# Lecture Notes 8

## Accounting as a Conceptual Framework

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International macroeconomics concerns itself with a number of variables that are often ignored in more microeconomically focused analyses of the international economy. Some of these are common to any macroeconomic analysis: aggregate output and employment, the money supply, the price level, the interest rate. Others are peculiar to the macroeconomics of the open economy: the exchange rate, the balance of payments, the relative price of traded and non-traded goods, and international capital flows.

The national income accounts and balance of payments accounts are two key data sources for macroeconomic aggregates. This Course Supplement introduces some useful accounting identities from the national income accounts and balance of payments accounts. An identity is an algebraic relationship that is true by definition. An identity therefore has no independent economic content. However, these identities have been selected for their usefulness in categorizing interesting macroeconomic aggregates. In this sense, they can offer insights into macroeconomic relationships. (Much more interesting insights emerge elsewhere, of course, when we develop causal links between the aggregates.)

8.1 Balance of Payments Accounting: The Basic Concepts

The balance of payments accounts record the economic transactions between domestic residents and the rest of the world over a given period of time. As much as possible they capture international flows of goods, services, and financial claims. This data is often used by policy makers to predict the effects of international conditions on the domestic economy. Successful use of the balance of payments accounts for policy purposes depends, of course, on a sound understanding of their construction.

Residence

The concept of residence applies to individuals, firms, institutions, and government. With the exception of government employees—such as diplomats or military personnel—the balance of payments acknowledges a difference between residence and citizenship. You may reside abroad long enough to establish legal residency in another country, but this does not imply that you give up your citizenship. The balance of payments records transactions between residents of different nations, so once you establish residence in a new country, your transactions in that country no longer enter the balance of payments. (Government employees, however, are not considered to establish residence abroad no matter how long they actually reside abroad.)

The foreign affiliates of domestic corporations are also generally considered foreign residents, even when they are wholly owned by the parent company.¹

¹We can classify foreign affiliates as subsidiaries (which are legally incorporated abroad)
So if a foreign affiliate acquires materials from its parent company, this transaction enters the balance of payments accounts. (In contrast, international organizations are always considered foreign residents: they are not considered residents of any nation.)

**Transactions**

A balance-of-payments transaction is just a transfer of economic value from a resident of one country to a resident of another country. The economic value may be a tangible good, an economic service, or a financial asset. We consider the transaction to take place at the time of the change of ownership.\(^2\)

The balance of payments accounts record transactions between foreign and domestic residents under a few useful categories. Roughly speaking, a balance-of-payments transaction is recorded in the Current Account if it involves goods or services (or unilateral transfers); it is recorded in the Capital and Financial Account if it involves financial assets. You can think of the Current Account as recording transactions in *current* goods and services, while the Capital and Financial Account records transactions in claims to *future* goods and services. The Financial Account is often disaggregated into the Nonreserve Financial Account (sometimes called the Private Capital Account), which records net flows of portfolio investment and direct foreign investment, and the Official Reserve Transactions Account, which records changes in the government’s net holdings of international reserve assets.

### 8.1.1 Debits and Credits

An inflow of value is recorded as a debit. An outflow of value is recorded as a credit.

For example, the value of imported televisions appears as a debit in the current account. If the importer paid for televisions by check, the transfer of ownership of the deposits to the foreign exporter is recorded as a credit in the Financial Account. Suppose $1M worth of televisions were imported. These transactions could be recorded as follows.

<table>
<thead>
<tr>
<th></th>
<th>Credit (+)</th>
<th>Debit (-)</th>
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<td>Current Account</td>
<td>$1M</td>
<td></td>
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<tr>
<td>Capital and Financial Account</td>
<td>$1M</td>
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Note how this exchange enters the balance of payments accounts twice, as a credit and a debit of the same value. This reflects the double-entry bookkeeping principles underlying the balance of payments accounts.

\(^2\)This follows the *Balance of Payments Manual* of the International Monetary Fund. Ownership is normally considered to change when the the transacting parties record the transaction; details are in the *Manual*. 

and branches (which are not). Although foreign branches are usually considered foreign residents for balance of payments purposes, the permanence and “center of interest” of their operations are considered to be the determinants of residency. For tax purposes, however, a foreign branch is considered a domestic resident.
The balance of payments accounts use double-entry bookkeeping principles: each transaction generates a debit (value inflow) and a credit (value outflow). In principle each debit and credit should be recorded in the appropriate account when it occurs, but this is impossible in practice. Instead total debits and credits are estimated independently for various subaccounts. The next section presents various subaccounts and discusses how these would record a variety of international transactions.

8.2 The Balance Of Payments Accounts

8.2.1 The Current Account

We distinguish four subaccounts of the current account: merchandise trade, services, (factor) income, and unilateral transfers.

The Merchandise Trade subaccount records exports and imports of goods.

The Income subaccount records the income flows generated by internationally held assets, including those held by the monetary authority. For example, this subaccount records payments by foreign residents for domestic land or capital. Interest payments, dividends, and repatriated profits appear here.

Here we record foreign wage payments to domestic residents.

Entries in the Unilateral Transfers subaccount record official foreign aid (government grants) and private remittances. Private remittances include private foreign assistance (e.g., for famine relief), pension payments to retirees who are foreign residents, or remittances from domestic workers to their families abroad. The last of these—money and goods sent to families abroad—is the largest of the private transfers.

