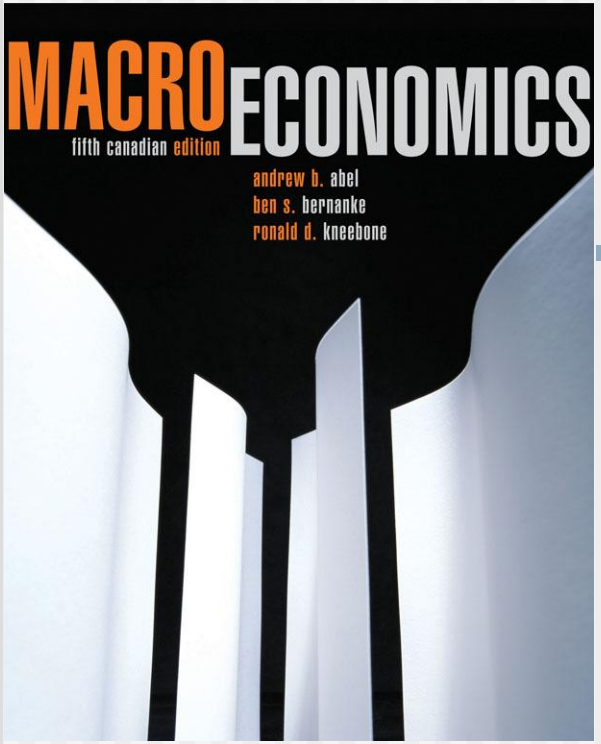


Chapter 5

Saving and Investment in the Open Economy

Balance of Payments Accounting

- The balance of payments accounts are the record of country's international transactions.
  - *Any transaction that involves a flow of funds into Canada is a credit item (+).*
  - *Any transaction that involves a flow of funds out of Canada is a debit item (-).*

The Current Account

- The current account measures a country's trade in currently produced goods and services, along with net transfers between countries.
- The components of the current account balance are:
  - *net export of goods and services;*
  - *investment income from assets abroad;*
  - *current transfers.*

Net Exports of Goods and Services

- Merchandise trade is trade in goods.
  - *A car brought to Canada from Japan is a merchandise import for Canada.*
  - *It is a debit item for Canada (–).*
  - *It is a credit item for Japan (+).*
- The trade in services includes, for example, transportation or tourism:
  - *A Canadian tourist in Mexico is an import of tourism services for Canada.*
  - *It is a debit item for Canada (–).*
  - *It is a credit item for Mexico (+).*

Investment Income from Assets Abroad

- Investment income is interest payments, dividends and royalties a country's residents receive from assets owned abroad.
- *NFP* and net investment income from abroad are equivalent concepts.

Current Transfers

- Current transfers are payments from one country to another that do not correspond to the purchase of any good, service or asset. My pension income is an example.
- A transfer by a Canadian to someone abroad (perhaps a family member back home) is a debit item (–) for Canada.

Current Account Balance

- The current account balance is obtained by adding all the credit items and subtracting all the debit items.
- A current account surplus is a positive current account balance.
- A current account deficit is a negative current account balance.

The Capital Account

- The capital and financial account records trade in existing assets, either real (direct investment) or financial (portfolio investment).
- The financial account records direct and portfolio investment.
- The capital account records migrants' funds, inheritances, transaction of intellectual property, like patents.

The Capital Account (Continued)

- If Canada sells an asset to another country it is a financial inflow for Canada; a credit item (+) in the capital account.
- If Canada buys an asset from abroad it is a financial outflow for Canada; a debit item (–) in the capital account.

The Capital Account Balance

- The capital account balance equals the value of capital inflows (credit items) minus the value of capital outflows (debit items).
- A capital account surplus is a positive capital account balance.
- A capital account deficit is a negative capital account balance.

The Official Settlements Balance

- The official settlements balance or the balance of payments is the net increase (domestic less foreign) in a country's official reserve assets.
- The official reserve assets are assets used in international payments.
- The balance of payments can be in surplus or in deficit.

TABLE 5.1

Canada's Balance of International Payments, 2006 (Billions of Dollars)

CURRENT ACCOUNT				
Net exports			**36.1**	
Exports		522.9		
Goods	455.7			
Services	67.2			
Imports		−486.8		
Goods	−404.4			
Services	−82.4			
Net income from assets			**−11.8**	
Income receipts on investments		61.6		
Income payments on investments		−73.4		
Current transfers			**−0.7**	
Current Account Balance (*CA*)				**23.6**
CAPITAL AND FINANCIAL ACCOUNT				
Increase in Canadian-owned assets abroad (capital outflow)			**−165.3**	
Canadian official reserve assets		−1.0		
Other Canadian assets		−164.3		
Increase in foreign-owned assets in Canada (capital inflow)			**142.6**	
Financial account			**−22.7**	
Capital account			**4.2**	
Capital and Financial Account Balance (*KA*)				**−18.5**
Statistical discrepancy				**−5.1**

Source: Adapted from Statistics Canada CANSIM II Tables 376-0001 and 376-0002.

The Current and the Capital Accounts

- The current account (*CA*) balance and the capital account (*KA*) balance must sum to zero at each period of time ($CA + KA = 0$).
- The statistical discrepancy is the amount to be added to the sum of *CA* and *KA* balances to reach its theoretical value of zero.

TABLE 5.2

Why the Current Account Balance and the Capital Account Balance Sum to Zero: An Example (Balance of Payments Data Refer to Canada)

***Case I:* Canada Imports $75 Sweater from Britain; Britain Imports $75 Telephone from Canada**

Current Account	
Exports	+$75
Imports	−$75
Current account balance, *CA*	0
Capital Account	
No transaction	
Capital account balance, *KA*	0
Sum of current and capital account balances, *CA* + *KA*	0

***Case II:* Canada Imports $75 Sweater from Britain; Britain Buys $75 Bond from Canada**

Current Account	
Imports	−$75
Current account balance, *CA*	−$75
Capital Account	
Capital inflow	+$75
Capital account balance, *KA*	+$75
Sum of current and capital account balances, *CA* + *KA*	0

***Case III:* Canada Imports $75 Sweater from Britain; Bank of Canada Sells $75 of British Pounds to British Bank**

Current Account	
Imports	−$75
Current account balance, *CA*	−$75
Capital Account	
Capital inflow (reduction in Canadian official reserve assets)	+$75
Capital account balance, *KA*	+$75
Sum of current and capital account balances, *CA* + *KA*	0

Net Foreign Assets and the Balance of Payments

- Net foreign assets can change when:
  - *the value of existing foreign assets and foreign liabilities changes, and*
  - *the country acquires new foreign assets or incurs new liabilities*.
- The net amount of new foreign assets a country acquires in period of time equals its current account surplus.

