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Monetary and Financial Statistics: Compilation Guide

Chapter 8. Financial Statistics

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Introduction

1. Corresponding to the *MFSM*'s Chapter 8 on financial statistics, this chapter of the guide offers a systematic approach to developing a country's financial statistics. That is, it provides steps for compiling one or more of *three levels* of financial accounts—basic flow of fund accounts, an SNA integrated financial account and corresponding balance sheet, and detailed financial statistics. This chapter is based on international guidelines found in the *1993 SNA* and the *MFSM* and on methodologies developed at national levels.

2. The purpose of this approach is to facilitate the compilation of financial statistics in countries that do not currently compile such statistics, as well as to assist countries with existing financial statistics to improve aspects of quality in financial statistics relating to (1) adherence to international accounting and statistical standards for classifying financial assets and liabilities, sectorizing economic accounts, and following valuation and other accounting rules; (2) compilation of stocks, transactions, and other flows accounts; and (3) periodicity and timeliness of existing financial statistics.

3. Before illustrating the three levels of financial accounts and providing compilation steps, the chapter overviews several relevant topics such as definition, scope, and framework for financial statistics, presentation, source data, and compilation methods. (Issues such as the definition and valuation of financial instruments and institutional sectors are not treated in this chapter, but in chapters 3, 4, and 5 of this guide.)

4. Specifically, after orienting the reader about the definition and scope of financial statistics, the chapter discusses the recommended framework—*balance sheets* and *accumulation accounts,* with a reference to *flow of funds accounts*. Balance sheets generally show stocks of nonfinancial and financial assets and liabilities on the date for which the balance sheet is compiled. Accumulation accounts are generally the flow accounts explaining all changes in balance sheets between the beginning and the end of the accounting period. Accumulation accounts consist of the capital account, financial account, and other changes in assets account. In turn, the other changes in assets account is subdivided into the revaluation account and the other changes in volume account (OCVA). Flow of funds accounts (another term in some countries for financial accounts) are a subset of financial statistics; they are, in this guide, transaction accounts linked to other accumulation accounts and balance sheets.

5. The chapter then discusses the presentation of financial statistics—*matrices* and *time series* formats. Matrices are sector statements for a particular time period or for many time periods, whereas time series tables show the extent of the market for transactions and holdings of particular instruments.

6. The chapter reviews *source data*. The success in compiling financial statistics heavily depends on the quality of the source data. Because source data differ in availability in

countries, the chapter examines both *core* and *supplementary data sources*. Core source data are generally available on the depository corporations survey, balance of payments, and central government data on at least a quarterly basis; thus, the chapter recommends that financial statistics be compiled quarterly with a time lag of no more than 16 weeks.

7. For compilation on a quarterly basis, the degree of complexity (financial instruments and sectors covered) depends on country circumstances. However, compiling these statistics with any less frequency and timeliness (e.g., annual basis, with long lags in compilation and dissemination) would significantly diminish the usefulness of the data for policymaking.

8. Compilers should apply the valuation and classification guidelines recommended for monetary statistics in the guide, except for special cases identified in this chapter. To compile financial statistics, compilers need many types of estimation methods; hence, the chapter describes diverse compilation methods.

9. At its core, the chapter illustrates *three levels of financial statistics*. They are as follows:

> (1) *basic flow of funds accounts* that a developing country can use when data sources are limited but it wishes to analyze intersectoral financial flows;
>
> (2) *an SNA integrated financial account and corresponding balance sheet* that an emerging market country can use when it has already developed basic flow of funds accounts but wishes to enhance the usefulness of the data for policy purposes by adding stock data and more separate sectors and financial instruments to the analysis; and
>
> (3) *detailed financial statistics* that a country can use when it has developed capital markets and wants to include in its financial statistics all sectors and financial instruments specified in the methodology of the *1993 SNA*.

10. Because countries are at various stages of financial development and capabilities for compiling financial statistics, the chapter recommends that, as a starting point, compilers begin with the basic flow of funds accounts—the simplest form and level of financial statistics. These statistics can be compiled with a minimum number of resources devoted to compiling existing data, with no need for additional data.

11. Finally, the chapter discusses issues related to *estimation techniques* of missing data; *editing, residual calculations,* and *discrepancies*; and *uses of financial statistics*. Throughout, the chapter provides examples—in tables 8.1 through 8.12.1.

12. As will be discussed in more detail in the last section, financial statistics have many benefits. A major benefit is that financial statistics reveal weaknesses in the underlying data for the various sectors. Using financial statistics to reveal and quantify discrepancies in the data across economic sectors is one of the most important outcomes for those countries that compile the data for the first time.

13. Another benefit is that the statistics relate the financial activity of nonfinancial sectors to the financial corporations sector. Data on loans and on capital market instruments, such as securities, indicate the extent to which countries use financial corporations and capital markets to obtain funds to finance economic activity. The data offer a means for assessing the relative importance of types of financing and for monitoring the changes in the sources of financing over time. The data indicate the sources of funds to financial corporations and other sectors. The forms of saving are identified—deposits, pension accounts, insurance policies, or securities. Financial statistics also provide a means for examining the contribution of domestic and foreign sources of financing to a country's current expenditure and capital.

14. Policymakers use financial statistics to analyze economic and financial developments within countries and to compare economic and financial developments among countries. For example, within the IMF's programs, financial statistics as described in this guide are an important input for compiling financial soundness indicators and for a balance sheet approach to analyzing a country's vulnerability to external or internal shocks. The financial account shows the flow of funds from net-savers sectors to net-borrowers sectors, channeled through intermediation in the financial sector or, to a lesser extent, through direct lending between the nonfinancial sectors. Also, the financial statistics record the distribution and redistribution of financial assets and liabilities among the sectors of the economy on a quarter-by-quarter basis.

15. Accompanying this chapter is an annex, containing a comprehensive numerical example to illustrate financial statistics compilation in practice. Compilers may better follow the example using the electronic version developed in a spreadsheet, which shows the links to source data and estimation techniques used to complete the accounts.

Definition, Scope, and Framework for Financial Statistics

Definition and Scope of Financial Statistics

Financial statistics[1] **consist of** a comprehensive set of stock and flow data on the financial assets and liabilities of all sectors of an economy. The financial statistics are organized and presented in formats designed to show financial flows among the sectors of an economy and corresponding financial asset and liability positions. ***MFSM*, ¶11.**

The **scope of the monetary statistics** is limited to the assets and liabilities of the financial corporations sector and its subsectors. In contrast, the financial statistics encompass all financial stocks and flows among all sectors of the economy and between these sectors and the rest of the world. ***MFSM*, ¶405.**

[2] Clarification of terminology: The set of **financial statistics** is broader than the **flow of funds accounts** because it includes data on stocks, and separate flows into transactions and other flows. Consequently, flow of funds accounts in this guide are transactions accounts only. Finally, flow of funds accounts with the financial instrument and sector breakdowns of the *1993 SNA* are called "**financial accounts**."

16. Financial statistics are defined as a comprehensive set of stock and flow data on the financial assets and liabilities of all sectors of an economy. This guide uses the term "financial statistics" rather than "flow of funds accounts" to avoid the ambiguity that results from the variety of flow of funds forms.

17. The scope of financial statistics is all financial stocks and flows among all *sectors* of the economy and between these sectors and the rest of the world. Chapter 3 pointed out that the sectors in the total economy, other than the financial corporations sector, are the general government sector, nonfinancial corporations sector, rest of the world sector, and other resident (households and nonprofit institutions serving households) sector. Furthermore, each sector may have *subsectors*. For instance, in the general government sector, the subsectors are the central government, state and local government, and social security funds. (The definitions of sectors and subsectors are also described more fully in chapter IV of the *1993 SNA*.)

18. In addition to sectors, *financial instruments* are the basic building blocks for compiling financial statistics. The main categories of financial instruments are described in chapter 4 of this guide; they include monetary gold and SDRs, currency and deposits, securities other than shares, loans, shares and other equity, insurance technical reserves, financial derivatives, and other accounts receivable/payable. As compiling agencies do for sectors, they can aggregate or disaggregate financial instruments, depending on the availability of source data and the analytical needs of the country.

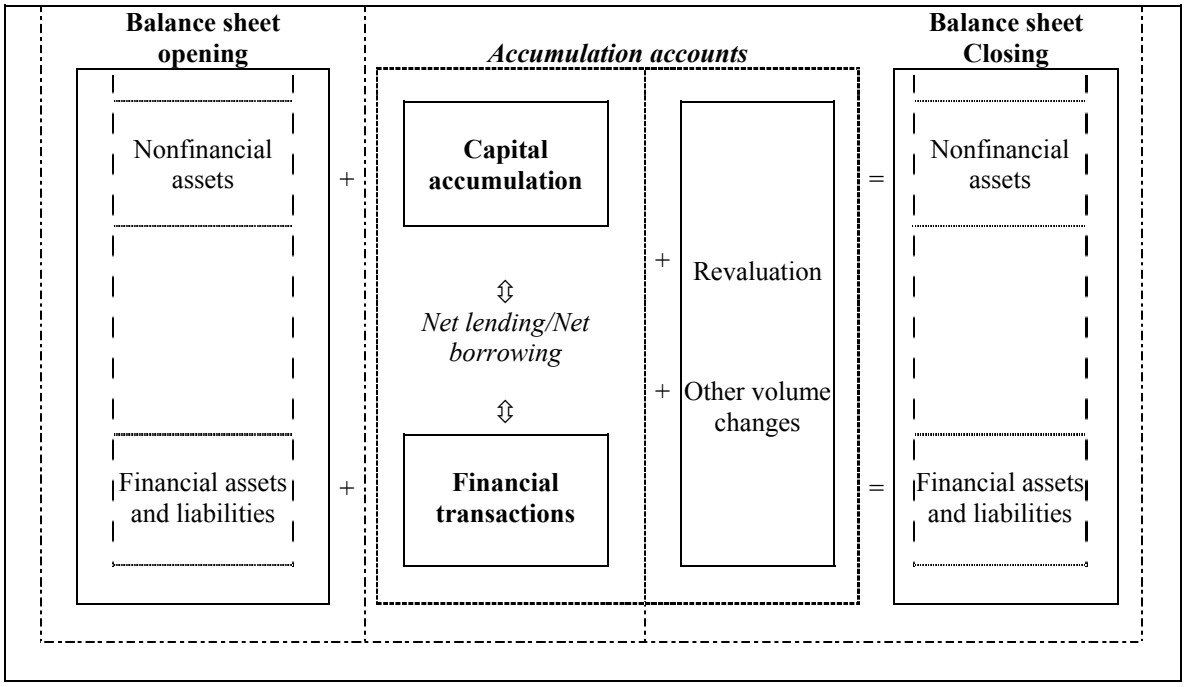
19. Next, the chapter discusses the framework of financial statistics, comprising balance sheets and accumulation accounts. Accumulation accounts consist of the capital account, financial account, and the other changes in assets account, which is subdivided into the revaluation account and the other changes in volume account. Finally, a reference is made to flow of funds accounts as a particular focus of the financial statistics.

The Framework for Financial Statistics

The **balance sheets and accumulation accounts** are the recommended framework for financial statistics because they provide an internationally recognized set of guidelines for integrating financial stocks and flows into a complete system of accounts. The balance sheets and accumulation accounts cover the transactions, other flows, and stock positions that are relevant for broad financial analysis. ***MFSM*, ¶421 and ¶422.**

20. The framework of financial statistics is the balance sheet accounts and accumulation accounts in the *1993 SNA*. These accounts cover the transactions, other flows, and stock positions relevant for broad financial analysis. The *balance sheet account* covers stock positions of assets and liabilities and net worth. The *accumulation account* includes the capital account, the financial account, and the other changes in assets account, subdivided into the revaluation account and other changes in volume account. Box 8.1 provides a schematic view of the interrelationships of these accounts. The next sections will explain balance sheet accounts and accumulation accounts in more detail.

Box 8.1. Interrelationships of the Balance Sheets and Accumulation Accounts in the *1993 SNA*



Balance sheets

The *balance sheets* show stocks of nonfinancial and financial assets and liabilities on the date for which the balance sheet is compiled. The difference between total assets and total liabilities is net worth. For each group of assets and liabilities, and thus net worth, changes between the opening and closing balance sheets result from transactions and other flows recorded in the accumulation accounts.
***MFSM*, ¶418.**

21. The *balance sheets* are a database of time series that build up from data sources to the matrix of the financial balance sheets by sector. For each time series, the database should record where it comes from, which cell in the sector it belongs to, and how it is aggregated with other series to produce the cell totals. The information is usually stored in greater detail than is required for compiling a matrix. The database can contain hundreds of categories or subcategories, depending on the details available in the source data.

22. In some areas, however, the data that compilers obtain from the source each quarter may be less detailed than is required within the timetable for first publication. Moreover, in some cases, no direct data sources exist, and the derivation of the data in these circumstances is described in sections ahead. Most countries have no or very few direct data sources on the household and nonprofit institutions serving household (NPISH) sectors. In addition, depending on the transaction instrument involved, they may have little direct data on the rest of the world sector and certain others.

23. Thus, in these circumstances, they may use two basic techniques—*counterpart* data collection and *residual* data—to obtain data from balance sheets. Both techniques use the principle that each asset must have a matching liability. The information that is stored in balance sheet databases in greater detail than is required for compiling the matrix gives countries greater control over the allocation of counterparts and residuals. For example, for most tradable securities held in a foreign currency, the rest of the world is the residual. To balance each category, countries should nominate for each sector in the matrix a statistician responsible for the methodology. Counterparts and residuals are discussed in more detail ahead in the section on source data.

Accumulation accounts

24. The accumulation accounts include three accounts—the capital account, the financial account, and the other changes in assets account. Under the other changes in assets account are two accounts—the revaluation account and the other changes in volume account.

Capital account and financial account

The capital account records acquisitions and disposals of nonfinancial assets as a result of transactions with other units or internal bookkeeping transactions linked to production (own account capital formation, changes in inventories, and consumption of fixed capital), and measures the changes in net worth as a result of saving and capital transfers receivable from abroad. The balancing item is net lending or net borrowing, depending on whether saving *plus* capital transfers is *less* than the net acquisition of nonfinancial assets. ***MFSM*, ¶417.**

Net lending/Net borrowing is the balancing item of the capital account, calculated as net saving *plus* capital transfers receivable *less* capital transfers payable *less* acquisition *less* disposals of nonproduced nonfinancial assets. The net resources available to an economy or sector from saving and net capital transfers that are not used for capital accumulation are the amount of resources available for net acquisition of financial assets, that is, net lending. Economies or institutional sectors with a surplus of resources (through saving and net capital transfers) over capital accumulation are net lenders. Economies or institutional sectors that have capital expenditures in excess of these resources are net borrowers. Changes in net worth arise from saving and capital transfers. ***MFSM*, ¶428.**

The financial account records the acquisition and disposal of financial assets and liabilities, and shows how net lending or net borrowing from the capital account is reflected in transactions in these financial items (equation 7). The financial account is the last account in the sequence of accounts recording transactions. ***MFSM*, ¶417.**

The financial account shows financial transactions among institutional units and between institutional units and the rest of the world. Financial transactions cover all transactions involving change of ownership of financial assets, including the creation and liquidation of financial claims." ***MFSM,* ¶429**

To emphasize the fact that financial transactions can be directly measured, the term ***net financial investment*** is used to denote the balancing item of the financial account, calculated as net acquisition of financial assets *less* net incurrence of liabilities. ***MFSM*, ¶449.**

Net financial investment is always equal in concept to net lending/borrowing. A statistical discrepancy can be shown that represents any difference between the recorded total for saving and capital transfers and recorded total net lending. The discrepancy can arise in practice because of gaps in coverage or mismeasurement of any of the items in the full sequence of accounts. ***MFSM*, ¶449.**

25. Compilers use the *capital account* to derive the statement of sector net lending or net borrowing, with which financial statistics typically begin. Net lending or net borrowing is the balancing item of the capital account, equating saving and capital transfers with a sector's net acquisition of nonfinancial assets.

26. The *financial account*—the core of financial statistics—describes how sectors dispose of their excess funds (net lending position) or meet their financing requirements (net borrowing position). In other words, the financial account refers to that part of each sector's accumulation accounts consisting of transactions in financial instruments—the net acquisition of financial assets and the net incurrence of liabilities. In the financial account, the difference between the net acquisition of financial assets and net incurrence of liabilities is referred to as net financial investment. Although calculated separately using financial statistics in the financial account, net financial investment is conceptually equivalent to net lending or net borrowing in the capital account. In practice, the independent measurement of the two concepts results in a discrepancy. Dealing with that discrepancy is a compilation issue discussed later in this guide.

27. As in the case of assembling balance sheets, a compiling unit assembles financial accounts from a database of time series. That is, the unit builds up a database from data sources to a matrix of financial transactions by sector that make up the financial accounts. For each time series, the database should record where it comes from, which cell in the sector account matrix it belongs to, and how it is aggregated with other series to produce the cell totals.

28. Financial transactions measure the net acquisition of financial assets or the net incurrence of liabilities for each type of financial instrument. Some sectors are net lenders while others are net borrowers. All financial transactions involve any of the following: (1) simultaneously creating or liquidating a financial asset and the counterpart liability, (2) changing ownership of a financial asset, or (3) assuming a liability. A financial asset of one unit is always balanced by a liability of another unit (except in the cases of monetary gold and SDRs). For example, a loan is an asset of the lender (or holder) and a liability of the borrower. A share is a liability of the company issuing it and an asset of the holder.

29. A financial transaction between two institutional units increases net lending/borrowing by one institutional unit and, by the same amount, decreases net lending/borrowing by the other. So a financial account shows how a deficit sector finances its net borrowing by reducing its assets and/or incurring liabilities. Sectors with surplus resources make the resources available to others by acquiring assets (e.g., by purchasing government bonds or money market instruments, such as commercial paper, issued by corporations, etc.) or by reducing their own liabilities.

30. The financial account provides a complete set of financial transactions accounts for each sector. In principle, flows into and out of each sector should exactly balance, with net total financial transactions for each sector equaling the financial net lending/borrowing from the capital account for that sector. In practice, a statistical adjustment item reflects errors and

omissions anywhere in the accounts. Compilers will find the size of the statistical adjustment items and their variation from period to period to be helpful in assessing the quality of the statistics; the size of the adjustment items may indicate a need for new sources of data or improvements in methodology.

31. Besides including the capital and financial accounts, the accumulation account includes the other changes in assets account. This account comprises two subaccounts—the revaluation account and the other changes in volume account.

Other changes in assets account: revaluation account and other changes in volume account (OCVA)

The revaluation account shows changes in net worth arising from holding gains and losses on nonfinancial assets, financial assets, and liabilities resulting from changes in the prices of the various assets and liabilities. ***MFSM*, ¶417.**

The OCVA account shows changes in net worth arising from all factors other than transactions as recorded in the capital and financial accounts and holding gains/losses as recorded in the revaluation account. ***MFSM*, ¶417.**

32. The other changes in assets account includes accounts for recording revaluations and other changes in volume (OCVA). Such accounts are critical for compilers of financial statistics to completely understand the relationship between flows in the financial account and the stocks recorded in the balance sheet account. That is, the changes in stocks of assets or liabilities from one period to the next are the sum of the transactions recorded in the financial account, revaluations, and other changes in volume.

33. The chapter next discusses flow of funds accounts, the forms of which are many—from a basic account of transactions and sectors to the detailed three-dimensional matrices and time series tables of financial statistics. The basic flow of funds account (equivalent to the first level of financial accounts) is a subset of full financial statistics.

Flow of funds accounts

Flow of funds data, presented in a matrix form showing the financial transactions among all subsectors of an economy, are a particular focus of the financial statistics described in Chapter 8 of this manual. ***MFSM*, ¶12.**

Flow of funds statements sometimes cover both financial and capital transactions, thereby providing a link to the capital account of the *1993 SNA*. Parallel stock presentations can also accompany flow of funds statements. ***MFSM*, ¶408.**

Flow of funds accounts are sectoral accounts, and, while these accounts place an emphasis on financial corporations because of their important role in financial activity, they also attach due consideration to the financial activities of other institutional sectors. Flow of funds accounts had their origin as a separate statistical system but are now commonly linked to the nonfinancial economy by their integration within the national accounting framework, particularly through associating financial data with data on saving and capital formation. Flow of funds are transactions accounts, but they are often linked to balance sheet accounts and are prepared in conjunction with accounts of stocks of financial assets and liabilities of each institutional sector. ***MFSM*, ¶439.**

Flow of funds accounts exist in various forms that differ according to the analytical needs that are being addressed and by the complexity and detail of the accounting presentation and data requirements. The simplest flow of funds accounts identify financial transactions of major importance between sectors at an aggregated level. The most complex flow of funds accounts consist of a three-dimensional matrix that relates the creditor sector, the debtor sector, and the financial asset used in the transaction. The preparation of basic flow of funds accounts is within the capabilities of all countries that have reasonably complete systems of balance of payments, government finance, and monetary statistics. ***MFSM*, ¶440.**

Flow of funds accounts that follow the form of the *1993 SNA* financial account can, of course, be fully integrated with capital account transactions and with sectoral and national balance sheets. ***MFSM*, ¶442.**

34. The *MFSM* defines flow of funds accounts as transaction accounts; it also states that flow of funds accounts are linked to balance sheets, and compilers prepare them in conjunction with accounts of stocks of financial assets and liabilities of each institutional sector. In some countries, flow of funds accounts are synonymous with the accumulation accounts and balance sheets, defined in the *MFSM* as financial statistics.

35. In addition, the *MFSM* notes that flow of funds accounts take many forms in terms of presentation and scope. For example, compilers present them in a *matrix* form (discussed ahead in the next section), showing financial and capital transactions of sectors, and accompany them with a parallel matrix, showing stocks of assets and liabilities for the same sectors. As for scope, the *MFSM* notes that scope includes simple accounts (identifying financial transactions of major importance between sectors at an aggregated level) or complex accounts (with three-dimensional flows from creditor to debtor for each type of asset). Nonetheless, flow of funds accounts can and often do follow the form of the *1993 SNA* financial account; compilers can fully integrate them with capital account transactions and with sectoral and national balance sheets.

36. In practice, countries use the term "flow of funds accounts," but the term rarely, if at all, refers to a separate and distinct system of financial statistics. National compilers, including those in different statistics-gathering agencies, typically work to integrate the various components of flow of funds accounts with other accounts in the national accounts system. Compilers of financial statistics seek to integrate the statistics with the nation's current accounts and with international transactions accounts. The integration is based on the broad framework of the *1993 SNA*.

