Theory of open economy

LECTURE: 10

Closed economy
an economy that does not interact with other economies in the world

Open economy
an economy that interacts freely with other economies around the world

CLOSED ECONOMY MACROECONOMICS

$Y = C + I + G$ (Goods Market)

$S = I + (G-T)$ (Asset Market)

There is only one medium of exchange ($)

OPEN ECONOMY MACROECONOMICS

NX = Exports – Imports

- $NX < 0$: Trade Deficit
- $NX > 0$: Trade Surplus

$Y = C + I + G + NX$

$S = I + (G-T) + NX$

Output/Income in the Open Economy

- Trade Deficits imply $NX < 0$
- Therefore, $Y - (C + I + G) = NX < 0$
- Countries that run trade deficits are consuming more that they earn

Savings in the Open Economy

- Again, a trade deficit implies $NX < 0$
- Therefore, $S - (I - (G-T)) = NX < 0$
  - A country with a trade deficit is borrowing from the rest of the world
  - That is, foreign countries are acquiring domestic assets

Balance of Payments Accounting

Anything that we buy or sell to the rest of the world must be paid for.

The current account (CA) tracks the flow of goods and services between the US and the rest of the world

The capital & financial account tracks the payments for those goods & services (KFA)

$CA + KFA = 0$

CASE STUDY: The Reagan deficits revisited

	1970s	1980s	actual change	closed economy	small open economy
$G - T$	2.2	3.9	↑	↑	↑
S	19.6	17.4	↓	↓	↓
r	1.1	6.3	↑	↑	no change
I	19.9	19.4	↓	↓	no change
NX	-0.3	-2.0	↓	no change	↓
ε	115.1	129.4	↑	no change	↑

Data: decade averages; all except **r** *and* ε *are expressed as a percent of GDP;* ε *is a trade-weighted index.*

The important macroeconomic variables of an open economy include:

net exports

net foreign investment(the net capital outflow)

nominal exchange rates

real exchange rates

The International Flows of Goods and Capital

- Exports goods and services that are produced domestically and sold abroad
- Imports goods and services that are produced abroad and sold domestically
- Net exports the value of a nation's exports minus the value of its imports; also called the trade balance
- Trade balance the value of a nation's exports minus the value of its imports; also called net exports
- Trade surplus an excess of exports over imports
- Trade deficit an excess of imports over exports
- Balanced trade a situation in which exports equal imports

Net exports the value of a nation's exports minus the value of its imports; also called the trade balance

The **net exports** of any country are the difference between the value of its exports and the value of its imports:

Net exports = Value of country's exports – Value of country's imports.

An important but subtle fact of accounting states that, for an economy as a whole, net capital outflow (*NCO*) must always equal net exports (*NX*):

$$NCO = NX.$$

This equation holds because every transaction that affects one side of this equation affects the other side by exactly the same amount. This equation is an *identity* — an equation that must hold because of the way the variables in the equation are defined and measured.

The economy's gross domestic product (Y) is divided among four components: consumption (C), investment (I), government purchases (G), and net exports (NX). We write this as

$$Y = C + I + G + NX$$

National saving (S) equals $Y - C - G$. If we rearrange the equation to reflect this fact, we obtain

$$Y - C - G = I + NX$$

$$S = I + NX.$$

Because net exports (NX) also equal net capital outflow (NCO), we can write this equation as

$$S = I + NCO$$

Domestic Saving = Net capital. investment outflow

This equation shows that a nation's saving must equal its domestic investment plus its net capital outflow.

The Flow of Financial Resources: Net Capital Outflow

The term net capital outflow refers to the difference between the purchase of foreign assets by domestic residents and the purchase of domestic assets by foreigners:

Net capital outflow = Purchase of foreign assets by domestic residents – Purchase of domestic assets by foreigners.

The net capital outflow (sometimes called net foreign investment) can be either positive or negative. When it is positive, domestic residents are buying more foreign assets than foreigners are buying domestic assets.

The Market for Foreign-Currency Exchange

Another identity from the preceding chapter:

$$NCO = NX$$

Net capital outflow

Net exports

- In the market for foreign-currency exchange,
  - ***NX*** is the demand for dollars:
    Foreigners need dollars to buy U.S. net exports.
  - ***NCO*** is the supply of dollars:
    U.S. residents sell dollars to obtain the foreign currency they need to buy foreign assets.

The Market for Foreign-Currency Exchange

Another identity from the preceding chapter:

$$NCO = NX$$

Net capital outflow

Net exports

- When ***NX*** is positive, we send more goods abroad than we import.
- Therefore, foreigners buy this excess with our money.
- They get our money by selling us some of theirs.
- We now have claims on foreign assets, so ***NCO*** is also positive.

The Market for Foreign-Currency Exchange

Another identity from the preceding chapter:

$$NCO = NX$$

Net capital outflow

Net exports

- When ***NX*** is negative, we import more goods abroad than we send abroad.
- Therefore, we pay for this excess with foreign money.
- We get their money by selling them some of ours.
- Foreigners now have claims on domestic assets, so ***NCO*** is also negative.

The Market for Foreign-Currency Exchange

Recall: The U.S. real exchange rate (***E***) measures the quantity of foreign goods & services that trade for one unit of U.S. goods & services.

