Economics 2
Fall 2024

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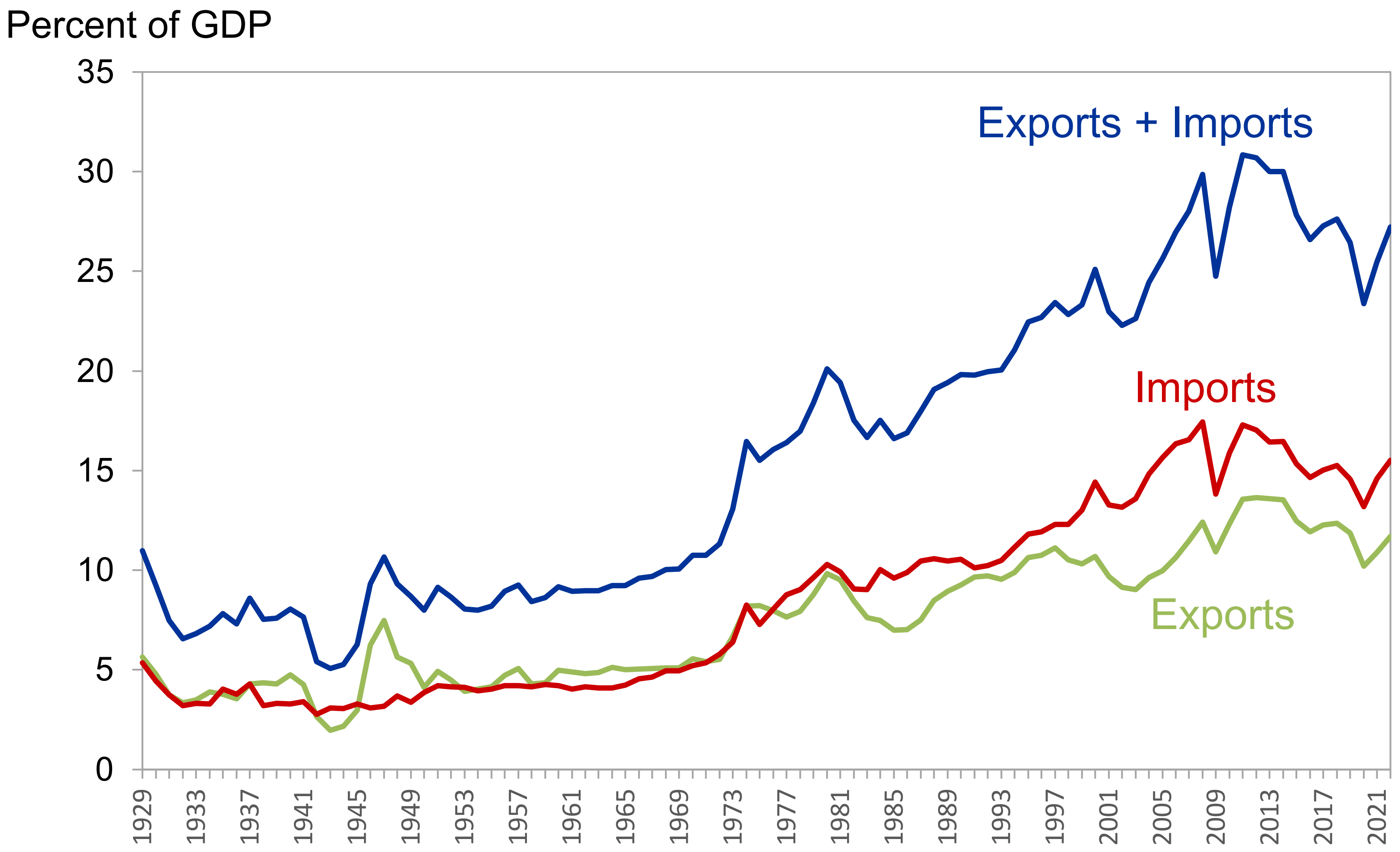
LECTURE 13

International Trade

I. Overview of International Trade

U.S. Trade Relative to GDP since 1929



Source: Bureau of Economic Analysis.

Overview

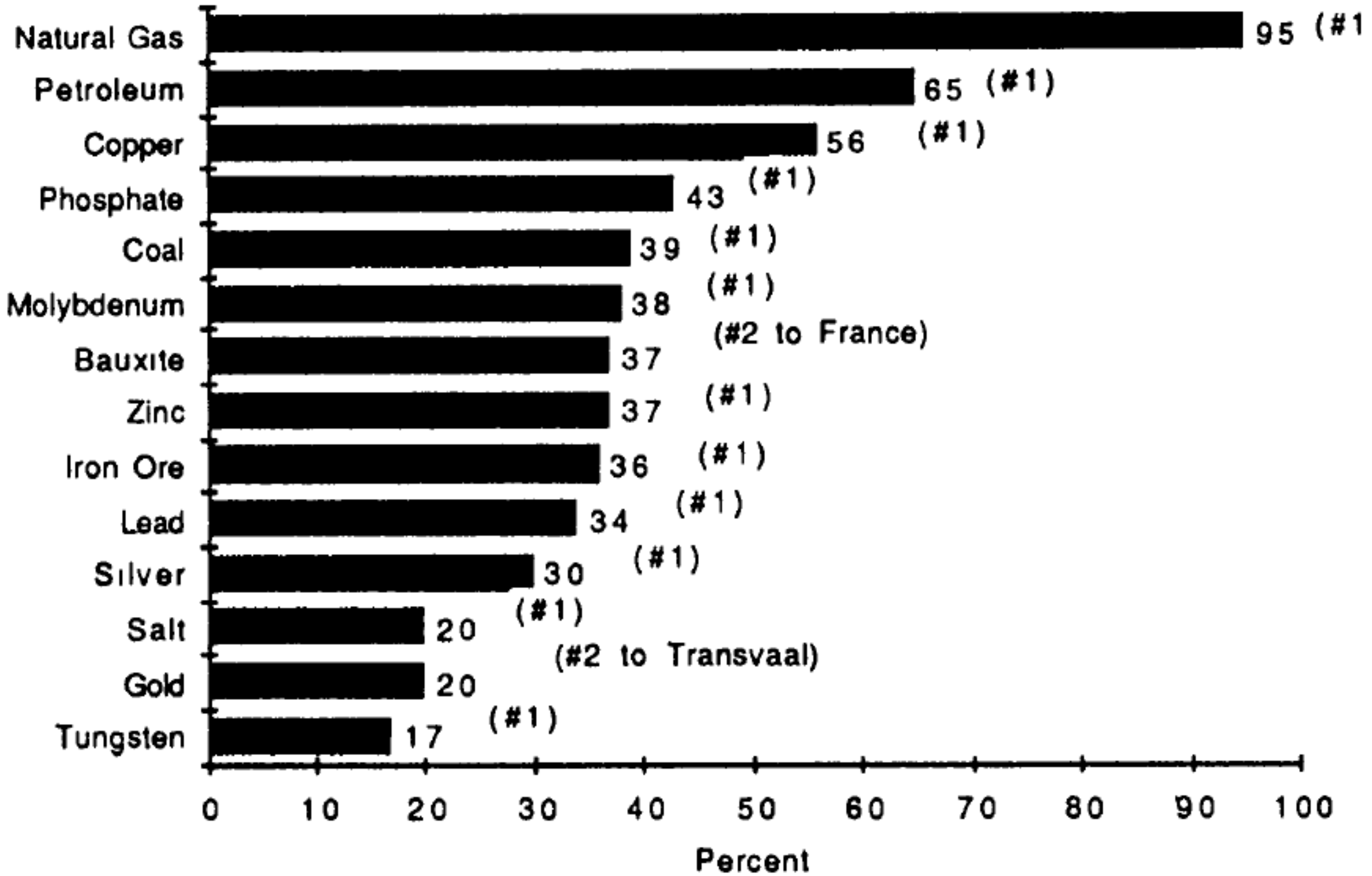
- Main argument in favor of international trade is that there are gains from specialization.
- World prices play a crucial role in ensuring that both sides benefit.
- We will also discuss some of the reasons a country might want to limit international trade (and how it might do it).

II. Sources of Comparative Advantage

Comparative Advantage

- A producer has a comparative advantage in the production of some good if it is the low-opportunity-cost producer of the good.
- A country will tend to have a comparative advantage in the production of goods that use inputs it has in abundance.
- Example 1: Climate and soil in determining where agricultural production takes place.
- Example 2: Minerals and early US industrialization.

U.S. Mineral Output, 1913: Percentage of World Total



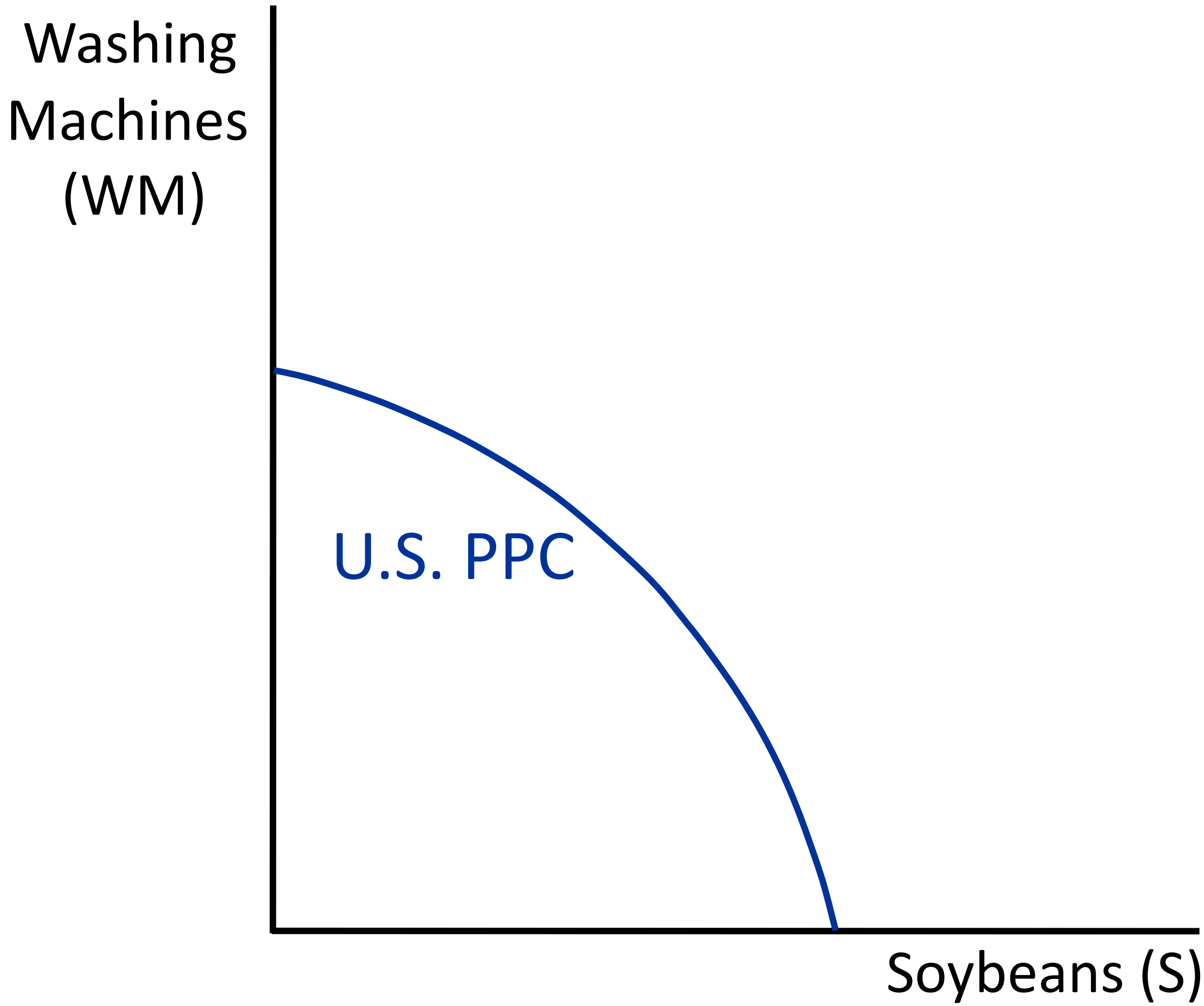
Source: Gavin Wright, "The Origins of American Industrial Success, 1879–1940."

Dynamic Comparative Advantage

- Some comparative advantage isn’t inherent, but acquired.
- By doing something or getting an early start, a country may become the low-opportunity-cost producer of a good.
- We sometimes refer to this as “dynamic comparative advantage.”

III. The Gains from International Trade:

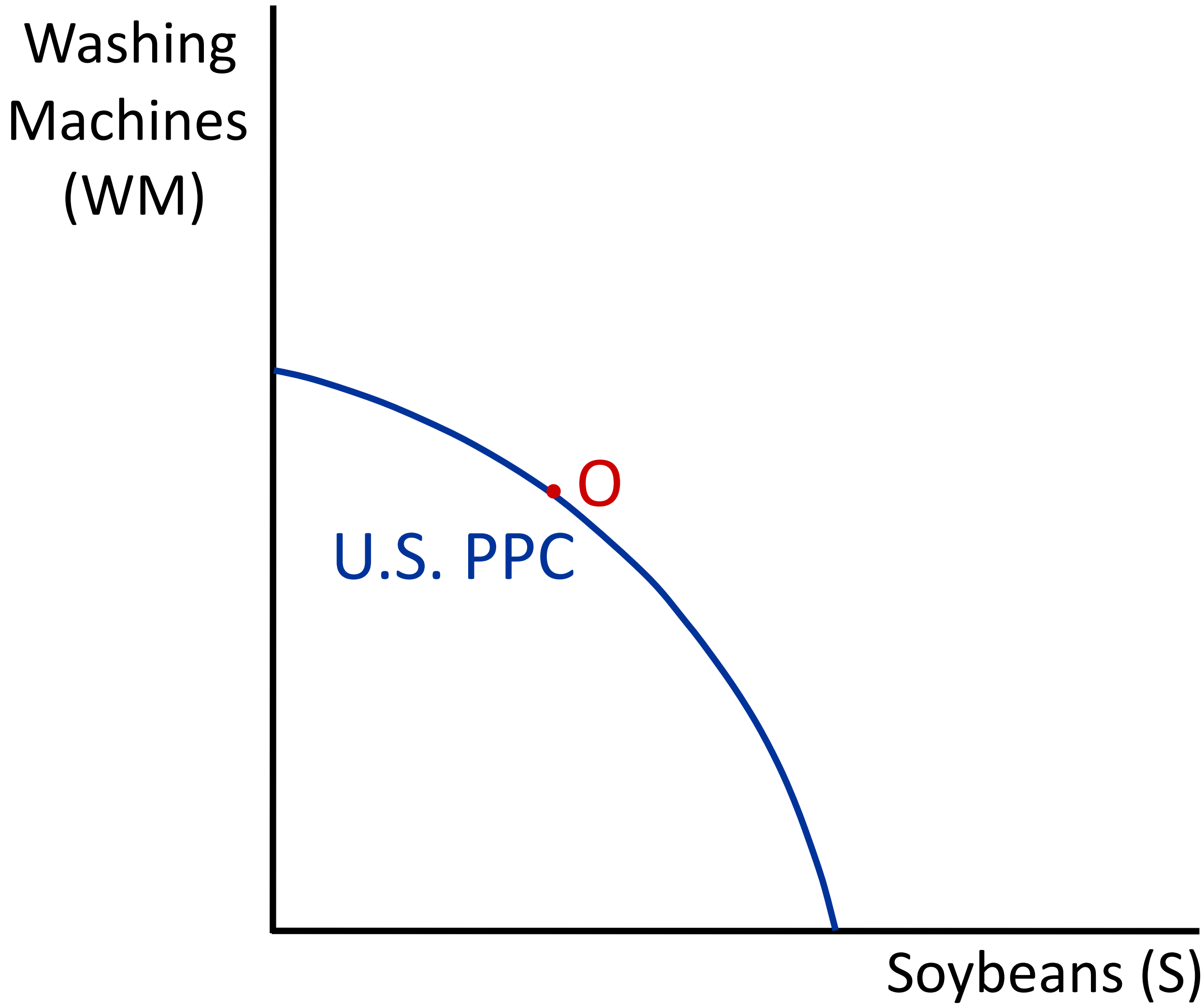
Optimal Specialization when the PPC is Curved