Presentation of Financial Statistics

37. The two most common presentations of financial statistics are matrices with sectors and instruments for a particular time period and sector statements for many time periods. In addition, time series tables can be prepared to show the extent of the market for transactions and holdings of particular instruments.

38. The large amount of information in a country's financial statistics provides both opportunities and issues for presentation. Striking a balance that provides sufficient detail and conveys the information efficiently to various clients is a challenge, particularly because different users prefer alternative presentations. Tables with substantial detail make it difficult

for users to extract useful information or formulate questions about trends and relationships that may be of interest. However, condensation eliminates information from view that might otherwise be important.

Matrix Formats

39. Matrices can be prepared for (1) transactions, (2) stocks, and (3) other flows. They can all be done for one time period or many, and they are for the basic two-dimensional flow of funds. A fourth less common matrix is a more detailed (three-dimensional) flow of funds account.

40. A simplified matrix corresponds to the basic flow of funds account, as follows (see also Tables 8.7 and 8.8 in the *MFSM)*.

Basic flow of funds account

A basic flow of funds account is a modified form of the flow of funds matrix that employs a reduced number of sector and financial asset categories. The sectors chosen are normally those most important for financial analysis and for which data are available—remaining sectors are placed in a residual category. Countries that prepare macroeconomic accounts covering monetary statistics, government finance data, and the balance of payments can construct the basic accounts. Therefore, countries that have limited statistical resources can nevertheless benefit from compiling a set of interrelated and internally consistent sectoral accounts that are useful for analytic and policy purposes. ***MFSM*, ¶453.**

41. Basic flow of funds accounts are shown below in modified forms of flow of funds matrices—in table 8.2.1 (for transactions) and table 8.2.2 (for stock positions). Each matrix consists of columns and rows, which show data for a single period.

Transactions matrix

42. *Transactions matrix—columns:* In a transactions matrix (table 8.2.1), *columns* list sectors. Each sector has two columns. One column is for uses of funds, and the other is for resources of funds (whereas in a stock matrix [table 8.2.2] the columns show assets and liabilities corresponding to the uses and sources). If the transactions matrix contains the full statement for a sector, including investment in nonfinancial assets, then the sum of all columns for uses of funds for each sector must equal the sum of all columns for resources of funds.

43. *Transactions matrix—rows:* The *rows* of the transactions matrix list instruments. The rows show whether an instrument is a resource or use for a sector. An instrument could, of course, be both a resource and a use for the same sector, such as for a sector that both issues

and holds equity shares. An important identity for each instrument is that the sum of resources across sectors must equal the sum of uses across sectors.[2]

44. Table 8.2.1—a sample transactions matrix—shows that shares and other equities (row D) were both a use and resource for financial corporations. That is, in the period 2003:Q1, financial corporations purchased (use column) on net an amount of 370.8 shares. In the resource column, net issuance was negative by 601.2 shares, meaning that financial corporations retired equity by that amount.

Table 8.2.1: Summarized Financial Statistics Matrix: Transactions

Transactions		Financial corporations		General government		Nonfinancial corporation		Other residents		Rest of the world		Total	
1st quarter 2003		Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources
A	Gold and SDR	-9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-9.9	-9.9	-9.9
B	Currency and deposits	-10,360.4	763.5	5,498.6	0.0	-1,317.0	0.0	820.8	0.0	25.3	-5,871.0	-5,332.7	-5,332.7
C	Securities other than shares	5,097.2	0.0	112.4	5,078.7	14.2	705.4	0.0	0.0	6.7	-553.6	5,230.5	5,230.5
D	Shares and other equities	370.8	-601.2	335.5	0.0	-640.7	393.4	-275.9	0.0	9.0	6.5	-201.3	-201.3
E	Loans	-9,683.1	-52.7	0.0	-14.9	299.6	-4,928.5	0.0	-4,844.4	-156.3	300.6	-9,539.9	-9,539.9
F	Insurance technical reserves	0.0	894.8	0.0	0.0	0.0	0.0	752.0	0.0	142.8	0.0	894.8	894.8
G	Financial derivatives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
H	Other accounts receivable/payable	3,114.4	0.0	0.0	0.0	5,457.1	0.0	0.0	0.0	365.2	72.2	8,936.7	72.2
I	Subtotal	-11,471.0	0.0	5,946.5	5,063.8	3,813.0	0.0	1,297.0	-4,844.4	392.7	-6,055.2	-21.8	-6,055.2
J	Net financial investment		0.0		882.7		0.0		6,141.4		6,447.9		6,447.9

Stock positions matrix

45. The stock positions matrix summarizes sector balance sheets for the end of the period, with assets and liabilities in the sector columns. Table 8.2.2 provides the portion of the balance sheet for broad categories of financial instruments. It shows, for example, the heavy reliance of the other residents (households and NPISH) on deposits (row B) relative to other financial assets, such as shares (row D). The matrix indicates that nearly half of loans held by financial corporations were liabilities of other financial corporations (row E), while the remainder were liabilities of other sectors.

[2] If the identities do not hold because of data limitations, the matrix would show discrepancies between uses and resources for sectors and instruments. Discussion of ways to deal with discrepancies is provided ahead.

Table 8.2.2: Summarized Financial Statistics Matrix: Stock positions

Stock positions		Financial corporations		General government		Nonfinancial corporation		Other residents		Rest of the world		Total	
End of March 2002		Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
A	Gold and SDR	895.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	895.1	0.0
B	Currency and deposits	67,373.2	188,385.8	50,073.3	0.0	20,893.7	0.0	82,593.4	0.0	6,427.6	38,975.4	227,361.2	227,361.2
C	Securities other than shares	139,104.0	0.0	13,542.7	110,271.3	247.1	8,805.5	0.0	0.0	55.1	33,872.1	152,948.9	152,948.9
D	Shares and other equities	11,106.6	52,614.8	2,853.8	0.0	35,004.1	14,875.1	14,995.8	0.0	291.2	270.7	64,251.5	67,760.5
E	Loans	66,118.4	32,188.3	0.0	5,942.9	1,915.3	20,540.2	0.0	36,448.8	30,300.4	3,213.9	98,334.2	98,334.2
F	Insurance technical reserves	0.0	24,452.4	0.0	0.0	0.0	0.0	19,791.4	0.0	4,661.0	0.0	24,452.4	24,452.4
G	Financial derivatives	62.0	221.4	0.0	0.0	0.0	0.0	0.0	0.0	159.4	0.0	221.4	221.4
H	Other accounts receivable/payable	8,257.1	9,815.9	0.0	0.0	3,272.1	190.3	0.0	0.0	1,022.5	2,545.5	0.0	0.0
I	Subtotal	293,815.8	305,338.9	66,469.8	116,214.2	61,332.4	44,411.1	117,380.6	36,448.8	42,917.2	78,877.6	582,137.2	581,512.1
J	Net financial position		-11,523.2		-49,744.4		16,921.3		80,931.8		-35,960.4		625.1

Other flows matrix

46. Compilers prepare the other flows matrix to record revaluations and OCV, which reconcile transactions and period-to-period changes in stock positions. Table 8.2.3 summarizes other flows among sectors.

Table 8.2.3: Summarized Financial Statistics Matrix: Other flows

Other flows		Financial corporations		General government		Nonfinancial corporation		Other residents		Rest of the world		Total	
1st quarter 2003		Changes in assets	Changes in liabilities	Changes in assets	Changes in liabilities	Changes in assets	Changes in liabilities	Changes in assets	Changes in liabilities	Changes in assets	Changes in liabilities	Changes in assets	Changes in liabilities
A	Gold and SDR	37.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	37.6	9.9
B	Currency and deposits	642.2	-213.2	0.0	0.0	0.0	0.0	0.0	0.0	12.0	642.2	654.2	654.2
C	Securities other than shares	5,842.1	0.0	0.0	-2.7	0.0	3.0	0.0	0.0	0.3	5,842.1	5,842.4	5,842.4
D	Shares and other equities	567.5	-6,622.7	-335.5	0.0	-4,055.6	1,080.6	-1,739.9	0.0	22.5	1.0	-5,541.1	-5,541.1
E	Loans	-292.0	0.0	0.0	0.0	0.1	-334.3	0.0	0.0	9.2	51.6	-282.7	-282.7
F	Insurance technical reserves	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G	Financial derivatives	0.0	97.4	0.0	0.0	0.0	0.0	0.0	0.0	97.4	0.0	97.4	97.4
H	Other accounts receivable/payable	0.0	0.0	0.0	0.0	762.5	0.0	0.0	0.0	0.0	762.5	0.0	0.0
I	Subtotal	6,797.4	-6,738.5	-335.5	-2.7	-3,293.1	0.0	-1,739.9	0.0	0.0	7,309.2	0.0	0.0
J	Net other flows		13,535.9		-332.8		0.0		-1,739.9		0.0		0.0

Uses of the matrix presentation

47. The compiler will find the matrix format particularly useful, because it emphasizes the identities that the compiler must satisfy for each sector and each instrument. The compiler will find inconsistencies immediately apparent and can make corrections. From the user's perspective, the matrix format highlights that one sector's resources are another

sector's uses. The matrix also makes evident the significance of particular instruments to overall financial transactions for a sector and the economy in the given time period.

48. In addition to having a snapshot for a specific time, compilers and others can use a matrix to trace the impact of changes, such as the changing preferences for an instrument by a sector. That is, matrix analysis emphasizes the requirement of substituting for other types of instruments or for financing the new preferences from additional resources. An example would be to trace a change in the other residents sector preference for bank deposits in table 8.2.1. Given available resources for households, a reduction in the increase of currency and deposits in row B implies an equal corresponding increase in other types of instruments, say in insurance and pension reserves. However, this implies that the total of currency and deposit resources would need to change, and the total insurance and pension reserves resources would also change. Hence, each change in the matrix results in at least four changes to keep the matrix in balance.

49. The two-dimensional matrix does not allow compilers or users to identify counterparty sectors. For example, net purchases of shares and other equity of households (Table 8.2.1, row D under the uses column) is -275.9. (In stock terms, other residents' assets of shares and other equity are 14,995.8.) However, the matrix does not identify the value of shares and other equity purchased or sold (a net sale of 275.9 in the example) from each counterpart sector; nor does the matrix for stocks show what sector the assets are from.

Detailed flow of funds matrices

> The *SNA* financial account may be expanded into a three-dimensional matrix to track financial transactions between source and user sectors and the financial asset used in the transaction. It therefore shows who finances whom and by means of which financial asset. Because of the symmetrical nature of financial assets and liabilities, a single matrix could be constructed, insofar as one institutional unit's asset is another institutional unit's liability. ***MFSM*, ¶463.**

50. Because of the analytical limitations of two-dimensional matrices, compilers can develop the matrix presentation further into a three-dimensional structure, showing counterpart data for each instrument transaction. Three-dimensional financial statistics correspond to detailed flow of funds matrices, and they are discussed, with an example, in the *MFSM*.[3] That presentation envisions counterpart sectors broken down for each of the financial use and resource items.

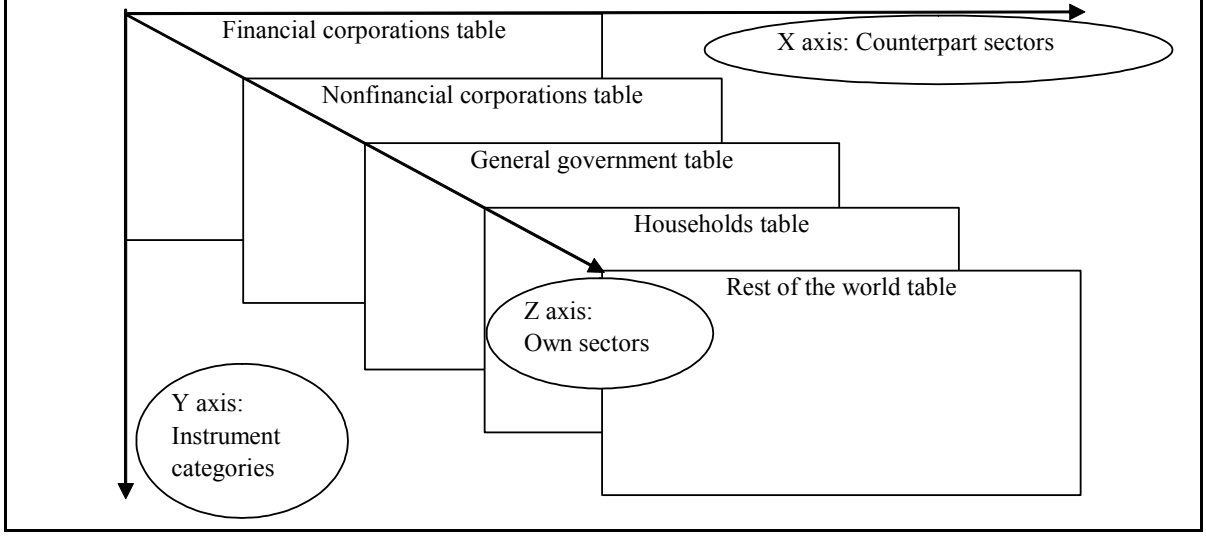
51. However, as the number of instrument categories and subsectors increase, the three-dimensional structure becomes cumbersome for the compiler to both maintain and present clearly to the user. Thus, this section discusses a way next to retain some elements of the three-dimensional structure by separating matrices into those consisting of resource and

[3] See the section "Detailed Flow of Funds" and table 8.9.

use categories in rows and counterpart sectors in columns for each sector—the *detailed flow of funds matrix*.

52. A way to retain some elements of the three dimensional structure is to separate matrices into those consisting of resource and use categories in rows and counterpart sectors in columns for each sector. Compilers obtain three-dimensional information by combining two-dimensional tables. By slicing the cubic into several rectangles along the axis of sectors, they create several two-dimensional tables, with an axis showing counterpart sectors and instrument categories. The concept is shown in the diagram.

Concept of three dimensional flow of funds accounts



53. An example that retains elements of the three-dimensional structure is shown in tables 8.2.4 and 8.2.5. Table 8.2.4 displays transactions and stocks for financial corporations with other sectors, whereas table 8.2.5 shows the same information but only for nonfinancial corporations. The figures of own sector (financial corporations' figures in the table 8.2.4 and nonfinancial corporations' figures in the table 8.2.5) remain the same as those in the summary table. However, figures in the counterpart sector (e.g., figures of the other residents sector—households and NPISH) represent only own sector's positions with the counterpart sectors.

54. For example, in table 8.2.4, the value of financial corporations sector shares sold by the other residents during the period was 314.2 (net transactions), and the value of the financial corporations sector shares held by the other residents sector was 13,538.5 (stock position).

55. Similarly, in table 8.2.5, the value of nonfinancial corporations shares purchased by the other residents sector was 38.4, and the value of shares held by the other residents sector was 1,457.3.

Table 8.2.4: Financial corporations table for three-dimensional structure

Transactions		Financial corporations		General government		Nonfinancial corporation		Other residents		Rest of the world	
1st quarter 2003		Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources
A	Gold and SDR	-9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-9.9
B	Currency and deposits	-10,360.4	763.5	5,498.6	0.0	-1,317.0	0.0	820.8	0.0	25.3	-5,871.0
C	Securities other than shares	5,097.2	0.0	0.0	4,960.6	0.0	704.9	0.0	0.0	0.0	-568.3
D	Shares and other equities	370.8	-601.2	335.5	0.0	-733.5	256.6	-314.2	0.0	0.0	3.2
E	Loans	-9,683.1	-52.7	0.0	-2.1	299.3	-5,262.8	0.0	-4,844.4	-134.3	643.8
F	Insurance and pension reserves	0.0	894.8	0.0	0.0	0.0	0.0	752.0	0.0	142.8	0.0
G	Financial derivatives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
H	Other accounts receivable/payable	3,114.4	0.0	0.0	0.0	4,947.6	0.0	0.0	0.0	6,687.2	3,114.4
I	Subtotal	-11,471.0	925.1	5,834.1	4,958.5	3,196.3	-4,301.2	1,258.6	-4,844.4	381.6	-6,239.5
J	Net financial position	0.0	-11,523.2	0.0	-49,744.4	0.0	16,921.3	0.0	80,931.8	0.0	-35,960.4

Stock positions		Financial corporations		General government		Nonfinancial corporation		Other residents		Rest of the world	
End of March 2003		Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
A	Gold and SDR	895.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B	Currency and deposits	67,373.2	188,385.8	50,073.3	0.0	20,893.7	0.0	82,593.4	0.0	6,427.6	38,975.4
C	Securities other than shares	139,104.0	0.0	0.0	96,483.8	0.0	8,797.6	0.0	0.0	0.0	33,822.6
D	Shares and other equities	11,106.6	52,614.8	2,853.8	0.0	31,589.7	9,726.3	13,538.5	0.0	0.0	256.5
E	Loans	66,118.4	32,188.3	0.0	4,717.5	1,850.1	20,474.3	0.0	36,448.8	29,009.1	3,148.7
F	Insurance technical reserves	0.0	24,452.4	0.0	0.0	0.0	0.0	19,791.4	0.0	4,661.0	0.0
G	Financial derivatives	62.0	221.4	0.0	0.0	0.0	0.0	0.0	0.0	159.4	0.0
H	Other accounts receivable/payable	8,257.1	9,815.9	0.0	0.0	3,128.7	0.0	0.0	0.0	6,687.2	8,257.1
I	Subtotal	293,815.8	305,338.9	52,927.1	101,201.3	57,462.2	38,998.2	115,923.3	36,448.8	40,929.9	78,605.3
J	Net financial position	0.0	-11,523.2	0.0	-49,744.4	0.0	16,921.3	0.0	80,931.8	0.0	-35,960.4

Table 8.2.5: Nonfinancial corporations table for three-dimensional structure

Transactions		Financial corporations		General government		Nonfinancial corporation		Other residents		Rest of the world	
1st quarter 2003		Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources	Uses	Sources
A	Gold and SDR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B	Currency and deposits	0.0	-1,317.0	0.0	0.0	-1,317.0	0.0	0.0	0.0	0.0	0.0
C	Securities other than shares	704.9	0.0	0.0	-0.5	14.2	705.4	0.0	0.0	0.5	14.7
D	Shares and other equities	256.6	-733.5	0.0	0.0	-640.7	393.4	38.4	0.0	9.0	3.3
E	Loans	-5,262.8	299.3	0.0	0.0	299.6	-4,928.5	0.0	0.0	334.3	0.3
F	Insurance and pension reserves	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G	Financial derivatives	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
H	Other accounts receivable/payable	3,551.7	8,499.3	0.0	0.0	5,457.1	0.0	0.0	0.0	190.3	509.5
I	Subtotal	-4,301.2	3,196.3	0.0	-0.5	3,813.0	-3,812.3	38.4	0.0	361.2	527.8
J	Net financial position	0.0	-11,523.2	0.0	-49,744.4	0.0	16,921.3	0.0	80,931.8	0.0	-35,960.4

Stock positions		Financial corporations		General government		Nonfinancial corporation		Other residents		Rest of the world	
End of March 2003		Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
A	Gold and SDR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B	Currency and deposits	0.0	20,893.7	0.0	0.0	20,893.7	0.0	0.0	0.0	0.0	0.0
C	Securities other than shares	8,797.6	0.0	0.0	197.6	247.1	8,805.5	0.0	0.0	7.9	49.5
D	Shares and other equities	9,726.3	31,589.7	0.0	0.0	35,004.1	14,875.1	1,457.3	0.0	291.2	14.2
E	Loans	20,474.3	1,850.1	0.0	0.0	1,915.3	20,540.2	0.0	0.0	65.9	65.2
F	Insurance and pension reserves	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G	Financial derivatives	62.0	221.4	0.0	0.0	0.0	0.0	0.0	0.0	159.4	0.0
H	Other accounts receivable/payable	5,855.0	8,983.7	0.0	0.0	3,272.1	190.3	0.0	0.0	190.3	143.4
I	Subtotal	38,998.2	57,462.2	0.0	197.6	61,332.4	44,411.1	1,457.3	0.0	555.3	272.3
J	Net financial position	0.0	-11,523.2	0.0	-49,744.4	0.0	16,921.3	0.0	80,931.8	0.0	-35,960.4

56. Despite their usefulness to agencies for compiling and understanding financial flows and financial intermediation, the two-dimension and three-dimension matrix presentations often become too intricate for analysis, as sector and instrument detail is increased. In addition, because each matrix is limited to a single period, the presentation does not lend simply to recognizing important trends over time.

Time Series Presentations

57. Time series presentations are available in various formats for financial statistics. Like matrices, time series presentations typically focus on a *sector*, subsector, or combination of sectors. Also like matrices, they may focus on particular *instruments* or markets.

Sector tables

58. Table 8.2.6 is an example of a truncated financial statistics account for the *sector* of other residents (households and NPISH) for four time periods—two years (2001 and 2002) and two quarters (2002:Q4 and 2003:Q1). It displays a sequence of accounts: transactions, other changes in volume and revaluations, and end-of-period stocks. It has three categories of instruments (currency and deposits, shares and other equities, and insurance technical reserves). Although the activity described in a particular column takes place simultaneously over the period, the compiler can interpret the table as a sequence of activities of the sector (for these instruments) that result in a change in the value of end-of-period holdings, and, hence, contribute to the sector net worth.

59. In table 8.2.6, the other residents sector held a value of 1,107.4 in shares of domestic nonfinancial corporations at the end of 2001 (row 26). In 2002, they sold, on net, a value 31.0 shares (row 6). Other flows, in this case revaluations from rising prices in the equity market, amounted to a value increase of 236.8 in 2002 (row 16). At the end of 2002, the value of shares held (row 26) was thus 1,313.2 (= 1107.4 – 31.0 + 236.8).

60. A typical feature of time series sector tables is the mixing of different frequencies in the same table (whereas matrices are for single period only.) Again in table 8.2.6, annual and quarterly frequencies are shown, and compilers have taken care in labeling to ensure correct interpretation. They have labeled stocks as end-of-period. Typically, this means the stocks are the amount outstanding at the close of the markets on the last trading day of the year or quarter presented. They have labeled flows, in contrast, as "quarterly rate, not seasonally adjusted." This means that the period has actually experienced these amounts, and the amounts have not been adjusted for seasonal variations. The flows for years are the amounts in the year as a whole.