- ***E*** is the real value of a dollar in the market for foreign-currency exchange.
- (We didn't actually introduce ***E*** as the notation for the real exchange rate in the last chapter. We probably should have. The formula for ***E*** is now

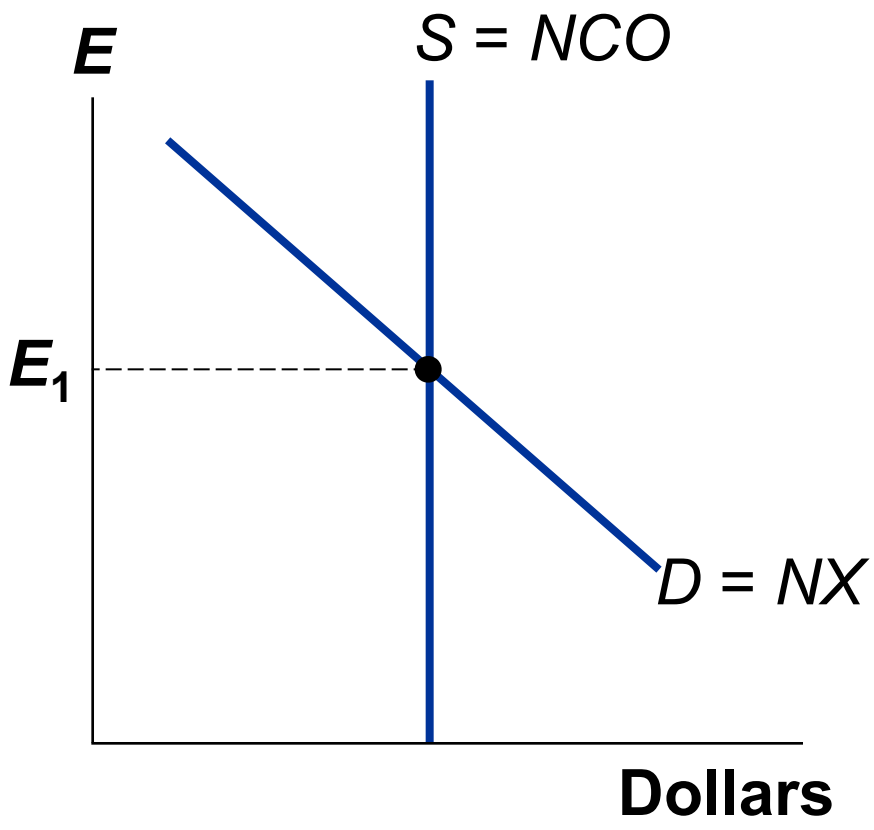
$$E = \frac{e \times P}{P^*}$$

The Market for Foreign-Currency Exchange

E adjusts to balance supply and demand for dollars in the market for foreign- currency exchange.

An increase in ***E*** has no effect on saving or investment, so it does not affect *NCO* or the supply of dollars.

An increase in ***E*** makes U.S. goods more expensive to foreigners, reduces foreign demand for U.S. goods—and U.S. dollars.



Nominal vs Real Exchange Rates

Nominal exchange rate the rate at which a person can trade the currency of one country for the currency of another

Appreciation an increase in the value of a currency as measured by the amount of foreign currency it can buy

Depreciation a decrease in the value of a currency as measured by the amount of foreign currency it can buy

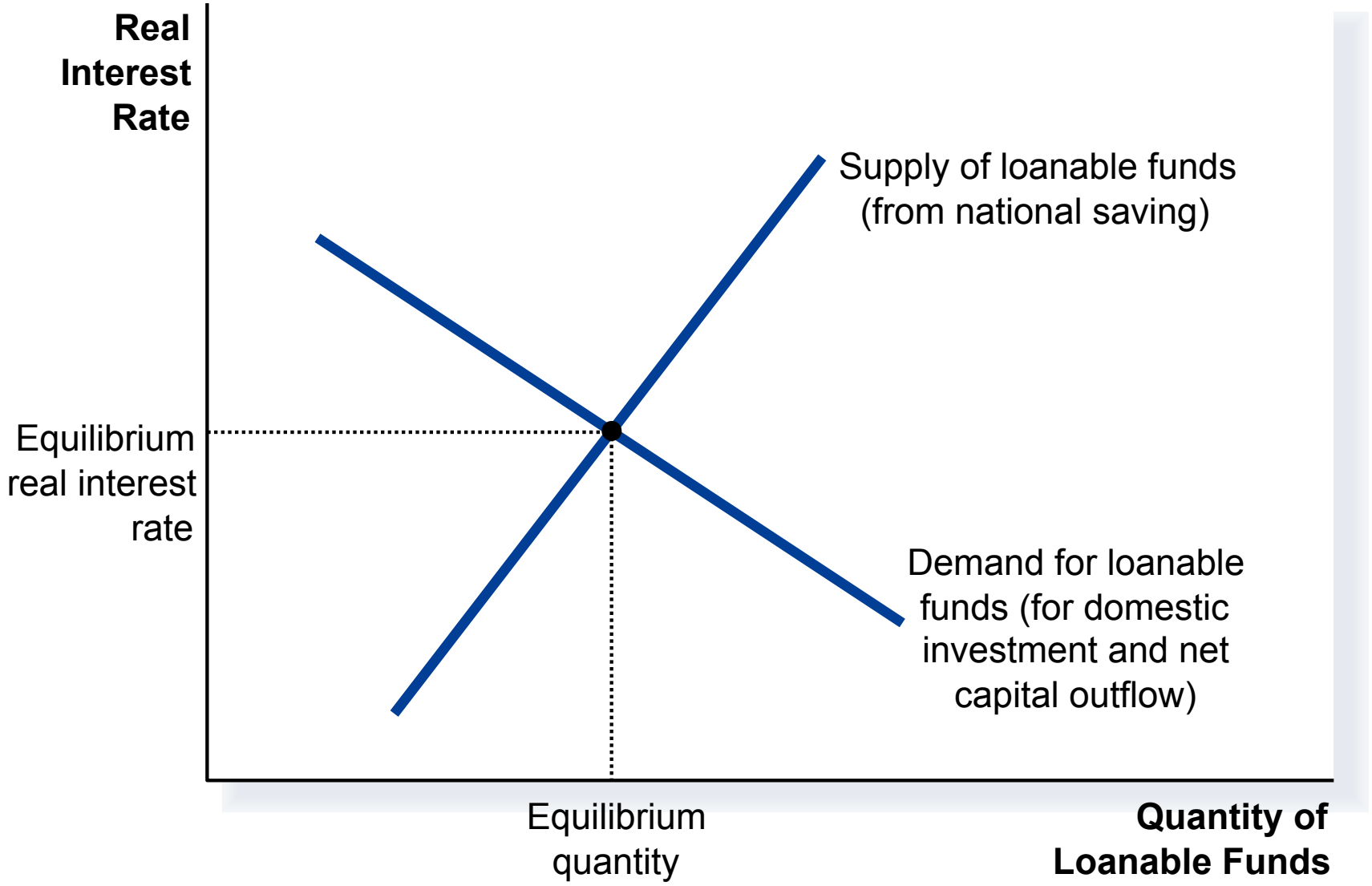
Real exchange rate the rate at which a person can trade the goods and services of one country for the goods and services of another

