

---

## **Appendixes**



# Appendix I. Survey on the Use, Compilation, and Dissemination of Macroprudential Indicators

1. The *Survey on the Use, Compilation, and Dissemination of Macroprudential Indicators* was conducted by the IMF in 2000. It was an important step in the IMF's program to develop a common set of FSIs.<sup>1</sup>

## Background

2. The objective of the survey was to obtain information on national needs and practices related to FSIs to (1) gauge the usefulness of specific indicators, (2) assess compilation and dissemination practices to help identify international best practices where possible, (3) evaluate whether the SDDS or other vehicles would be appropriate to encourage the public dissemination of FSIs, and (4) explore the analytical frameworks used by member countries in macroprudential analysis.

3. The survey had two parts. The first part, the *User Questionnaire*, gathered information from financial supervisors, financial policymakers, and the private sector on the usefulness of the FSIs and methods of macroprudential analysis. The second part, the *Compilation and Dissemination Questionnaire*, inquired about national practices in compiling and disseminating FSIs.

4. The FSIs included in the survey largely focused on information about depository corporations (banks) but included some key information on their corporate and household counterparties. This focus was determined in light of the importance of banking institutions and the greater availability of information for banks compared with other types of institutions.

5. Central banks in each economy received the survey, with a request that they coordinate its distribution, completion, and return to the IMF. They were

asked to distribute the survey within their economy to whichever parties they judged could best provide representative information on needs and practices relating to FSIs, such as the supervisory agency, the central government, and private sector participants.

6. A total of 122 responses (74 percent of those receiving the survey), covering 142 countries and other jurisdictions, was received. The first part of the survey (*User Questionnaire*) was completed by all 122 respondents, while 93 respondents completed the second part (the *Compilation and Dissemination Questionnaire*). The high response rate to the survey is an indication of the importance being attached worldwide to issues relating to macroprudential analysis and the possible role of FSIs in such analysis. This view is bolstered by the evident effort made by respondents to thoroughly answer the survey and provide detailed comments.

## Results

### The Most Useful FSIs

7. Respondents judged all major categories of FSIs to be broadly useful. Indicators of *capital adequacy*, *asset quality (lending institutions)*, and *profitability* were deemed the most useful, followed by indicators of *liquidity* and *sensitivity to market risk*. Users in industrial countries in particular deemed the *liquidity* and *sensitivity to market risk* indicators less useful than the others. Several respondents from industrial countries commented that the *liquidity* and *sensitivity to market risk* indicators were sophisticated and possibly difficult to construct with precision.

8. With the highest score possible being 4, Table A1.1 presents the 13 FSIs with an average usefulness score of 3.5 or over. These FSIs include central elements of bank soundness. Two of them—the Basel capital adequacy ratio and one of its components—

<sup>1</sup>A more detailed discussion of the survey and its results is provided in Sundararajan and others (2002).

**Table A1.1. FSIs by Type of Economy***(Most useful FSIs, with average usefulness scores of 3.5 and higher)*

FSI #	FSI	All Countries	Industrial Countries	Emerging Countries	Developing Countries
1.1	Basel Capital Adequacy Ratio	3.8	3.7	3.9	3.6
1.1a	Ratio of Basel Tier I capital to risk-weighted assets	3.6	3.6	3.6	3.5
2.4	Distribution of loans, by sector	3.6	3.5	3.6	3.5
2.5	Distribution of credit extended, by sector	3.5	3.3	3.6	3.6
2.8	Ratio of total large loans to own funds	3.5	3.2	3.6	3.6
2.9	Ratio of gross nonperforming loans to total assets	3.9	3.9	3.9	3.8
2.10	Ratio of gross nonperforming loans net of provisions to total assets	3.8	3.8	3.8	3.8
3.2	Ratio of profits to period-average assets (ROA)	3.6	3.5	3.8	3.6
3.3	Ratio of profits to period-average equity (ROE)	3.6	3.5	3.8	3.6
3.4	Ratio of net interest income to total income	3.5	3.3	3.6	3.6
3.8	Spread between reference lending and deposit rates	3.5	3.4	3.6	3.5
4.3	Ratio of liquid assets to total assets	3.5	3.2	3.6	3.5
4.4	Ratio of liquid assets to liquid liabilities	3.6	3.2	3.7	3.7

relate to the capital base, which serves as a buffer to withstand shocks; four of them measure profitability, which serves to sustain the capital base. The remaining FSIs assessed to be most useful relate to the quality of banks' assets—as covered by data on nonperforming loans, the distribution of assets, and asset liquidity. This list is the basis of the core indicators provided in Chapter 1.

9. Table A1.2 presents the FSIs with an average usefulness score of 3.0 to 3.4. These FSIs form the basis of the list of encouraged indicators set out in Chapter 1. They cover some of the elements of capital adequacy, the distribution of bank credit by risk weight category and by country, the financial condition of the corporate and household sectors, some of the elements of operating income and expenses of banks, the maturity and duration of assets and liabilities, and other market risks.

### Additional Indicators

10. The *User Questionnaire* also asked respondents to identify FSIs they considered useful but that were not covered in the survey. The most frequently identified useful additional FSIs were asset prices. Among the asset prices suggested were the prices of real estate, both commercial and residential, and equity prices, including the stock prices of the depository corporations subsector relative to the overall stock price index and stock prices disagre-

gated by industry. Moreover, to prevent the masking of relevant information through the aggregation process and to help in the identification of outliers, clustering of problem cases, or tiering in markets, there were calls for more information on the distribution or dispersion of observations. Several respondents identified the ratio of gross nonperforming loans to total loans as useful, in lieu of the FSI in the survey that used total assets as the denominator.

### Importance of Nondepository Financial Institutions

11. About 80 percent of the respondents reported that information on nondepository financial institutions, markets, and activities was important to the overall analysis of financial sector soundness. On nondepository financial institutions,<sup>2</sup> the majority of the respondents were most interested in information on insurance corporations and pension funds, followed by information on other financial intermediaries. Many of these institutions were viewed by respondents as playing an important role in financial intermediation and possibly in contagion. Several respondents mentioned the importance of specialized financial intermediaries, such as venture capital funds for advanced economies, and microcredit insti-

<sup>2</sup>Defined, in line with the *MFSM* (IMF, 2000a), as insurance corporations and pension funds, other financial intermediaries, and financial auxiliaries.