Services (called invisibles in the U.K.) include tourism, transportation services, and professional and other services. Transportation services include freight and insurance charges for goods as well as international travel, including tourist travel. Tourist services include all spending abroad by domestic residents.

Since the debits and credits in each account are estimated independently, without making corresponding entries in other accounts, we might expect that errors in measurement—compounded by any deliberately hidden illegal activities—will generate accounts that don’t “balance”. This is in fact the case, and the accounts are balanced by introducing an additional category: the statistical discrepancy, formerly called errors and omissions.

These are called visibles in the U.K. That choice of terminology is actually a good reminder that some trade in goods is invisible (e.g., trade in illegal drugs) and is not recorded in the balance of payments.

Foreign affiliate earnings are recorded even if not remitted. Thus undistributed profits of a foreign affiliate should be measured as if received by the domestic parent.

Note that royalties, and license fees appear under other services.

This follows the 5th edition of the IMF Manual, and is a change from earlier editions.

As of the 5th edition of the IMF Manual, this account now only includes current transfers. Capital transfers, including unilateral debt forgiveness, are now recorded in an equivalent capital subaccount.
CURRENT ACCOUNT

1. Merchandise Trade
2. Services
   - tourism
   - transportation
   - business, professional and other services
3. Income (Factor Services)
   - Investment Income
   - Employee Compensation
4. Unilateral Current Transfers
   (incl. workers remittances)
   - government grants
   - government pensions
   - private remittances and other transfers (including taxes)

CAPITAL AND FINANCIAL ACCOUNT

1. Capital Account
   - Unilateral Capital Transfers
     (debt forgiveness, investment grants)
   - Acquisition/Disposal of IPRs
2. Financial Account (Private)
   - Direct Foreign Investment
   - Portfolio Investment (long term and short term)
3. Financial Account (Official Reserve Transactions)
   (gold, IMF credits and SDRs, foreign exchange reserves)
   - Changes in domestic assets held by foreign monetary authority
   - Changes in foreign assets held by domestic monetary authority

Table 8.1: Accounts and Subaccounts

Residents on goods and services (food, lodging, local transportation, entertainment, and so forth), but not their expenditure on international transportation. Business and professional services encompass banking services, management consultancy, engineering services, educational services, medical services. Royalties and license fees, when paid to or received from a foreign resident, are counted in other services.

8.2.2 The Capital and Financial Account

The capital and financial account keeps track of the change of in domestic ownership of foreign assets (called “U.S. Assets Abroad”) and in foreign ownership of domestic assets (called “Foreign Assets in the U.S.”) The capital account keeps track of capital transfers (such as debt forgiveness or migrants transfers) and transactions involving nonproduced, nonfinancial assets (such a patents
or trademarks). The financial account tracks direct investment, portfolio investment, and official transactions in reserve assets. We will disaggregate the Financial Account into the Nonreserve Financial Account (sometimes called the Private Capital Account) and the Official Reserve Transactions Account.

Nonreserve Financial Account

The Nonreserve Financial Account records the net changes in domestic ownership of foreign assets and in foreign ownership of domestic assets. The primary distinction in the Nonreserve Financial Account is between foreign direct investment and portfolio investment. Portfolio investment flows can refer to anything from currency to long term bonds to corporate stock. Portfolio investment is sometimes broken down into short-term capital flows (original term to maturity of less than a year, including liquid funds) and long-term capital flows (of longer or undefined maturity). The categorization of asset flows by contractual maturity was intended to distinguish assets by the investors’ intended holding period. However it is generally agreed that contractual maturity fails to proxy this distinction. It therefore makes sense to emphasize the distinction between direct foreign investment and portfolio investment, where the category of direct foreign investment is intended to indicate the acquisition of a managerial influence.

Official Reserve Transactions

Reserve assets are assets that are “available to and controlled by” the monetary authorities. International reserve assets include gold, foreign exchange reserves, credit issued by the international Monetary Fund, and SDRs. “Reserves” are assets under the control of the monetary authority that can be used in the implementation of balance of payments policy. Monetary authority transactions in international reserve assets are entered in the balance of

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8Gross flows are much larger. While the Nonreserve Financial Account does not include transactions of central banks (monetary authorities), it does include transactions by other government agencies. For example, it would include credit extended by the ExIm Bank.

9I believe the IMF and the World Bank continue to report this breakdown by asset maturity, but the U.S. Department of Commerce has abandoned this distinction due to practical measurement difficulties and dubious economic relevance.

10Short-term assets may be held with the intent to roll them over; long-term assets can be sold before maturity; and an asset with a long-term contractual maturity may have only a few months left to maturity when traded.

11Definitionally, accumulating foreign equity beyond ten percent of book value is considered DFI, as is the purchase of real estate or production facilities.

12SDR is an acronym for Special Drawing Right. SDRs are created by the IMF, with a value defined in terms of a basket of five currencies (dollar, yen, mark, pound, franc) .
payments accounts as Official Reserve Transactions. Do not be confused by the fact that a reduction in foreign exchange reserves implies Official Reserve Transactions is positive: as always, outflows of value are entered in the balance of payments accounts as credits.

An additional category—allocation of special drawing rights—is sometimes included to reflect changes in IMF allocations of SDRs to member nations. The debit of the special drawing rights account of official reserves is then offset by a credit to allocations of special drawing rights.