Real exchange rate = Nominal exchange rate × Domestic price/Foreign price

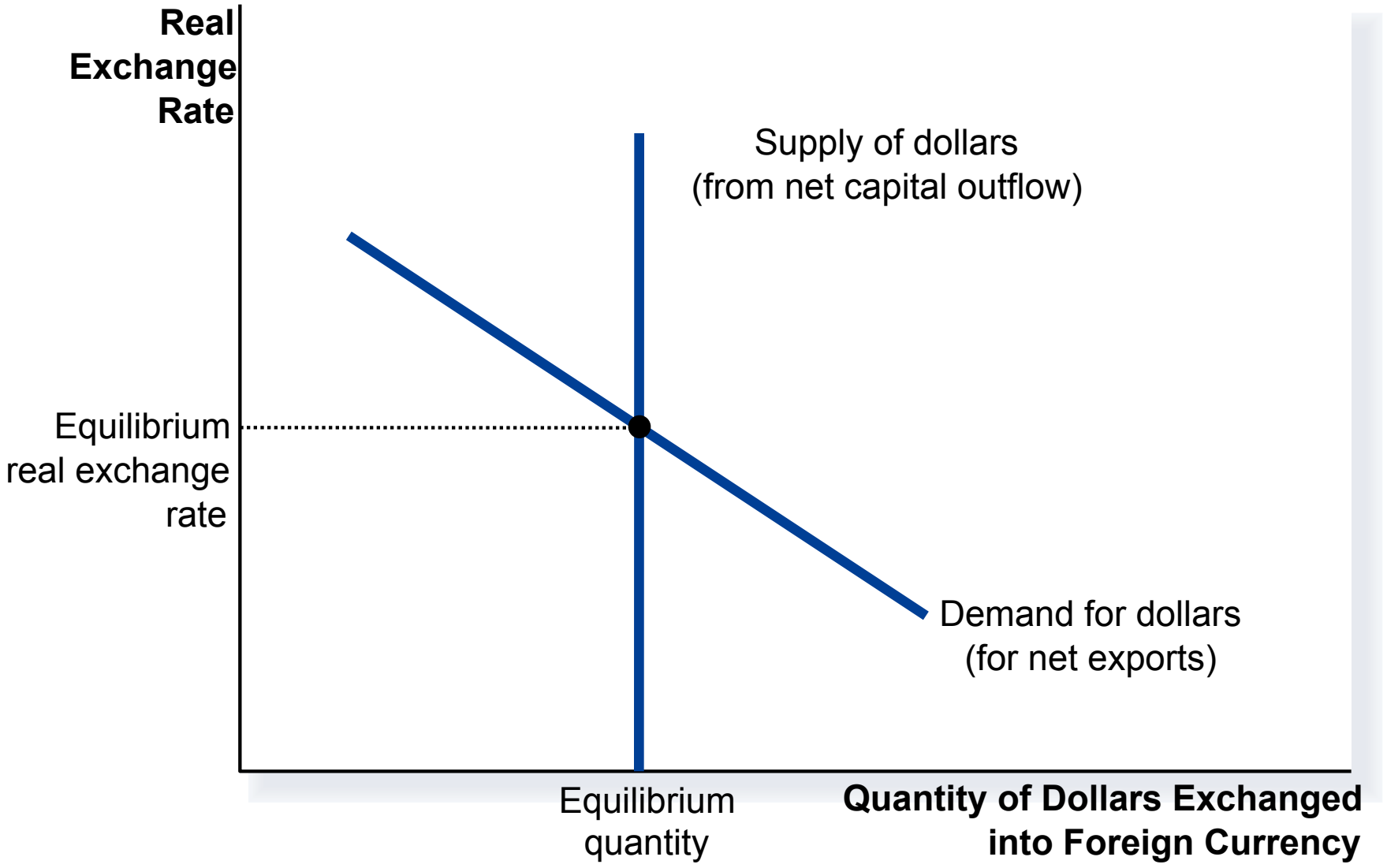
Real exchange rate = $(e \times P)/P^*$.
This real exchange rate measures the price of a basket of goods and services available domestically relative to a basket of goods and services available abroad.

You may recall that economists distinguish between two interest rates: The nominal interest rate is the interest rate as usually reported, and the real interest rate is the interest rate corrected for the effects of inflation. When there is no inflation, the two rates are the same. But when borrowers and lenders expect prices to rise over the course of the loan, they agree to a nominal interest rate that exceeds the real interest rate by the expected rate of inflation. The higher nominal interest rate compensates for the fact that they expect the loan to be repaid in less valuable dollars.