**Table AI.2. Group II FSIs by Type of Economy***(Useful FSIs, with average usefulness scores of 3.0 to 3.4)*

FSI #	FSI	All Countries	Industrial Countries	Emerging Countries	Developing Countries
1.1b	Ratio of Basel Tier 1 + 2 capital to risk-weighted assets	3.4	3.2	3.6	3.4
1.1c	Ratio of Basel Tier 1 + 2 + 3 capital to risk-weighted assets	3.0	2.9	3.1	3.1
1.2	Distribution of capital adequacy ratios (number of institutions within specified capital adequacy ratio ranges)	3.3	3.3	3.4	3.1
1.3	Leverage ratio (ratio of total on-balance-sheet assets to own funds)	3.2	2.9	3.3	3.3
2.1	Distribution of on-balance-sheet assets, by Basel risk weight category	3.4	3.2	3.5	3.4
2.4a	Loans for investment in commercial real estate	3.2	3.3	3.3	3.1
2.4b	Loans for investment in residential real estate	3.2	3.3	3.2	3.2
2.6	Distribution of credit extended, by country or region	3.1	3.2	3.2	2.8
2.7	Ratio of credit to related entities to total credit	3.4	3.0	3.6	3.5
2.11	Ratio of corporate debt to own funds (“debt-equity ratio”)	3.4	3.4	3.5	3.3
2.12	Ratio of corporate profits to equity	3.3	3.1	3.4	3.2
2.13	Ratio of corporate debt-service costs to total corporate income	3.2	3.2	3.4	3.0
2.14	Corporate net foreign currency exposure	3.2	3.2	3.4	2.9
2.15	Ratio of household total debt to GDP	3.0	3.2	3.0	2.8
3.5	Ratio of trading and foreign exchange gains/losses to total income	3.3	3.2	3.4	3.3
3.6	Ratio of operating costs to net interest income	3.4	3.0	3.6	3.6
3.7	Ratio of staff costs to operating costs	3.2	2.8	3.4	3.4
4.5	Average maturity of assets	3.4	3.0	3.4	3.6
4.6	Average maturity of liabilities	3.4	3.0	3.4	3.6
4.10	Ratio of customer deposits to total (noninterbank) loans	3.2	2.9	3.3	3.3
5.1	Ratio of gross foreign currency assets to own funds	3.1	2.7	3.2	3.2
5.2	Ratio of net foreign currency position to own funds	3.4	3.1	3.6	3.5
5.3	Average interest rate repricing period for assets	3.0	2.8	3.3	3.0
5.4	Average interest rate repricing period for liabilities	3.0	2.8	3.2	3.0
5.5	Duration of assets	3.2	3.0	3.4	3.0
5.6	Duration of liabilities	3.2	3.0	3.3	3.0
5.8	Ratio of net equity position to own funds	3.0	2.8	3.0	3.1

tutions and development banks or funds for developing countries. Some respondents noted the importance of information on financial conglomerates, especially those that included insurance companies.

**12.** On financial markets, about 90 percent of those responding on the issue indicated that data on the securities markets (public and private debt and equity markets) were important.<sup>3</sup> A few thought that information on foreign exchange markets (16 percent) and derivatives markets (6 percent) was also important.

**13.** Several respondents noted that borrower information (indebtedness and asset-liability mismatches) was useful, as it provided some indication on emerging credit quality trends and risks in the corporate, household, or foreign sectors. Some respondents said

<sup>3</sup>The types of data mentioned included trading volumes, bid-ask spreads, and credit spreads.

that they paid particular attention to large corporations, while a few others mentioned the importance of monitoring other financial activity, such as the functioning of payment, settlement, and clearing systems. In addition, some respondents emphasized that qualitative information—such as the thoroughness of supervision and the transparency of financial policies—was important to the overall assessment of financial sector stability.

#### **Disaggregation of “Depository Corporations” into Subsectors**

**14.** Almost 60 percent of the respondents thought that more disaggregated information on depository corporations was needed, particularly breakdowns by ownership, function, exposure to risk (for example, geographical, asset type, borrower type), and size. A few respondents felt that disaggregated data that highlighted distributions among banks or allowed for peer group analysis were also useful. One respondent

felt that the disaggregation of banks' data should be as fine as possible to enable distinctive activity patterns to be identified. Several respondents, however, stressed that the type of disaggregation would depend on the issue being analyzed.

**15.** Almost 30 percent of all respondents (about half of those who felt that more disaggregation was useful) mentioned that they analyzed or would like to analyze institutions by ownership characteristics (for example, domestic versus foreign, private versus state-owned, and publicly held stock versus privately held equity). Of these respondents, almost all stated that a breakdown between domestic and foreign institutions was useful, with some emphasizing that the domestic/foreign distinction was important because foreign institutions might operate under different regulatory and supervisory regimes. At the same time, one-fourth of the respondents stated that a breakdown between private and state-owned institutions was important.

**16.** About 20 percent of the respondents said that disaggregation by function or exposure was useful. The functions most often mentioned were commercial banking, universal banking, and specialized banking (especially mortgage lending and, to a lesser extent, development lending). About 80 percent of the respondents interested in disaggregation by exposure indicated that they would like information on internationally active banks. Sixteen percent wanted disaggregated information on offshore banks, while another 16 percent wanted information on banks disaggregated by their geographical market.

### **Systemically Important Institutions**

**17.** Almost 60 percent of the respondents reported doing some evaluation of systemically important institutions. Supervisors tended to be more concerned about such institutions—two-thirds of them reported that they evaluated the condition of these institutions, as opposed to less than half of market participants and about half of the government policy or research analysts.

**18.** Most respondents reported using a measure of size (of assets and/or deposits) to ascertain the importance of an institution. Sometimes size was coupled with other criteria, for instance, exposure to certain risks (such as foreign exchange risk), com-

plexity of transactions, or complexity of ownership structure. However, some respondents mentioned only risk exposure, or used legal or prudential definitions, while others evaluated all institutions by sector or a particular category. This had as a result that all institutions within a particular classification (for example, problem banks, deposit-taking institutions, institutions with insured deposits, commercial banks, international banks) ended up sometimes being considered systemically important. This was often the case in countries with small, developing, or concentrated markets.

**19.** Many respondents said that the techniques used to evaluate the condition of systemically important institutions were similar to those used to evaluate other institutions. Most mentioned using the CAMELS framework or ratio analysis. Among the variables stressed by the respondents as important in their evaluations were interbank activity, liquidity, large exposures, foreign exchange exposure, consolidated positions for institutions that are part of a financial group, and risk management practices (including assessment by internal models).

### **Benchmarks**

**20.** Many respondents reported that specific norms, benchmarks, or thresholds were not used in macroprudential analysis. While some of them were considering using norms and benchmarks in the future, others preferred using comparisons with peer group countries to establish relative rankings.

**21.** Among those who reported using norms and benchmarks for FSIs, some highlighted their critical role in guiding interpretation of the indicators. For this purpose, benchmarks were constructed in a number of ways, including (1) historical averages, (2) bank supervisors' prudential thresholds applied at the aggregate level, (3) trigger points, (4) cross-country comparisons, and (5) criteria constructed from econometric studies.

### **Business Surveys**

**22.** Overall, about half of all respondents reported that they made use of business survey results—qualitative or quantitative measures of business expectations and potential leading indicators of instability—to supplement macroprudential analysis.