61. Alternatively, compilers could multiply the quarterly data by four, thereby expressing them "at an annual rate." Expressing the flow data at the same rate as the annual data means users can compare the figures to one another for different frequencies.[4] That is, the length of time in the period does not affect the amount of quarterly and annual data. Hence, in the example, the figure 38.4 at a quarterly rate is the other residents' net purchase nonfinancial corporations domestic shares in 2003:Q1, but compilers could show it as 153.6 at an annual rate. Users can compare the annual rate figure directly to figures for 2001 and 2002, which will indicate that share purchases in the quarter moved at a faster pace than in the earlier periods.

62. Quarterly data in financial statistics, indeed in virtually all economic time series, are subject to seasonal variation. Compilers will find it helpful and recommended, where

[4] Alternatively, the annual flows could be divided by four and expressed as a "quarterly rate." The choice depends on conventions used in the country. Rates of growth and rates of interest also may be expressed at different frequencies, and matching the volume flows with other rates may be convenient.

possible, to adjust for such variation. The statistical techniques and issues related to seasonal adjustment are complex and not included in this guide.[5]

Table 8.2.6: Other residents' assets (transactions, other flows, and stock positions)

	Year of Quarter	2001	2002	2002 4Q	2003 1Q
Transactions (quarterly data at quarterly rate, not seasonally adjusted)					
1	Currency and deposits	597.8	766.0	383.1	820.8
2	Bank notes and coins	152.2	98.2	-139.2	-937.0
3	Other resident sector deposits	445.6	667.8	522.3	1,757.8
4	Shares and other equities	221.6	584.0	11.5	-275.9
5	Financial corp. shares	123.6	615.0	-55.3	-314.2
6	Nonfinancial corp. shares	98.0	-31.0	66.8	38.4
9	Insurance technical reserves	3,534.7	4,854.4	1,451.4	752.0
8	Insurance reserves for residents	1,542.3	1,959.6	596.2	444.0
7	Pension reserves	1,992.4	2,894.8	855.2	308.0
10	Subtotal	4,354.1	6,204.5	1,846.0	1,297.0
Other flows					
11	Currency and deposits	0.0	0.0	0.0	0.0
12	Bank notes and coins	0.0	0.0	0.0	0.0
13	Other resident sector deposits	0.0	0.0	0.0	0.0
14	Shares and other equities	-11.0	1,069.1	-17.0	-1,739.9
15	Financial corp. shares	-33.0	832.3	-45.0	-1,845.7
16	Nonfinancial corp. shares	22.0	236.8	28.0	105.7
17	Insurance technical reserves	0.0	0.0	0.0	0.0
18	Insurance reserves for residents	0.0	0.0	0.0	0.0
19	Pension reserves	0.0	0.0	0.0	0.0
20	Subtotal	-11.0	1,069.1	-17.0	-1,739.9
End-of-period stock					
21	Currency and deposits	81,006.5	81,772.6	81,772.6	82,593.4
22	Bank notes and coins	11,870.2	11,968.4	11,968.4	11,031.4
23	Other resident sector deposits	69,136.4	69,804.2	69,804.2	71,562.0
24	Shares and other equities	15,358.5	17,011.6	17,011.6	14,995.8
25	Financial corp. shares	14,251.1	15,698.4	15,698.4	13,538.5
26	Nonfinancial corp. shares	1,107.4	1,313.2	1,313.2	1,457.3
27	Insurance technical reserves	14,185.0	19,039.4	19,039.4	19,791.4
28	Insurance reserves for residents	3,274.4	5,234.0	5,234.0	5,678.0
29	Pension reserves	10,910.6	13,805.4	13,805.4	14,113.4
30	Subtotal	110,550.0	117,823.6	117,823.6	117,380.6

[5] A concise explanation is provided in chapter VIII of QUARTERLY NATIONAL ACCOUNTS MANUAL, CONCEPTS, DATA SOURCES, AND COMPILATION, by Adriann M. Bloem, Robert J.Dipplesman, and Nils Ø. Mæhle (Washington, D.C., International Monetary Fund, 2001).

Instrument tables

63. Compilers can also use the time series presentation to summarize the activity for *instruments*. Over longer time spans, this presentation allows users to analyze changes in the market; that is, the presentation captures the changing of the instrument for sector funding and indicates which sector is providing a particular type of financing. While the instrument tables do not show a complete funding picture of how a particular sector is financed (by what instrument and by what sector), they offer a manageable presentation of a specific sector's funding and purchases that can be used in analysis.

64. Table 8.2.7 shows an example of a time series presentation for shares and other equity for the same periods as in the previous example. The rows for transactions show net issuance and net purchases by sector. Only three sectors issue equity in the example: financial corporations, nonfinancial corporations, and the rest of the world (shares issued by foreign corporations in the domestic economy). However, all sectors, including the government, purchase shares. Note the equalities that hold: net issuance for the economy as a whole is equal to net purchases for the economy as a whole. Similarly, an equality exists for revaluations and other changes in volume (other flows) total. Finally, the end-of-period stock positions for all issuing sectors must equal the end-of-period stock positions for all holding sectors.

65. In the example**,** nonfinancial corporations hold a large portion of the shares (row 28), while the rest of the world holds a small proportion (row 30). In 2003:Q1, the nonfinancial corporations sector issued, on net, a large amount (row 3), while the financial corporation retired more equity than it issued (row 2). On the other hand, the financial corporations sector was a large net purchaser (row 6), and the nonfinancial corporations sector was a net seller in the period (row 8).

Table 8.2.7: Shares and other equity by holding sector (transactions, other flows, and stock positions)

	Year of Quarter	2001	2002	2002 4Q	2003 1Q
Transactions (quarterly data at quarterly rate, not seasonally adjusted)					
1	Issuing sectors total *	2,427.0	1,968.3	2,160.5	-201.3
2	Financial corporations	1,542.5	2,231.8	1,371.4	-601.2
3	Nonfinancial corporations	853.4	-300.2	777.3	393.4
4	Rest of the world	31.1	36.8	11.8	6.5
5	Holding sectors total	2,416.0	2,047.2	2,143.7	-201.3
6	Financial corporations	884.4	145.1	561.7	370.8
7	General government	17.9	-139.5	0.0	335.5
8	Nonfinancial corporations	1,294.7	1,359.4	1,558.2	-640.7
9	Other residents	221.6	584.0	11.5	-275.9
10	Rest of the world	-2.6	98.2	12.3	9.0
Other flows					
11	Issuing sectors total *	-16.2	5,403.4	58.7	-5,541.1
12	Financial corporations	-20.2	2,985.2	26.5	-6,622.7
13	Nonfinancial corporations	1.6	2,429.0	28.4	1,080.6
14	Rest of the world	2.4	-10.8	3.8	1.0
15	Holding sectors total	-16.2	5,403.4	5.7	-5,541.1
16	Financial corporations	5.2	1,609.2	-2.4	567.5
17	General government	0.0	165.2	0.0	-335.5
18	Nonfinancial corporations	-35.2	2,501.9	24.2	-4,055.6
19	Other residents	-11.0	1,069.1	-17.0	-1,739.9
20	Rest of the world	24.8	58.0	0.9	22.5
End-of-period stock					
21	Issuing sectors total *	66,141.1	73,522.5	73,522.5	67,760.5
22	Financial corporations	54,542.8	59,838.7	59,838.7	52,614.8
23	Nonfinancial corporations	11,361.1	13,420.6	13,420.6	14,875.1
24	Rest of the world	237.2	263.2	263.2	270.7
25	Holding sectors total	62,711.0	70,013.5	70,013.5	64,251.5
26	Financial corporations	8,414.0	10,168.3	10,168.3	11,106.6
27	General government	2,828.1	2,853.8	2,853.8	2,853.8
28	Nonfinancial corporations	35,839.2	39,700.5	39,700.5	35,004.1
29	Other residents	15,358.5	17,011.6	17,011.6	14,995.8
30	Rest of the world	271.2	279.3	279.3	291.2

* Excluding SDR allocations

Overview of Compilation Methods and Source Data

66. After an overview of the framework and presentation of financial statistics, this section focuses on general features regarding compilation methods and data sources, including issues related to the reporting of imperfect data.

Overview of compilation methods

67. In theory, compilers could obtain data for the financial accounts and the financial components of the balance sheets from both parties to every financial transaction and position; however, costs prevent such an exhaustive approach. If compilers could obtain data from both parties, they would obtain two views of each transaction and position (i.e., a creditors' view and a debtors' view). The views should be identical but may not be in practice. Thus compilers often rely on the reporting by only one of the parties to a financial transaction and/or position and the use of *counterpart* and *residual* information.

68. *Counterparts*: Compilers can, for example, determine financial transactions and positions of households by obtaining information from other institutions that engage in financial transactions with households. That is, they take advantage of the fact that numerous transactors, such as households, mostly channel financial transactions through a much smaller number of other units, such as banks and other financial institutions. The information for households so derived is described as *counterpart* information.

69. To obtain this information, compilers use the framework discussed earlier in this chapter, basing compilation of financial accounts mainly on balance sheet information of financial and other institutions. With this information, they may estimate the value of financial assets and liabilities of the institutions concerned and certain counterparts.

70. They also use “differencing” to estimate some transactions and other flows involving financial assets and liabilities. This involves subtracting opening balance sheet values from closing balance sheet values. It also involves using other information, such as write-offs and holding gains and losses, to distinguish transactions from nontransaction flows. In other cases, the compilers find information on transactions available from the data sources they use to compile the financial account estimates.

71. *Residuals:* In some cases, when compilers cannot obtain information directly, they can derive it residually. This is possible because, for each financial instrument other than monetary gold and SDRs, the sum of the net acquisitions of financial instruments for each sector (including the rest of the world) must equal the sum of the net incurrence of liabilities.

72. As mentioned above, compilers prepare estimates of stocks (levels) by gathering together balance sheet information from various sources and selecting the most reliable estimates. As noted previously, different data sources provide alternative or counterpart measures of the same item; thus, compilers often have a choice. For example, government authorities will report most borrowing by state-owned nonfinancial corporations, as assets, as well as by the nonfinancial corporations themselves, as liabilities. The data will generally not

agree because the compiling agency (e.g., the government authorities) may not survey all state-owned nonfinancial corporations. In this case, compilers can use the data from the government authorities to estimate both the asset and liability parts of these borrowings.

73. Also as mentioned above, in many cases compilers may derive financial transactions by taking the difference between closing and opening levels of balance sheet items. Where possible, they can eliminate the component of the change caused by valuation effects, such as exchange rate movements and changes in financial instrument prices. For example, they first revalue the opening stock of securities denominated in foreign currencies (reported in national currency) by using the exchange rates prevailing at the end of the period. They subtract the recalculated opening stock from the reported closing stock to obtain an estimate of the value of transactions (in national currency). They then subtract the estimated value of transactions from the difference between the actually reported opening and closing stocks to obtain an estimate of the valuation effect.

74. In other cases, they estimate transactions by using directly collected data rather than by differencing levels. Most of the estimates of transactions involving nonresidents are based on directly collected data.

75. After a compiler prepares the initial estimates of stocks and transactions, he or she calculates estimates of valuation changes as a residual. He/she then uses these estimates to test the plausibility of the initial estimates of stocks and transactions and, if necessary, make adjustments to these initial estimates.

Source Data

76. The matrix presentation provides a means for understanding the *source data* and general compilation methods for financial statistics. The compiler focuses on a combination of aggregation and/or estimation of data by sector (moving vertically within the matrix) and/or allocating instrument totals among the use (asset) or resource (liability) categories of the sectors (moving horizontally within the matrix). Regardless whether the compiler moves vertically or horizontally through the matrix, he will need to consult a variety of data sources.

77. This section discusses main source data (illustrated in Table 8.3.1) and supplemental sources (Table 8.3.2). It then discusses methods of adjusting data and dealing with reporting of imperfect data.

Table 8.3.1: Types of Main Source Data

Source	Possible use
1. Balance sheet data of financial corporations (including counterpart data)	Use for stock positions of financial corporations sectors. Obtain control total of certain financial instruments such as deposits and loans and allocating them to counterpart sectors.
2. International Investment Positions	Use for stock positions of the rest of the world sector.
3. Balance sheet data for nonfinancial corporations (NFCs)	Use to derive the structure of the balance sheet and to obtain data on households' financing by NFCs, such as trade credits.
4. Government debt data	Use as benchmark in determining control totals for government debt categories, such as treasury bills.
5. Financial market/custodian data	Use for control total of certain financial instruments, such as securities other than shares and shares and other equity, and for allocating among issuing/holding sectors.
6. Financial account of balance of payments and government finance statistics	Use for transactions with the rest of the world sector and general government sectors, including counterpart sectors.
7. Market price indices (e.g., share price index)	Use to convert book value into market value (or vice versa) for financial instruments, such as shares and other equity, in order to separate transactions from revaluations.

Main source data

78. Using the available data in table 8.3.1, compilers of financial accounts start most commonly by determining stock positions of each sector (the financial corporations, the general government, nonfinancial corporations, other residents, and rest of the world sectors).

79. Compilers will sometimes find the process of determining stock positions straightforward; often they will not. If they have balance sheet data available for the major sectors (financial corporations, general government, and nonfinancial corporations) and data available for the country's international investment position (IIP), then they can estimate stock positions of the other residents sector, including households and nonprofit institutions serving households (NPISH), as residual. However, the actual process is often less straightforward, because the availability of balance sheet data for the general government sector, nonfinancial corporations sector, and IIP data is limited, or data lack necessary detail.

80. In countries where the data availability is especially limited, the compilation of financial statistics necessarily will depend heavily on balance sheet data of financial

corporations. Moreover, the compilation procedures that depend mainly on financial corporations also rely on counterpart data provided by the financial institutions. Moving vertically, the compilers first prepare three-dimensional financial statistics matrices, like those explained in the previous section. Then they obtain two-dimensional basic financial statistics matrices by aggregating those counterpart breakdowns into major financial instrument categories. This process is detailed in the following sections—as compilation of Level 2 financial statistics.

81. Some countries also have limited balance sheet data available for the nonfinancial corporations sector. They find those data useful for obtaining data for certain financial instruments, such as trade credits. However, the data typically have significant shortcomings. The data may be limited in the units they cover, the extent of detail for financial assets and liabilities, and their frequency and timeliness. In such circumstances, compilers use the data mainly to provide benchmarks for estimating the sectors' stock positions.

82. To fill gaps in data for nonfinancial sectors, compilers can rely on obtaining control totals for financial assets and liabilities—in essence, moving horizontally across the financial statistics matrix. The control total refers to the total amount (stocks or flows) of a certain financial instrument issued and held. The compilers can find the data for control totals available from the following three sources:

- the balance sheet data of financial corporations (mainly for nonnegotiable instruments such as deposits and loans),
- government debt data, or
- data from other sources, such as financial market participants or custodians/security registration offices (mainly for negotiable instruments such as securities other than shares and shares and other equity).

83. While compilers will find the horizontal approach particularly useful for some instruments—such as securities other than shares and shares and other equity—they will not always find the available data sufficient to allocate fully across all sectors. In the case of financial market data without sector specific information, the challenge for compilers is to allocate an aggregate among issuers and holders, using multiple sources of information where available. Moreover, compilers without full data for issuers and/or holders may need to designate a sector as a residual, to ensure that the value of a transaction in a period or amount outstanding is fully allocated for the entire economy.

84. In the case of flows, the compiler is expected have a method to estimate transactions, other changes in volume, and revaluations. Financial account data of balance of payments and government finance statistics are expected to be useful either for directly compiling transactions or for estimating transactions for the rest of the world and general government sector, respectively. Compilers use price indices most often to estimate revaluations of securities when market values are not available. For categories of financial assets and

liabilities that have no revaluations or other changes in volume, compilers may calculate transactions from the period-to-period changes in stock positions.

Supplemental source data

85. Compilers can use supplemental source data to improve and fill gaps from the primary sources. A few such sources are described in table 8.3.2. For example, compilers can use government survey data to provide information on several sectors. Where confidentiality requirements allow, compilations from tax records may prove helpful in some countries. Also, various trade associations, both for industries and markets, normally are active in surveying and publishing data for their specific markets.

86. A compiling agency may find an array of other private sources, including private vendors—corporations that compile and make available data for specialized markets or for consulting purposes. Vendors may include security ratings agencies. Compilers may find vendor data available only after they contract specially with the private source. A compiler will also find useful the profit and loss statements, although usually available only annually or semiannually, for identifying OCV data, such as loan write-offs, and separating transactions from OCV.

Table 8.3.2: Types of Supplementary Source Data

Type	Possible use
1. Special surveys	Obtain data on nonfinancial sectors' financial activities such as household savings and borrowings, as well as business finances.
2. Tax records	Obtain balance sheet data of corporations and nonprofits institutions serving households for use as benchmarks.
3. Trade association publications	Obtain data on activities of other financial corporations and transactions for particular types of financial instruments such as financial derivatives.
4. Private data vendors	Obtain data on activities of particular financial market activities such as asset securitization.
5. Profit and loss statements	Obtain data on OCV such as loan write-offs and separate transaction from OCV.

Macro and micro source data

87. Source data for compiling financial statistics are either macro (describing the sector or financial instrument as a whole) or micro (describing the specific institutional units or transactions). An example of macro data would be aggregates for depository corporations sector assets, such as loans or the total equity shares outstanding from the sum of all shares traded on exchanges. Examples of micro data are the income statements and balance sheets of individual nonfinancial corporations or records of issues and redemptions of individual

securities. Compilers require statistical techniques to convert micro data to the aggregates used in financial statistic accounts, especially in cases where the micro data are available for only a sample of the universe for the sector or instrument.

Comparability of information

88. Where a compiler uses a wide variety of sources to compile financial statistics, he or she needs to consider how well the data match the principles outlined in the preceding chapters of this guide. If necessary, he or she may need to adjust the data to ensure comparability of information from different sources. Indeed, it would be rare if such adjustments were not needed. Moreover, the quality and care of such adjustments will bear importantly on the usefulness of the compiled financial statistics.

89. Table 8.3.3 lists types of adjustments that compilers often need when they deal with comparability of source data. Compilers will find that coverage of some source data does not exactly match the sector it applies. They will find that breakdowns, in terms of counterpart sector and/or classification of financial assets and liabilities used in source data, may differ from those of financial statistics. Also, source data do not necessarily value assets and liabilities according to the rules outlined in Chapter 5. Thus, compilers need to adjust data to bring the valuation in alignment. In addition, they may need to adjust data because they need to compile the data on an accrual basis, rather than a cash basis. This issue is especially prevalent in government sector statistics.

Table 8.3.3: Adjustments for Data Comparability

Type	Reason for adjustments
1. Coverage	For sectors, aggregates may cover units not in a sector or they may exclude a portion of a sector. Similarly, for instruments micro data may not cover all transactions or aggregates may include some transactions that belong in other categories.
2. Sectorization	Source data may differ from standards used in financial statistics. For example when subsidiaries of corporations in some source data belong to the financial corporations sector but the parent is classified in the nonfinancial corporations sector.
3. Classification of financial instruments	Classification of financial assets and liabilities in source data may differ from standards used in financial statistics.
4. Time of recording	Transactions may not be recorded on an accrual basis. Time of recording of the same transaction may be different among sectors.
5. Valuation	Data may not be market/fair valued for securities other than shares and shares and other equity. Data may not be updated using current foreign exchange rates.

Discrepancies

90. Finally, compilers of financial statistics deal with treating discrepancies in data. Although compilers most frequently face the lack of appropriate data, they may also face a problem of multiple (or overlapping) source data for a financial instrument or parts of a sector. In such cases, compilers often face conflicts where one source (e.g., balance sheet data) indicates an amount that is different from another source (e.g., financial market data). Compilers are then required to assess the relative quality of the data from the different sources and resolve the differences or report discrepancies. A fuller discussion of the treatment of discrepancies is provided in the following section.

Dealing with reporting of imperfect data

91. In an ideal world, the parties involved would accurately record every financial transaction simultaneously and at the same valuation. If compilers collected and collated all these records, without error, they could compile a perfect set of financial statistics. Moreover, because both parties were keeping a record (except perhaps in the case of transactions with households) of the same transaction, compilers could check to ensure they matched and

eliminate transcription errors, etc. Although such a system is clearly not feasible, it provides a useful conceptual baseline against which to discuss the reality. This reality is a partial and error prone system of data collection and recording. The main departures from the ideal are listed and discussed below.

Inconsistent reporting

92. Where both parties to a transaction report it in the returns they make, several errors may occur and introduce inconsistency into the accounts. These include different valuation (for example of a transaction involving foreign exchange), different timing (for example when a bank deposit takes place), and different classification of both the type of transaction and the sector of the counterpart.

93. This problem may arise at several points in the accounts. An obvious example concerns transactions between banks. All banks return reports to the central bank in which they identify their balances with other banks. When compilers collate all these figures, the net balance should be zero. The fact that it is not zero puts the sector account out of balance. In the case of this interbank difference, compilers adjust data specially to reclassify the discrepancy. In other cases, they prefer one source to the other. Whatever is done, it is likely to contribute to the adjustment items of the sector statistics.

94. A few more examples follow: Banks report on deposits by, and lending to, local government. So do the local authorities. The figures do not agree. Also timing errors arise, for example, because of the delay in the banking system between initiating and completing transactions. And some institutions may not compile accounts strictly according to calendar quarters.

Partial reporting

95. This heading can include numerous difficulties. In many matrix cells, only one primary source of information exists. In some cases, the quality of the data will excel—for example, net issues of government securities. But in others, the figures may be based on partial information, because the coverage of a survey is incomplete or the response may not be 100 percent.

96. Errors may also occur where the figures are based on sample surveys. For example, if the survey has measured the activities of financial cooperatives incompletely, the compiler's first problem is to identify them all. Then, the compiler may find far too many to feasibly obtain data from every one. Of those cooperatives that are asked for data, only a proportion may respond in time. Moreover, respondents have scope for compounding the errors through the grossing-up procedures.

97. Compilers may find that partial information can exist for the rest of the world sector in the form of custody holdings reported by banks. Although this information provides a lower bound (minimum amount) on holdings, it cannot be said to provide a complete picture.

98. Another form of partial information may arise because it is impractical to require respondents to provide full detail needed ideally to compile the accounts. Compilers will find that some types of transactions are split between different lines in the financial matrix. Often, the additional work that would be required to provide the details cannot be justified.

