

Chapter 1

The Balance of Payments

1.1 Balance-of-Payments Accounting

A country's international transactions are recorded in the balance-of-payments accounts. In the United States, the balance-of-payments accounts are compiled by the Bureau of Economic Analysis (BEA), which belongs to the U.S. Department of Commerce. Up-to-date balance of payments data can be found on the BEA's website at <http://www.bea.doc.gov>.

A country's balance of payments has two main components: the current account and the capital account. The current account records exports and imports of goods and international receipts or payments of income. Exports and income receipts enter with a plus and imports and income payments with a minus. For example, if a U.S. resident buys a SONY CD player from Japan for \$50, then the U.S. current account goes down by \$50. This is because this transaction represents an import of goods worth \$50.

The capital account keeps record of sales of assets to foreigners and purchases of assets located abroad. Thus, the capital account measures changes in a country's net foreign asset position. Sales of assets to foreigners are given a positive sign and purchases of assets located abroad a negative sign. For example, in the case of the import of the CD player, if the U.S. resident pays with U.S. currency, then a Japanese resident (SONY) is buying U.S. assets (currency) for \$50, so the U.S. capital account receives a positive entry of \$50.

The CD player example demonstrates a fundamental principle of balance-of-payments accounting known as *double-entry bookkeeping*. Each transaction enters the balance of payments twice, once with a positive sign and once with a negative sign. To illustrate this principle with another example,

suppose that an Italian friend of yours comes to visit you in Philadelphia and stays at the Ivy Inn. He pays \$200 for his lodging with his VISA credit card. In this case, the U.S. is exporting a service (hotel accommodation), so the current account increases by \$200. At the same time, the Ivy Inn purchases a financial asset worth \$200 (the promise of VISA-Italy to pay \$200), which decreases the U.S. capital account by \$200. (Question: How does this transaction affect the Italian balance of payments accounts?)

The detailed decomposition of the balance-of-payments accounts is as follows:

1. **Current Account:** It measures a country's net exports (i.e., the difference between exports and imports) of goods and services and net international income receipts.
 - (a) **Trade Balance (or Balance on Goods and Services)** The trade balance figure is usually in the news because it is reported monthly by the Department of Commerce.
 - i. **Merchandise Trade Balance (or Balance on Goods):** It equals exports minus imports of goods.
 - ii. **Services Balance:** Includes net receipts from items such as transportation, travel expenditures, and legal assistance.
 - (b) **Income Balance:**
 - i. **Net investment income:** it is the difference between income receipts on U.S.-owned assets abroad and income payments on foreign-owned assets in the United States. It includes international interest and dividend payments and earnings of domestically owned firms operating abroad.
 - ii. **Net international compensation to employees**
 - (c) **Net Unilateral Transfers:** It is the difference between gifts (that is, payments that do not correspond to purchases of any good, service, or asset) received from the rest of the world and gifts made by the U.S. to foreign countries.
2. **Capital Account:** Difference between sales of assets to foreigners and purchases of assets held abroad.
 - (a) U.S. assets held abroad consist of:
 - i. Official reserve assets
 - ii. Other assets

- (b) Foreign assets held in the U.S. consist of:
 - i. Official reserve assets
 - ii. Other assets

The components of the balance-of-payments accounts are linked by the following accounting identities:

$$\begin{aligned}\text{Trade Balance} &= \text{Merchandise Trade Balance} \\ &+ \text{Services Balance}\end{aligned}$$

$$\begin{aligned}\text{Current Account Balance} &= \text{Trade Balance} \\ &+ \text{Income Balance} \\ &+ \text{Net Unilateral Transfers}\end{aligned}$$

The sum of a country's net exports of goods and services, net international income receipts, and net unilateral transfers must necessarily be reflected in an equivalent change in its net foreign asset position. That is, the current account equals the difference between a country's purchases of assets from foreigners and its sales of assets to them, which is the capital account preceded by a minus sign. This relationship is known as the **fundamental balance-of-payments identity**:

$$\text{Current Account Balance} = - \text{Capital Account Balance}$$

Table 1.1 displays the U.S. balance-of-payments accounts for 1999. In that year, the country experienced a deficit in both the current and the trade balance accounts. This is not a rare occurrence. In fact, the trade balance and the current account have been in deficit for more than 15 years. The difference between the current account and the trade balance in 1999 is explained mainly by large net unilateral transfers of about half a percent of GDP. Typically, the U.S. makes more gifts to other nations than it receives. Net unilateral transfers have been negative since the end of World War II, with one exception. In 1991, net unilateral transfers were positive because of the payments the U.S. received from its allies in compensation for the expenses incurred during the Gulf war. Note also that in 1999 the U.S. was a net importer of goods, with a merchandise trade deficit of 3.7% of GDP and at the same time a net exporter of services, with a service balance surplus of about 1% of GDP. This illustrates that the merchandise trade balance may be a misleading approximation of the total trade balance.