## Compilation and Dissemination Practice<sup>4</sup>

23. Country practices on the compilation and dissemination of FSIs and their components were mixed. With only a few exceptions, compilation of FSIs themselves was quite limited, and dissemination of FSIs—especially outside the industrial countries—was scanty. However, compilation and dissemination of components of FSIs were more extensive.

24. The average number of FSIs compiled and disseminated by industrial countries, emerging countries, and developing countries is shown in Figure A1.1. Industrial countries compiled and disseminated the largest number of FSIs, and emerging countries compiled and disseminated the second largest number of FSIs. Industrial and emerging countries compile on average more than half of the indicators specified in the survey.

25. For almost all FSIs, users in countries subscribing to the SDDS rated the usefulness of FSIs nearly identically with users in industrial and emerging countries. Although subscribers' performance in the dissemination of components of FSIs was somewhat better than nonsubscribers' performance, the overall results were broadly similar to those for the total population of respondents—that is, SDDS subscribers had somewhat limited compilation and dissemination of FSIs but relatively extensive compilation and dissemination of the component data series used to compile the FSIs.

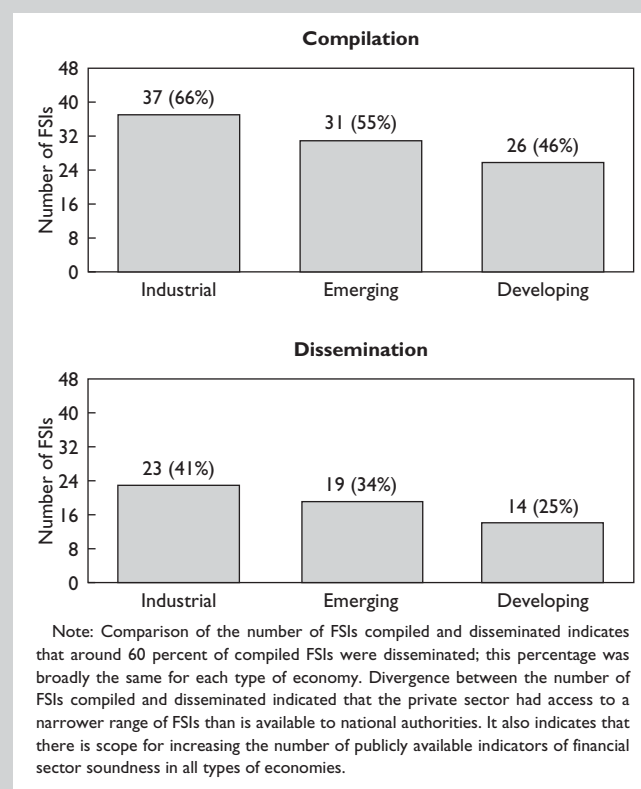
26. The survey also inquired about country practices regarding the periodicity of compilation and dissemination as well as users' needs in those areas. The periodicity of dissemination of FSIs varied considerably among the different categories of FSIs. No general pattern could be ascertained, and the number of responses was too low to draw valid conclusions.

### Concepts Employed

27. The *Compilation and Dissemination Questionnaire* asked a series of quantitative and open-ended questions about accounting and statistical issues to assess the state of existing practices, possibly identify best practices that might be used as a basis for devel-

<sup>4</sup>For a detailed discussion of compilation and dissemination practices, see Slack (2003).

**Figure A1.1. Average Number of FSIs Compiled and Disseminated, by Type of Economy**



opment of international standards, and help identify strategies for improving the comparability of FSIs.

28. The responses highlighted a diversity of national practices and revealed many reasons why FSIs might not be comparable across economies:

- Different, and often complex, standards exist for recognition of substandard claims and provisioning.
- National definitions of regulatory capital differ: for instance, as regards deductions and components of each tier of capital. Moreover, numerous countries indicated that they had not approved the inclusion of Tier 3 capital within the base.
- Consolidation practices for foreign branches and subsidiaries differ (see section below). Within each country, some FSIs use global (cross-border) consolidations drawn from supervisory data, while other FSIs use domestic (national residence basis) consolidations drawn from statistical sources. Overall, however, some degree of international



conformity exists in consolidation practices because of the rather widespread use of domestic consolidation.

- Valuation practices for financial instruments differ (see section below). Key issues include the limited use of market valuations for debt securities and shares, and the diverse practices for on-balance-sheet recognition of derivatives, repurchase agreements, and securities lending.
- Different rules exist across countries for revaluing foreign currency positions. Although there appears to be convergence in industrial countries toward use of market exchange rates in revaluing foreign-currency-denominated positions, continued use of official rates in a number of emerging and developing countries might hinder the comparability of FSIs.

**29.** The list of issues above indicated that practices were diverse and that cross-country comparison of FSIs was challenging.

### Consolidation

**30.** The survey sought information on country practices for consolidating information on foreign branches and subsidiaries of financial institutions into single accounting statements or statistical reports. A key issue was whether data were compiled on a domestic or global consolidation basis.

**31.** Strong differences in practices by type of economy were found. Respondents in developing countries adhered overwhelmingly to a national residence basis for most FSIs. This possibly reflects the fact that banks with headquarters in developing countries may often have few or no nonresident branches or subsidiaries. It might also reflect limited supervisory infrastructures in developing countries that may not always effectively monitor and supervise nonresident operations. To some extent, adherence to domestic consolidation was also reported by respondents in emerging countries. In industrial countries, supervisors used global consolidation most often but also reported that data using both approaches to consolidation were available for numerous FSIs.<sup>5</sup>

<sup>5</sup>The availability of FSI data on both bases could have some important advantages. For example, one respondent noted, “The survey does not address the main statistical aspect, which is reconciliation between the home and host country approach, which will be viable if both supervisory and macroeconomic statistical data sources are used.”

**32.** Differences in practices by category of FSI were also found. These differences often reflected whether the primary source data are supervisory or statistical in nature. A summary of the practices by category of FSI is provided below.

*Capital adequacy.* In industrial countries and emerging countries, data were primarily from supervisory sources and generally on a global consolidation basis, although data using both consolidation approaches were often available. In a number of emerging countries and many developing countries, only data on a national residence basis were used. In terms of worldwide totals, the two approaches were used about equally, and in the case of some FSIs up to one-fourth of respondents used both. A small number of countries reported nonstandard consolidations in their data, such as including nonresident branches but not nonresident subsidiaries.

*Asset quality (lending institutions).* FSIs derived from monetary statistics were overwhelmingly on a national residence basis. FSIs derived from supervisory sources were most often on a global consolidation basis, but in many cases they were available on a national residence basis or on both bases.

*Asset quality (borrowing institutions).* FSIs were almost exclusively on a national residence basis because the underlying data were drawn from national macroeconomic statistical series.

*Profitability and competitiveness.* Data were most often on a national residence basis or were available on both bases. However, a number of countries had data only on a global basis. Within the profitability category, nonstandard consolidations were used by a number of countries.

