

Macroeconomics, Masaryk University Spring 2017

Lecture 9: A Macroeconomic Theory of the Open Economy

Nikoloz Kudashvili

Seventh Edition

Principles of Macroeconomics

N. Gregory Mankiw



Wojciech Gerson (1831-1901)

CHAPTER 19

A Macroeconomic Theory of the Open Economy

In this chapter, look for the answers to these questions

- In an open economy, what determines the real interest rate? The real exchange rate?
- How are the markets for loanable funds and foreign-currency exchange connected?
- How do government budget deficits affect the exchange rate and trade balance?
- How do other policies or events affect the interest rate, exchange rate, and trade balance?

Introduction

- The previous chapter explained the basic concepts and vocabulary of the open economy: net exports (NX), net capital outflow (NCO), and exchange rates.
- This chapter ties these concepts together into a theory of the open economy.
- We will use this theory to see how govt policies and various events affect the trade balance, exchange rate, and capital flows.
- We start with the loanable funds market...

The Market for Loanable Funds

- An identity from the preceding chapter:

$$S = I + NCO$$

The diagram illustrates the identity $S = I + NCO$. The variable S is labeled as "Saving", I is labeled as "Domestic investment", and NCO is labeled as "Net capital outflow". Each label is enclosed in a yellow rectangular box, and thin lines connect the boxes to their respective variables in the equation above.

- Supply of loanable funds = saving.
- A dollar of saving can be used to finance:
 - the purchase of domestic capital
 - the purchase of a foreign asset
- So, demand for loanable funds = $I + NCO$

The Market for Loanable Funds

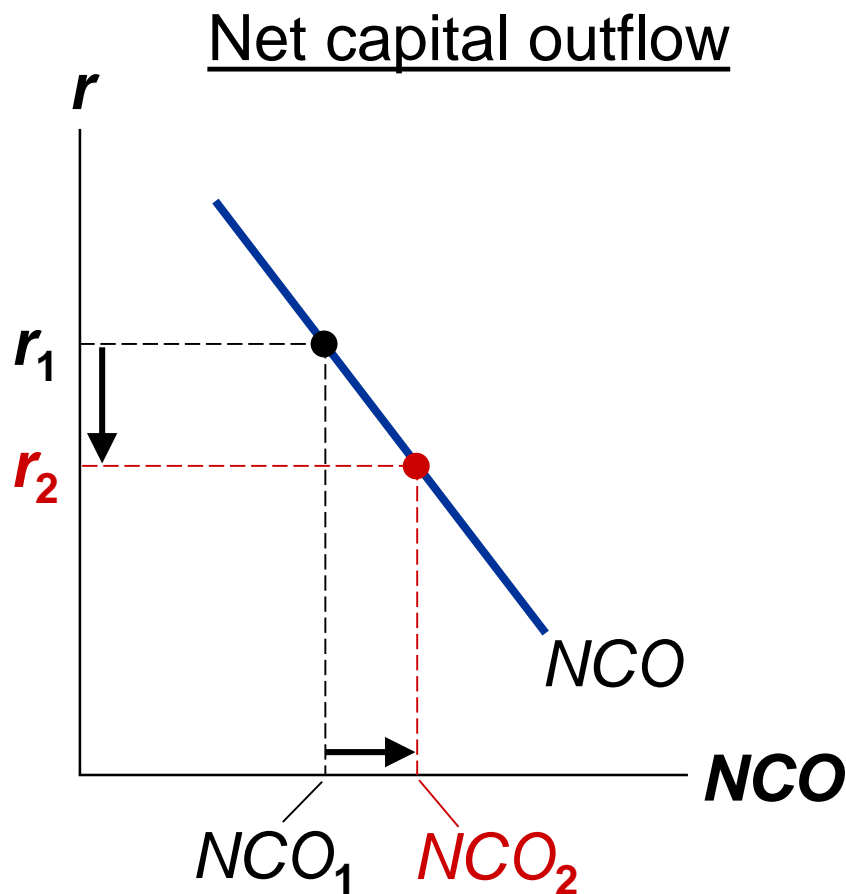
- Recall:
 - S depends positively on the real interest rate, r .
 - I depends negatively on r .
- What about NCO ?

How NCO Depends on the Real Interest Rate

The real interest rate, r , is the real return on domestic assets.

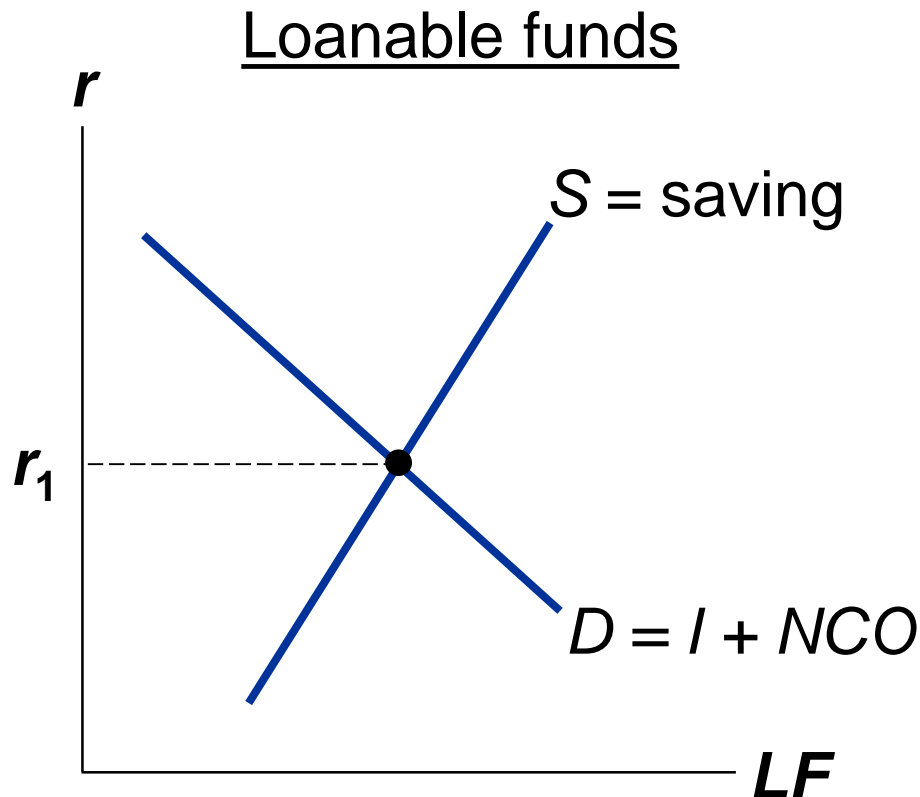
A fall in r makes domestic assets less attractive relative to foreign assets.

- People in the U.S. purchase more foreign assets.
- People abroad purchase fewer U.S. assets.
- NCO rises.



The Loanable Funds Market Diagram

r adjusts to balance supply and demand in the LF market.



Both I and NCO depend negatively on r , so the D curve is downward-sloping.