### 8.2.3 Recording Transactions

The balance of payments uses a broad measure of transactions, one that includes many activities that do not seem to involve exchanges. For example, private and official gifts, pensions, and even expropriations are included. The Unilateral Transfers subaccount of the Current Account allows standard double entry recording of such “transactions”. In other transactions the element of exchange is conceptually more evident even if the actual transfer of goods, services, or assets is invisible. For example, the reinvestment (without remittance) of profits by a foreign subsidiary may be treated in the balance of payments as if the profits had in fact been remitted and then were reinvested abroad by the parent company. Another example is the treatment of domestic currency deposits acquired by a foreign government from a (foreign) resident bank or business: the deposit transfer is recorded in the balance of payments although total foreign claims on U.S. banks are unchanged. (Similarly, the IMF records government purchases and sales of gold to domestic residents in the balance of payments—although the Commerce Department does not.)

It is easiest to understand the balance of payments accounts by recording examples of transactions in an imaginary balance of payments account. Remember, debits record any inflow of value whether through the acquisition of goods, services, or assets or through the reduction of a liability. Similarly, a credit results from any outflow of value, whether from the disbursement of goods, services, or assets or from the increase in a liability. Consider again our example of television imports; the value of an imported television appears as a debit in the merchandise trade account. As another example, the value of banking services provided to foreign residents appears as a credit in the services account. Similarly, the acquisition of foreign stock or even a foreign factory generates a debit in the Capital and Financial Account. Each of these transactions may be thought of as one-half of an international exchange.

For example, when the U.S. exports wheat in exchange for a deposit in a foreign bank, we should record a credit in the U.S. Current Account (for the outflow of the wheat) and a debit in the U.S. Capital and Financial Account.

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13 The monetary authority may be an exchange stabilization fund as well as a central bank.
(for the acquisition of the deposit, an asset). This is a typical export transaction: it generates a Current Account credit and an equal Capital and Financial Account debit. This happens whether the export is paid for by cash, check, or trade credit.\footnote{Trade-credit is the extension, by the exporter or by a bank, of credit to the importer. It therefore appears as a debit (the acquisition of a promissory note) in the exporting country’s Capital and Financial Account.}

**Balance of Payments Accounting Examples**

Suppose that a U.S. manufacturer exports machine tools and receives payment by check. There are two international flows in this transaction, the machine tool going out of the country and the new asset coming into the country. Both of these should be recorded in the balance of payments accounts, which record international flows of goods, services, and assets. The value of a machine tool export should appear as a credit in the Merchandise Trade subaccount, while the value of the bank balances transferred in payment should appear as a debit in the Nonreserve Financial Account.

Now consider a harder example: suppose domestic residents receive additional shares as a dividend on their holdings of foreign equity (stock). Of course the additional shares acquired will generate a debit in the Capital and Financial Account, but what is the corresponding credit? It is a Current Account credit for factor services “exported,” i.e., for the services of the capital represented by the original share ownership.

The oddest examples concern unilateral transfers. Consider the private donations of medical supplies to Kosovo refugees in 1999. This outflow of goods generated a credit to the Current Account, but what was the corresponding debit? We maintain balance in the balance of payments by recording a corresponding debit in the Current Account under Unilateral Transfers. As another example, in 1991 the U.S. received payments from its allies to help finance the Gulf War. The payments of course generated debits in the Capital and Financial Account; the offsetting credit was to Unilateral Transfers (in the Current Account). These credits were large enough to almost completely eliminate the U.S. current account deficit in 1991, and in fact the quarterly data register a current account surplus for the first two quarters of 1991. Occasionally you will hear an ad hoc justification of this as representing an inflow of “goodwill”, but don’t forget that foreign seizure of a domestic ship would look the same in the balance of payments.

As a final example, suppose an exporter decides to sell foreign exchange to the domestic central bank. There is a credit to portfolio investment in the Nonreserve Financial Account, and a debit to official reserve flows.
8.2.4 Interpreting the Data: Net Flows

Data from the balance of payments accounts is generally reported as net flows over a month, quarter, or year. Net flows for any type of transaction are calculated by adding up all the credits and debits. For example, in the U.S. one of the most widely published net flows is the monthly merchandise trade balance. Exports generate credits, which are added to the merchandise trade balance. Imports generate debits, which are subtracted from the merchandise trade balance. The monthly merchandise trade balance therefore tells us by how much exports exceed imports. A deficit in the merchandise trade balance, when the balance is negative, tells us that the country is importing more goods than it is exporting.

The large U.S. merchandise trade deficits have attracted considerable attention, yet the number is not particularly significant. Certainly one month movements of this volatile series tell us little about trends in the balance. But even sustained deficits are not informative, for a sustained deficit in the merchandise trade balance may simply indicate that a country has specialized in the production of services. For this reason, a better measure of the “trade balance” is the quarterly balance on goods and services. The balance on goods, services, and income is still more informative about whether a country is tending to live within its current productive capacity—including its earnings on foreign investments. Finally, the current account balance give the best idea of whether current income (including unilateral transfers) is adequate to meet current expenditures.

