

International Economics

THEORY & POLICY

Seventh Edition



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Chapter 12

National Income Accounting and the Balance of Payments

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Preview

- National income accounts
 - ◆ measures of national income
 - ◆ measures of value of production
 - ◆ measures of value of expenditure
- National saving, investment and the current account
- Balance of payments accounts



National Income Accounts

- Records the value of **national income** that results from *production* and *expenditure*.
 - ◆ Producers earn income from buyers who spend money on goods and services.
 - ◆ The amount of expenditure by buyers = the amount of income for sellers = the value of production.
 - ◆ National income is often defined to be the *income earned by a nation's factors of production*.



National Income Accounts: GNP

- **Gross national product (GNP)** is the value of all final goods and services *produced by a nation's factors of production* in a given time period.
 - ◆ What are factors of production? workers (labor), physical capital (like factories and equipment), natural resources and other factors that are used to produce goods and services.
 - ◆ The value of final goods and services produced by US labor, capital and natural resources are counted as US GNP.



National Income Accounts: GNP (cont.)

- GNP is calculated by adding the value of expenditure on final goods and services produced.
- There are 4 types of expenditure:
 - Consumption: expenditure by domestic residents
 - Investment: expenditure by firms on plants & equipment
 - Government purchases: expenditure by governments on goods and services
 - Current account balance (exports minus imports): net expenditure by foreigners on domestic goods and services

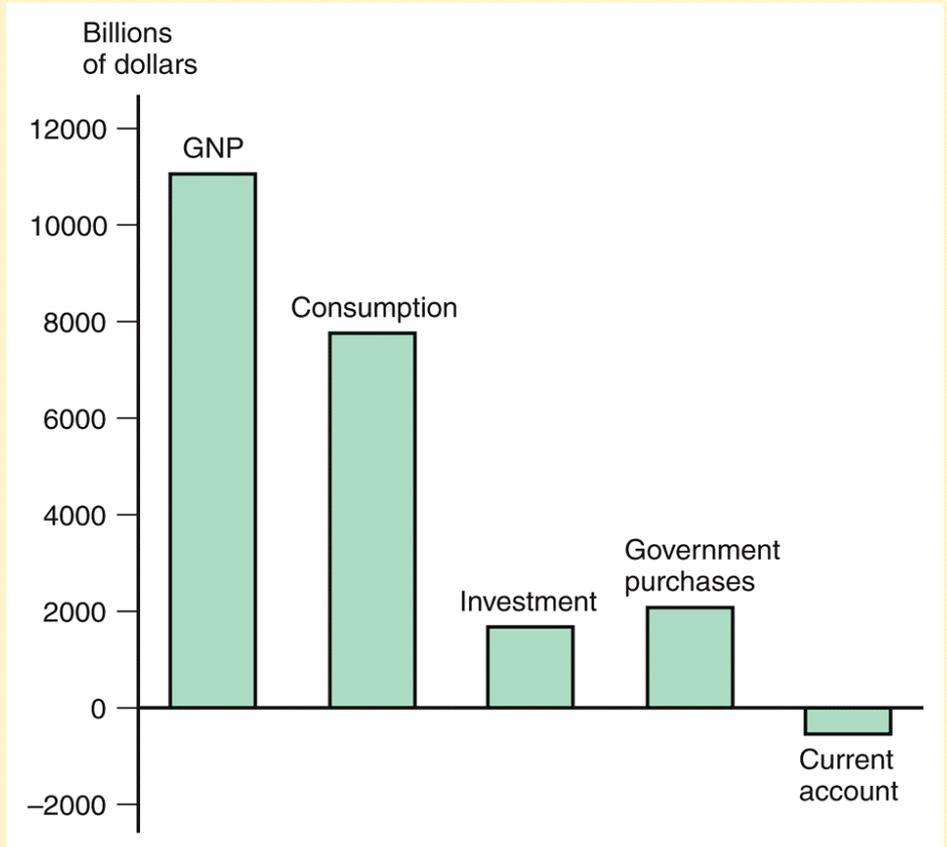
National Income Accounts: GNP (cont.)

Figure 12-1

U.S. GNP and Its Components

America's \$11.1 trillion 2003 gross national product can be broken down into the four components shown.

Source: *Economic Indicators*, U.S. Government Printing Office, July 2004.