The National Income Accounting Identity

$$S = I + CA = I + (NX + NFP)$$

and was derived in Chap 2:

- $S_{pvt} = (Y + NFP - T + TR + INT) - C$
- $S_{govt} = (T - G - TR - INT)$
- $Y = C + I + G + NX$
- Remember $S = S_{pvt} + S_{govt}$

Uses of the National Saving

- National saving (*S*) is used:
  - *to increase the nation's stock of assets by funding investment (I);*
  - *to increase (decrease) the nation's stock of net foreign assets by lending (borrowing) to (from) foreigners (the available funds are equal to CA).*

The Goods Market Equilibrium

- The open-economy goods market equilibrium condition is:

$$S^d = I^d + CA = I^d + (NX + NFP)$$

- In an open-economy, goods market equilibrium – the desired amount of national saving (S^d) – must equal the desired amount of domestic investment (I^d) plus the amount lent abroad CA.
- These are the uses of national saving.

The Goods Market Equilibrium (continued)

- Let's assume *NFP* is zero.
- Then the open-economy goods market equilibrium condition is:

$$S^d = I^d + NX$$

$$NX = Y - (C^d + I^d + G)$$

($C^d + I^d + G$) is called absorption – the total spending by domestic residents.

Saving and Investment in a Small Open Economy

- A small open economy is an economy that is too small to affect the world real interest rate.
- The world real interest rate is the real interest rate that prevails in the international capital market.

A Small Open Economy: Assumptions of the Model

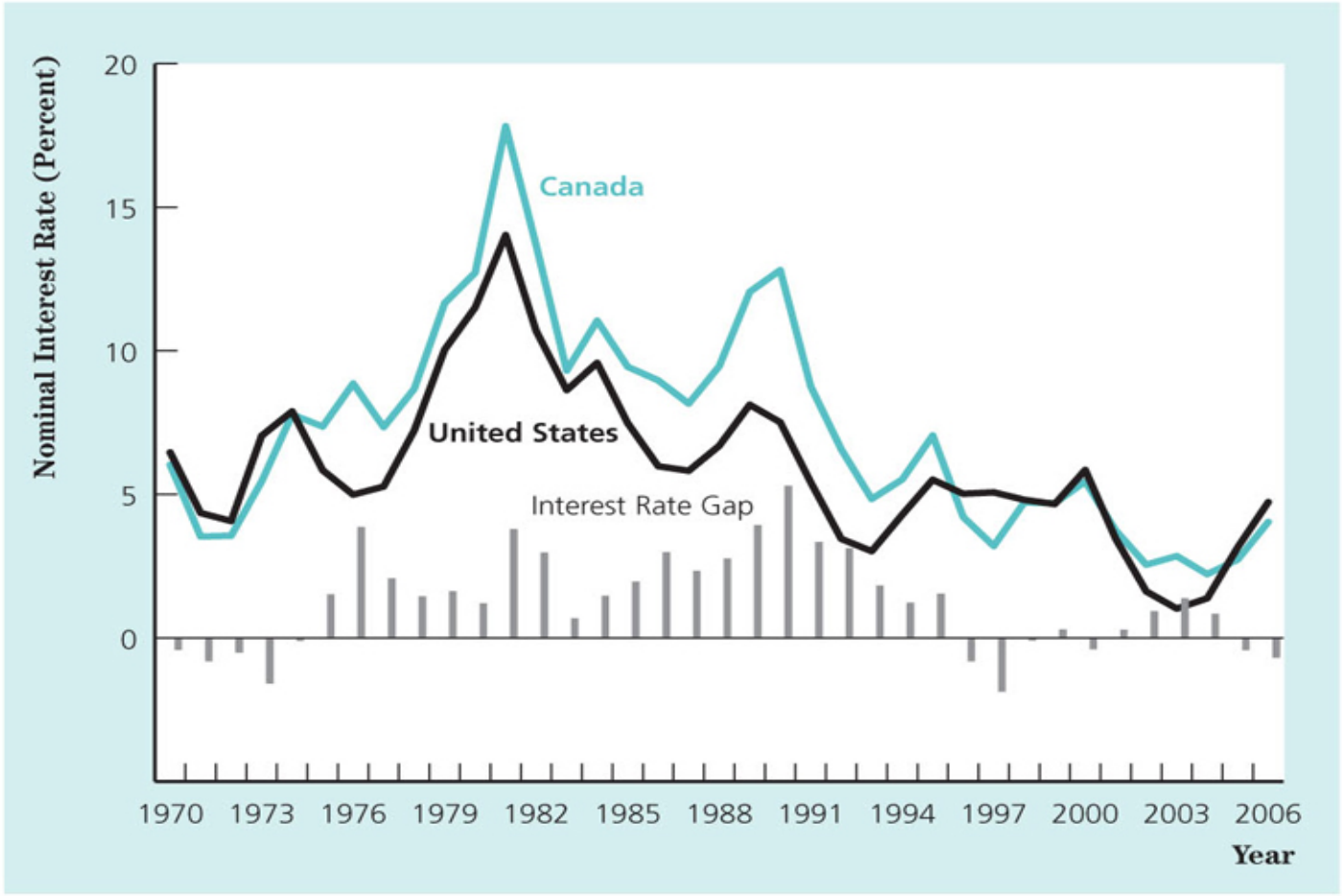
- The world real interest rate is fixed for a small open economy.
- The markets for financial capital are open to all savers and borrowers regardless of where they live.
- Thus, for a small open economy the domestic real interest rate will adjust in the long run to equal the (expected) world interest rate.

FIGURE 5.1

INTEREST RATES IN CANADA AND THE US

The graph shows nominal interest rates paid on Canadian and US government 3-month Treasury bills and the difference between them. Note that the Canadian interest rate tends to move with changes in the US interest rate. This reflects the fact Canadian savers are able to freely choose between owning Canadian and US financial assets. Note as well that the gap between Canadian and US interest rates was considerably larger between 1975 and 1995 than it had been either before or after. This suggests some influence unique to that period was causing savers to demand that Canadian borrowers offer a more attractive interest rate to compensate them for purchasing Canadian assets. We return to this issue in Chapter 10.

Source: Adapted from Statistics Canada, CANSIM II series v122531, and from the *Economic Report of the President*, Table B73.



The Model of a Small Open Economy

- In an open economy, desired national saving need not equal desired investment.
- Higher values of the world real interest rate (r^w) imply:
  - *lower levels of desired consumption (people save more);*
  - *lower desired investment (higher uc).*
- The reverse is true for lower levels of r^w.
- Our saving and investment model can be used to determine the excess between S and I, which we know is the current account balance.