Statistical Discrepancy

In principle, the current account, Nonreserve Financial Account, and official reserve flows should sum to zero. In practice, they do not. Some transactions are missed, and the statistical discrepancy gives us an idea of the net international transactions not recorded in the balance of payments accounts. In the U.S., the value of the statistical discrepancy has grown tremendously in the past two decades, from a value of -$1.5B in 1969 to $32B in 1995, with a high of $54B in 1990. It is widely believed that this represents a growth in unrecorded services and especially capital flows. For this reason, the reported Capital and Financial Account balance is often the sum of the Nonreserve Financial Account balance and the Statistical Discrepancy.

It is important to note that the missing transactions are not purely random. For the world as a whole, the balance of payments accounts tend to underreport merchandise imports, foreign investment income, and the acquisition of assets
abroad. It is hardly surprising that people hide their imports, their investment income, and their assets abroad from government officials interested in taxing or regulating these flows.

There is a popular impression that the Statistical Discrepancy must reflect illicit drug traffic and the earnings of undocumented immigrant workers. However note that the Statistical Discrepancy in the U.S. often shows a large credit balance, while these items would be likely to generate debits. For example, smuggled drugs should have been entered as a debit in the Merchandise Trade Balance but were not, so this debit should show up in the Statistical Discrepancy.\(^{16}\) Similarly, payments to undocumented workers should have generated a debit to the Services subaccount but do not, so this debit shows up in the Statistical Discrepancy.\(^ {17}\)

The rise in the merchandise trade deficit may be one contributor to the statistical discrepancy in the U.S. This is due to the delayed recording of the credit arrangements used in financing international trade. A rise in the recorded trade deficit will precede the rise in the recorded Capital and Financial Account, and the missing credit will show up in the Statistical Discrepancy. Another possibility is an increase in disintermediated loan activity. For example, when a firm borrows from a foreign affiliate there should be a credit to the Capital and Financial Account, but such transactions are likely to be underreported. The debit side of the transaction nevertheless tends to show up when the borrowed funds are deposited in the banking system. Another possibility is unrecorded foreign purchases of U.S. real estate, especially since the U.S. does not closely monitor foreign real estate holdings. Finally, a contribution may be made by the smuggling of U.S. goods abroad.

**Illegal Transactions** When regulation restricts international transactions, there are incentives to evade these restrictions. Evasion may include outright smuggling of merchandise, but it may take many other forms. We now briefly consider the effects of illegal transactions on the balance-of-payments accounts. The discussion in this section draws on Gandolfo (1995).

We first consider a versatile and popular tool: misinvoicing. It is clear that misinvoicing can be used to evade import tariffs and export duties. For example, an importer may present documents claiming a lower value for imported or exported goods than the value actually paid. This may involve completely forged documents, in which case trade-data comparisons by the partner countries may disclose the illegal transactions. However if the foreign trading partner performs the misinvoicing, the illegal transaction will lead to no discrepancy. So tax evasion leads to underinvoicing, with corresponding

\(^{16}\)That is, it shows up in the Statistical Discrepancy to the extent that the associated credit entries appear in the Capital and Financial Account.

\(^{17}\)Again, it shows up to the extent that associated credit entries appear in the Capital and Financial Account (e.g., when worker earnings are deposited in Mexico).
inaccuracy in the measurement of the balance of trade.

However there can also be incentives to overinvoice imports when capital flows are restricted. For example, a foreign exporter might agree to overinvoice a shipment of goods and credit the discrepancy to a foreign account held (illegally, from the point of view of the domestic country) by the importer. Thus misinvoicing can be used to hide capital outflows. Travel, labor income, and worker’s remittances can be similarly exploited (see Gandolfo (1995, p.85)).

The Overall Balance of Payments

Since the balance-of-payments accounts are kept with double entry bookkeeping, they must balance. In this sense the balance of payments is always zero. However one often encounters discussion of balance-of-payments “imbalances”, or of balance-of-payments deficits. Most often this refers to what is often called the “Overall Balance”: –ORT. From our discussion of the balance-of-payments accounts, this must equal the sum of the Current Account, the Capital and Financial Account, and the Statistical Discrepancy. (Since the Official Reserve Transactions balance should be accurately measured, it is natural to include the statistical discrepancy in this sum.) So when the Overall Balance is in deficit—so that we speak of a balance-of-payments deficit—the monetary authority suffers a drain of official reserve assets. This situation is not permanently sustainable, since access to reserve assets is limited, which suggests the need for a change in policy.

8.3 National Income Accounting

This section develops of some national-income-accounting identities that will be useful throughout the course. We begin with the underlying budget identities of the non-bank private sector, which comprises households and firms. For both households and firms, the sources and uses of income are necessarily equal. Afterwards, we link these directly to the balance of payments.

8.3.1 Firms:

Consumption expenditure \( C \) by consumers, investment expenditure \( I_g \) by firms, and government expenditure \( G \), and purchases by foreign residents (Ex) of domestic goods and (non-factor) services all generate business income. Of course, part of consumption, investment, and government expenditure is on imports (Im), and this part does not generate income for domestic firms. Also, the wages of civil servants \( WN_g \) constitute part of government expenditure, and this too does not generate income for domestic businesses. Total business income is therefore \( C + I_g + (G - WN_g) + Ex - Im \). This income is allocated to wage payments \( WN_f \), to direct and indirect business taxes (BTx), and to
offset depreciation of equipment as a capital consumption allowance (CCA). The remainder is after tax profit ($Pr$).\textsuperscript{18}

$$C + I_g + (G - WN_g) + Ex - Im = WN_f + Pr + BTx + BTr + CCA + \text{intermediate goods} + \text{intermediate goods}$$

Total business income necessarily equals the allocation of business income. Don’t forget that $Ex - Im$ includes non-factor services.

