Chapter 5

Saving and Investment in the Open Economy
Chapter Outline

• Balance of Payments Accounting
• Goods Market Equilibrium in an Open Economy
• Saving and Investment in a Small Open Economy
• Saving and Investment in Large Open Economies
• Fiscal Policy and the Current Account
Table 5.1 Balance of Payments Accounts of the United States, 2005 (Billions of Dollars)

<table>
<thead>
<tr>
<th>Current Account</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net exports of goods and services (NX)</td>
<td>-723.7</td>
</tr>
<tr>
<td>Exports of goods and services</td>
<td>1272.2</td>
</tr>
<tr>
<td>Goods</td>
<td>892.6</td>
</tr>
<tr>
<td>Services</td>
<td>379.6</td>
</tr>
<tr>
<td>Imports of goods and services</td>
<td>-1995.9</td>
</tr>
<tr>
<td>Goods</td>
<td>-1674.3</td>
</tr>
<tr>
<td>Services</td>
<td>-321.6</td>
</tr>
<tr>
<td>Net income from abroad (NFP)</td>
<td>1.6</td>
</tr>
<tr>
<td>Income receipts from abroad</td>
<td>468.7</td>
</tr>
<tr>
<td>Income payments to residents of other countries</td>
<td>-467.1</td>
</tr>
<tr>
<td>Net unilateral transfers</td>
<td>-82.9</td>
</tr>
<tr>
<td>Current Account Balance (CA)</td>
<td>-804.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capital and Financial Account</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Account</td>
<td></td>
</tr>
<tr>
<td>Net capital account transactions</td>
<td>-5.6</td>
</tr>
<tr>
<td>Financial Account</td>
<td></td>
</tr>
<tr>
<td>Net financial flows</td>
<td>801.0</td>
</tr>
<tr>
<td>Increase in U.S.-owned assets abroad (financial outflow)</td>
<td>-491.7</td>
</tr>
<tr>
<td>U.S. official reserve assets</td>
<td>14.1</td>
</tr>
<tr>
<td>Other U.S.-owned assets abroad</td>
<td>-505.8</td>
</tr>
<tr>
<td>Increase in foreign-owned assets in U.S. (financial inflow)</td>
<td>1292.7</td>
</tr>
<tr>
<td>Foreign official assets</td>
<td>220.7</td>
</tr>
<tr>
<td>Other foreign-owned assets</td>
<td>1072.0</td>
</tr>
<tr>
<td>Capital and Financial Account Balance (KFA)</td>
<td>795.4</td>
</tr>
<tr>
<td>Statistical Discrepancy</td>
<td>9.6</td>
</tr>
</tbody>
</table>

**Memoranda:**
- Balance on goods and services (trade balance) = -723.7
- Balance on goods, services, and income = -722.1
- Official settlements balance = Balance of payments = Increase in U.S. official reserve assets minus increase in foreign official assets = -14.1 - 220.7 = -234.8

Note: Numbers may not add to totals shown owing to rounding.
Balance of Payments Accounting

- **Basic Principles**
  - **Credit item (+)**
    - Funds flow into the country
    - Example: exports of goods
  - **Debit item (–)**
    - Funds flow out of the country
    - Example: imports of goods
Balance of Payments Accounting

• The current account
  – Net exports of goods and services \((NX)\)
  – Net income from abroad \((NFP)\)
  – Net unilateral transfers \((NUT)\)
Balance of Payments Accounting

• The current account
  – Net income from abroad (*NFP*)
    • Income received from abroad is a credit item, since it causes funds to flow into the United States
    • Payment of income to foreigners is a debit item
    • Net income from abroad is part of the current account, and is about equal to *NFP*, net factor payments
Balance of Payments Accounting

• The current account
  – Net unilateral transfers (*NUT*)
    • Payments made from one country to another
    • Negative net unilateral transfers for United States, since United States is a net donor to other countries
Balance of Payments Accounting

- Sum of net exports of goods and services, net income from abroad, and net unilateral transfers is the current account balance
- \( CA = NX + NFP + NUT \)
  - Positive current account balance implies current account surplus
  - Negative current account balance implies current account deficit
Balance of Payments Accounting

• The capital and financial account
  – The capital and financial account records trades in existing assets, either real (for example, houses) or financial (for example, stocks and bonds)
  – The capital account records the net flow of unilateral transfers of assets into the country
Balance of Payments Accounting