National Income Accounts

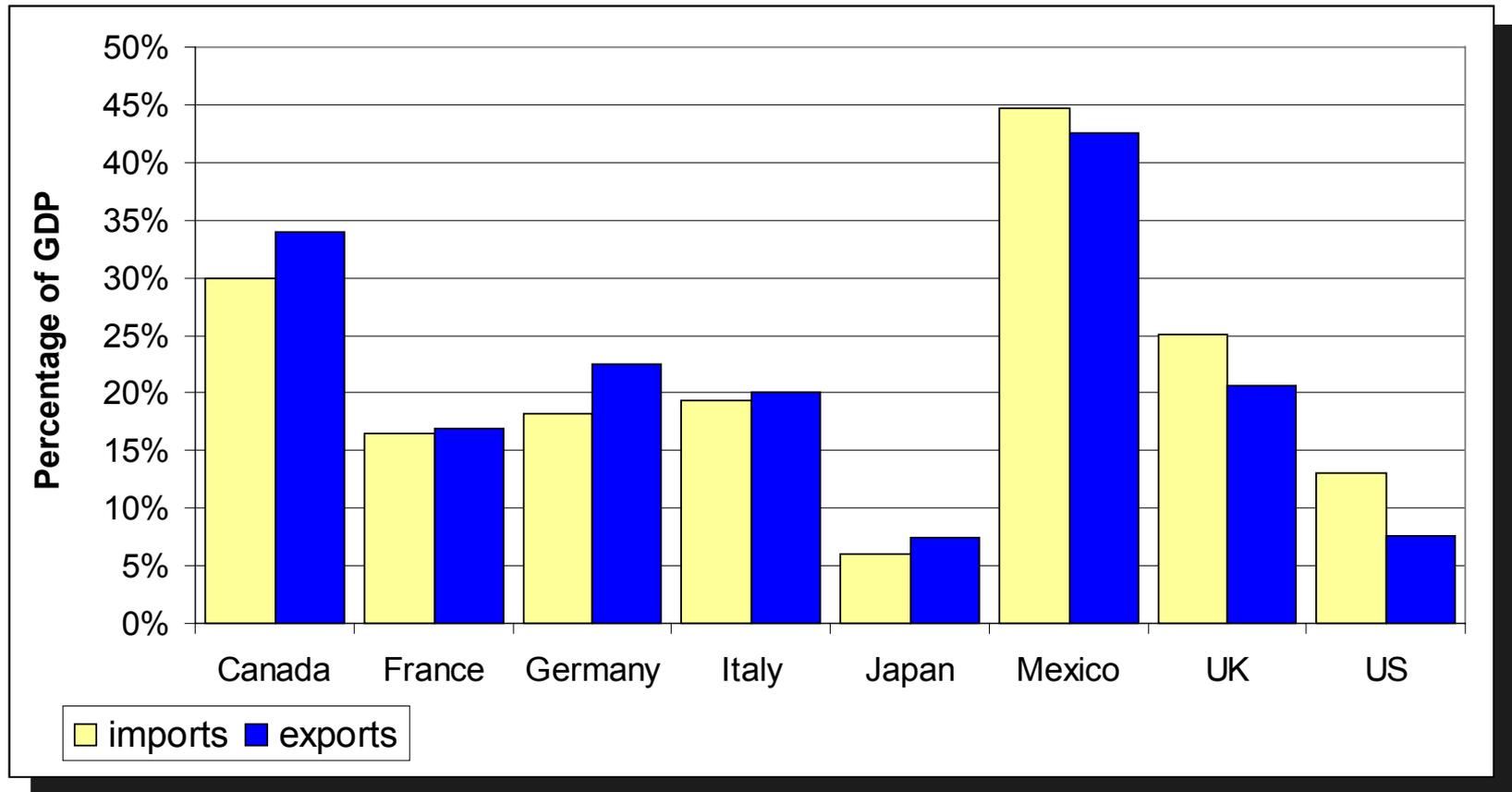
- GNP is one measure of national income, but a more precise measure of national income is GNP adjusted for following:
 - **Depreciation** of capital results in a loss of income to capital owners, so the amount of depreciation is subtracted from GNP.
 - **Indirect business taxes** reduce income to businesses, so the amount of these taxes is subtracted from GNP.



National Income Accounts (cont.)

- Another approximate measure of national income is **gross domestic product (GDP)**:
- Gross domestic product measures the final value of all goods and services that are produced *within a country* in a given time period.
- $GDP = GNP - \text{factor payments from foreign countries} + \text{factor payments to foreign countries}$

Imports and Exports As a Fraction of GDP



Imports and exports as a percentage of GDP by country, 2000. Source: OECD

GNP = Expenditure on a Country's Goods and Services

National income = value of production

$$Y = C^d + I^d + G^d + EX \leftarrow \text{expenditure on production}$$

$$= (C - C^f) + (I - I^f) + (G - G^f) + EX$$

$$= C + I + G + EX - (C^f + I^f + G^f)$$

$$= C + I + G + EX - IM$$

$$= \underbrace{C + I + G}_{\text{Domestic expenditure}} + \underbrace{CA}_{\text{Net expenditure by foreigners}}$$

Domestic expenditure

Net expenditure by foreigners

**TABLE 12-1 National Income Accounts for Agraria,
an Open Economy (bushels of wheat)**

GNP (total output)	=	Consumption	+	Investment	+	Government purchases	+	Exports	-	Imports
100	=	75 ^a	+	25	+	10	+	10	-	20 ^b

^a 55 bushels of wheat + (0.5 bushel per gallon) × (40 gallons of milk).