*Liquidity.* Consolidation on a national residence basis was most common, but the FSIs on liquid assets and average maturities of assets and liabilities were often consolidated on a global basis. Global consolidation is not relevant for some of the liquidity FSIs that refer solely to national conditions.

*Sensitivity to market risks.* Consolidation on a national residence basis was most common. Consolidation on a cross-border basis was used to some extent in supervisory data in industrial and emerging countries.



**Valuation**

**33.** For deposits and loans, historical valuations were most commonly used—in supervisory data, in at least three-fourths of all responses, and in statistical data, in about 9 out of 10 cases. In contrast, for securities (other than shares), as well as for shares and other equity, no valuation method clearly predominated, although use of market values was more common than other valuation approaches. For financial derivatives, market valuations were used most often, with supervisors also reporting fairly common use of “other” valuation methods, such as hedge valuations. Historical valuations predominated in miscellaneous receivables and payables and in nonfinancial assets, but use of the other types of valuations was not uncommon.

**34.** On the translation of the value of foreign-currency-denominated instruments into domestic currency equivalents, end-of-period exchange rates were used most often for all types of financial instruments. A large minority of emerging countries and developing countries reported that they used official exchange rates. Foreign currency positions were revalued most often at the rate applying on the bal-

ance sheet closing date. However, revaluations of foreign currency positions at other frequencies were not uncommon for securities (other than shares), shares and other equities, and financial derivatives.

**Presentation**

**35.** The majority of respondents preferred the use of ratios and growth rates in presenting their FSIs. However, many respondents also felt that the preferred mode of presentation depended on the particular FSI in question and the type of analysis being conducted. For example, for sectoral aggregates, it was useful to have weighted averages as well as simple averages, accompanied by the frequency distribution of institutions according to the range of values of the indicators.

**36.** Some respondents noted that measures of dispersion (standard deviations, histograms, Gini indices, and so forth) could be particularly useful in presenting FSIs because they allowed the analyst to identify, among other things, outliers, trends in concentration, and tiering in markets, which could be relevant for the analysis of financial stability.

## Appendix II. Summary of Guidance for Each Financial Soundness Indicator

1. This appendix brings together in summary form the guidance outlined in the *Guide* for each agreed FSI. The main purpose of this appendix is to support the work of compilers by bringing together in one place the various elements of guidance relating to each FSI, not least to help compilers locate the relevant detailed advice in the main text. The summaries are of one page length or less, and there is some cross-referencing among them. In addition, for ease of reference, an index of the FSI summaries is provided (Box A2.1).

2. For many of the agreed FSIs, the *Guide* recommends that the data series be drawn from sectoral financial statements; therefore, even though FSIs are described individually below, the compiler needs to remain aware of the broader context. In other words, the FSIs are a body of data with interrelationships that may not be apparent in the short summaries. Where relevant, the appropriate lines in the sectoral financial statements (Tables 4.1, 4.2, 4.3, and 4.4 in Chapter 4) are referenced.

3. Each summary below has the following three sub-headings.

- **Definition:** provides the definition of the FSI and, where appropriate, guidance on where the component series are defined in the *Guide*.
- **Issues for compilers:** draws out specific issues of which compilers should be aware.
- **Data sources:** provides information on where the information can be obtained. Relevant to this sub-heading is Chapter 11, which provides a detailed discussion of sources of information and additional data series that might be required. Also relevant is Appendix IV, which reconciles the *Guide*'s methodology with the national accounts and commercial accounting frameworks. As outlined in Chapter 11, it is not possible to generalize as to what information is available from supervisory sources, but some of the key differences in methodology between national accounts and supervisory information should be explored in compiling cross-border consolidated data for deposit takers.

4. For deposit takers, it is assumed that data from supervisory sources are available on a consolidated basis, but the nature of the consolidation should be compared with the *Guide*'s recommendations (see Chapter 5). If countries decide that domestic consolidated data (see paragraph 5.25) can also be derived from supervisory sources, then the references under cross-border consolidated information also apply to domestic data, but in general the summaries assume that the national accounts will be the source for domestic based data.

5. In reviewing the summaries below and determining the need to collect new data (and incur increased resource costs), authorities must make a judgment as to the importance of the additional data series for compiling and monitoring FSI data.

### 6. To summarize the guidance in Chapters 2 and 3:

- The definitions of deposit takers and other sectors are provided in Chapter 2 (paragraphs 2.4 to 2.19).
- Transactions and positions should be recorded on an **accrual** basis, and only existing, actual assets and liabilities should be recognized (paragraphs 3.3 to 3.9).
- The *Guide* prefers **valuation methods** that can provide the most realistic assessment at any moment in time of the value of an instrument or item. Market value is the preferred basis of valuation of transactions as well as of positions in traded securities. For positions in nontradable instruments, the *Guide* acknowledges that nominal value (supported by appropriate provisioning policies) may provide a more realistic assessment of value than the application of fair value (see paragraphs 3.20 to 3.33).
- **Residence** is defined in terms of where an institutional unit has its center of economic interest (see paragraphs 3.34 to 3.36).
- Transactions and positions in **foreign currency** should be converted into a single unit of account based on the market rate of exchange (see paragraphs 3.44 to 3.48).

**Box A2.1. FSIs: Index of Summaries****Core FSIs***Deposit takers*

Regulatory capital to risk-weighted assets  
 Regulatory Tier I capital to risk-weighted assets  
 Nonperforming loans net of provisions to capital  
 Nonperforming loans to total gross loans  
 Sectoral distribution of loans to total loans  
 Return on assets  
 Return on equity  
 Interest margin to gross income  
 Noninterest expenses to gross income  
 Liquid assets to total assets (liquid asset ratio)  
 Liquid assets to short-term liabilities  
 Net open position in foreign exchange to capital

**Encouraged FSIs***Deposit takers*

Capital to assets ratio  
 Large exposures to capital  
 Geographical distribution of loans to total loans  
 Gross asset and liability position in financial derivatives to capital  
 Trading income to total income  
 Personnel expenses to noninterest expenses  
 Spread between reference lending and deposit rates  
 Spread between highest and lowest interbank rate  
 Customer deposits to total (noninterbank) loans

Foreign-currency-denominated loans to total loans  
 Foreign-currency-denominated liabilities to total liabilities  
 Net open position in equities to capital

*Other financial corporations*

Assets to total financial system assets  
 Assets to GDP

*Nonfinancial corporations*

Total debt to equity  
 Return on equity  
 Earnings to interest and principal expenses  
 Net foreign exchange exposure to equity  
 Number of applications for protection from creditors

*Households*

Household debt to GDP  
 Household debt service and principal payments 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  
 Commercial real estate loans to total loans

- Short-term **maturity** is defined as one year or less (or payable on demand), with maturities over one year defined as long term (see paragraphs 3.49 and 3.50).