FIGURE 5.2

A SMALL OPEN ECONOMY THAT LENDS ABROAD

The graph shows the saving–investment diagram for a small open economy. The country faces a fixed world real interest rate of 6%. At this real interest rate national saving is $5 billion (point *B*) and investment is $1 billion (point *A*). The part of national saving not used for investment is lent abroad, so foreign lending is $4 billion (distance *AB*).

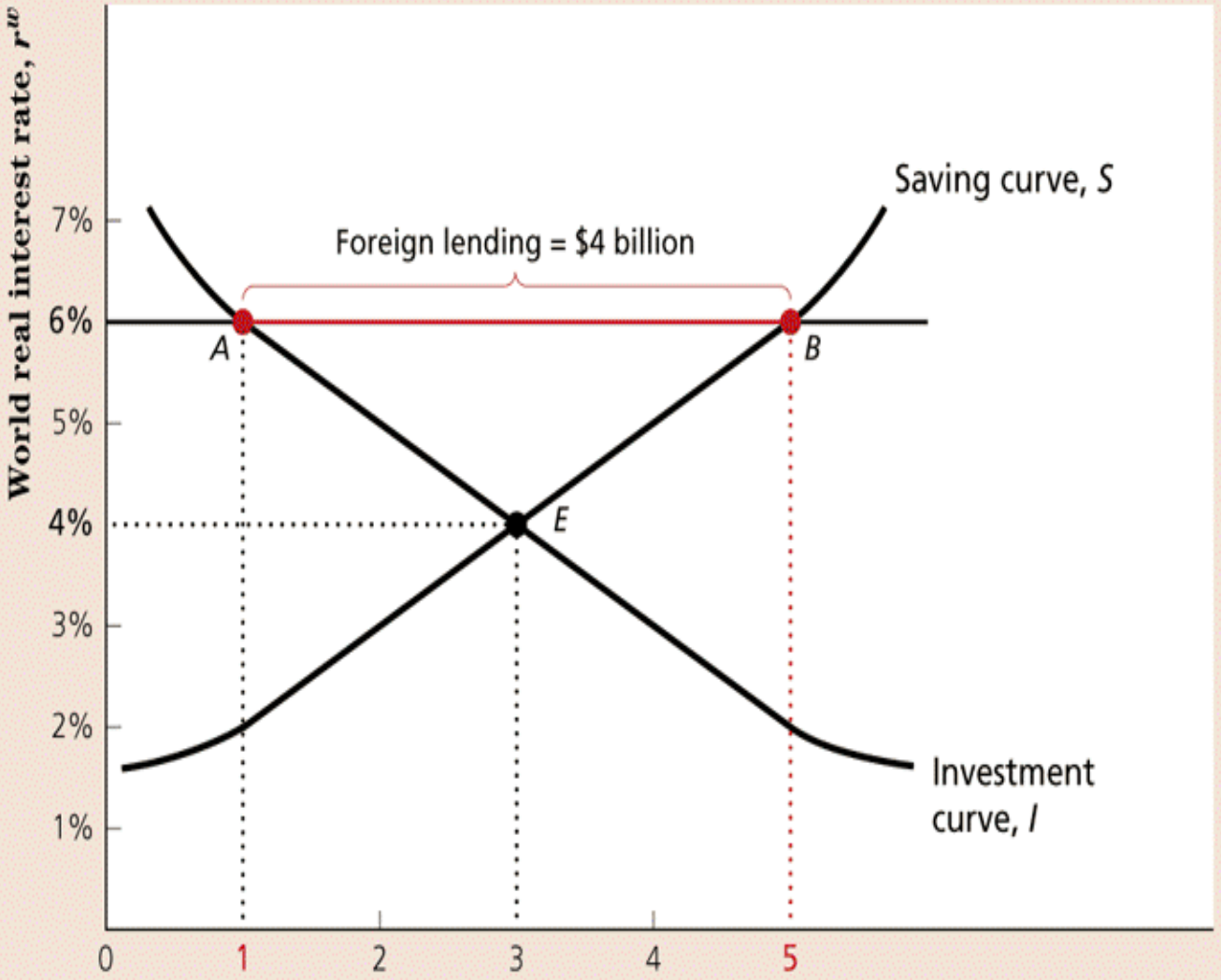
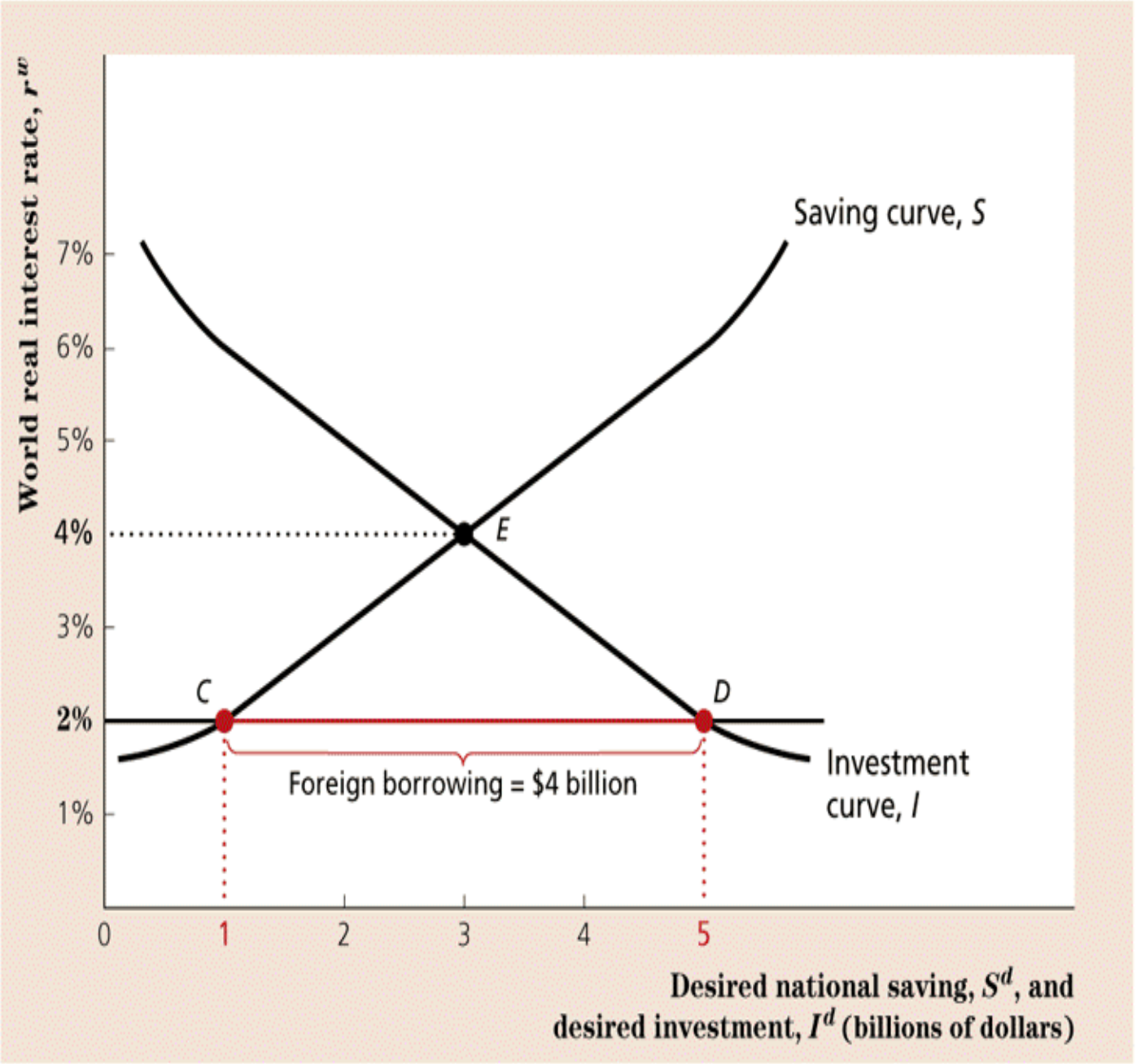