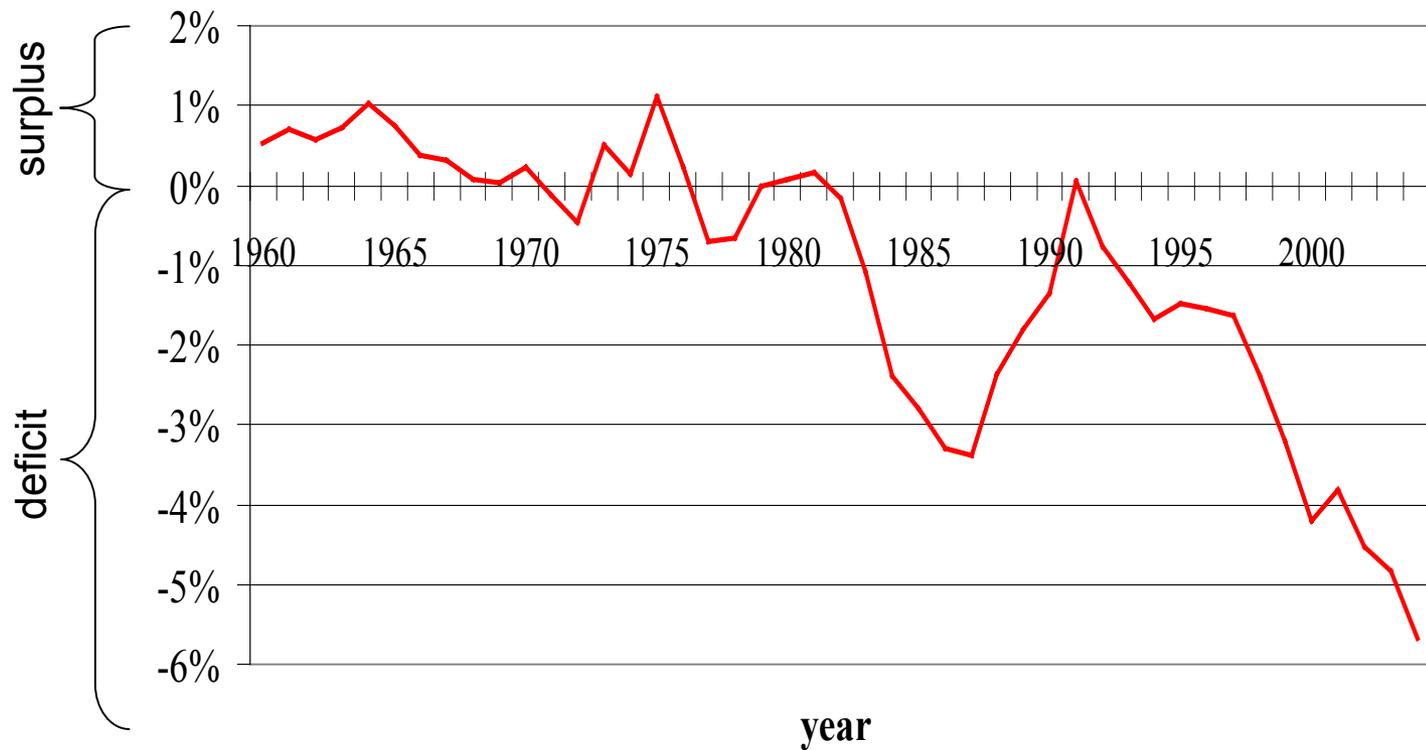
^b 0.5 bushel per gallon × 40 gallons of milk.

Expenditure and Production in an Open Economy

$$CA = EX - IM = Y - (C + I + G)$$

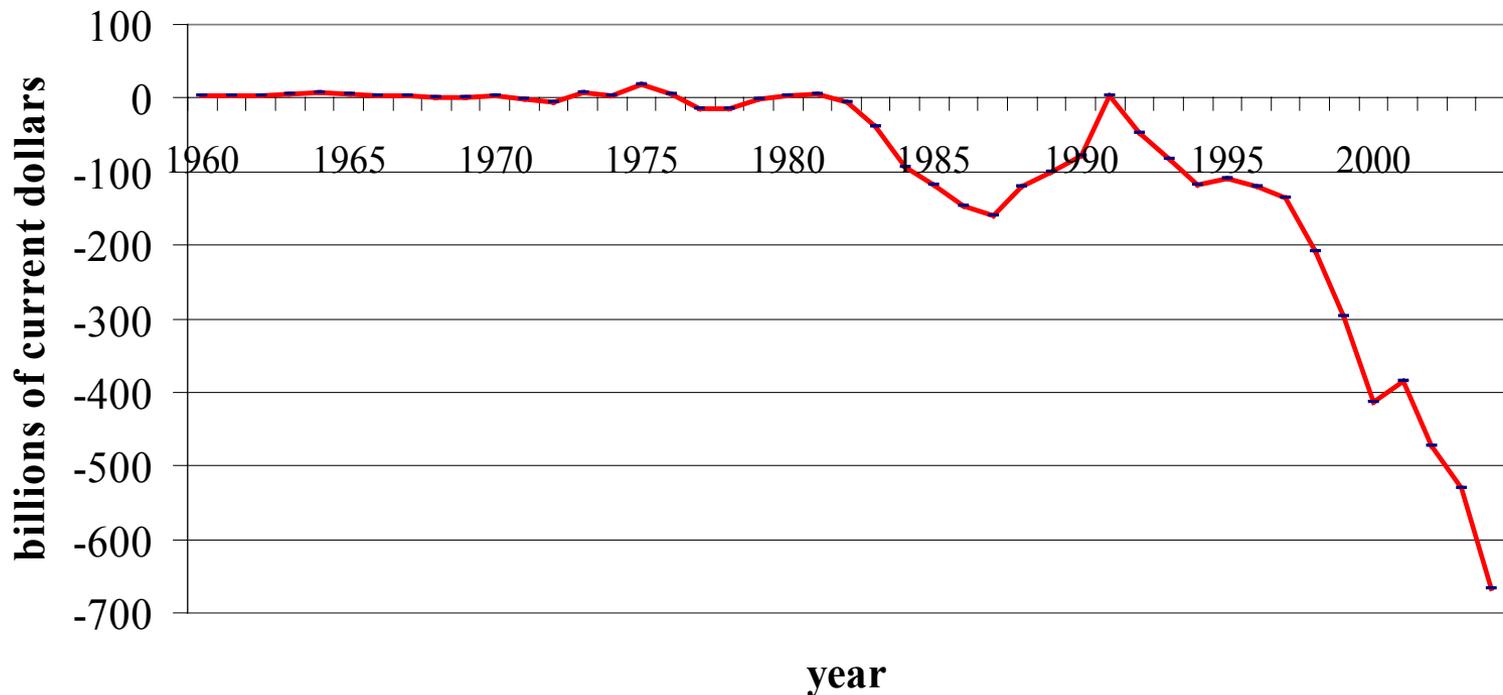
- When production > domestic expenditure, exports > imports: current account > 0, trade balance > 0
 - ◆ when a country exports more than it imports, it earns more income from exports than it spends on imports
 - ◆ net foreign wealth is increasing
- When production < domestic expenditure, exports < imports: current account < 0, trade balance < 0
 - ◆ when a country exports less than it imports, it earns less income from exports than it spends on imports
 - ◆ net foreign wealth is decreasing

