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LECTURE 26
DETERMINANTS OF NET EXPORTS
April 30, 2020

I. REVIEW OF TOOLS
   A. Overview
   B. Exchange rates
   C. Balance of payments

II. A CRUCIAL DETERMINANT OF NET EXPORTS
   A. Net exports only change if net capital inflows change
   B. Net capital inflows depend positively on the real interest rate
   C. So, net exports depend negatively on the real interest rate
   D. The exchange rate adjusts so that $NX = -KI$

III. S, I, AND r IN THE LONG RUN IN AN OPEN ECONOMY
   A. Saving, net capital inflows, and investment
   B. Our long-run S and I diagram modified to incorporate net capital inflows

IV. APPLICATION #1: A TAX CUT
   A. The scenario we are considering
   B. The short-run effect on net exports
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V. APPLICATION #2: HIGHER TARIFFS ON MANY GOODS
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VI. THE CURRENT U.S. TRADE DEFICIT
   A. U.S. trade deficit facts
   B. Mistaken Implications of the U.S. Trade Deficit
   C. The key role of increased net capital inflows
   D. Why have net capital inflows increased?

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Determinants of Net Exports

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https://www.youtube.com/watch?v=YQygxKI5z3w

Announcements

- You should have turned in Problem Set 6.
- We will have class next Tuesday (at the usual time).
    - No new material; a summary/synthesis lecture.
    - We will also discuss the final.
- We will post a sample final this evening.
- We will send an email about the logistics of the final over the weekend.

I. Review of Tools

Net Exports

- Exports: The value of all the goods and services we sell abroad.
- Imports: The value of all the goods and services we buy from abroad.
- Net Exports (NX):

$$NX = \text{Exports} - \text{Imports}$$

- Another term for net exports is the "trade balance":
  - NX < 0 is a trade deficit.
  - NX > 0 is a trade surplus.

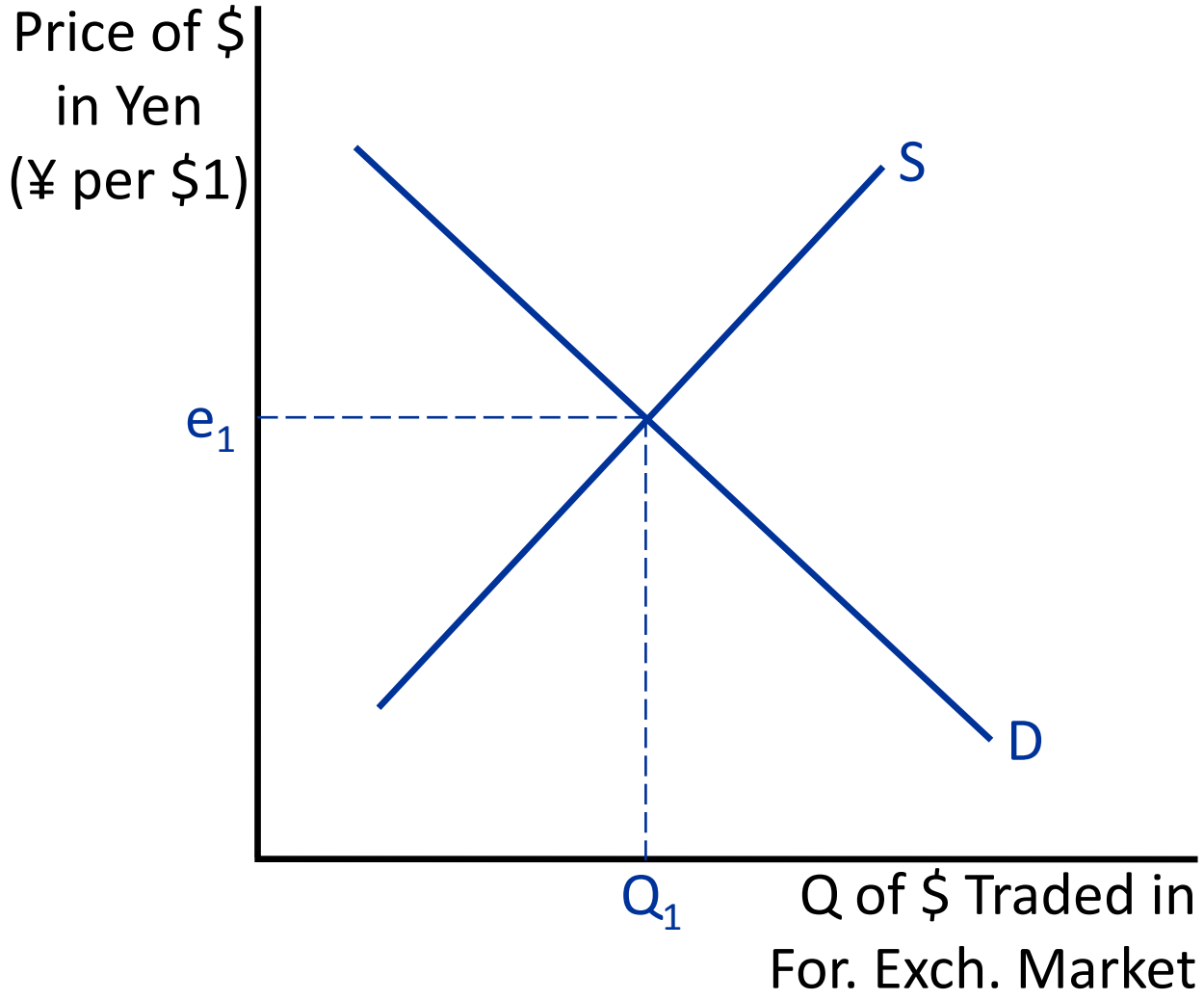
Where Net Exports Enter Our Analysis

- They are one component of planned aggregate expenditure:

$$PAE = C + I^p + G + NX$$

- When we derived S* = I*, we assumed net exports were zero.
    - We'll see that when net exports are not zero, things are more complicated than S* = I*.

Foreign Exchange Market for Dollars



A Key Feature of the Foreign Exchange Market

- The exchange rate does not affect purchases of assets.

The Balance of Payments – Step 1

- Equilibrium in the foreign exchange market for dollars:

  Value of foreign purchases of American goods and services and of American assets
  = Value of American purchases of foreign goods and services and of foreign assets

- That is:

Exports + Capital Inflows = Imports + Capital Outflows

Net Capital Inflows

- Capital Inflows: The value of all the U.S. assets purchased by foreigners.
- Capital Outflows: The value of all the foreign assets purchased by Americans.
- Net Capital Inflows (KI):

$$KI = \text{Capital Inflows} - \text{Capital Outflows}$$

The Balance of Payments – Step 2

- Recall:

Exports + Capital Inflows = Imports + Capital Outflows

- We can rewrite this as:

(Exports − Imports)

