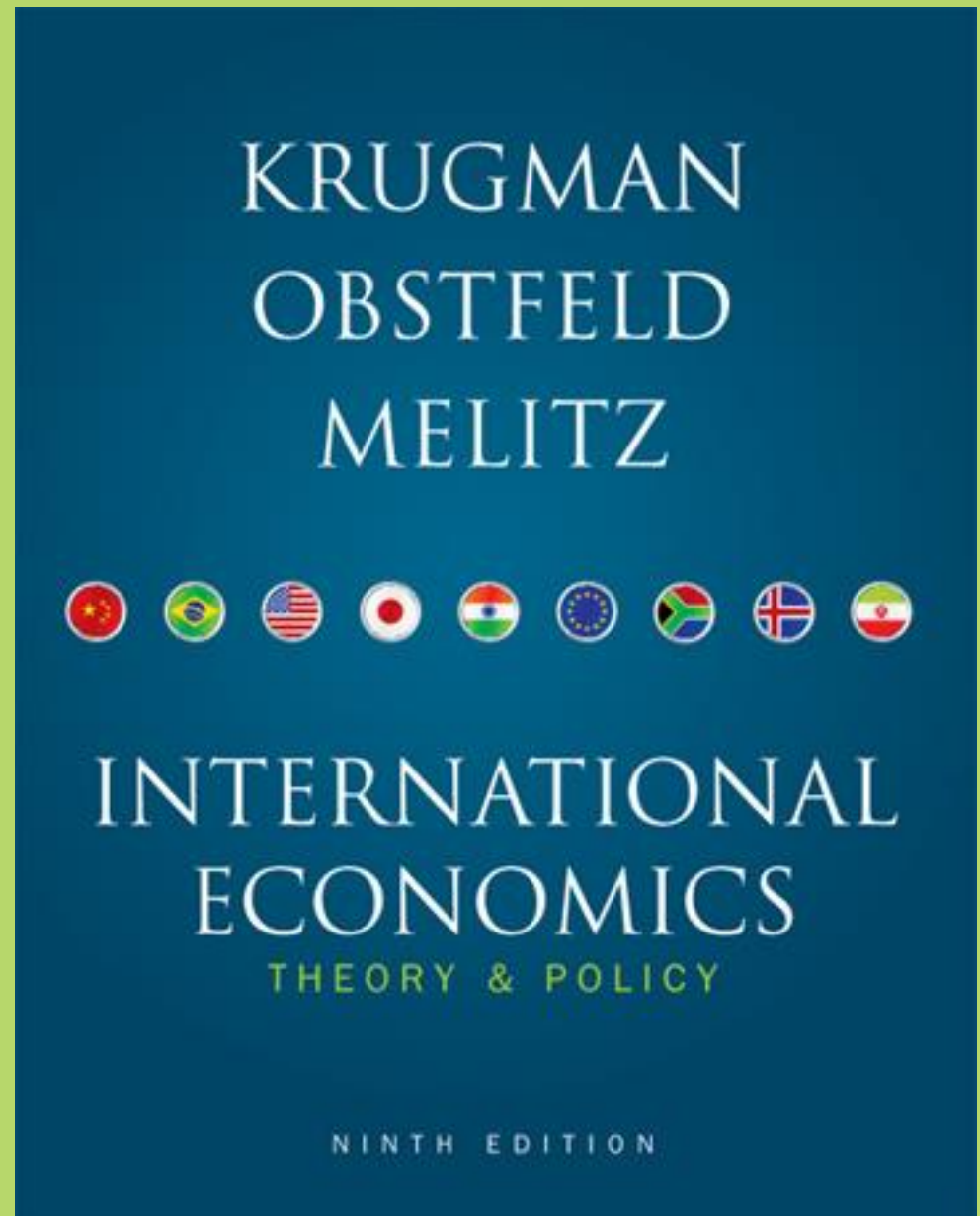


# Chapter 13

## 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*.

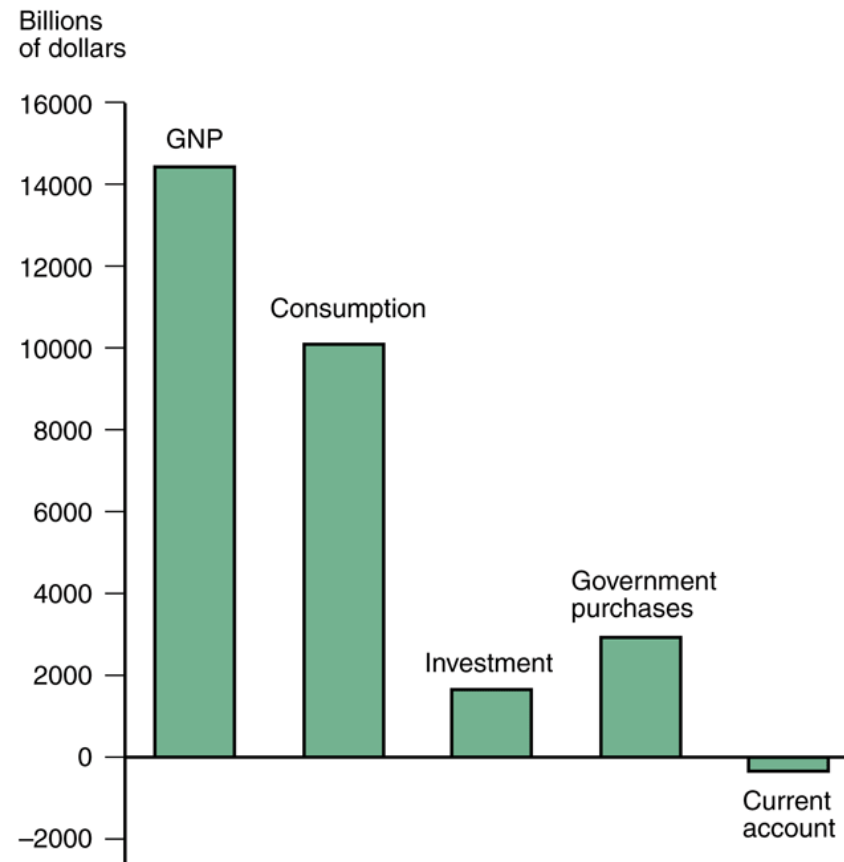
# National Income Accounts: GNP

- **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? Factors that are used to produce goods and services: workers (labor services), physical capital (like buildings and equipment), natural resources and others.
  - The value of final goods and services produced by US-owned factors of production 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:
  1. Consumption: expenditure by domestic consumers
  2. Investment: expenditure by firms on buildings & equipment
  3. Government purchases: expenditure by governments on goods and services
  4. Current account balance (exports minus imports): net expenditure by foreigners on domestic goods and services

# Fig. 13-1: U.S. GNP and Its Components



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

# National Income Accounts

- GNP is one measure of national income, but a more precise measure of national income is GNP adjusted for following:
  - 1. Depreciation** of physical capital results in a loss of income to capital owners, so the amount of depreciation is subtracted from GNP.
  - 2. Unilateral transfers** to and from other countries can change national income: payments of expatriate workers sent to their home countries, foreign aid and pension payments sent to expatriate retirees.

# 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.
  - $GDP = GNP - \text{payments from foreign countries for factors of production} + \text{payments to foreign countries for factors of production}$



# GNP = Expenditure on a Country's Goods and Services

- The national income identity for an open economy is

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

Expenditure by domestic individuals and institutions

Net expenditure by foreign individuals and institutions

# Expenditure and Production in an Open Economy

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

- When production > domestic expenditure, exports > imports: current account > 0 and 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 and 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

# Imaginary Open Economy

The hobbits live in the Shire. They only grow apples, 1000 apples per year. They invest by putting aside 50 apples for the next year planting. There is the hobbit government who appropriates 300 apples to feed the army. The hobbits can import metal locks from the Lonely Mountain (Erebor) at the price of 10 apples for 1 metal lock. They export 200 apples and import 25 metal locks. Show, by components the National Income of the Shire.