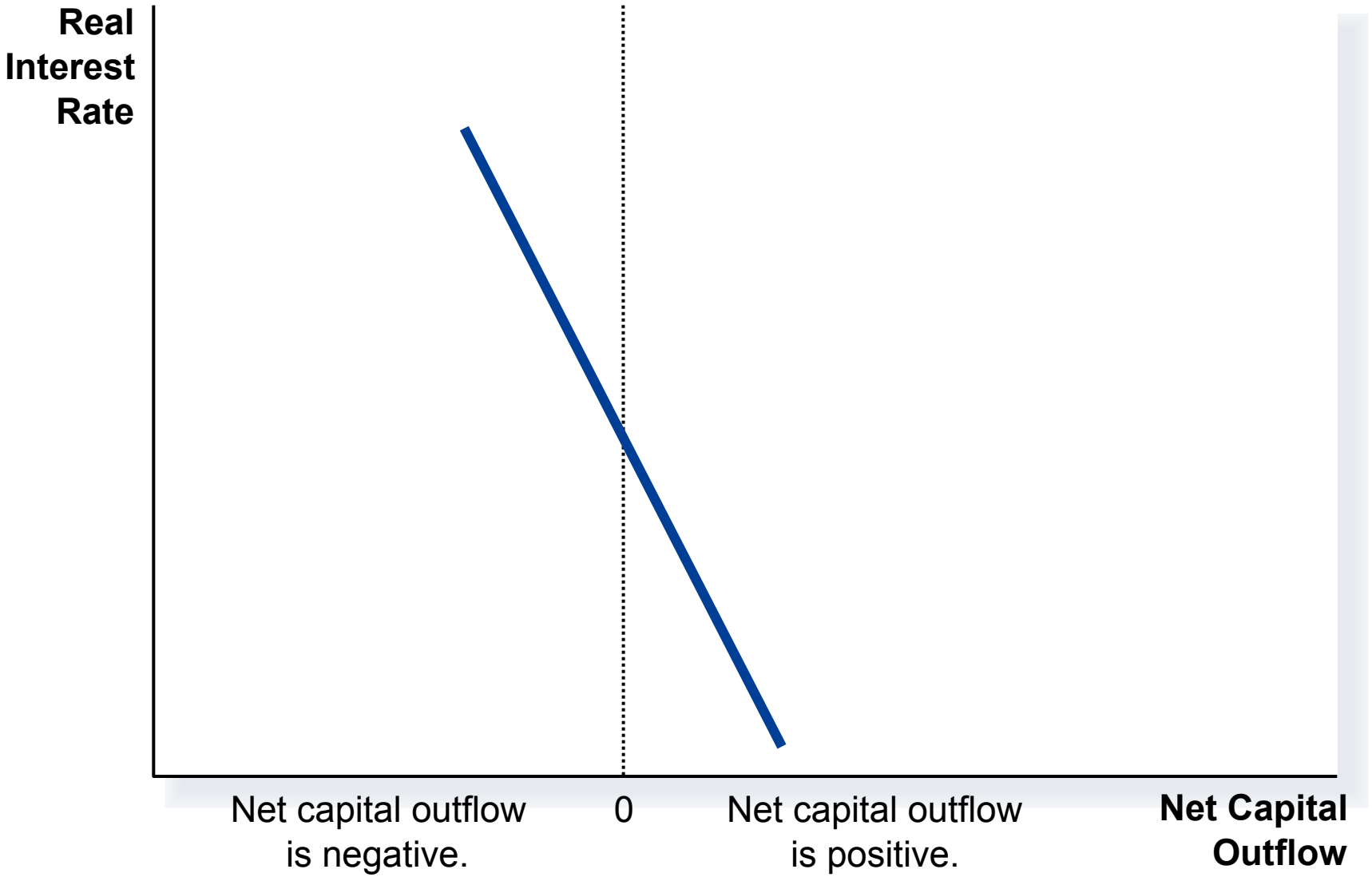
The Market for Loanable Funds



The Market for Foreign-Currency Exchange



How Net Capital Outflow Depends on the Interest Rate

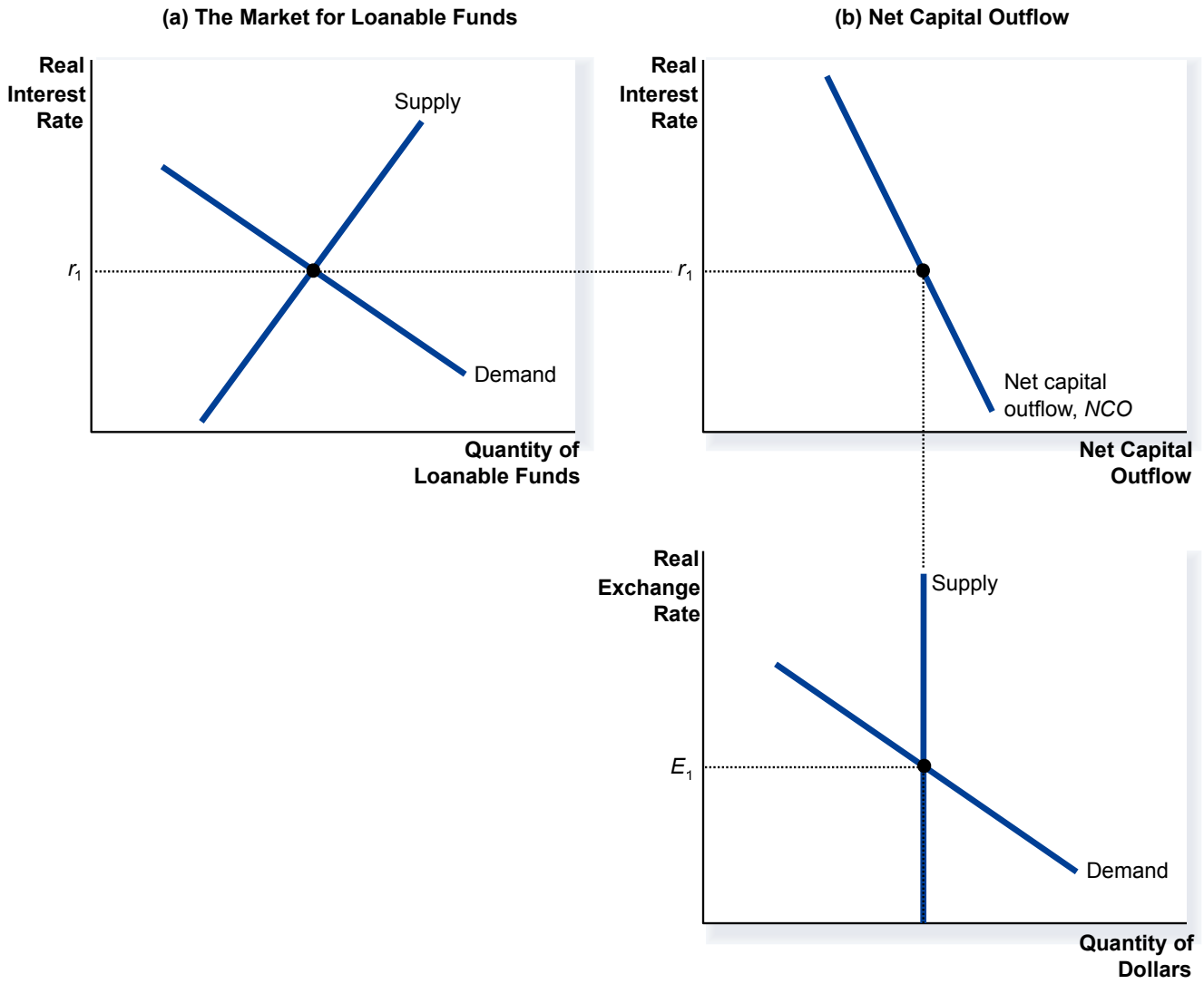


Equilibrium in Open Economy

Prices in the loanable funds market and the foreign-currency exchange market adjust simultaneously to balance supply and demand in these two markets.