• The capital and financial account
  – Most transactions appear in the financial account part of the capital and financial account
    • When home country sells assets to a foreign country, that is a capital inflow for the home country and a credit (+) item in the capital and financial account
    • When assets are purchased from a foreign country, there is a capital outflow from the home country and a debit (−) item in the capital and financial account
Balance of Payments Accounting

• The Capital and Financial Account
  – Capital Account (unilateral transfers of assets)
  – Financial Account
    • Financial Inflow
      – Credit item (+)
      – Sale of U.S. assets to foreigners
    • Financial Outflow
      – Debit item (–)
      – Purchase of foreign assets by U.S. residents

• \( KFA = \) capital and financial account balance
Balance of Payments Accounting

- The official settlements balance
  - Transactions in official reserve assets are conducted by central banks of countries
  - Official reserve assets are assets (foreign government securities, bank deposits, and SDRs of the IMF, gold) used in making international payments
  - Central banks buy (or sell) official reserve assets with (or to obtain) their own currencies
Balance of Payments Accounting

- The official settlements balance
  - Also called the balance of payments, it equals the net increase in a country’s official reserve assets
  - For the United States, the net increase in official reserve assets is the rise in U.S. government reserve assets minus foreign central bank holdings of U.S. dollar assets
  - Having a balance of payments surplus means a country is increasing its official reserve assets; a balance of payments deficit is a reduction in official reserve assets
Balance of Payments Accounting

- The relationship between the current account and the capital and financial account
  - Current account balance ($CA$) + capital and financial account balance ($KFA$) = 0 (5.1)
  - $CA + KFA = 0$ by accounting; every transaction involves offsetting effects
Balance of Payments Accounting

• Examples given of offsetting transactions (text Table 5.2)
• In practice, measurement problems, recorded as a statistical discrepancy, prevent $CA + KFA = 0$ from holding exactly.
Table 5.2 Why the Current Account Balance and the Capital and Financial Account Balance Sum to Zero: An Example

(Balance of Payments Data Refer to the United States)

<table>
<thead>
<tr>
<th>Case I: United States Imports $75 Sweater from Britain; Britain Imports $75 Computer Game from United States</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Account</strong></td>
</tr>
<tr>
<td>Exports</td>
</tr>
<tr>
<td>Imports</td>
</tr>
<tr>
<td>Current account balance, CA</td>
</tr>
<tr>
<td><strong>Capital and Financial Account</strong></td>
</tr>
<tr>
<td>No transaction</td>
</tr>
<tr>
<td>Capital and financial account balance, KFA</td>
</tr>
<tr>
<td>Sum of current and capital and financial account balances, CA + KFA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case II: United States Imports $75 Sweater from Britain; Britain Buys $75 Bond from United States</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Account</strong></td>
</tr>
<tr>
<td>Imports</td>
</tr>
<tr>
<td>Current account balance, CA</td>
</tr>
<tr>
<td><strong>Capital and Financial Account</strong></td>
</tr>
<tr>
<td>Financial inflow</td>
</tr>
<tr>
<td>Capital and financial account balance, KFA</td>
</tr>
<tr>
<td>Sum of current and capital and financial account balances, CA + KFA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case III: United States Imports $75 Sweater from Britain; Federal Reserve Sells $75 of British Pounds to British Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Account</strong></td>
</tr>
<tr>
<td>Imports</td>
</tr>
<tr>
<td>Current account balance, CA</td>
</tr>
<tr>
<td><strong>Capital and Financial Account</strong></td>
</tr>
<tr>
<td>Financial inflow (reduction in U.S. official reserve assets)</td>
</tr>
<tr>
<td>Capital and financial account balance, KFA</td>
</tr>
<tr>
<td>Sum of current and capital and financial account balances, CA + KFA</td>
</tr>
</tbody>
</table>
Balance of Payments Accounting

- Net foreign assets and the balance of payments accounts
  - Net foreign assets are a country’s foreign assets minus its foreign liabilities
    - Net foreign assets may change in value (example: change in stock prices)
    - Net foreign assets may change through acquisition of new assets or liabilities
Balance of Payments Accounting

• Net foreign assets and the balance of payments accounts
  – The net increase in foreign assets equals a country’s current account surplus
  – A current account surplus implies a capital and financial account deficit, and thus a net increase in holdings of foreign assets (a financial outflow)
  – A current account deficit implies a capital and financial account surplus, and thus a net decline in holdings of foreign assets (a financial inflow)
Balance of Payments Accounting