ACTIVE LEARNING 1

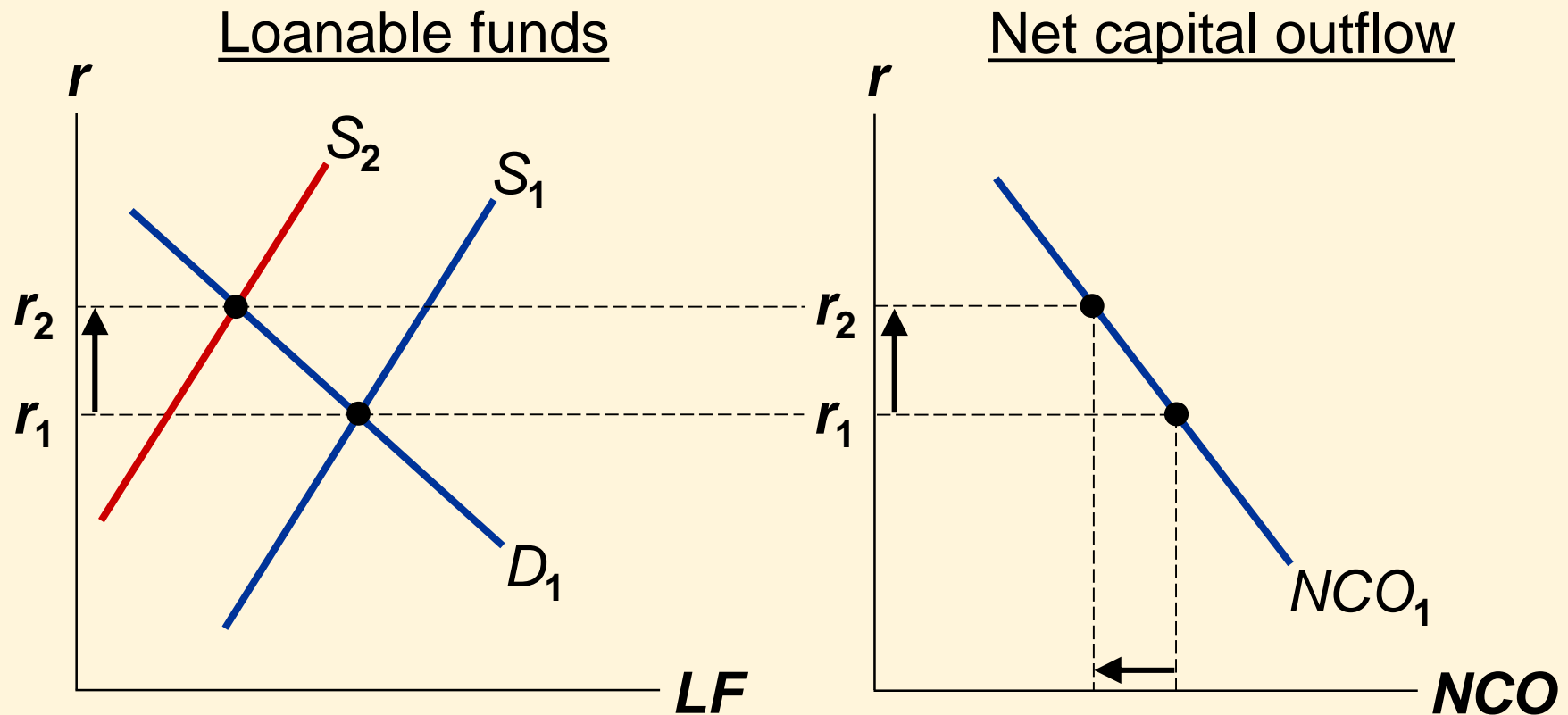
Budget deficits and capital flows

- Suppose the government runs a budget deficit (previously, the budget was balanced).
- Use the appropriate diagrams to determine the effects on the real interest rate and net capital outflow.

ACTIVE LEARNING 1

Answers

When working with this model, keep in mind:
the LF market determines r (in left graph),
then this value of r determines NCO (in right graph).



The Market for Foreign-Currency Exchange

- Another identity from the preceding chapter:

$$\mathbf{NCO} = \mathbf{NX}$$

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

- Recall:

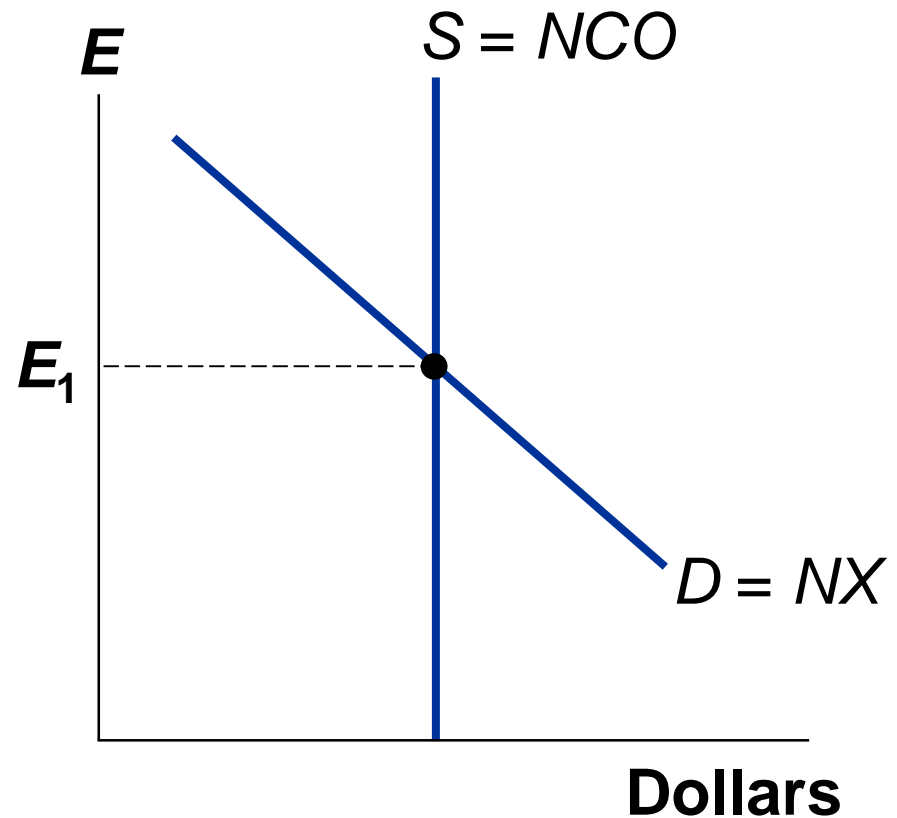
The U.S. real exchange rate (E) measures the quantity of foreign goods & services that trade for one unit of U.S. goods & services.

- E is the real value of a dollar in the market for foreign-currency exchange.

The Market for Foreign-Currency Exchange

An increase in E makes supply and demand for dollars to the foreigners, markets for foreign demand for U.S. goods and U.S. dollars.

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



FYI: Disentangling Supply and Demand

When a U.S. resident buys imported goods, does the transaction affect supply or demand in the foreign exchange market? Two views:

1. *The supply of dollars increases.*

The person needs to sell her dollars to obtain the foreign currency she needs to buy the imports.

2. *The demand for dollars decreases.*

The increase in imports reduces ***NX***, which we think of as the demand for dollars.

(So, ***NX*** is really the net demand for dollars.)

Both views are equivalent. For our purposes, it's more convenient to use the second.

FYI: Disentangling Supply and Demand

When a foreigner buys a U.S. asset, does the transaction affect supply or demand in the foreign exchange market? Two views:

1. *The demand for dollars increases.*

The foreigner needs dollars in order to purchase the U.S. asset.

2. *The supply of dollars falls.*

The transaction reduces *NCO*, which we think of as the supply of dollars.

(So, ***NCO*** is really the net supply of dollars.)

Again, both views are equivalent. We will use the second.

ACTIVE LEARNING 2

Budget deficit, exchange rate, 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?