+ (Capital Inflows − Capital Outflows) = 0

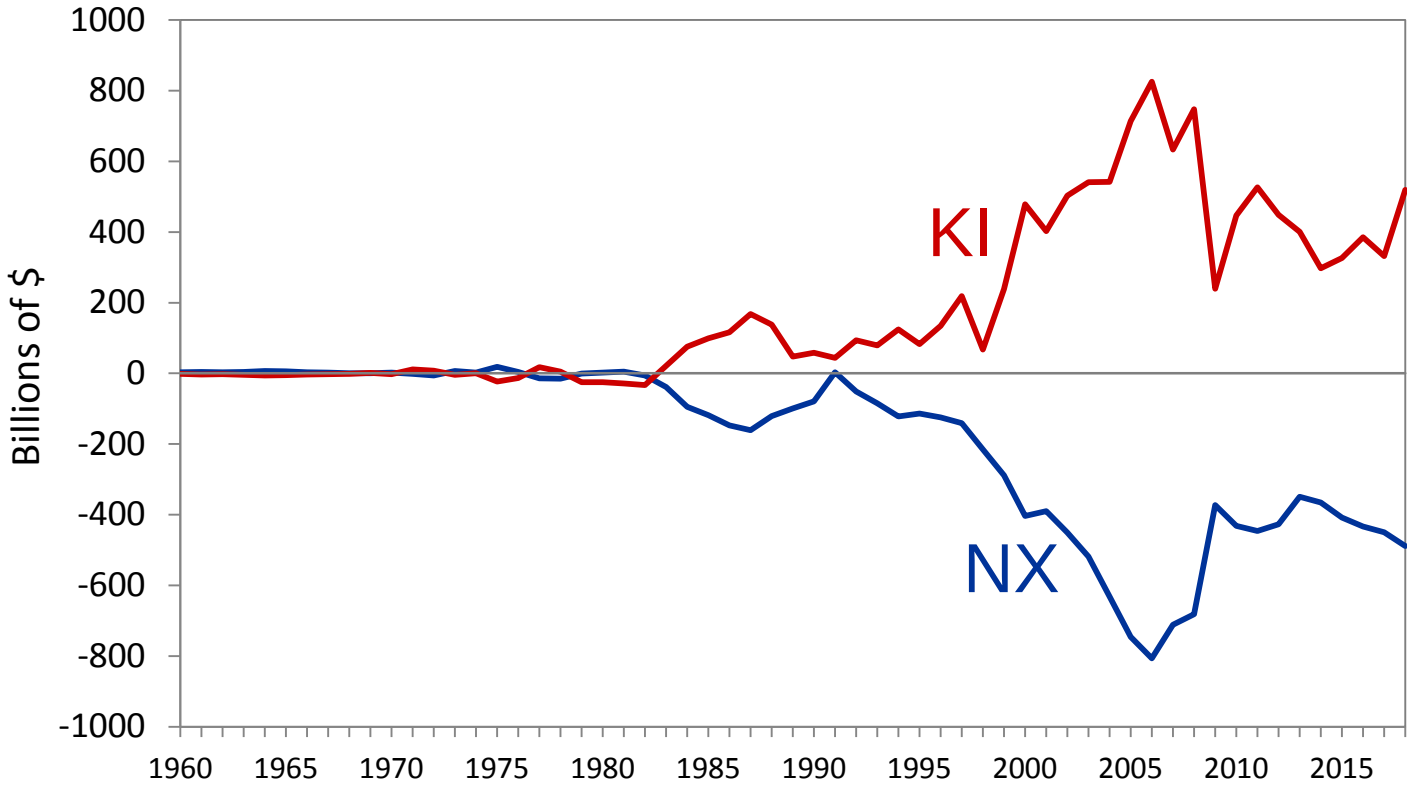
- In symbols:

$$NX + KI = 0$$

- In words:

Net Exports + Net Capital Inflows = 0

Net Exports (NX) and Net Capital Inflows (KI)



Source: Bureau of Economic Analysis

II. A Crucial Determinant of Net Exports

NX Only Moves If KI Moves

- Since NX + KI = 0:

$$NX = -KI$$

- So:
  - If something does not change net capital inflows, it does not change net exports.
  - If something does changes net capital inflows, it changes net exports in the opposite direction.

What Determines Net Capital Inflows?

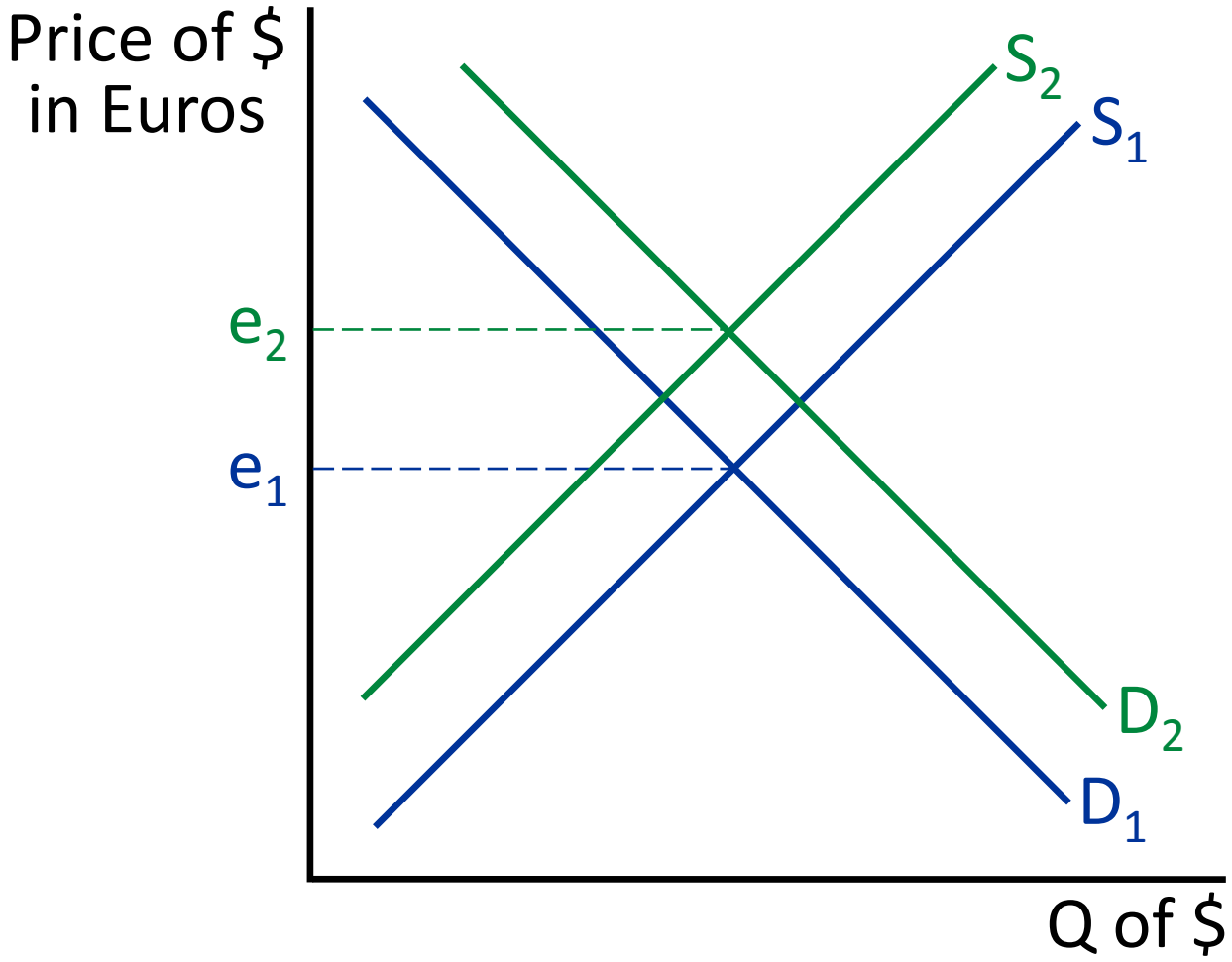
- The real interest rate, r: If r rises, American assets become more attractive relative to foreign assets, and so net capital inflows rise.
- Foreign real interest rates: If real interest rates abroad rise, American assets become less attractive relative to foreign assets, and so net capital inflows fall.
- Also, “tastes” for assets: If Americans and/or foreigners find American assets more attractive at a given r, net capital inflows rise.

Implication for Net Exports: The Real Interest Rate Is a Crucial Determinant of NX

$$NX = -KI$$

- A rise in the real interest rate raises KI; a fall in the real interest rate lowers KI.
- Therefore: A rise in r lowers NX; a fall in r raises NX.

