

Overview of Section III

Exchange Rates and Open Economy

Macroeconomics

Section III of the textbook is comprised of six chapters:

- Chapter 12** National Income Accounting and the Balance of Payments
- Chapter 13** Exchange Rates and the Foreign Exchange Market: An Asset Approach
- Chapter 14** Money, Interest Rates, and Exchange Rates
- Chapter 15** Price Levels and the Exchange Rate in the Long Run
- Chapter 16** Output and the Exchange Rate in the Short Run
- Chapter 17** Fixed Exchange Rates and Foreign Exchange Intervention

■ Section III Overview

The presentation of international finance theory proceeds by building up an integrated model of exchange rate and output determination. Successive chapters in Section III construct this model step-by-step so you can acquire a firm understanding of each component as well as the manner in which these components fit together. The resulting model presents a single unifying framework admitting the entire range of exchange rate regimes from pure float to managed float to fixed rates. The model may be used to analyze both comparative static and dynamic time path results arising from temporary or permanent policies or exogenous shocks in an open economy.

The primacy given to asset markets in the model is reflected in the discussion of national income and balance of payments accounting in the first chapter of this section. Chapter 12 begins with a discussion of the focus of international finance. The discussion then proceeds to national income accounting in an open economy. The chapter points out, in the discussion on the balance of payments account, that current account transactions must be financed by financial account flows from either central bank or noncentral bank transactions. A case study uses national income accounting identities to consider the link between government budget deficits and the current account.

Observed behavior of the exchange rate favors modeling it as an asset price rather than as a goods price. Thus, the core relationship for short-run exchange-rate determination in the model developed in Section III is uncovered interest parity. Chapter 13 presents a model in which the exchange rate adjusts to equate expected returns on interest-bearing assets denominated in different currencies given expectations about exchange rates, and the domestic and foreign interest rates. This first building block of the model lays the foundation for subsequent chapters that explore the determination of domestic interest rates and output, the basis for expectations of future exchange rates, and richer specifications of the foreign exchange market that include risk. An appendix to this chapter explains the determination of forward exchange rates.

Chapter 14 introduces the domestic money market, linking monetary factors to short-run exchange rate determination through the domestic interest rate. The chapter begins with a discussion of the determination of the domestic interest rate. Interest parity links the domestic interest rate to the exchange rate, a relationship captured in a two-quadrant diagram. Comparative statics employing this diagram demonstrate the effects of monetary expansion and contraction on the exchange rate in the short run. Dynamic considerations are introduced through an appeal to the long-run neutrality of money that identifies a long-run steady-state value toward which the exchange rate evolves. The dynamic time path of the model exhibits overshooting of the exchange rate in response to monetary changes.

Chapter 15 develops a model of the long-run exchange rate. The long-run exchange rate plays a role in a complete short-run macroeconomic model since one variable in that model is the expected future exchange rate. The chapter begins with a discussion of the law of one price and purchasing power parity. A model of the exchange rate in the long run based upon purchasing power parity is developed. A review of the empirical evidence, however, casts doubt on this model. The chapter then goes on to develop a general model of exchange rates in the long run in which the neutrality of monetary shocks emerges as a special case. In contrast, shocks to the output market or changes in fiscal policy alter the long-run real exchange rate. This chapter also discusses the real interest parity relationship that links the real interest rate differential to the expected change in the real exchange rate. An appendix examines the relationship of the interest rate and exchange rate under a flexible-price monetary approach.

Chapter 16 presents a macroeconomic model of output and exchange rate determination in the short run. The chapter introduces aggregate demand in a setting of short-run price stickiness to construct a model of the goods market. The exchange rate analysis presented in previous chapters provides a model of the asset market. The resulting model is, in spirit, very close to the classic Mundell-Fleming model. This model is used to examine the effects of a variety of policies. The analysis allows a distinction to be drawn between permanent and temporary policy shifts since permanent policy shifts alter long-run expectations while temporary policy shifts do not. This distinction highlights the importance of exchange rate expectations on macroeconomic outcomes. A case study of U.S. fiscal and monetary policy between 1979 and 1983 utilizes the model to explain notable historical events. The chapter concludes with a discussion of the links between exchange rate and import price movements which focuses on the J-curve and exchange-rate pass-through. An online appendix to the chapter compares the IS-LM model to the model developed in this chapter. Another appendix considers intertemporal trade and consumption demand. Another appendix discusses the Marshall-Lerner condition and estimates of trade elasticities.