Terms of Trade

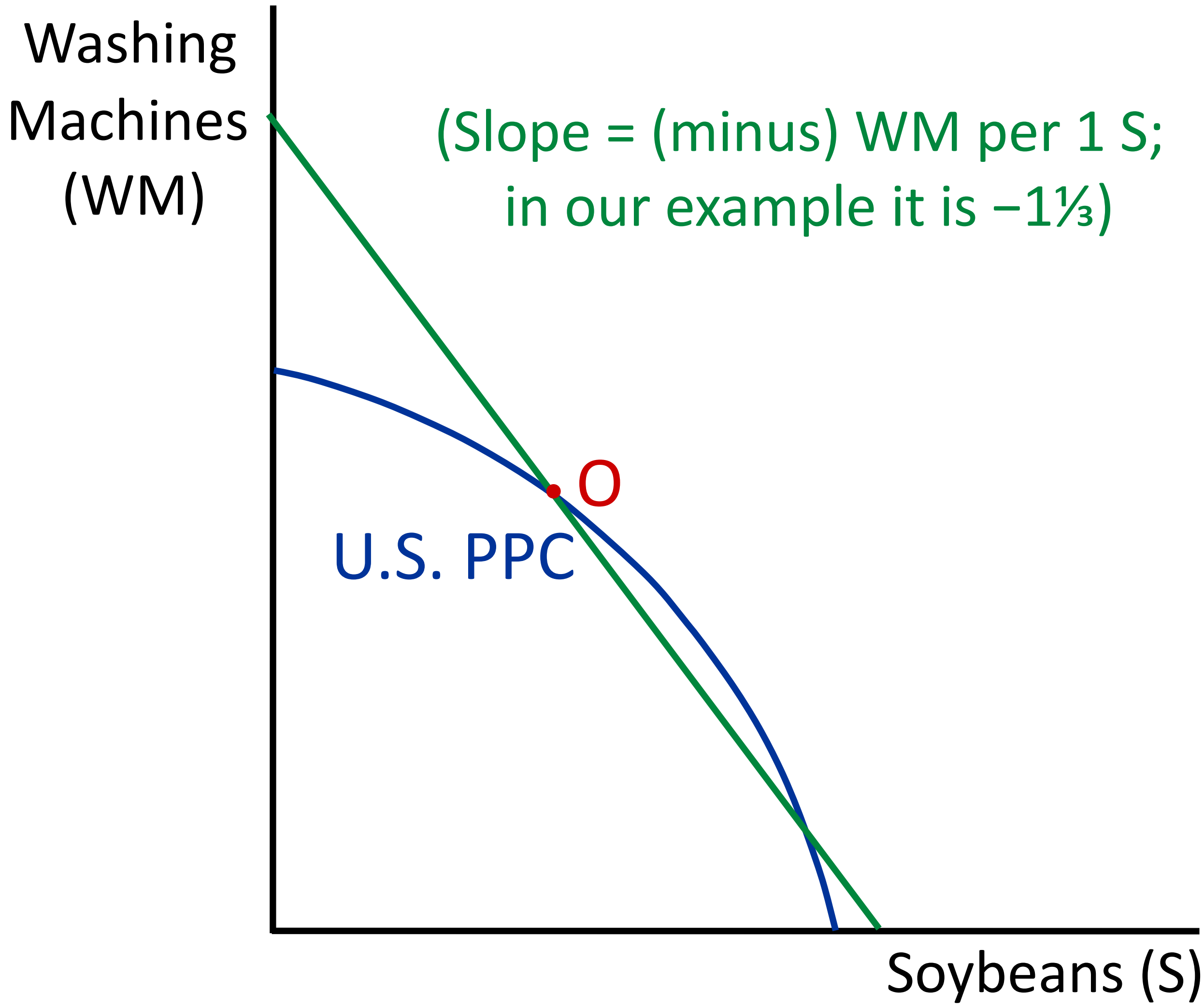
- Assume that the world price of soybeans is $400 and the world price of washing machines is $300 (in the same currency).
- The terms of trade (also called the world relative price) is therefore 1⅓ washing machines per ton of soybeans.
- Note: We are assuming that the world price doesn't change as a country produces more of a good.

Optimal Specialization when the PPC is Curved



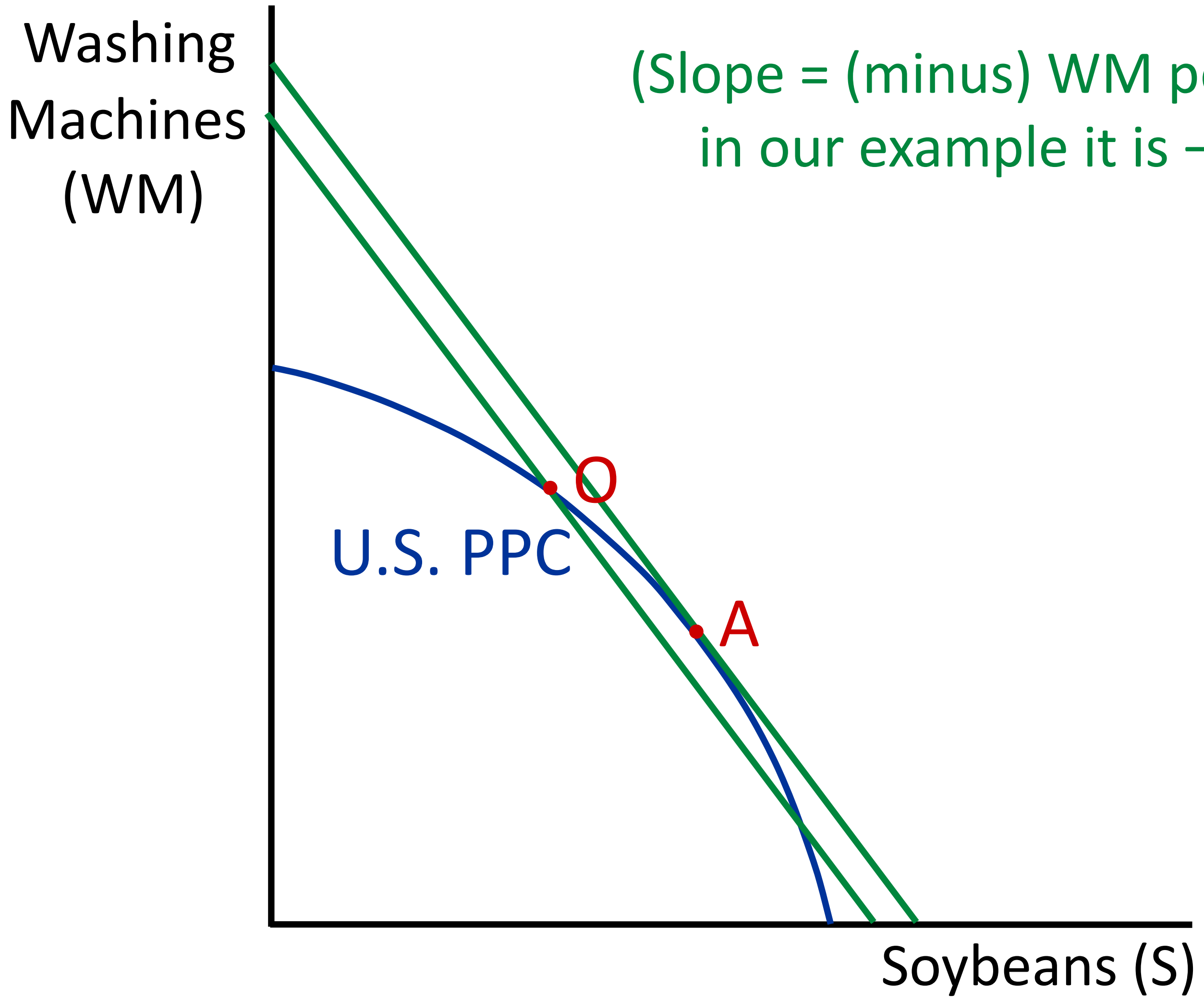
Suppose US produces at point O and then decides to trade

Optimal Specialization when the PPC is Curved



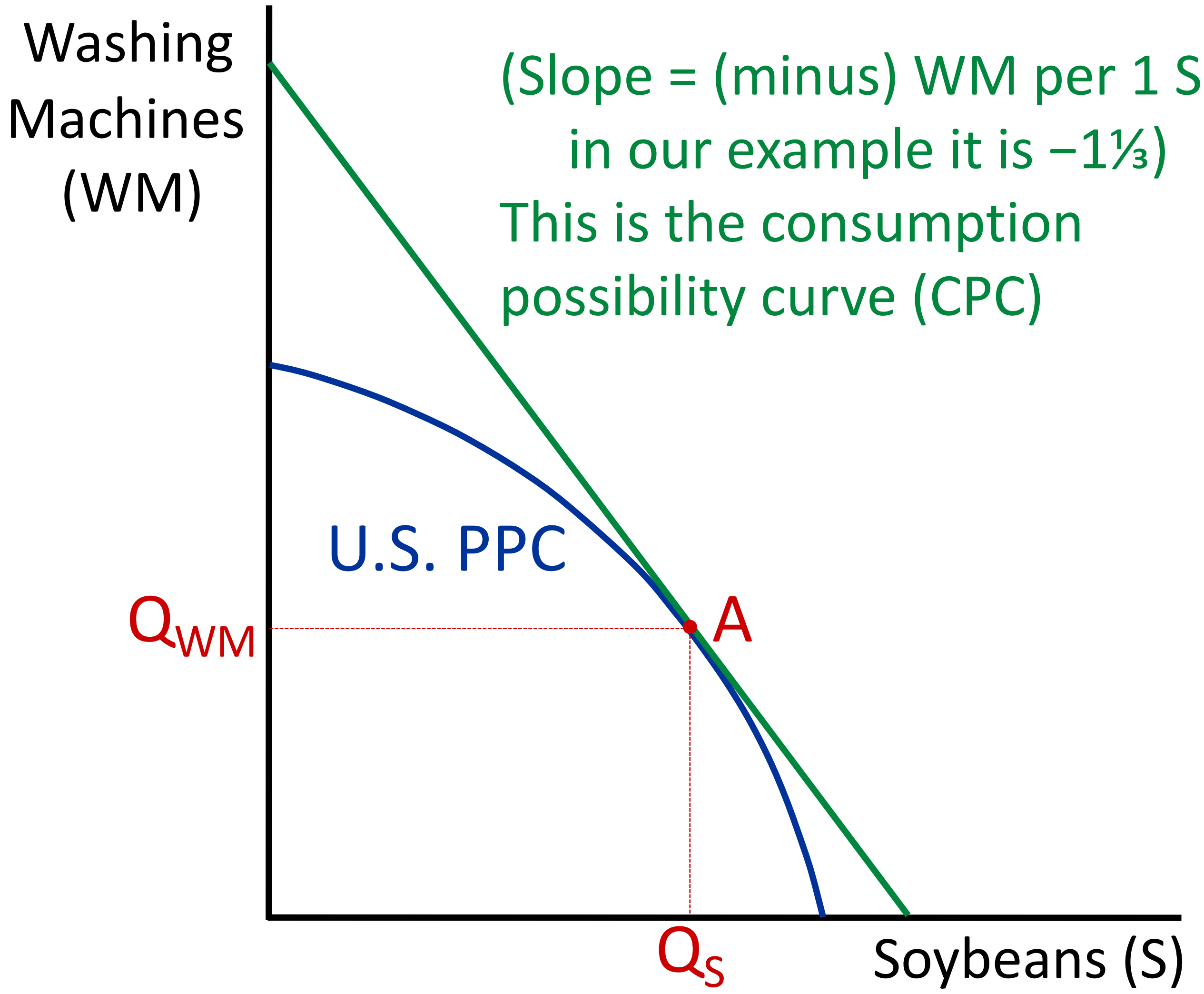
Suppose US produces at point O and then decides to trade.
Then US can consume at any point along green line

Optimal Specialization when the PPC is Curved

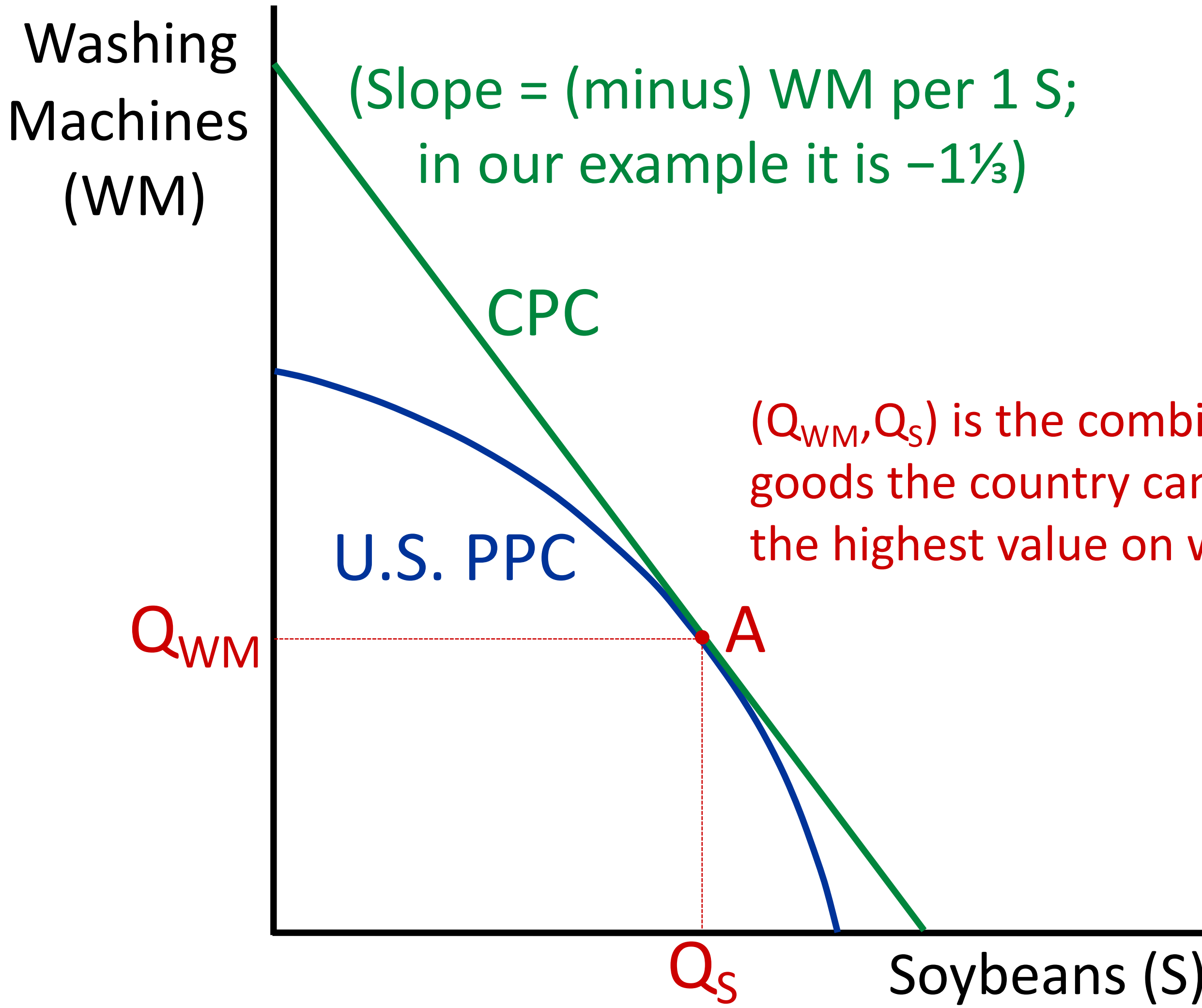


US can maximize its consumption possibility line by producing at A (where green line is tangent to blue PPC) instead of O