A Rise in the Real Interest Rate in the U.S.
Foreign Exchange Market for Dollars



The dollar appreciation lowers exports and raises imports, and so lowers NX.

III. Saving, Investment, and the Real Interest Rate in the Long Run in an Open Economy

The Real Interest Rate

- r is a crucial determinant of KI, and hence of NX.
- So: we need to figure out what determines r.
  - We will continue to assume (realistically!) that in the short run and in the medium run, r is determined by the Fed responding to inflation according to its reaction function.
  - But, what determines r in the long run?

Saving and Investment in the Long Run—The Case We've Considering Until Now (NX* = 0)

- Recall: $Y^* = C^* + I^* + G + NX^*$
- If $NX^* = 0$, this implies:

$$Y^* - C^* - G = I^*$$

- Using the definition of saving, this implies:

$$\mathbf{S^* = I^*}$$

- Intuition.
- r^* adjusts to bring about $S^* = I^*$.

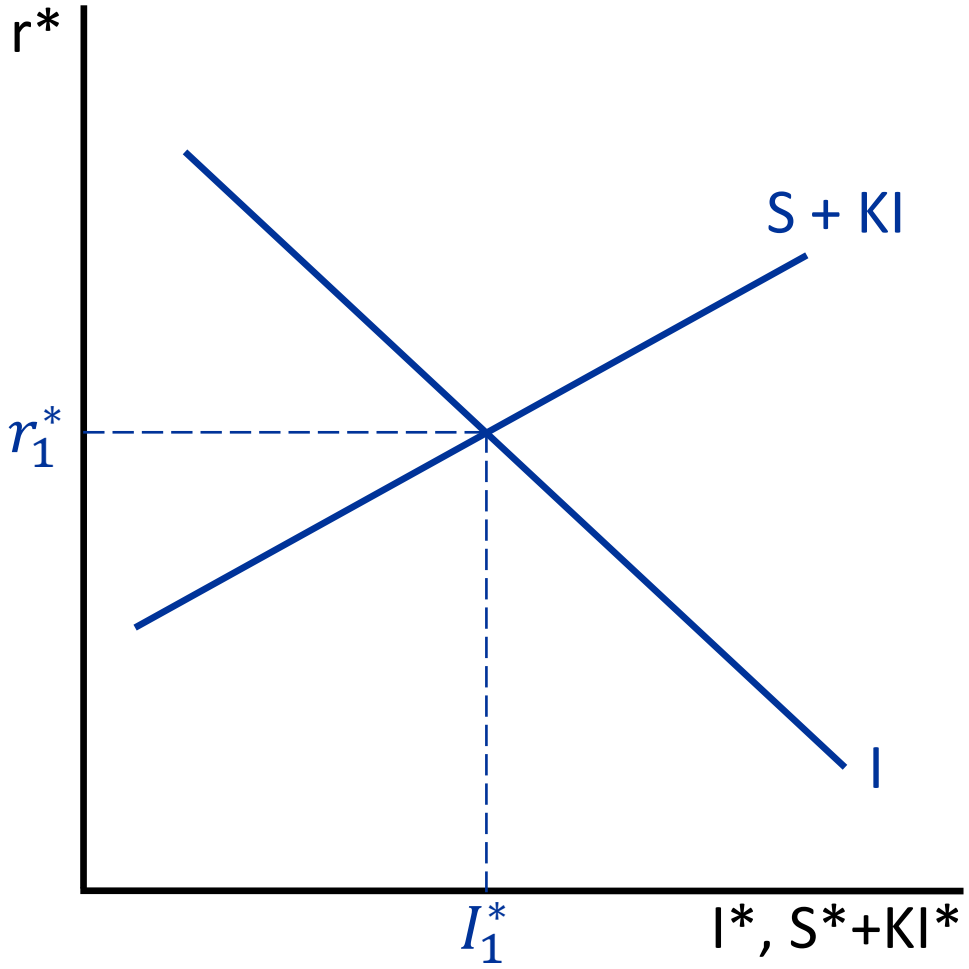
Saving and Investment in the Long Run When NX* Is Not Necessarily Zero

- Recall: $Y^* = C^* + I^* + G + NX^*$
- This implies: $Y^* - C^* - G - NX^* = I^*$
- Grouping the first 3 terms: $(Y^* - C^* - G) - NX^* = I^*$
- Using $NX = -KI$ and the definition of saving:

$$\mathbf{S^* + KI^* = I^*}$$

- Intuition.
- r^* adjusts to bring about $S^* + KI^* = I^*$.

The Real Interest Rate in the Long Run



Note: Both saving and net capital inflows are increasing in r.

Key Messages

- NX = −KI.
- The real interest rate is a crucial determinant of KI (and therefore of NX).
- In a world of international trade and capital flows, the real interest rate in the long run is the one that causes S* + KI* to equal I*.

IV. Application #1: A Tax Cut

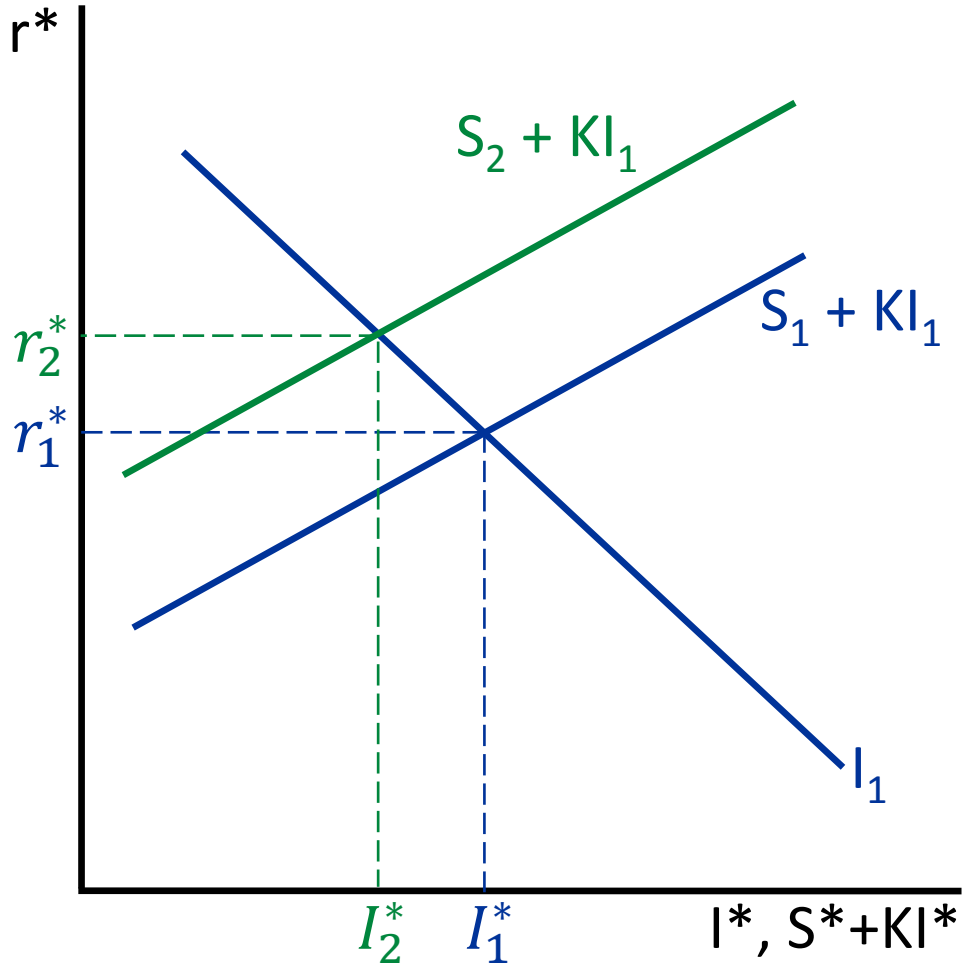
Application #1: A Long-Lasting Tax Cut

- The scenario we're considering:
  - The economy starts in long-run equilibrium.
  - There is then a long-lasting cut in taxes, T.
  - As always when we change T (unless we explicitly say otherwise), we are holding G fixed.
- Determining the behavior of net exports:
  - To figure out what happens to NX, we need to figure out what happens to KI.
  - To figure out what happens to KI, we need to figure out what happens to r.