Indirect reporting

99. Indirect reporting occurs in two forms: One form occurs in the absence of information direct from the sector. In this case, compilers obtain details from the counterpart sector. This case applies particularly to the nonfinancial corporations and households/NPISH sectors. The other form arises when compilers use balance sheet stock data (at the beginning and end of each period) as a basis for estimating the (net) transactions within the period. In doing this, they consider factors like changes to the population involved and changes in valuation, including write-offs.

100. Compilers usually derive transactions in bank deposits and lending from stocks. For flows denominated in national currency, they find the results relatively reliable. But for flows denominated in foreign currency, the results are less certain, because they depend on eliminating the effects of variations in exchange rates. A compiler has to make assumptions about the mix of currency holdings and about the average rates at which the transactions took place.

No reporting

101. No direct or indirect reporting may exist for some kinds of financial transactions. The best hope is that other information will occasionally indicate the likely size of the levels or flows involved. Examples of these transactions are trade credit and other lending between the nonfinancial corporations sector and households and certain household financial transactions with the rest of the world. In such cases, compilers may simply omit the transactions from the accounts.

Main sources and residual sectors

102. While the major sources of data for the financial accounts provide much information, they do not capture transactions that bypass the financial system. That is, the major sources do not capture transactions directly between the nonfinancial corporations, households, nonprofit institutions serving households, and the rest of the world.

103. To cover some of the latter, compilers may direct some inquiries particularly at measuring balance of payments flows (for example direct investment) at major nonfinancial corporations through a survey.

104. For compilers to ensure that transactions in assets equal transactions in liabilities across each row, they may designate one or more sectors as the residual sector for each line. The compilation system automatically allocates any errors and omissions for that line to

these sectors. In certain lines, more than one residual sector may exist. In such cases, on the basis of "hard" information, compilers may allocate to each remaining sector a proportion of the amount unallocated.

Systematic Development of Financial Statistics

105. As noted in the previous section, countries need a wide range of source data and methods to compile the full range of financial statistics. In reality, the available data are quite different among countries. As a result, for expositional purposes, this chapter describes compilation methods and issues for three levels of accounts.

- *Basic flow of fund accounts,* designated "Level 1" financial statistics in this chapter. Developing countries might use these statistics when they have limited sources of information and wish to analyze intersectoral financial flows.

- *The SNA integrated financial account and financial balance sheet,* described as "Level 2" financial statistics. Emerging market countries are likely to use these statistics when they have already developed Level 1-type financial statistics but wish to enhance their usefulness for policy and analysis with balance sheet effects among a larger group of sectors and instruments.

- *Detailed financial statistics matrices* will be denoted by "Level 3" financial statistics. Particularly, countries with developed capital markets might wish to develop these statistics and include all the sectors and instruments in the *1993 SNA*. The countries would integrate Level 3 financial statistics with other elements of national accounts, such as the product and income accounts.

106. The remainder of this section highlights some differences among Levels 1, 2, and 3. The next section sets out the steps, in detail, for compiling the three levels of financial statistics.

107. As shown in table 8.4.1 ahead, financial statistics of Levels 1 through 3 differ with respect to using flow and stock data. Level 1 shows only flows. Some source data are, in fact, transaction flows; but, in most instances, compilers use changes in stock data for estimating transaction flows. Level 2 contains both flow and stock data; it relies heavily on stock data for the calculation of flows, with estimates of other changes in volume and revaluations where possible. Level 3 also provides flows and stocks; in addition, it offers more detail to reconcile the stocks-flow relations using information on changes in market value and other changes in volume.

108. The accounting entry system for identifying total inflows and outflows among sectors differs in Level 1 from the entries in Levels 2 and 3. Level 1 uses a double-entry system, arranged in one column for each sector. That single column distinguishes the outflow or inflow of resources, with positive entries representing increases in financial resources and negative entries representing decreases in financial resources. In contrast, the quadruple-entry

system in Levels 2 and 3 uses two columns for each sector. Those two columns distinguish the uses and resources from one another, and each transaction results in four entries to the system. For example, if a household purchases a newly issued bond directly from a governmental unit, a compiler makes an entry to increase other residents sector bonds, an entry to reduce other residents sector cash, an entry to increase general government sector cash, and an entry to increase general government sector liabilities.

109. In moving from Level 1 to Level 3, the level of detail is enhanced. Level 1, in the example of the following section, has four sectors (the central government, private sector, depository corporations, and rest of the world). In this example of Level 1, no disaggregation is done into separate sectors for domestic nonfinancial corporations and other residents (households and NPISH). Moreover, in this example, no breakdown is done in financial asset and liability categories. Level 2 expands the sectoral breakdown by identifying more domestic sectors, such as state and local government, social security funds, public nonfinancial corporations, other nonfinancial corporations, and other resident (households and NPISH) sectors. Level 2 also incorporates detail for financial assets/liabilities categories. Level 3 shows all sectors necessary for the full integration with the nonfinancial national accounts, including a NPISH sector, and new types of financial corporations and instruments.

110. Furthermore, in moving from Level 1 to Levels 2 and 3, compilers need to amplify source data for compiling the accounts. For Level 1, they require only aggregate data from the nonfinancial national accounts, central government, balance of payments, and monetary statistics (specifically the depository corporations survey (DCS)). For Level 2, the compilation depends heavily on comprehensive balance sheet data for financial corporations, with breakdowns for financial assets and liabilities and counterpart sectors. The IMF's standardized report forms would serve as sources for compiling DCS and the financial corporations survey (FCS), as shown in Chapter 7 of this guide. This level also uses international investment position (IIP) data and some capital market data (government securities and corporate shares) as supplementary sources. In the Level 3 financial statistics, basic sources are still balance sheet data for financial corporations, but a compiler may depend on numerous other sources for capital market data and balance sheet data of domestic nonfinancial sectors.

Table 8.4.1: Levels of Financial Statistics Used for Exposition

Characteristics	Level 1	Level 2	Level 3
1. Use of flow and stock data	Shows flows only; relies on changes in stocks where flow data are not available.	Shows both flows and stocks; relies heavily on period-to-period changes in stock positions for compilation of flows.	Shows both flows and stocks; reconciles stock and flow data using accounts for revaluations and OCV.
2. Accounting entries	Double entries arranged in one column: Resource (inflow) is positive while use (outflow) is negative.	Quadruple entries arranged in two columns: both resources and uses shown for each sector.	Quadruple entries arranged in two columns: both resources and uses shown for each sector.
3. Sector detail	Four sectors: Central government, depository corporations, private sector, and rest of the world.	Expanded domestic sector coverage to include state and local government, social security funds, nonfinancial corporations, and other residents (household and NPISH). Financial sector expanded to include depository and other financial corporations.	Full set of sectors in line with the *1993 SNA* and *MFSM*, including separation of households and NPISH and expanded detail for financial intermediaries.
4. Instrument detail	None. Only total transactions shown.	Most basic categories, including currency and deposits, securities other than shares, shares and other equity, loans, financial derivatives, and insurance technical reserves.	A wide range of traditional instruments plus details of financial derivatives (forward-type and option – type) and new financial instruments such as structured financing products.
5. Source data	Relies almost exclusively on aggregates from the DCS and balance of payments statistics.	Relies substantially on balance sheet data for financial corporations, supplemented with data from the general government, IIP, and capital market sources.	A wide variety of sources including but not limited to reports from government and regulatory agencies, capital market and trade publications, and special surveys of households and corporations.

The Structure of Financial Statistics

Basic Flow of Funds Account (Level 1 Financial Statistics)

A **basic flow of funds account** is a modified form of the flow of funds matrix that employs a reduced number of sector and financial asset categories. The sectors chosen are normally those most important for financial analysis and for which data are available—remaining sectors are placed in a residual category.
***MFSM*, ¶453.**

111. This section provides five steps for how to compile Level 1 financial statistics. An overview explains the basic sectors and components of Level 1, showing a schematic. The section then provides the compilation steps, finishing with comments on Level 1.

Overview

112. Table 8.5.1 shows the schematic for a reasonably uncomplicated set of financial statistics in a matrix, as a basic flow of funds account (Level 1 financial statistics) with the terms for the scheme. This Level 1 has relatively few sectors or transaction components.[6]

113. The economy is divided into domestic and rest of world (ROW) sectors. The domestic sector is further broken down into central government, private, and depository corporations sectors. Private sector is the residual sector and includes the *1993 SNA* households, NPISH, nonfinancial corporations, other financial corporations, and state and local government sectors.

114. Level 1 may also combine nonfinancial economic activities—available from the *1993 SNA* current and capital accounts and referred to as "above the line" components—with financial activities or "below the line" components. Table 8.5.1 could, therefore, include flows above the line, such as disposable income, final consumption expenditures, net capital formation, exports, and imports. Compilers use them to obtain a measure of each sector's net lending or net borrowing. This more complete version of Level 1 financial statistics may be compiled only on an annual basis, unless above-the-line data, which determine net lending/net borrowing, are available more frequently. The focus of Level 1 financial statistics, however, is to "explain" how sectors intermediate that position with figures below the line.

115. The table 8.5.1 account is a zero-sum matrix, meaning that each row and each column sums to zero. To maintain the sector/column identities, a positive entry represents an increase in financial resources. A positive entry on line 1 (net lending) means the sector increased resources from the production process. A positive sign in the lower part of the table

[6] Tables 8.7 and 8.8 of the *MFSM* (and Table 8.2.1 of this guide) are also basic flow of funds accounts that can be used as a reference. The level 1 account chosen in this guide has, however, the advantage of relative simplicity and, at the same time, significant analytical usefulness.

(domestic and external financing) means that the sector raised financial resources (reduced its financial assets or increased liabilities).

116. Conversely, negative entries mean the sector reduced its resources. That is, a negative entry on line 1 (net borrowing) means the sector's spending exceeded its income from production. A negative entry below line 1 means that the sector provided funds (increased its financial assets or reduced its liabilities). Rows in the table also sum to zero. This is ensured by using contra-entries where source data are not available. In that way, all totals are fully allocated among the sectors.

117. This table's account shows only flow data compiled from already existing macroeconomic statistics i.e., national accounts, as well as balance of payments and monetary statistics, specifically, the depository corporations survey (DCS). Monetary statistics are reported as stocks, while other source data are typically flows. Flows for monetary statistics are calculated as period-to-period changes in the stock positions and are denoted as "Δ" in the table.

118. Financing alternatives are shown on lines 2 through 10, as follows:

- External financing (lines 2 through 6)—financing from the rest of world sector—is available from balance of payments statistics. In the table, external financing is divided into (1) foreign direct investment transactions between the ROW sector and the private sector (line 3); (2) net increases in liabilities of the central government and private sectors to the ROW sector (line 4); and (3) the increase in net foreign assets of the depository corporations sector with the ROW sector (line 5). Importantly, line 4 is a net increase concept, meaning that assets held by the private and central government sectors are subtracted from the increase in liabilities incurred. Similarly, line 5 is a net concept, with foreign liabilities at banks subtracted from the assets acquired by banks. Line 6 shows that part of the increase in net foreign assets that correspond to central bank net international reserves (NIR).

- Domestic financing (lines 7 through 10) is accomplished through three types of instruments. Domestic credit, line 8, comprises loans and other credit from depository corporations to the central government and private sectors. Broad money (line 9) refers to short-term liquid funds supplied by the private sector (money holders) to the depository corporations sector. Finally, other domestic financing (line 10) includes loans, shares, and other credits supplied through other nonbank financial corporations and capital markets; those flows are mainly between the central government sector and the private sector.

Table 8.5.1: Level 1 Financial Statistics Matrix

Transactions	Sectors				
	Domestic Economy			Rest of the World	Sum
	Central Gov.	Private Sector	Depository Corp		
1. Net lending (+)/net borrowing (-)	$NLNB_g$	$NLNB_p$	0	$NLNB_f$	0
2. External financing					
2.1. Foreign direct investment		$+FDI_p$	$+FDI_{odc}$	-FDI	0
2.2. Increase in external liabilities	$+NFB_g$	$+NFB_p$		-NFB	0
2.3. Increase in net external assets			-ΔNFA	+ΔNFA	0
2.4. Of which: central bank NIR			-ΔNIR	+ΔNIR	
3. Domestic financing					
3.1. Change in domestic credit	$+\Delta DC_g$	$+\Delta DC_p$	-ΔDC		0
3.2. Change in broad money		-ΔBM	+ΔBM		0
3.3. Other domestic financing	+ODF	-ODF			0
4. Net errors and omissions	0	$+OIN_p$	$+OIN_{dc}$	$+OIN_f$	0
5. Sum	0	0	0	0	

Note: Inflow and outflow of funds are shown in a single column for each sector. The plus and minus signs indicate inflow (increase in resources) and outflow (decrease in resources) respectively. The sum of the matrix in each column or each row is always equal to zero.

NLNB	Net lending/net borrowing	The difference between net saving and net investment, i.e. the excess of funds available to lend in the case where Savings > Investments and the amount required to borrow if Savings < Investments.
FDI	Foreign direct investment	Net increase in inward and outward foreign direct investment
NFB	Net foreign borrowings	Net increase in foreign borrowings by private sector
NFA	Net foreign assets	Net acquisition of foreign assets of depository corporations
NIR	Net International Reserves	Changes in net international reserves
DC	Domestic credit	Changes in loans and other credit extended by depository corporations.
BM	Broad money	Changes in deposits and similar liabilities of depository corporations.
ODF	Other domestic financing	Changes in securities, loans, and other credits between the private sector and the central government.
OIN	Net errors and omissions (Other items net)	A balancing item that is the difference between NLNB and the sum of external financing and internal financing.

Compilation steps

119. Five compilation steps for compiling a Level 1 financial statistics matrix are as follows.

Step 1

120. Step 1 requires using the data above-the-line data from national income and product accounts for the time period chosen to obtain net lending/borrowing, line 1. To do so, a compiler would calculate net lending/net borrowing as the difference between net saving and net capital formation, including net investment in inventories. For the rest of the world sector, net lending/net borrowing correspond to current account balance plus capital transfers

in the balance of payments statistics. Net lending/net borrowing becomes a control total, and, as explained below, the sum of external and internal financing has to match net lending/net borrowing. For the depository corporations sector, net lending/net borrowing is assumed to be zero.

Step 2

121. Step 2 in the compilation is to insert figures for external financing, which are available from the balance of payments and monetary statistics. Foreign direct investment (FDI) (line 2.1), both inward and outward, is assumed to be between the ROW sector and the private sector, although in some countries FDI in depository corporations may also be significant.

122. To estimate the increase in net external liabilities (line 2.2), the compiler requires balance of payments statistics for individual sectors. NFB_g and NFB_p refer to specific data on the central government and private sectors, respectively. The sum, NFB, differs from the total increase in external liabilities in the BOP, because it excludes foreign liabilities of the depository corporations sector. Foreign liabilities of the depository corporations sector are included in line 2.3, ΔNFA, which is available from the DCS. ΔNFA records the net change in foreign assets, less the net change in foreign liabilities, for the depository corporations sector. Line 2.4 informs of the changes in net international reserves (NIR) of the central bank.

Step 3

123. Step 3 in compiling this level also uses data from the DCS, namely changes in domestic credit (line 3.1) and changes in broad money (line 3.2):

124. For line 3.1, the table calculates ΔDC as the period-to-period change in the domestic credit by the depository corporations sector. The entry for ΔDC_g refers to net domestic claims on the central government (central government liabilities less central government deposits). The table calculates ΔDC_g as the period-to-period change in net claims on central government in the DCS. The table shows figures placed in the central government sector as a source of funds (positive sign). Similarly, the table calculates changes in domestic credit to the private sector (ΔDC_p) as the period-to-period change in claims on private sector, again showing it as a source of funds.

125. For line 3.2, compilers derive changes in broad money (ΔBM) from the DCS and placed the positive entry, that is, the increase in resources, in the depository corporations sector and placed the contra-entry, that is, the reduction in resources, in the private sector (money holders).

Step 4

126. Step 4 is to calculate line 3.3—other domestic financing (ODF). For the central government sector, ODF is the difference between the sector's net lending/net borrowing position and previously estimated financing components. That is:

$$ODF = (S\text{-}I)_g - NFB_g - \Delta DC_g$$

127. The same figure, with the opposite sign (-ODF), then becomes other domestic financing for the private sector. In other words, domestic financing from outside the depository corporations sector is an exchange of resources between the central government and private sectors.

Step 5

128. Step 5 completes the table with calculation of line 4—the statistical discrepancy between net lending/net borrowing and the sum of external and domestic financing. In theory, the result should be zero for all sectors, but this is rarely the case in practice. For the central government sector, the discrepancy is zero, because the financing was forced to equal net lending/borrowing. However, in other sectors, a nonzero statistical discrepancy can be expected. The statistical discrepancy for the depository corporations sector will be equal to "changes in other items net" in the DCS. Moreover, the statistical discrepancy in the ROW sector is the same as "net errors and omissions" in the balance of payments statistics.

Comments on Level 1

129. Level 1 financial statistics contain advantages and shortcomings. Among the advantages, for a given time period, a Level 1 table identifies the broad sectors of the economy that provide funds for investment. In addition, despite the simplicity of the table, the table also shows how those funds were transformed and used by other sectors. Over several periods, the table provide a glimpse at how the financing of the economy is evolving. It shows the relative growth of the use of financing by the private sector versus the central government sector and the importance of the supply of financing from the ROW sector versus the depository corporations.

130. Despite the relative ease for compilers to assemble Level 1 financial statistics, this level has significant shortcomings. An important shortcoming is the limited information on financial intermediation. Nonbank financing has increasingly become a vital part of developing economies, and the Level 1 account does not offer detail about capital markets or other financial corporations.

131. A further limitation is that the accounts include flows only. Assets may be affected by price changes, and debt measures may create burdens that affect funds available to nonfinancial sectors for spending. Thus, data on stock positions have increasingly become important factors in economic and policy analysis.

132. Moreover, the single-column presentation does not allow users to analyze changes to sector balance sheets. In the Level 1 matrix, increases in resources result from either an increase in sector liabilities or a decrease in sector assets. Similarly, reductions in sector resources result from either a decrease in sector liabilities or an increase in sector assets.

133. The account is limited also because vital nonfinancial sectors—the other residents sector (households and NPISH) and nonfinancial corporations sector—are not presented separately. Typically, one sector is a net lender, and the other is a net borrower. This account, by combining the sectors, hides the divergent behavior of the sectors.

134. The availability of data for the central government would allow users to independently calculate financial flows between this sector and the private sector, improving the residual calculation described earlier in the fourth step of this compilation.

135. Finally, the account does not provide the same independent check that more detailed financial statistics can provide on information on net lending/net borrowing. As will be shown in the following section, compilation of financial accounts that is based heavily on data from financial corporations and capital markets offers data on net financial investment, which are a means to check the accuracy of net lending/net borrowing.

The SNA Integrated Financial Account and Financial Balance Sheet (Level 2 Financial statistics)

The **SNA integrated financial account** (presented in Table 8.3 and in the financial part of Table 8.6) represents further development of flow of funds beyond the sectoral and financial asset detail provided in the basic accounts. The integrated financial account is a two-dimensional matrix that covers all institutional sectors and financial asset categories. ***MFSM*, ¶460.**

136. This section shows, in five steps, how to compile the SNA integrated financial account and financial balance sheet (thereinafter level 2 financial statistics). In the overview, the section explains basic sectors and components of level 2, assuming an example from a hypothetical country. It assumes that the country has a statistical system producing the DCS and FCS. The country's capital market is in its formative stage, having begun issuing equity shares and debt securities. The section then moves to the five compilation steps, finishing up with comments about Level 2.

Overview

137. Level 2 financial statistics increase the amount of detail relative to Level 1 by building on the balance sheet data for financial corporations. The accounts include both stock and flow data (transactions and other flows). Each sector records assets (or uses, in the case of flows) and liabilities (resources). This guide recommends compiling Level 2 financial statistics at a quarterly basis, mainly because the compilation uses only below-the-line data.

138. A major goal of Level 2 financial statistics is to obtain sectors' net financial investment—the difference between net acquisition of financial assets and net incurrence of liabilities. In theory (but not in practice), net financial investment is equal to net lending/net borrowing derived from above-the-line data. Therefore, the financial account provides a way to evaluate the above-the-line data (i.e., statistics in the capital account within the nonfinancial national accounts). Moreover, quarterly data of Level 2 provide a rough gauge of real activity at the higher frequency than above-the-line data.

139. Another feature of the Level 2 financial statistics compilation, relative to level 1, is the use of supplementary data from the capital markets. Specifically, it uses data for government securities and equity-shares for both issuing sectors and holding sectors. Compilers use counterpart data in the financial corporations balance sheet to compile the positions for nonfinancial corporations, general government, and the rest of the world.

140. A critical difference between the DCS and FCS and the financial account is that the financial account reports transactions and stock positions of nonfinancial and financial sectors on a gross basis, whereas the DCS and FCS mainly focus on the net positions and net flows into financial corporations. Level 2 financial statistics present transactions and positions across subsectors of the financial corporations sector on a gross basis.

141. When compiling Level 2 financial statistics, compilers derive many transaction flows principally from stock positions. It is assumed that little information exists in the compiling country for actual financial flows (transactions) among sectors, except for balance of payments statistics. The compilation of transactions flow requires other data sources or estimates to calculate other flows (price and other changes).

142. In Table 8.6.1 (Level 2), the number of sectors is greater than in Level 1, and the boundaries are consistent with those in the *MFSM*. The level divides financial corporations, which will be the basis for much of the compilation, into depository corporations (DC) and other financial corporations (OFC) subsectors. Additional subsector detail includes the central bank and other depository corporations (ODC). Nonfinancial corporations and the general government also have subsectors. Finally, with the addition of the other residents (households and NPISH) sector and the rest of world sector, Level 2 provides nearly the full range of sectors defined in the *MFSM*.

143. Also in Table 8.6.1, the instrument detail in Level 2 is enhanced relative to Level 1, and the classification is consistent with the *MFSM*. Note that the main categories of financial instruments should be those of the *MFSM,* while further disaggregation may be country specific (Table 8.6.1 is an example only). Level 2 shows a full range of deposits, securities other than shares, and shares and other equity categories. If compilers deem certain further information useful, the table could provide types of loans, with mortgage loans differentiated from other types of loan credit, as further disaggregation.