US Current Account As a Percentage of GDP, 1960–2004



Source: Bureau of Economic Analysis, US Department of Commerce

US Current Account, 1960–2004



Source: Bureau of Economic Analysis, US Department of Commerce

US Current Account and Net Foreign Wealth, 1977–2003

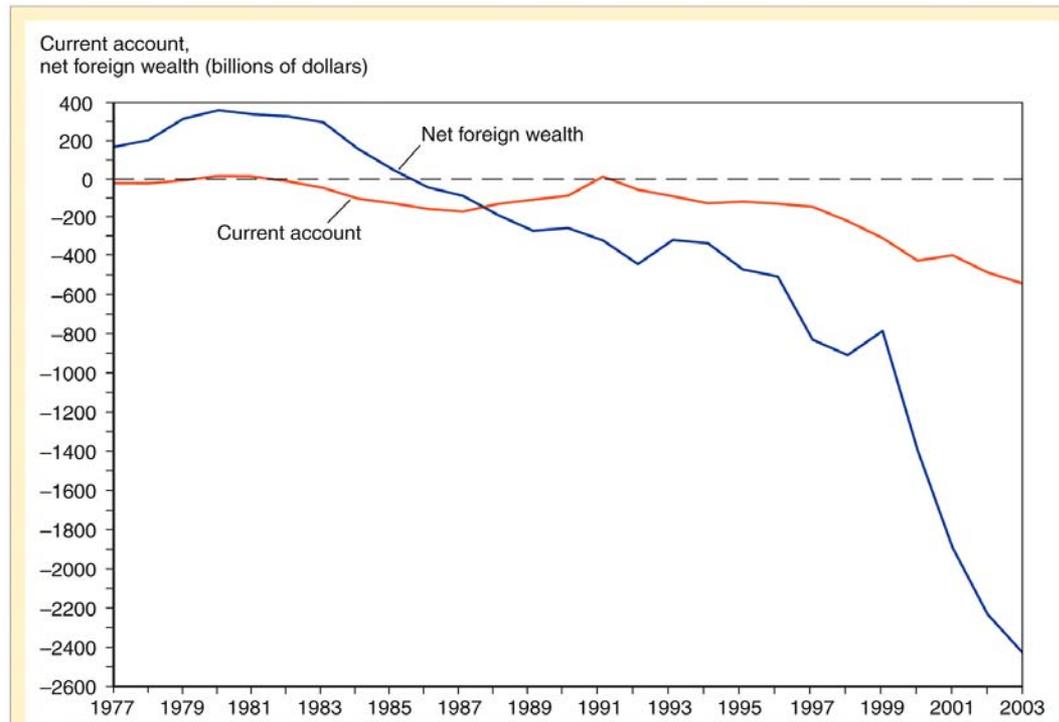


Figure 12-2

The U.S. Current Account and Net Foreign Wealth Position, 1977–2003

A string of current account deficits in the 1980s reduced America's net foreign wealth until, by the early 21st century, the country had accumulated a substantial net foreign debt.

Source: U.S. Government Printing Office, *Economic Indicators*, April 2004.

Saving and the Current Account

- National saving (S) = national income (Y) that is not spent on consumption (C) or government purchases (G).
- $Y - C - G$
- $(Y - C - T) + (T - G)$
- $S^p + S^g = S$

How Is the Current Account Related to National Saving?

$$CA = Y - (C + I + G)$$

implies

$$\begin{aligned} CA &= (Y - C - G) - I \\ &= S - I \end{aligned}$$

current account = national saving – investment

current account = net foreign investment

- A country that imports more than it exports has low national saving relative to investment.

How Is the Current Account Related to National Saving? (cont.)

$$CA = S - I \quad \text{or} \quad S = I + CA$$

- Countries can finance investment either by saving or by acquiring foreign funds equal to the current account deficit.
 - ◆ a current account deficit implies a financial capital inflow or negative net foreign investment.
- When $S > I$, then $CA > 0$ and net foreign investment and financial capital outflows for the domestic economy are positive.