• Net foreign assets and the balance of payments accounts
  – Foreign direct investment: a foreign firm buys or builds capital goods
    • Causes an increase in capital and financial account balance
  – Portfolio investment: foreigners acquire U.S. securities; also increases capital and financial account balance
Balance of Payments Accounting

• Summary: Equivalent measures of a country’s international trade and lending

Current account surplus
= capital and financial account deficit
= net acquisition of foreign assets
= net foreign lending
= net exports (if $NFP$ and net unilateral transfers are zero)
**Summary 7**

**Equivalent Measures of a Country’s International Trade and Lending**

<table>
<thead>
<tr>
<th>Each Item Describes the Same Situation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A current account surplus of $10 billion</td>
</tr>
<tr>
<td>A capital and financial account deficit of $10 billion</td>
</tr>
<tr>
<td>Net acquisition of foreign assets of $10 billion</td>
</tr>
<tr>
<td>Net foreign lending of $10 billion</td>
</tr>
<tr>
<td>Net exports of $10 billion (if net factor payments, $NFP$, and net unilateral transfers equal zero)</td>
</tr>
</tbody>
</table>
Balance of Payments Accounting

- Box 5.1: Does Mars have a current account surplus?
  - Adding together all countries’ current account balances gives a current account deficit for the world
  - The statistical problem is primarily a misreporting of income from assets held abroad
Balance of Payments Accounting

• Application: The United States as international debtor
  – The rise in foreign liabilities by the United States since the early 1980s has been very large
  – The United States has become the world’s largest international debtor
Balance of Payments Accounting

• Application: The United States as international debtor
  – But the net foreign debt of the United States relative to U.S. GDP is relatively small (18%) compared to other countries (some of whom have net foreign debt of over 100% of GDP)
  – Despite the large net foreign debt, the United States has direct foreign investment (companies, land) in other countries about equal in size to other countries’ foreign direct investment in the United States
Balance of Payments Accounting

- Application: The United States as international debtor (cont.)
  - What really matters is not size of net foreign debt, but country’s wealth (physical and human capital)
    - If net foreign debt rises but wealth rises, there’s no problem
    - But U.S. wealth isn’t rising as much as net foreign debt, which is worrisome
Goods Market Equilibrium in an Open Economy

• From Ch. 2,

\[ S = I + CA = I + (NX + NFP) \]  \hspace{1cm} (5.2)

– So national saving has two uses:
  • Increase the capital stock by domestic investment
  • Increase the stock of net foreign assets by lending to foreigners
– In this section, we’ll assume \( NFP = 0 = NUT \)
Goods Market Equilibrium in an Open Economy

\[ S = I + CA = I + NX \]

- To get goods market equilibrium, national saving and investment must equal their desired levels:
  \[ S^d = I^d + NX \]  (5.4)
Goods Market Equilibrium in an Open Economy

- \( S = I + CA = I + NX \)
  - Alternative method:
    - \( Y = C^d + I^d + G + NX \) (5.5)
    - \( NX = Y - (C^d + I^d + G) \) (5.6)
    - Net exports equal output \( (Y) \) minus absorption \( (C^d + I^d + G) \)
Saving and Investment in a Small Open Economy

- Small open economy: an economy too small to affect the world real interest rate
  - World real interest rate ($r^w$): the real interest rate in the international capital market
Saving and Investment in a Small Open Economy

• Key assumption: Residents of the small open economy can borrow or lend at the expected world real interest rate
Figure 5.1 A small open economy that lends abroad

[Diagram of a graph showing the relationship between the world real interest rate and desired national saving and investment.]
Figure 5.2 A small open economy that borrows abroad
Saving and Investment in a Small Open Economy

- Result: $r^w$ may be such that $S^d > I^d$, $S^d = I^d$, or $S^d < I^d$
  - a. If $S^d > I^d$, the excess of desired saving over desired investment is lent internationally (net foreign lending is positive) and $NX > 0$
  - b. If $S^d = I^d$, there is no net foreign lending and $NX = 0$
  - c. If $S^d < I^d$, the excess of desired investment over desired saving is financed by borrowing internationally (net foreign lending is negative) and $NX < 0$
Saving and Investment in a Small Open Economy

- Alternative interpretation: in terms of output and absorption
# Table 5.3 Goods Market Equilibrium in a Small Open Economy: An Example (Billions of Dollars)

