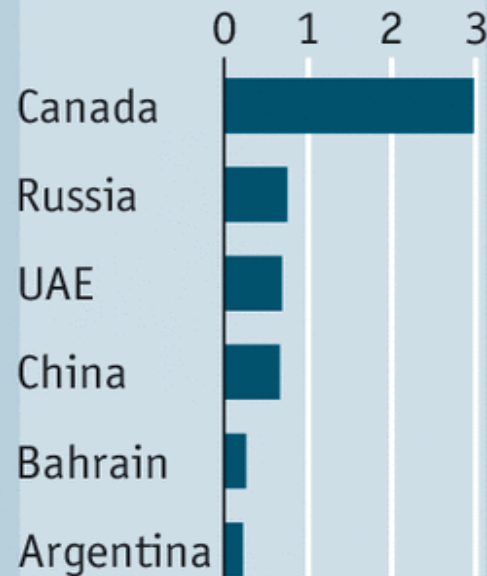
Possible Arguments for Protection

- National security
- Diversification
- Jobs for particular kinds of workers
- Positive externalities
- Others?

Metal-bashing

US imports, 2017*, tonnes, m

Aluminium



Steel

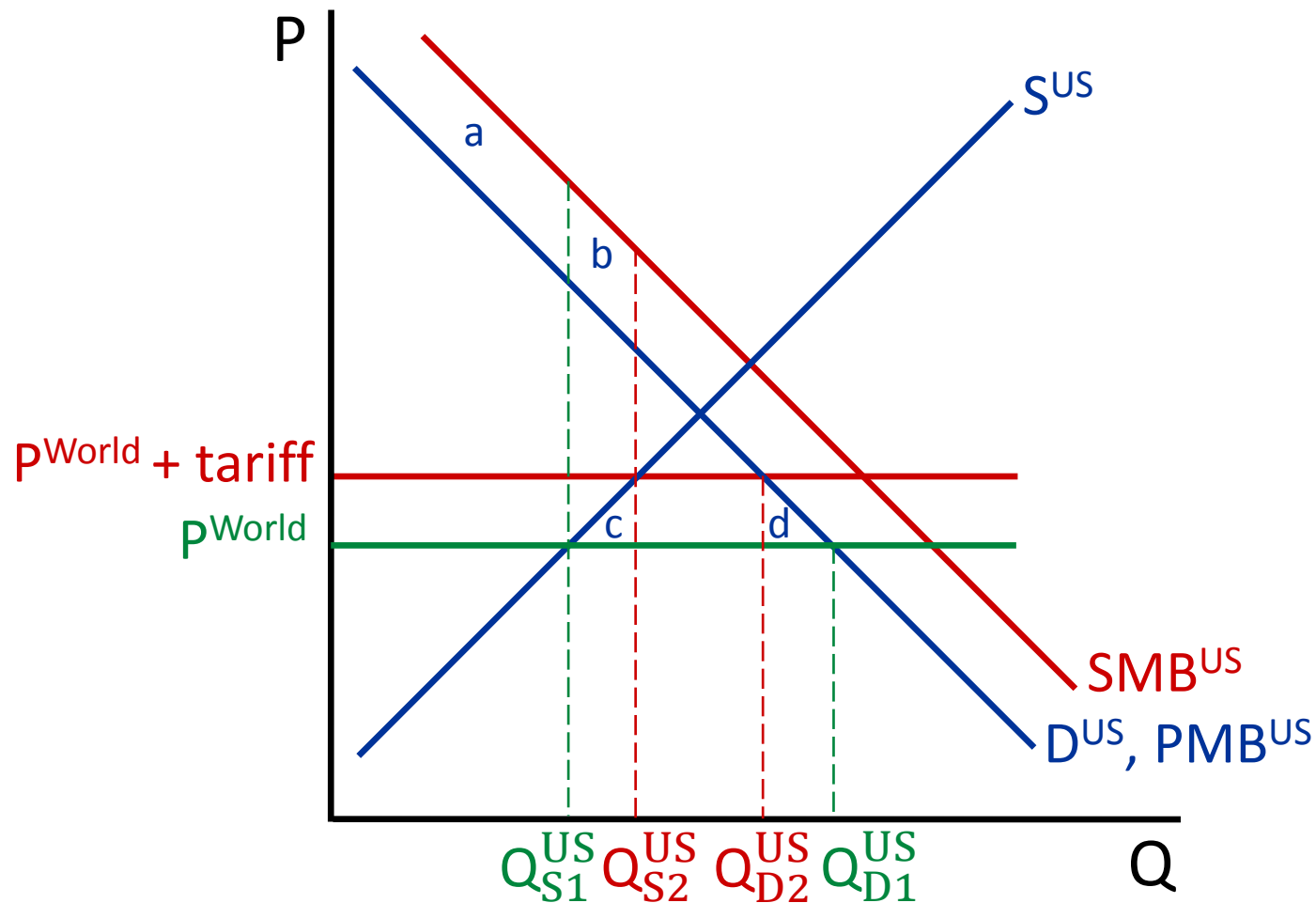


Sources: US Census Bureau;
US Department of Commerce;
IHS Global Trade Atlas Database

*Year to October
annualised

Source: *The Economist*, February 22, 2018, Economist.com.

Positive Externality of Production and a Tariff



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

Some Statistics on the Midterm

- Median: 64.5
- 75th percentile: 77.0
- 25th percentile: 53.5
- Median corresponds *roughly* to a B.

Some Notes on Grading

- We reward improvement.
- Regrade requests must be submitted in writing to your GSI by March 6th.