As they do, they determine the macroeconomic variables of national saving, domestic investment, net foreign investment, and net exports.

The Real Equilibrium in an Open Economy

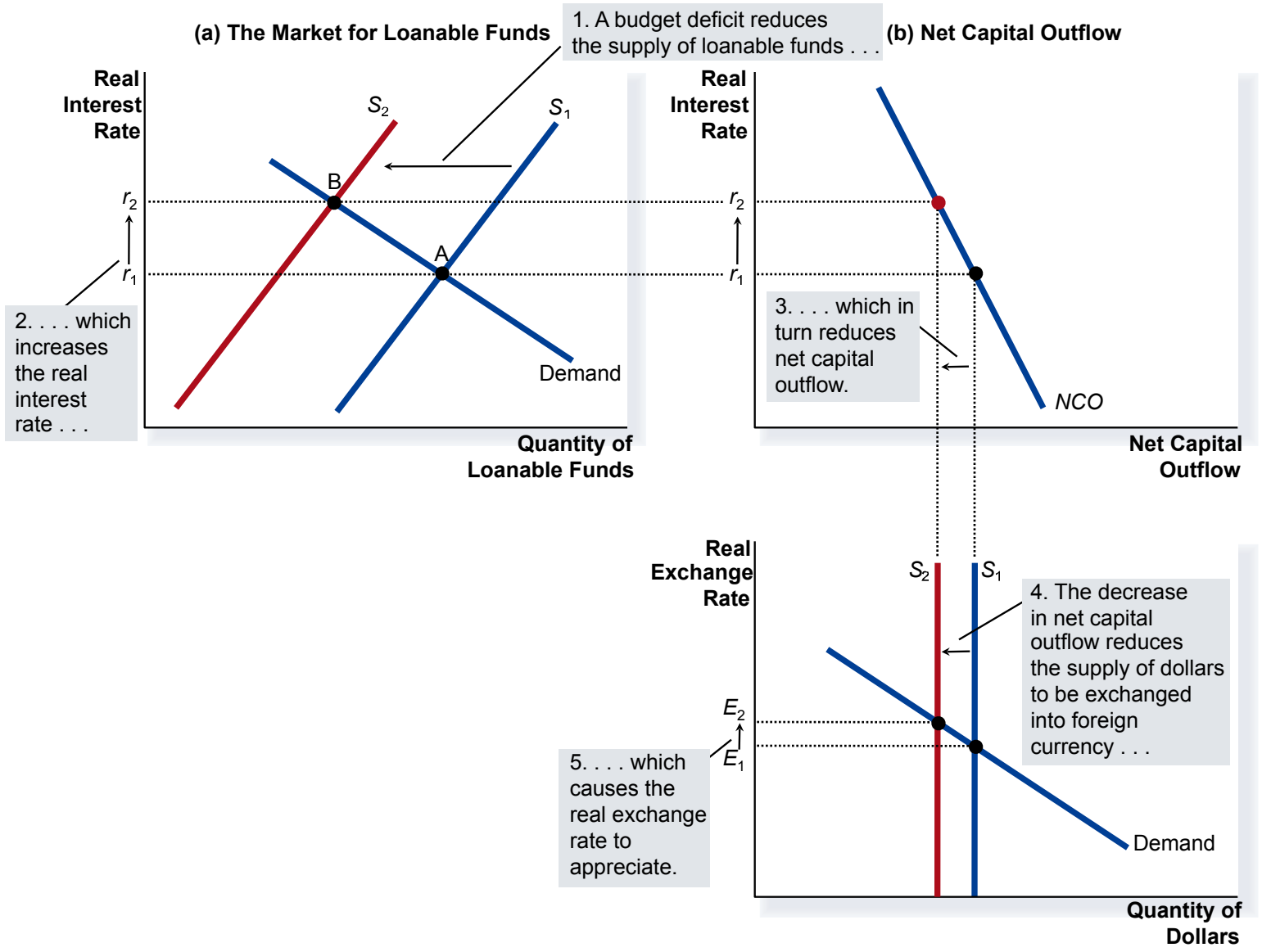


Government Budget Deficits

In an open economy, government budget deficits . . .