FIGURE 5.3

A SMALL OPEN ECONOMY THAT BORROWS ABROAD

The same small open economy shown in Figure 5.2 now faces a fixed world real interest rate of 2%. At this real interest rate, national saving is $1 billion (point *C*) and investment is $5 billion (point *D*). Foreign borrowing of $4 billion (distance *CD*) makes up the difference between what investors want to borrow and what domestic savers want to lend.



Economic Shocks in a Small Open Economy

- A change that increases (decreases) desired national saving at a given world real interest rate (r^w) will:
  - *increase (decrease) net foreign lending;*
  - *increase (decrease) the current account balance;*
  - *increase (decrease) net exports.*

Economic Shocks in a Small Open Economy (continued)

- As in the closed economy, equilibrium between saving and investment implies goods market equilibrium.
- The key is that Y, the supply of output, and the world interest rate (r^w) are given. Then assuming that we know G, we can use:

$$S^d = I^d + NX \quad \text{(where } NX = CA\text{)}$$

- Which implies goods market equilibrium through

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

Key assumptions

- The S^d curve is drawn for given levels of Y, wealth, G and T, all of which can shift S^d.
- Similarly, the I^d curve is drawn for given levels of productivity (which will affect MPK^f) effective tax rates, price of capital goods (which will affect the user cost) all of which can shift I^d.
- The S^d and I^d diagram can be used to examine the effects of shocks.

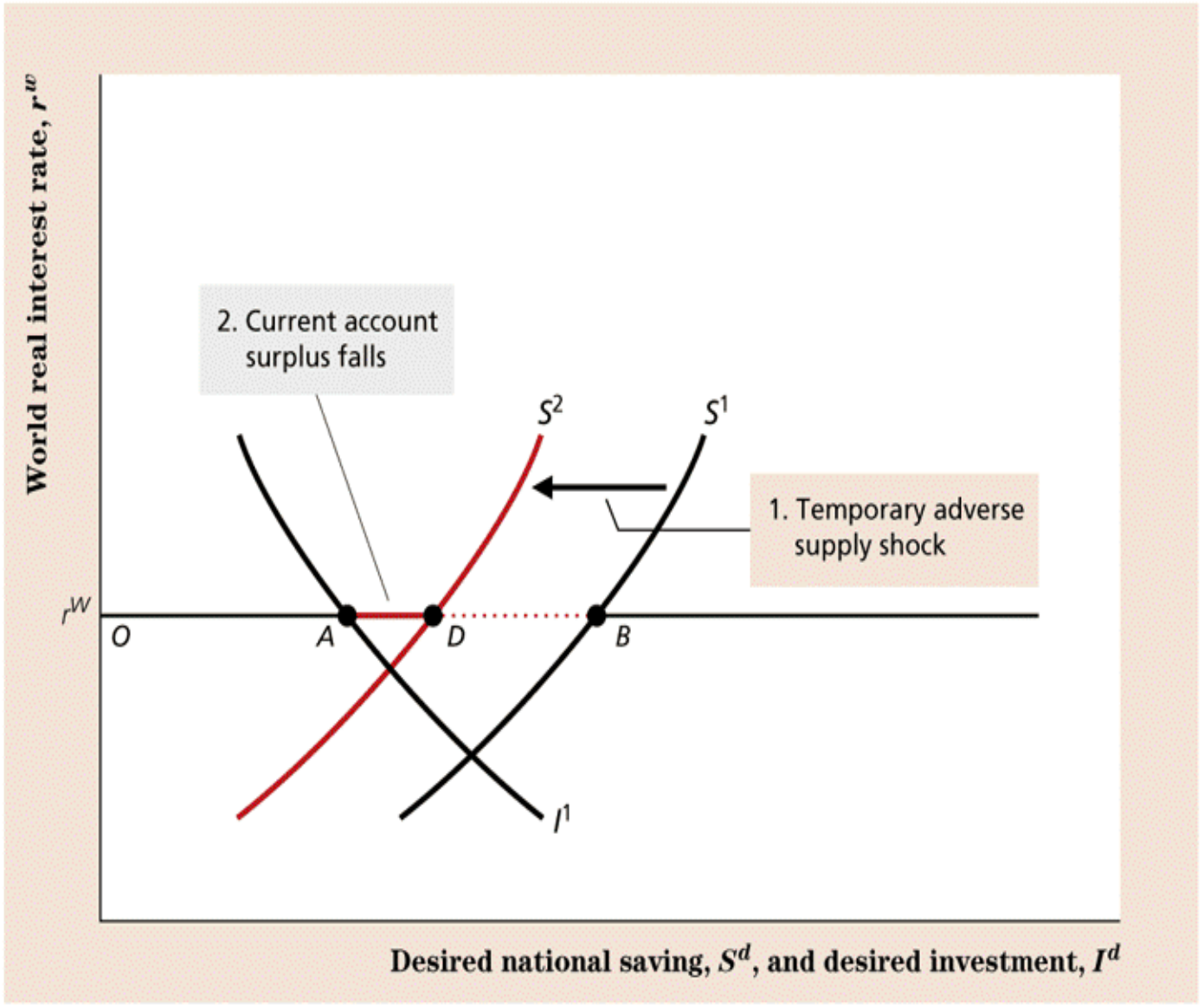
A Temporary Adverse Supply Shock

- A severe drought when the *CA* is in surplus will cause:
  - *the investment curve to be unaffected, since the shock is temporary;*
  - *current income to fall;*
  - *saving to fall at every r (the saving curve shifts left) as people reduce their saving to smooth consumption (C^d);*
  - *net foreign lending and current account surplus to shrink.*

FIGURE 5.4

A TEMPORARY ADVERSE SUPPLY SHOCK IN A SMALL OPEN ECONOMY

Curve S^1 is the initial saving curve, and curve I^1 is the initial investment curve of a small open economy. With a fixed world real interest rate of r^w, national saving equals the distance *OB* and investment equals distance *OA*. The current account surplus (equivalently, net foreign lending) is the difference between national saving and investment, shown as distance *AB*. A temporary adverse supply shock lowers current output and causes consumers to save less at any real interest rate, which shifts the saving curve left, from S^1 to S^2. National saving decreases to distance *OD*, and the current account surplus decreases to distance *AD*.