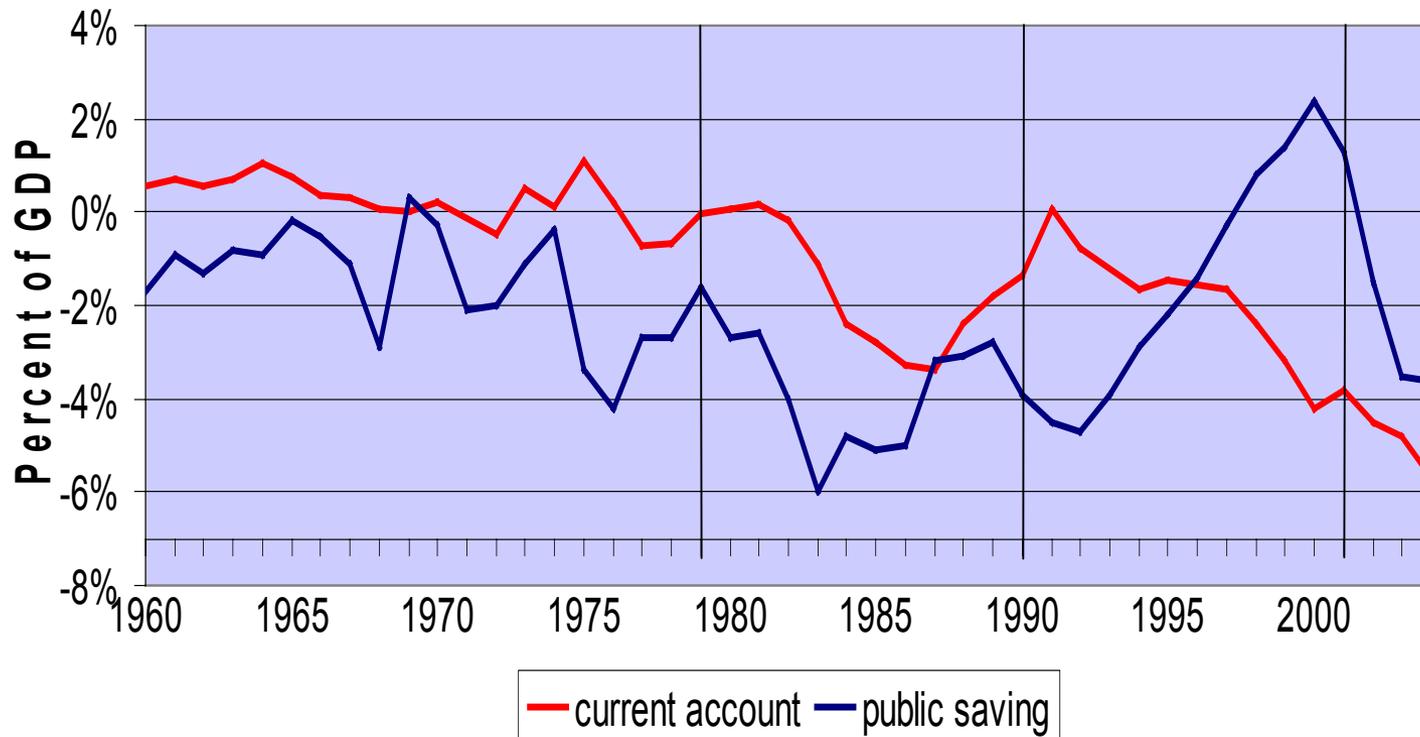
How Is the Current Account Related to National Saving? (cont.)

$$\begin{aligned} CA &= S^p + S^g - I \\ &= S^p - \text{government deficit} - I \end{aligned}$$

- Government deficit is negative government saving
 - ◆ equal to $G - T$
- A high government deficit causes a negative current account balance, all other things equal.

Inverse Relationship Between Public Saving and Current Account?

US current account and public saving relative to GDP,
1960-2004



Source: Congressional Budget Office, US Department of Commerce



Balance of Payments Accounts

- A country's balance of payments accounts accounts for its payments to and its receipts from foreigners.
- Each international transaction enters the accounts twice: once as a credit (+) and once as a debit (-).

Balance of Payments Accounts (cont.)

- The balance of payment accounts are separated into 3 broad accounts:
 - ◆ **current account:** accounts for flows of goods and services (imports and exports).
 - ◆ **financial account:** accounts for flows of financial assets (financial capital).
 - ◆ **capital account:** flows of special categories of assets (capital), typically non-market, non-produced, or intangible assets like debt forgiveness, copyrights and trademarks.

Example of Balance of Payment Accounting

- You import a DVD of Japanese anime by using your debit card.
- The Japanese producer of anime deposits the funds in its bank account in San Francisco. The bank credits the account by the amount of the deposit.

DVD purchase	-\$30
(current account)	

Credit (“sale”) of bank account by bank	+\$30
(financial account)	

Example of Balance of Payment Accounting (cont.)

- You invest in the Japanese stock market by buying \$500 in Sony stock.
- Sony deposits your funds in its Los Angeles bank account. The bank credits the account by the amount of the deposit.

Purchase of stock (financial account)	-\$500
Credit (“sale”) of bank account by bank (financial account)	+\$500

Example of Balance of Payment Accounting (cont.)

- US banks forgive a \$100 M debt owed by the government of Argentina through debt restructuring.
- US banks who hold the debt thereby reduce the debt by crediting Argentina's bank accounts.

Debt forgiveness: non-market transfer (capital account)	-\$100 M
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Credit (“sale”) of bank account by bank (financial account)	+\$100 M
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How Do the Balance of Payments Accounts Balance?