Table 8.6.1: Examples of Sectors and Financial Instrument Categories in Level 2 Financial Statistics

(Sectors) Financial corporations Depository corporations Central bank Other depository corporations Commercial banks Building societies Trust companies Other financial corporations Finance companies Life insurance corporations Non-life insurance corporations sector Pension funds General government Central government State and local government Social security funds Nonfinancial corporations sector Public nonfinancial corporations Other nonfinancial corporations Other residents Rest of the world **(Financial Instrument Categories)** Gold and SDR Gold SDR holdings Currency and deposits Bank notes and coins Bank deposits Nonbank financial institutions deposits Central government deposits Local government deposits Social security funds deposits Public nonfinancial corporations deposits Other nonfinancial corporations deposits Other resident deposit Foreign notes and coins Deposits with/from nonresidents	Securities other than shares Treasury bills Treasury bonds Local government securities Financial corporations securities Public nonfinancial corporations securities Other nonfinancial corporations securities Securities issued by nonresidents Shares and other equity Financial corporations shares Quoted Unquoted Nonfinancial corporations shares Quoted Unquoted Foreign shares SDR allocation Loans Central bank (CB) loans Loans to banks other than CB loans Loans to nonbank financial institutions Loans to central government Loans to state and local government Loans to public nonfinancial corp. Loans to other nonfinancial corp. Mortgage loans Other loans Loans to other residents Mortgage loans Other loans Loans to/from nonresidents Insurance technical reserves Insurance reserves for residents Insurance reserves for nonresidents Pension reserves Financial derivatives Other accounts receivable/payable Other accounts with residents Other accounts with nonresidents

Compilation steps

144. The compilation of Level 2 financial statistics requires a number of nearly simultaneous actions. However, it can be thought of as a five-step process:

Step 1. With balance sheet data for financial corporations, construct a total financial corporations sector from the subsector totals.

Step 2. Using counterpart data from the financial corporations balance sheet, set the stage for compiling nonfinancial sector statements.

Step 3. With data from the capital markets and other available sources, enhance the instrument detail in the nonfinancial sectors to complete the accounts for those sectors.

Step 4. With data from the IIP survey, create a rest of the world sector statement.

Step 5. Using flow statements from financial corporations, balance of payments statistics, and price indices for securities, separate the transactions and other flows.

145. Carrying out each step requires the compiler to make judgments and use estimates for source data. In some instances, a compiler may find more than one set of data available for a given aggregate. In this case, he/she will need to choose the most reliable source as control total. This chapter discusses issues for such estimations and choices.

146. Compilers need to compile full sector accounts on a gross rather than net basis. Netting data could result in the loss of significant analytical information. That is, in the case where an asset of one type of financial corporation is a liability of another type of financial corporation, the compiler records both the asset and liability for the full sector. For example, with gross positions, compilers can compare loans to financial corporations relative to loans to nonfinancial corporations, but they cannot do so on the basis of net positions of the financial corporations sector.

Step 1

147. Step 1 relies on balance sheet data for financial corporations, which compilers also use for the DCS and FCS. The following matrix (table 8.6.2) is an example of the stock positions of the financial corporations account with its subsectors—central bank, ODC, and OFC. Without netting intersectoral positions, the table adds the assets and liabilities for each subsector across the rows. The resulting summation provides the assets and liabilities of the financial corporations sector account. For other periods, matching tables are provided. The financial corporations sector account then becomes part of the full financial statistics matrix, provided in the annex.

148. At this early stage, the compiler needs to ensure that important statistical equalities hold. For example, bank deposits, which are liabilities of the central bank, must be equal to the same liability category of the other depository corporations sector. In some compilations, this may not be the case at first, because the timing of recognition of such deposits may differ. In such a case, compilers usually use the central bank's liability data, overriding the aggregation obtained from the assets of the ODC's balance sheet. Compiling teams typically consider the central bank data more accurate; they derive this data from a single rather than multiple sources, and compilers presume that central banks use reliable recording procedures.

In addition, the central bank data likely take account of deposits of banks in liquidation, which may not be in the aggregated statistics of individual banks.

Table 8.6.2: Stock Positions of Financial Corporations

Stock positions End of March 2003		Financial corporations		Depository corporations		Central Bank		Other depository corporations		Other financial corporations	
		Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
A	Gold and SDR	895.1	0.0	895.1	0.0	895.1		0.0	0.0	0.0	0.0
B	Currency and deposits	67,373.2	188,385.8	53,823.5	186,046.1	30,097.6	75,037.3	23,725.9	111,008.8	13,549.7	0.0
C	Securities other than shares	139,104.0	0.0	124,741.8	0.0	71,127.9		53,613.9	0.0	15,261.5	0.0
D	Shares and other equities	11,106.6	52,614.8	1,143.8	44,035.0		6,362.8	1,143.8	37,672.2	9,962.8	8,579.8
E	Loans	66,118.4	32,188.3	63,072.6	28,643.3	4,798.6	27,020.3	58,274.0	1,623.0	3,045.8	3,545.0
F	Insurance technical reserves	0.0	24,452.4	0.0	0.0			0.0	0.0	0.0	24,452.4
G	Financial derivatives	62.0	221.4	62.0	221.4		159.4	62.0	62.0	0.0	0.0
H	Other accounts receivable/payabl	8,257.1	9,815.9	5,365.7	6,832.7	3,215.4	1,010.3	2,150.3	5,822.4	2,891.4	2,983.2
I	Subtotal	293,815.8	305,338.9	249,104.6	265,778.5	110,134.6	109,590.1	138,970.0	156,188.4	44,711.2	39,560.4
J	Net financial position	0.0	-11,523.2	0.0	-16,674.0		544.5	0.0	-17,218.5	0.0	5,150.8

149. In the next example (table 8.6.3), total assets for bank deposits at the central bank, shown in the upper panel (before adjustment), do not equal the liabilities recorded by the central bank. In the lower panel (after adjustment), the compiler distributed the difference between the central bank total and the other bank total to the commercial bank sector, using information that some liquidated bank deposits were not included in the other bank figures and were the most likely source of discrepancy. Alternatively, with such information, the compiler could have distributed the discrepancy proportionately among the depository corporations subsectors according to the outstanding amounts. The particular method used will depend on other information that the compiler obtains.[7]

[7] It is likely that the compiler will need to seek such information through contacts within the statistical system or from industry sources.

Table 8.6.3: Adjustment for Conflicting Data

(Before adjustment)

	Depository corporations							
			Central Bank		Other depository corporations			
							Commercial Banks	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
Bank deposits	16,134.8	15,216.2		15,216.2	16,134.8		16,134.8	

(After adjustment)

	Depository corporations							
			Central Bank		Other depository corporations			
							Commercial Banks	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
Bank deposits	15,216.2	15,216.2		15,216.2	15,216.2	0.0	15,216.2	

150. The compiler should ensure that the deposit assets of nonbank financial corporations equal the liabilities of such deposits within the all-financial corporations sector. If they are not equal, the compiler commonly use liability data for depository corporations as the control total. He or she can base the discrepancy on any additional information he/she obtains or can distribute it proportionately among the deposit assets of the nonbank financial corporations.

Step 2

151. Step 2 in the compilation process uses the counterpart data in the balance sheet of financial corporations to estimate elements of the financial assets and liabilities of the nonfinancial sectors. That is, for each transaction category in the financial corporation sector, a compiler enters the asset (liability) in the appropriate liability (asset) category of the nonfinancial sector counterpart.

152. In a preliminary stage, the compiler may find it helpful to assume that agents in the nonfinancial sectors transact only with financial corporations. This is clearly the case for deposit instruments, as well as for insurance and pension reserves. It is less likely the case for other instrument categories, although in many developing countries, the financial corporations sector is the dominant counterpart for financial transactions of the nonfinancial sectors.

153. The availability of counterpart data varies according to the type of instrument. Compilers should retain all such data from the survey collection process. If counterparties are not available, compilers may deduce them from the type of instrument. For example, in the case of securities other than shares, a central government has issued a treasury bond held by the ODC sector. Compilers may assume that corporate securities held were issued by nonfinancial private corporations, and that debentures and unsecured debt were issued by financial corporations.

154. When the data are not sufficient to identify the issuer of the security, the compiler should attempt to obtain supplementary information directly from financial corporations. Without such direct information, the compiler would need to distribute security holdings to the most likely counterpart sectors, documenting the methods for future evaluation.

155. Numerous other issues are likely to arise, owing to insufficient counterpart data. The experience of compilers indicates that the data they obtain from nonbank financial institutions are likely to be deficient in counterpart data for loan categories. Thus, supplementary sources may have available information that permits a reasonable allocation among counterparties. If not, the compiler is left to develop methods that carry out such allocations. In determining the instrument categories, for instance, compilers should consider differences in the availability of counterpart data. Typically, a compiler will need to separate instruments related to banks and nonbank financial institutions, such as deposits and loans, rather than separating them in terms of sectors of ODC and OFC, as shown in Table 8.6.1, because the methods for allocating among counterparties are different.

156. Even when counterpart data are available, these data may not be in a form that compilers can readily insert into the accounts. For example, banks sometimes categorize loan data by industry rather than economic sector. In such cases, the compiler may find special surveys to be necessary to allocate business loan data, because the industry category can span other nonfinancial corporations, public nonfinancial corporations, and sole proprietorships. In the absence of special surveys, the compiler may find it useful to inquire the lenders for allocating the data.

157. Alternatively, the respondents may report financial corporation loans by purpose rather than by industry or sector. In such cases, the compiler must allocate the transaction (liability) to a sector, and that sector may be obvious by the type of loan. That is, home mortgage loans are typically liabilities of the household sector, and commercial mortgage loans are typically liabilities of the private nonfinancial business sector. In the instrument categories, the compiler may often separate mortgages from other loans, as is shown in Table 8.6.1, because the allocation among counterparties differs.

158. One instance where counterpart data rarely exist but where the financial sector holds the liability is domestic notes and coins. In this case, the compiler needs to distribute the asset over many sectors, using rules of thumb (such as proportions of total deposits) or alternative source data. In developing countries, it is likely that other resident sectors (mainly households) hold most notes and coins that the financial sectors do not report.

159. By convention, compilers do not record stock data for monetary gold, SDR holdings, and SDR allocations. On the other hand, they calculate flow data from central bank records and enter them with the rest of the world as the counterpart. Steps 4 and 5, ahead, provide additional detail on the compilation of the rest of the world sector.

160. For financial derivatives, compilers may find outstanding amounts in the balance sheet data of financial corporations. However, they will not likely find counterpart data also available. Thus, when IIP data do not include financial derivatives and no derivative market data are available, compilers could allocate to the rest of the world the imbalances between assets and liabilities within the financial corporations sector. This approach assumes that such transactions are made with financial corporations abroad. Without information to separate transactions from other flows, compilers could record all period-to-period changes

in stock positions as other flows. The estimation of financial derivatives data should be enhanced in Level 3 financial statistics.

Step 3

161. Step 3 for compiling Level 2 financial statistics uses data from capital markets and other sources to enhance the detail and quality of financial assets and liabilities of nonfinancial sectors. Such data may be scarce in the early stages of a statistical program of a developing country; cost constraints likely restrain their availability. Nonetheless, over time, additional statistics may become available from market sources, such as equity and bond market exchanges, trade associations, government regulatory bodies, or custodian and registration agents. Compilers of level 2 financial statistics should be aware of such data as they become available. Indeed, an active compilation program may help spur the supply of such data, as market participants and policymakers increasingly use financial statistics.

162. Two areas—government securities and listed equity shares—typically have supplemental data available in relatively early stages of financial account development. In the example for a sample country in the annex, government records provided the data for holdings of government securities. However, the information was not identical to balance sheet data for financial corporations. In this instance, the compiler may decide that he or she could enhance consistency throughout the accounts by relying on the balance sheet data as the primary source for information of financial corporations sectors' holdings of government liabilities. The information from the government could be secondary: the compiler could use it to provide details on holdings of sectors other than the financial sectors.

163. For the central government sector, central government sources provide data on total foreign debt, as well as outstanding amounts of treasury bills and notes. The compiler may record the difference between total government debt and government bills/bonds as loans from nonresidents.

164. Compilers are able to use data from the stock exchange to obtain an estimate of the total market value of corporate shares outstanding for financial and nonfinancial corporations. However, no data may be available for the holders of such shares, other than the data provided in the financial corporations' balance sheet data. Compilers may assume that the remainder of holdings outside the financial corporations sector is assets of other nonfinancial corporations.

Step 4

165. Step 4 of the compilation process for Level 2 is to insert information from of the international investment position (IIP). That data provides the stocks of the rest of the world sector. In countries where IIP data are available only on an annual basis, compilers may estimate quarterly data by adding quarterly flows from the balance of payments statistics.

166. The compiler needs to recognize that asset and liability positions of the rest of the world sector in the financial statistics are the mirror image of those in the IIP. That is, assets

in the IIP are in fact liabilities of the rest of the world sector in the financial statistics stock positions; conversely, liabilities in the IIP are assets in the financial statistics stock positions. Additionally, since information is likely to be limited for counterpart sectors for the rest of world sector with domestic sectors, compilers will have to overcome deficiencies by using estimation methods and assumptions based on alternative information.

167. The next paragraphs in step 4 discuss Table 8.6.5, which maps IIP components to the corresponding components in the financial statistics stock positions.

168. Table 8.6.5 maps, from the IIP asset side, equity shares (both the direct investment component for equity and reinvested earnings [line 1] and portfolio investment equity shares [line 3]) to the financial statistics accounts as shares and other equity (foreign). Such shares are liabilities of the rest of world sector and assets of the other nonfinancial corporations sector mainly. However, from the balance sheet data for financial corporations, compilers have already determined the holdings of equity shares (foreign) for the financial corporations sector. Thus, compilers allocate the difference between the total in the financial corporations sector and the total in the IIP data to the other nonfinancial corporations sector, on the assumption that no other domestic sectors hold foreign shares. A similar principle applies to the debt securities portion of portfolio investment (line 4).[8]

169. The table also maps other capital assets in direct investment (line 2) to loans in the financial statistics stock positions. These loans are an asset of the other nonfinancial corporations sector and liability of the rest of the world sector. The liability is in addition to the loans extended by the financial corporations sector. Other capital that is a liability in the IIP (line 8) is also a loan instrument in the financial statistics accounts. However, in this case, it is liability of other nonfinancial corporations and an asset of the rest world sector that is added to loans made to financial corporations and the government sector.

[8] Of course, there may be a problem if the IIP figure is larger than the total in the financial corporations sector. While there may be explanations for such an anomaly, such as securities lending or short selling, the compiler may find it convenient to use the data from the financial corporations.

Table 8.6.5: Mapping IIP Components to Level 2 Financial Statistics

IIP Component	Financial Statistics Instrument Category
Assets:	
Direct investment abroad	
1. Equity capital and reinvested earnings	Shares and other equity (foreign shares): liabilities of the rest of the world and assets of other nonfinancial corporations (input the amount that exceeds financial corporations' balance sheet data).
2. Other capital	Loans: liabilities of the rest of the world and assets of other nonfinancial corporations.
Portfolio investment abroad	
3. Equity securities	Shares and other equity (foreign shares): liabilities of the rest of the world and assets of other nonfinancial corporations (input the amount that exceeds financial corporations' balance sheet data).
4. Debt securities	Securities other than shares (securities issued by nonresidents): liabilities of the rest of the world and assets of other nonfinancial corporations (input the amount that exceeds financial corporations' balance sheet data).
5. Other investment	Other foreign assets: liabilities of the rest of the world and assets of other nonfinancial corporations (input the amount that exceeds financial corporations' balance sheet data).
6. Reserve assets	Not used: data from financial corporations' balance sheet data are used for gold, SDR, and securities other than shares.
Liabilities:	
Direct investment in reporting economy	
7. Equity capital and reinvested earnings	Shares and other equity (domestic shares of nonfinancial corporations): assets of the rest of the world and liabilities of other nonfinancial corporations.
8. Other capital	Loans: assets of the rest of the world and liabilities of other nonfinancial corporations.
Portfolio investment in reporting economy	
9. Equity securities	Shares and other equity (domestic shares of nonfinancial corporations): assets of the rest of the world and liabilities of other nonfinancial corporations.
10. Debt securities	Securities other than shares (government bonds or other nonfinancial corporations securities): assets of the rest of the world and liabilities of the central government or other nonfinancial corporations.
11. Other investment	Other foreign liabilities: assets of the rest of the world and liabilities of other nonfinancial corporations (input the amount that exceeds financial corporations' balance sheet data).

170. The mapping of other investment assets in IIP (line 5) requires careful treatment to avoid double counting balance sheet data for financial corporations. The IIP data are the amount of deposits, loans, or other foreign liabilities in the rest of the world sector. In the absence of sectoral breakdowns in the IIP, the positions are assumed to be assets of financial corporations, other than the central bank. The difference between these IIP other investments and balance sheet data of financial corporations other than the central bank are recorded as other foreign assets in the other nonfinancial corporations sector. The treatment of other investment liabilities in IIP line 11 is the same.

171. Reserve assets in IIP (line 6) are not used in the financial statistics matrix, because compilers obtain these data from the central bank balance sheet. Central bank balance sheet data and IIP data for reserve assets should be consistent with each other, unless the central

government holds a portion of reserve assets. In that case, compilers enter the detail for the amount and instrument type as assets of the central government sector.

172. Compilers use the IIP data for direct investment in equity capital and reinvested earnings (line 7) to estimate a portion of shares and other equity assets of the rest of the world sector. However, it is unlikely that the data in line 7 are included in the total market capitalization of the exchange, which the compiler uses as the control for total domestic shares. Hence, compilers add the direct investment data to the value of domestic shares; without other information, the compiler may assume that the shares are liabilities of other nonfinancial corporations.

173. In contrast, the capitalization of the exchange likely includes portfolio equity data (line 9). Therefore, the compiler does not add the value of those shares to the total market capitalization. Because these assets are rest of world assets, they reduce the assets of the residual holder, which in the example is the other nonfinancial corporations sector. Compilers may again assume that the liability resides in the other nonfinancial corporations sector.

174. For debt securities (line 10), the IIP provides assets for the rest of the world sector; the compiler needs to make assumptions about the most plausible instrument categories. In the example, the compiler first checks for government bonds. Because the total held by foreigners reported by the central government should be less than that in the IIP, the compiler may assume that the remainder is security liabilities of the other nonfinancial corporations sector. If the IIP total is greater than the government reported total, then the IIP total overrides the government data.

175. A country lacking IIP data will likely need to accumulate flows from its balance of payments statistics to estimate foreign direct investment. In a country that compiles Level 2 financial statistics, compilers may find that positions between nonfinancial sectors (typically other nonfinancial corporations sector) and the rest of the world sectors are less significant than positions between the financial corporations sector and the rest of the world sector. However, even in such a country, the amount of foreign direct investment in the other nonfinancial corporations sector could be significant. Thus, the compiler needs to explore the availability of stock data for direct investment.

Step 5

176. Step 5 is to distinguish between transactions and other flows. A compiler can request direct information from financial corporations, for example with reference to (1) the profit and loss account as source data (holding gains and losses owing to changes in interest rates and exchange rates, extraordinary income and expense, etc.) and (2) other adjustments made to calculate flow statements, such as reclassification of assets or liabilities, and mergers, split-over, or situations affecting the composition of institutional units in the aggregated balance sheets for financial and nonfinancial corporations, if available.

177. The compiler should obtain *transaction data* for the rest of the world sector and its counterpart sectors from balance of payments statistics. The compiler should be mindful that the differences between period-to-period changes in IIP data and balance of payments data, which are recorded as other flows in the annex example, represent revaluations owing, in part, to foreign exchange rate fluctuations or other changes in volume (OCV).

178. Compilers will find that balance of payments statistics generally include more details of financial instruments (e.g., breakdown of other investment) and sectorization of the domestic economy (i.e., monetary authorities, general government, banks, and other sectors) than IIP data. As a result, balance of payments statistics map more straightforwardly to financial statistics than IIP statistics do. Compilers can use balance of payments data on monetary authorities and banks as proxies for transaction data for the central bank and other depository corporations, respectively. A compiler must separate other sectors into other financial corporations and nonfinancial corporations, as well as break down general government into central, state, and local government and social security funds. If the compiler is not able to allocate data to each subsector, he or she may allocate data to the other nonfinancial corporations sector and central government sector, respectively.

179. Similarly, it is expected that compilers will obtain transaction data for the general government from government finance statistics. However, they should be aware that government finance statistics often have shortcomings in terms of the coverage (e.g., the exclusion of nonbudgetary central government activities, state and local government, and/or social security funds) or details for financial instruments and counterpart data. As a result, compilers use them solely as a check on net financial investment of the central government and its major instruments (e.g., treasury bills and loans).

180. For shares and other equity, compilers in countries with an organized stock exchange will find share price indices (SPI) available. They can use such indices to estimate revaluations (on the liability side) only if the SPI represents the sector or industry very well, which is frequently not the case. The annex example records the obtained revaluations as other flows. On the asset side, the example prorates those other flows to shareholding sectors, based on those sectors' stock positions. The compiler obtains transactions as differences between period-to-period changes in stock positions and revaluations. The equation below shows this process of calculation.[9]

$$\text{Changes in stock positions}_t = \text{Stock positions}_t - \text{Stock positions}_{t-1}$$

$$\text{Transactions}_t = \text{Changes in stock positions}_t - \text{Revaluations}_t$$

(On the liability side)

$$\text{Revaluations}_t = \text{Stock positions}_{t-1} * (\text{SPI}_t / \text{SPI}_{t-1} - 1)$$

[9] An enhanced process for level 3 financial statistics is shown in table 8.7.2.

SPI: Share Price Index for certain sector/industry

(On the assets side)
$\text{Revaluations}^{i}_{t} = p^{i} * \text{Revaluations}_{t}$

The total for holders "i" is given by $\text{Stock position}_{t} = \sum_{I} \text{Holding sector}^{i}_{t}$ and the proportion for the particular holder is $p^{i} = (Y^{i}_{t-1} / X_{t-1})$.

181. Unless a country has an active secondary market of debt securities, compilers will find it difficult to obtain price indices for securities other than shares. If a compiler discovers that price indices for securities other than shares are not available, then he or she needs to collect the book value data from financial corporations and other respondents, to be able to calculate true transactions for securities other than shares. Finally, a security-by-security database can offer the most relevant data, but this type of database is not available for many countries.