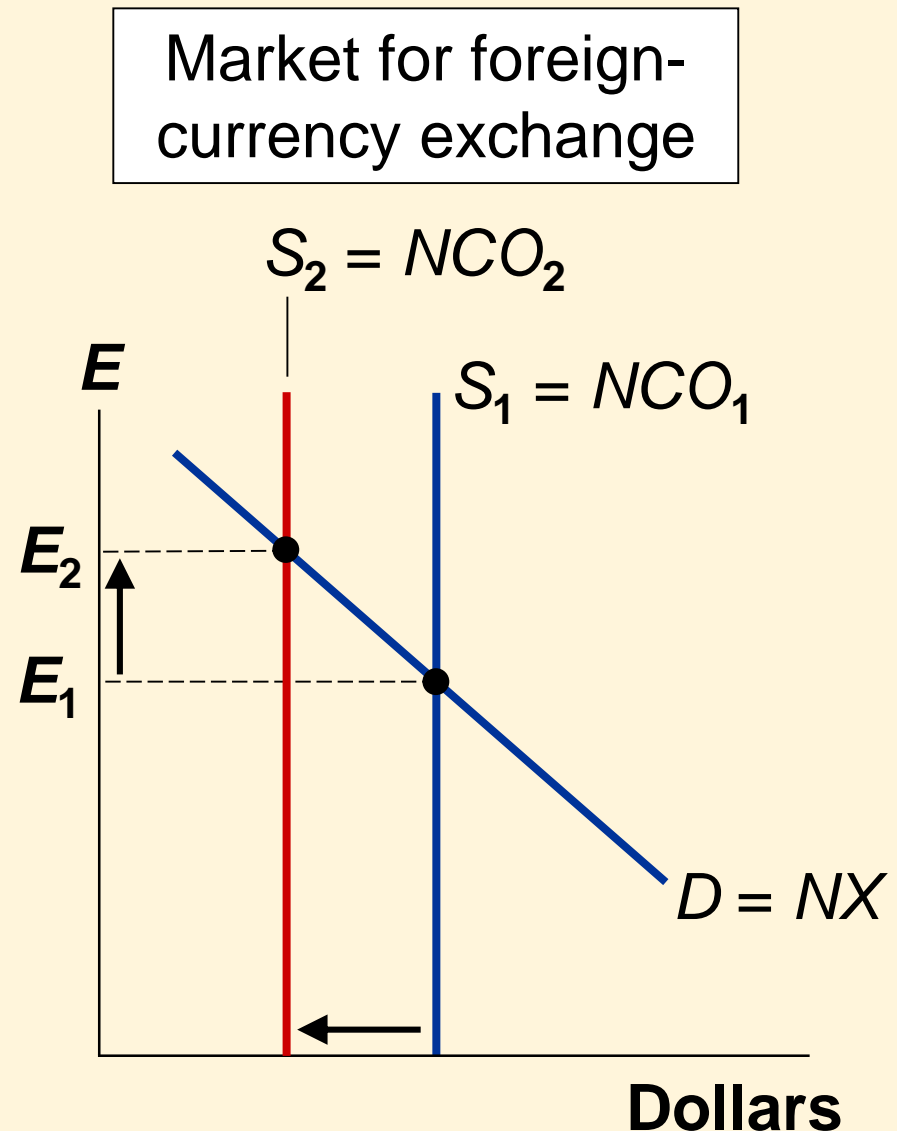
ACTIVE LEARNING 2

Answers

The budget deficit reduces NCO and the supply of dollars.

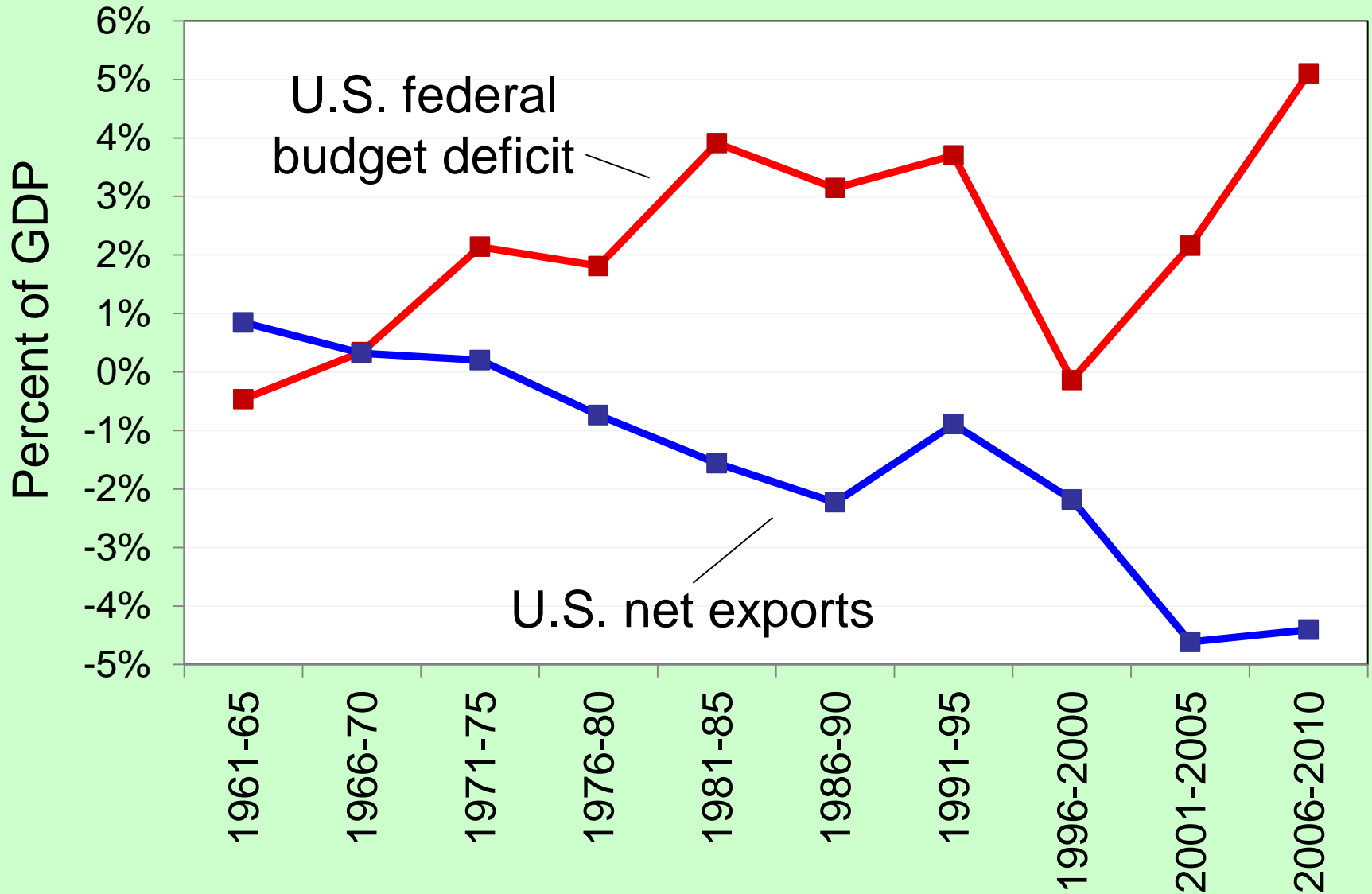
The real exchange rate appreciates, reducing net exports.

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.



SUMMARY: The Effects of a Budget Deficit

- National saving falls.
- The real interest rate rises.
- Domestic investment and net capital outflow both fall.
- The real exchange rate appreciates.
- Net exports fall (or, the trade deficit increases).

SUMMARY: The Effects of a Budget Deficit

- One other effect:
As foreigners acquire more domestic assets, the country's debt to the rest of the world increases.
- Due to many years of budget and trade deficits, the U.S. is now the “world’s largest debtor nation.”

International Investment Position of the U.S.