### 8.3.2 Households:

Households are the owners of the factors of production, including their own labor. They derive their income primarily from wages ($WN$) but also from the sale of factor services, both domestically ($Dv$) and abroad ($FP$).\textsuperscript{19} In addition, they receive net transfers ($Tr$). The household budget identity equates total personal income to its use for consumption ($C$), saving ($PS$), and the payment of taxes ($PTx$).

$$WN + Dv + FP + Tr = C + PS + PTx$$

Personal income necessarily equals the uses of personal income.

Note that total transfers comprise business transfers ($BTr$), government transfers ($GTr$), and net unilateral transfers received from non-residents ($UTr$).

$$Tr = BTr + GTr + UTr$$

Wage income may be earned in the private sector ($WN_f$) or in the public sector ($WN_g$).

$$WN = W(N_f + N_g)$$

### 8.3.3 Private sector:

The budget constraint for the entire private sector can be found by summing the budget constraints of households and firms. After simplification, we find our key accounting identity for total income ($Y_T$).\textsuperscript{20}

$$\begin{align*}
\frac{\text{A}}{} & \frac{\text{B}}{} \\
\frac{\text{C + Ig + G + Ex - Im + FP + UTr}}{\text{GDP}} & \frac{\text{C + PS + Pr - Dv + CCA + PTx + BTx - GTr}}{\text{GNP}} \\
\frac{\text{Y_T}}{} & \frac{\text{S + Tx}}{}
\end{align*}$$

\textsuperscript{18}Why isn’t investment on the right, along with intermediate goods? Hint: think about what is done with after tax profits.

\textsuperscript{19}These categories are interpreted extremely broadly. Thus ‘wages’ includes all wages, salaries, and fringe benefits, and income from factor services includes dividends, rents, and net interest.

\textsuperscript{20}IMF (1993, p.13) calls $Y_T$ gross national disposable income.
Note that $Y_T = C + S + Tx$. Here $Y_T = C + I_g + G + Ex - Im + FP + UTr = GDP + FP + UTr = GNP + UTr$ is the total income available to the domestic economy.\textsuperscript{21}

Source: Economic Indicators, July 2005.

Figure 8.1: GNP and Its Components

8.4 Links Between the Domestic and Foreign Sectors

Even in our national income accounting discussion above, we could not ignore the role of the foreign sector altogether. Some domestic expenditure is on imports, some foreign expenditure is on exports, and factor payments and transfers take place across national boundaries.

Our next task is to specify the links between the domestic economy and the rest of the world in more detail. That is, we will link the national income accounting concepts given above with concepts from the balance of payments.

\textsuperscript{21}Note that total income can be written directly in terms of factor incomes: $Y_T = WN + Pr + BTx + BTr + CCA + FP + UTr$. This follows immediately from the budget identity of firms.
The first balance of payments concept we consider is the current account (CA): the net surplus on goods, services, and gifts that domestic residents run with the rest of the world.

\[ CA = \text{Ex} - \text{Im} + \text{FP} + \text{UTr} \]

In order to link our national income accounting concepts with the concept of the current account from the balance of payments, it is useful to define ex post absorption (A) as the total expenditure by domestic residents, whether on domestic or foreign goods and (non-factor) services.

\[ A = C + I_g + G \]

Note that an identity links the current account, total income, and absorption.

\[ CA = Y_T - A \]

The absorption approach to the balance of payments emphasizes this identity, noting that the current account equals the excess of income over expenditure. If we desire to improve the current account, we must raise our total income or lower our absorption. The key assumption that has often been made by financial programmers who take the absorption approach to the balance of payments is that lower absorption is easier to achieve than increases in income, especially in the short run (and especially in the presence of negative profit public enterprises). As a result, severe current account imbalances have often been fought with expenditure reducing policies. Note, however, that we are dealing only with identities at this point—not behavioral equations or equilibrium conditions—so we have no real clues about appropriate way to pursue our policy goals.

Similarly, the identity

\[ CA = (S - I_g) - (G - Tx) \]  \hspace{1cm} (8.1)

suggests that to the extent that \( S \) and \( I_g \) are determined in the private sector, policies to improve the current account should focus on reducing the government budget deficit. While this may be true, it is brash to treat \( S \) and \( I_g \) as exogenous and fixed when deciding on fiscal policy.

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22We must simplify slightly to do this. For example, the standard for national income accounting the System of National Accounts (SNA) of the United Nations. However, as discussed in Appendix I of the IMF Manual, the rest-of-the-world account does not perfectly conform to the IMF balance of payments accounts. Similarly, some work is required to reconcile the U.S. National Income and Product Accounts (NIPA) with the balance-of-payments data in the Survey of Current Business. (See the July issues of the SCB.)

23See Alexander (1952), the originator of the “absorption” terminology, for an early treatment.

24Since sovereignty concerns often keep countries from approaching the IMF until time of severe balance of payments crisis, these are also common IMF stabilization policy proposals. Of course exchange regime liberalization policies are also proposed in order to improve the trade balance, but these are often argued to be more uncertain in timing and effect.
Finally, the identity

\[ CA = [S + (Tx - G)] - I_g \]  \hspace{1cm} (8.2)  

suggests that we can view the current account as being the difference between total national saving (including the budget surplus) and gross private domestic investment. This highlights the fact that a negative current account balance can reflect borrowing abroad in order to finance a high level of domestic investment. Of course, a current account deficit can also reflect a low level of national saving. The policy conclusions may be very different in these two cases, suggesting that the deficit itself is not particularly informative.