- ✓reduce the supply of loanable funds,
- ✓drive up the interest rate,
- ✓crowd out domestic investment,
- ✓cause net foreign investment to fall.

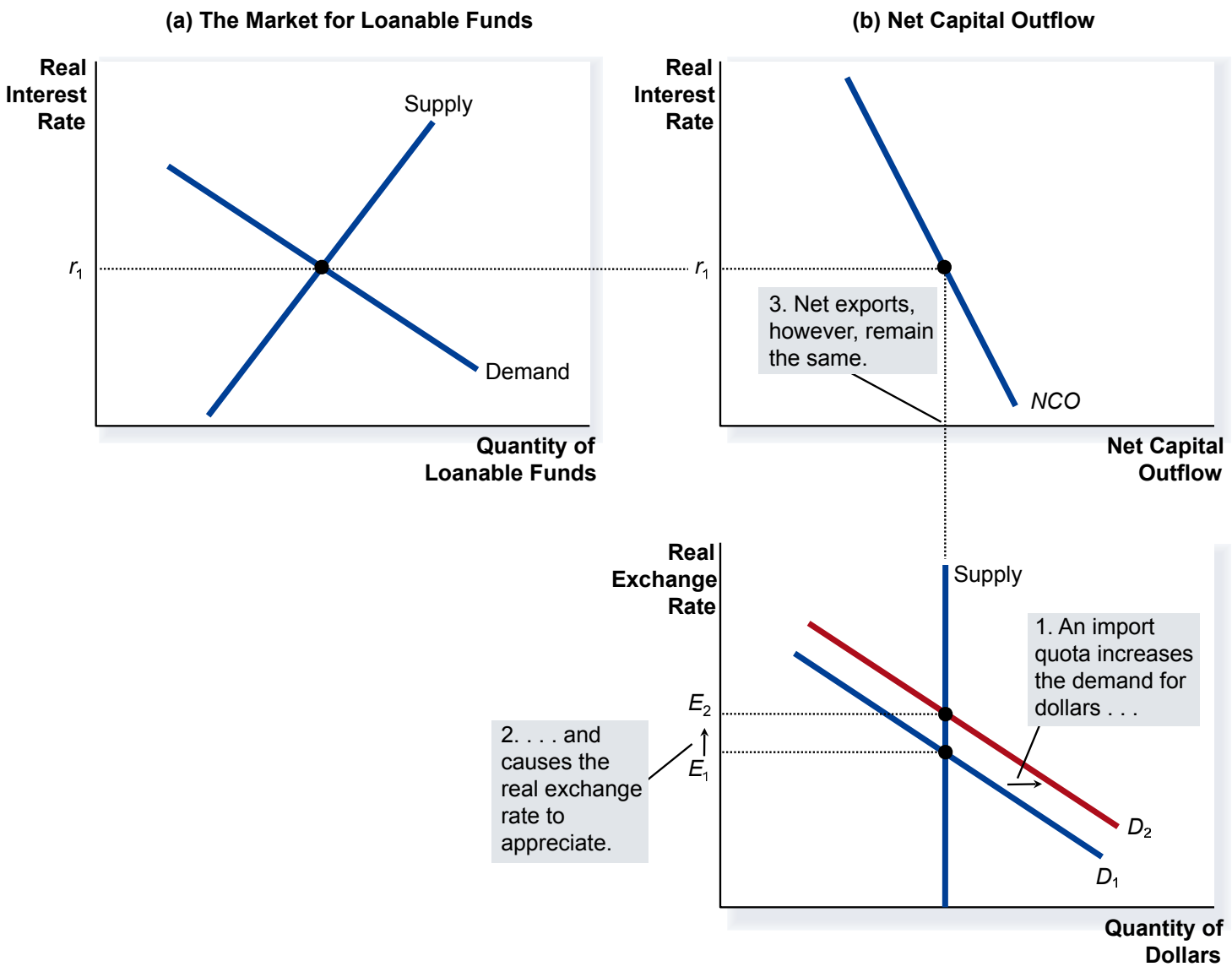
The Effects of Government Budget Deficit



Effect of an Import Quota

- ✓ Because foreigners need dollars to buy U.S. net exports, there is an increased demand for dollars in the market for foreign-currency.
- ✓ This leads to an appreciation of the real exchange rate.
- ✓ There is no change in the interest rate because nothing happens in the loanable funds market.
- ✓ There will be no change in net exports.
- ✓ There is no change in net foreign investment even though an import quota reduces imports.
- ✓ An appreciation of the dollar in the foreign exchange market encourages imports and discourages exports.
- ✓ This offsets the initial increase in net exports due to import quota.
- ✓ Trade policies do not affect the trade balance.

The Effects of an Import Quota



ACTIVE LEARNING

Budget deficit, exchange rate, and NX

Initially, the government budget is balanced and trade is balanced ($NX = 0$).

Suppose the government runs a budget deficit. As we saw earlier, r rises and NCO falls.

How does the budget deficit affect the U.S. real exchange rate? The balance of trade?