- Due to the double entry of each transaction, the balance of payments accounts will balance by the following equation:

$$\begin{aligned} & \textit{current account} + \\ & \quad \textit{financial account} + \\ & \quad \quad \textit{capital account} = 0 \end{aligned}$$

Balance of Payments Accounts

- Each of the 3 broad accounts are more finely divided:
- **Current account:** imports and exports
 - merchandise (goods like DVDs)
 - services (payments for legal services, shipping services, tourist meals,...)
 - income receipts (interest and dividend payments, earnings of firms and workers operating in foreign countries)
- **Current account:** *net unilateral transfers*
 - ◆ gifts (transfers) across countries that do not purchase a good or service nor serve as income



Balance of Payments Accounts (cont.)

- **Capital account:** records special asset transfers, but this is a minor account for the US.

Balance of Payments Accounts (cont.)

- **Financial account:** the difference between sales of domestic assets to foreigners and purchases of foreign assets by domestic citizens.
- **Financial (capital) inflow**
 - ◆ Foreigners loan to domestic citizens by acquiring domestic assets.
 - ◆ Foreign owned (sold) assets in the domestic economy are a credit (+)
- **Financial (capital) outflow**
 - ◆ Domestic citizens loan to foreigners by acquiring foreign assets.
 - ◆ Domestically owned (purchased) assets in foreign economies are a debit (-)



Balance of Payments Accounts (cont.)

- **Financial account** has at least 3 categories:
 - **Official (international) reserve assets**
 - All other assets
 - **Statistical discrepancy**

Balance of Payments Accounts (cont.)

- **Statistical discrepancy**

- ◆ Data from a transaction may come from different sources that differ in coverage, accuracy, and timing.
- ◆ The balance of payments accounts therefore seldom balance in practice.
- ◆ The statistical discrepancy is the account added to or subtracted from the financial account to make it balance with the current account and capital account.

Balance of Payments Accounts (cont.)

- **Official (international) reserve assets:** foreign assets held by central banks to cushion against instability in international markets.
 - ◆ Assets include government bonds, currency, gold and accounts at the International Monetary Fund.
 - ◆ Official reserve assets owned by (sold to) foreign central banks are a credit (+).
 - ◆ Official reserve assets owned by (purchased by) the domestic central bank are a debit (-).

Balance of Payments Accounts (cont.)

- The negative value of the official reserve assets is called the **official settlements balance** or “balance of payments”.
 - ◆ It is the sum of the current account, the capital account, the non-reserve portion of the financial account, and the statistical discrepancy.
 - ◆ A negative official settlements balance may indicate that a country is depleting its official international reserve assets or may be incurring debts to foreign central banks.
 - selling foreign currency by the domestic central bank and buying domestic assets by foreign central banks are credits for official international reserve assets, and therefore reduce the official settlements balance.

US Balance of Payments Accounts, 2003 in Billions of Dollars

TABLE 12-2 U.S. Balance of Payments Accounts for 2003 (billions of dollars)

	Credits	Debits
Current Account		
(1) Exports	+1,314.9	
Of which:		
Goods	+713.1	
Services	+307.4	
Income receipts	+294.4	
(2) Imports		-1,778.1
Of which:		
Goods		-1,260.7
Services		-256.3
Income payments		-261.1
(3) Net unilateral current transfers		-67.4
Balance on current account		-530.7
[(1) + (2) + (3)]		
Capital Account		
(4)		-3.1

US Balance of Payments Accounts, 2003 in Billions of Dollars (cont.)

TABLE 12-2 U.S. Balance of Payments Accounts for 2003 (billions of dollars)		
	Credits	Debits
Financial Account		
(5) U.S. assets held abroad		-283.4
(increase -)		
Of which:		
Official reserve assets	+1.5	
Other assets		-284.9
(6) Foreign assets held in U.S.	+829.2	
(increase +)		
Of which:		
Official reserve assets	+248.6	
Other assets	+580.6	
Balance on financial account	+545.8	
[(5) + (6)]		
Statistical discrepancy		-12.0
[sum of (1) through (6) with sign reversed]		
Source: U.S. Department of Commerce, <i>Survey of Current Business</i> , July 2004. Totals may differ from sums because of rounding.		



US Net Foreign Assets

- The US has the most negative net foreign wealth in the world, and so is therefore the world's largest debtor nation.
- And its current account deficit in 2004 was \$670 billion dollars, so that net foreign wealth continued to decrease.
- The value of foreign assets held by the US has grown since 1980, but liabilities of the US (debt held by foreigners) has grown more quickly.

US Net Foreign Assets (cont.)