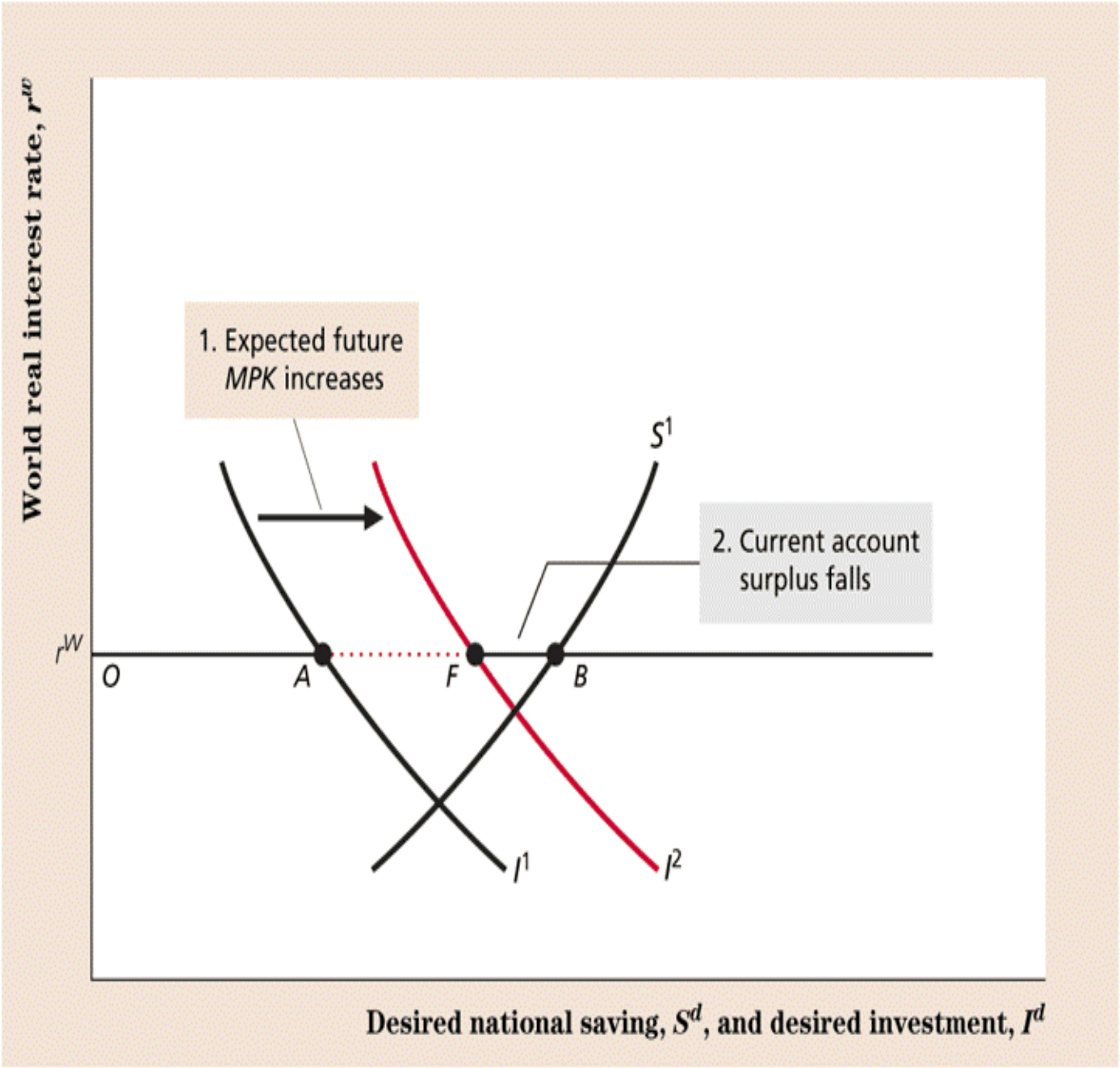
A Permanent Positive Supply Shock

- A technological innovation, when the *CA* is in surplus will cause;
  - the expected future MPK^f to increase;
  - the saving curve to be unaffected;
  - the domestic capital stock to increase;
  - desired investment to rise at every *r*;
  - net foreign lending and the current account to shrink (absorption increases).

FIGURE 5.5

AN INCREASE IN THE EXPECTED FUTURE *MPK* IN A SMALL OPEN ECONOMY

As in Figure 5.4, the small open economy's initial national saving and investment curves are S^1 and I^1. At the fixed world real interest rate of r^w, there is an initial current account surplus equal to the distance *AB*. An increase in the expected future marginal product of capital (MPK^f) shifts the investment curve right, from I^1 to I^2, causing investment to increase from *OA* to distance *OF*. The current account surplus, which is national saving minus investment, decreases from distance *AB* to distance *FB*.