<table>
<thead>
<tr>
<th>Given</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross domestic product, $Y$</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government purchases, $G$</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effect of real interest rate on desired consumption and investment</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) World real interest rate, $r^w$ (%)</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>(2) Desired consumption, $C^d$</td>
<td>15</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>(3) Desired investment, $I^d$</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Results</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4) Desired absorption, $C^d + I^d + G$</td>
<td>24</td>
<td>20</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>(5) Desired national saving, $S^d = Y - C^d - G$</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>(6) Net exports, $NX = Y - $desired absorption</td>
<td>−4</td>
<td>0</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>(7) Desired foreign lending, $S^d - I^d$</td>
<td>−4</td>
<td>0</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

*Note: We assume that net factor payments, $NFP$, and net unilateral transfers equal zero.*
Saving and Investment in a Small Open Economy

- Net exports equals net foreign lending equals the current account balance (assuming net factor payments and net unilateral transfers are zero)
Saving and Investment in a Small Open Economy

• The effects of economic shocks in a small open economy
  – Anything that increases desired national saving (\( Y \) rises, future output falls, or \( G \) falls) relative to desired investment (\( MPK^f \) falls, \( \tau \) rises) at a given world interest rate increases net foreign lending, and vice versa
  – A temporary adverse supply shock
    • Temporary drop in income leads to a drop in saving, so net foreign lending declines; shown in text Fig. 5.3
Figure 5.3 A temporary adverse supply shock in a small open economy

2. Current account surplus falls

1. Temporary adverse supply shock

Diagram showing the relationship between world real interest rate, desired national saving, and desired investment in a small open economy.
• The effects of economic shocks in a small open economy
  – An increase in the expected future marginal product of capital
  – Desired investment rises, so net foreign lending falls; shown in text Fig. 5.4
Figure 5.4 An increase in the expected future MPK in a small open economy.
Saving and Investment in a Small Open Economy

• The political environment: default and sovereign debt
  – There is no international agency that can enforce international debt contracts
  – But sovereign governments don’t often default on loans, since doing so might disrupt trade and prevent them from borrowing in the future
Application

The Impact of Globalization on the U.S. Economy
Globalization

- World’s economies are increasingly interdependent—more international trade and investment
- Should the U.S. reign in globalization?
Globalization

- Historical data on trends in trade from 1929 to 2005
  - Note large gains in both exports and imports over past 50 years (as % of GDP)
Figure 5.5 The determination of the world real interest rate with two large open economies

(a) Home country

World real interest rate, \( r_w \)

5\%

6\%

7\%

8\%

Desired national saving, \( S_d \), and desired investment, \( I_d \) (billions of dollars)

1\%

2\%

3\%

4\%

5\%

6\%

7\%

8\%

I = 150

S = 450

$200 billion

$300 billion

A

B

I = 200

S = 400

Home saving curve, \( S \)

Home investment curve, \( I \)

(b) Foreign country

World real interest rate, \( r_w \)

5\%

6\%

7\%

8\%

Desired national saving, \( S_{d, For} \), and desired investment, \( I_{d, For} \) (billions of dollars)

1\%

2\%

3\%

4\%

5\%

6\%

7\%

8\%

S_{For} = 550

I_{For} = 650

$100 billion

S_{For} = 500

I_{For} = 700

$200 billion

S_{For} = 500

I_{For} = 800

Foreign saving curve, \( S_{For} \)

Foreign investment curve, \( I_{For} \)

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Globalization

• Historical data on trends in investment from 1982 to 2004
  – Note large gains in both our investments abroad and foreigners’ investments in U.S. over past 20 years (as % of GDP)
  – Worrisome issue: U.S. is now the world’s largest international debtor
Figure 5.6 Exports and imports of goods and services as a percent of GDP, 1929-2005
Globalization

• Costs of globalization: U.S. jobs lost in particular sectors
• Benefits of globalization: U.S. jobs gained in particular sectors
  – U.S. exports increase
  – Cheaper imported goods means more goods & services at lower prices—gains from trade
• But loss for jobs from foreign trade is a small fraction of total job loss in U.S.
Globalization

- Recent years: big changes in business services industry—call centers, etc.
- Critics: moving jobs abroad
- Reality: U.S. is world leader in exporting business services—far more is done in U.S. and sold abroad than vice versa
- So U.S. benefits from such activity far more than it "loses"
Figure 5.7 International ownership of assets relative to U.S. GDP, 1982-2004
Saving and Investment in Large Open Economies

- Large open economy: an economy large enough to affect the world real interest rate
  - Suppose there are just two economies in the world
    - The home or domestic economy (saving $S$, investment $I$)
    - The foreign economy, representing the rest of the world (saving $S_{For}$, investment $I_{For}$)

