

**Chapter 12**  
National Income Accounting and the Balance of Payments

Slides prepared by Thomas Bishop  
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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

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**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*.

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### 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

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

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

National income = value of domestic production

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

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

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

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

$$= \underbrace{C + I + G}_{\text{Expenditure by domestic individuals and institutions}} + \underbrace{CA}_{\text{Net expenditure by foreign individuals and institutions}}$$

Expenditure on domestic production

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**SUMMARY OF LAST LECTURE**

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**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.

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**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:
  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

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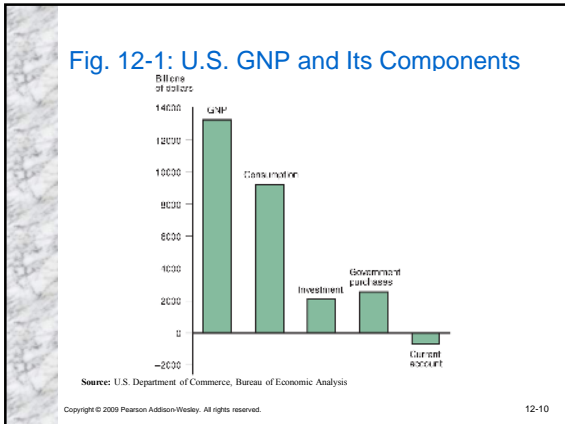
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**NET FOREIGN WEALTH**

Cumulative result of current account balances

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**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

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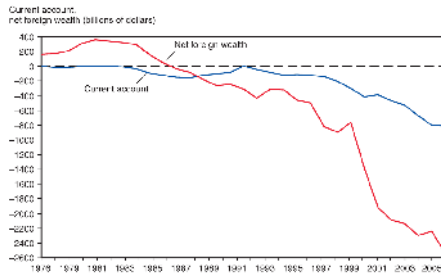
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Fig. 12-2: U.S. Current Account and Net Foreign Wealth, 1976–2006



Source: U.S. Department of Commerce, Bureau of Economic Analysis, June 2007 release  
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### Saving and the Current Account

- National saving (S) = national income (Y) that is not spent on consumption (C) or government purchases (G).
- $Y - C - G$
- $(Y - C - T) + (T - G)$
- $S^p + S^g = S$
- *private saving vs. government saving*
  - ◆ Which is better?
  - ◆ How is each accomplished?

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### How Is the Current Account Related to National Saving?

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

implies

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

$$= S - I$$

**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.

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

**$CA = S - I$       or       $I = S - CA$**

- 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. **Opposite case.**

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

**$CA = S^p + S^g - I$**   
 **$= S^p - \text{government deficit} - I$**

- 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.

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**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 (-).

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### 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 non-market, non-produced, or intangible assets like debt forgiveness, copyrights and trademarks.

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### Example of Balance of Payments Accounting

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

DVD purchase (current account)	-\$30
Credit ("sale") of deposit in account by bank (financial account)	+\$30

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### Example of Balance of Payments Accounting (cont.)

- You invest in the Japanese stock market by buying \$500 in Sony stock.
- Sony deposits the money 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 deposit in account by bank (financial account)	+\$500

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### Example of Balance of Payments Accounting (cont.)

- U.S. banks forgive a \$100 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: non-market transfer (capital account)	-\$100 M
Credit ("sale") of 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:

$$\text{current account} + \text{financial account} + \text{capital account} = 0$$

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### 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,...)
  3. 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 for goods and services produced

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Balance of Payments Accounts (cont.)

- **Capital account:** records special transfers of assets, but this is a minor account for the U.S.

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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

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Balance of Payments Accounts (cont.)

- **Financial account** has at least 3 subcategories:
  1. **Official (international) reserve assets**
  2. All other assets
  3. **Statistical discrepancy**

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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.

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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.

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

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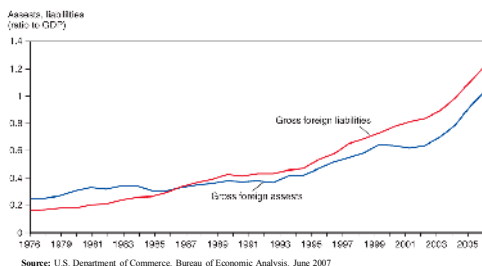
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Fig. 12-3: U.S. Gross Foreign Assets and Liabilities, 1976-2006



Source: U.S. Department of Commerce, Bureau of Economic Analysis, June 2007  
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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.

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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.

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**Summary (cont.)**

4. National saving minus domestic investment equals the current account ( 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 (i.e. sum to zero)
  - ◆ Transactions of goods and services appear in the current account; transactions of financial assets appear in the financial account.

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**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.

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**Additional Chapter Art**

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

$$\text{GNP (total output)} = \text{Consumption} + \text{Investment} + \text{Government purchases} + \text{Exports} - \text{Imports}$$

$$100 = 75^A + 25 + 10 - 10 - 20^B$$

<sup>A</sup>55 bushels of wheat + (0.5 bushel per gallon) × (40 gallons of milk).  
<sup>B</sup>0.5 bushel per gallon × 40 gallons of milk.

Table 12-3: International Investment Position of the United States at Year End, 2005 and 2006 (millions of dollars)

Type of investment	2005 Total	2006					2006 Change
		Value (in billions)					
		2006 Total	2006 Change	2006 Net	2006 Gross	2006 Total	
Total	1,020,000	1,020,000	1,020,000	1,020,000	1,020,000	0	
Direct investment	400,000	400,000	400,000	400,000	400,000	0	
Portfolio investment	300,000	300,000	300,000	300,000	300,000	0	
Financial derivatives	100,000	100,000	100,000	100,000	100,000	0	
Reserve assets	100,000	100,000	100,000	100,000	100,000	0	
Other investment	120,000	120,000	120,000	120,000	120,000	0	

Table 12-3: International Investment Position of the United States at Year End, 2005 and 2006 (millions of dollars)

Type of investment	2005 Total	2006					2006 Change
		Value (in billions)					
		2006 Total	2006 Change	2006 Net	2006 Gross	2006 Total	
Total	1,020,000	1,020,000	1,020,000	1,020,000	1,020,000	0	
Direct investment	400,000	400,000	400,000	400,000	400,000	0	
Portfolio investment	300,000	300,000	300,000	300,000	300,000	0	
Financial derivatives	100,000	100,000	100,000	100,000	100,000	0	
Reserve assets	100,000	100,000	100,000	100,000	100,000	0	
Other investment	120,000	120,000	120,000	120,000	120,000	0	