# Saving and the Current Account

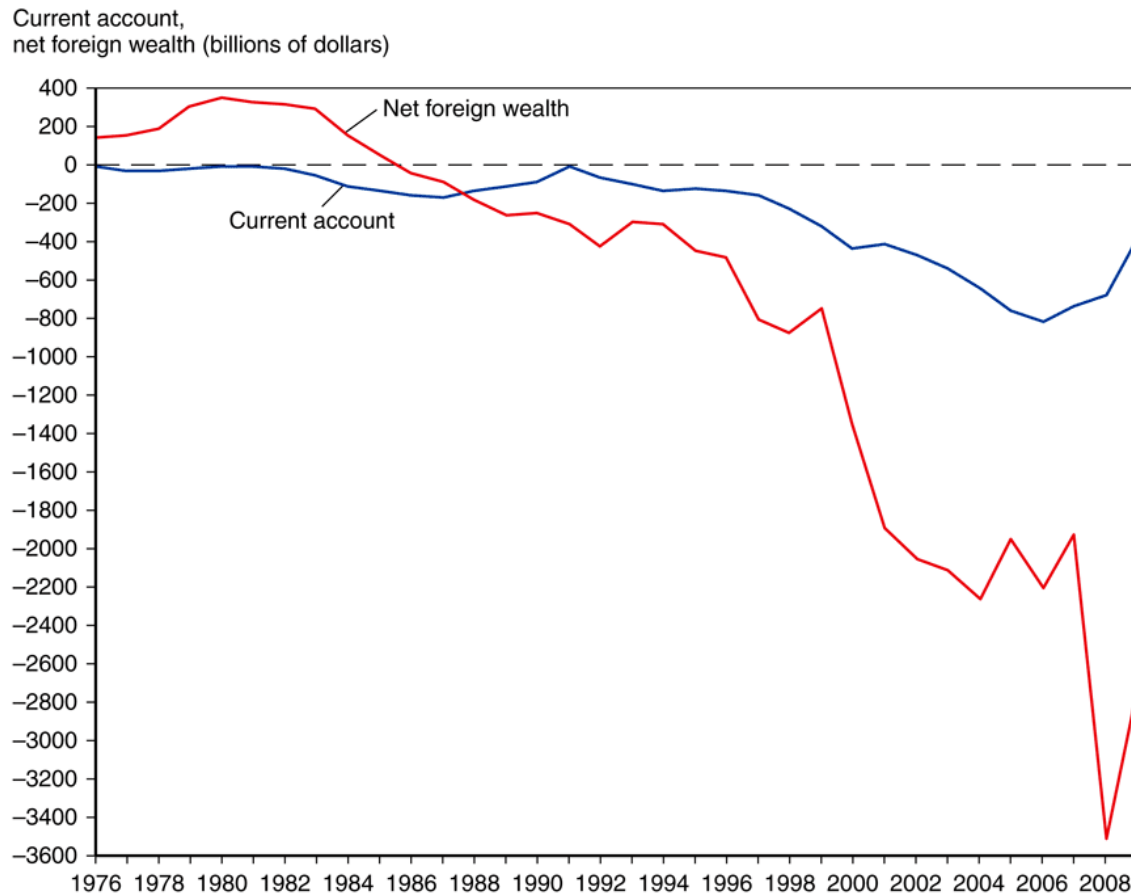
- National saving ( $S$ ) = national income ( $Y$ ) that is not spent on consumption ( $C$ ) or government purchases ( $G$ ).

$$S = Y - C - G$$

$$S = (Y - C - T) + (T - G)$$

$$S = S^p + S^g$$

# Fig. 13-2: U.S. Current Account and Net Foreign Wealth, 1976–2009



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

# How Is the Current Account Related to National Saving?

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

***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.)

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

- 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 asset inflow or negative net foreign investment.
- When  $S > I$ , then  $CA > 0$  so that 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 when other factors remain constant.



# Balance of Payments Accounts

- A country's balance of payments accounts accounts for its payments to and its receipts from foreigners.
- An international transaction involves two parties, and each transaction enters the accounts twice: once as a credit (+) and once as a debit (–).

## Balance of Payments Accounts (cont.)

- The balance of payments 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 nonmarket, non-produced, or intangible assets like debt forgiveness, copyrights and trademarks.

# Example of Balance of Payments Accounting

- You import a fax machine from Olivetti.
- Olivetti deposits your check in a U.S. bank.

---

Fax machine (*current account, U.S. good import*)

-\$80

---

Bank deposit (*financial account, U.S. asset sale*)

+\$80

---

# Example of Balance of Payments Accounting (cont.)

- You buy lunch in France and pay by credit card.
- French restaurant receives payment from your credit card company.

---

Meal purchase (*current account, U.S. service import*)

-\$30

---

Sale of credit card claim (*financial account, U.S. asset sale*)

+\$30

---

# Example of Balance of Payments Accounting (cont.)

- You buy a share of BP.
- BP deposits the money in a U.S. bank.