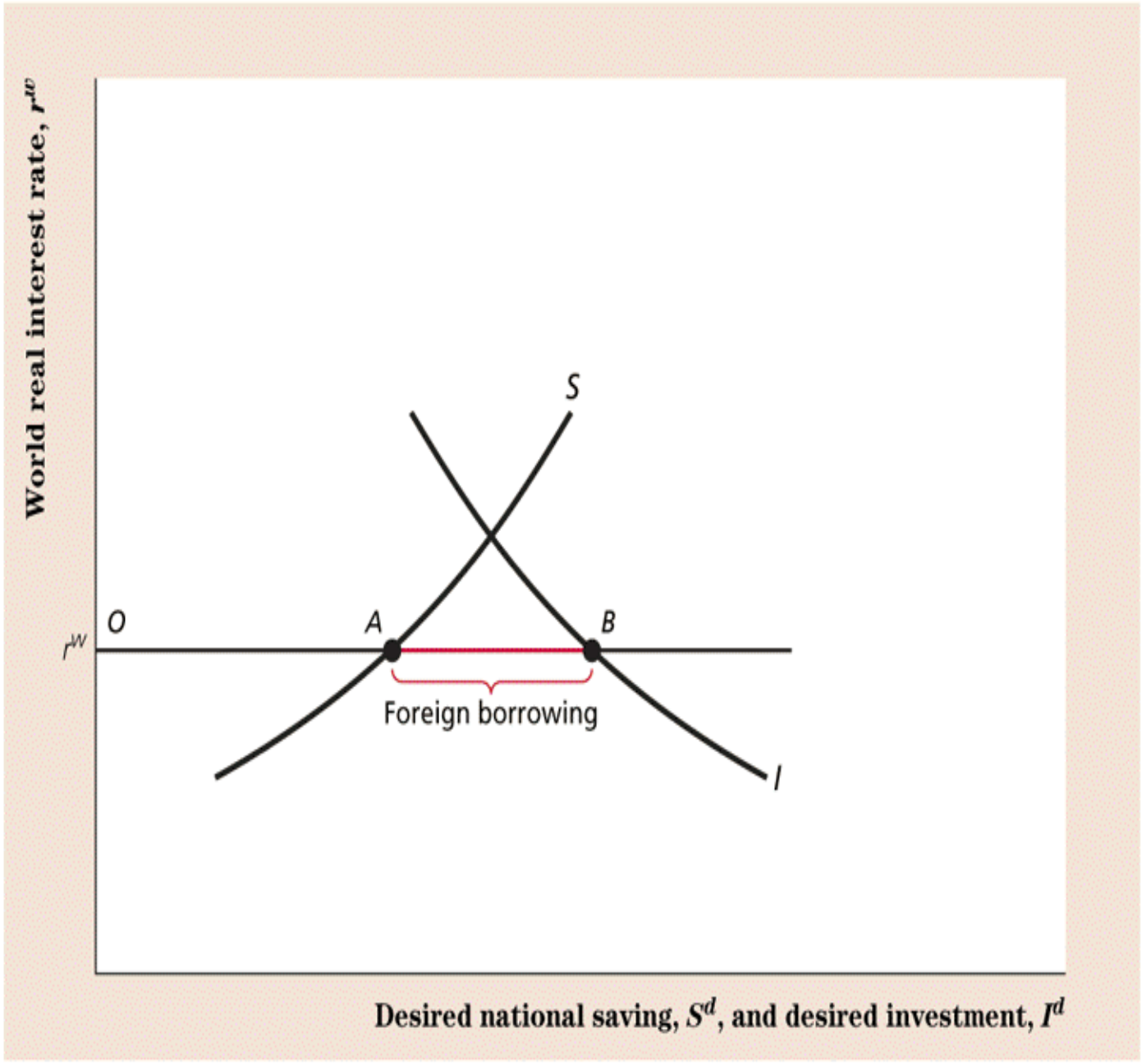
A Developing Country and *CA* Deficit

- In early years the capital stock is low, so the MPK^f is high and the desired investment is high.
- In early years income is low, so desired saving is low.
- The combination of high desired investment and low desired saving gives a high implicit domestic real interest rate.
- Since the implicit domestic real interest rate is higher than the world real interest rate, capital inflows are high and the *CA* is in deficit.

FIGURE 5.6

INTERNATIONAL BORROWING IN A DEVELOPING COUNTRY

In a small developing economy, income and national saving are low, so the saving curve *S* is far to the left. Investment opportunities are good (the expected future *MPK* is high), so the investment curve *I* is far to the right. At the world real interest rate of r^w, investment (distance *OB*) greatly exceeds national saving (distance *OA*). To fund its desired investment, the country must borrow abroad. Distance *AB* is the developing country's foreign borrowing or, equivalently, its current account deficit.



Lessons from the Financial Crises

- Large current account deficits alone do not need to lead to crises (the early history of the US and Canada).
- Why did things go wrong for the LDCs in the late 1970s early 1980s
  - *Adverse shocks (world wide downturn);*
  - *Sharp increase in interest rates (debt was floating rate); and*
  - *Loans may not have been used wisely.*

Lessons from the Financial Crises (continued)

- The Mexican bailout in 1995 could have created moral hazard among investors.
- Fiscal expansion might be better to fight a recession after a crisis.
- Some policy choices to be made include:
  - *type of exchange rate regime;*
  - *control over capital flows and banking system;*
  - *improve financial system; and*
  - *Introducing or improving social safety nets.*

A Large Open Economy: Assumptions of the Model

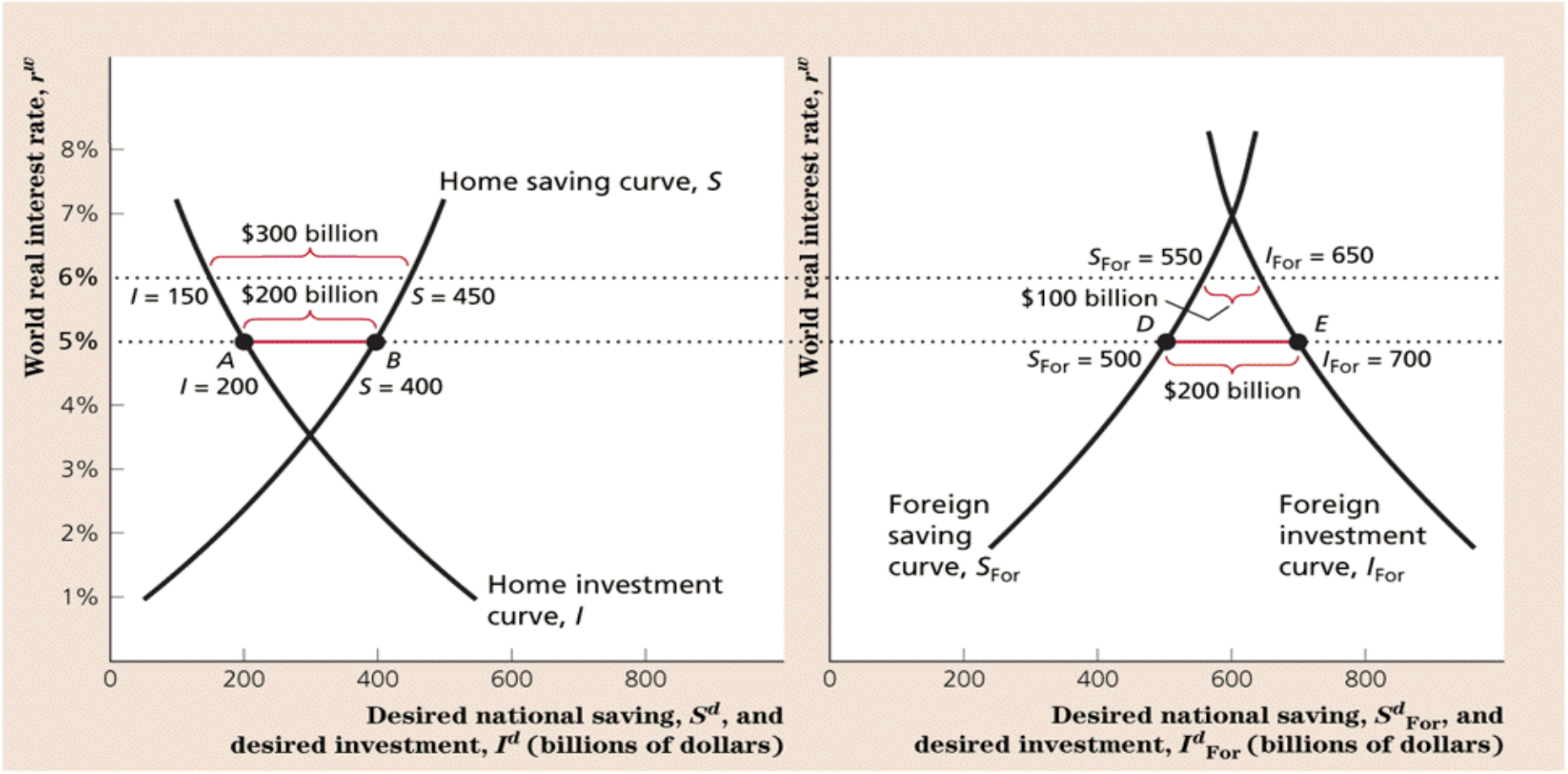
- A large open economy is an economy large enough to affect the world real interest rate.
- Suppose the world consisted of only two large economies: the domestic and the foreign economy.