Table 1.1: U.S. Balance-of-Payments Accounts, 1999.

Item	Billions of dollars	Percentage of GDP
Current Account	-331.5	-3.6
Trade Balance	-265.0	-2.8
Merchandise Trade Balance	-345.6	-3.7
Services Balance	80.6	0.9
Income Balance	-18.4	-0.2
Net Unilateral Transfers	-48.0	-0.5

Source: Department of Commerce, Survey of Current Business, July 2000. Available on the web at www.bea.doc.gov.

Table 1.2 displays the trade balance (TB), the current account balance (CA), and the trade share as percentages of GDP in 1996 for Germany, Japan, Mexico, and the United States. The trade share is defined as the sum of exports and imports of goods and services divided by GDP and is commonly used as a measure of an economy's openness to trade.¹ The table illustrates that the trade balance and the current account need not have the same sign. For instance, both Germany and Mexico have a trade balance surplus and a current account deficit. In the case of Mexico, the current account is in deficit because net investment income is negative and large in absolute value. Mexico's negative net investment income is a consequence of the fact that Mexico is a net debtor to the rest of the world and thus must make interest payments to service its foreign debt. Germany's current account deficit is a different story. It arises because Germany makes large unilateral transfers to the rest of the world. Japan is the only country in the table with a current account larger than the trade balance. This situation is explained by the fact that, unlike the other countries in the table, Japan is a net lender to the rest of the world and therefore receives significant positive net investment income. Finally, the table also shows that countries can display quite some variation in their degree of openness to trade. Germany

¹The trade balance, for example, is not a good measure of openness. To see why, consider an economy in which both exports and imports are 50% of GDP. Clearly, this economy trades a great deal with the rest of the world and can therefore be considered to be very open. Nevertheless, its trade balance is zero, which is the same trade balance an economy that does not trade at all with the rest of the world would show.

Table 1.2: Trade balance, current account, and trade share as percentages of GDP in 1996 for selected countries

Country	TB	CA	Trade Share
Germany	1.08	-0.51	46.00
Japan	0.40	1.22	17.00
Mexico	1.34	-0.39	42.00
U.S.	-1.43	-1.98	24.00

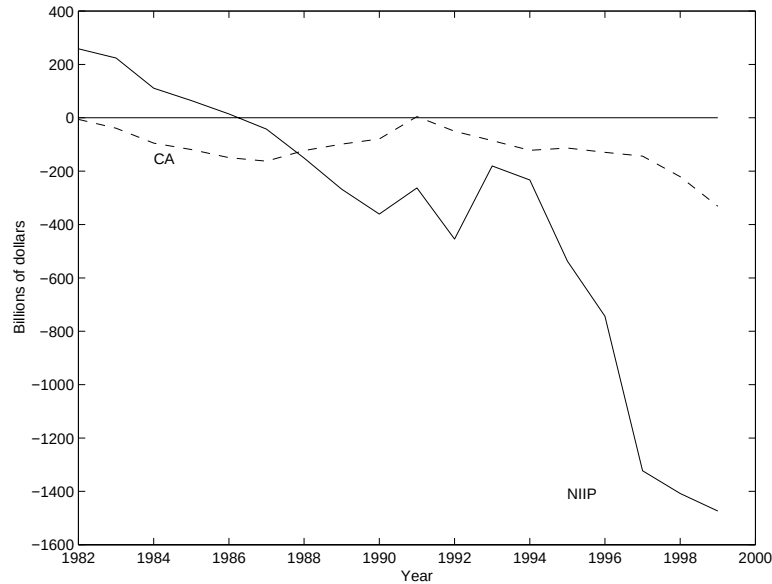
Source: 1998 World Development Report, tables 15 and 20.