7. Moreover, as the *Guide* recommends that for each corporate sector—deposit takers, other financial corporations, and nonfinancial corporations—data be compiled on a consolidated basis, the word “group” is used on a number of occasions in the summaries. For deposit takers, as well as for other corporate entities, a group in this context includes the parent deposit taker, its deposit-taking branches, and its deposit-taking subsidiaries.

8. For deposit takers, the *Guide* requires the compilation of data covering **domestically controlled deposit takers** on a cross-border consolidated basis

(domestically controlled, cross-border consolidated data). Data on a domestic consolidated basis might be separately compiled if the authorities believe that such data would contribute materially to financial stability analysis (for example, to illustrate the linkage with other macroeconomic information).

**Core FSIs****Deposit Takers****Regulatory capital to risk-weighted assets***Definition*

9. This FSI measures the capital adequacy of deposit takers using the definitions of regulatory capital and risk-weighted assets of the BCBS. Sector-wide regulatory capital is the numerator and is defined in para-

graphs 4.68 to 4.73. Sector-wide risk-weighted assets is the denominator and is defined in paragraph 4.74. The FSI is defined in paragraphs 6.17 and 6.18.

#### *Issues for compilers*

**10.** Data are based on supervisory concepts. To derive sector-wide regulatory capital, the consolidated regulatory capital of the deposit-taking groups in the reporting population is aggregated. To derive sector-wide risk-weighted assets, the consolidated risk-weighted assets of the deposit-taking groups in the reporting population are also aggregated.

#### *Sources of data*

**11. Domestically controlled, cross-border consolidated and domestic consolidated data:** The availability of data reported to supervisory agencies will determine the scope of the data that can be disseminated. Consolidated regulatory capital and consolidated risk-weighted assets of each domestically controlled deposit-taking group in the reporting population should be available to supervisors.

### **Regulatory Tier 1 capital to risk-weighted assets**

#### *Definition*

**12.** This FSI measures the capital adequacy of deposit takers based on the core capital concept of the BCBS. Sector-wide Tier 1 capital is the numerator and is defined in paragraphs 4.70 and 4.73. Sector-wide risk-weighted assets is the denominator and is defined in paragraph 4.74. The FSI is defined in paragraph 6.19.

#### *Issues for compilers*

**13.** Data are based on supervisory concepts. To derive sector-wide Tier 1 capital, the consolidated Tier 1 capital of the deposit-taking groups in the reporting population is aggregated. To derive sector-wide risk-weighted assets, the consolidated risk-weighted assets of the deposit-taking groups in the reporting population are also aggregated.

#### *Sources of data*

**14. Domestically controlled, cross-border consolidated and domestic consolidated data:** The availability of data reported to supervisory agencies will determine the scope of the data that can be disseminated. Consolidated Tier 1 capital and consolidated risk-weighted assets of each domestically controlled deposit-taking group in the reporting population should be available to supervisors.

### **Nonperforming loans net of provisions to capital**

#### *Definition*

**15.** This FSI is intended to compare the potential impact on capital of NPLs, net of provisions. The impact of NPL losses on capital is uncertain in most circumstances, because for various reasons the lender might expect to recover some of the potential NPL losses. This FSI is calculated by taking the value of NPLs less the value of specific loan provisions (lines 42 and 18(ii), respectively, in Table 4.1) as the numerator and capital as the denominator. The FSI is defined in paragraphs 6.22 and 6.23.

#### *Issues for compilers*

**16.** The guidance for NPLs is the same as that provided for the ratio of NPLs to gross loans. Provisions are defined as specific provisions, which are the outstanding amount of provisions made against the value of individual loans (including a collectively assessed group of loans) (see paragraph 4.50). Provisions on intrasectoral loans are deducted from the specific provisions data. The *Guide* relies on national practices in identifying specific provisions but recommends that such practices be clearly documented. In calculating this ratio, it is important to understand how provisions data affect both the numerator and the denominator (see paragraph 6.24).

**17.** Capital is measured as total capital and reserves (line 30 in the sectoral balance sheet and defined in paragraph 4.62) and, for cross-border consolidated data, also as total regulatory capital (line 36 and defined in paragraphs 4.70 to 4.73). In measuring sector-wide capital, intrasector equity investments are deducted from the overall capital in the sector so that capital and reserves held within the sector are not double counted. Also, in line with supervisory guidance, capital excludes purchased goodwill. See the text annex to Chapter 5 for information on these adjustments to capital and reserves and those relating to intrasector provisions.

#### *Sources of data*

**18. Domestically controlled, cross-border consolidated data:** Information on NPLs and specific provisions (adjusted for provisions on intrasectoral loans) for the reporting population are typically available from supervisory sources, although national definitions of a NPL can vary. Similarly, capital and reserves data might be available from supervisory sources, although for total capital and reserves, the

definition would need to be investigated to ensure compatibility with the approach of the *Guide*. See Table 11.4 for possible adjustments required. Supervisory data should already be on a consolidated basis—although coverage would require investigation—but data may need to be aggregated to calculate the numerator and denominator for this ratio.

**19. Domestic consolidated data:** National accounts sources do not provide information on NPLs, so additional data would need to be collected. NPLs on account of lending among deposit takers in the reporting population that are part of the same group (if any) are excluded. Data on specific provisions would also need to be collected (adjusted for provisions on intrasectoral loans, if any (paragraph 5.87)). For capital, data are available from national accounts sources, such as monetary and financial statistics, but are subject to adjustment (see Box 11.1 and the capital and reserves entry in Appendix IV). In addition to the deductions mentioned under issues for compilers, NPLs should be reduced by the amount of any specific provisions (adjusted for provisions on intrasectoral claims). Moreover, in the balance sheet, equity investments in subsidiaries and associates (and reverse investments) should be valued at the proportionate share in the subsidiary's or associate's capital and reserves, and this could affect total capital and reserves measured on a national accounts basis. The treatment of equity investments is discussed in Box 5.1, and the text annex to Chapter 5 provides numerical examples of the adjustments at the sector level (see in particular paragraphs 5.89 and 5.90). Information on the funds contributed by owners and retained earnings (including those earnings appropriated to reserves) may be collected separately, or perhaps from monetary and financial statistics sources if data are collected by component of capital and reserves as set out in the *MFSM* (paragraph 214), subject to the deductions and other adjustments mentioned above. See also Box 11.1 and Tables 11.1–11.3.

### **Nonperforming loans to total gross loans**

#### *Definition*

**20.** This FSI is intended to identify problems with asset quality in the loan portfolio. It is calculated by using the value of NPLs as the numerator and the total value of the loan portfolio (including NPLs and before the deduction of specific loan loss provisions)

as the denominator. NPLs and loans (lines 42 and 18(i) in Table 4.1) are described in paragraphs 4.84 to 4.86 and 4.45 to 4.48, respectively. The FSI is defined in paragraphs 6.54 and 6.55.