- The world real interest rate moves to equilibrate desired international lending by one country with desired international borrowing by the other (Fig. 5.8)
Figure 5.8 International trade in business services, 1986-2005
Saving and Investment in Large Open Economies

• The equilibrium world real interest rate is determined such that a current account surplus in one country is equal in magnitude to the current account deficit in the other
Saving and Investment in Large Open Economies

- Changes in the equilibrium world real interest rate: Any factor that increases desired international lending of a country relative to desired international borrowing causes the world real interest rate to fall
Application

Recent Trends in the U.S. Current Account Deficit
U.S. Current Account Deficit

- Is the large U.S. current account deficit sustainable?
- Will adjustment occur, and if so, how?
Figure 5.9 Current account balance as a percent of GDP, 1960-2005
U.S. Current Account Deficit

• Data on U.S. current account deficit—it is getting worse, not better
U.S. Current Account Deficit

• Why is the U.S. current account deficit continuing to increase?
  – Lower foreign demand
  – Better international investment opportunities
  – Higher oil prices
  – Increased saving by developing countries
U.S. Current Account Deficit

• Lower foreign demand
  – Slower economic growth in Japan and Europe in early 2000s
  – People there are saving more and investing in U.S. more, but buying fewer U.S. goods
U.S. Current Account Deficit

- Better international investment opportunities
  - U.S. investors are diversifying investments internationally
  - Foreign investors are investing more in U.S.
Figure 5.10 Net international ownership of assets relative to U.S. GDP, 1982-2004
U.S. Current Account Deficit

• Higher oil prices
  – U.S. imports much more oil than it exports
  – Doubling of oil prices recently led to decline in current account balance of over 1% of GDP
Figure 5.11 Petroleum net exports as a percent of U.S. GDP, 1978-2005
U.S. Current Account Deficit

• Increased saving by developing countries
  – Many developing nations want to invest in safe places like U.S., rather than borrowing and getting into financial crises
  – They changed from being international borrowers to being international lenders
U.S. Current Account Deficit

• Some people also blame U.S. government deficit—twin deficits argument
  – But in late 1990s, U.S. government ran surpluses, and current account deficit got larger
  – Other countries with current account surpluses also run larger government budget deficits than U.S.
U.S. Current Account Deficit

• What does the future hold?
  – Probably rising import prices and falling export prices, caused by a fall in value of dollar
  – Leading to lower imports and higher exports, reducing current account deficit
Fiscal Policy and the Current Account

- Are government budget deficits necessarily accompanied by current account deficits? That is, are there “twin deficits”?
  - The critical factor: the response of national saving
    - An increase in the government budget deficit raises the current account deficit only if the increase in the budget deficit reduces desired national saving
    - In a small open economy, if an increase in the government budget deficit reduces desired national saving, the saving curve shifts left, thus reducing the current account balance (Fig. 5.12)
Figure 5.12 The government budget deficit and the current account in a small open economy
Fiscal Policy and the Current Account

- The government budget deficit and national saving
  - A deficit caused by increased government purchases
    - No question here: The deficit definitely reduces national saving
    - Result: The current account balance declines
  - A deficit resulting from a tax cut
    - $S^d$ falls only if $C^d$ rises
    - So $S^d$ won’t change if Ricardian equivalence holds, since then a tax cut won’t affect consumption
    - But if people don’t foresee the future taxes implied by a tax cut today, they will consume more, desired saving will decline, and so will the current account balance
Fiscal Policy and the Current Account

- **Application: the twin deficits**
  - Relationship between the U.S. government budget deficit and U.S. current account deficit
  - Text Fig. 5.13 shows data
  - The deficits appear to be twins in the 1980s and early 1990s, moving closely together
  - But at other times (during World Wars I and II, and during 1975) government budget deficits grew, yet the current account balance increased
  - The evidence is also mixed for foreign countries
Figure 5.13 The government budget deficit and the current account in the United States, 1960-2005
Fiscal Policy and the Current Account

• Application: the twin deficits
  – U.S. experience
    • Early and mid 1980s: supports twin deficits
    • Federal tax rebate, 1975: contrary to twin deficits
    • Recent experience: contrary to twin deficits
  – Experience of other countries
    • Germany: increased CA deficit and budget deficit
    • Canada, Italy mid 1980s large budget deficits without severe CA deficits
Key Diagram 4 National saving and investment in a small open economy
Key Diagram 5 National saving and investment in large open economies

(a) Home country
(b) Foreign country