While identities cannot shed light on economic behavior—they are just identities after all—they can serve to ferret out some illogical claims made in popular discussions of international economics. For example, it is popular to argue that increased global integration now allows capital and technology to flow to low wage nations, which will then achieve the productivity levels of developed countries but have a huge competitive advantage in lower wages. High wage countries will run huge trade deficits, leading to falling wages or high unemployment.

As Krugman (1995) points out, one problem with this story is that it involves the low wage countries simultaneously running large trade surpluses and receiving large capital inflows. That is, they are financing investment in excess of their saving by borrowing abroad, while selling more goods and services abroad than they are buying there. As (8.2) makes clear, this is not possible. One cannot be simultaneously a net borrower and a net lender. Here is another way to look at this: in order to run large surpluses, the low wage countries must become net exporters of capital to the rest of the world.

### 8.5 Links to the Financial Sector

The current account, as the difference between total domestic income and total domestic expenditures, must determine the change in domestic residents’ net claims on the rest of the world.\(^{25}\)

\[ CA = Y_T - A = \Delta NFA \]  \hspace{1cm} (8.3)  

These net claims (NFA) comprise the net foreign assets of the banking sector \((NFA_{\text{bank,ma}})\) less the foreign indebtedness of nonbank residents \((FI)\), so we can write\(^{26}\)

\[ \Delta NFA = \Delta NFA_{\text{bank,ma}} - \Delta FI \]  \hspace{1cm} (8.4)

---

\(^{25}\)Ignoring possible capital gains and losses on NFA.

\(^{26}\)Note that  

\[ KA = \Delta FI - \Delta NFA_{\text{bank}} \]
One central observation by financial programmers—a minor elaboration of the absorption approach—is that

$$\Delta NFA^{\text{bank, ma}} = Y_T - A + \Delta FI$$

Expenditure beyond total income, which is not financed by borrowing, draws down the net foreign assets of the banking sector. Since foreign exchange reserves are finite, this is not permanently sustainable. (These days it is important to note that the reserve loss may take the form of accumulating arrears.)

### 8.5.1 Monetary Considerations

Traditionally, financial programmers have put primary emphasis on monetary factors in CA determination. Recall:

$$CA = \Delta NFA^{\text{bank, ma}} - \Delta FI$$

Note that since the money supply ($M_2$) is defined to be deposits ($D$, broadly measured) plus currency in circulation ($Cu$, which does not include vault cash), it must equal the domestic currency value of the net foreign assets of the banking sector ($NFA^{\text{bank, ma}}$) plus the domestic credit extended by the banking sector to the government and private sectors ($DC$).

$$M_2/P = NFA^{\text{bank, ma}} + DC/P$$

This identity follows immediately from the simplified banking sector balance sheets below.\(^{27}\)

<table>
<thead>
<tr>
<th>Monetary Authority</th>
<th>Financial Intermediaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>Liabilities</td>
</tr>
<tr>
<td>$P NFA^{\text{ma}}$</td>
<td>$R$</td>
</tr>
<tr>
<td>$DC^{\text{ma}}_{\text{g,p,bank}}$</td>
<td>$Cu$</td>
</tr>
<tr>
<td>$DC^{\text{bank}}_{\text{g,p}}$</td>
<td></td>
</tr>
</tbody>
</table>

### 8.5.2 Financial Programming

Historically, the term “financial programming” is associated with the use of a simple accounting framework to guide IMF supported adjustment programs.\(^{28}\)

Financial programmers attempt to draw policy implications from a theory-supplemented set of accounting identities that link the flow of funds between the non-bank private sector, the banking sector, the government sector, and

\(^{27}\)Current figures for the Federal Reserve can be obtained from the Federal Reserve Bulletin.

\(^{28}\)This discussion draws heavily upon IMF (1987)).
the foreign sector. They tend to focus on the national income accounts, the balance of payments accounts, and the balance sheets of the monetary authorities, the banking system, and the fiscal authorities. These are the basic data available to the programmer in assessing the current state of the economy, although in LDCs there may be important gaps and lags in data availability.

Financial programming developed in the IMF’s Research Department in the late 1950s and early 1960s. Initially it focussed on analysis of the small open economy under fixed exchange rates, paying particular attention to the links between the monetary sector and the balance of payments (Polak, 1957; Prais, 1961). For the next thirty years the basic character of financial programming models consisted of a quantity theory model of price determination with a stabilizing reciprocal link between the monetary sector and the balance of payments: current account deficits drained money from the economy, and the resulting price declines depreciated the real exchange rate and improved the balance of payments. (See Edwards (1989) for an explicit model.)

Data availability is an important consideration in modeling, since it determines the set of observable variables that can be included in a model. The fact that for many countries only monetary and balance of payments data were available on a timely and accurate basis had a strong influence on early financial programming: macroeconomic forecasts were attempted on the basis of this limited data set. (This is an important factor in the popularity of the monetary approach to the balance of payments, which we will discuss later.) Perhaps the most important role of the accounting identities emphasized by the IMF, however, has been to act as a consistency check on forecasts and policy targets independently generated for different sectors of the economy. That is, the accounting identities can be used as a tool for consistent macroeconomic planning.