ACTIVE LEARNING

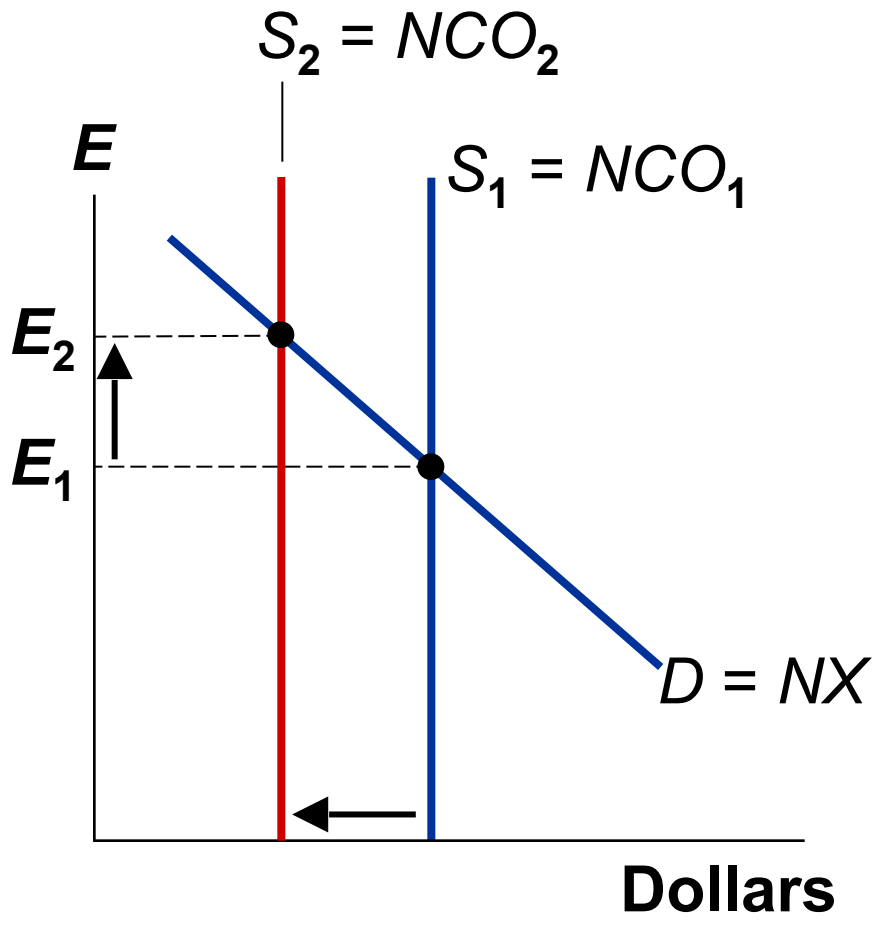
Answers

The budget deficit reduces *NCO* and the supply of dollars.

The real exchange rate appreciates,

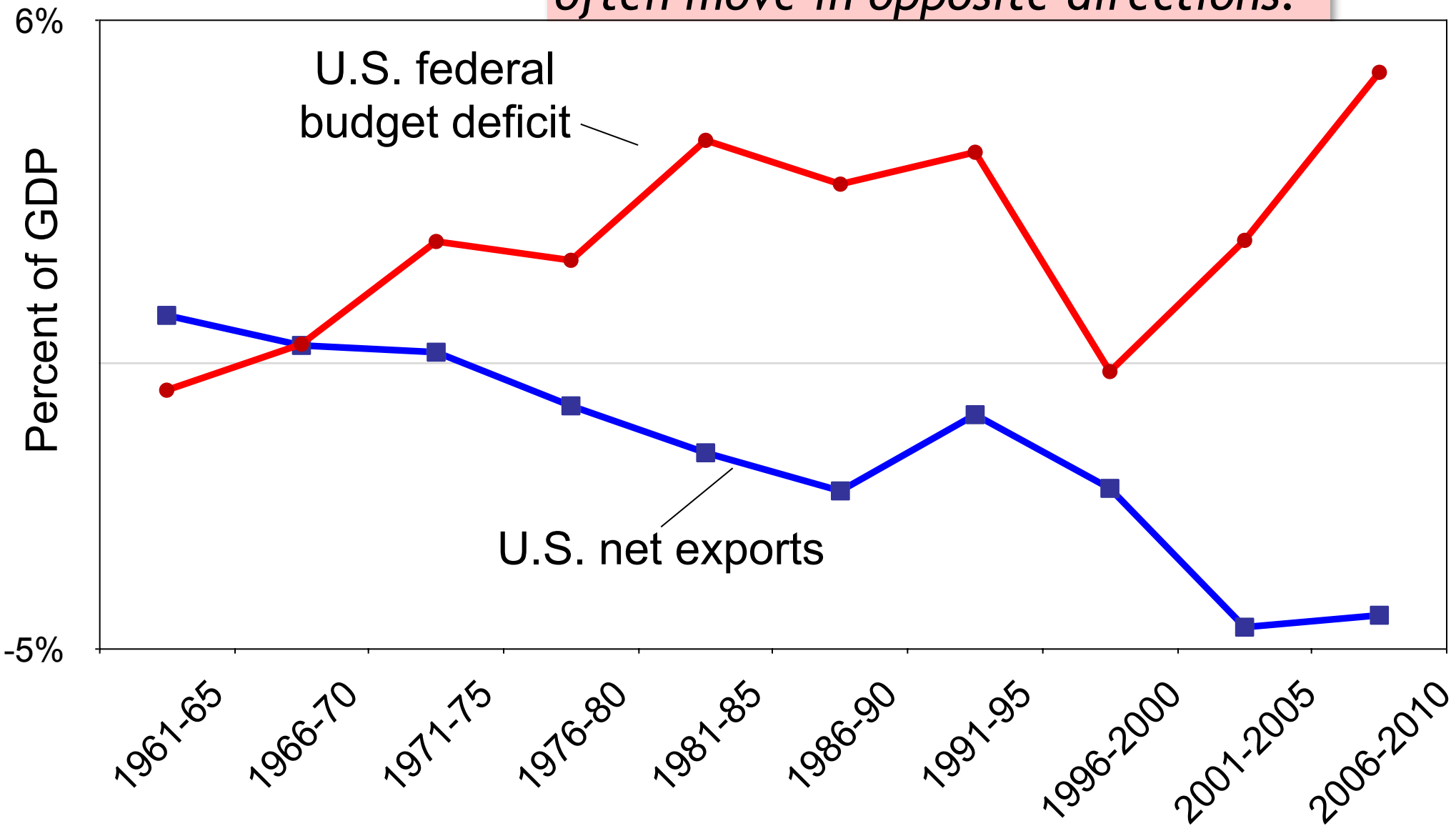
reducing net exports.