The Short-Run Effect on Net Exports

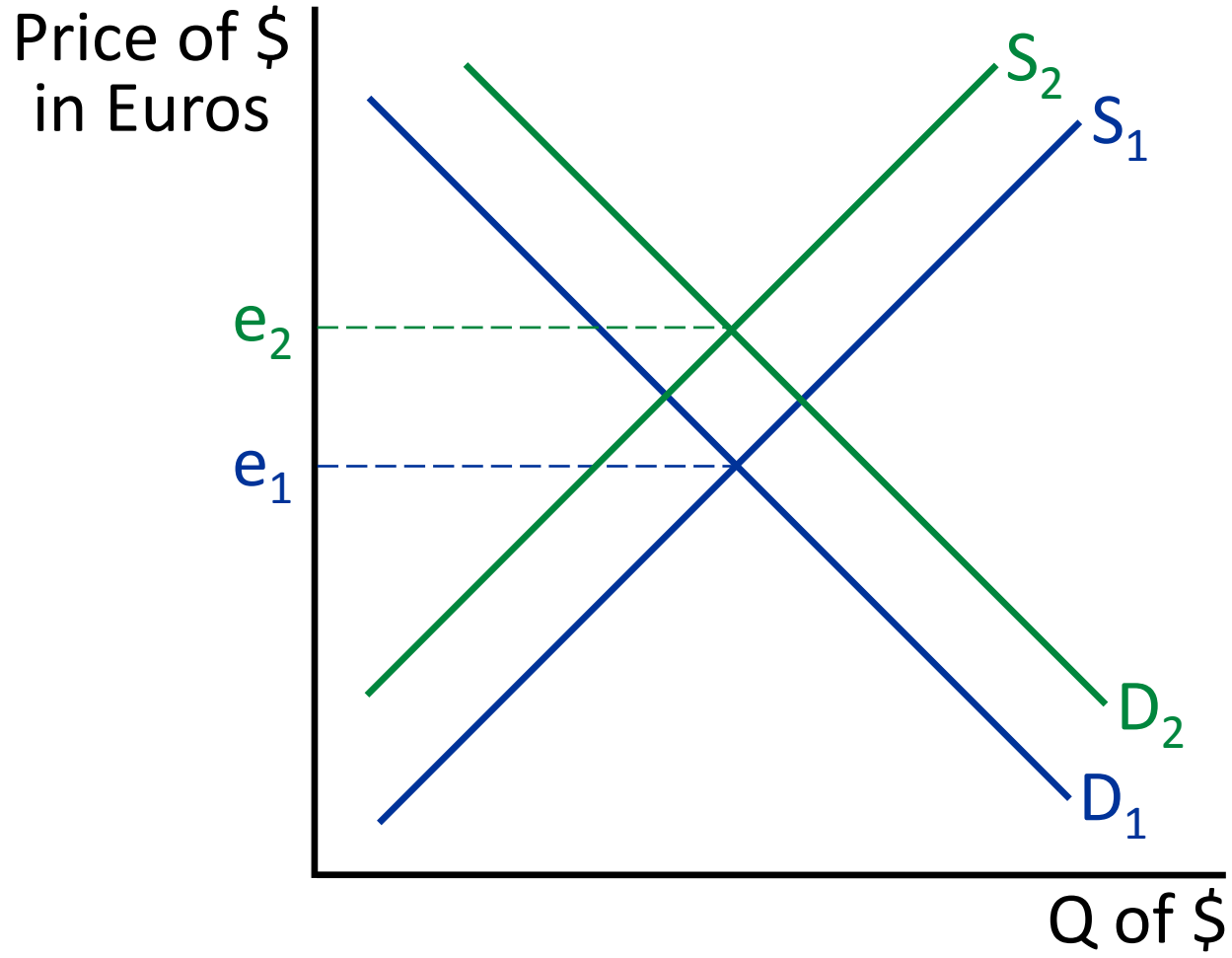
- r is determined by the Fed responding to inflation according to its reaction function.
- Inflation doesn't change in the short run (because of nominal rigidity).
- So, r does not change.
- So, KI does not change.
- So, NX does not change.

The Long-Run Effect on Net Exports



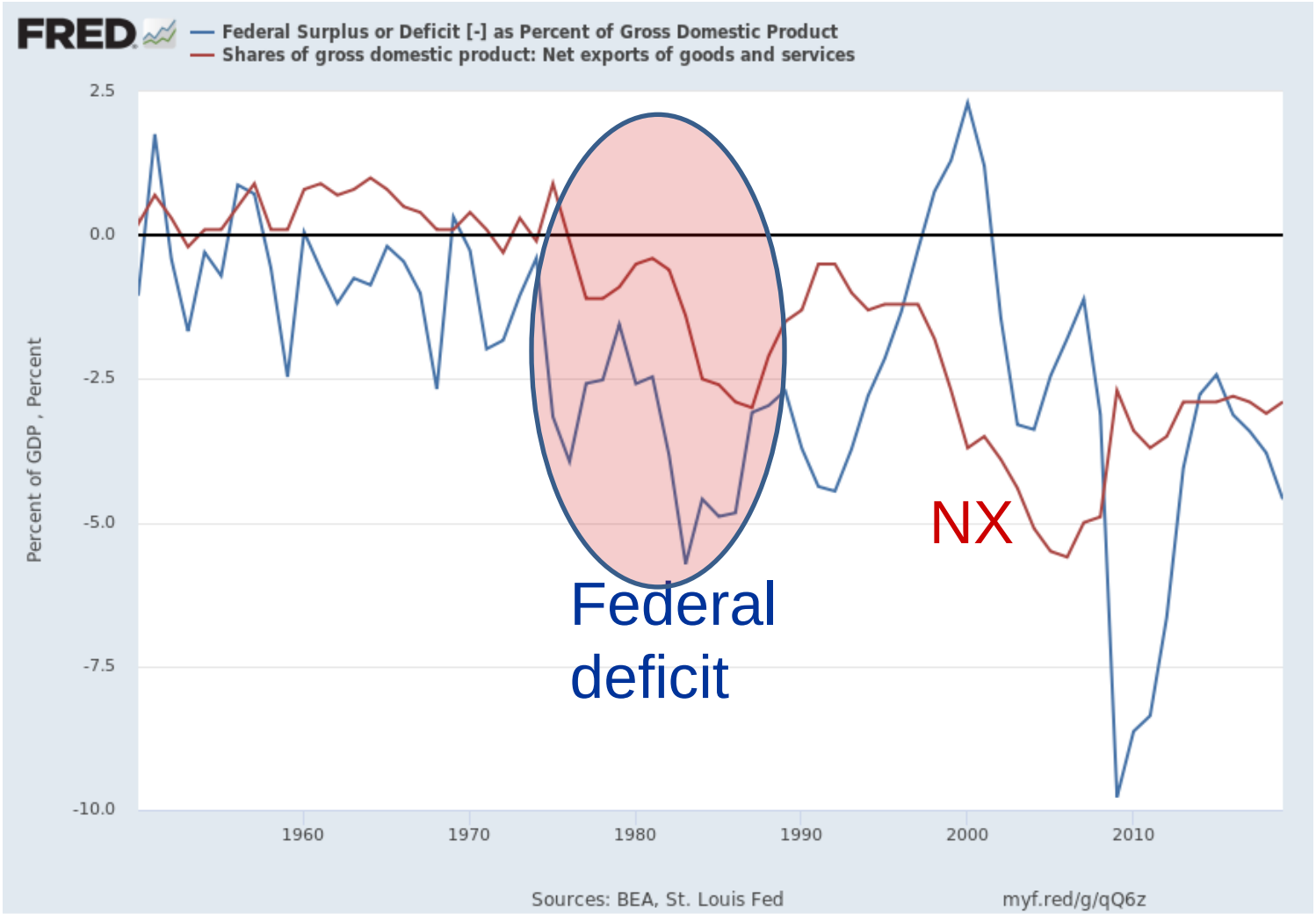
r rises, so KI rises, so NX falls.