Available on the web at www.worldbank.org/wdr/wdr98.

and Mexico, for example, appear to be much more open to trade than Japan and the U.S.

The reason why the concept of Current Account Balance is economically important is that it reflects changes in a country's net international investment position. Net international investment position is a technical term to refer to a country's net foreign wealth, that is, the difference between foreign assets owned by U.S. residents and U.S. assets owned by foreigners. The net international investment position is a stock while the current account is a flow. Figure 1.1 shows the U.S. current account balance since 1982 along with a measure of the nation's net international investment position. The United States had accumulated substantial foreign wealth by the early 1980s when a string of current account deficits of proportions unprecedented in the twentieth century opened up. In 1987, the nation became a net debtor to foreigners for the first time since World War I. The negative current account deficits did not stop in the 1990s. In 1997 the United States was the world's biggest foreign debtor, with a net foreign asset position of -1,322 billion dollars. However, this situation should be interpreted with some perspective. The United States is also the country with the largest GDP. In 1997, the U.S. foreign debt represented about 15% of the country's GDP. In other nations, such as Brazil, Argentina, and Mexico, foreign debt is between 35% and 50% of GDP.

Figure 1.1: The U.S. Current Account (CA) and Net International Investment Position (NIIP)



Source: Economic Report of the President, 1992 and 1998; and Survey of Current Business, July 2000.

1.2 Net Foreign Asset Position and Expected Future Trade and Current Account Balances

A natural question that arises from our description of the recent history of U.S. external accounts is whether the observed trade balance and current account imbalances are sustainable in the long run. In this section, we develop a simple framework to address this question.

1.2.1 Can a country run a perpetual trade balance deficit?

To address this question, we need to study the relationship between initial net foreign asset holdings and expected future trade balances. A negative net international investment position means that the country as a whole is a debtor to the rest of the world. Thus, the country must generate trade balance surpluses in the future in order to service its foreign debt. Similarly,

a positive net international investment position implies that the country is a net creditor to the rest of the world. The country can therefore run future trade balance deficits. Let's analyze this idea more formally. Consider an economy that lasts for only two periods, period 1 and period 2. Let TB_1 denote the trade balance in period 1, CA_1 the current account balance in period 1, and B_1^* the country's net international investment position (or net foreign asset position) at the end of period 1. For example, if the country in question was the U.S. and period 1 was meant to be 1999, then $CA_1 = -331.5$ billion, $TB_1 = -265.2$, and $B_1^* = -1,474$ billion. Net investment income in period 1 is equal to the return on net foreign assets held by the country's residents between periods 0 and 1. Let r denote the interest rate paid on investments held for one period and B_0^* denote the net foreign asset position at the end of period 0. Then

$$\text{Net investment income in period 1} = rB_0^*$$

In what follows, we ignore net international compensation to employees and net unilateral transfers by assuming that they are always equal to zero. Then the current account equals the sum of net investment income and the trade balance, that is,

$$CA_1 = rB_0^* + TB_1 \quad (1.1)$$

The current account, in turn, represents the amount by which the country's net foreign asset position changes in period 1, that is,

$$CA_1 = B_1^* - B_0^*. \quad (1.2)$$

Combining equations (1.1) and (1.2) to eliminate CA_1 yields:

$$B_1^* = (1 + r)B_0^* + TB_1$$

A relation similar to this one must also hold in period 2. So we have that

$$B_2^* = (1 + r)B_1^* + TB_2$$

Combining the last two equations to eliminate B_1^* we obtain

$$(1 + r)B_0^* = \frac{B_2^*}{(1 + r)} - TB_1 - \frac{TB_2}{(1 + r)} \quad (1.3)$$