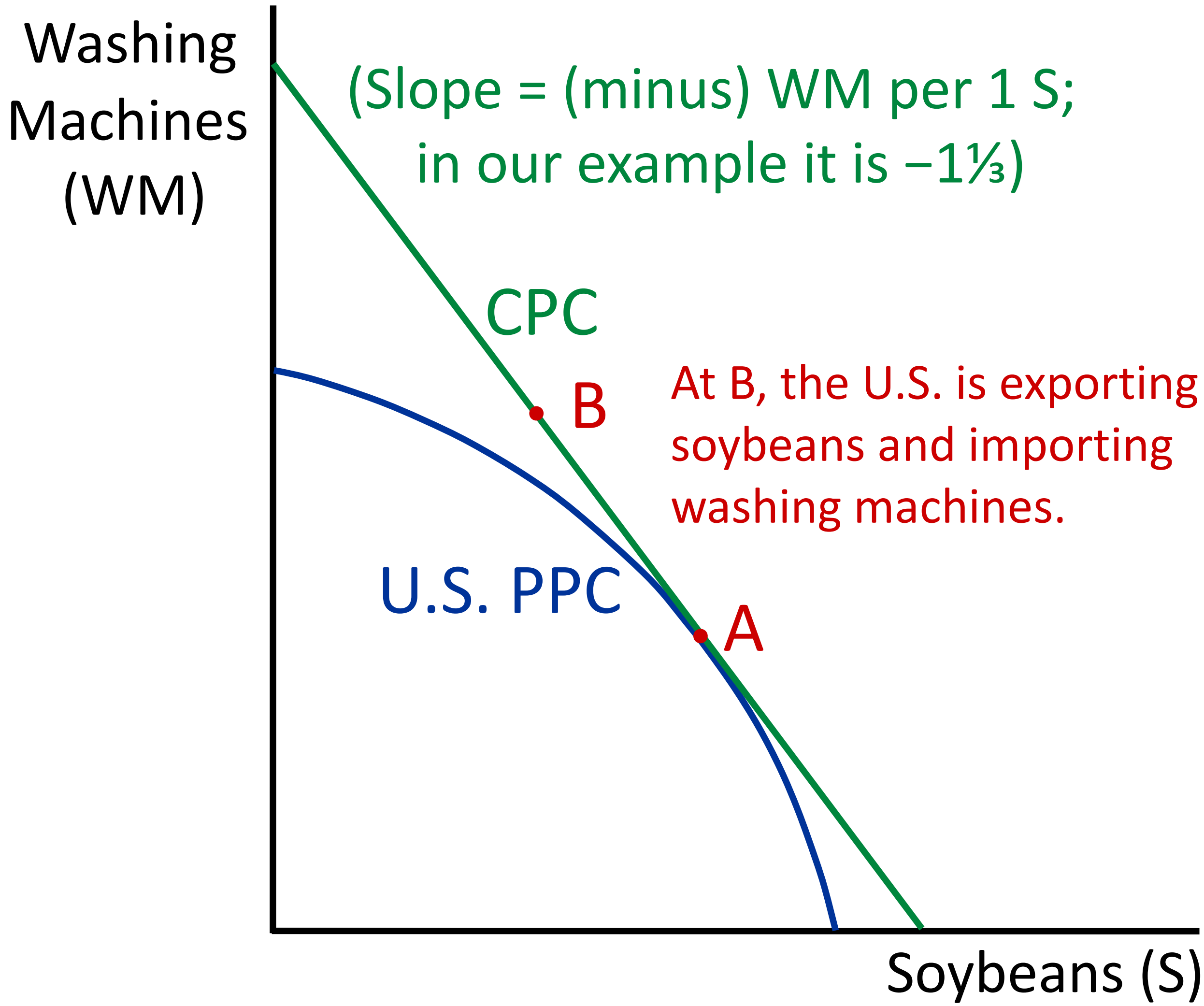
Optimal Specialization when the PPC is Curved



Optimal Specialization when the PPC is Curved



Optimal Specialization when the PPC is Curved



Gains from trade captured by the fact the CPC lies outside the PPC. Point B chosen by US depends on preferences of US consumers for WM vs. Soybeans

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.

Quiz

Why should a country produce at the point where the PPC is tangent to the CPC line from?

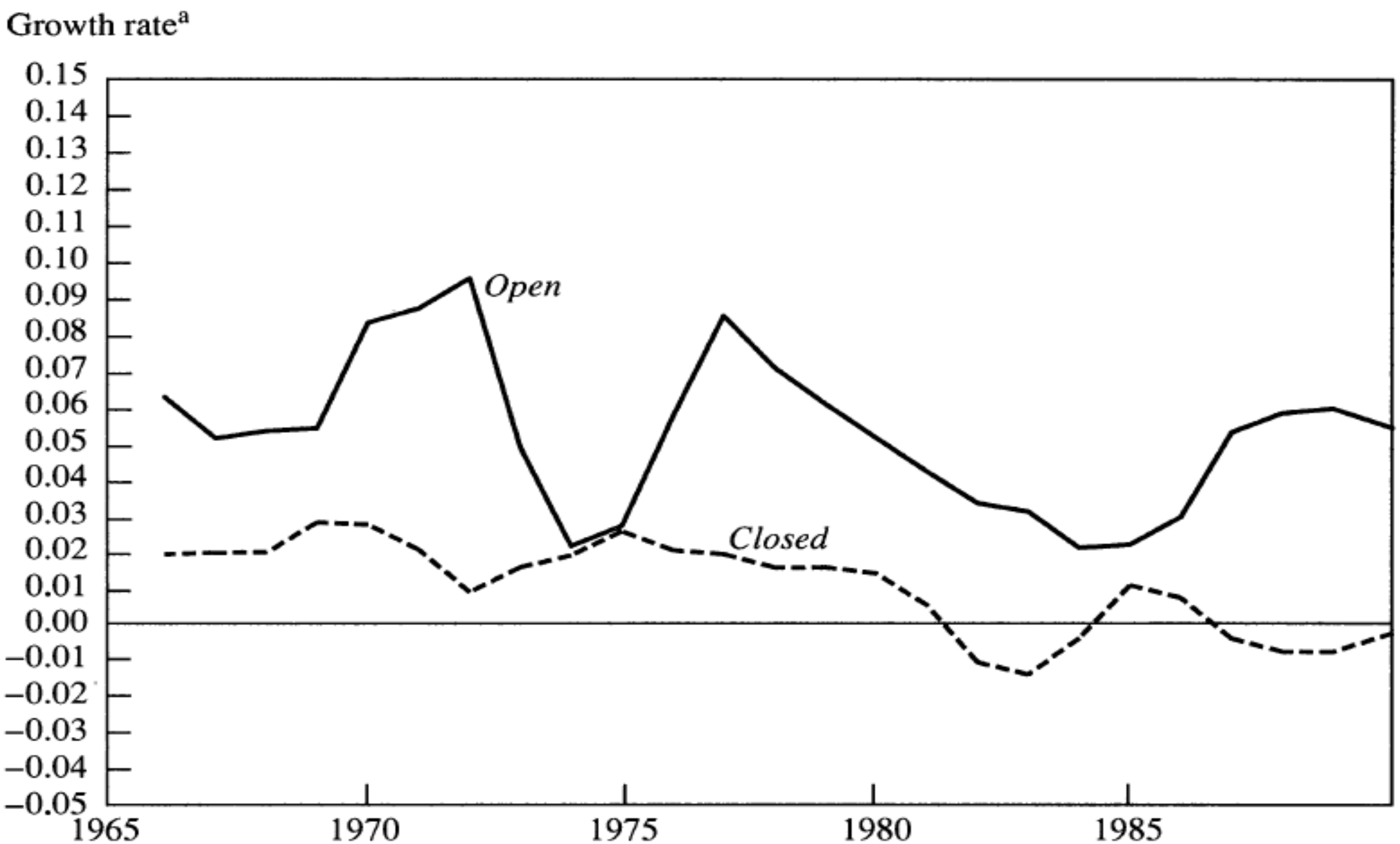
- A. Because it maximizes the value of domestic production using trade prices
- B. Because PPC and CPC intersect at the tangent point
- C. Because production and consumption is not the same with international trade
- D. All the above
- E. None of the above

Where We Are

- International trade theory suggests there will be gains from specialization if countries differ in opportunity cost.
- There is a crucial role for world prices in encouraging trade and ensuring that both countries benefit.
- Want to look at empirical evidence to see if the theory is confirmed by the data.

IV. Empirical Evidence on the Gains from International Trade

Average Growth of Eight Always Open and Forty Always Closed Economies, 1966-90

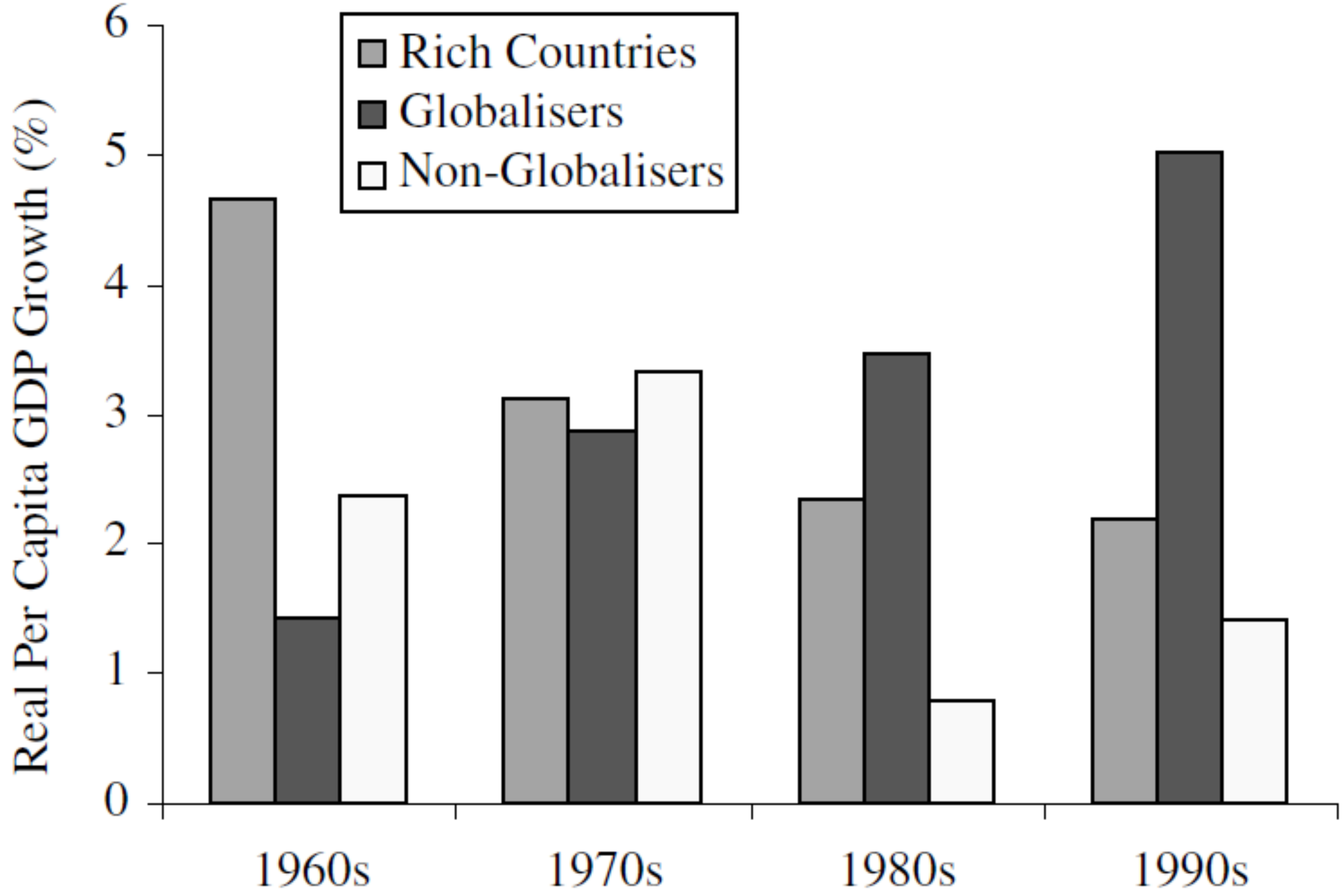


Source: Jeffrey Sachs and Andrew Warner, "Economic Reform and the Process of Global Integration."

Possible Problems in Looking at the Correlation between Trade and Growth?

- Ignores reverse causation: Perhaps being rich makes you want to engage in a lot of trade.

Openness and Growth in Emerging Economies



Source: David Dollar and Aart Kraay, "Trade, Growth, and Poverty."

Globalisers are developing countries that start opening to trade from late 1970s to 1980s. They grow substantially more subsequently

Possible Problems in Looking at the Correlation between Trade and Growth?