A Large Open Economy: the World Interest Rate

- The world real interest rate is determined within the model. It is not fixed.
- The world interest rate will be such that desired international lending by one country equals desired international borrowing by the other country.

A Large Open Economy: the Equilibrium

- The lending country's *CA* surplus will be equal the borrowing country's *CA* deficit.
- The world desired saving will be equal to the world desired investment.
- We can determine r^w within the model, with desired lending equal to desired borrowing.
- Equilibrium can also be defined in terms of goods markets, one deficit equal to another's surplus.
- The model could be used to look at regions within a country or countries within the euro area.



(a) Home country

(b) Foreign country

FIGURE 5.7

THE DETERMINATION OF THE WORLD REAL INTEREST RATE WITH TWO LARGE OPEN ECONOMIES

The equilibrium world real interest rate is the real interest rate at which desired international lending by one country equals desired international borrowing by the other country. In the figure, when the world real interest rate is 5%, desired international lending by the home country is $200 billion ($400 billion desired national saving less $200 billion desired investment, or distance *AB*), which equals the foreign country's desired international borrowing of $200 billion ($700 billion desired investment less $500 billion desired national saving, or distance *DE*). Thus, 5% is the equilibrium world real interest rate. Equivalently, when the interest rate is 5%, the current account surplus of the home country equals the current account deficit of the foreign country (both are $200 billion).

Fiscal Policy and the Current Account

- Are the government budget deficit and the current account deficit closely linked ("twin deficit")?
- An increase in the government budget deficit will raise the current account deficit *only if* the increase in the budget deficit reduces desired national saving – that is, the S^d curve shifts.

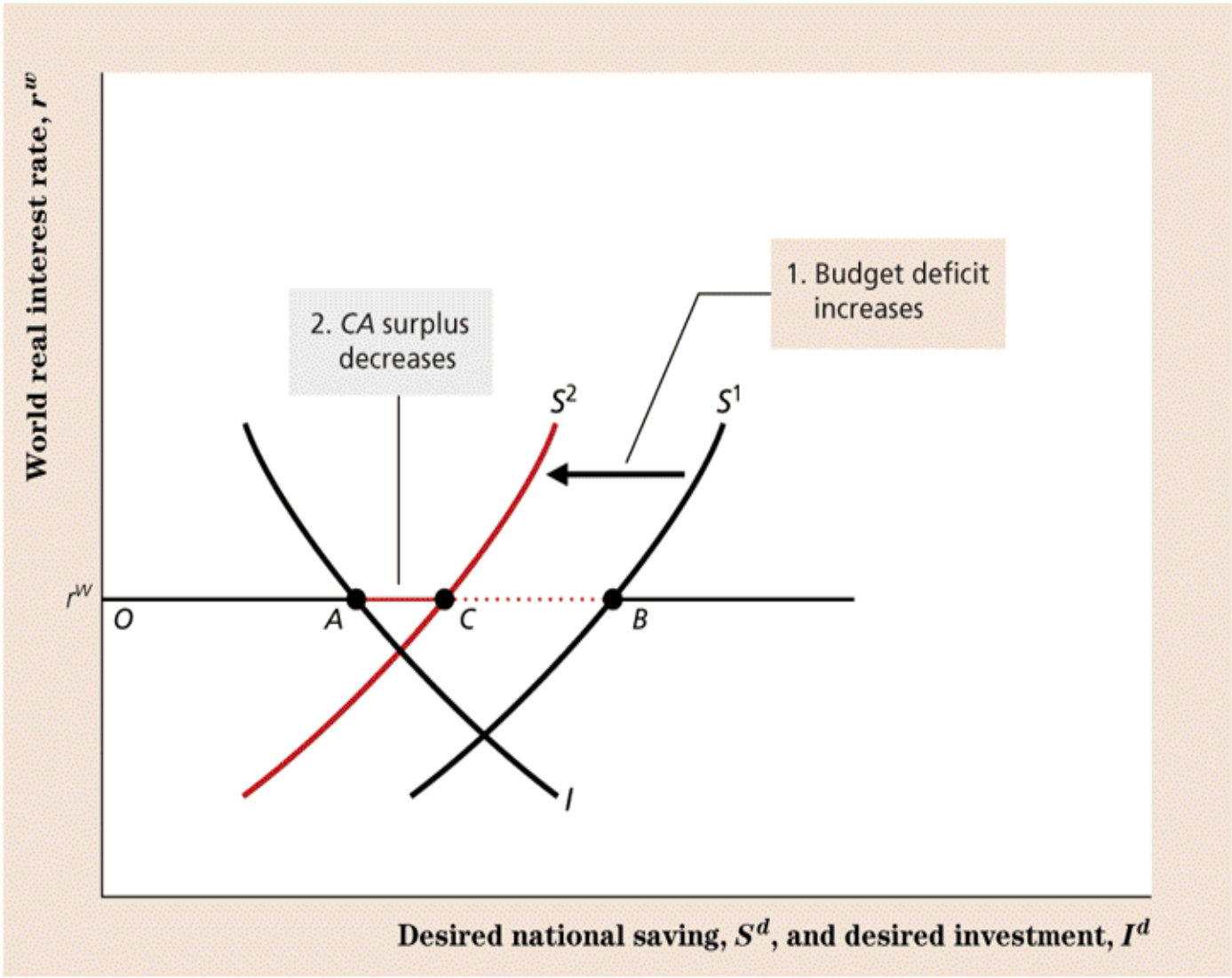
The Critical Factor: The Response of National Saving

- In a small open economy an increase in the budget deficit reduces the current account balance by the same amount that it may reduce desired national saving.
- Less saving would be sent abroad (or more output is absorbed domestically) and the current account balance falls.
- So, how is national saving affected?