Comments on Level 2

182. Level 2 financial statistics provide many advantages over Level 1. Primarily, the added sector details allow analysts and policymakers to analyze more broadly the financing activities by sectors, as Level 2 shows more clearly the links between financial flows and stocks. Also, the expanded detail for instruments provides a basis for users to monitor growth and developments in specific financial markets and note the substitution among financial instruments as alternatives increase. The greater breadth of the accounts lets analysts and policymakers make international comparisons.

183. More generally, the expansion to two columns for each sector—that is, showing both assets and liabilities—offers a clearer picture of the financial processes of the sectors. Note that Level 1 does not show how *net financial investment* changed; Level 2 shows that such investment changed because of a change in liabilities and/or a change in assets. For example, it shows improvements in the financial position of the nonfinancial corporations sector by both increases in assets or reductions in liabilities. Moreover, Level 2 shows how the composition of assets and liabilities might have changed—for instance, from short- to longer-term instruments.

184. By offering both flows and stocks, Level 2 financial statistics bring the statistics closer to a full understanding of how the net worth of sectors are changing. Considerable information is provided by the data on stock positions and other flows, as well as transactions. On the other hand, balance sheet analysis is limited to financial assets and liabilities, and the accounts as described in the example do not show revaluations and other changes in volume separately.

185. Level 2 financial statistics do, in fact, have significant shortcomings, in part because they rely heavily on financial corporations' balance sheets as counterpart data and depend on stock data to estimate flows. Meanwhile, a growing economy will likely experience considerable financial innovation, resulting in new types of instruments and alternative paths

for financial intermediation. As this evolution occurs, a country will need to review the financial corporations sector and expand the instrument categories. The financial market growth also will likely include greater investment in nonfinancial assets, particularly real estate.

186. As discussed in the next section, compilers may consider expanding the financial statistics to capture such activity. Level 3 will capture positions and transactions between domestic nonfinancial sectors whereas Level 2 will likely omit them. Because Level 2 calculates transactions mainly from end-of-period stocks, it often ignores revaluations of securities and write-offs/downs of loans. Such calculations may distort the financial flows used in analysis. Indeed, such distortions increase as a country's financial system is liberalized and its capital markets develop.

Detailed Financial Statistics Matrices (Level 3 Financial Statistics)

While a financial account flow of funds provides a great deal of sectoral detail, it is only at the two-dimensional level, that is, it shows net incurrence of liabilities by sector and net acquisitions of assets by sector. To address the three-dimensional issue of which sectors finance other specific sectors through the use of specific financial assets, it is necessary to develop **more elaborate flow of funds matrices**. ***MFSM*, ¶462.**

187. This section discusses issues compilers will encounter when upgrading Level 2 financial statistics to Level 3 (detailed financial statistics matrices).[10] Level 3 financial statistics are usually found in countries with highly developed financial systems and capital markets. In these countries, corporations and households have available a wide choice of instruments, including financial derivatives and structured financing products, to finance economic activities. Countries should have formal statistical data systems in place so that high-quality information from a variety of sources is available.

188. Even so, Level 3 compilers need to be familiar with private sector sources, such as trade associations, exchange markets, and academic surveys of economic activity. When compilers examine accounts that fall under the category of Level 3, they will note differences in methods used to collect data for particular types of transactions. This reflects the unique structure of countries' statistical and financial systems. Nonetheless, the results are similar, because the accounts provide detailed means for following and examining the financial intermediation in the economy.

189. A goal of Level 3 financial statistics is to integrate financial statistics and nonfinancial national accounts. As noted previously, financial statistics include the accumulation accounts and balance sheets in a complete system of national accounts. A particular focus of Level 3 is to expand those details to reconcile stocks and flows, using enhanced statistics for revaluations and OCVA.

[10] Note that while the *MFSM* refers to flow of funds matrices only, this section also encompasses balance sheet matrices.

190. Moreover, relative to Level 2, Level 3 the financial statistics show a more detailed derivation of the sector at financial investment, which must reconcile with net lending and net borrowing in the capital account. Those capital account statistics are usually derived from the nonfinancial national accounts of a country's system of accounts. Ways to accomplish the reconciliation are discussed at the end of this section.

191. Thus, the structure of Level 3 financial statistics has detailed sector and subsector financial accounts that show net purchases of financial assets and net incurrence of liabilities. The accounts also show positions—that is, sector and subsector holdings of assets and liabilities. Between the financial flows and the balance sheet positions are sector and subsector accounts for other changes in volume and nominal holding gains and losses. The full sequence of accounts associated with the financial statistics is shown in box 8.1 at the beginning of this chapter.

192. Unlike the sections for Level 1 and Level 2 financial statistics, this section does not offer a step-by-step systematic process for compilation. Indeed, the steps described for compiling Level 2 apply to Level 3; however, Level 3 represents an evolution to more detailed accounts, with a larger number of financial subsectors and an expanded set of instruments. In addition, Level 3 increases the financial information on nonfinancial sectors, both with subsector detail and recognition of a greater variety of financial transactions. Table 8.7.1 below provide examples of this detail.

193. For subsectors in the financial corporations sector, Level 3 includes money market mutual funds (MMMF)—a subsector of the depository corporations sector—and mutual funds other than MMMF—a subsector of the other financial corporations sector. The insurance companies and pension fund subsectors also have more detail than they did in Level 2. Other subsectors are possible, depending on the structure of the financial markets and business institutions in the country. Table 8.7.1 also indicates an additional nonfinancial sector—nonprofit institutions serving households (NPISH).

194. Compilers typically are able to classify instruments under the broad categories in table 8.7.1, which follow the recommendations in the *MFSM* and this guide. For example, among financial instruments, securities other than shares include commercial paper—a substitute for bank financing used by the largest and most creditworthy firms. This category also has a place for structured financing products, such as asset-backed securities. The list includes mutual fund shares, consumer credit, financial leases, government loans, nonfinancial corporation loans, and a breakdown of financial derivatives. Compilers can keep up with the classifications despite the fact continuous innovation in financial markets means the list of instruments is constantly evolving, and some instruments may be unique to a particular country. This guide, however, is not prescriptive on the breakdowns under the broad categories (Table 8.7.1 is an example only.)

Table 8.7.1: Example of Sectors and Asset and Liability Categories in Level 3 Financial Statistics

(Sectors)
Financial corporations
  O*f which, public financial corporations*
  Depository corporations
    Central bank
    Other depository corporations
      Commercial banks
      Building societies
      Trust companies
      Money Market Mutual Fund (MMMF)
  Other financial corporations
    Other financial intermediaries
      Finance companies
      Mutual fund other than MMMF
      Specialized financial institutions
      Special purpose companies
      Funding corporations
    Insurance corporations and pension funds
      Life insurance corporations
      Non-life insurance corporations
      Reinsurance corporations
      Corporate pension funds
      Other private pension funds
    Financial auxiliaries
General government
  Central government
  State and local government
  Social security funds
Nonfinancial corporations
  Public nonfinancial corporations
  Other nonfinancial corporations
Households
Nonprofit institutions serving households (NPISHs)
Rest of the world

(Asset/Liability categories)
Nonfinancial assets
  Reproduced assets
  Non reproduced assets
    Of which: Land
Gold and SDR
  Gold
  SDR holdings
Currency and deposits
  Bank notes and coins
  Bank deposits
  Nonbank financial institutions deposits
  Central government deposits
  Local government deposits
  Social security funds deposits
  Public nonfinancial corp. deposits
  Other nonfinancial corp. deposits
  Other resident deposit
  Foreign notes and coins
  Deposits with/from nonresidents
Securities other than shares
  Treasury bills
  Treasury bonds
  Local government securities
  Financial corporations (FC) securities
  Public nonfinancial corp. securities
  Other nonfinancial corp. securities
  Structured financing products
  Commercial paper
Securities issued by nonresidents
Shares and other equity
  Financial corp. shares
  Nonfinancial corp. shares
  Foreign shares
  Mutual fund shares
  SDR allocation
Loans
  Central bank (CB) loans
  FC Loans to banks other than CB loans
  FC Loans to nonbank financial institutions
  FC Loans to central government
  FC Loans to state and local government
  FC Loans to public nonfinancial corporations
  FC Loans to other nonfinancial corporations
    Mortgage loans
    Other loans
  FC Loans to other residents
    Mortgage loans
    Consumer credit
    Other loans
  Financial leases
  Government loans
  Nonfinancial corporations loans
  Loans to/from nonresidents
Insurance technical reserves
  Insurance reserves for residents
  Insurance reserves for nonresidents
  Pension reserves
Financial derivatives
  Forward-type
  Option-type
Other accounts receivable/payables
  Trade credits
  Other

Enhancing detail for nonfinancial sectors

195. Level 3 financial statistics are distinguished from Level 2 by the extent of the detail shown for nonfinancial sectors. Whereas Level 2 gains much of its value by exploiting the balance sheet data for financial corporations, Level 3 enhances the information for the general government sector, nonfinancial corporations sector, and NPISHs.

196. A specific area for improvement relative to Level 2 financial statistics includes incorporating financial positions between the government sector and nonfinancial sectors; this would include loans from the government to corporations, households, and NPISHs. The *Government Finance Statistics Manual 2001 (GFSM 2001)* offers examples from balance sheets of the government sector.

197. Similarly, data for nonfinancial corporations may allow identification of financial positions with other domestic sectors. Nonfinancial corporations loans and trade credits are the types of transactions that compilers can add to the accounts. Compilers could classify loans made by public corporations (in some countries, an alternative to loans made by governments) as government loans for analytical purposes.

198. A goal in Level 3 financial statistics is to create a sector for NPISHs. Few countries have been able to do this, although many continue to work toward it. A benefit from having an NPISH sector is increased accuracy of the household sector, because NPISHs are otherwise combined with the residually calculated households. Those countries that are making progress in creating the sector are using special surveys, tax and registration records filed with the government, and counterpart data.

199. Finally, compilers ought to work toward surveys of balance sheets that contain sufficient detail to show the full range of financial instruments used by the nonfinancial sectors. Unlike the case of Level 2, a more developed economy will have a substantial portion of positions outside the bounds covered by counterpart data in the financial corporations' balance sheets.

Special-purpose vehicles

200. Some of the additional subsectors of financial corporations and instruments present a daunting challenge for the compiler. In particular, Level 3 financial statistics need to record activities of entities created for the sole purpose of legally issuing debt backed by financial assets and of funding subsidiaries. The need is also apparent in Level 2 financial statistics if the aim is to compile the net financial investment for all sectors. In table 8.7.1, the former are named special-purpose companies, and the latter, funding corporations. Other names for these corporations are asset-backed security issuers or special-purpose vehicles.

201. Because the corporations frequently are not regulated, compilers may have little formal means of collecting data on their assets and liabilities. Rather than composed of stand-alone institutions such as banks, these special-purpose companies may comprise an elastic set

of legal entities—each created for intermediating a particular set of funds. Moreover, the intermediation they perform is in addition to the intermediation of funds recognized in Levels 1 and 2 financial statistics.[11] Some of the liabilities of such entities are held by sectors that report fewer details or are outside the formal data-gathering process of the statistical system.

202. Special-purpose companies[12] are created to purchase financial assets (from an originator) and sell securities backed by those assets to banks, institutional investors (such as mutual funds, insurance corporations, and pension funds), hedge funds, or individuals. Many structures exist for asset-backed securities. A common type is pass-through securities, whose structure allows payments for interest and principal to pass through the special-purpose company, between the borrower and investor. The types of assets that are securitized reflect the nature of the underlying economy. Examples from developed nations include mortgages, consumer credit, financial leases, and loans to corporations or households. Creation of instrument categories for these securitized assets is useful to measure securitization ratios (ratios showing how much of the total assets have been securitized).

203. The balance sheets of special-purpose companies (and hence the sector in the accounts) are quite simple, with the assets showing the value of the collateral (mortgages, consumer credit, etc.) and occasionally foreign direct investment activities, and the liabilities indicating the cumulative value of the securities issued, less principal repayments and defaults.

204. Data for special-purpose companies are sometimes available through the agencies where the securities are registered. Such data would provide the amount of gross issuance. Compilers may also use industry sources to ascertain the amount outstanding, new issuance, and repayments. In particular, compilers might find available newsletters and other reports published by industry specialists and brokers of such securities, which are used by participants to monitor activity at a high frequency. A compiler must take care to secure source data for retirement of securities, or he or she must estimate such retirements. He or she may also find it most difficult to obtain data on defaults, but these data could be available from the private sources already noted.

205. Many asset-backed securities are priced regularly in the capital markets, much as bonds. To reflect the current market value, compilers may use data on prices to revalue outstanding securities. The change in market value from period to period would be a component of the revaluation account for the sector holding such securities. In addition, some information is often available on defaults of securities. The amount of principal

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[11] In some cases, the result of this added intermediation is a "grossing up" of balance sheets. That is, for a given level of real economic output, the number and value of financial assets outstanding (and corresponding liabilities) increase as securitization of financial assets occurs.

12 Chapter 3 of this guide refer to the special purpose companies as special purpose entities that acts as financial intermediaries, i.e. that constitute separate institutional units.

defaulted belongs in the other change in volume account. Allocating that value to the sector holding the defaulted issues may be difficult, likely requiring the compiler to consult with market participants and estimate.

206. Funding corporations typically are created by a large financial corporation, such as a bank holding company, to raise capital for subsidiaries. A compiler may find it difficult to obtain data for the balance sheet of such corporations separately from the holding company itself. However, he or she may find estimates of the assets of the funding corporations available from the data for subsidiaries, which show loans from parents or similar accounting entries. Liabilities of the funding corporations can be any combination of capital market instruments, such as short-term commercial paper, bonds, or notes. Compilers must estimate the value of the liabilities residually, as the value must equal the assets; funding corporations typically hold no other types of assets.

Effect of secondary market transactions

207. Institutional sectors may trade securities, once issued, many times; moving them off the balance sheet of the sector of the original purchaser to another sector balance sheet. (Intrasector transactions are of less concern, because in most cases they do not affect the aggregated balance sheet of the purchasing sector.) However, if compilers use original-purchase data to determine security holders, that information becomes outdated. For example, central governments often provide information on the purchasers of their issues soon after the issue date, that is, the so-called primary-market purchase data. However, in economies with secondary markets, securities may change ownership during the period they are outstanding, moving from a broker/dealer to a commercial bank and to an insurance company, for example.

208. For a compiler of financial statistics, a developed secondary market implies that he or she must rely more on sources other than the primary market data. In some cases, a compiler can best deduce the information on holders (investors) from the balance sheets of the investors. In the above example, he or she would deduce such data from reports of the broker/dealers, banks, and insurance companies. Typically, the household sector is a residual holder, ensuring that a compiler has counted all outstanding debt.

209. If data are missing for more than one sector, then compilers must make estimates, using alternative data sources such as custodians (often banks) and security registration offices. A difficulty that often arises, however, is to identify the sector from the categories used by the custodians and registration offices. Registration information, in particular, may be misleading, owing to tax or other incentives that may affect the form of reported ownership.

Incorporating nonfinancial assets

210. A critical element for a compiler in integrating financial statistics with other national accounts is to link investment in nonfinancial assets with those of financial assets. The capital account—a part of the national accounts—shows investment in (that is, net purchases

of) nonfinancial assets. Such assets include produced assets, such as capital equipment (including software), inventories, and structures; it also should include nonproduced assets, such as land. The difference between outlays for nonfinancial assets and saving (derived in the current accounts) is net lending/net borrowing. Thus, in Level 3, the financial statistics are linked to the capital account and, hence, investment in nonfinancial assets, by explaining how the net lending/net borrowing position of the sector is satisfied. This linkage is a critical element of the financial statistics accounting structure, because capital outlays are generally financed with debt as well as current income.

211. Compilers can use numerous ways to determine the market value of the stock of nonfinancial assets. One possibility is accumulating the nominal value of net investment ($NetInvest_{tga}$)—the so-called perpetual inventory method.

$$Value^{t}_{tga} = \Sigma^{t} NetInvest_{tga}$$

212. The procedure ensures consistency with the related flow accounts. However, an issue with such a procedure is the starting point of the accumulation. The compiler must assume that the value of the capital stock was not material before the beginning point or have an estimate of the value at that point.

213. The compiler may also need to adjust the value of the stock for changes in value owing to holding gains and losses, just as is the case of a financial asset. The most obvious tangible asset that requires revaluation is real estate, where market values tend to fluctuate by considerable amounts. In addition, natural disasters and other unusual events may require compilers to record other changes in volume.

214. An alternative procedure for estimating the value of the stock of nonfinancial assets is to rely on independent surveys. Industry or census-type surveys are sometimes available at intervals (annual, decennial, or something in-between), and these surveys, together with adjustments for market value and other changes in volume, provide benchmark values that compilers can use. The compiler can derive estimates for the values between the benchmarks using the accumulation method above.

Compiling OCV and revaluation accounts

215. In Level 3 financial statistics, revaluations and OCV are separated from each other, as well as from transactions. Table 8.7.2 summarizes the steps for estimating such components for shares and other equity as an example.

216. In step 1, the compiler estimates transactions for listed corporations. To compile primary market transactions—typically new share issues and share retirements via buy-backs or other means—the unit can use government and private sources. If an economy-wide total is available from sources, the unit may find that the other nonfinancial corporations sector is the residual sector for the estimate of net issuance. For secondary market transactions, the unit will find that data with sectoral breakdown is often available in organized stock exchanges.

217. In step 2, a unit compiles separate data for the market value of shares outstanding; it makes the estimates for the economy as a whole and by sector using data from organized stock exchanges and information available from sector balance sheets. The unit must estimate both the asset side (holders of shares and other equity) and the liability side (issuers of shares and other equity). In step 2, a sector with limited data, such as the household sector, is typically a residual holder to ensure that the total value for the economy is fully allocated.

218. In step 3, the compiling unit computes the change in total outstanding (from step 2). That change equals the sum of three flows: the amount due to transactions (from step 1), the amount due other changes in volume, and the amount due to holding gains/losses.

219. Step 4 computes the amount due to holding gains/losses using broad price indices for equity shares. Compilers apply the indices to the total outstanding in the previous period. They then distribute the amount thus calculated to the sectors according to their holdings. The remaining flow—that is not accounted for by net issuance and holding gains and losses—is the amount due to other changes in volume.

Table 8.7.2 Estimating transactions, revaluations, and OCV for shares and other equity

Steps	Possible data sources	Comments
1. Transactions: Estimate net issuance of shares by sectors and secondary market transactions at transaction prices.	Government registrations, market exchanges, and private industry tabulations.	Data required for both gross issuance and retirements of shares. Detail on the industry or corporation type allows for estimates by sector.
2. Stocks: Estimate market value of total shares outstanding and the amount of that total held by each sector.	Sector balance sheet data and market exchanges.	The household sector is typically a residual holder, although figures for households may be available from surveys. Such surveys provide a rough check on the accuracy of sector data.
3. Other flows: For the economy and each sector, calculate the period-to-period change in market value of shares held. The difference between the total change in value of shares held and net issuance (from step 1) is the change value due to holding gains and losses and to OCV.	Calculated from the flow and stock data in steps 1 and 2.	Refinements include using sector data, where available, from income statements that show changes in value held due to holding gains and losses.
4. Separation of revaluations and OCV: The amount calculated in step 3 is further disaggregated into holding gains and losses and other change in volume using an index of the change in prices. That is, the period-to-period change in market value less the change in value calculated using price indices is equal to OCV.	The price indices should be as broad as possible. In some instances, specialized indices can be used for some sector holdings.	

220. The method, while practical, is deficient in a number of ways. For example, compilers must calculate the estimated market value for unquoted shares and other equity in step 2 (calculation of liability stock positions), and there is no international agreement on the method to be used for the estimation. In addition, the method assumes that all sectors hold a representative portfolio of equity shares that is roughly in the same proportion as that used to construct the market price index. It further assumes that all sectors experience holding gains and losses in the same proportion as their holdings of shares. In fact, the timing of transactions within sectors and the differences in holdings of shares makes the actual holding gains and losses differ. Refinements to the method, therefore, could take account of holdings

for particular sectors; income statements from insurance companies and pension funds, for example, may provide enough information to make such refinements.

221. Data deficiencies make the calculation of revaluations and OCV less reliable for securities other than shares. The sources for transaction estimates of bonds and other such financial instruments are often less developed, and firms may report holdings on the original purchase-price basis rather than a market value basis. Nonetheless, amounts outstanding are likely available, and bond price indices offer a means to estimate holding gains and losses on an aggregated basis.

222. Important, but frequently neglected, areas for other changes in volume are loan write-offs/downs. A simple difference in stock positions of loans includes transactions (net of extension of loans and reimbursement) and OCV (write-offs/downs). Some source data for write-offs/downs may be available in financial corporations' accounting records. If the frequency of source data is less than quarterly, compilers may need to extrapolate or perform other estimates.

223. Corporate accounting recognizes write-offs/downs when the corporations remove nonperforming loans from balance sheets or sell them at a discount. If no loan loss provisions exist, corporations expense the write-offs/downs and, therefore, identify them in the corporation's profits and loss statements. If loan loss provisions exist, corporations do not recognize the expenses, to the extent that the provisions equal or exceed the losses. Therefore, to obtain source data for the OCV, compilers need to identify the amount of withdrawal of loan loss provisions, as well as the amount of losses for write-offs/downs.

224. Compilers need to revalue at current exchange rates the equity shares denominated in foreign currencies (assumed to be issued by nonresident corporations). The compilers record revaluations for foreign-currency-denominated assets and liabilities as nominal changes in price—that is, in the revaluation account. To obtain stock data book value before revaluation, they discount stock data by foreign exchange rates. They translate changes in book-valued end-of-period stock data into transactions during the period. Finally, they calculate other flows by taking the difference between end-of-period stock data and transactions. More practically, because a compiler uses IIP data in the stock table and use balance of payments data for the transactions table in the rest of the world sector, he or she records the difference between the period-to period changes in IIP data and BOP data as revaluations.

Comments on Level 3

225. As the discussion in this section and earlier sections indicates, the rules for compilation are many and follow guidelines based on international standards. Nonetheless, in practice, compilers of Level 3 financial statistics require considerable judgment and often take substantial leeway. The compiler may need to choose the most appropriate data among several unsatisfactory sources. Alternatively, as is more likely, he or she may need to develop a means to estimate missing data (see next section). Residual calculations are likely to be

numerous, requiring compilers to frequently monitor for errors that may be allocated to residual sectors or instruments.