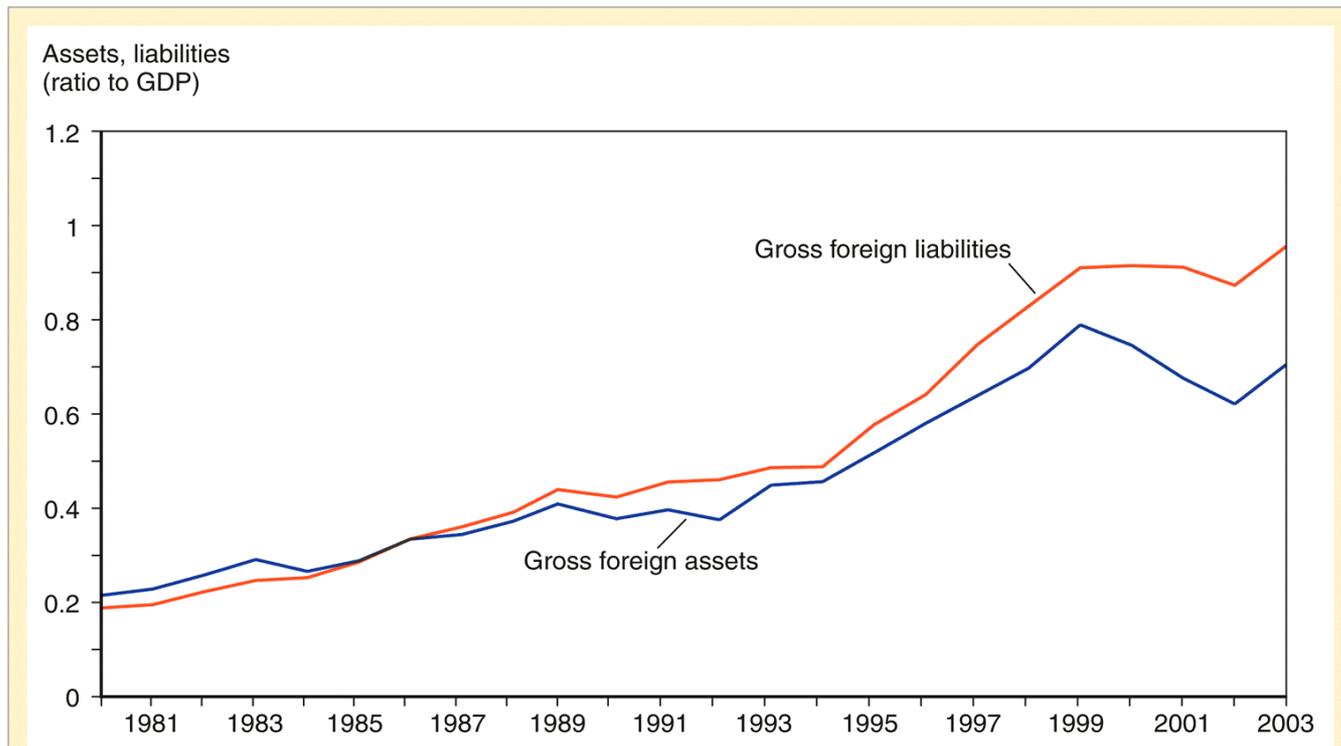


Figure 12-3

U.S. Gross Foreign Assets and Liabilities, 1980–2003

Note: Since 1980, both the foreign assets and the liabilities of the United States have increased sharply. But liabilities have risen more quickly, leaving the United States with a substantial net foreign debt.

Source: Philip R. Lane and Gian Maria Milesi-Ferretti, "Financial Globalization and Exchange Rates." Photocopy, Trinity College Dublin and IMF, June 2004.

US Net Foreign Assets (cont.)

- About 70% of foreign assets held by the US are denominated in foreign currencies and almost all of US liabilities (debt) are denominated in dollars.
- Changes in the exchange rate influence value of net foreign wealth (gross foreign assets minus gross foreign liabilities).
 - ◆ A depreciation of the US dollar makes foreign assets held by the US more valuable, but does not change the dollar value of dollar denominated debt.

TABLE 12-3 International Investment Position of the United States at Year End, 2002 and 2003 (millions of dollars)

Line	Type of investment	Position, 2002 ^a	Changes in position in 2003				Total (a+b+c+d)	Position, 2003 ^a
			Attributable to			Total		
			Financial flows	Valuation adjustments				
				Price changes	Exchange-rate changes ¹			
(a)	(b)	(c)	(d)	(a+b+c+d)				
Net international investment position of the United States:								
1	With direct investment positions at current cost (line 3 less line 24).....	-2,233,018	-545,759	37,112	255,457	55,526	-197,664	-2,430,682
2	With direct investment positions at market value (line 4 less line 25).....	-2,553,407	-545,759	-13,696	397,918	63,954	-97,583	-2,650,990
U.S.-owned assets abroad:								
3	With direct investment at current cost (lines 5+10+15).....	6,413,535	283,414	355,668	327,520	-177,445	789,157	7,202,692
4	With direct investment at market value (lines 5+10+16).....	6,613,320	283,414	676,650	468,722	-178,138	1,250,648	7,863,968
5	U.S. official reserve assets.....	158,602	-1,523	18,059	8,438	1	24,975	183,577
6	Gold.....	90,806		18,059		1	18,060	108,866
7	Special drawing rights.....	12,166	-601		1,073		472	12,638
8	Reserve position in the International Monetary Fund.....	21,979	-1,494		2,050		556	22,535
9	Foreign currencies.....	33,651	572		5,315		5,887	39,538
10	U.S. Government assets, other than official reserve assets.....	85,309	-537				-537	84,772
11	U.S. credits and other long-term assets ³	82,682	-702				-702	81,980
12	Repayable in dollars.....	82,406	-700				-700	81,706
13	Other ⁴	276					-2	274
14	U.S. foreign currency holdings and U.S. short-term assets.....	2,627	165				165	2,792
15	U.S. private assets: With direct investment at current cost (lines 17+19+22+23).....	6,169,624	285,474	337,609	319,082	-177,446	764,719	6,934,343
16	With direct investment at market value (lines 18+19+22+23).....	6,369,409	285,474	658,591	460,284	-178,139	1,226,210	7,595,619
Direct investment abroad:								
17	At current cost.....	1,839,995	173,799	9,472	58,756	-13,009	229,018	2,069,013
18	At market value.....	2,039,780	173,799	330,454	199,958	-13,702	690,509	2,730,289
19	Foreign securities.....	1,846,879	72,337	328,137	227,021		627,495	2,474,374
20	Bonds.....	501,762	-28,094	3,209	25,253		368	502,130
21	Corporate stocks.....	1,345,117	100,431	324,928	201,768		627,127	1,972,244
22	U.S. claims on unaffiliated foreigners reported by U.S. nonbanking concerns.....	908,024	28,932		18,093	-340,377	-293,352	614,672
23	U.S. claims reported by U.S. banks, not included elsewhere.....	1,574,726	10,406		15,212		201,558	1,776,284