The final chapter of this section discusses intervention by the central bank and the relationship of this policy to the money supply. This analysis is blended with the previous chapter's short-run macroeconomic model to analyze policy under fixed rates. The balance sheet of the central bank is used to keep track of the effects of foreign exchange intervention on the money supply. The model developed in previous chapters is extended by relaxing the interest parity condition and allowing exchange-rate risk to influence agents' decisions. This allows a discussion of sterilized intervention. Another topic discussed in this chapter is capital flight and balance of payments crises with an introduction to different models of how a balance of payments or currency crisis can occur. The analysis also is extended to a two-country framework to discuss alternative systems for fixing the exchange rate as a prelude to Section IV. An appendix to Chapter 17 develops a model of the foreign exchange market in which risk factors make domestic-currency and foreign-currency assets imperfect substitutes. The second appendix discusses the timing of a balance of payments crisis. An online appendix explores the monetary approach to the balance of payments.

Chapter 12

National Income Accounting and the Balance of Payments

■ Chapter Organization

The National Income Accounts

National Product and National Income

Capital Depreciation and International Transfers

Gross Domestic Product

National Income Accounting for an Open Economy

Consumption

Investment

Government Purchases

The National Income Identity for an Open Economy

An Imaginary Open Economy

The Current Account and Foreign Indebtedness

Saving and the Current Account

Private and Government Savings

*Case Study: Government Deficit Reduction May Not Increase
the Current Account Surplus*

The Balance of Payments Accounts

Examples of Paired Transactions

The Fundamental Balance of Payments Identity

The Current Account, Once Again

The Capital Account

The Financial Account

The Statistical Discrepancy

Official Reserve Transactions

Case Study: The Assets and Liabilities of the World's Biggest Debtor

Summary

■ Key Themes

This chapter introduces the international macroeconomics section of the text. In international macroeconomics we study “open” economies, that is economies that trade both assets and goods and services with the rest of the world. International macroeconomic theory focuses on issues such as unemployment, savings, trade imbalances, and money and the price level in open economies. Some of the issues that you might have read about in newspapers or magazines that are studied in international macroeconomics include the U.S trade deficit, the exchange rate of the dollar against other currencies, Europe’s Economic and Monetary Union, and the financial crisis in Asia.

A major portion of this chapter is taken up with the presentation of the theory of national income accounting and the balance of payments account. You may have seen some of the material on national income accounting for a closed economy in previous economics courses. In those courses you learned that GNP can be considered the sum of different categories of spending or, alternatively, as the sum of different categories of payments to domestic workers, capital-owners, and land-owners. These two ways of adding up GNP give us the relationship for a closed economy that private savings minus investment equals government expenditures minus government tax revenues; that is, net private saving equals net government dissaving.

This relationship must be modified in an open economy to include the current account which represents exports minus imports or, alternatively, net lending by an economy to the rest of the world. The current account equals net private savings (private savings minus private investment) plus government savings (tax receipts minus government expenditures). The case study on the budget and current account imbalances of the United States and Europe allows you to consider the relationship among the budget deficit, savings, and the current account in a consistent framework.

It is useful, when studying balance of payments accounting, to keep in mind the rule that there is a debit in either the current account or the financial account of a country when payment for an item classified in that account is flowing out of a country. Using this “follow the money” rule should help you keep track of debits and credits. For example, a car is a good and thus is a current account item. When a car produced by Toyota in Japan is sold to a U.S. resident, there is a payment from the United States and thus the import of the car is recorded as a current account debit. If the Toyota company uses the payment for the car to increase the size of its checking account in the United States, then this purchase of a financial account item (the checking account) by Toyota represents a credit in the U.S. financial account. This example brings up the important point that balance of payments accounting is a form of double-entry bookkeeping since each transaction enters the accounts twice, once as a credit and once as a debit. In reality, as discussed in the box in this chapter, there are large statistical discrepancies between the current and financial accounts. These discrepancies reflect some real-world difficulties in measuring international payments.