Foreign Exchange Market for Dollars
The Long Run Effects of a Tax Cut in the U.S.



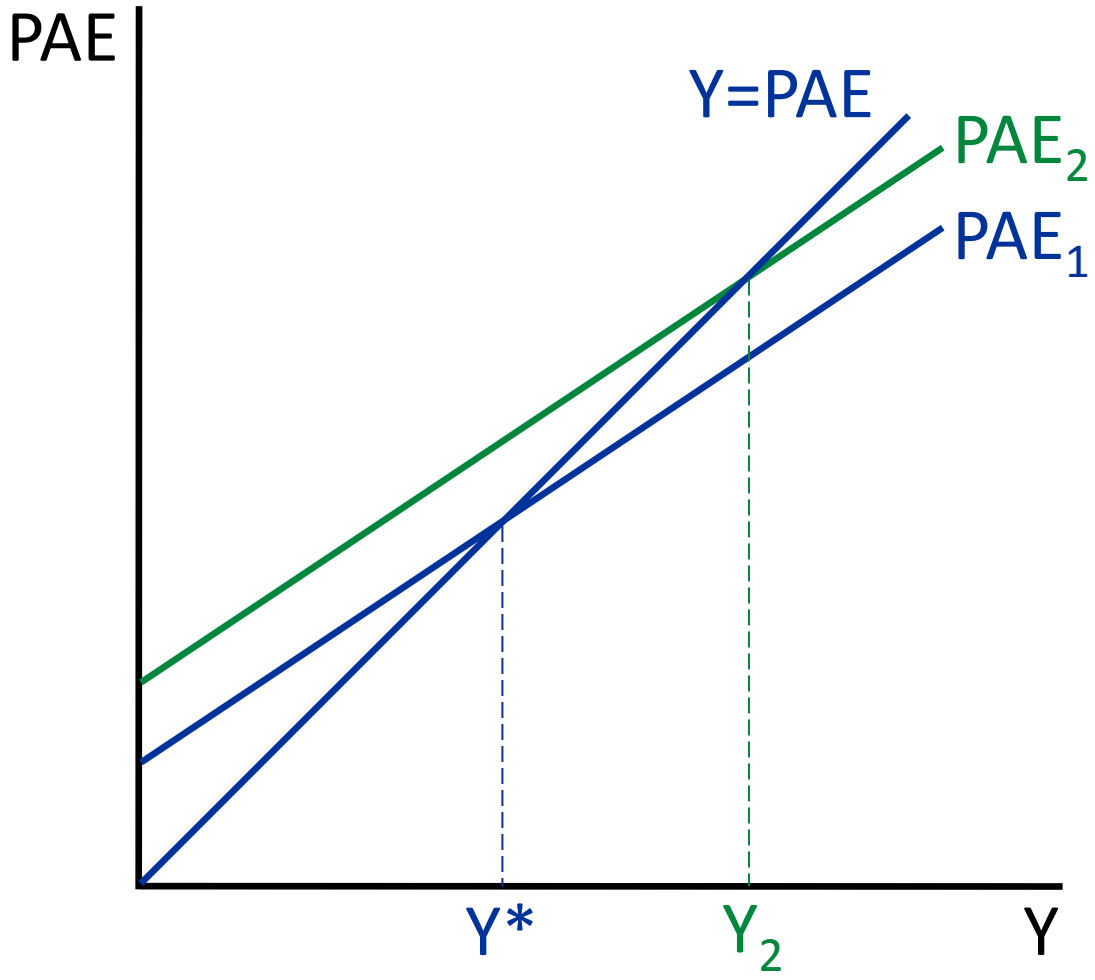
e rising is what makes NX fall (as we know it must from the I*–S*+KI* diagram).

The “Twin Deficits”



Source: FRED. Data are percent of GDP.

A Little about Going from the Short Run to the Long Run: The Short Run

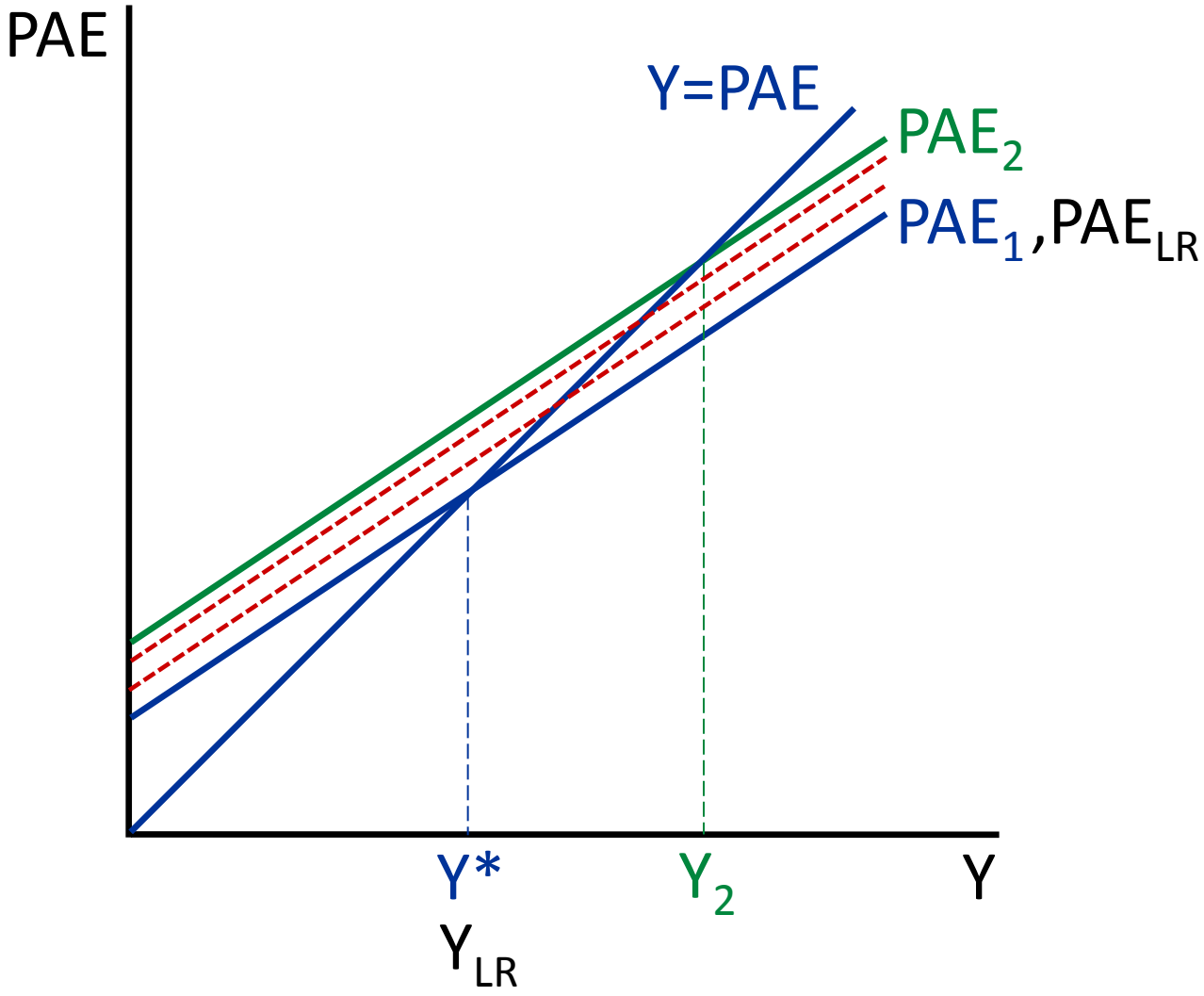


The tax cut shifts up the PAE line in the short run, as usual.