FIGURE 5.8

THE GOVERNMENT BUDGET DEFICIT AND THE CURRENT ACCOUNT IN A SMALL OPEN ECONOMY

An increase in the government budget deficit affects the current account only if the increased budget deficit reduces national saving. Initially, the saving curve is S^1 and the current account surplus is distance *AB*. If an increase in the government deficit reduces national saving, the saving curve shifts left, from S^1 to S^2. With no change in the effective tax rate on capital, the investment curve *I* does not move. Thus, the increase in the budget deficit causes the current account surplus to decrease from distance *AB* to distance *AC*. In contrast, if the increase in the budget deficit has no effect on national saving, the current account is also unaffected and remains equal to distance *AB*.



The Government Budget Deficit and National Saving

- The deficit caused by increased government purchases reduces desired national saving, because G has risen.

$$S^d = Y - C^d - G$$

- The deficit caused by cuts in current taxes will cause desired national saving to fall only if it causes desired consumption to rise (remember, G is unchanged now).

$$S^d = Y - C^d - G$$

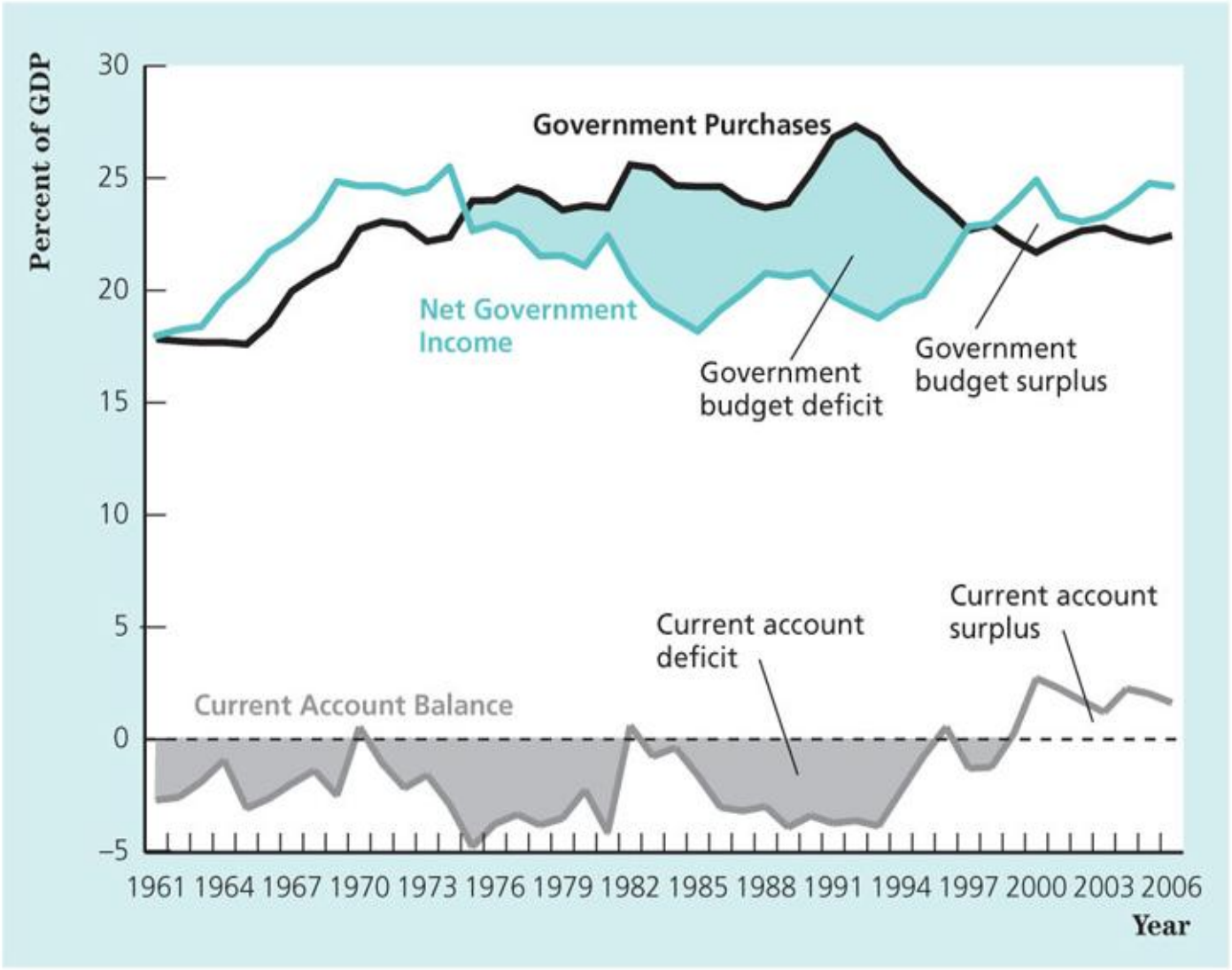
  - *Cuts in current taxes do not raise desired consumption when the Ricardian equivalence holds.*
  - *The empirical evidence on the Ricardian equivalence is, at best, mixed.*

FIGURE 5.12

THE GOVERNMENT BUDGET BALANCE AND THE CURRENT ACCOUNT BALANCE IN CANADA, 1961–2006

The figure shows government purchases, net government income (taxes less transfers and interest), and the current account balance for Canada for the period 1961–2006. Government data are for federal, provincial, territorial, and municipal governments, and each series is measured as a percentage of GDP. The government deficit (shaded area) is the difference between government purchases and net receipts. Note the twin deficits during almost the whole period from 1975 to 1998. Since 1998 Canada has experienced twin surpluses.

Source: Adapted from Statistics Canada, CANSIM II series v113713, v646937, v498327, v498332, v498316, and v498328.



The curious case of the US current account deficit

- The US ran current account deficits when there were both government budget surpluses and later deficits.
- Some have pointed to a global saving gut, originating in Asia and elsewhere.
- There are implications for adjustment, with some economists worried about a "sudden stop" – a situation where foreigners may no longer want to hold US debt.