There is a less used category, the capital account, which tracks unilateral asset gifts (primarily debt forgiveness or immigrants moving assets with them). A unilateral current gift, such as foreign aid or a gift from a resident in one country to relatives in another, is a current account item, but one time shifts in accumulated asset positions are included in this third account. As usual, if money comes into a country, the item is a credit; if it goes out, the item is a debit. These terms have changed since the last edition of this text. Older articles or textbooks will refer to a two-category system where the financial account is called the capital account. The names were changed in late 1999.

The chapter concludes with a discussion of official reserve transactions. The important point to keep in mind now is that these official capital flows play the same role as other capital flows from the standpoint of financing the current account. There are, however, additional macroeconomic implications of central-bank foreign asset transactions. These will be studied in detail in Chapter 17.

■ Key Terms

Define the following key terms:

1. Gross National Product _____

_____.
2. Balance of Payments _____

_____.
3. National Saving _____

_____.
4. Official International Reserves: _____

_____.
5. Current Account _____

_____.
6. Financial Account _____

_____.
7. Capital Account _____

_____.

■ Review Questions

1. Fill in the blanks below.
 - a. For a Closed Economy:
 - i. Spending approach $Y = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + G$
 - ii. Income approach $Y = \underline{\hspace{1cm}} + S^p + \underline{\hspace{1cm}}$
 - combining (i) and (ii) $S^p - \underline{\hspace{1cm}} = G - \underline{\hspace{1cm}}$
 - b. For an Open Economy:
 - iii. Spending approach $Y = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + G + \underline{\hspace{1cm}} - IM$
 - iv. Income approach $Y = \underline{\hspace{1cm}} + S^p + \underline{\hspace{1cm}}$
 - v. Current Account Definition $CA = \underline{\hspace{1cm}} - \underline{\hspace{1cm}}$
 - combining (iii), (iv), and (v) $S^p - \underline{\hspace{1cm}} = G - \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$
2. The following chart lists savings, investment, the government budget surplus, and the current account surplus, all relative to GNP, for a number of hypothetical countries.
 - a. Fill in the missing entries in the chart.

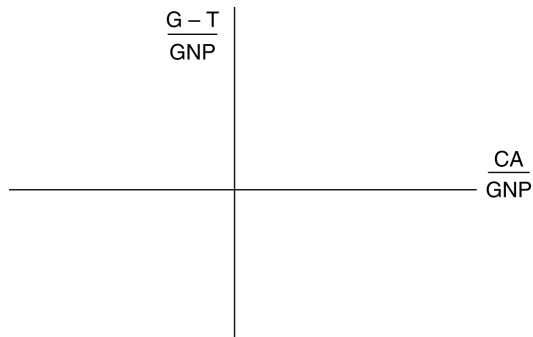
Country	S/GNP	I/GNP	$(G - T)/GNP$	CA/GNP
Oceania	0.22	0.20	0.02	_____
Armansk	_____	0.15	-0.01	0.08
Naboo	0.17	0.22	_____	-0.05
Klingon	0.21	_____	0.05	0.01

- b. In the graph below, plot the line that represents all points where the budget deficit equals the current account deficit. Then plot the points corresponding to the appropriate values for the four hypothetical countries. Do you see a relationship between budget deficits and current account deficits? Why or why not?



- c. Below are values for the budget surpluses or deficits, and the current account surpluses or deficits for a number of countries (all data are for 2000, and are expressed as percent of GNI [Source: IFS Annual 2001]. Note that $G - T$ is the budget deficit, so a negative number is a budget surplus. Plot these points.

Country	U.S.	Mexico	South Africa	Thailand	Sweden	Ireland
$(G - T)/GNP$:	-2.6	1.3	1.9	2.3	-6.1	-3.6
CA/GNP :	-4.5	-3.1	-0.3	7.6	2.9	-0.6



Do you find a relationship between budget deficits and current account deficits for these countries? Why or why not?