Now consider the possible values that the net foreign asset position at the end of period 2, B_2^* , can take. If B_2^* is negative ($B_2^* < 0$), it means that in

period 2 the country is acquiring debt to be paid off in period 3. However, in period 3 nobody will be around to collect the debt because the world ends in period 2. Thus, the rest of the world will not be willing to lend to our country in period 2. This means that B_2^* cannot be negative, or $B_2^* \geq 0$. This restriction is known as the no-Ponzi-game condition.² Can B_2^* be strictly positive? The answer is no. A positive value of B_2^* means that the country is lending to the rest of the world in period 2. But clearly the country will be unable to collect this debt in period 3 because, again, the world ends in period 2. Thus, the country will never choose to hold a positive net foreign asset position at the end of period 2. If B_2^* can be neither positive nor negative, it must be equal to zero:

$$B_2^* = 0.$$

Using this expression, (1.3) becomes

$$(1+r)B_0^* = -TB_1 - \frac{TB_2}{(1+r)}. \quad (1.4)$$

This equation states that a country's initial net foreign asset position must equal the present discounted value of its future trade deficits. Our claim that a negative initial net foreign wealth position implies that the country must generate trade balance surpluses in the future can be easily verified using equation (1.4). Suppose that the country is a net debtor to the rest of the world ($B_0^* < 0$). Clearly, if it never runs a trade balance surplus ($TB_1 \leq 0$ and $TB_2 \leq 0$), then the left-hand side of (1.4) is negative while the right-hand side is positive, so (1.4) would be violated.

Thus, the answer to the question of whether a country can run a perpetual trade balance deficit is yes, provided the country's initial net foreign asset position is positive. Because the U.S. is currently a net foreign debtor to the rest of the world, it follows that it will have to run trade balance surpluses at some point in the future.

1.2.2 Can a country run a perpetual current account deficit?

In a finite-horizon economy like the two-period world we are studying, the answer to this question is, again, yes, provided the country's initial net

²This constraint on terminal asset holdings is named after Charles K. Ponzi, who introduced pyramid schemes in the 1920s in Massachusetts. To learn more about the remarkable criminal career of Ponzi, visit <http://www.mark-knutson.com>.

foreign asset position is positive. To see why, note that an expression similar to (1.2) must also hold in period 2, that is,

$$B_2^* - B_1^* = CA_2.$$

Combining this expression with equation (1.2) to eliminate B_1^* , we obtain

$$B_0^* = -CA_1 - CA_2 + B_2^*$$

Imposing the no-Ponzi-game condition $B_2^* = 0$, it follows that

$$B_0^* = -CA_1 - CA_2. \quad (1.5)$$

This equation says that a country's initial net foreign asset position must be equal to the sum of its current account deficits. Suppose the country's initial net foreign asset position is negative, that is, $B_0^* < 0$. Then for this country to satisfy its intertemporal budget constraint (equation (1.5)) the sum of its current account surpluses must be positive ($CA_1 + CA_2 > 0$), that is, the country must run a current account surplus in at least one period.

1.3 Measuring a country's net international investment position

It is surprisingly hard to measure accurately a country's net international investment position, or net foreign wealth. We saw earlier that the current account balance measures the flow of new net claims on foreign wealth that a country acquires by exporting more goods and services than it imports. This flow is not, however, the only factor that causes a country's net foreign wealth to change. For example, take another look at figure 1.1, which shows the U.S. current account balance and its net international investment position between 1982 and 1997. Between 1996 and 1997 U.S. net foreign assets declined by \$579 billion while the current account deficit was only \$143 billion. Thus, \$436 billion of the total decline in net foreign assets must be accounted for by transactions not recorded in the current account. The two most important sources of those changes in net foreign wealth are unrecorded capital flows, which show up in the balance of payments accounts as errors and omissions, or as "statistical discrepancy". In 1997, the statistical discrepancy was \$-143 billion which is as large as the current account deficit itself. Second, changes in the market price of wealth previously acquired can alter a country's net foreign wealth. During 1997

the Department of Commerce calculated that on a market-value basis, U.S.-owned assets abroad at the end of 1996 appreciated in dollar value by \$660 billion. At the same time, the dollar value of foreign-owned assets in the U.S. at the end of 1996 rose by \$1,239 billion. In economic terms, the true dollar U.S. current-account deficit for 1997 is probably better approximated by

$$\begin{aligned}
 \text{true U.S. current account} &= \text{recorded current account} \\
 &\quad - \text{statistical discrepancy} \\
 &\quad + \text{appreciation of U.S.-owned assets abroad} \\
 &\quad - \text{appreciation of foreign-owned assets in the U.S.} \\
 &= -143 - (-143) + 660 - 1,239 \\
 &= -579 \text{ billion}
 \end{aligned}$$