226. Nonetheless, where compiled, Level 3 financial statistics provide a substantial body of information for policy analysis and research. Indeed, countries compile Level 3 financial statistics precisely because they provide a tool for improving the understanding of how sectors interact economically with each other and how financial intermediation affects economic growth and development. The increased data for financial activity of nonfinancial sectors and households supply necessary links to real economic activity.

227. Level 3 financial statistics offer the opportunity to study the impact of balance sheet changes on sector activity and on the overall economic aggregates. Moreover, with sufficient detail, Level 3 offers opportunities for studying the effects of different financial market instruments on activity. Importantly, the level of detail allows for considerable regrouping of aggregates, which is helpful for international comparisons, where countries' financial environments may differ in specifics but not in a fundamental nature.

228. Financial statistics document, for a particular time, the level and intensity of financial activity, and they record over time how such activity evolves. At their most general level, the financial statistics show how economic sectors transmit investment and spending decisions between and among themselves. As a result, analysts frequently use the financial statistics contained within the accounts for estimating econometric models of macroeconomic behavior.

Issues Related to Estimation Techniques for Missing Data

229. Compilers of quarterly financial statistics rely on various techniques to estimate missing or incomplete data. The publication schedule of financial statistics typically reflects the processing time for financial corporations' balance sheet data, or other essential sources, such financial market data and balance of payments statistics. To maintain a reasonable release schedule for financial statistics, compilers need to estimate missing data, because some source data, especially for Level 3 financial statistics, become available later and, in some cases, after substantial lags. In addition, some data are only annual, and missing data techniques offer means to generate quarterly data from the annual figures. Indeed, compilers typically have an arsenal of techniques to meet their needs. To evaluate the techniques and set priorities for improving data for financial statistics, they need to track errors in estimates relative to actual figures.

230. This section lists techniques under two broad categories. The first list provides estimation techniques that compilers can use when they cannot obtain quarterly data but have timely annual data available. The second list provides estimation techniques to use when timely quarterly data are not available but become available for subsequent publications of the accounts.

Estimation of Quarterly Figures from Annual Sources

a. *Sliding level method:* The simplest and most common method for estimating missing data is to repeat the previous year's figure. If Y_{t-1} is the level for the most recent previous year, then each quarter y_{tq} is given that same level. That is,

$$y_{1q} = Y_{t-1}$$
$$y_{2q} = Y_{t-1}$$
$$y_{3q} = Y_{t-1}$$
$$y_{4q} = Y_t$$

Note that the sliding level method value in the fourth quarter "slides" to the next year's figure. The sliding level is particularly useful if the data series is highly irregular, showing neither trend nor seasonality. By holding the level constant, the compiler does not introduce bias or unintentional error into the estimates.

b. *Complementation method:* If the amount of increase in the annual data appears to be relatively smooth over time, compilers may estimate quarterly data from annual figures by "complementing" the previous amount by one-fourth the additional amount of the previous year:

$$y_{1q} = Y_{t-1} + [(Y_t - Y_{t-1}) / 4]$$
$$y_{2q} = y_{1q} + [(Y_t - Y_{t-1}) / 4]$$
$$y_{3q} = y_{2q} + [(Y_t - Y_{t-1}) / 4]$$
$$y_{4q} = Y_t$$

c. *Constant ratio method:* The annual data sometimes indicate that a series tends to be a stable proportion of some other series. For example, annual data may indicate that security holdings of bonds by pension funds may be a (near) constant proportion of the total of all bonds over the year. In that case, the total for holders "i" is given by $X_t = \sum_i Y^i_t$ and the proportion for the particular holder is $p^i = (Y^i_{t-1} / X_{t-1})$. The quarterly data are estimated by:

$$y^i_{1q} = p^i * X_t$$
$$y^i_{2q} = p^i * X_t$$
$$y^i_{3q} = p^i * X_t$$
$$y^i_{4q} = Y_t$$

If quarterly data are available for the total then one can use that information:

$$y^i_{1q} = p^i * X_{1q}$$
$$y^i_{2q} = p^i * X_{2q}$$
$$y^i_{3q} = p^i * X_{3q}$$
$$y^i_{4q} = Y_t$$

d. *Flow increment method:* It may be necessary to estimate quarterly stocks when stock data are available only annually but flow data are available quarterly and the flow and stock data share the same framework. As was shown in the Level 2 financial statistics, compilers typically estimate quarterly IIP data with this method. The formula below adds the quarterly flow (*f*) to the previous annual figure to obtain quarterly estimates of Y.

$y_{1q} = Y_{t-1} + f_{1q}$
$y_{2q} = Y_{t-1} + f_{1q} + f_{2q}$
$y_{3q} = Y_{t-1} + f_{1q} + f_{2q} + f_{3q}$
$y_{4q} = Y_t$

e. *Proportional method:* It is sometimes the case that compilers can estimate growth of a data series by growth of another series. For example, compilers might infer the amounts outstanding of deposits of a certain category of depository corporations, where only annual data are available, from the data of another type of financial corporation, where quarterly data are available. The formula below applies the growth of series X to the previous year's level of series Y to obtain quarterly estimates of Y.

$y_{1q} = Y_{t-1} * (x_{1q} / X_{t-1})$
$y_{2q} = Y_{t-1} * (x_{2q} / X_{t-1})$
$y_{3q} = Y_{t-1} * (x_{3q} / X_{t-1})$
$y_{4q} = Y_t$

f. *Smoothing method:* Compilers use many methods to create a relatively smooth quarterly series from annual data. They use most processes when no quarterly data are available for some time, if ever. In that case, the methods attempt to retain the cyclical and trend pattern implied in the annual data. Two such methods are shown below.

Method 1: K-L method[13]

$y_{1q} = Y_{t-1} + (11Y_{t-1} + 5Y_{t+1} - 6N_t + 32)/64$, where $N_t = Y_{t+1} + Y_{t-1} - 2Y_t$
$y_{2q} = y_{1q} + (9Y_{t-1} + 7Y_{t+1} - 10N_t + 32)/64$
$y_{3q} = y_{2q} + (7Y_{t-1} + 9Y_{t+1} - 10N_t + 32)/64$
$y_{4q} = Y_t$

Method 2:

$y_{1q} = Y_{t-1} + F \times Y_{t-2} /(Y_{t-2} + Y_{t-1} + Y_t + Y_{t+1})$, where $F = Y_t - Y_{t-1}$
$y_{2q} = y_{1q} + F \times Y_{t-1} /(Y_{t-2} + Y_{t-1} + Y_t + Y_{t+1})$
$y_{3q} = y_{2q} + F \times Y_t /(Y_{t-2} + Y_{t-1} + Y_t + Y_{t+1})$
$y_{4q} = Y_t$

Estimation of Quarterly Figures When Data are Missing or Incomplete

a. *Sliding level method:* As above, the sliding method assumes that the estimate for the current quarter is the same as the prior quarter.

$y_t = y_{t-1}$

If the data exhibit a seasonal pattern, then the compiler would use the data for four quarters earlier.

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[13] See Board of Governors of the Federal Reserve System, *Guide to the Flow of Funds Accounts, Volume 1* (Washington, D.C). It can be ordered through the Internet at http://www.federalreserve.gov/Releases/z1/ffguide.htm

$y_t = y_{t-4}$

Note that, in general, if a series exhibits seasonality, the compiler should use year-earlier data that pertain to the same quarter. If no seasonality exists, then the previous quarter is sufficient.

b. *Substitution method:* The substitution method has an additive and a multiplicative form. The additive formula uses the amount of change in a related and obtainable series ("x" in the notation below) to estimate the missing quarterly data:

$y_t = y_{t-1} + (x_t - x_{t-1})$

The multiplicative form uses a change in the same proportion as the related series:

$y_t = y_{t-1} * (x_t / x_{t-1})$

Example: x=pension reserves and y=insurance reserves.

For data with seasonal patterns:
Additive: $y_t = y_{t-4} + (x_t - x_{t-4})$
Multiplicative: $y_t = y_{t-4} * (x_t / x_{t-4})$

c. *Trend method:* To use the trend method, assume that changes in the series (additive or multiplicative) are based on past changes in the series.

Additive: $y_t = y_{t-1} + (y_{t-1} - y_{t-2})$
Multiplicative: $y_t = y_{t-1} * (y_{t-1} / y_{t-2})$

For data with seasonal patterns:
Additive: $y_t = y_{t-4} + (y_{t-4} - y_{t-8})$
Multiplicative: $y_t = y_{t-4} * (y_{t-4} / y_{t-8})$

d. *Extrapolation method:* If gradual changes in the series with missing data are typical, the compiler may approximate forward estimates with an extrapolation formula. Such formulas calculate the missing data-based values of the last available data and a weighted average of past changes. We present one formula that weights the most recent changes the greatest.

$y_t = y_{t-1} * ([3/6 * (y_{t-1} / y_{t-2})] + [2/6 * (y_{t-2} / y_{t-3})] + [1/6 * (y_{t-3} / y_{t-4})])$

For data with seasonal patterns:

$y_t = y_{t-1} * ([3/6 * (y_{t-1} / y_{t-5})] + [2/6 * (y_{t-2} / y_{t-6})] + [1/6 * (y_{t-3} / y_{t-7})])$

e. *Regression method:* A criticism of the above methods is that they rely on set formulas and do not reflect the complexity in the way financial stocks and flows are determined. An alternative is to build regression models to estimate statistically the impact of any variety of economic variables on the series in question. For example, if the nonfinancial corporations' issuance of securities other than shares is key missing data, the compiler could estimate a model using interest rates and related types of nonfinancial variables, such as spending on capital goods. This approach can be appealing analytically, but it not without its drawbacks. The first is that it is very costly in staff time and data to build reliable models. Regression

models are unique to a particular series and typically require substantial maintenance by the compiler to ensure that the relationships continue to hold over time. On the other hand, the formula methods allow for more efficient processing of a wide variety of data. In any case, regression models can be complex and are beyond the scope of this guide.

Editing, Residual Calculations, and Discrepancies

231. Table 8.9.1 evaluates the reliability of areas of a typical financial statistics matrix. The darker areas indicate where the compiler placed a relatively "high" degree of reliability. Not surprisingly, the darker areas are those that use balance sheet data for financial corporations or rely on the IIP and balance of payments data. In each case, the collection of data is designed specifically to meet the needs of national compilers.

232. The moderately-shaded areas indicate series where estimates are judged to be less reliable, but still where source data are available on a sample basis or on a basis where the frequency is less than quarterly or annually. Estimates of trade credits and many types of government financial assets fall in that category.

233. The lightly shaded areas are for series where virtually no source data exist; estimates for series in the nonshaded area are based largely on residual calculation. In the table, which is an example only, although applicable to most countries, household sector asset categories fall in that category, in addition to miscellaneous assets and liabilities for most sectors. (Blank cells indicate series where no data should appear in the accounts. For example, households do not have currency liabilities, and depository corporations do not issue government securities.)

Table 8.9.1: Reliability of the estimates

: High : Middle : Low

	Financial corporations				General government		Nonfinancial corporations				Other residents		Rest of the world	
	Depository corporations		Other financial corporations				Public nonfinancial corporations		Other nonfinancial corporations					
	Asset	Liability	Asset	Liability	Asset	Liability	Asset	Liability	Asset	Liability	Asset	Liability	Asset	Liability
Currency and deposits														
Currency														
Deposits														
Loans														
Securities other than shares														
Central government securities														
Other securities														
Structured-financing instruments														
Shares and other equities														
Financial derivatives														
Insurance technical reserves														
Others accounts														

Editing and Checking Data

234. Careful examination of resulting data in a matrix is still the simplest and most direct way to identify data problems. Compilers can supplement "eyeball testing" with charts and special tabulations, such as ratios, which will show data outliers that may need correction or understanding before publication. Such methods frequently reveal figures outside a range of recent experience, numbers that do not change that were expected to have changed from a previous period, or numbers that are of the wrong sign.

235. Eyeball testing also involves applying plausibility tests to aggregate data. The compiler should begin the data gathering process with a sense of what the numbers might look like in the final compilation. He or she needs to "explain" differences from expectations with a reasonable story about the movements of the data. That is, the compiler should understand the basic underlying macroeconomic relationships. Results that do not meet a plausibility test require a compiler to review source data or consult other experts outside the compiling agency for confirmation.

236. For example, the compiler may discover in the early part of the process that net financial investment of households is negative, even though over time it has typically been positive. A compiler would test for plausibility by examining real sector data to see if investment in real estate was high or if spending on durable goods was exceptionally strong. Alternatively, borrowing may have been particularly strong in the period, owing to unusually favorable lending terms or other factors.

237. Compilers will find problems sometimes more apparent when they use time series with tables and charts to examine them. While the matrix format provides its own natural check in the way it is constructed, time series point out fluctuations and outliers that compilers cannot see in the matrix. Time series can also be ratios and percentage changes.

Residual Calculations

238. Estimates in financial statistics rely heavily on residual calculations. When compilers make an effort to increase the accuracy of estimates of residual calculations, this enhances the overall confidence and usefulness of the accounts. The issues of residual calculations are mainly related to the other nonfinancial corporations and households sectors, because those sectors most often have series calculated residually.

239. Residual calculations require special attention. A compiler calculates an estimate for a series as a residual when source data provide a total amount and amounts for all but one sector. In some instances, the majority of data for a sector are based on residual calculations. For example, compilers often know the total issue of central government securities by reports made by the government.

240. Most national data collection systems identify holdings of the financial corporations, general government (especially social security funds), and even nonresidents. However, rarely, if at all, do source data regularly report holdings of the other nonfinancial corporations and households sectors, although these sectors may be a significant investor. In that case, the compiler often derives the holding amount of these sectors by subtracting all known holdings for other sectors from the total issue. Then, he or she allocates the residual amount between the other nonfinancial corporations and household sectors. Therefore, the accuracy of the household sector figure depends on the accuracy of the total and the accuracy of the other sectors' reported holdings, as well as estimation methods for the allocation of residual amount.

241. Examination of residually calculated series sometimes reveals negative balances in stock positions. Negative stock positions can result when a source gives the control total for a certain instrument category, and compilers estimate holding/issuing amounts separately from other sources except for a residual sector. If the total of the known sectors is greater than the control total, the residual amount is negative. This negative amount may be a consequence of the use of different data sources for the control total and each sector, inappropriate estimation methods, or misreporting of data from respondents. In this case, the compiler must research the source of the error and correct data appropriately.

242. An area of particular difficulty with negative values is repurchase agreements and securities lending transactions. International guidelines for the treatment of repurchase agreements and securities lending allow for negative balances for securities holdings. However, reporting misspecification is likely, because recommended procedures in the *MFSM* allow duplicate recording of the securities resold or relent. Amounts are likely to be negative or skewed to a lower figure in financial statistics because they allow for the full range of sectors outside the financial corporations sector.

243. Financial statistics are often subject to revision. Compilers revise data when new, more complete information is available. Moreover, because compilers calculate some series from other series, revisions in one area often lead to revisions elsewhere in the financial statistics. Compilers should track and document the revision history of the series. Often that history indicates biases in the preliminary information that compilers may correct in subsequent data collections or account for in preliminary estimates.

Statistical Discrepancies

244. Statistical discrepancies arise when two sets of information lead to different results for an aggregate economic series, even though in theory the results should be identical. One of the more vexing discrepancies typical in financial statistics is the difference between net lending/net borrowing (NLNB) derived from the capital account and net financial investment (NFI). NFI is the conceptually identical concept derived from the financial account. The following identities aid in understanding the discrepancy and its importance:

From the capital account:

(1) NLNB = Net Saving – Net Capital Formation

From the financial account:

(2) NFI = Acquisition of Financial Assets – Incurrence of Liabilities

In theory NLNB = NFI, but in practice a discrepancy arises because the measurement of (1) is independent of the measurement of (2).

245. No international consensus exists on how compilers should treat this discrepancy. They can "eliminate" it using a residual calculation (usually called balancing item); or they can distribute it between the accounts. In addition, they should make the discrepancy an item in the other changes in volume account. Other treatments are possible, and each treatment has its advantages or disadvantages.

246. An argument for removing the discrepancy (that is subsuming it in the accounts) is that it eliminates an item of ambiguity for users. Compilers are charged with providing users with the "best" estimates; removing discrepancies keeps the accounts balanced. If compilers showed the discrepancy in some part of the account, it would lead to different measures of the same activity.

247. On the other hand, showing discrepancies provides a means for measuring the size of likely errors. Compilers can indicate to the users the preferred measure of an activity such as NLNB, while at the same time quantifying the possible degree of statistical error.

248. This guide makes no recommendations on how compilers should treat discrepancies in their publications. No matter how a compiler treats the discrepancy in published material, it should be a matter of record for the compiler. Discrepancies contain valuable information for understanding the weaknesses of the data system used to compile the accounts. They point to areas in need of improving and to areas containing errors that compilers will correct in subsequent estimations. Full documentation of the discrepancies is a necessary part of the processes used to improve the accounts over time.

Using Financial Statistics

249. Policymakers and analysts use financial statistics to describe and analyze economic and financial developments within countries and to compare economic and financial developments among countries. For example, within the IMF's programs, financial statistics, as described in this guide, are at the core of financial soundness indicators, and to support a balance sheet approach to analyzing a country's vulnerability to external or internal shocks.

250. The financial account in particular shows how funds flow from sectors that are net savers to sectors that are net borrowers, usually via financial intermediaries. Thus it records how sectors of the economy distribute and redistribute financial assets and liabilities.

251. The financial account also shows how each sector's financial transactions relate to its saving and capital expenditure and how financial transactions generally relate to one another within and between sectors. So it provides a way for analysts to examine the financial effects of economic policy, and it assists in decisions regarding future policy. Analysts can use it to investigate factors influencing the holdings of, and transactions in, different types of financial instruments, in particular changes in interest rates. Corporations and others also use it to understand the financial environment they operate in, for example by helping them assess competition in the market for funds.

252. For financial institutions, the financial account shows the large amounts of money channeled through them as financial intermediaries. The scale of this makes it important for them to be aware of changes in their sources of funds and in the use of those funds. The transactions of the financial institutions affect the liquidity, income and capital expenditure of other sectors, and the financing of the public sector borrowing requirements.

253. The financial account is a matrix of transactions. It provides a discipline that requires compilers to define and compile the constituent statistics consistently. The total transactions in one instrument line must agree: it is not possible to have the government issuing X billions of government bonds, and all other sectors (including rest of the world) recording more or fewer purchases of them.

254. In forecasting, analysts can discern past relationships between economic and financial variables and extrapolate them into the future. In the forecasting process, the advantage of this accounting matrix is that it keeps the various components of the forecast in touch with each other. That is, the matrix compels the forecaster to consider explicitly all the implications of a change. For example, if the public sector's net cash requirement were to increase, this sector would have to borrow from other sectors. Hence, the forecast must allow for funds to be made available to it. As a result, it might lend less to other sectors. Thus, the impact of a higher public sector net cash requirement spreads further, as the other borrowers, deprived of finance, have to find funds elsewhere (perhaps at a higher rate of interest) or cut back on their activities.

Descriptive Statistics

255. Countries can use financial statistics to describe the intermediation process. They can use financial statistics that relate nonfinancial sectors to the financial corporations sector (and capital market instruments, such as securities) to indicate the extent that they use financial corporations and capital markets to obtain or invest funds for real economic activity. The financial statistics offer a means for countries to evaluate the importance of a type of financing relative to another and a means to monitor how financing changes over time. The statistics also indicate the sources of funds to financial corporations. The statistics identify forms of saving—deposits, pension accounts, insurance policies, or securities. Moreover, the statistics provide a means for describing the role of domestic versus foreign funds for financing a country's current outlays and capital spending.

256. At a more analytical level, the financial statistics offer a means to answer questions about the role of financial markets in wealth creation. The statistics show the extent of debt of sectors relative to their income, net worth, and spending.

Projections

257. Analysts use financial statistics to project over a short or intermediate term (one or two years) financial flows and stocks within the context of other economic developments. The forecast offers a means to evaluate policy alternatives and to provide feedback on the internal consistency of forecasts of real economic activity. Policymakers (i.e., the central bank and government) and private sector analysts use the financial statistics to analyze the effects of interest rate and exchange rate changes. They also forecast the impact of external shocks on financial flows and asset positions.

258. Analysts maintain projections of financial statistics to understand the path of economic flows by comparing previously forecast variables with actual events. For example, data on bank loan activity, bond issuance, and money growth are available at a monthly or higher frequency. Each of these variables is contained within the financial statistics at a quarterly frequency. A forecast of quarterly financial statistics, made in tandem with forecasts of real activity—from the national accounts—provides policymakers and analysts a

way to evaluate the higher-frequency data as it is reported and a check on whether the economy is evolving as anticipated.

259. Analysts can base forecasts of financial flows and stocks on judgment or on models. In practice, the forecasts are typically a combination, because econometric models of financial flows rarely show a structure that is stable over longer periods. Both judgmentally based or model-based forecasts are typically conditional, meaning they are predicated on a set of underlying assumptions, such as a structure of interest rates, exchange rates, and fiscal policy.

260. Financial forecasts can be long term as well as short term. Analysts sometimes project likely changes in financial structure to reflect changes in economic or regulatory policy. The description provided in financial statistics offers a means to anticipate the evolution of changes in financial intermediation over many years.

International Comparisons

261. Analysts can use financial statistics to identify similarities and differences between countries' financial intermediation. The financial statistics quantify sectors that supply funds, distinguishing them from sectors that are net users of funds. The accounts further indicate the extent that capital markets finance economies—through equity shares and bonds compared with a traditional loan/deposit system. In general, financial statistics show the extent that countries use specific financial instruments; the statistics also show the relative sizes of types of financial corporations. The availability of such data across countries makes available information that researchers could use to determine whether differences in financial structure affect economic efficiency meaningfully.

262. Analysts can also compare financial intermediation across countries by focusing on the nonfinancial sectors in financial statistics. Analysts can compare countries' differences in household sector saving, as well as asset and liability components. Similarly, they can compare and research financial statistics for nonfinancial corporations. The statistics show the differences among countries of holders of financial assets, such as shares.

263. While the statistics provide a means for comparison, they do not indicate one financial structure is preferred over another. Such evaluations would only be the product of careful analysis of the relationship of financial statistics to other information, such as differences in real economic activity and economic policies.