#### *Issues for compilers*

**21.** The *Guide* provides guidance for identifying NPLs. Loans are nonperforming when payments of principal and interest are past due by three months (90 days) or more, or interest payments corresponding to three months (90 days) or more have been capitalized (reinvested into the principal amount), refinanced, or rolled over (that is, payment has been delayed by agreement). In addition, NPLs should also include those loans with payments less than 90 days past due that are recognized as nonperforming under national supervisory guidance—that is, evidence exists to classify a loan as nonperforming even in the absence of a 90-day past due payment, such as if the debtor files for bankruptcy. After a loan is classified as nonperforming, it (and/or any replacement loan(s)) should remain so classified until written off or payments of interest and/or principal are received on this or subsequent loans that replace the original loan. Replacement loans include loans arising from rescheduling or refinancing the original loan(s) and/or loans provided to make payments on the original loan.

**22.** Data on loans should exclude accrued interest on nonperforming loans and lending among deposit takers in the reporting population that are part of the same group.

#### *Sources of data*

**23. Domestically controlled, cross-border consolidated data:** Information on NPLs for the reporting population is typically available from supervisory sources, although national definitions of an NPL can vary. Similarly, information on loans might be available from supervisory sources and is likely to be subject to the exclusions mentioned under issues for compilers. Also, the *Guide's* definition of deposit takers should be compared with the definition used for supervisory purposes. Supervisory data may need to be aggregated to calculate the numerator and denominator for this ratio.

**24. Domestic consolidated data:** National accounts data do not provide information on NPLs; additional data on NPLs would need to be collected for domestic consolidated data. Data on loans should be avail-



able from monetary and financial statistics but perhaps not subject to the exclusions mentioned above. Also, the *Guide*'s definition of a deposit taker should be compared with the definition of "other depository corporations" used for monetary and financial statistics. Box 11.1 explains how data collected using *MFSM* methodology can be utilized in compiling FSIs for deposit takers.

### Sectoral distribution of loans to total loans

#### Definition

**25.** This FSI provides information on the distribution of loans (including NPLs and before the deduction of specific loan loss provisions) to resident sectors and to nonresidents. The numerators and denominator for this FSI are *lending to each of the institutional sectors* (lines 18(i.i) and 18(i.ii) in Table 4.1) and *gross loans* (line 18(i)), respectively. The resident sectors are deposit takers (see paragraphs 2.4 to 2.7), the central bank (2.13), the general government (2.18), other financial corporations (2.14), nonfinancial corporations (2.15), other domestic sectors (households (2.16) and nonprofit institutions serving households (2.17)). Nonresidents are defined in paragraphs 3.35 and 3.36. Loans are defined in paragraphs 4.45 to 4.48. This FSI is defined in paragraphs 6.56 and 6.57.

#### Issues for compilers

**26.** Sectoral analysis is a concept used in the national accounts that classifies entities by the nature of their economic activity. Lending is attributed on the basis of the residence of the reporting entity.

**27.** Data on loans should exclude accrued interest on nonperforming loans as well as lending among deposit takers in the reporting population that are part of the same group. Because all sectors are covered, the sum of the sectoral ratios should be unity.

#### Sources of data

**28. Domestically controlled, cross-border consolidated data:** The availability of data on loans by sector might vary depending on supervisory practices. Lending by any foreign branches and/or deposit-taking subsidiaries of the reporting entity to residents of the economy for which the FSI data are being compiled is classified as lending to the relevant resident sector. In contrast, lending to residents of the local economy in which the foreign subsidiary/branch is

located is classified as lending to nonresidents. To derive sector-wide data on deposit takers' lending by institutional sector, the consolidated data may need to be aggregated to derive both the numerators and the denominator of this FSI.

**29. Domestic consolidated data:** Data on loans to the various sectors are available from monetary and financial statistics, subject to the adjustments mentioned above. Loans to deposit-taking branches and subsidiaries abroad are included in the data as lending to nonresidents.

### Return on assets

#### Definition

**30.** This FSI is intended to measure deposit takers' efficiency in using their assets. It is calculated by dividing net income before extraordinary items and taxes (although net income after extraordinary items and taxes (line 11 of Table 4.1) might instead, or additionally, be used) by the average value of total assets (financial and nonfinancial) over the same period. At a minimum, the denominator can be calculated by using the average of the beginning- and end-period positions, but compilers are encouraged to use the most frequent observations available to calculate the average. Net income before and after extraordinary items and taxes (lines 8 and 11, respectively, in Table 4.1) and its components are defined in paragraphs 4.17 to 4.35; total assets (nonfinancial and financial assets) (line 14) are defined in paragraphs 4.37 and 4.38. The FSI is defined in paragraphs 6.52 and 6.53.

#### Issues for compilers

**31.** Net income is calculated on a basis closer to commercial accounting and supervisory approaches than to national accounting. Unlike the national accounts, in the *Guide* net income includes gains and losses on financial instruments, and gains and losses from the sales of fixed assets, which are measured as the difference between the sale value and the balance sheet value at the previous end period (see Table 4.1).

**32.** Notably, compilers should be aware that the *Guide* recommends that interest income not include the accrual of interest on nonperforming assets (paragraph 4.18). It also encourages the inclusion of realized and unrealized gains and losses arising during each period on all financial instruments (financial

assets and liabilities, in domestic and foreign currencies) valued at market or fair value in the balance sheet, excluding equity in associates, subsidiaries, and any reverse equity investments (paragraph 4.22).

**33.** At the sector level, a number of adjustments are specified to eliminate the impact of intrasector transactions on sectoral net income. These include the elimination of the following income items arising from claims on deposit takers in the reporting population: the investing deposit taker's prorated share of the earnings of associate deposit takers, dividends receivable from other deposit takers, provisions for accrued interest on nonperforming claims, and specific provisions on claims on other deposit takers. A full list of adjustments is provided in Chapter 5 (paragraph 5.53).

**34.** In line with supervisory guidance, goodwill is deducted from capital and reserves. Thus, goodwill is not classified as an asset (see paragraph 4.110) and, given this, not amortized in the income account. Consistent with this, gains and losses on the sale of an associate or subsidiary (and disinvestment of a reverse investment) are also excluded from income (paragraph 5.91).

#### *Sources of data*

**35. Domestically controlled, cross-border consolidated data:** The data for net income available to supervisory sources may depend on the national commercial accounting practice, as might the extent to which they meet the definitions in the *Guide*. It is likely that there will be a need for the sector-wide adjustments set out above (see Table 11.4 and paragraph 11.51). The available information may need to be aggregated to calculate both the numerator and denominator.

**36. Domestic consolidated data:** For national accounts-based data, there is a need to include within net income those items classified as income items in the *Guide* but not in the national accounts. These adjustments include, most notably, gains and losses on financial instruments and provisions on nonperforming assets (see Table 11.1). Moreover, the sector-wide adjustments described above for net income and total assets, including those transactions and positions with other deposit takers in the reporting population that are part of the same group (see Tables 11.2 and 11.3), should be considered. Information on goodwill may also be needed (Table 11.1).