A Little about Going from the Short Run to the Long Run: Returning to Potential Output

- As usual, inflation does not change immediately (and so r does not change immediately).
- Y > Y*, so after a while inflation starts to rise.
- As inflation rises, the Fed, following its reaction function, raises r.
- The increases in r reduce C, I, ***and NX*** at a given Y − T, and so shift the PAE line down and lower Y.
- The process continues until we are back at Y*.

Returning to Potential Output



V. Application #2: Higher Tariffs on Many Goods

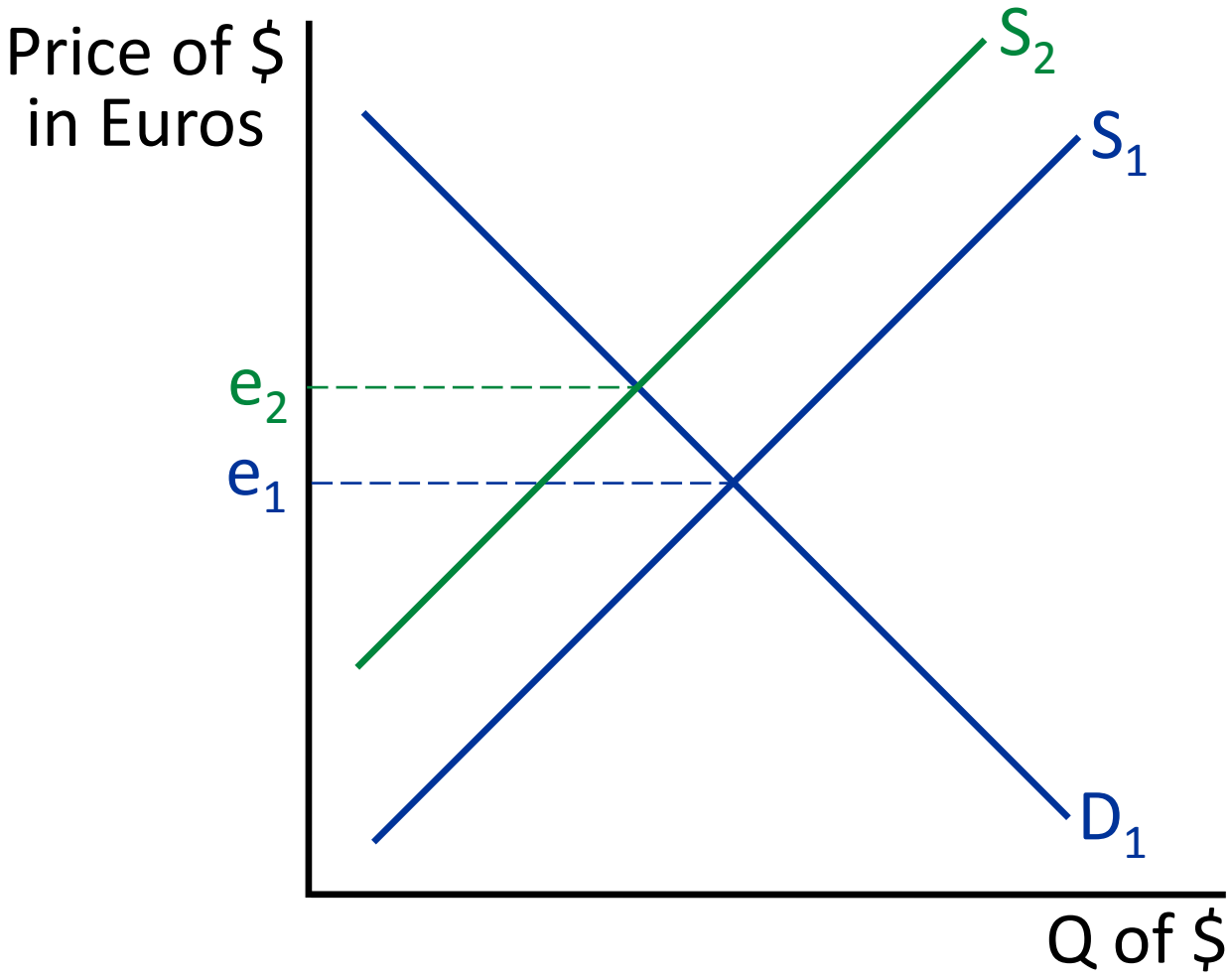
Application #2: Higher Tariffs on Many Goods

- The scenario we're considering:
  - The economy starts in long-run equilibrium.
  - There is then a long-lasting increase in tariffs on many goods.
  - We assume that other countries don't raise their tariffs in response.
- We'll start by analyzing the short-run effect.

What Happens to Net Exports ***at a Given Exchange Rate***?

- At a given exchange rate, imports will fall, and so net exports will rise.
- But, does the exchange rate stay the same?