than by its recorded measure.³

1.4 Saving, Investment, and the Current Account

As documented by figure 1.1, since the early 1980s the U.S. current account has displayed large deficits, reaching 3.6% of GDP in 1999. This development has received a lot of attention in the press and by professional and academic economists. Often, explanations of the phenomenon are based on one of the following “alternative theories” of current account determination: (1) Large current account deficits originate from too much borrowing by U.S. residents from the rest of the world. (2) The current account deficits are caused by large trade imbalances: Americans are importing too much and exporting too little. (3) The U.S. is running current account deficits because people are not saving as much as they used to. Alternatively, a more optimistic interpretation of the matter is that, in fact, current account deficits are a good thing because they are due not to insufficient savings, but rather caused by high levels of domestic investment. (4) The root of the problem lies in the fact that the country is living beyond its means; domestic absorption exceeds national income. At first glance, these four statements seem like different explanations of the same phenomenon. However, we show in this section, they represent neither “theories” of current account deficits

³Other factors that explain differences between changes in net foreign wealth and the recorded current account are expropriations of foreign assets and default on international debt, both of which reduce a country’s net international investment position.

nor are distinct. They simply represent accounting identities all of which must be satisfied at all times in any economy.

A basic concept that we introduced in earlier in this chapter is that the current account measures the change in the net foreign asset position of a country:

$$CA_t = B_t^* - B_{t-1}^*,$$

where CA_t denotes the country's current account in period t and B_t^* the country's net foreign asset holdings at the end of period t .

Another basic relationship derived above links the current account to the trade balance and net investment income (again, we are ignoring net international compensation to employees and net unilateral transfers):

$$CA_t = TB_t + rB_{t-1}^*, \quad (1.6)$$

where TB_t denotes the trade balance in period t and r denotes the interest rate.

The trade balance measures the difference between a country's exports and imports of goods and non-financial services. That is, letting X_t stand for exports in period t and IM_t for imports in period t , the trade balance is given by

$$TB_t = X_t - IM_t. \quad (1.7)$$

The difference between the amount of goods and services a country produces domestically and the amount of goods and services a country uses for consumption and investment purposes must necessarily be equal to the difference between the country's exports and imports, which is precisely the trade balance. Let Q_t denote the amount of goods and services produced domestically in period t . This measure of output is typically referred to as gross domestic product (GDP). Let C_t denote the amount of goods and services consumed domestically in period t and I_t denote the amount of goods and services used for domestic investment (in plants, infrastructure, etc.) in period t . We will refer to C_t and I_t simply as consumption and investment in period t , respectively. Then we have

$$X_t - IM_t = Q_t - C_t - I_t$$

or, combining this expression with equation (1.7),

$$TB_t = Q_t - C_t - I_t \quad (1.8)$$

Plugging this relation into equation (1.6) yields

$$CA_t = rB_{t-1}^* + Q_t - C_t - I_t$$

The sum of GDP and net investment income, is called national income, or gross national product (GNP). We will denote national income in period t by Y_t , that is,

$$Y_t = Q_t + rB_{t-1}^*.$$

Combining the last two expressions results in the following representation of the current account

$$CA_t = Y_t - C_t - I_t. \quad (1.9)$$

National savings, which we will denote by S_t , is defined as the difference between income and consumption, that is,

$$S_t = Y_t - C_t.$$

It then follows from equation (1.9) that the current account is equal to saving minus investment,

$$CA_t = S_t - I_t \quad (1.10)$$

According to this relation, a deficit in the current account occurs when a country's investment exceeds its saving. Conversely, a current account surplus obtains when a country's investment falls short of its saving.

Another concept frequently used in macroeconomics is that of absorption, which we will denote by A_t . A country's absorption is defined as the sum of consumption and investment,

$$A_t = C_t + I_t$$

Combining this definition with equation (1.9), the current account can be expressed as the difference between income and absorption:

$$CA_t = Y_t - A_t \quad (1.11)$$

Summing up, we have derived four alternative expressions for the current account:

$$\begin{aligned} CA_t &= B_t^* - B_{t-1}^* \\ CA_t &= rB_{t-1}^* + TB_t \\ CA_t &= S_t - I_t \\ CA_t &= Y_t - A_t \end{aligned}$$

which emphasize the relationship between the current account and alternative macroeconomic aggregates: respectively, the accumulation of foreign assets, the trade balance, savings and investment, and income and absorption.