31 October 2013

Value of U.S.-owned foreign assets	\$21.6 trillion
Value of foreign-owned U.S. assets	\$25.8 trillion
U.S.' net debt to the rest of the world	\$ 4.2 trillion

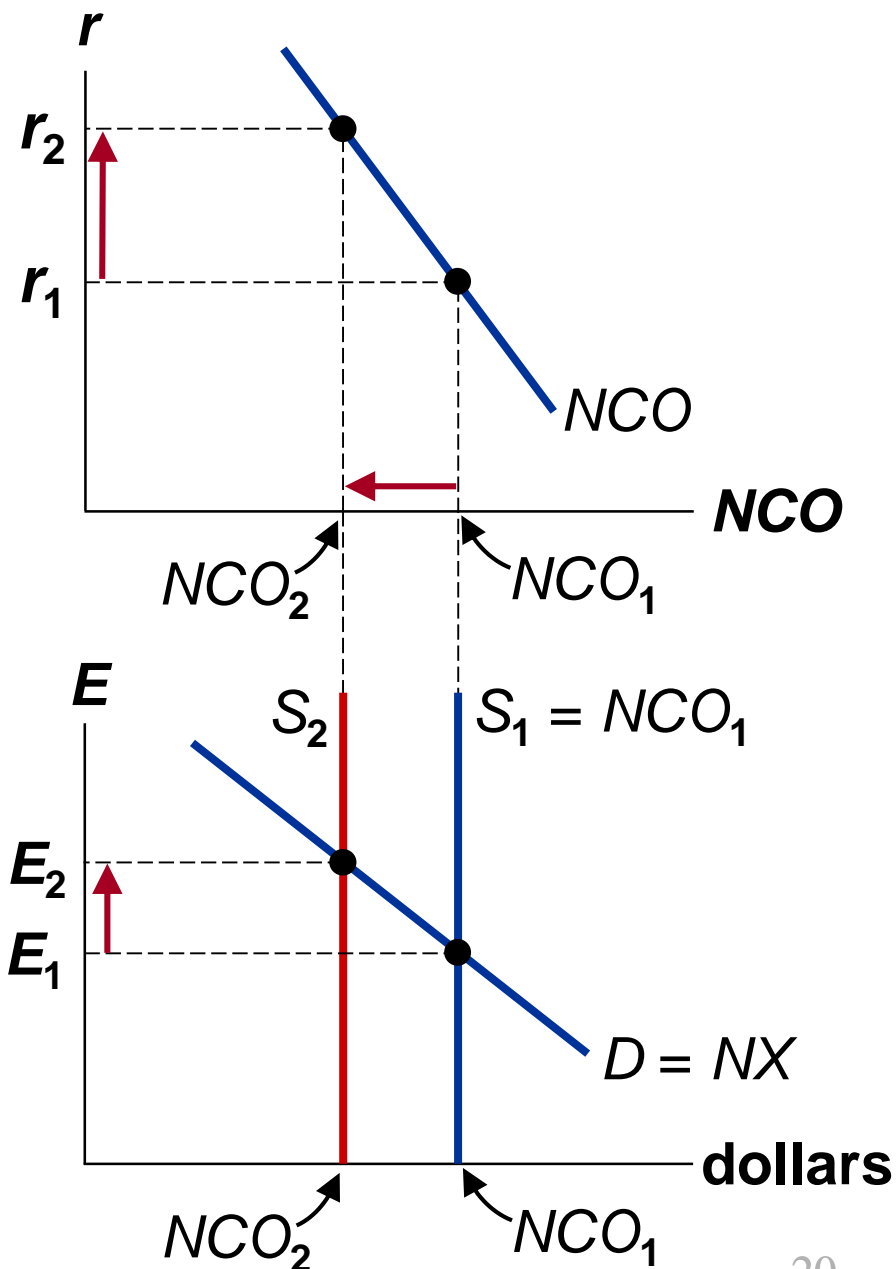
The Connection Between Interest Rates and Exchange Rates

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).



ACTIVE LEARNING 3

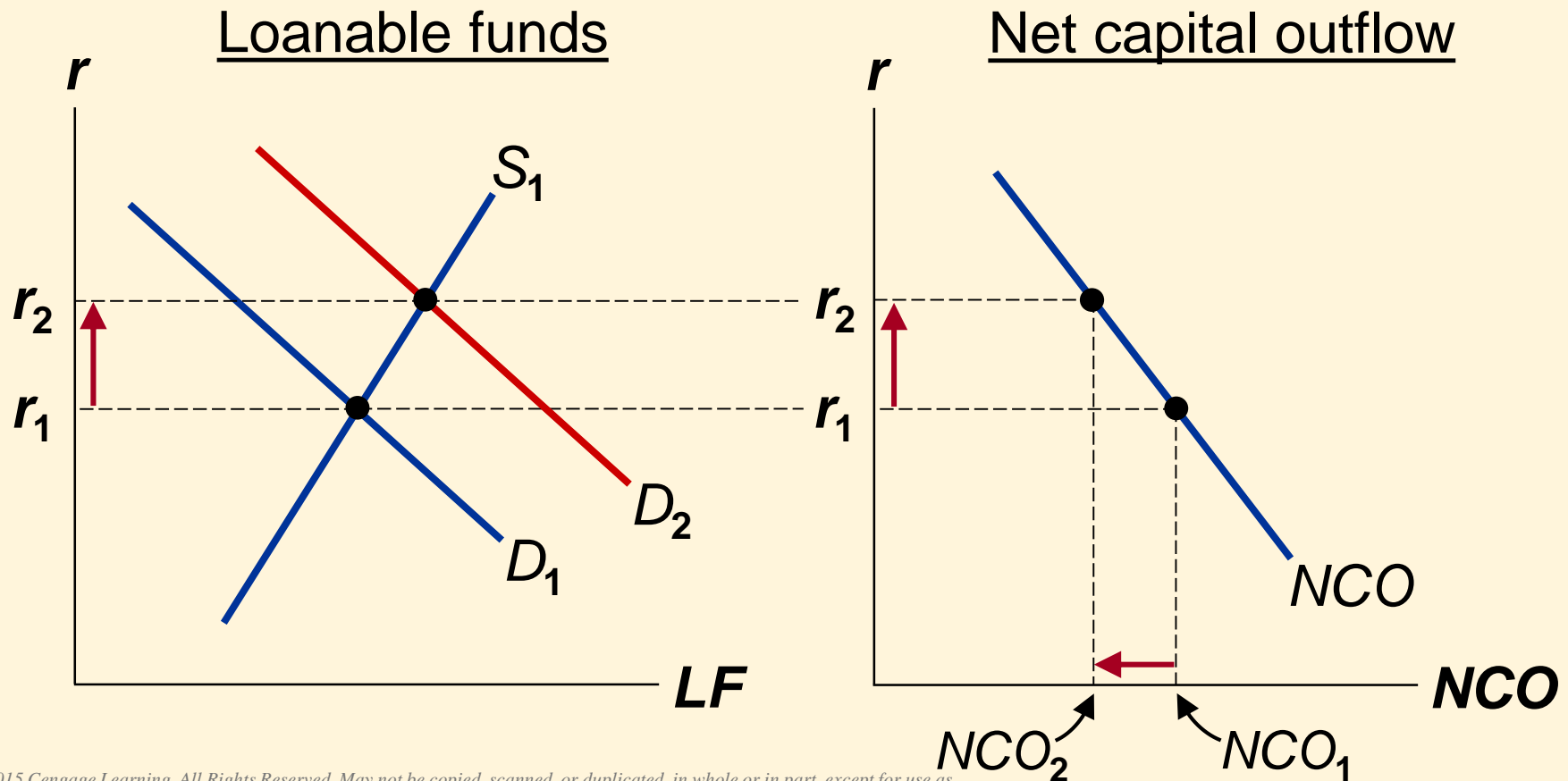
Investment incentives

- Suppose the government provides new tax incentives to encourage investment.
- Use the appropriate diagrams to determine how this policy would affect:
 - the real interest rate
 - net capital outflow
 - the real exchange rate
 - net exports

ACTIVE LEARNING 3

Answers

Investment—and the demand for LF—increases at each value of NCO to fall.