From the identities above, we can conclude that

$$CA = \frac{1}{P}(\Delta M2 - \Delta DC - P \Delta FI)$$

This identity has led many financial programmers to focus on control of $\Delta DC$ as the way to improve $CA$.

(i) Choose $CA$ target $CA^t$ (or, equivalently, $\Delta NFA^{bank, ma}_t = CA^t + \Delta FI$).\(^{30}\)

(ii) Project values $\Delta M2, \Delta FI$ (iii) Set $\Delta DC = \Delta M2 - P(\Delta FI - CA^t) = \Delta M2 - P \Delta NFA^{bank, ma}$

Remember, we are still working with identities. (No “Model”.) Nevertheless, this is the basis of the monetary approach to the balance of payments (MABOP). Just add

\(^{29}\)We will aggregate the monetary authorities with the banking sector, whether the relevant transactions are controlled by the treasury, a central bank, or a separate exchange equalization account.

\(^{30}\)CA\(^t\) is often chosen to equal sustainable long term capital flows and unrequited transfers.
Y Exog

$L(i, Y)$ “Stable” and doesn’t depend on $DC$ or $\Delta DC$ (There is some support in developing countries p.14 Dornbusch)

$M2/P = L(i, Y)$

some way to project $i$ and $P$

Here is a particularly simple case, and our first model of this Course Supplement. We assume a constant income velocity of money ($L = k_2 Y$) and impose continuous purchasing power parity ($P = E P^*$). Given real income and net foreign indebtedness, we find that domestic credit expansion implies a current account deficit.

$$CA = k_2 \Delta Y - \Delta DC/P - \Delta FI$$

(8.6)

$$= -\Delta DC/P \quad \text{if} \quad \Delta Y = 0 = \Delta FI$$

(8.7)

The focus is on the difference between any changes in the demand for money and any attempts to change its supply.

Terms and Concepts

capital account, 4

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Problems for Review

1. Consider the following table, based on July 1991 data from the IMF’s *International Financial Statistics*. (The data are given as billions of US dollars.)

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>UK</th>
<th>Germany</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>-99</td>
<td>-22</td>
<td>44</td>
<td>57</td>
</tr>
<tr>
<td>KA</td>
<td>-1</td>
<td>14</td>
<td>-57</td>
<td>-48</td>
</tr>
<tr>
<td>Discrepancy</td>
<td>73</td>
<td>7</td>
<td>18</td>
<td>-22</td>
</tr>
<tr>
<td>ORT</td>
<td>27</td>
<td>1</td>
<td>-5</td>
<td>13</td>
</tr>
</tbody>
</table>

Update this table using last July’s *International Financial Statistics*.

2. For each of the following transactions, correctly record the resulting debits and credits in the U.S. balance of payments accounts (as listed in Table 8.1).

- The U.S. exports $1M worth of grain to Mexico.
- Mexico pays a U.S. exporter $1M in dollars.
- The U.S. exports $1M worth of grain to Mexico, and Mexico pays for this in dollars.
- Honda builds an automobile manufacturing facility in the U.S.
- Japanese investors buy U.S. Treasury bonds and pay by check.

3. The relationships implied by the balance of payments accounts and the national income accounts are identities. How much can they tell us about the macroeconomic links between countries? Why?

4. Locate the *International Financial Statistics Yearbook* in the library and record the U.S. current account deficits for the last decade. Do the same thing with the *Economic Report of the President*. How well do these values match?
Bibliography


Additional Detail

Problem: $\Delta DC = \Delta DC^{ma} + \Delta DC^{bank}$ and $DC^{bank}$ may not be controllable.

$$P\ CA = \Delta M2 - \Delta DC - P\ \Delta FI$$

(8.8)

$$= \Delta M2 - \Delta DC^{ma} - \Delta DC^{bank} - P\ \Delta FI$$

(8.9)

So we may also need to project $\Delta DC^{bank}$ and then choose $\Delta DC^{ma}$. Let’s reconsider the balance sheet of the monetary authorities. Recall that high powered money ($M$) is defined as legal reserves plus currency in circulation, which must equal the net foreign assets of the monetary authorities plus any domestic credit it extends.

$$M = R + Cu = P\ NFA^{ma} + DC^{ma}$$

Thus $P\ \Delta NFA^{ma} = \Delta M - \Delta DC^{ma}$ and, since $P\ \Delta NFA^{ma} = BOP$, deficits in the balance of payments are associated with the monetary authorities extending domestic credit at a rate that exceeds the growth in high powered money. (To understand why this happens, we need a model. Our last one should be suggestive.) So we seem to be suggesting a policy focus on the monetary authorities’ extension of domestic credit.

Problem:

$$P(G - Tx) = \Delta DC^{ma} + \Delta DC^{bank} + P\ \Delta FI_g + \Delta B^g_p$$

Many developing countries find it difficult to place government bonds with the public and difficult to increase their borrowing abroad. Domestic credit then remains under pressure from large budget deficits, and this in turn pressures $CA$. This is one reason why so much emphasis is placed on budget restraint in adjustment programs. To see this, set $\Delta B^g_p = 0$ and note that

$$P\ CA = \Delta M2 - \Delta DC^{ma, bank} - \Delta DC^p - P\ \Delta FI$$

(8.10)

$$= \Delta M2 - P(G - Tx) - \Delta DC^p - P\ \Delta FI_p$$

(8.11)

A financial programmer can project $\Delta DC^p$ by relating it to GNP or investment demand and essentially proceed as before, but now current account targets imply budget deficit targets.