Financial Soundness Indicators

264. The set of financial soundness indicators (FSI) developed by the IMF include several elements from the financial statistics described in this guide. FSI proposed by the Fund refer to indicators of the current financial health and soundness of the financial institutions in a country and of their corporate and household counterparts. Such indicators support the work of macroprudential analysis. They include aggregated individual institutions data and indicators that represent the markets in which the financial institutions operate.

265. Table 8.10.1 shows how indicators correspond to categories in Level 2 financial statistics. The financial statistics contain one indicator in the core set and ten indicators in the encouraged set. If compilers added maturity and currency details, they could also draw other indicators from the financial statistics.

Table 8.10.1 Financial Soundness Indicators in Financial Statistics

Financial Soundness Indicator	Financial Statistic (Level 2)
Core set:	
Deposit takers	
Regulatory capital to risk-weighted assets	
Regulatory Tier I capital to risk-weighted assets	
Nonperforming loans net of provision to capital	
Sectoral distribution of loans to total loans	**Numerator = Loans to each sector by depository corporations** **Denominator = Total loans by depository corporations**
Large exposure to capital	
Return on assets	**Denominator = Total assets - net financial position in the depository corporations sector**
Return on equity	
Interest margin to gross income	
Non-interest expenses to gross income	
Liquid assets to total assets	Numerator available if liquidity breakdowns prepared
Liquid assets to short-term liabilities	Numerator and denominator available if liquidity/maturity breakdowns prepared
Duration of assets	
Duration of liabilities	
Net open position in foreign exchange to capital	Numerator available if currency breakdowns prepared
Encouraged set:	
Deposit takers	
Capital to assets	**Denominator = Total assets - net financial position in the depository corporations sector**
Geographical distribution of loans to total loans	
Gross liability position in financial derivative to capital	**Numerator = Financial derivatives in depository corporations' assets**
Gross liability position in financial derivative to capital	**Numerator = Financial derivatives in depository corporations' liabilities**
Trading income to total income	
Personal expenses to non-interest expenses	
Spread between reference lending and deposit rates	
Spread between highest and lowest interbank rate	
Customer deposits to total (non-interbank) loans	
Foreign currency-denominated loans to total loans	Numerator available if currency breakdowns prepared
Foreign currency-denominated liabilities to total liabilities	Numerator available if currency breakdowns prepared
Net open position in equities to capital	
Other financial corporations	
Assets to total financial system assets	**Numerator = Total assets - Net financial position in the other financial corporations sector** **Denominator = Total assets - net financial position in the financial corporations sector**
Assets to GDP	**Numerator = Total assets - Net financial position in the other financial corporations sector**
Nonfinancial corporate sector	
Total debt to equity	**Numerator = Total liabilities - Shares and other equity (liability side) in the other nonfinancial corporations sector** **Denominator = Shares and other equity (liability side) in the other nonfinancial corporations sector**
Return on equity	**Denominator = Shares and other equity (liability side) in the other nonfinancial corporations sector**
Earnings to interest and principal expenses	
Net foreign exchange exposure to equity	Numerator available if currency breakdowns prepared **Denominator = Shares and other equity (liability side) in the other nonfinancial corporations sector**
Number of applications for protection from creditors	
Households	
Household debt to GDP	**Numerator = Total liabilities in the other residents sector**
Household debt service and principal payment to income	
Market liquidity	

Average bid-ask spread in the securities market	
Average daily turnover ratio in the securities market	
Real estate markets	
Real estate prices	
Residential real estate loans to total loans	**Mortgage loans to the other residents sector**
Commercial real estate loans to total loans	**Mortgage loans to the other nonfinancial corporations**

Balance Sheet Approach in IMF Surveillance

266. Financial statistics also provide a foundation for countries to develop balance sheet approaches to foreshadow financial crisis. The IMF's balance sheet approach refers to a country's examining its sectoral balance sheets and its aggregate balance sheet,[14] in the assumption that an economy's resilience to a range of shocks, including financial shocks, hinges in part on the composition of the country's assets and liabilities. Stock data in the financial statistics, as discussed for level 2 and 3 accounts, are essentially the balance sheet data proposed.

267. The approach focuses on balance sheet mismatches of maturities and currencies for assets and liabilities, problems with capital structure, and overall issues related to solvency. For these analyses, the balance sheet approach focuses on intersectoral positions broken down by financial instruments.

268. Table 8.10.2 shows an example matrix of an economy's intersectoral asset and liability positions that countries might use in the balance sheet approach. The example includes residual maturity (short term versus medium and long term) and currency (domestic versus foreign currency) breakdowns, in addition to creditor and debtor sectors (central bank, general government, other depository corporations, other financial corporations, nonfinancial corporations, other residents, and nonresidents). Debtors are broken down horizontally in columns, while breakdowns of creditor sectors as well as maturity and currency breakdowns are shown vertically in rows. Intrasector positions (e.g., government sector debt held by the government sector) are to be netted out, and therefore, the items that have the same sector in the column and row (shadowed items diagonally positioned in the matrix) are not filled in.

[14] It can be said that the Fund's traditional analysis on financial crisis is based on the examination of flow variables such as current account and fiscal balance.

TABLE 8.10.2: IMF'S BALANCE SHEET APPROACH: INTERSECTORAL ASSET AND LIABILITY POSITION MATRIX

Issuer of liability (debitor) \ Holder of liability (creditor)	Central bank	General government	Other depository corporations	Other financial corporations	Nonfinancial corporations	Other resident sectors	Nonresidents
Central bank							
Monetary Base							
Total Other liabilities							
Short-term							
Domestic Currency							
Foreign Currency							
Medium-and long-Term							
Domestic Currency							
Foreign Currency							
General government							
Total Other liabilities							
Short-term							
Domestic Currency							
Foreign Currency							
Medium-and long-Term							
Domestic Currency							
Foreign Currency							
Other depository corporations							
Total Other liabilities							
Short-term							
Domestic Currency							
Foreign Currency							
Medium-and long-Term							
Domestic Currency							
Foreign Currency							
Other financial corporations							
Total Other liabilities							
Short-term							
Domestic Currency							
Foreign Currency							
Medium-and long-Term							
Domestic Currency							
Foreign Currency							
Nonfinancial corporations							
Total Other liabilities							
Short-term							
Domestic Currency							
Foreign Currency							
Medium-and long-Term							
Domestic Currency							
Foreign Currency							
Other resident sectors							
Total Other liabilities							
Short-term							
Domestic Currency							
Foreign Currency							
Medium-and long-Term							
Domestic Currency							
Foreign Currency							
Nonresidents							
Total Other liabilities							
Short-term							
Domestic Currency							
Foreign Currency							
Medium-and long-Term							
Domestic Currency							
Foreign Currency							

269. The definition of domestic sectors may differ from those recommended in this guide, owing to specific analytical needs, such as the focus on emerging-market economies. For example, the balance sheet approach matrix might refer to the private other nonfinancial corporations sector as the nonfinancial sector and, thus, contain the public nonfinancial corporations in the government sector. As a result, the government sector in the balance sheet approach matrix means the public sector, which consolidates the general government sector and the public nonfinancial corporations sector.

Annex: Numerical Example

270. The purpose of this annex is to explain, through a numerical example developed in an electronic spreadsheet[15], how a country might compile the framework for financial statistics in practice. The example is based on a hypothetical emerging-market economy.

271. The choice of a country with a lack of data sources allows the annex to describe how to overcome the lack of data for particular items, for example, through the use of counterpart information and other estimation techniques.

272. The example has three sets of data: (1) source data; (2) financial statistics matrices (where comments will assist the compilation process for the most difficult cells); and (3) summary tables intended for publication and used throughout the guide as examples.

273. Source data comprise (1) balance sheet data for the financial sector (central bank, other depository corporations, and other financial corporations) in tables 1 to 3.3 (see list of tables in the first page of the electronic file); (2) government data on treasury bills and bonds, in table 4; (3) data on stock market capitalization, in table 5; (4) the international investment position, in table 6; and (5) the financial account of the balance of payments statistics, in table 7.

274. Financial statistics matrices comprise stock positions, transactions, and other flows, in accordance with the methodology in the *1993 SNA* and *MFSM*. This example has constructed the matrices quarterly and annually to specifically address issues that appear in quarterly but not in annual data.

275. The example uses summary tables to illustrate various sections in chapter 8. The numbering of the tables (822 through 861) corresponds to tables 8.2.2 through 8.6.1 in the chapter.

276. The following two sections discuss the lessons that compilers can draw from the numerical example.

1. Issues related to the availability of source data

- Experts regard data on the financial sector as of the best quality and the most important source for a successful compilation of financial statistics. Compilers use this data not only as a direct source but also as counterpart information to complete financial positions and transactions in other sectors.

- When the other financial corporations data are not available with the needed frequency or timeliness, the financial statistician may opt to estimate the missing data

[15] Available on-line at http://www.imf.org in electronic form only.

or to define the financial sector narrowly, that is, excluding the other financial corporations from it. Instead, these data could belong to the residual sector, i.e. together with households and nonfinancial corporations. The latter choice may be appropriate for countries where the other financial corporations subsector is relatively unimportant compared to depository corporations. If this were not the case, compilation efforts should generally prioritize the collection of data for other financial corporations before investing heavily in financial statistics.

- Data on the government and external sectors are less important for compiling financial statistics than financial sector data, but are still necessary. For the government sector, data on central government may suffice when state and local government data are not timely. For the external sector, compilers need quarterly balance of payments to compile flow accounts for the rest of the world sector.

- Compared to compiling flow data, compiling stock data (intersectoral balance sheets) is more demanding because it requires the availability of the international investment position, which relatively few countries compile. Countries with no such data would need to invest in IIP data first before trying to compile a complete set of financial statistics, that is, including stock, transactions, and other flows accounts.

- The example has mainly calculated data on other flows residually. However, the guide recommends collecting data on other flows and calculating transactions residually for most financial instruments.

2. Issues related to the compilation process: compiling difficult cells

Cases related to calculating stock data

A. Calculating a residual sector within the financial corporations sector and residual formulas

Reference (spreadsheet, cell): Stock March 2003, 11-BF

Purpose: The compiler must account for subsectors not covered by the financial sector source data. In the case of the example, data on credit unions are not available. The compiler uses selected instruments in this subsector as counterpart to other sectors as estimated allocation of residuals.

Formula: IF((AI11-AH11-AT11)>0,0,(AI11-AH11-AT11)*-1)

Explanation: Deposits of nonblank financial institutions in depository corporations are inconsistent. The reason is that the total liability deposits in depository corporations (AI11) are lower than the assets reported by the nonblank financial institutions covered by the source data (AH11-AT11). Because credit unions are nonblank financial institutions in Eden and are

not covered by source data, the compiler estimates that the difference between the deposits in assets and liabilities belongs to the residual sector (i.e., the credit unions).

The example constructs the formula in both asset and liability sides of the credit union balance sheet to make sure that total assets equal total liabilities in this particular financial instrument.

B. Solving the differences in asset and liability valuation for securities

Reference: Stock March 2003, 21-BE

Purpose: The compiler must correct the discrepancy arising from the fact that securities are issued at one price and bought in secondary markets at different prices. Unless the compiler adjusts for the difference, the total assets and liabilities in securities for all sectors can never match.

Formula: J21-AH21-AT21-W21-G21-O21

Explanation: Our example takes the issuance of treasury bills by the central government and holdings by the rest of the sectors. In our case, the value of the t-bills issued (J21) is lower than the value reported by the different holders of t-bills (AH21-AT21-W21-G21-O21). The compiler allocates the difference to the residual sector (i.e., the credit unions) assuming that holdings of t-bills by the credit unions could also explain the difference.

In our example, however, the estimation has led to compiling a negative value for the credit unions' holdings of securities. Such a case offers the compiler the possibility of rethinking the estimation technique, which may not be appropriate for the country Eden. In fact, the technique is appropriate for countries with low and stable interest rates, because countries can assume that differences in prices are much less important that the residual sector's holdings.

However, for countries with high and volatile interest rates, the difference in prices between primary and secondary markets may be very significant. In this case, the compiler may consider adjusting the issuer value (liability) with the holders' aggregated value (assets in holder sectors) on the grounds that the aggregated assets value is closer to the market value of the securities, which is the general valuation principle in the accounts.

C. Stock of securities issued by nonresidents

Reference: Stock March 2003, X-27

Purpose: The compiler can estimate, using IIP and central bank data, the stock of securities issued by nonresidents and held by residents.

Formula: IIP!F12+'Stock March 2003'!AJ27

Explanation: The international investment position data (under assets, portfolio investment, debt securities [IIP!F12]) are not enough to gather the full amount of securities issued by nonresidents and held by residents. The reason is the central bank holdings of securities are not reported in the IIP under the portfolio investment but are reported as part of the reserves assets. Therefore, the compiler has to add the central bank holdings of securities (Stock March 2003'!AJ27).

D. Stock of securities issued by other nonfinancial corporations and held by the rest of the world.

Reference: Stock March 2003, W-26

Purpose: The compiler may estimate the stock of securities issued by other nonfinancial corporations and held by the rest of the world.

Formula: IIP!F23-W21

Explanation: The compiler needs to adjust the international investment position data (under liabilities, portfolio investment, debt securities [IIP!F23]). The reason is that this amount includes the holdings of t-bills by nonresidents (W21), which the framework of financial statistics needs to separately identify.

E. Stock of non-life insurance reserves for residents

Reference: Stock March 2003, U-48

Purpose: The compiler allocates the non-life insurance reserves among the household and nonfinancial corporations.

Formula: F48

Explanation: The example has allocated in full the non-life insurance reserves—a liability of the insurance companies—as an asset of the households. The compiler has no direct source data of possible holders of the reserves (mainly households and nonfinancial corporations (NFC)) and decided that most of the reserves may belong to the households. However, this decision may depend on the country, because some countries may have better developed the non-life insurance business for companies, such as large industrial groups. An alternative would be to split the total amount according to an estimated percentage allocated to NFC, based on survey data. This data may be outdated and still valid for the estimation, since the proportion is unlikely to change significantly over time.

F. Shares and other equity of public nonfinancial corporations

Reference: Stock March 2003, 30-R

Purpose: The compiler may estimate the value of shares and other equity of public nonfinancial corporations.

Formula: 200 (number)

Explanation: The compiling unit has estimated data by counterpart information (central government mainly) and refined it with information on the shareholders' structure of the bigger public corporations, as well as recent selling or acquisitions of shares or participations by the government. At least on an irregular basis, the compiler needs comprehensive data (balance sheets and other financial statements) for all public nonfinancial corporations to update or improve the estimated data.

G. Stock of other accounts with nonresidents as assets of other nonfinancial corporations

Reference: Stock March 2003, 54-S

Purpose: The compiler estimates other accounts with nonresidents as assets of other nonfinancial corporations.

Formula: IIP!F14-(E19+E46+E54-AJ19-AJ46-AJ54)

IIP!F14 = IIP asset, other investment (which include deposits, loans, other foreign assets/liabilities)
E19= Financial corporations, assets, deposits from nonresidents
E46= Financial corporations, assets, loans from nonresidents
E54= Financial corporations, assets, other accounts from nonresidents
AJ19= Central bank, assets, deposits from nonresidents
AJ46= Central bank, assets, loans from nonresidents
AJ54= Central bank, assets, other accounts from nonresidents

Explanation: Owing to the lack of direct data for NFC, the compiler has to use counterpart information (i.e., IIP data) to estimate other accounts with nonresidents. However, the compiler has to adjust the IIP heading "other investment," which contains data for a number of instruments (deposits, loans, other foreign assets/liabilities) and possible counterpart sectors (financial and nonfinancial corporations).

The compiler can adjust the data as follows: IIP asset other investment minus deposits, loans and other accounts with Financial Corporations, except central bank. He or she excludes the central bank because foreign currency deposits in the central bank are not part of other investment but are included in the reserves assets of the IIP. The same explanation applies to loans and other accounts, although these two are country specific; that is, the explanation will depend on whether the reserve assets in the IIP for the country include these loans and other accounts or not.

H. Stock of other accounts with nonresidents as liabilities of other nonfinancial corporations

Reference: Stock March 2003, 54-T

Purpose: The compiler estimates other accounts with nonresidents as liabilities of other nonfinancial corporations.

Formula: IIP!F25-F19-F46-F54

IIP!F25 = IIP liability, other investment (which include deposits, loans, other foreign assets/liabilities)
F19= Financial corporations, liabilities, deposits from nonresidents
F46= Financial corporations, liabilities, loans from nonresidents
F54= Financial corporations, liabilities, other accounts from nonresidents

Explanation: Same as previous case, although the compiler does not need to adjust for the central bank in this instance.

The adjustment is as follows: IIP liability other investment minus deposits, loans, and other accounts with financial corporations.

I. Stock of loans by other financial corporations to depository corporations

Reference: Stock March 2003, S-31

Purpose: The compiler estimates the residual calculation of stock of loans by other financial corporations to depository corporations not covered by source data (credit unions in our example).

Formula: AH35+AT35-AI35-AU35

Explanation: The compiling unit calculates residually the loans granted by other financial corporations to depository corporations not covered by source data. This formula ensures that assets and liabilities will always be equal, assigning to the residual sector any difference that may arise between loans granted and those received by the depository corporations covered by source data.

The compiler, in the case of Eden, was confronted with a depository corporations balance sheet that lacked this type of loans. Therefore, he or she completed loans from other financial corporations (AO-35) using counterpart information (i.e., the loans on the asset side of the other financial corporations). This is the reason why the residual is zero.

J. The use of counterpart data to modify the commercial banks balance sheet. The case of deposits at the central bank.

Reference: Stock March 2003, AN-10

Purpose: The example comments on using counterpart information to modify the commercial banks balance sheet and the consequences for calculating the net financial position for this subsector.

Formulas: AN10=AK10.

Explanation: This is the case where an alternative data source regarded as higher quality (banks deposits as liability in the central bank balance sheet, AK10) replaces the data coming directly from the sector (deposits at the central bank as asset, AN10).

The compiler decided to replace the data in the commercial banks balance sheet without further adjusting it. Therefore, the difference between the two data sources (original and counterpart) affects the net financial position (AO56). Alternatively, the compiler could have used another account in the balance sheet, such as other accounts receivable (AN52) or the residual sector (BE10), to allocate the difference, which would eliminate the impact of the adjustment on the net financial position.

K. The use of counterpart data to complete the commercial banks balance sheet. The case of central bank and other financial corporations loans.

Reference: Stock March 2003, AO-34, AO-35, and AO51

Purpose: The example comments on the use of counterpart information to complete the commercial banks balance sheet and the consequences for the calculation of the net financial position.

Formulas: AO34=AJ34, AO35=AZ35, AO51=AN51 ,AO53= 'Depository Corp'!H217-AO51-AO35-AO34.

Explanation: The cases where the commercial banks balance sheet missed information to complete the matrix were in the central bank loans (AO34), other financial corporations loans (AO35), and financial derivatives (AO51). The compiler completed these cells using counterpart information, that is, the respective assets in the central bank (AJ34), the other financial corporations (AZ35), and the own commercial banks (AN51), although the reason for the latter is not clear.

For illustrative purposes only, the example shows how in this case the net financial position has not been affected because the compiler decided to use the other accounts payable to

compensate for the adjustments made, that is, he or she adjusted AO53 by deducting AO51-AO35-AO34.

Cases related to calculating transactions data

L. Transactions in treasury bills as source of funds for the central government

Reference: Transactions 1st quarter 2003, 21-J

Purpose: The compiler may estimate transactions in t-bills during the period.

Formula: J21 = E21+O21+G21+U21+W21

Explanation: A compiling unit calculates the source of funds for one sector (J21, central government) indirectly through the uses of funds in the rest of the sectors (E21 to W21).

The compiler also uses this estimation technique to calculate the transactions in securities (cell T-26) and shares and other equity (T-30) issued by other nonfinancial corporations.

M. Transactions in shares and other equity issued by nonresident and held by other nonfinancial corporations

Reference: Transactions 1st quarter 2003, S-31

Purpose: The compiler can estimate transactions in shares and other equity issued by nonresidents using counterpart information.

Formula: Z31-E31-G31-U31-W31

Explanation: The compiling unit calculates the total source of funds (Z31) first as the sum of all sector resources (most of them derived from the difference of balance sheet data.) Then, the unit deducts the use of funds from all sectors except nonresidents (E31-G31-U31-W31) to derive the residual (S-31), which is the holdings of shares by other nonfinancial corporations.

Cases related to calculating other flows data

N. Other flows: Estimation of price changes in shares using price indexes

Reference: Other flows 1st quarter 2003, T-30 and AO-29

Purpose: The compiler can estimate the prices changes of shares and other equity of commercial banks and other nonfinancial corporations using stock exchange price indices.

Formula: ='Stock market'!E5*('Stock market'!F8/'Stock market'!E8-1)

Stock market data: E44 * (F47/E47 – 1)

Explanation: The compiling unit uses the change in percent of the price index to revalue the liability stock at the end of the period.

O. Other flows in assets of central government in the form of financial corporations shares

Reference: Other flows 1st quarter 2003, I-29

Purpose: The compiler may estimate how holdings of shares are revalued proportionally using the share of holdings of shares in every sector.

Formula 1: Z29*('Stock December 2002'!I29/'Stock December 2002'!Y29) =

= Total changes in liabilities * (stock held by central government in December 2002/ Total holdings of shares of financial corporations in December 2002).

Total changes in liabilities: Defined as the sum of changes for all sectors (although the only sector that should present value is the financial corporations sector, that is, the issuing sector).

Explanation: This estimation builds upon the previous one because the compiler first estimates the price change in the issuing sector and only after distributes this change among the holding sectors.

P. Other flows in financial derivatives: example of use of qualitative information

Reference: Other flows 1st quarter 2003, AK-51 and W-51

Purpose: The example discusses allocating the differences in balance sheets for financial derivatives among sectors and between transactions and other flows based on very reduced, qualitative available information.

Formula: AK-51 ='Stock March 2003'!AK51-'Stock December 2002'!AK51

W-51='Stock March 2003'!W51-'Stock December 2002'!W51

'Stock March 2003'!W51 =IF(F51-E51>0, F51-E51, 0)

Explanation: The compiler does not know the transactions in financial derivatives for Eden's domestic sectors, except for central bank trading with nonresident banks to hedge its reserves. Therefore, the two sectors involved in derivative operations are the central bank and the rest of the world. The compiler uses qualitative information (metadata) to figure out that no transactions took place during the first quarter of 2003. He or she should then allocate the difference in stock values to other flows, since it represent changes in prices of the derivatives outstanding.