3. Below is a roster of transactions for the mythical economy of Freedonia. Use this roster of transactions to complete the balance of payments chart which follows. (All transactions are in millions of Freedonian dollars.)

Description	Amount
a. Sale of stock in the Freedonian Balloon Company to U.S. investors	\$ 8
b. Payment of dividends to Italian shareholders in Freedonia Balloon Co.	\$ 9
c. Purchase of British tea sets	\$ 5
d. Purchase of American cowboy hats	\$ 8
e. Sale of Freedonian cigars to Belgium	\$ 3
f. Sale of Freedonia's largest hotel to Japanese investors	\$14
g. Purchase of IBM stock by several Freedonian investors	\$10
h. Sale of Freedonian harps to Switzerland	\$22
i. Purchase of Canadian hockey sticks	\$ 5
j. Rental of hotel rooms by German tourists in Freedonia	\$ 3
k. Sale of Freedonian croquet mallets to Great Britain	\$11
l. Purchases of French Francs by Freedonian Central Bank	\$18
m. Foreign aid to Freedonia from Bolivia	\$ 5
n. Purchases of beef from Argentina	\$ 4
o. Sale of Freedonian dollars to the U.S. Federal Reserve	\$ 8
p. Remittance of dividends to Freedonian shareholders of Chrysler stock	\$ 3
q. Purchase of cars from Yugoslavia	\$12
r. Sale of socks to Australia	\$ 6
s. Sale of a large Freedonian farm to a British citizen	\$ 2
t. Purchase of restaurant meals in Israel by Freedonian tourists	\$ 1
u. Freedonian foreign aid to Mongolia	\$ 1

The Freedonia Balance of Payments Account (Millions of Freedonia Dollars)

Current Account	
1. Exports of which:	_____
2. Merchandise	_____
3. Investment Income Received	_____
4. Imports of which:	_____
5. Merchandise	_____
6. Investment Income Paid	_____
7. Net Unilateral Transfers	_____
8. Balance on Current Account	_____
Financial Account	
9. Freedonian assets held abroad (increase –) of which:	_____
10. Official Reserve Assets	_____
11. Other Assets	_____
12. Foreign assets held in Freedonia of which:	_____
13. Official Reserve Assets	_____
14. Other Assets	_____
15. Balance on Financial Account	_____
16. Statistical Discrepancy	_____

■ **Answers to Odd-Numbered Textbook Problems**

1. The reason for including only the value of final goods and services in GNP, as stated in the question, is to avoid the problem of double counting. Double counting will not occur if intermediate imports are subtracted and intermediate exported goods are added to GNP accounts. Consider the sale of U.S. steel to Toyota and to General Motors. The steel sold to General Motors should not be included in GNP since the value of that steel is subsumed in the cars produced in the United States. The value of the steel sold to Toyota will not enter the national income accounts in a more finished state since the value of Toyota goes towards Japanese GNP. The value of the steel should be subtracted from GNP in Japan since U.S. factors of production receive payment for it.

3. a. The purchase of the German stock is a debit in the U.S. financial account. There is a corresponding credit in the U.S. financial account when the American pays with a check on his Swiss bank account because his claims on Switzerland fall by the amount of the check. This is a case in which an American trades one foreign asset for another.

- b. Again, there is a U.S. financial account debit as a result of the purchase of a German stock by an American. The corresponding credit in this case occurs when the German seller deposits the U.S. check in its German bank and that bank lends the money to a German importer (in which case the credit will be in the U.S. current account) or to an individual or corporation that purchases a U.S. asset (in which case the credit will be in the U.S. financial account). Ultimately, there will be some action taken by the bank which results in a credit in the U.S. balance of payments.