### **Return on equity**

#### *Definition*

**37.** This FSI is intended to measure deposit takers' efficiency in using their capital. It is calculated by dividing net income before extraordinary items and taxes (although net income after extraordinary items and taxes (line 11 of Table 4.1) might instead, or additionally, be used) by the average value of capital over the same period. As a minimum, the denominator can be calculated by taking the average of the beginning- and end-period positions (for example, at the beginning and the end of the month), but compilers are encouraged to use the most frequent observations available in calculating the average. Net income before and after extraordinary items and taxes (lines 8 and 11, respectively, in Table 4.1) and its components are defined in paragraphs 4.17 to 4.36. The FSI is defined in paragraphs 6.25 and 6.26.

#### *Issues for compilers and sources of data*

**38.** Regarding net income, issues for compilers and sources of data are discussed in the *return on assets* summary.

**39.** Capital is measured as total capital and reserves (line 30 in the sectoral balance sheet and defined in paragraph 4.62) and, for cross-border consolidated data, also Tier 1 capital (line 32 of Table 4.1 and defined in paragraphs 4.70 and 4.73). In the absence of Tier 1 data, funds contributed by owners and retained earnings (including those earnings appropriated to reserves) could be used (line 30(i) of Table 4.1 and defined in paragraph 4.64). In measuring sector-wide capital, intrasector equity investments are deducted from the overall capital in the sector so that capital and reserves held within the sector are not double counted. Moreover, in line with supervisory guidance, capital excludes purchased goodwill. See the text annex to Chapter 5 for information on these adjustments to capital and reserves and those relating to intrasector provisions.

**40.** Sources of data for capital are discussed in the *nonperforming loans net of provisions to capital* summary.

### **Interest margin to gross income**

#### *Definition*

**41.** This FSI is a measure of the relative share of net interest earnings—interest earned less interest



expenses—within gross income. It is calculated by using net interest income (line 3 in Table 4.1) as the numerator and gross income (line 5) as the denominator. Net interest income and its components are defined in paragraphs 4.17 to 4.19, while gross income is defined in paragraph 4.20. The FSI is defined in paragraphs 6.68 and 6.69.

#### *Issues for compilers*

**42.** In the *Guide*, interest income should not include the accrual of interest on nonperforming assets (see paragraph 4.18). However, to avoid asymmetric reporting at the sector level, an adjustment should be made so that interest does accrue on nonperforming claims on other deposit takers in the reporting population (paragraphs 5.55 to 5.57).

**43.** Gross income includes both net interest income and other gross income. Among other gross income items, the *Guide* encourages the inclusion of realized and unrealized gains and losses arising during each period on all financial instruments (financial assets and liabilities, in domestic and foreign currencies) valued at market or fair value in the balance sheet, excluding equity in associates, subsidiaries, and any reverse equity investments (paragraph 4.22). Moreover, at the sector level, a number of adjustments are specified to eliminate the impact of intrasector transactions on sectoral gross income. These are the elimination of the following income items arising from positions and transactions with other deposit takers in the reporting population: fees and commissions receivable; the investing deposit taker's prorated share of the earnings of associate deposit takers, dividends receivable from other deposit takers, other income receivable from other deposit takers, and gains and losses on deposit takers' ownership of equities of other deposit takers. A description of these adjustments is provided in Chapter 5, starting at paragraph 5.53 and in Box 5.1.

**44.** Gains and losses on the sale of an associate or subsidiary (and disinvestment, of a reverse investment) are excluded from gross income (paragraph 5.92).

#### *Sources of data*

**45. Domestically controlled, cross-border consolidated data:** Consolidated data for net interest income and gross income should be available from supervisory sources, but the extent to which they meet the definitions in the *Guide* could depend on national commercial accounting practice. It is likely that

there will be a need for the sector-wide adjustments set out above (see Table 11.4 and paragraph 11.51). The available information may need to be aggregated to calculate both the numerator and denominator.

**46. Domestic consolidated data:** From national accounts-based sources, data on deposit takers' net interest income should be available—Table 11.9 identifies the relevant line items in the 1993 SNA accounts—although to make adjustments for the nonaccrual of interest on nonperforming loans, additional data may be needed. For gross income data, there may be a need for additional information to include within gross income those items classified as income items in the *Guide* but not in the national accounts (see Table 11.1), and also to make the sector-wide adjustments described above (see Table 11.2).

### **Noninterest expenses to gross income**

#### *Definition*

**47.** This FSI measures the size of administrative expenses to gross income. The FSI is calculated by using noninterest expenses (line 6 in Table 4.1) as the numerator and gross income (line 5) as the denominator. Noninterest expenses are defined in paragraph 4.30 and gross income in paragraph 4.20. This FSI is defined in paragraphs 6.73 and 6.74.

#### *Issues for compilers*

**48.** Noninterest expenses cover all expenses other than interest expenses. Provisions are not included in noninterest expenses but are separately identified in the sectoral income and expense statement (line 7). To derive the sector-wide total, all noninterest expenses paid to other deposit takers are deducted (see Table 11.2). These comprise fees and commissions payable and other expenses payable. Moreover, no goodwill is amortized in the income and expense statement (paragraph 4.110).

**49.** Regarding gross income, issues for compilers are discussed in the *interest margin to gross income* summary.

#### *Sources of data*

**50. Domestically controlled, cross-border consolidated data:** The data for noninterest expenses and gross income available to supervisory sources may depend on national commercial accounting practice. Nonetheless, it is likely that there will be a need for

the sector-wide adjustments set out above (see Table 11.4 and paragraph 11.51). Regarding gross income, sources of data are discussed in the *interest margin to gross income* summary. The available information may need to be aggregated to calculate both the numerator and the denominator of this FSI.

**51. Domestic consolidated data:** From national accounts-based sources, data on deposit takers' non-interest expenses should be available—Table 11.9 identifies the relevant line items in the 1993 SNA accounts. The sector-wide adjustments for noninterest expenses need to be considered (see Table 11.2). Regarding gross income, sources of data are discussed in the *interest margin to gross income* summary.

### **Liquid assets to total assets (liquid asset ratio)**

#### *Definition*

**52.** This FSI provides an indication of the liquidity available to meet expected and unexpected demands for cash. It is calculated by using the core measure of liquid assets (line 39 in Table 4.1) as the numerator and total assets (line 14) as the denominator. This ratio can also be calculated using the broad measure of liquid assets (line 40). Liquid assets are defined in paragraphs 4.78 to 4.81, and nonfinancial and financial assets (total assets) are defined in paragraphs 4.37 and 4.38. The FSI is defined in paragraphs 6.45 and 6.46.

#### *Issues for compilers*

**53.** Assessing the extent to which an asset is liquid or not involves judgment and, particularly for securities, depends on the liquidity of secondary markets. The *Guide* distinguishes between core and broad liquid assets.