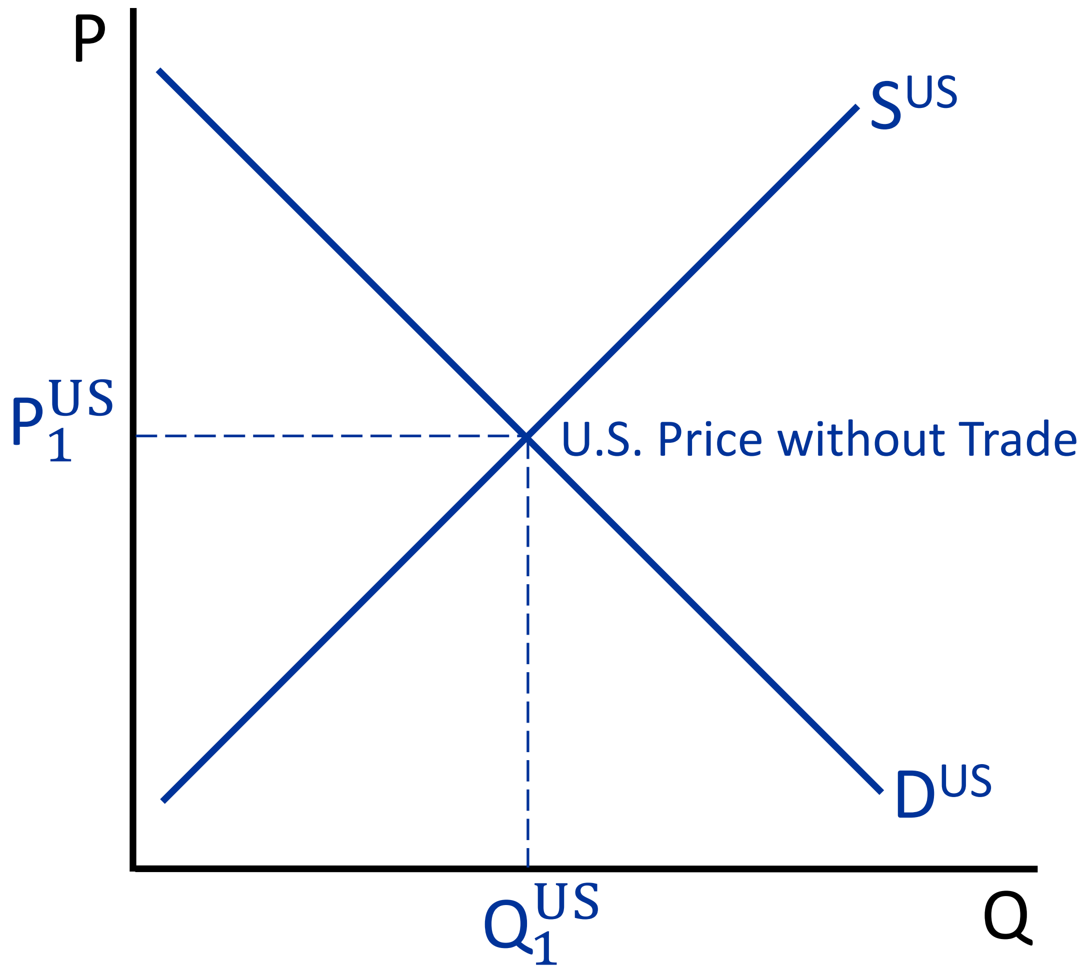
- Ignores reverse causation: Perhaps being rich makes you want to engage in a lot of trade.
- There might be a systematic relationship between trade and omitted influences on growth. For example, perhaps countries that adopt free trade policies adopt other policies that are good for growth.

Possible Problems in Looking at the Correlation between Trade and Growth?

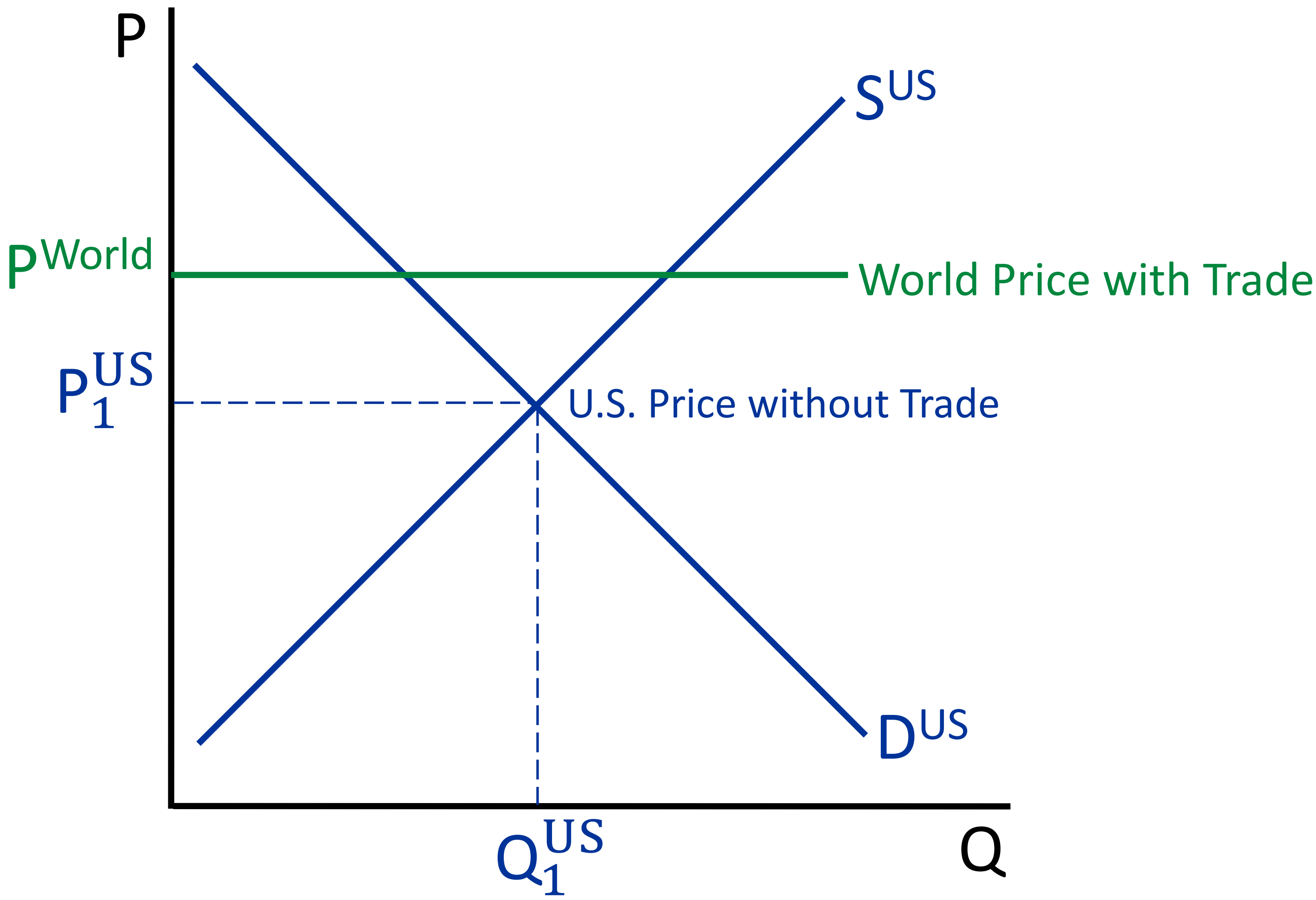
- Ignores reverse causation: Perhaps being rich makes you want to engage in a lot of trade.
- There might be a systematic relationship between trade and omitted influences on growth. For example, perhaps countries that adopt free trade policies adopt other policies that are good for growth.
- Economists convinced that opening to trade accelerates growth of emerging countries: country case studies and comparisons across countries

V. Supply and Demand Model of International Trade

Supply and Demand Diagram for an Export Good



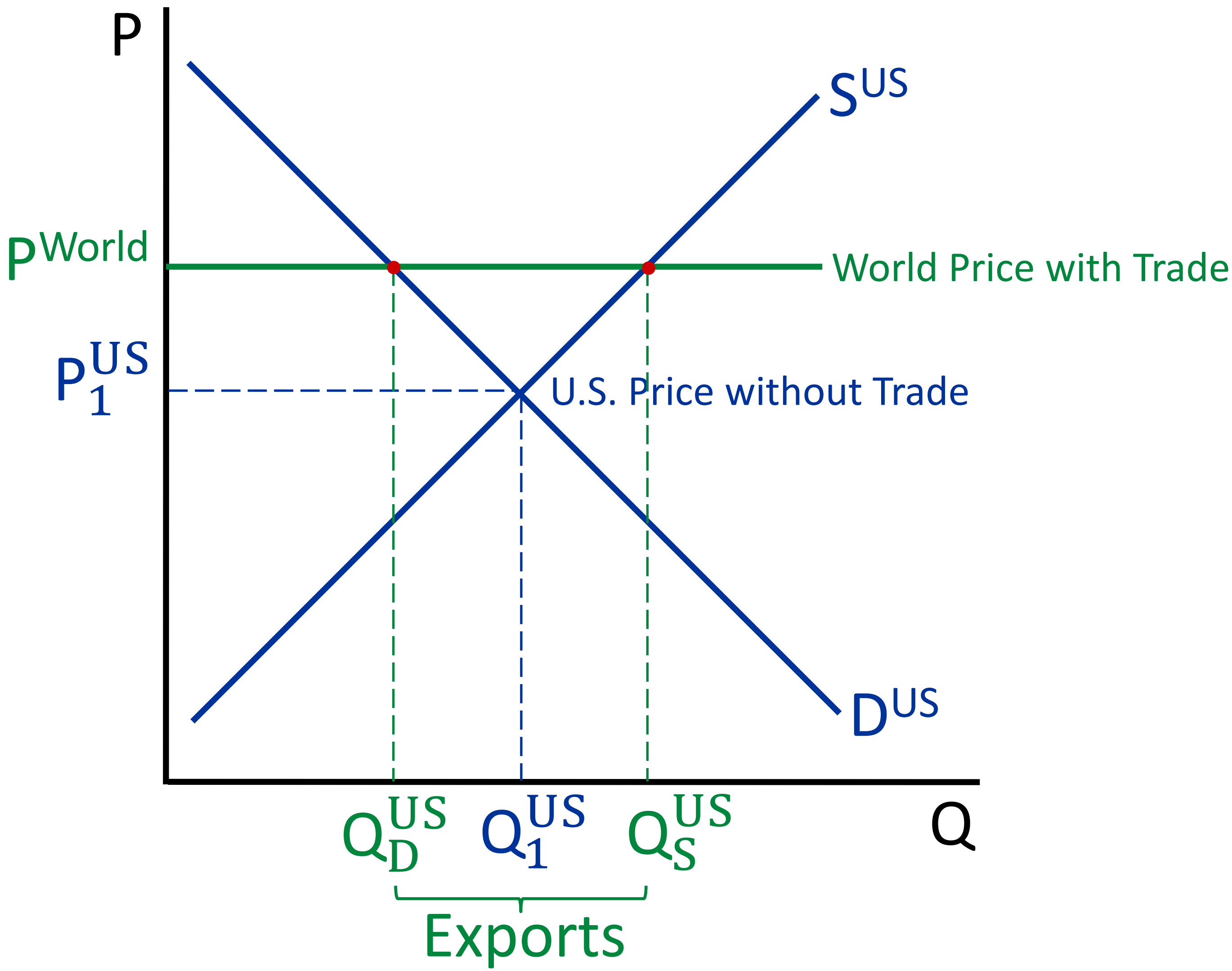
Supply and Demand Diagram for an Export Good



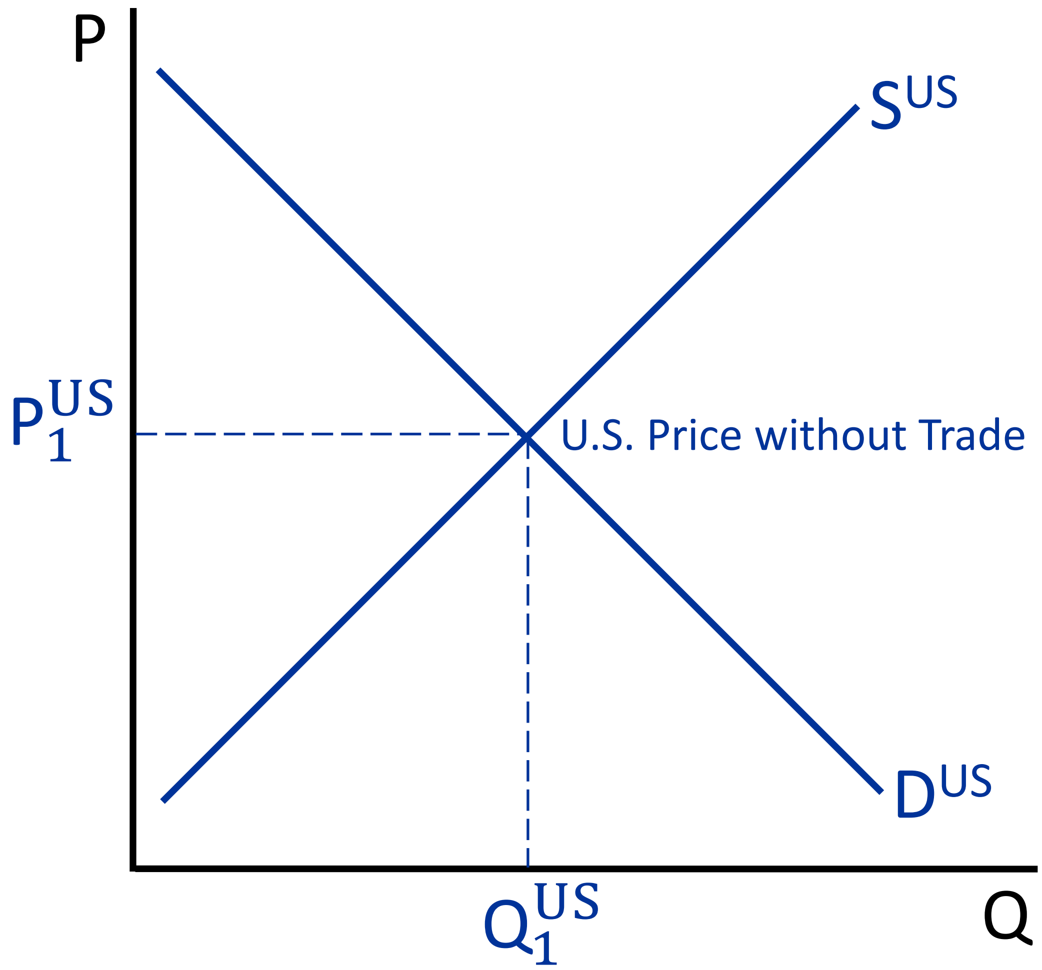
Some Notes on the Interpretation of the Supply and Demand Diagram with Trade

- 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 domestic economy.
- We assume that the world demand and world supply at that world relative price are perfectly elastic (=world is big relative to US)