Comment: If we shift attention to balance of payments improvement, we can ask further whether a focus on $CA$ or on $\Delta FI$ is more appropriate. To see this, note that

$$BoP = \Delta NFA^{ma}$$

(8.12)

$$= \Delta NFA^{bank, ma} - \Delta NFA^{bank}$$

(8.13)

$$= CA + \Delta FI - \Delta NFA^{bank}$$

(8.14)

$$= CA + KA$$

(8.15)
Financial programming remains essentially unchanged: (i) choose target BOP \(t\) (ii) forecast your exogenous variables (iii) set policy instruments to achieve target.

But hey, seriously folks, that’s all impossible without a good structural model!

For now, let’s set FP and UTr = 0.\(^{31}\)

Then \(GNP = GDP = Y_T\) and \(CA = Ex - Im(= NX)\). Also, note that in writing net exports as \(NX = Ex - Im\) instead of \(NX = Ex - qIm\), where the real exchange rate \(q = EP^*/P\) allows us to express our imports in units of domestic output, we implicitly set \(q = 1\).

Comment:

\[
\Delta NFA^{\text{bank,ma}} = \Delta NFA^{\text{ma}} + \Delta NFA^{\text{bank}} \\
FI = FI_g + FI_p \quad \text{government and private} \\
\Delta DC = \Delta DC^{\text{ma}}_{g&p} + \Delta DC^{\text{bank}}_{g&p} 
\]

(Note: \(DC^{\text{ma}}_{\text{bank}} = -DC^{\text{bank}}_{\text{ma}}\))

\(M2 = \text{mult} * M \rightarrow \Delta M2 = \text{mult} * \Delta M\)

\(M = P \text{ NFA}^{\text{ma}} + DC^{\text{ma}} \rightarrow \Delta M = P \Delta NFA^{\text{ma}} + \Delta DC^{\text{ma}}\)

\(M\) doesn’t include government deposits in banks, and \(DC^{\text{ma}}\), is net of these.

FP: net factor income received from abroad (including labor income only if non-resident, i.e., less than one year abroad.)

UTr: net transfers from abroad

Im includes imported intermediate goods and raw materials

In the presence of constraints on capital flows the story is slightly more involved. The monetary effects of the balance of payments: \(BOP < 0\) due to “excessive” money supply (increased Im \(\rightarrow\) (increases in all spending \(\rightarrow\) increased spending on foreign things) \(\rightarrow\) BOP deficit). Solution: monetary contraction \(\rightarrow\) decreased \(Y\), increased \(i\) \(\rightarrow\) increased \(BOP\).

Here is how the process is described by Edwards (1989). After an initial country evaluation, the IMF would

1. choose targets (for inflation, foreign reserves, etc.)

2. estimate “exogenous” components of the balance of payments (such as exports and interest payments)

3. determine the level of imports compatible with (1) and (2)

\(^{31}\)FP will be crucial later, when we consider the portfolio balance effects of foreign asset accumulation. It is also worth noting that some attention has been paid to the non-interest current account, \(NICA = CA - FP\). The idea here is that high interest payments by debtor countries put their \(CA\) into deficit, disguising the ”net resource transfer” o the ROW.
4. If the level of imports in (3) differs from the trend, decide whether devaluation is needed. If a devaluation is needed, return to step (2).

5. Forecast money demand, which requires forecasting nominal income and velocity. (Velocity is often treated as exogenous.)

6. Need interest rates be changed? If so, return to step (5) to revise forecasts.

7. Determine the relationship between money and high powered money.

8. Calculate the level of DC compatible with the NFA target.

9. Check DC target for realism and consistency, focusing on the public sector demand for domestic credit.

10. If DC target cannot be met, seek new sources of adjustment (e.g., demand reduction, supply expansion, financial policies). Return to (1) and iterate to consistency.

11. Determine quantitative and non-quantitative "performance criteria" for program monitoring.

12. Negotiate the program with the country’s authorities.

The early static models used for these exercises are slowly being replaced with dynamic models that include an explicit role for expectations.

**Notation**

\( A \) Real absorption.\(^{32}\)

\( A(\cdot, \cdot, \cdot) \) A function returning the value of real absorption given the values of real government expenditure, real total income, and real wealth.

\( G \) Real government expenditure on final goods and services.

\( Y_T \) Real total income.

\( \Omega \) Nominal wealth.

\( P \) Domestic price level (the domestic currency price of a unit of domestic GDP).

\( CA \) Real current account.

\(^{32}\)Nominal means measured in domestic currency units (e.g., dollars in the U.S.). Real means measured in units of domestic GDP. You find the real value by dividing the nominal value by the GDP deflator, \( P \).
NX(·,·) A function returning the real value of the trade balance given the real exchange rate and real total income.

$E$ Nominal exchange rate (domestic currency cost of foreign currency).

$P^*$ Foreign price level (the foreign currency price of a unit of foreign GDP).

FP Real net factor payments received from abroad.

UTr Real net unilateral transfers received from abroad.

NFA Real net foreign asset holdings.

FI Real net foreign indebtedness.

BoP The real balance of payments.