---

Stock purchase (*financial account, U.S. asset purchase*)  
-\$90

---

Bank deposit (*financial account, U.S. asset sale*)  
+\$90

---

# Example of Balance of Payments Accounting (cont.)

- U.S. banks forgive a \$50 M debt owed by the government of Argentina through debt restructuring.
- U.S. banks who hold the debt thereby reduce the debt by crediting Argentina's bank accounts.

---

Debt forgiveness (*capital account, U.S. transfer payment*)  
-\$50 M

---

Reduction in bank's claims (*financial account, U.S. asset sale*)  
+\$50 M

---

# 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

The 3 broad accounts are more finely divided:

- **Current account:** imports and exports
  1. merchandise (goods like DVDs)
  2. services (payments for legal services, shipping services, tourist meals, etc.)
  3. income receipts (interest and dividend payments, earnings of firms and workers operating in foreign countries)



# Balance of Payments Accounts (cont.)

- **Current account:** *net unilateral transfers*
  - gifts (transfers) across countries that do not purchase a good or service nor serve as income for goods and services produced
- **Capital account:** records special transfers of assets, but this is a minor account for the U.S.

# 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 inflow**
  - Foreigners loan to domestic citizens by buying domestic assets.
  - Domestic assets sold to foreigners are a credit (+) because the domestic economy acquires money during the transaction.
- **Financial outflow**
  - Domestic citizens loan to foreigners by buying foreign assets.
  - Foreign assets purchased by domestic citizens are a debit (–) because the domestic economy gives up money during the transaction.

# Balance of Payments Accounts (cont.)

- **Financial account** has at least 3 subcategories:
  1. Official (international) reserve assets
  2. All other assets
  3. 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 financial instability.
  - 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 (+) because the domestic central bank can spend more money to cushion against instability.
  - Official reserve assets owned by (purchased by) the domestic central bank are a debit (–) because the domestic central bank can spend less money to cushion against instability.

## 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 nonreserve 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 large debts to foreign central banks so that the domestic central bank can spend a lot to protect against financial instability.