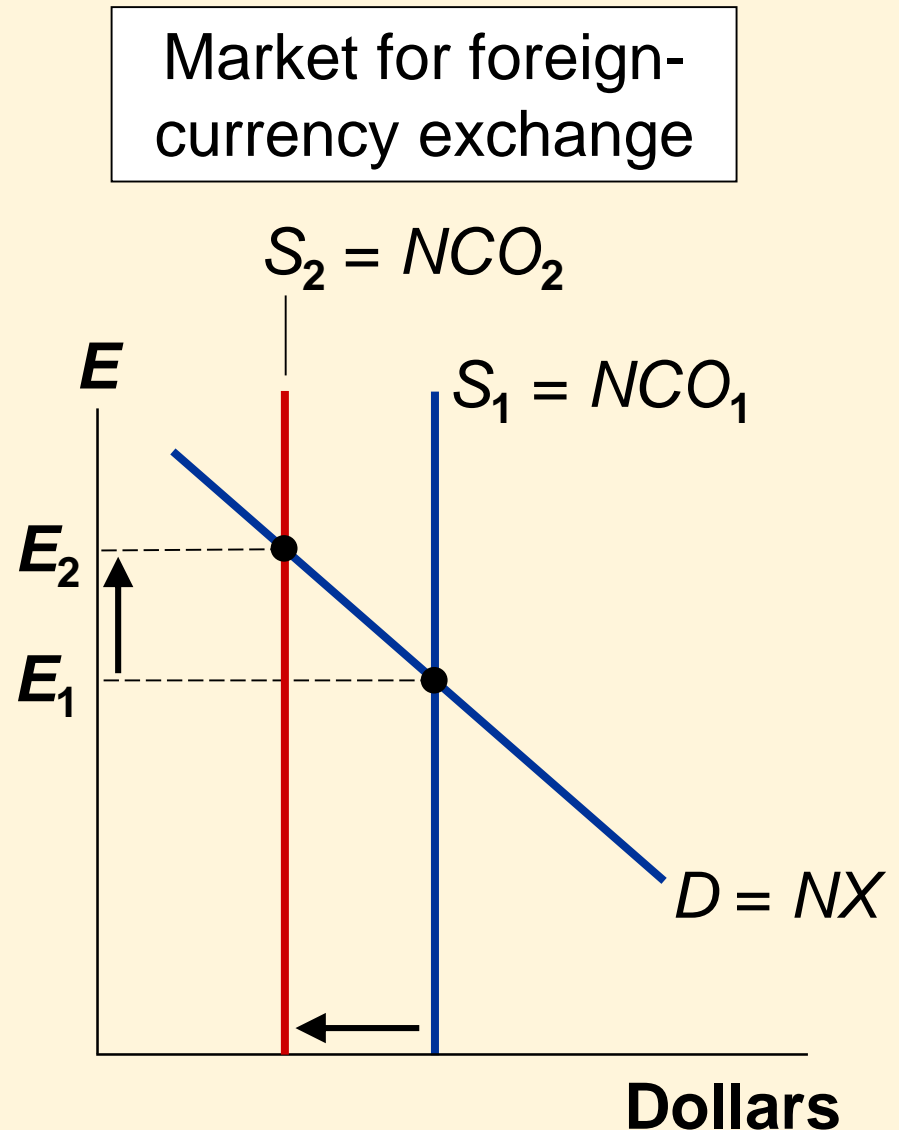


ACTIVE LEARNING 3

Answers

The fall in NCO reduces the supply of dollars in the foreign exchange market.

The real exchange rate appreciates, reducing net exports.



Budget Deficit vs. Investment Incentives

- A tax incentive for investment has similar effects as a budget deficit:
 - r rises, NCO falls
 - E rises, NX falls
- But one important difference:
 - Investment tax incentive increases investment, which increases productivity growth and living standards in the long run.
 - Budget deficit reduces investment, which reduces productivity growth and living standards.

Trade Policy

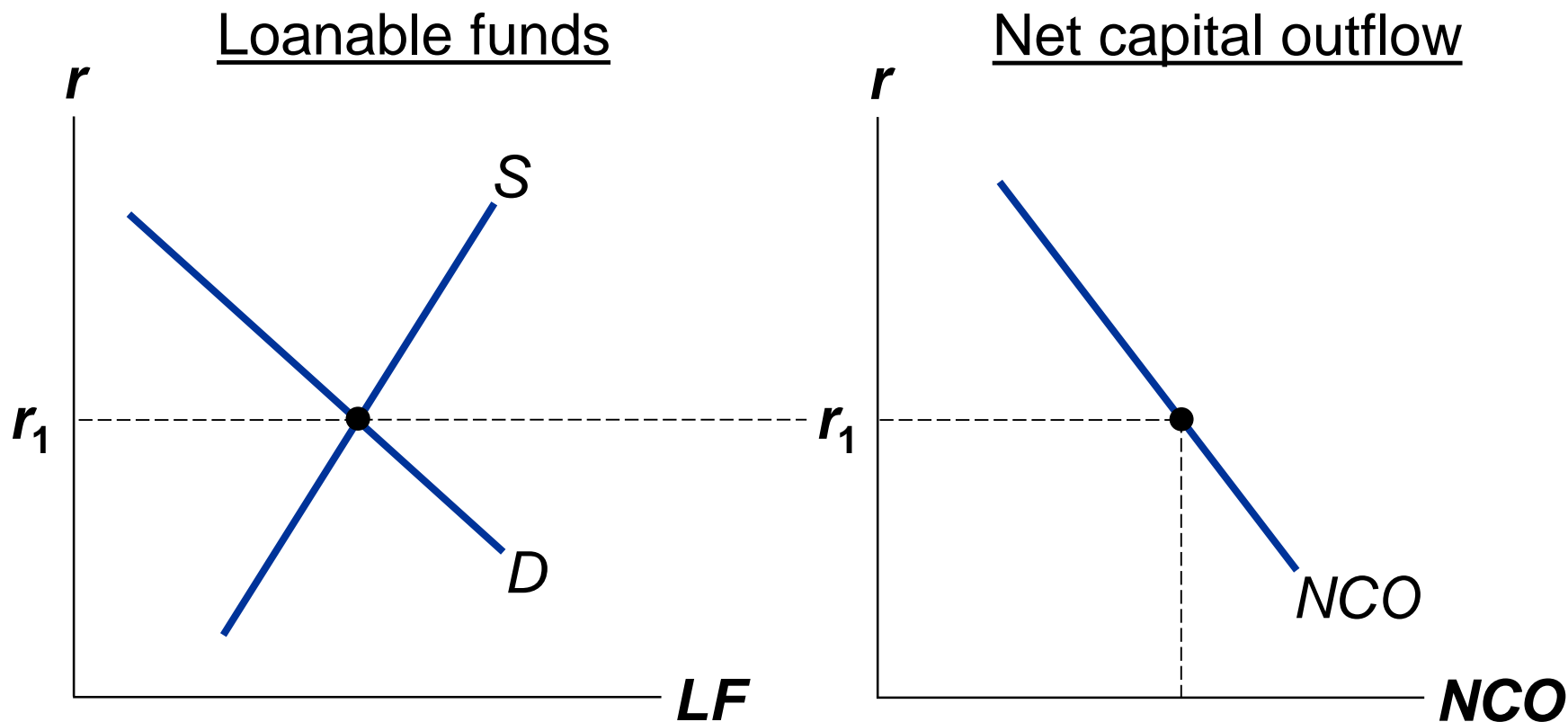
- **Trade policy:**
a govt policy that directly influences the quantity of g&s that a country imports or exports
- Examples:
 - **Tariff** – a tax on imports
 - **Import quota** – a limit on the quantity of imports
 - **“Voluntary export restrictions”** – the govt pressures another country to restrict its exports; essentially the same as an import quota

Trade Policy

- Common reasons for policies that restrict imports:
 - Save jobs in a domestic industry that has difficulty competing with imports
 - Reduce the trade deficit
- Do such trade policies accomplish these goals?
- Let's use our model to analyze the effects of an import quota on cars from Japan designed to save jobs in the U.S. auto industry.

Analysis of a Quota on Cars from Japan

An import quota does not affect saving or investment, so it does not affect **NCO**. (Recall: **NCO = S - I**.)



Analysis of a Quota on Cars from Japan

Since NCO is unchanged, S curve does not shift.