Foreign Exchange Market for Dollars
The U.S. Raises Tariffs on Many Goods



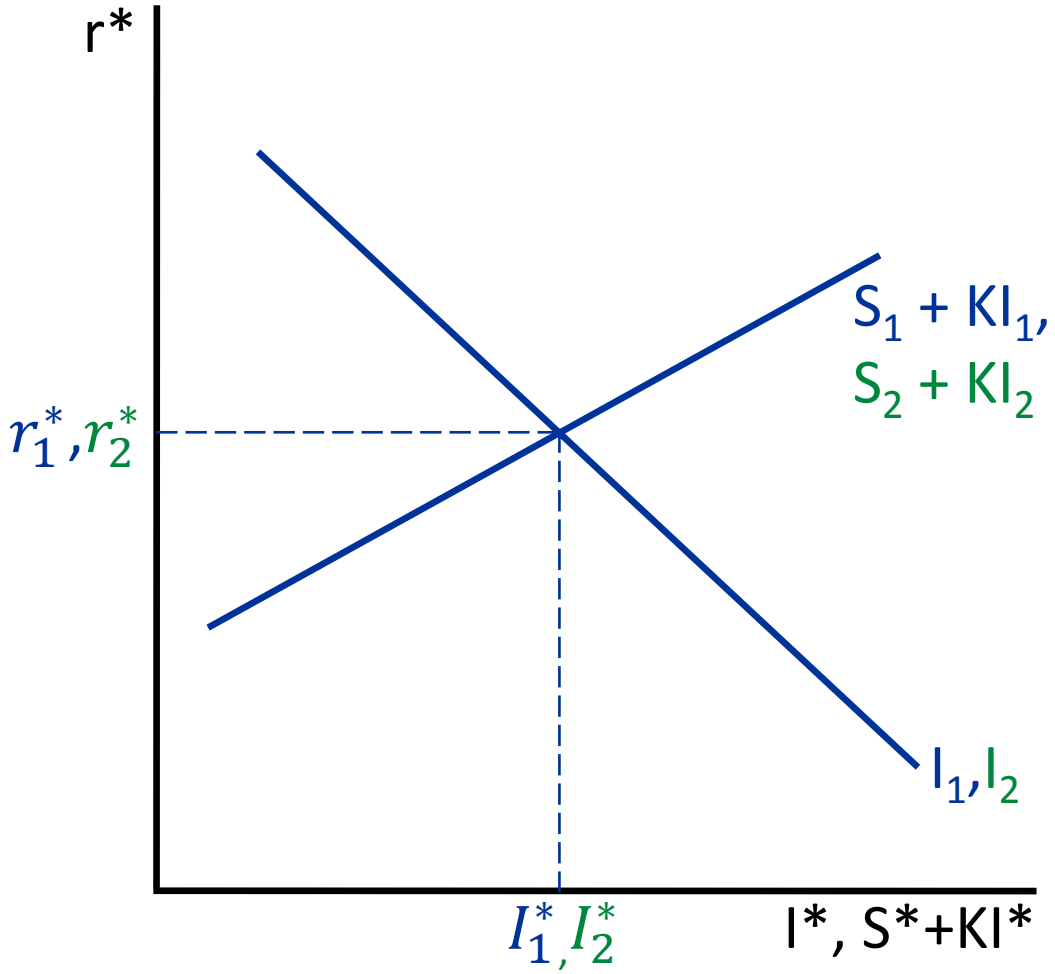
Determining the Effect on Net Exports

- At a given exchange rate, imports will fall, and so net exports will rise.
- But the exchange rate appreciates, which reduces exports and raises imports, and so causes net exports to fall.
- What is the overall effect?
- Recall: Determining the behavior of net exports:
  - To figure out what happens to NX, we need to figure out what happens to KI.
  - But nothing happens to KI!
  - So nothing happens to NX.

How Seriously Should We Take This?

- Will higher tariffs on many goods have literally ***no*** effect on NX?
  - Almost surely not: All models are approximations.
- Is there a force that clearly works against the direct effect of the tariffs on NX?
  - Yes! The reduced supply of dollars will drive up the price of dollars in foreign currency markets.
- Will the tariffs have ***approximately*** no effect on NX?
  - Very likely yes: As long as KI doesn't respond a lot to the exchange rate (which is realistic), the impact on NX is small. (We assume KI doesn't respond at all to the exchange rate, which is why we find no impact on NX.)

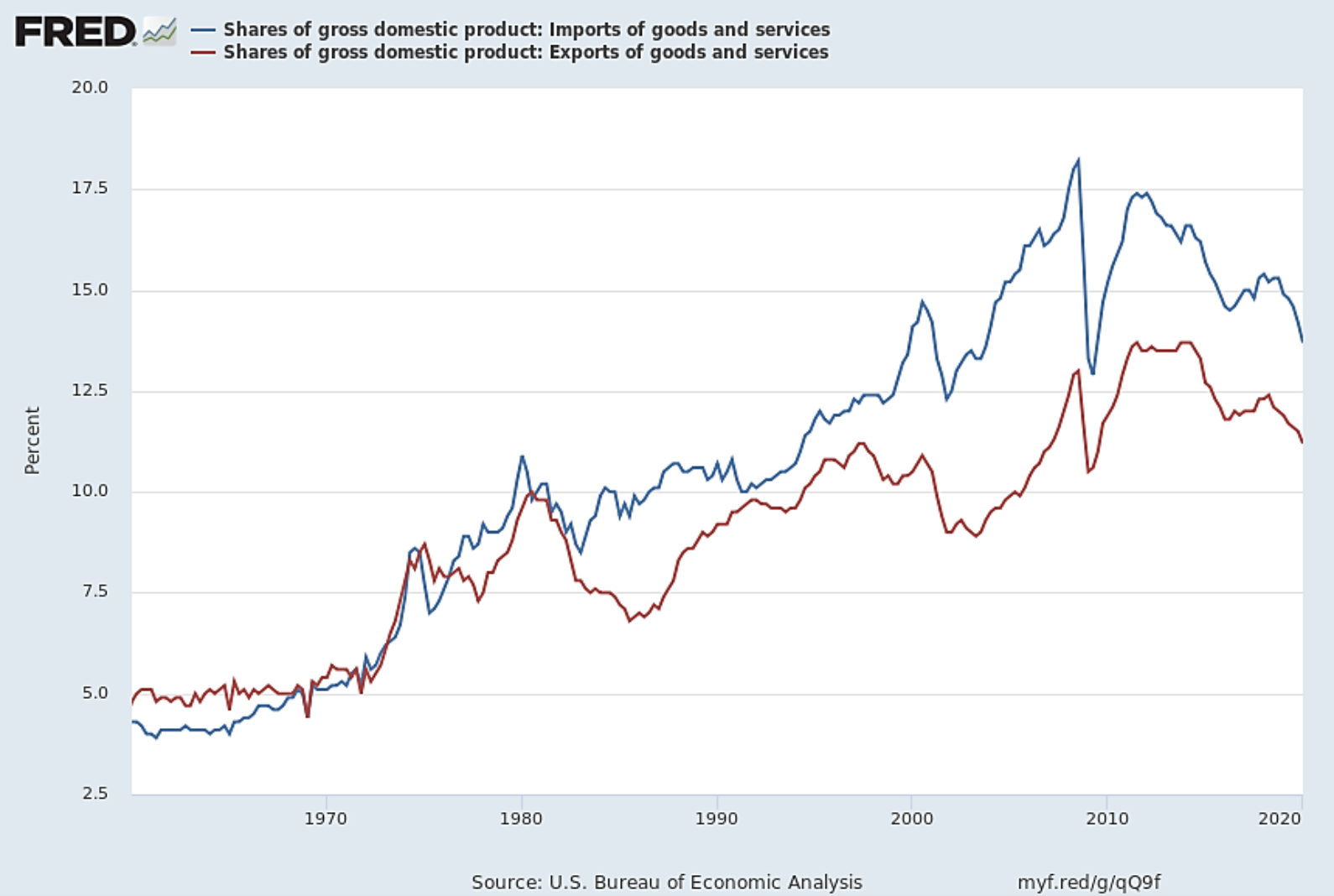
The Long-Run Effect on Net Exports



The tariffs do not affect NX in the long run as well as the short run.

VI. The Current U.S. Trade Deficit

U.S. Imports and Exports (as a % of GDP)