Supply and Demand Diagram for an Export Good



Supply and Demand Diagram for an Import Good



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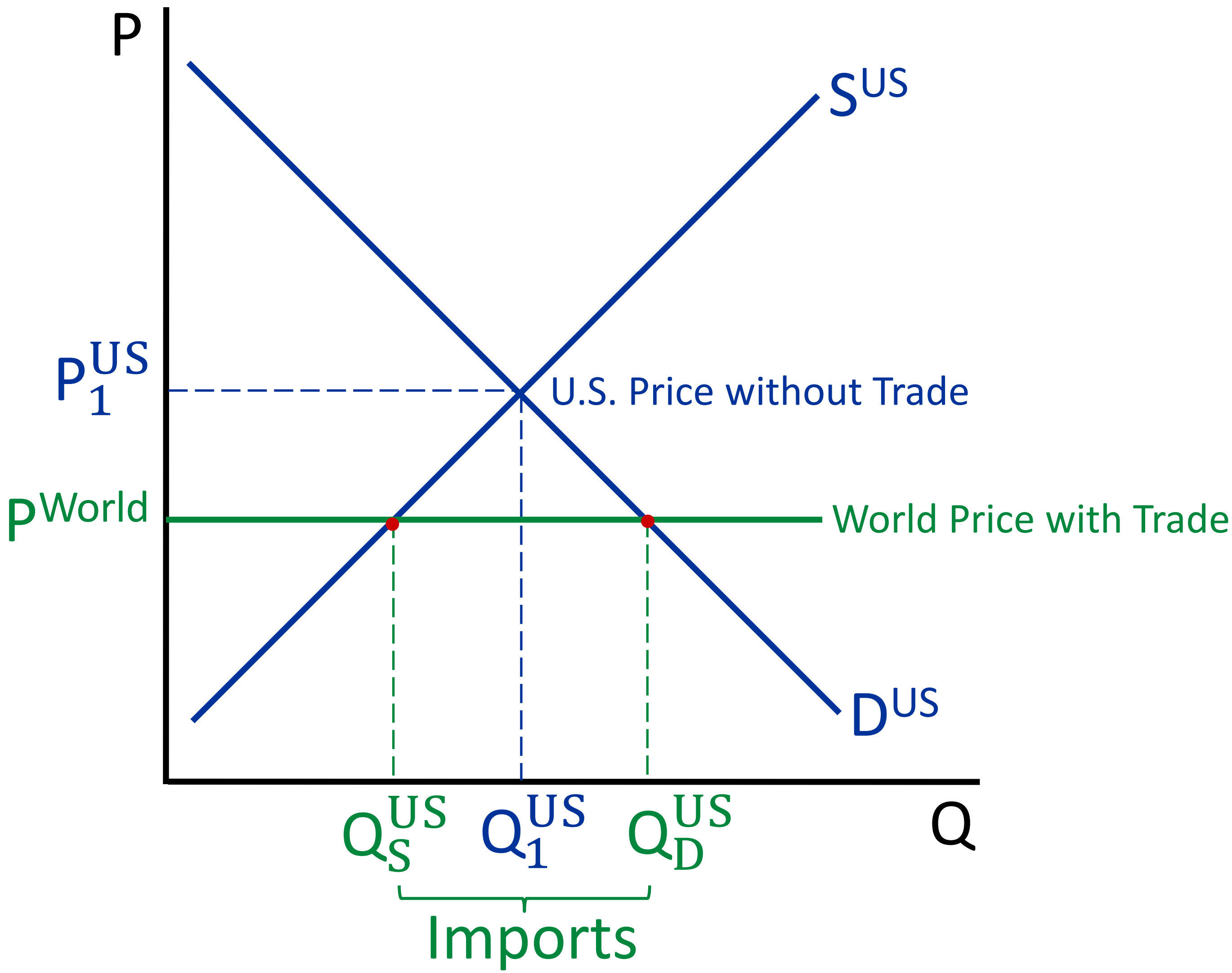


Quiz

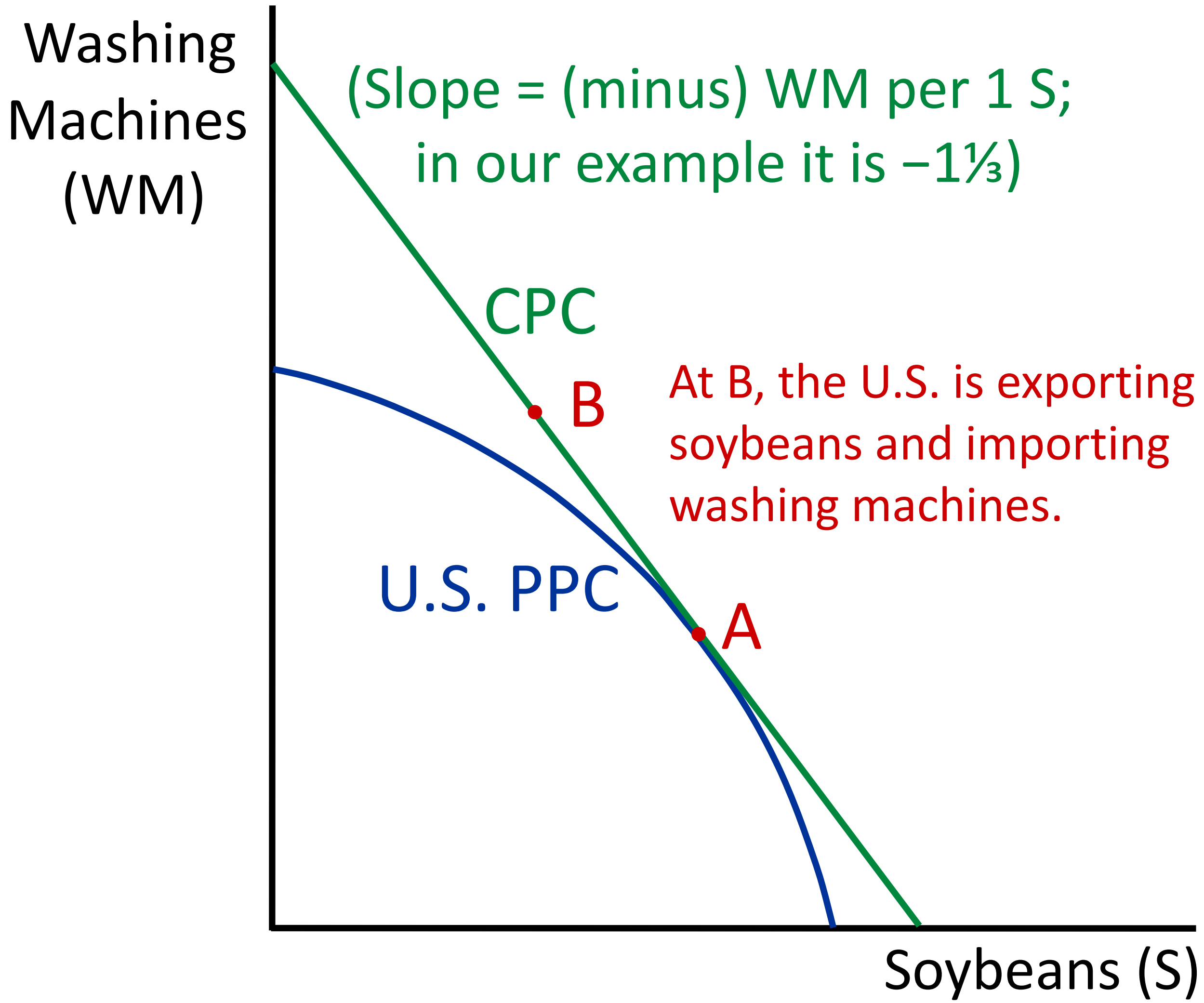
US used to consume more oil than it produces. Now, it is starting to produce more than it consumes. If US did not trade oil, which one below is true:

- A. US oil prices would always be lower than World prices.
- B. US oil prices would always be higher than World prices.
- C. US oil prices would be now lower than World prices (but would have been higher in the past)
- D. US oil prices would be now higher than World prices (but would have been lower in the past)
- E. None of the above is necessarily true because without trade oil exploration within US would have been bigger

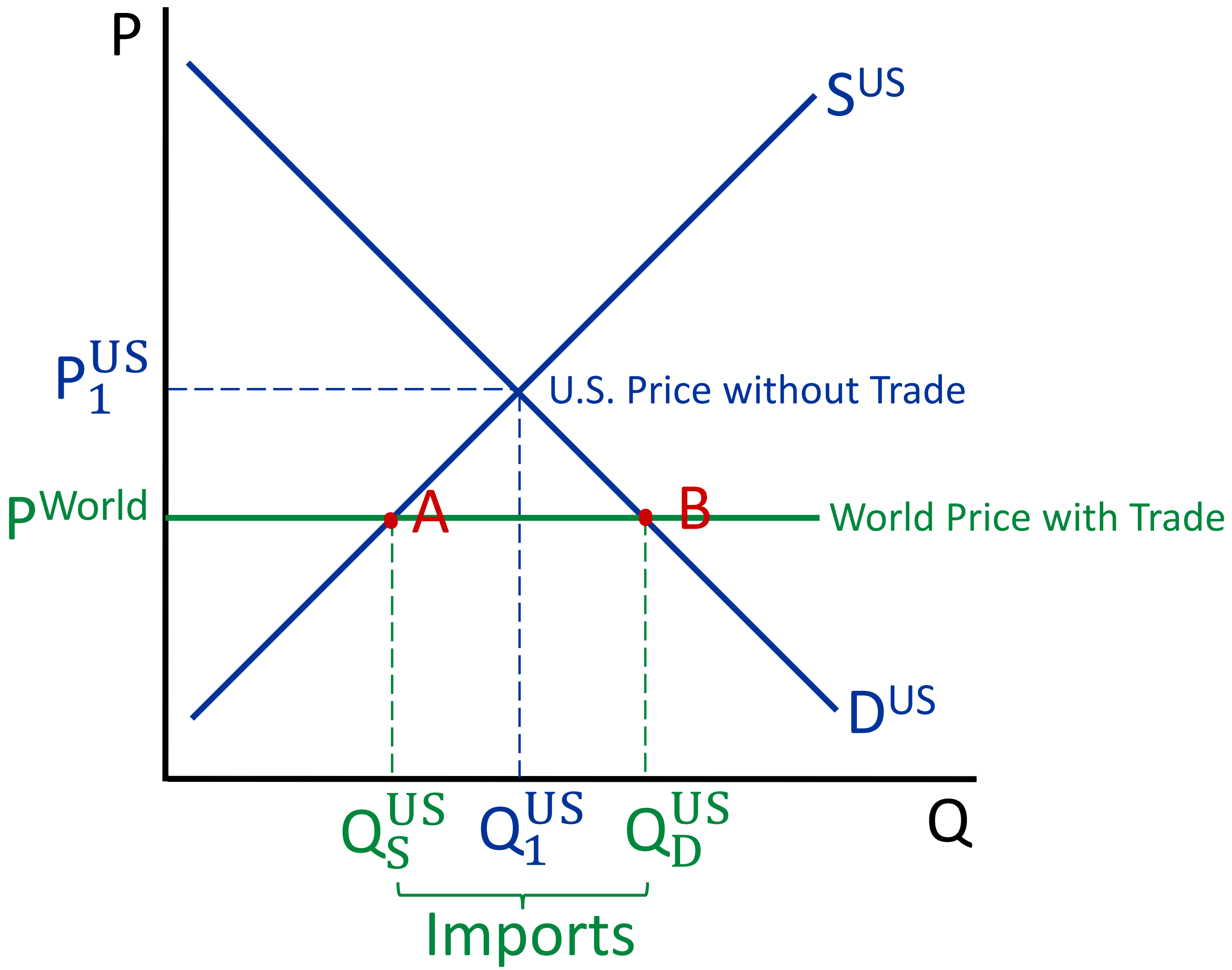
Supply and Demand Diagram with Trade Shows Some Useful Points

- 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.