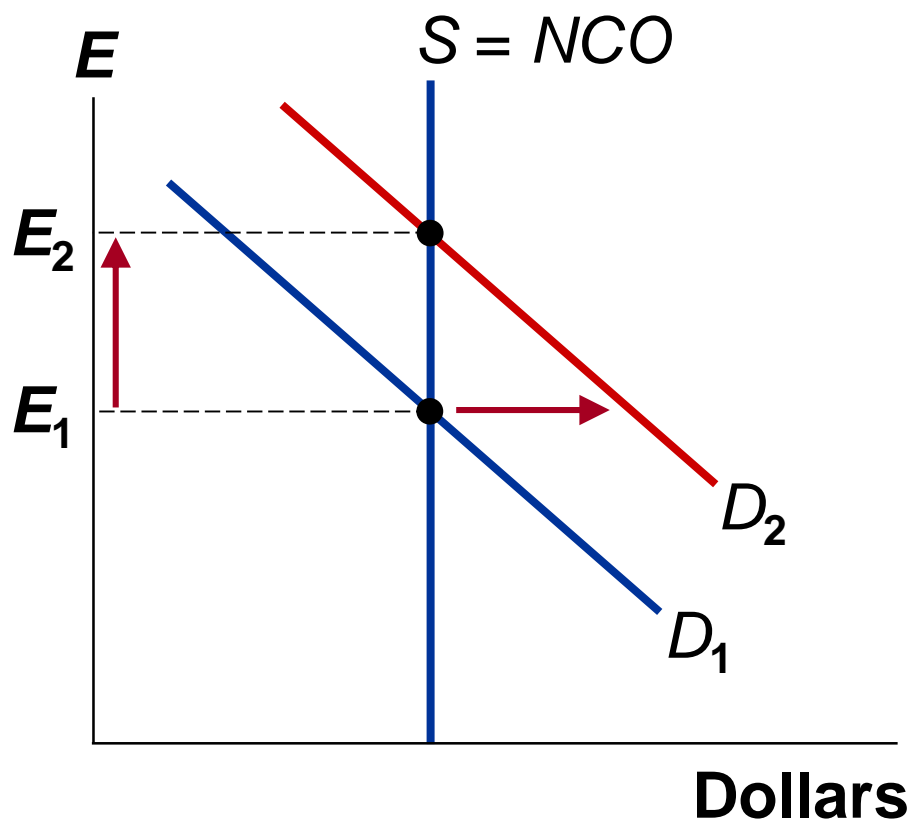
The D curve shifts:

At each E , imports of cars fall, so net exports rise, D shifts to the right.

At E_1 , there is excess demand in the foreign exchange market.

E rises to restore eq'm.

Market for foreign-currency exchange



Analysis of a Quota on Cars from Japan

What happens to **NX** ? Nothing!

- If **E** could remain at **E_1** , **NX** would rise, and the quantity of dollars demanded would rise.
- But the import quota does not affect **NCO** , so the quantity of dollars supplied is fixed.
- Since **NX** must equal **NCO** , **E** must rise enough to keep **NX** at its original level.
- *Hence, the policy of restricting imports does not reduce the trade deficit.*

Analysis of a Quota on Cars from Japan

Does the policy save jobs?

The quota reduces imports of Japanese autos.

- U.S. consumers buy more U.S. autos.
- U.S. automakers hire more workers to produce these extra cars.
- So the policy saves jobs in the U.S. auto industry.

But ***E*** rises, reducing foreign demand for U.S. exports.

- Export industries contract, exporting firms lay off workers.

The import quota saves jobs in the auto industry but destroys jobs in U.S. export industries!!

CASE STUDY: Capital Flows from China

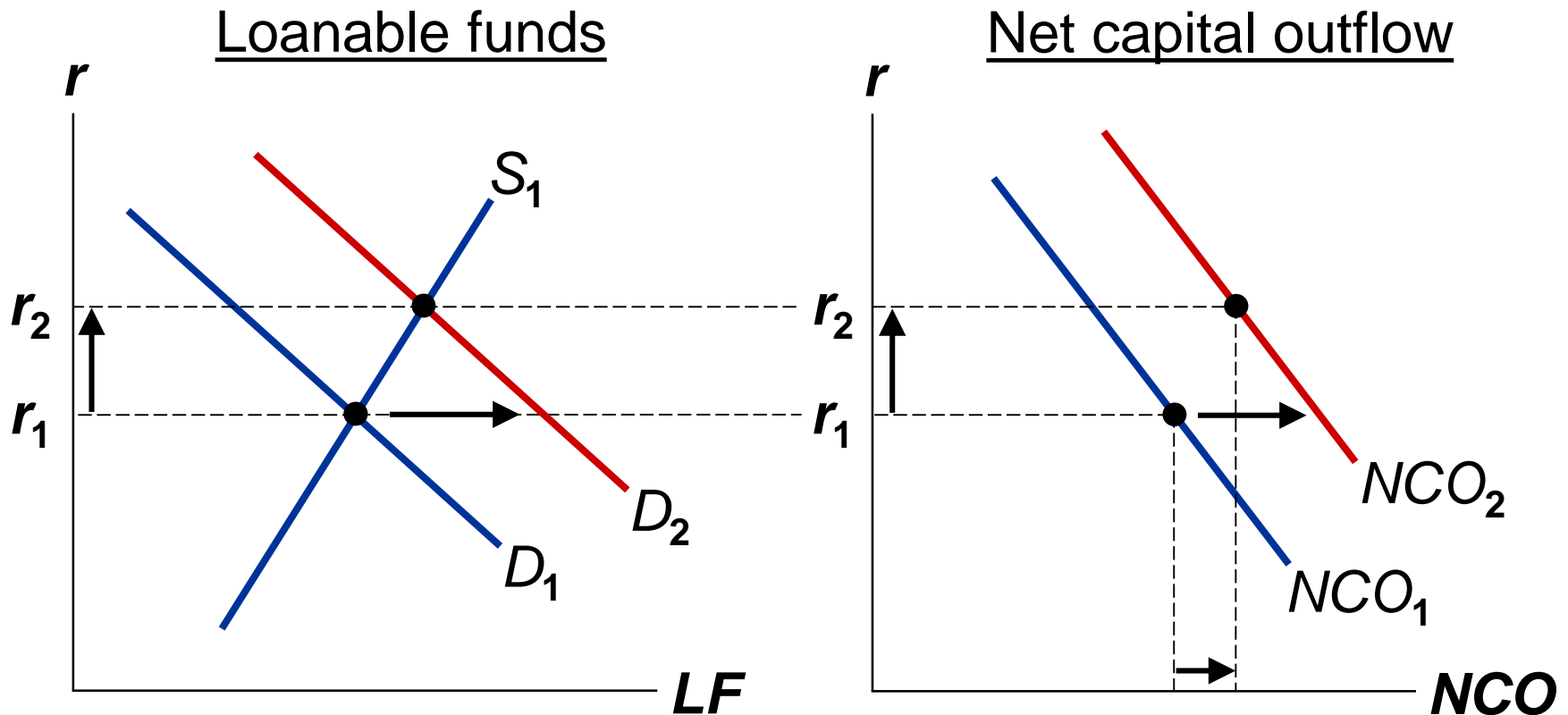
- In recent years, China has accumulated U.S. assets to reduce its exchange rate and boost its exports.
- Results in U.S.:
 - Appreciation of \$ relative to Chinese renminbi
 - Higher U.S. imports from China
 - Larger U.S. trade deficit
- Some U.S. politicians want China to stop, argue for restricting trade with China to protect some U.S. industries.
- Yet, U.S. consumers benefit, and the net effect of China's currency intervention is probably small.

Political Instability and Capital Flight

- 1994: Political instability in Mexico made world financial markets nervous.
 - People worried about the safety of Mexican assets they owned.
 - People sold many of these assets, pulled their capital out of Mexico.
- **Capital flight:** a large and sudden reduction in the demand for assets located in a country
- We analyze this using our model, but from the perspective of Mexico, not the U.S.