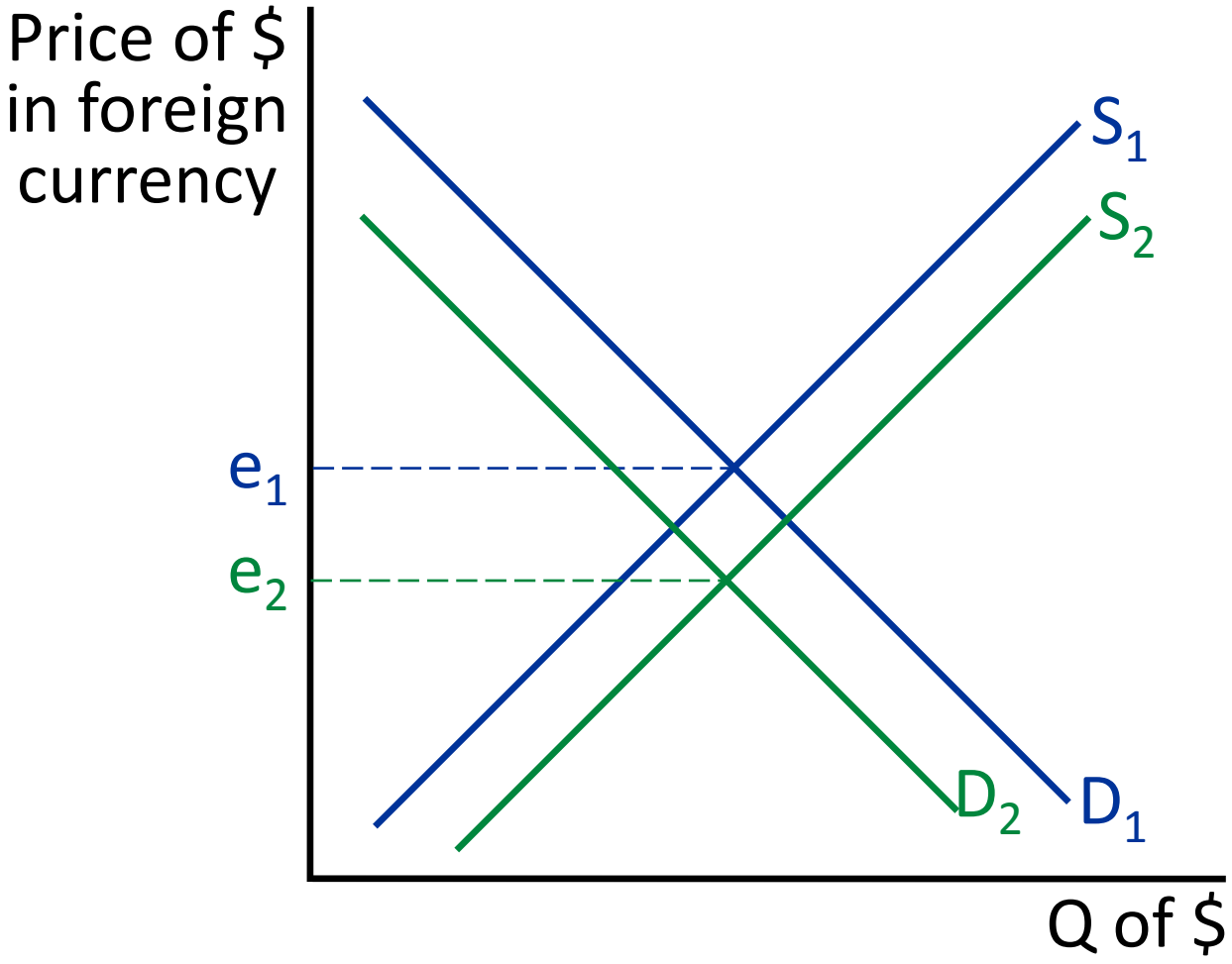


The U.S. been running a large trade deficit for decades.

Mistaken Explanations of the U.S. Trade Deficit

- We aren't productive enough; our goods and services are of low quality.
- Americans have strong tastes for foreign goods.
- Foreign countries engage in widespread protectionist polices.
- The problem: These theories predict a weak dollar, not a large trade deficit.

Foreign Exchange Market for Dollars
The Quality of U.S. Goods Deteriorates



Understanding the Persistent U.S. Trade Deficit

- Recall: $NX^* = -KI^*$.
- So, to understand why NX^* is large and negative (that is, a persistently large trade deficit), we need to understand why KI^* is large and positive.

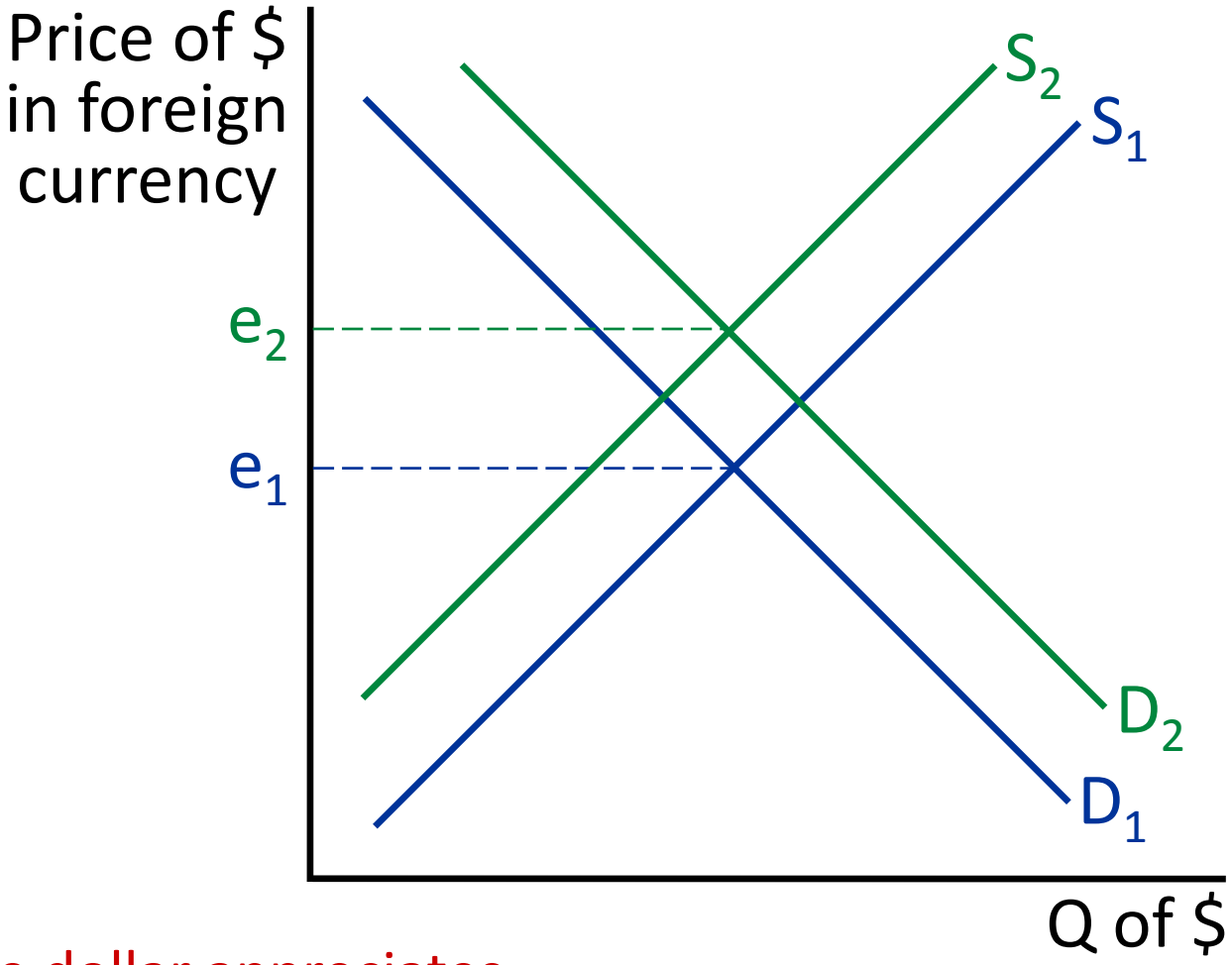
One Factor That Has Contributed to the Persistent U.S. Trade Deficit

- Large U.S. budget deficits.
  - Recall our earlier example of a permanent tax cut.
  - You might also want to work through the effects of a permanent increase in G.

Another Factor That Has Contributed to the Persistent U.S. Trade Deficit

- U.S. assets look highly attractive.
    - Perhaps because people think risky U.S. assets are likely to pay off especially well (for example, tech in the 1990s, housing in the early 2000s).
- As a result, KI is big and positive—so NX is big and negative.
- To put it another way: the increased attractiveness of U.S. shifts the supply and demand curves in the foreign exchange market, leading the dollar to appreciate, and so causing NX to fall.

Foreign Exchange Market for Dollars
Change in Tastes Toward U.S. Assets



The dollar appreciates.