Since ***NX*** = 0 initially, the budget deficit causes a trade deficit (***NX*** < 0).



The "Twin Deficits"

Net exports and the budget deficit often move in opposite directions.



The interest-rate effect: A lower price level reduces the amount of money people want to hold. As people try to lend out their excess money holdings, the interest rate falls. The lower interest rate stimulates investment spending and thus increases the quantity of goods and services demanded.

The exchange-rate effect: When a lower price level reduces the interest rate, investors move some of their funds overseas in search of higher returns. This movement of funds causes the real value of the domestic currency to fall in the market for foreign currency exchange. Domestic goods become less expensive relative to foreign goods. This change in the real exchange rate stimulates spending on net exports and thus increases the quantity of goods and services demanded.

The Connection Between Interest Rates and Exchange Rates

Keep in mind:

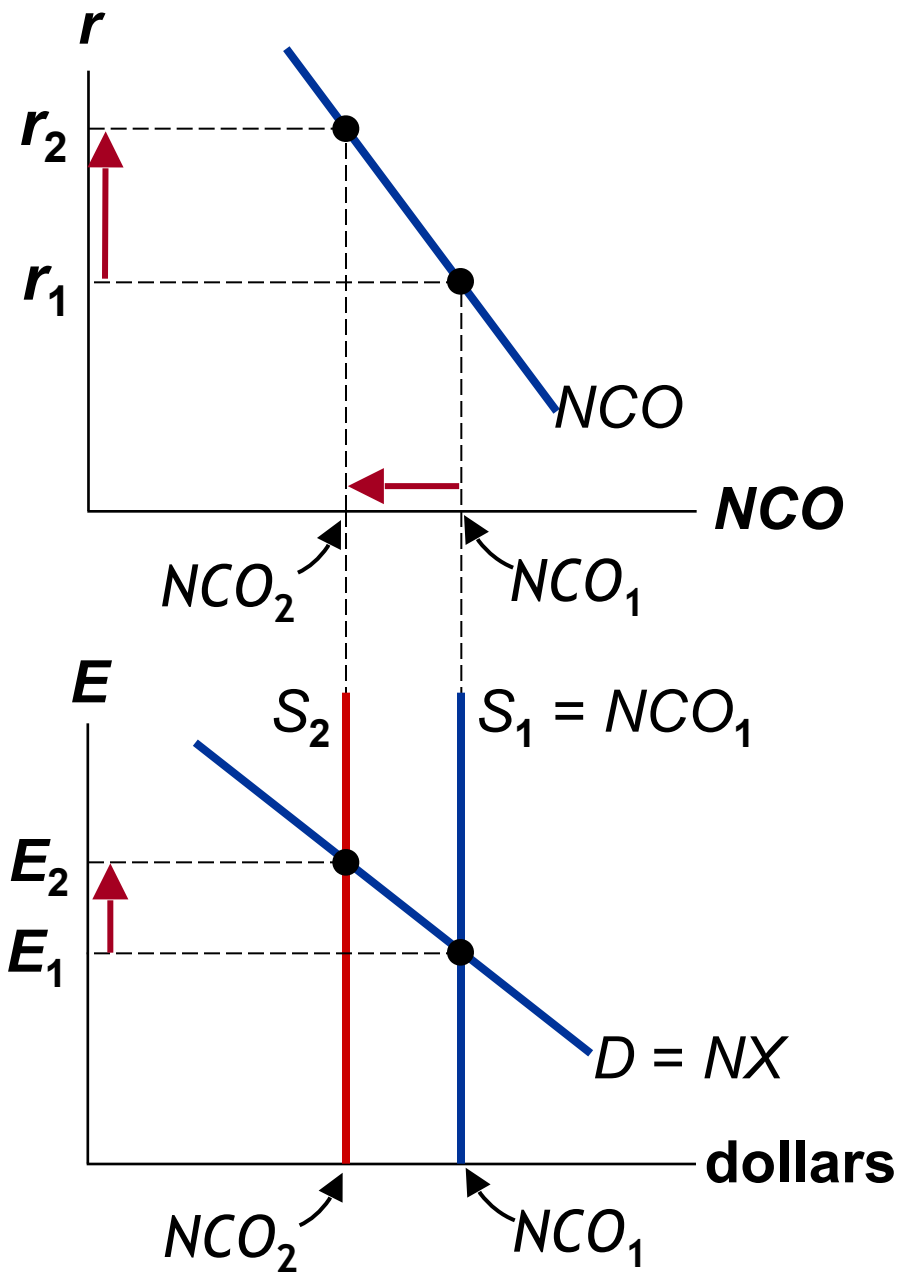
*The LF market (not shown) determines **r**. This value of **r** then determines NCO (shown in upper graph).*

This value of NCO then determines supply of dollars in foreign exchange market (in lower graph).

Anything that increases ***r*** will reduce *NCO*

and the supply of dollars in the foreign exchange market.

Result:
The real exchange rate appreciates.



A fiscal expansion in three models

A fiscal expansion causes national saving to fall.
The effects of this depend on openness & size.

	Closed economy	**Large open economy**	**Small open economy**
r	Rises	Rises, but not as much as in closed economy	No change
l	Falls	Falls, but not as much as in closed conomy	No change
NX	No change	Falls, but not as much as in small open economy	Falls

CONCLUSION

Yet, we should be careful not to blame our problems on the international economy.

- *Our trade deficit is not caused by other countries' "unfair" trade practices, but by our own low saving.*
- *Stagnant living standards are not caused by imports, but by low productivity growth.*

When politicians and commentators discuss international trade and finance, the lessons of this and the preceding chapter can help separate myth from reality.

THANKS FOR YOUR ATTENTION!