Capital Flight from Mexico

Decrease in investment and savings as domestic assets and portfolios lose their appeal
 Capital flight increases demand for LF.

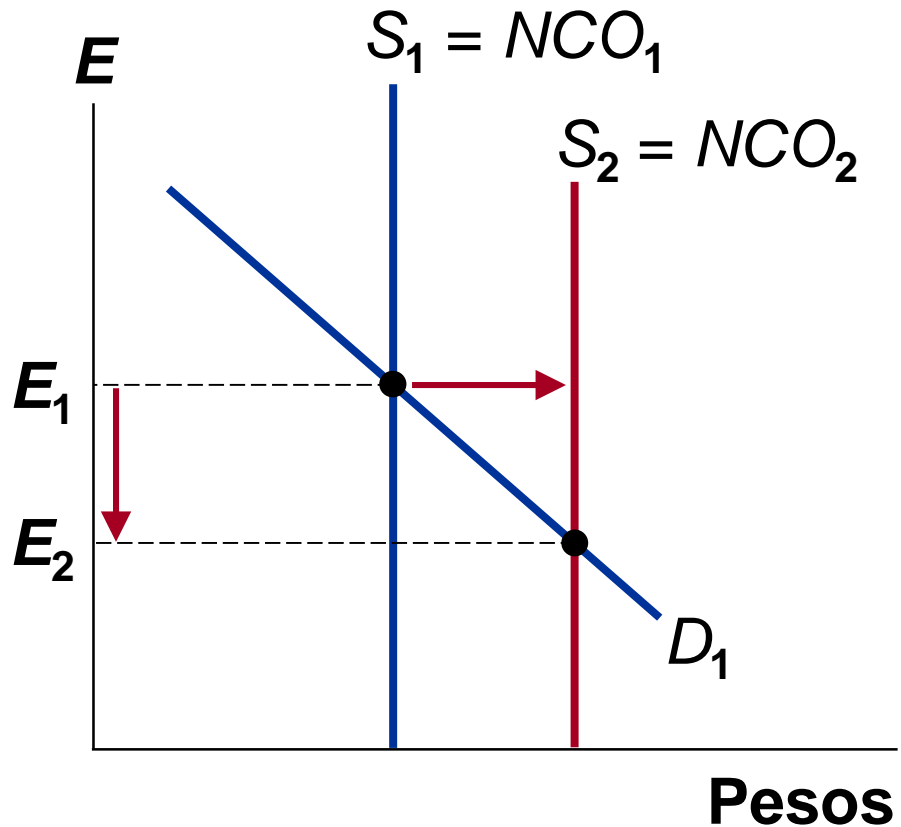


Capital Flight from Mexico

The increase in NCO causes an increase in the supply of pesos in the foreign exchange market.

The real exchange rate value of the peso falls.