Optimal Specialization when the PPC is Curved



Supply and Demand Diagram for an Import Good

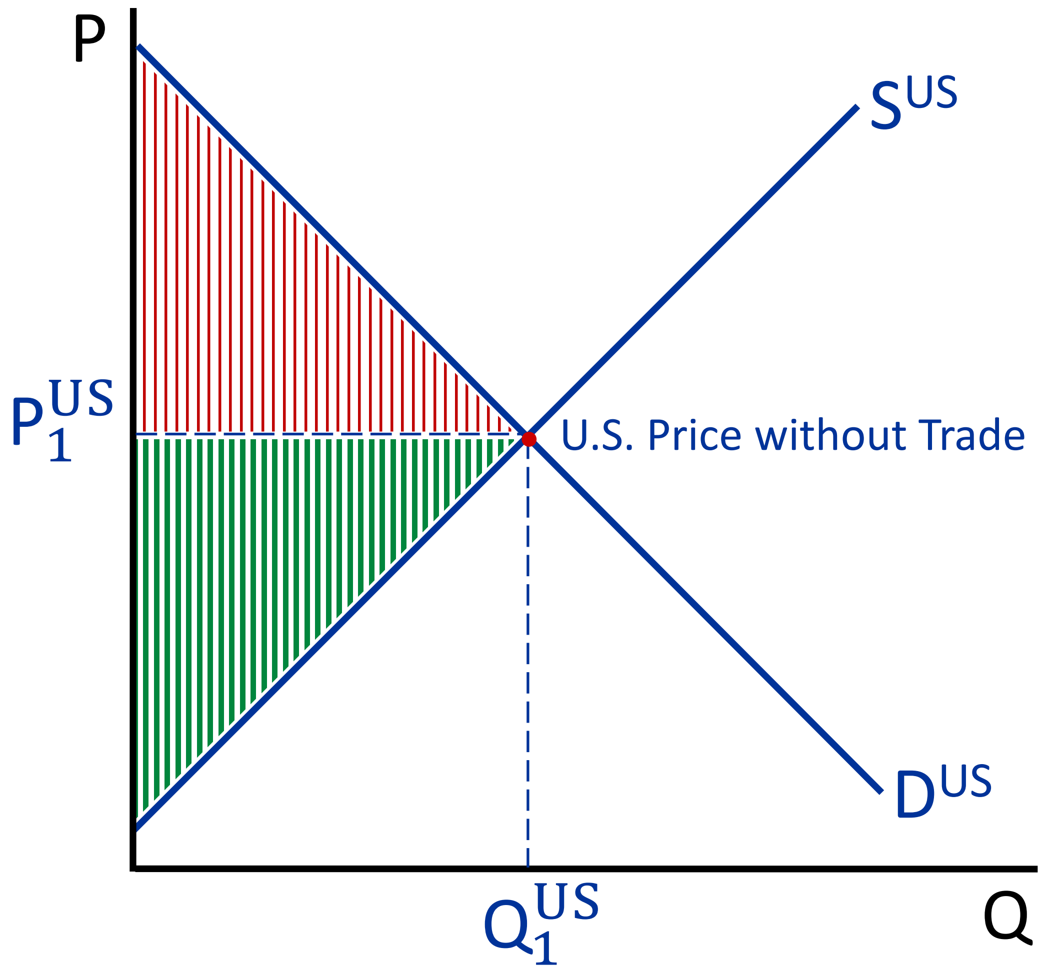


VI. Price, Welfare, and Employment Effects of Trade

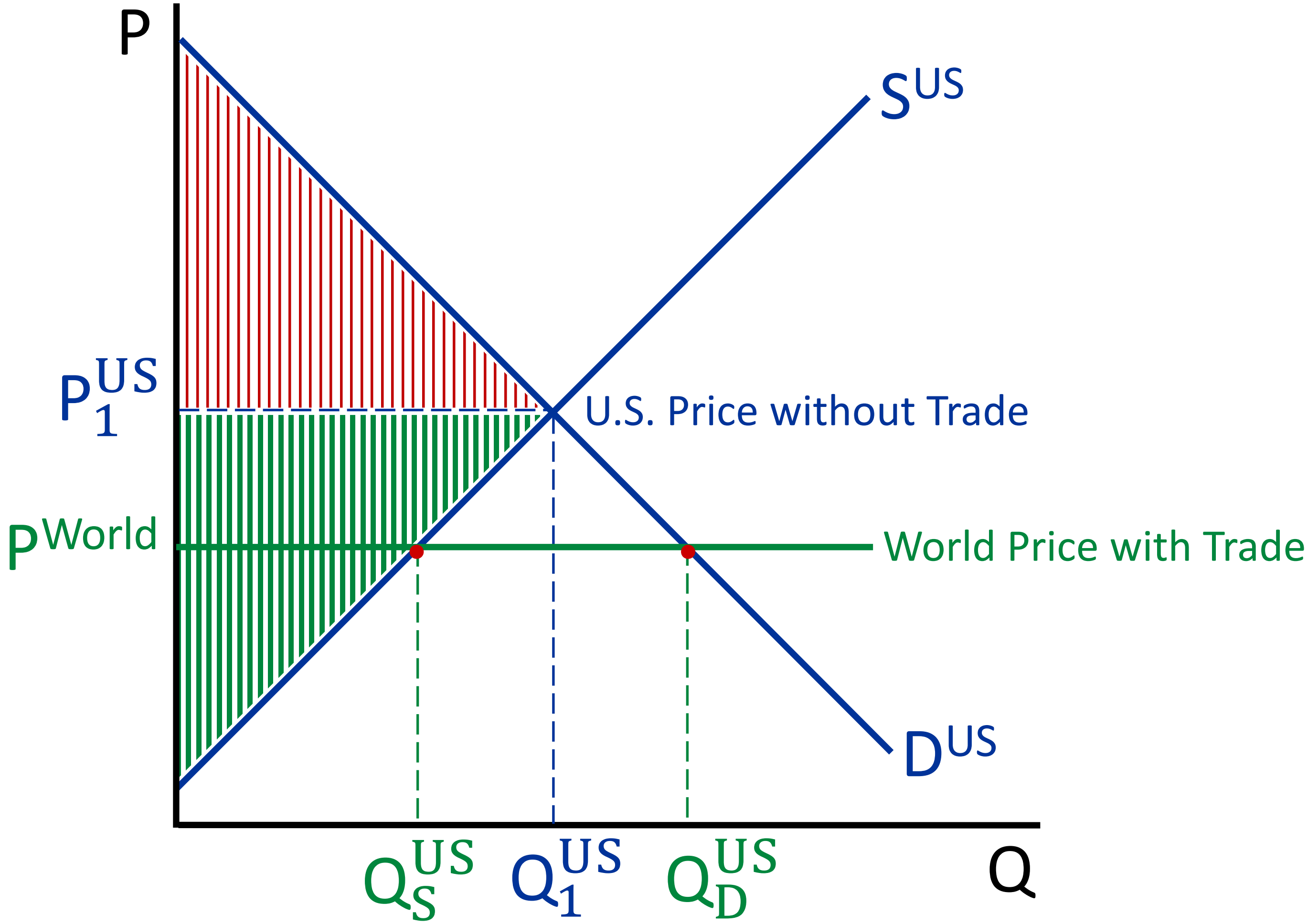
Price of Appliances Relative to Other Goods

Source: FRED, Federal Reserve Bank of St. Louis. Relative price of appliances has fallen because they used to be made in the US and are now made more cheaply in emerging countries such as China

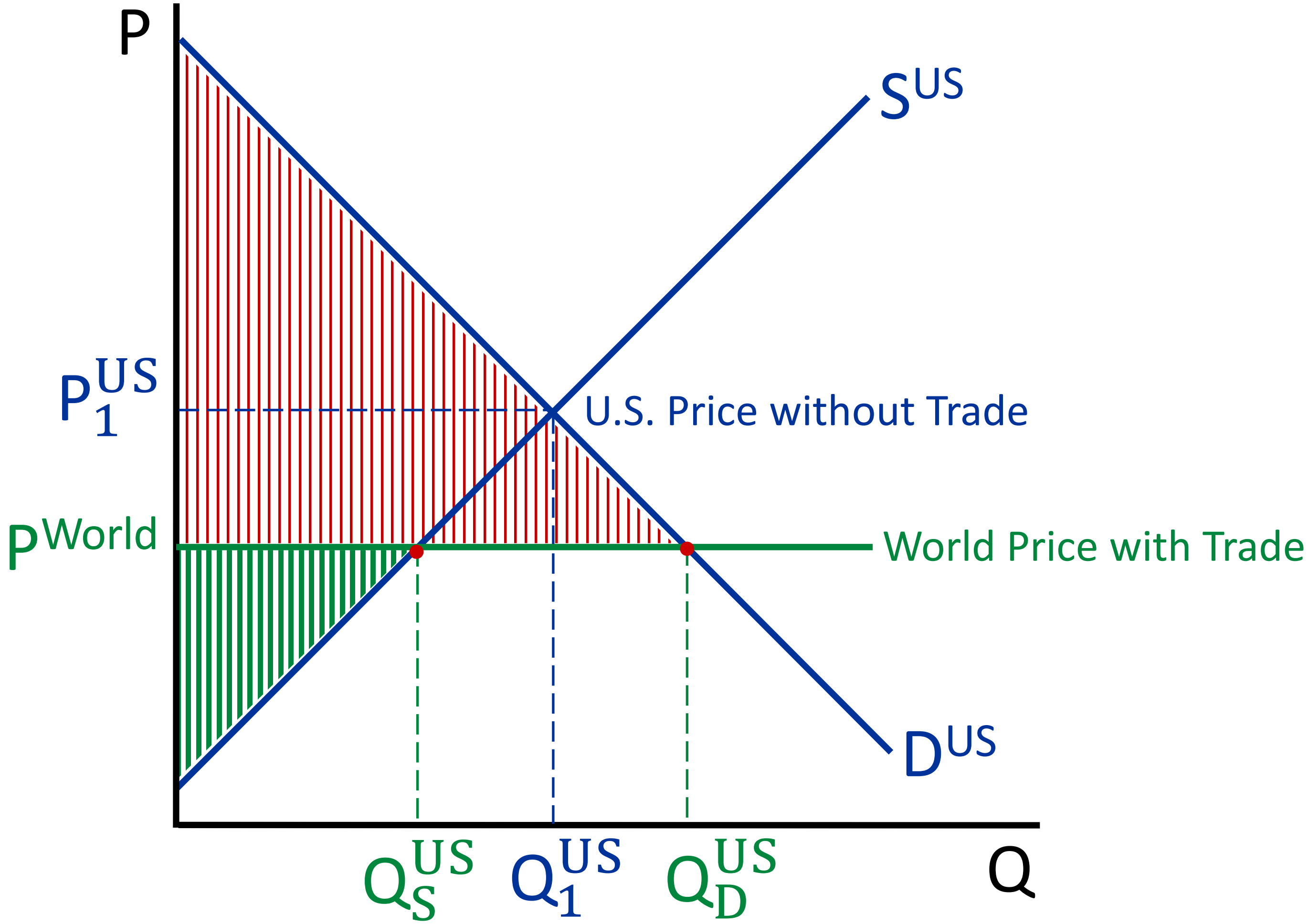
Gains in Surplus from Trade: Consumer+Producer surplus with no trade



Gains in Surplus from Trade: Ability to Import Good at lower Price P^{World}



Gains in Surplus from Trade: Import Good
Consumer+Producer surplus expands



Trade increases total economic surplus. Imports increase consumer surplus by more than domestic producers (US firms+workers) lose. Creates winners and losers.

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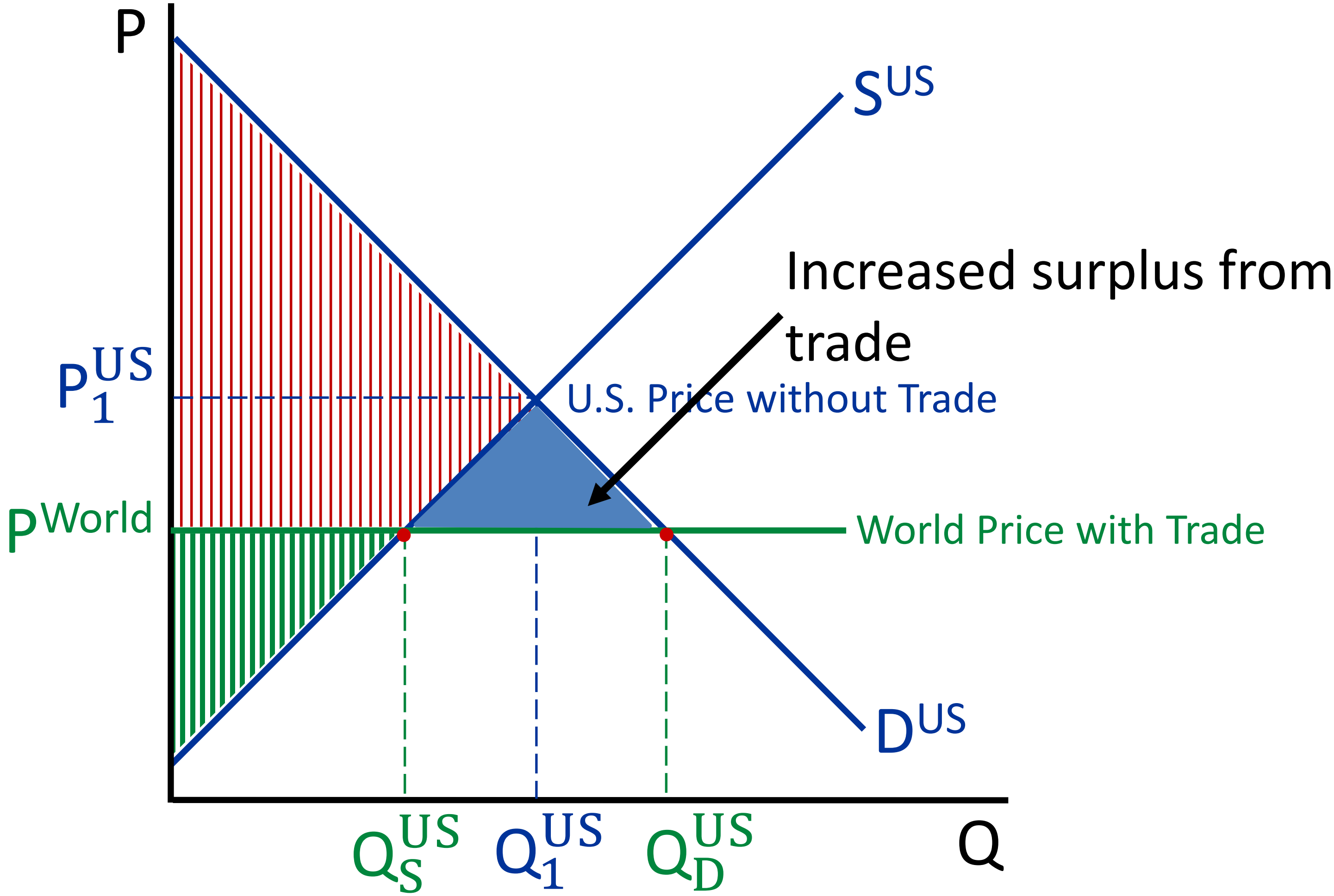
Consumer+Producer surplus expands



Trade increases total economic surplus. Imports increase consumer surplus by more than domestic producers lose. Creates winners and losers.

Quiz

Suppose the US prohibits imports in the market with trade we depicted. Which one below is true?

- A. There is a decrease of consumer surplus.
- B. There is an increase in producer surplus.
- C. There is deadweight loss
- D. All of the above
- E. None of the above necessarily

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:
  - may not have the skills needed to move to the industries where jobs are available
  - Autor, Dorn, and Hanson 2013 China Syndrome: US places which used to produce what China now exports to the US suffered big and sustained losses in employment and earnings

VII. Trade Policy

Some Definitions

- Free trade: A country puts up 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

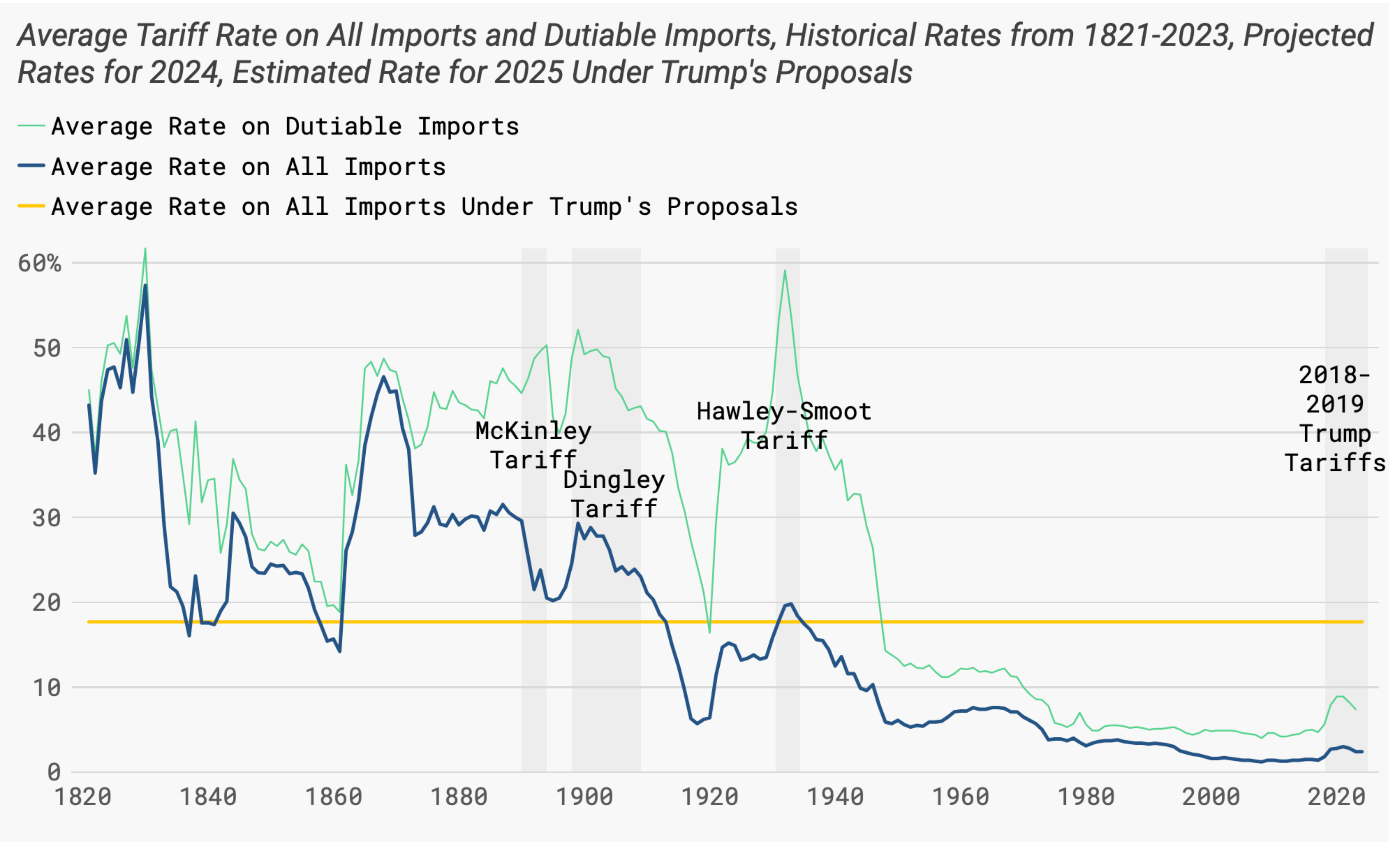
- Shipping costs matter.
- Improved logistics can make trade easier.
- Better communication makes trade in services possible [e.g., phone customer service for US provided from Bangalore, India]
- Reminder: output is goods and services. Goods are tangible items (cars, appliances, etc.) while services are intangible (tasks such as haircut, health care, education, restaurants, hotels, etc.)