- c. The foreign exchange intervention by the French government involves the sale of a U.S. asset, the dollars it holds in the United States, and thus represents a debit item in the U.S. financial account. The French citizens who buy the dollars may use them to buy American goods, which would be an American current account credit, or an American asset, which would be an American financial account credit.
 - d. Suppose the company issuing the traveler's check uses a checking account in France to make payments. When this company pays the French restaurateur for the meal, its payment represents a debit in the U.S. current account. The company issuing the traveler's check must sell assets (deplete its checking account in France) to make this payment. This reduction in the French assets owned by that company represents a credit in the American financial account.
 - e. There is no credit or debit in either the financial or the current account since there has been no market transaction.
 - f. There is no recording in the U.S. Balance of Payments of this offshore transaction.
- 5.
- a. Since noncentral bank financial inflows fell short of the current-account deficit by \$500 million, the balance of payments of Pecunia (official settlements balance) was $-\$500$ million. The country as a whole somehow had to finance its \$1 billion current-account deficit, so Pecunia's net foreign assets fell by \$1 billion.
 - b. By dipping into its foreign reserves, the central bank of Pecunia financed the portion of the country's current-account deficit not covered by private financial inflows. Only if foreign central banks had acquired Pecunian assets could the Pecunian central bank have avoided using \$500 million in reserves to complete the financing of the current account. Thus, Pecunia's central bank lost \$500 million in reserves, which would appear as an official financial inflow (of the same magnitude) in the country's balance of payments accounts.
 - c. If foreign official capital inflows to Pecunia were \$600 million, the Central Bank now increased its foreign assets by \$100 million. Put another way, the country needed only \$1 billion to cover its current-account deficit, but \$1.1 billion flowed into the country (500 million private and 600 million from foreign central banks). The Pecunian central bank must, therefore, have used the extra \$100 million in foreign borrowing to increase its reserves. The balance of payments is still -500 million, but this is now comprised of 600 million in foreign central banks purchasing Pecunia assets and 100 million of Pecunia's central bank purchasing foreign assets, as opposed to Pecunia selling 500 million in assets. Purchases of Pecunian assets by foreign central banks enter their country's balance of payments accounts as outflows, which are debit items. The rationale is that the transactions result in foreign payments to the Pecunians who sell the assets.
 - d. Along with noncentral bank transactions, the accounts would show an increase in foreign official reserve assets held in Pecunia of \$600 million (a financial account credit, or inflow) and an increase in Pecunian official reserve assets held abroad of \$100 million (a financial account debit, or outflow). Of course, total net financial inflows of \$1 billion just cover the current-account deficit.
7. The official settlements balance, also called the balance of payments, shows the net change in international reserves held by U.S. government agencies, such as the Federal Reserve and the Treasury, relative to the change in dollar reserves held by foreign government agencies. This account provides a partial picture of the extent of intervention in the foreign exchange market. For example, suppose the Bundesbank purchases dollars and deposits them in its Eurodollar account in a London bank. Although this transaction is a form of intervention, it would not appear in the official settlements balance of the United States. Instead, when the London bank credits this deposit in its account in the United States, this transaction will appear as a private financial flow.

9. If both assets and liabilities pay 5 percent, then the net payments on the net foreign debt would be 1.25 percent. While not trivial, this is probably not too bad a burden. At 100-percent net foreign debt to GDP ratio, the net payments are 5 percent. At this point, the payments may be a substantial drain on the economy.

11. If foreigners held 20 percent of their GDP in U.S. assets and the dollar depreciates 10 percent, this would not change the value of foreigners' liabilities (denominated in their own currency), but would make their assets worth 10 percent less. This would result in a change in net foreign assets of 2 percent of GDP. The impact of such a change in the exchange rate will obviously depend on the initial amount of foreign assets held in dollars.

13. Looking at the last two lines of the table, we see that market value of direct investment abroad is \$4,377,830 million. This is \$1,522,211 million more than the reported current cost listed in the table. The market value of direct investment in the United States is \$3,222,479 million, which is \$1,123,053 million more than the current cost listed in the table. Thus, assets would go up by \$1,522,211 million and liabilities would go up by \$1,123,053 million if we used market value instead of current cost. Thus, the net position would go up by \$399,158 million ($\$1,522,211 - \$1,123,053$). That is, the net position would be almost 400 billion dollars higher: $\$-2,140,471,000,000$.