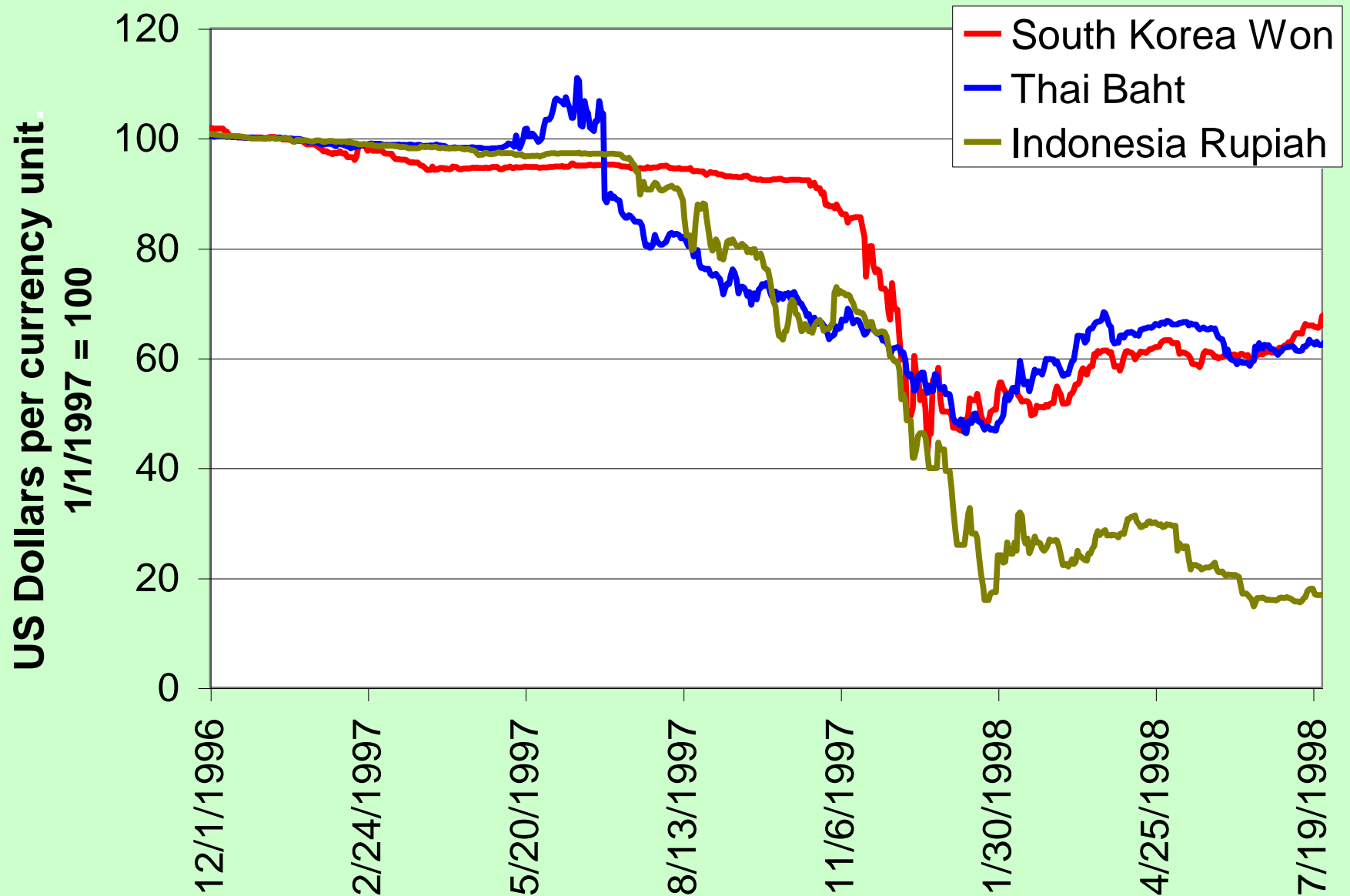
Market for foreign-currency exchange



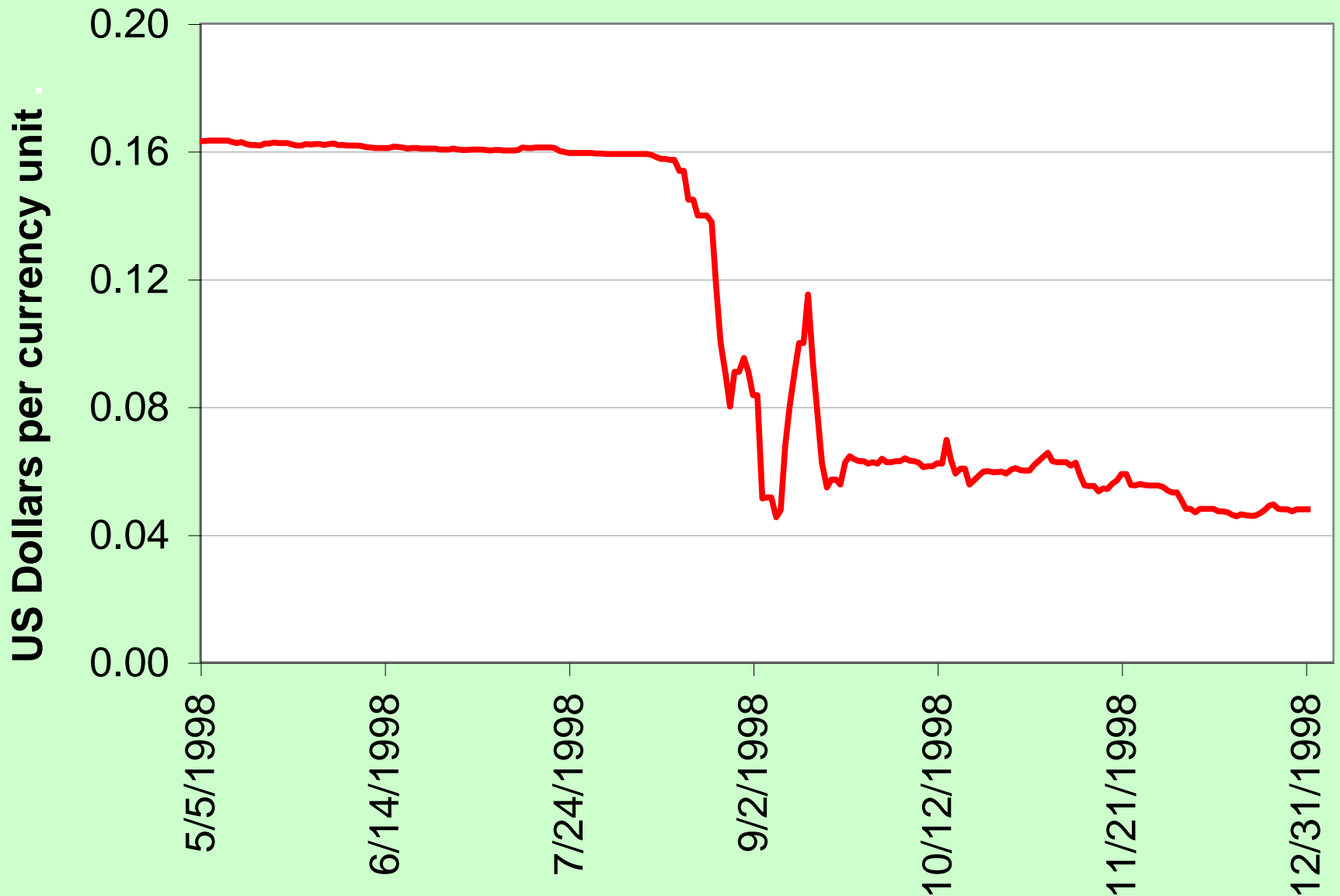
Examples of Capital Flight: Mexico, 1994



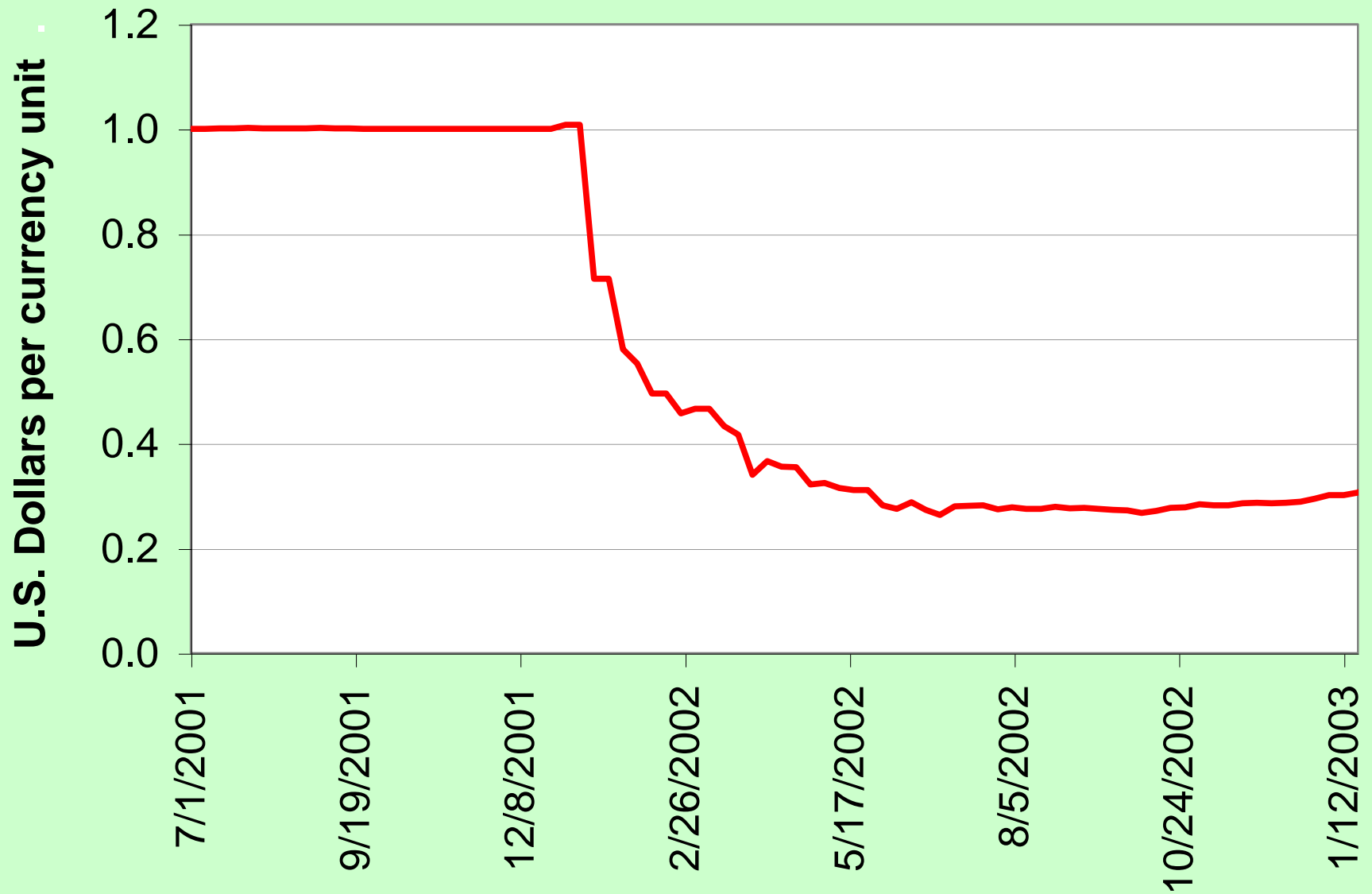
Examples of Capital Flight: S.E. Asia, 1997



Examples of Capital Flight: Russia, 1998



Examples of Capital Flight: Argentina, 2002



CONCLUSION

- The U.S. economy is becoming increasingly open:
 - Trade in g&s is rising relative to GDP.
 - Increasingly, people hold international assets in their portfolios and firms finance investment with foreign capital.

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.

Summary

- In an open economy, the real interest rate adjusts to balance the supply of loanable funds (saving) with the demand for loanable funds (domestic investment and net capital outflow).
- In the market for foreign-currency exchange, the real exchange rate adjusts to balance the supply of dollars (net capital outflow) with the demand for dollars (net exports).
- Net capital outflow is the variable that connects these markets.

Summary

- A budget deficit reduces national saving, drives up interest rates, reduces net capital outflow, reduces the supply of dollars in the foreign exchange market, appreciates the exchange rate, and reduces net exports.
- A policy that restricts imports does not affect net capital outflow, so it cannot affect net exports or improve a country's trade deficit. Instead, it drives up the exchange rate and reduces exports as well as imports.

Summary

- Political instability may cause capital flight, as nervous investors sell assets and pull their capital out of the country. As a result, interest rates rise and the country's exchange rate falls. This occurred in Mexico in 1994 and in other countries more recently.