# Table 13-2: U.S. Balance of Payments Accounts for 2009 (billions of dollars)

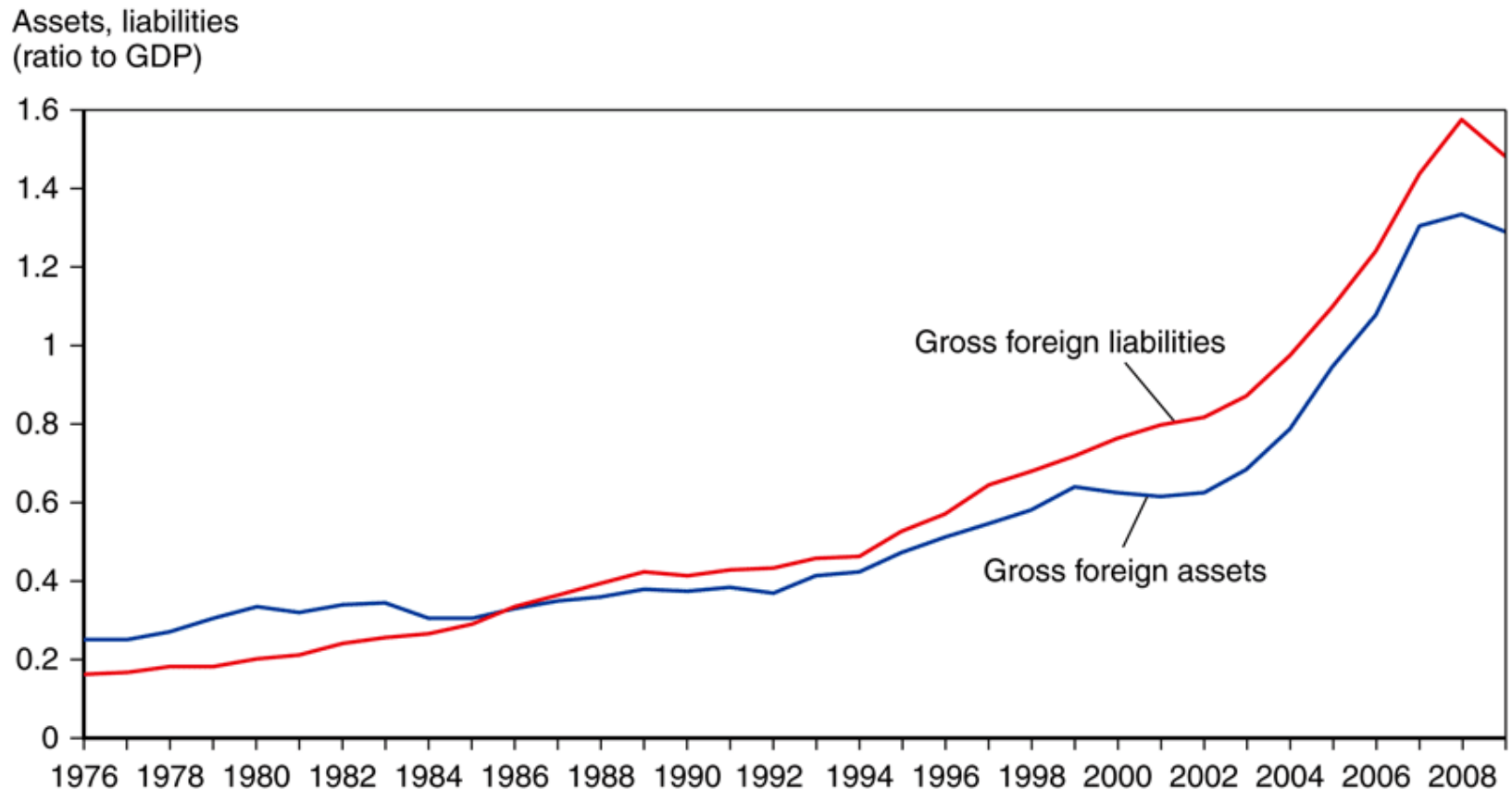
<b>TABLE 13-2 U.S. Balance of Payments Accounts for 2009 (billions of dollars)</b>	
<b>Current Account</b>	
(1) Exports	<b>2,159.0</b>
Of which:	
Goods	1,068.5
Services	502.3
Income receipts (primary income)	588.2
(2) Imports	<b>2,412.5</b>
Of which:	
Goods	1,575.4
Services	370.3
Income payments (primary income)	466.8
(3) Net unilateral transfers (secondary income)	-124.9
Balance on current account	<b>-378.4</b>
[(1) + (2) + (3)]	
<b>Capital Account</b>	
(4)	<b>-0.1</b>
<b>Financial Account</b>	
(5) Net U.S. acquisition of financial assets, excluding financial derivatives	<b>140.5</b>
Of which:	
Official reserve assets	52.3
Other assets	88.2
(6) Net U.S. incurrence of liabilities, excluding financial derivatives	<b>305.7</b>
Of which:	
Official reserve assets	450.0
Other assets	-144.3
(7) Financial derivatives, net	<b>-50.8</b>
Net financial flows	<b>-216.0</b>
[(5) - (6) + (7)]	
Net errors and omissions	162.5
[Net financial flows less sum of current and capital accounts]	
<b>Source:</b> U.S. Department of Commerce, Bureau of Economic Analysis, June 17, 2010, release. Totals may differ from sums because of rounding.	

# U.S. Balance of Payments Accounts

- The U.S. has the most negative net foreign wealth in the world, and so is therefore the world's largest debtor nation.
- Its current account deficit in 2009 was \$378 billion dollars, so that net foreign wealth continues to decrease.
- The value of foreign assets held by the U.S. has grown since 1980, but liabilities of the U.S. (debt held by foreigners) has grown faster.



# Fig. 13-3: U.S. Gross Foreign Assets and Liabilities, 1976-2009



Source: U.S. Department of Commerce, Bureau of Economic Analysis, June 2010.