TABLE 12-3 International Investment Position of the United States at Year End, 2002 and 2003 (millions of dollars)

Foreign-owned assets in the United States:								
24	With direct investment at current cost (lines 26+33)	8,646,553	829,173	318,556	72,063	-232,971	986,821	9,633,374
25	With direct investment at market value (lines 26+34)	9,166,727	829,173	690,346	70,804	-242,092	1,348,231	10,514,958
Foreign official assets in the United States								
26	U.S. Government securities	1,212,723	248,573	3,920		8,945	261,438	1,474,161
27	U.S. Treasury securities	954,896	194,568	-16,845		12,410	190,133	1,145,029
28	Other	796,449	169,685	-13,947		4,476	160,214	956,663
29	Other U.S. Government liabilities ¹	158,447	24,883	-2,898		7,934	29,919	188,366
30	U.S. liabilities reported by U.S. banks, not included elsewhere	17,144	-564				-564	16,580
31	Other foreign official assets	144,646	49,420			-3,465	45,955	190,601
32		96,037	5,149	20,765			25,914	121,951
Other foreign assets:								
33	With direct investment at current cost (lines 35+37+38+41+42+43)	7,433,830	580,600	314,636	72,063	-241,916	725,383	8,159,213
34	With direct investment at market value (lines 36+37+38+41+42+43)	7,954,004	580,600	686,426	70,804	-251,037	1,086,793	9,040,797
Direct investment in the United States:								
35	At current cost	1,505,171	39,890	6,460	1,259	1,175	48,784	1,553,955
36	At market value	2,025,345	39,890	378,250		-7,946	410,194	2,435,539
37	U.S. Treasury securities	457,670	113,432	-11,612		-16,948	84,872	542,542
38	U.S. securities other than U.S. Treasury securities	2,786,647	250,981	319,788	48,437	-14,803	604,403	3,391,050
39	Corporate and other bonds	1,600,414	213,718	5,205	48,437	-14,803	252,557	1,852,971
40	Corporate stocks	1,186,233	37,263	314,583			351,846	1,538,079
41	U.S. currency	301,268	16,640				16,640	317,908
42	U.S. liabilities to unaffiliated foreigners reported by U.S. nonbanking concerns	864,632	84,014		11,269	-493,372	-398,089	466,543
43	U.S. liabilities reported by U.S. banks, not included elsewhere	1,518,442	75,643		11,098	282,032	368,773	1,887,215

¹ Preliminary.

² Revised.

1. Represents gains or losses on foreign-currency-denominated assets due to their revaluation at current exchange rates.

2. Includes changes in coverage, capital gains and losses of direct investment affiliates, and other statistical adjustments to the value of assets.

3. Reflects changes in the value of the official gold stock due to fluctuations in the market price of gold.

4. Reflects changes in gold stock from U.S. Treasury sales of gold medallions and commemorative and bullion coins; also reflects replenishment through open market purchases. These demonetizations/monetizations are not included in

international transactions financial flows.

5. Also includes paid-in capital subscriptions to international financial institutions and resources provided to foreigners under foreign assistance programs requiring repayment over several years. Excludes World War I debts that are not being serviced.

6. Includes indebtedness that the borrower may contractually, or at its option, repay with its currency, with a third country's currency, or by delivery of materials or transfer of services.

7. Primarily U.S. Government liabilities associated with military sales contracts and other transactions arranged with or through foreign official agencies.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, July 2004.



Summary

- A country's GNP is roughly equal to the income received by its factors of production.
- In an open economy, GNP equals the sum of consumption, investment, government purchases, and the current account.
- GDP is equal to GNP minus net receipts of factor income from abroad. It measures the output produced within a country's borders.

Summary (cont.)

- National saving minus domestic investment equals the current account (\approx exports minus imports).
- The current account equals the country's net foreign investment (net outflows of financial assets).
- The balance of payments accounts records flows of goods & services and flows of financial assets across countries.
 - ◆ It has 3 parts: current account, capital account and financial account, which balance each other.
 - ◆ Transactions of goods and services appear in the current account; transactions of financial assets appear in the financial account.

Summary (cont.)

- Official international reserve assets are a component of the financial account which records official assets held by central banks.
- The official settlements balance is the negative value of official international reserve assets, and it shows a central bank's holdings of foreign assets relative to foreign central banks' holdings of domestic assets.
- The US is the largest debtor nation, and its foreign debt continues to grow because its current account continues to be negative.