The Advent of the Container Ship

The container ship greatly reduced the labor needed to load/unload ships. This reduction in costs made trade more profitable

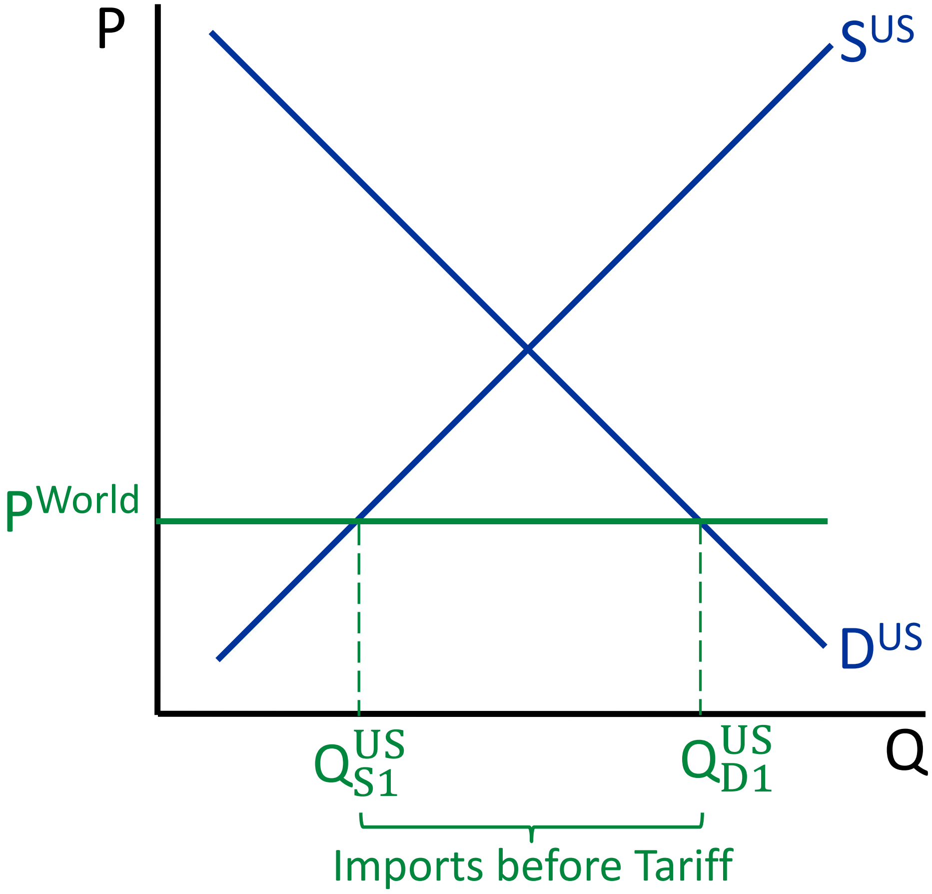
Methods of Protection

- Tariff: A tax on imports. Economically equivalent to a sales tax on those imported goods.
- Quota: A limit on the quantity of imports.
- Subsidies for domestic production.

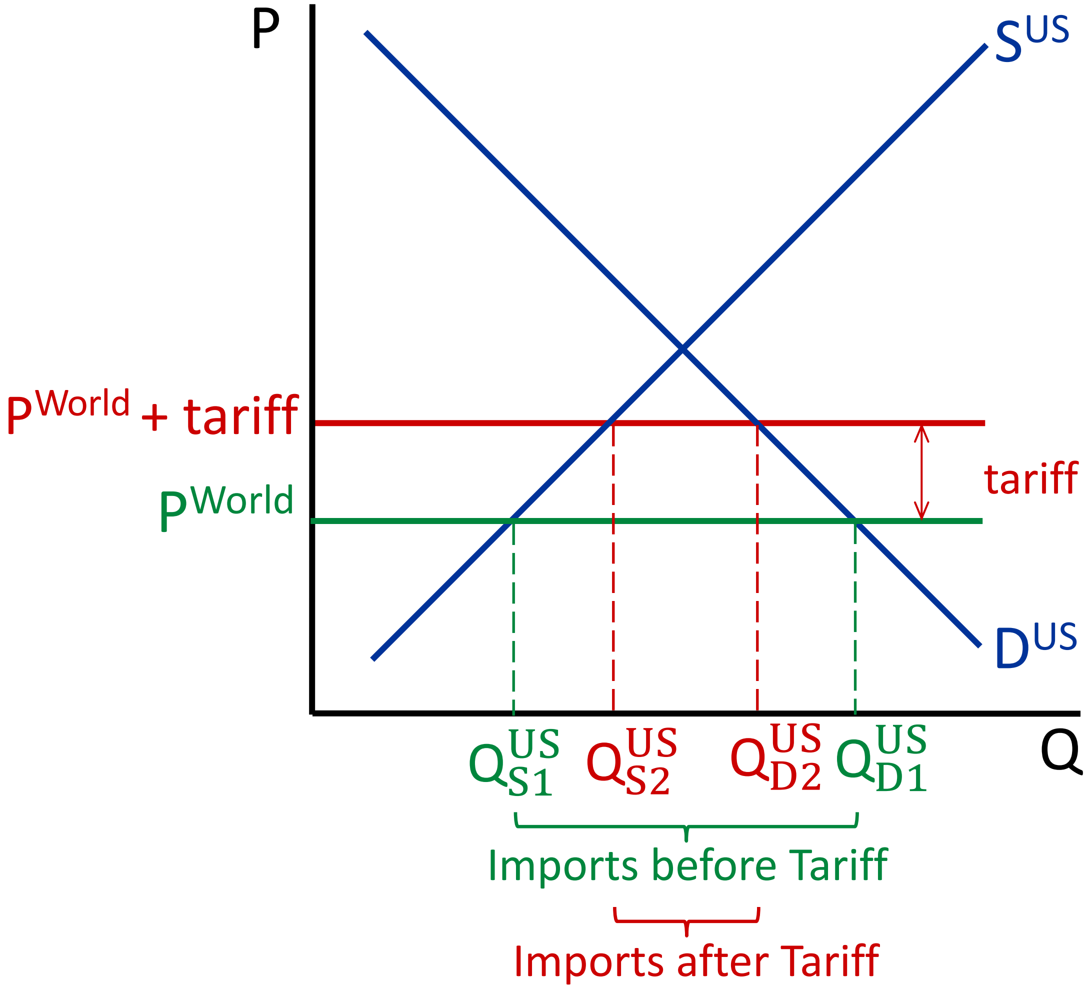


Tariffs apply to some imports only (dutiable imports). US Tariffs were historically high until World War II. Wave of reductions through World Trade Organization after WWII. Recent increases under Trump have been small (so far).
Source is Tax Foundation.

Effects of a Tariff



Welfare Analysis of a Tariff



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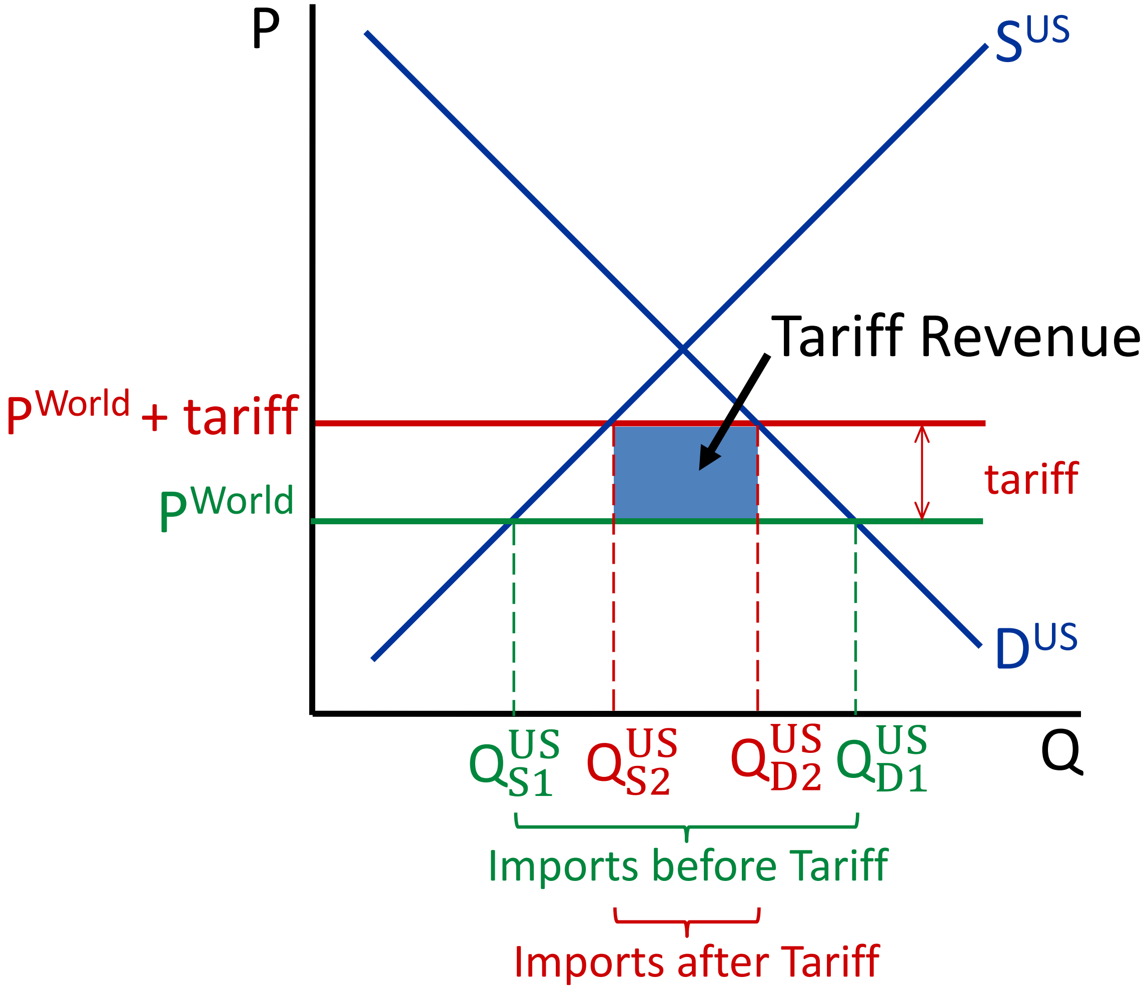

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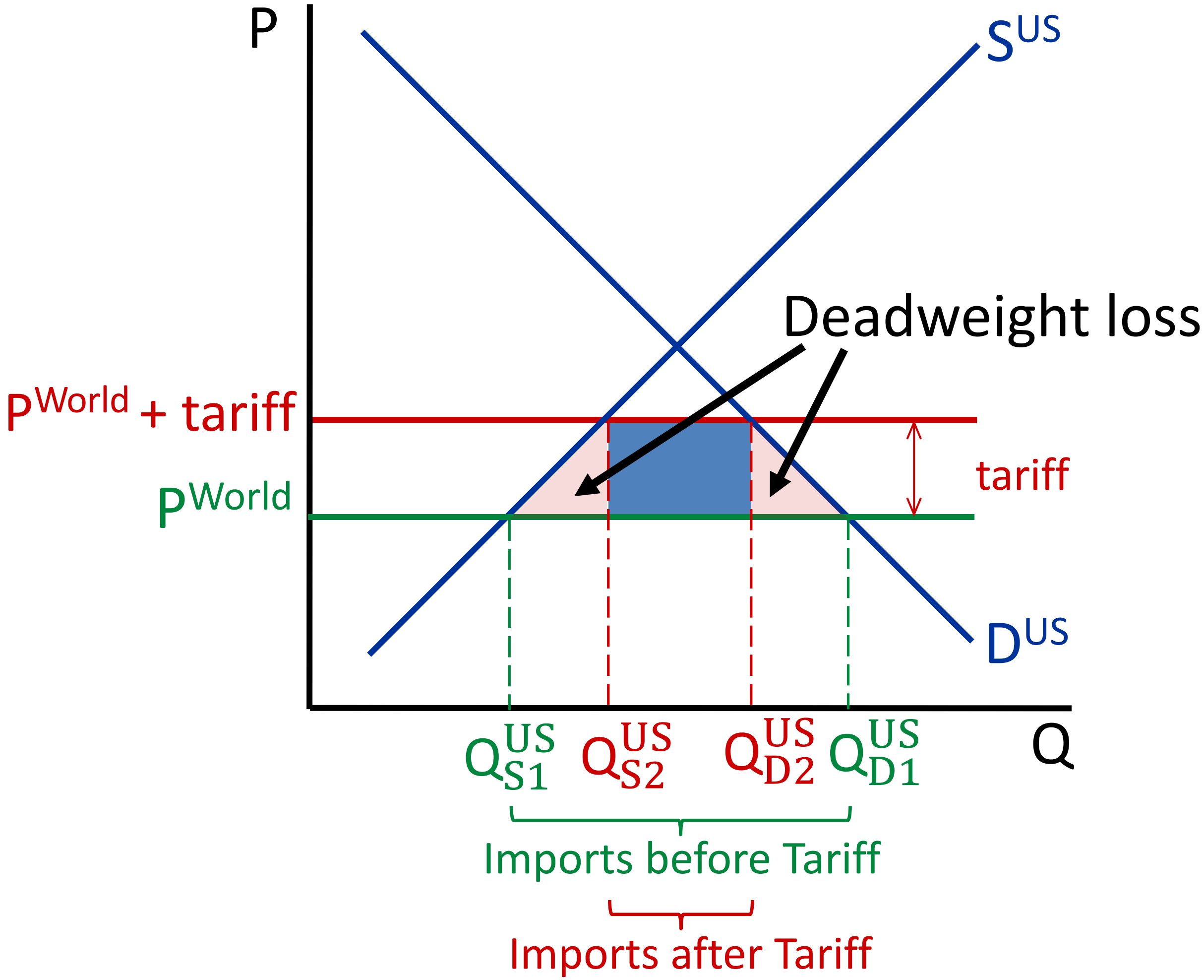