# U.S. Balance of Payments Accounts (cont.)

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

# Table 13-3: International Investment Position of the United States at Year End, 2008 and 2009 (millions of dollars)

**TABLE 13-3 International Investment Position of the United States at Year End, 2008 and 2009 (millions of dollars)**

Line	Type of Investment	Position, 2008 <sup>1</sup>	Changes in position in 2009				Position, 2009 <sup>2</sup>	
			Attributable to:					
			Financial flows (a)	Valuation adjustments				Total (a+b+c+d)
Price changes (b)	Exchange-rate changes <sup>3</sup> (c)	Other changes <sup>4</sup> (d)						
1	<b>Net international investment position of the United States (lines 2+3)</b> .....	<b>-3,483,882</b>	<b>-216,075</b>	<b>522,929</b>	<b>276,730</b>	<b>172,452</b>	<b>756,036</b>	<b>-2,737,846</b>
2	Financial derivatives, net (line 5 less line 25) <sup>5</sup> .....	159,835	-50,804	( <sup>6</sup> )	( <sup>6</sup> )	419,103	-31,701	127,534
3	Net international investment position, excluding financial derivatives (line 6 less line 26).....	-3,653,517	-165,271	522,929	276,730	153,349	787,737	-2,865,780
4	<b>U.S.-owned assets abroad (lines 5+6)</b> .....	<b>19,244,875</b>	<b>(<sup>7</sup>)</b>	<b>(<sup>7</sup>)</b>	<b>(<sup>7</sup>)</b>	<b>(<sup>7</sup>)</b>	<b>-865,791</b>	<b>18,379,084</b>
5	Financial derivatives (gross positive fair value).....	6,127,450	( <sup>7</sup> )	( <sup>7</sup> )	( <sup>7</sup> )	( <sup>7</sup> )	-2,615,443	3,512,007
6	U.S.-owned assets abroad, excluding financial derivatives (lines 7+12+17).....	13,117,425	140,465	1,066,119	357,956	185,112	1,749,652	14,867,077
7	U.S. official reserve assets.....	293,732	52,256	56,941	875	0	110,072	403,804
8	Gold.....	227,439	0	56,941	0	0	56,941	284,380
9	Special drawing rights.....	9,340	48,230	0	244	0	48,474	57,814
10	Reserve position in the International Monetary Fund.....	7,863	3,357	0	345	0	3,702	11,385
11	Foreign currencies.....	49,270	699	0	286	0	955	50,225
12	U.S. government assets, other than official reserve assets.....	624,100	-541,342	( <sup>8</sup> )	( <sup>8</sup> )	17	-541,325	82,775
13	U.S. credits and other long-term assets <sup>9</sup> .....	69,877	1,936	0	0	17	1,953	71,830
14	Repayable in dollars.....	69,804	1,936	0	0	17	1,953	71,557
15	Other <sup>9</sup> .....	273	0	0	0	0	0	273
16	U.S. foreign currency holdings and U.S. short-term assets <sup>9</sup> .....	554,222	-543,278	( <sup>8</sup> )	( <sup>8</sup> )	0	-543,278	10,944
17	U.S. private assets.....	12,199,593	629,552	1,009,178	357,081	185,095	2,180,906	14,380,499
18	Direct investment at current cost.....	3,742,835	268,680	-12,201	79,124	-27,247	308,356	4,051,191
19	Foreign securities.....	3,985,712	208,213	1,021,379	255,694	0	1,485,286	5,470,998
20	Bonds.....	1,237,284	144,909	84,123	27,269	0	256,301	1,493,585
21	Corporate stocks.....	2,748,428	63,304	937,256	228,425	0	1,228,985	3,977,413
22	U.S. claims on unaffiliated foreigners reported by U.S. nonbanking concerns.....	794,899	-124,428	0	8,404	115,550	-474	794,225
23	U.S. claims reported by U.S. banks and securities brokers, not included elsewhere.....	3,676,347	277,067	0	13,859	96,792	387,738	4,064,085
24	<b>Foreign-owned assets in the United States (lines 25+26)</b> .....	<b>22,738,757</b>	<b>(<sup>7</sup>)</b>	<b>(<sup>7</sup>)</b>	<b>(<sup>7</sup>)</b>	<b>(<sup>7</sup>)</b>	<b>-1,621,827</b>	<b>21,116,930</b>
25	Financial derivatives (gross negative fair value).....	5,967,815	( <sup>7</sup> )	( <sup>7</sup> )	( <sup>7</sup> )	( <sup>7</sup> )	-2,583,742	3,384,073
26	Foreign-owned assets in the United States, excluding financial derivatives (lines 27+34).....	16,770,942	305,736	543,190	81,226	31,763	961,915	17,732,857
27	Foreign official assets in the United States.....	3,939,998	450,030	-13,584	219	-2,824	433,841	4,373,839
28	U.S. Government securities.....	3,264,139	441,056	-104,274	0	-8,524	328,258	3,592,397
29	U.S. Treasury securities.....	2,400,516	561,125	-92,297	0	1,708	470,536	2,871,052
30	Other.....	863,823	-120,069	-11,977	0	-10,232	-142,278	721,345
31	Other U.S. Government liabilities <sup>9</sup> .....	40,577	57,971	0	219	0	58,190	98,767
32	U.S. liabilities reported by U.S. banks and securities brokers, not included elsewhere.....	252,608	-70,851	0	0	5,700	-65,151	187,457
33	Other foreign official assets.....	382,674	21,854	90,690	0	0	112,544	495,218
34	Other foreign assets.....	12,830,944	-144,294	556,774	81,007	34,587	528,074	13,359,018
35	Direct investment at current cost.....	2,521,353	134,707	-5,761	3,560	18,927	151,433	2,672,786
36	U.S. Treasury securities.....	850,921	22,781	-47,510	0	0	-24,729	826,192
37	U.S. securities other than U.S. Treasury securities.....	4,620,798	59	610,045	56,261	0	666,365	5,287,163
38	Corporate and other bonds.....	2,770,606	-136,296	150,665	56,261	0	70,630	2,841,236
39	Corporate stocks.....	1,850,192	136,355	459,380	0	0	595,735	2,445,927
40	U.S. currency.....	301,139	12,832	0	0	0	12,832	313,771
41	U.S. liabilities to unaffiliated foreigners reported by U.S. nonbanking concerns.....	731,539	-1,460	0	4,638	-69,240	-66,062	665,477
42	U.S. liabilities reported by U.S. banks and securities brokers, not included elsewhere.....	3,805,194	-313,013	0	16,548	84,900	-211,565	3,593,629
<b>Memoranda:</b>								
43	Direct investment abroad at market value.....	3,103,704	268,680	737,062	194,222	-817	1,199,147	4,302,851
44	Direct investment in the United States at market value.....	2,552,572	134,707	422,683	0	10,821	568,011	3,120,583