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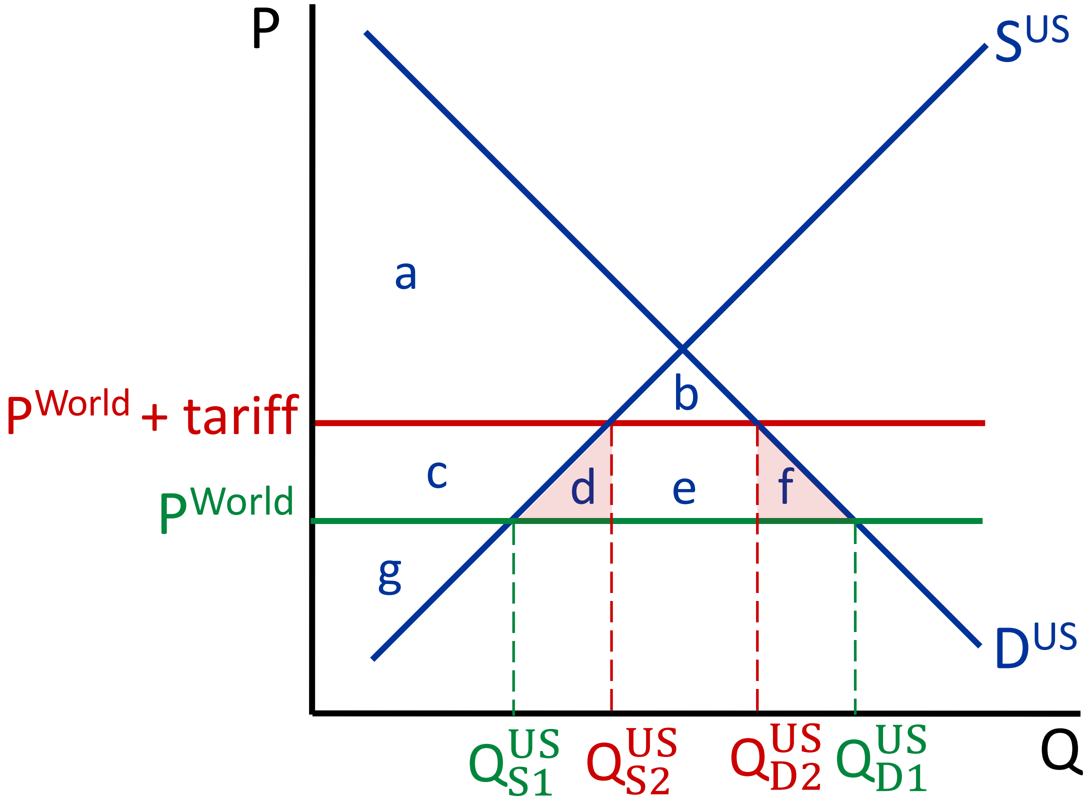
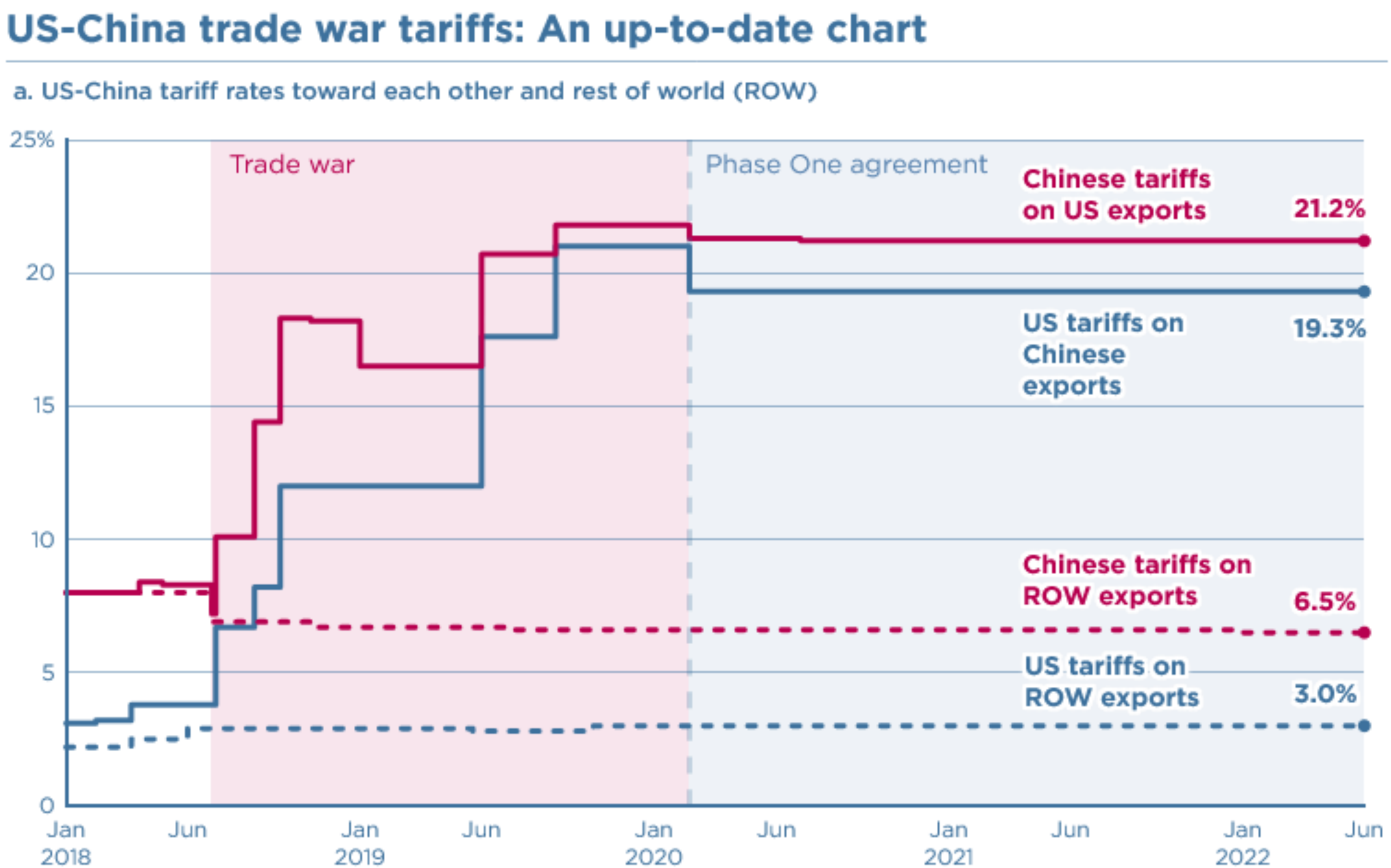


	Before Tariff(Q_{S1}^{US}, Q_{D1}^{US})	After Tariff(Q_{D2}^{US}, Q_{S2}^{US})
Consumer Surplus	a+b+c+d+e+f	a+b
Producer Surplus	g	c+g
Tariff Revenue		e
Total Surplus	a+b+c+d+e+f+g	a+b+c+e+g
Deadweight Loss		d+f

Empirical Effects of a Tariff

- Theory predicts that tariff should reduce imported quantities and increase prices.
- Trump trade war started in 2018 offers a recent natural experiment
- Can look at imports from China (treatment group) vs. imports from the rest of the world (control group) before and after change
- This is called a Difference-in-difference approach
- Shows a clear 20% reduction in imports from China following the 15 points tariff increase

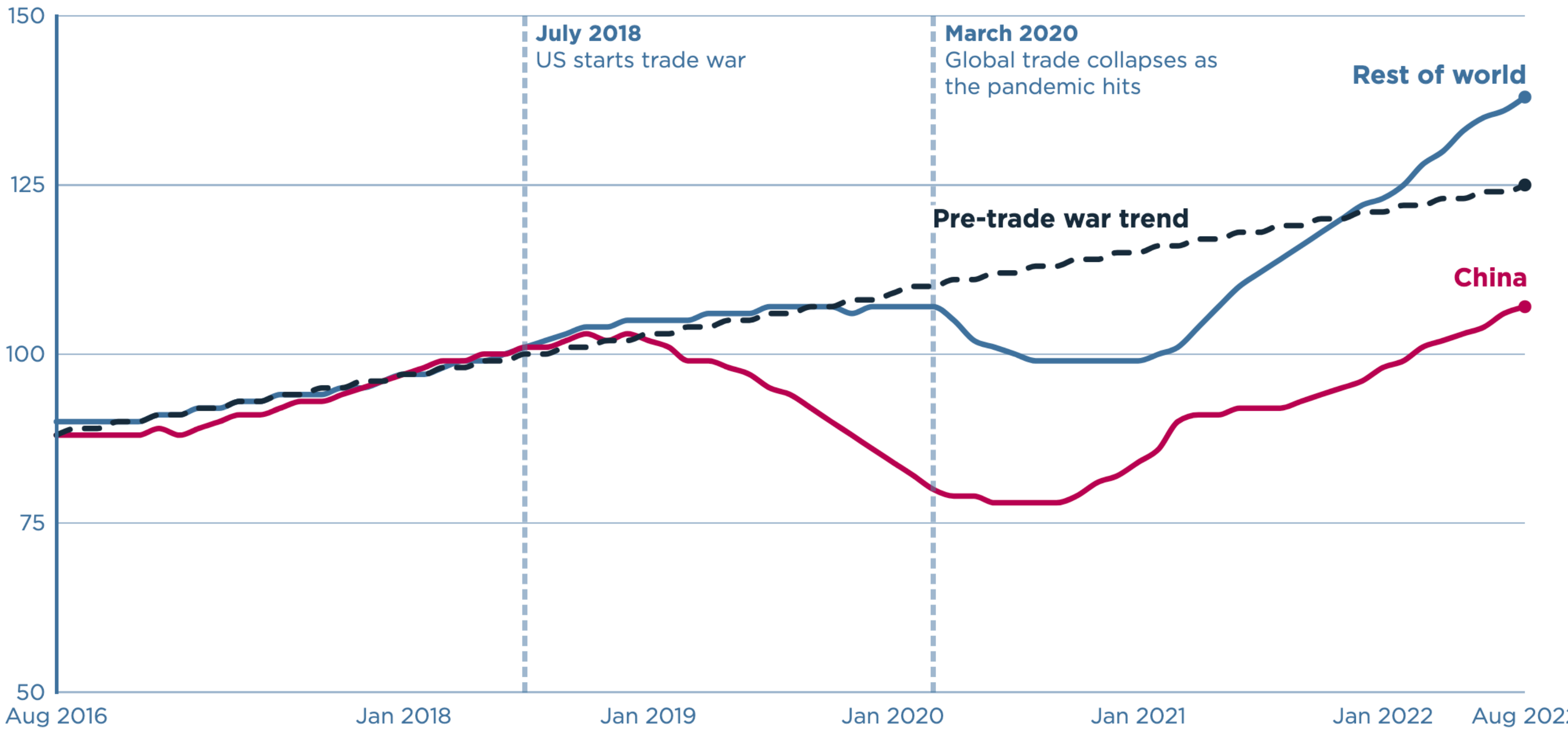


Source: Peterson Institute for International Economics, April 22, 2022.

Figure 1

US imports from China have only recently returned to pre-trade war levels, while imports from the rest of the world are above trend

Value of US goods imports from China and rest of world, 2016–2022 (June 2018 = 100)



Notes: Indexed value of US monthly imports, not seasonally adjusted, 12-month trailing sums. Pre-trade war trend based on US imports from the world from August 2016 through June 2018.

Source: Constructed by the author with US import data from US Bureau of the Census.

Source: Peterson Institute for International Economics, October, 2022. Four years in the trade war.

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%**

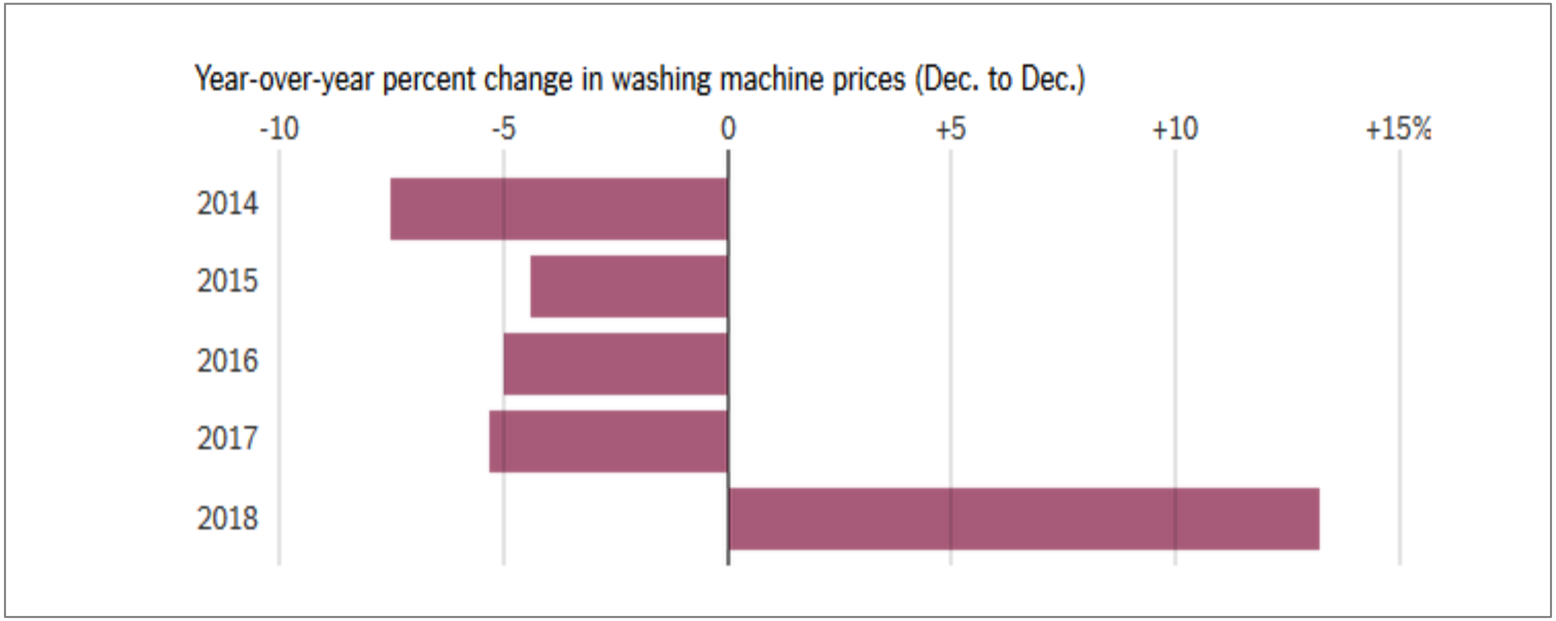
Tariff-rate quotas on imported solar cells and modules

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

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

New tariffs on washing machines set by Trump administration: year 1=2018

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 (tariffs on exports) and induced movements in the exchange rate.
- A big trade war would produce winners (producers/workers) in import industries
- A big trade war would produce losers (producers/workers) in export industries (e.g farmers)
- Losers tend to complain most visibly

VIII. Possible Arguments for Protection

Possible Arguments for Protection

- National security
- Concern about supply chain disruptions
- Diversification
- Infant industry/dynamic comparative advantage
- Jobs for particular workers
- Negative externalities: e.g. tax the carbon content of imports (if your country imposes carbon taxes but country you buy from does not)

References

- CORE-The Economy, Chapter 18.
- Principles of Economics, Chapter 15.