<sup>p</sup> Preliminary

<sup>r</sup> Revised

<sup>\*</sup> Less than \$500,000 (<sup>+</sup>/<sup>-</sup>)

..... Not applicable

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

2. Includes changes in coverage due to year-to-year changes in the composition of reporting panels, primarily for bank and nonbank estimates, and to the incorporation of survey results. Also includes capital gains and losses of direct investment affiliates and changes in positions that cannot be allocated to financial flows, price changes, or exchange-rate changes.

3. Financial flows and valuation adjustments for financial derivatives are available only on a net basis, which is shown on line 2; they are not separately available for gross positive fair values and gross negative fair values of financial derivatives. Consequently, columns (a) through (d) on lines 4, 5, and 24, 25 are not available.

4. Data are not separately available for the three types of valuation adjustments; therefore, the sum of all three types is shown in column (d).

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

6. 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.

7. Also includes paid-in capital subscriptions to international financial institutions and outstanding amounts of miscellaneous claims that have been settled through international agreements to be payable to the U.S. government over periods in excess of 1 year. Excludes World War I debts that are not being serviced.

8. 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.

9. Includes foreign-currency-denominated assets obtained through temporary reciprocal currency arrangements between the Federal Reserve System and foreign central banks. These assets are included in the investment position at the dollar value established at the time they were received, reflecting the valuation of these assets in the Federal Reserve System's balance sheet. The movement of exchange rates does not affect this valuation.

10. Includes U.S. government liabilities associated with military sales contracts and U.S. government reserve-related liabilities from allocations of special drawing rights (SDRs).

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, July 2010.

# Summary

1. A country's GNP is roughly equal to the income received by its factors of production.
2. In an open economy, GNP equals the sum of consumption, investment, government purchases, and the current account.
3. GDP is equal to GNP minus net income from foreign countries for factors of production. It measures the value of output produced within a country's borders.

# Summary (cont.)

4. National saving minus domestic investment equals the current account ( $\approx$  exports minus imports).
5. The current account equals the country's net foreign investment (net outflows of financial assets).
6. 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.)

7. Official international reserve assets are a component of the financial account, which records official assets held by central banks.
8. 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.
9. The U.S. is the largest debtor nation, and its foreign debt continues to grow because its current account continues to be negative.

## Shire bought \$100 in oil from Erebor

Tourists from Erebor spent \$25 on Shire's hills

S residents purchased \$45 in life insurance from E

E resident were paid 15\$ in dividends from their holding of domestic equities.

S residents gave 100\$ to E charities

E forgave 50\$ in debt when S was attacked by a demon

S borrowed 65\$ from E banks

E bought 15\$ in S bonds

S investors sold off 50\$ in holdings of E government bonds

One dwarf married a hobbit and brought 20\$ when he moved to S

E central bank bought a 30\$ S check