**54.** Core liquid assets comprise currency and deposits and other financial assets that are available either on demand or within three months or less, but deposit takers' deposits (and other nontraded claims) with other deposit takers in the reporting population are excluded.

**55.** Broad liquid assets include those in the core measure plus securities that are traded in liquid markets (including repo markets) that can be readily converted into cash with insignificant risk of change in value under normal business conditions. Such securities include those issued by the government

and/or the central bank in their own currency and high credit-quality private securities—both debt and equity securities. For instance, if a financial instrument is eligible under normal business conditions for repurchase operations at the central bank, then it can be classified as a liquid asset. Private sector securities of less than investment grade should be excluded from liquid assets.

**56.** The issues for compilers for total assets are the same as in the *return on assets* summary.

#### *Sources of data*

**57. Domestically controlled, cross-border consolidated data:** Data on liquidity should be available from supervisory sources. The BCBS (2000b) stresses the need for good liquidity management by banks, including the need for effective measurement processes. The extent to which national approaches to measuring liquidity meet the concepts in the *Guide* would require consideration. In particular, for sector-wide total liquid assets, deposit takers' non-traded claims on other deposit takers in the reporting population need to be deducted before aggregation. The available information may need to be aggregated to calculate both the numerator and denominator of this FSI.

**58. Domestic consolidated data:** While monetary statistics provide some data, such as deposits at the central bank, the liquid-asset concepts developed in the *Guide* are not covered in national accounts-based data, and additional data may need to be requested. Some approximation of the core measure might be available from the 1993 SNA's full sequence of accounts, and this is discussed in more detail in Appendix IV under the entry for *liquid assets*.

### **Liquid assets to short-term liabilities**

#### *Definition*

**59.** This FSI is intended to capture the liquidity mismatch of assets and liabilities, and provides an indication of the extent to which deposit takers could meet the short-term withdrawal of funds without facing liquidity problems. This FSI is calculated by using the core measure of liquid assets (line 39 in Table 4.1) as the numerator and the short-term liabilities (line 41) as the denominator. This ratio can also be calculated by taking the broad measure of liquid assets (line 40). Liquid assets are defined in para-

graphs 4.78 to 4.81, and short-term liabilities are defined in paragraph 4.83. The FSI is defined in paragraphs 6.47 to 6.48.

#### *Issues for compilers*

**60.** Short-term liabilities are the short-term element of deposit takers' debt liabilities (line 28) plus the net (short-term, if possible) market value of the financial derivatives position (liabilities (line 29) less assets (line 21)); it excludes such liabilities to other deposit takers in the reporting population. Preferably, "short term" should be defined on a remaining maturity basis, but original maturity is an alternative (defined in paragraphs 3.49 and 3.50).

**61.** It is recommended that the net (short-term) market value position (liabilities less assets) of financial derivative liabilities be included rather than the gross liability position because of the market practice of creating offsetting contracts and the possibility of forward-type instruments switching between asset and liability positions from one period to the next. Moreover, because of the potential importance to deposit takers of financial derivatives in their liquidity analysis, the *Guide* provides a table (Table 6.4) that could be used to provide information on the expected cash flows underlying financial derivatives and from the settlement of foreign currency spot positions. The FSI could also be calculated excluding financial derivative positions—that is, calculating the ratio using short-term debt only—particularly if a net financial derivative asset position were significantly affecting the ratio.

**62.** The issues for compilers for liquid assets are the same as in the *liquid assets to total assets* summary.

#### *Sources of data*

**63.** *Domestically controlled, cross-border consolidated data:* Data on short-term liabilities on a remaining maturity basis might be available from supervisory sources. The extent to which the data meet the concepts in the *Guide*, particularly with regard to financial derivatives, would require consideration. Sources of data on liquid assets are discussed in the *liquid assets to total assets* summary.

**64.** *Domestic consolidated data:* Data on short-term liabilities for all debt instruments are generally not available in national accounts-based data on a remaining maturity basis, but they are often available on an original maturity basis. The IMF (2003b) out-

lines the presentation of remaining maturity data for banks, on an external debt basis only. Any data should exclude short-term liabilities among deposit takers in the reporting population that are part of the same group. Data on financial derivatives positions are available in national accounts-based data (see Box 11.1) but not on a short term basis. Data sources on liquid assets are discussed in the *liquid assets to total assets* summary.

### **Net open position in foreign exchange to capital**

#### *Definition*

**65.** This FSI is intended to show deposit takers' exposure to exchange rate risk compared with capital. A deposit taker's open position in foreign exchange should be calculated by summing the foreign currency positions into a single unit of account as the numerator. Capital is the denominator. The FSI is defined in paragraphs 6.31 to 6.38. These paragraphs provide a detailed explanation as to how to measure the net open position in foreign exchange.

#### *Issues for compilers*

**66.** The guidance in the *Guide* for measuring the net open position in foreign exchange is based on that recommended by the BCBS. Therefore, deposit takers' net open position is the sum of the net position in on-balance-sheet foreign currency debt instruments; net notional positions in financial derivatives; on-balance-sheet holdings of foreign currency equity assets; net future foreign currency income and expenses not yet accrued but already fully hedged; foreign currency guarantees and similar instruments that are certain to be called and are likely to be irrecoverable; and, depending on the national commercial accounting practice, any other item representing a profit/loss in foreign currencies of the foreign currency positions set out in a single unit of account. The *Guide* describes the sum of the first three items listed above as the "net open position in foreign exchange for on-balance-sheet items."

**67.** Included among foreign exchange instruments for this FSI are foreign-currency-linked instruments; that is, instruments where the amounts payable are linked to a foreign currency, although the payments are made in domestic currency (paragraph 3.46).

**68.** Regarding capital, issues for compilers are discussed in the *return on equity* summary.

*Sources of data*

**69. Domestically controlled, cross-border consolidated data:** Data on the net open position in foreign exchange are likely to be available from supervisory sources because of the supervisory interest in banks' exposure to foreign currency. The extent to which the national approach to measuring the net open position meets the concepts in the *Guide* would require consideration. Regarding capital, sources of data are discussed in the *nonperforming loans net of provisions to capital* summary.

**70. Domestic consolidated data:** The net open position in foreign exchange is not available from national accounts-based data but might be obtained from supervisory sources or could be additionally requested (see Table 11.1). Regarding capital, sources of data are discussed in the *nonperforming loans net of provisions to capital* summary.

**Encouraged FSIs****Deposit Takers****Capital to assets***Definition*

**71.** This is the ratio of capital to total assets, without the latter being risk weighted. It measures the extent to which assets are funded by other than own funds and is a measure of the capital adequacy of the deposit-taking sector. The FSI is calculated by using capital as the numerator and assets (line 14 in Table 4.1) as the denominator. Total assets (nonfinancial and financial assets) are defined in paragraphs 4.37 to 4.38. The FSI is defined in paragraphs 6.20 and 6.21.

*Issues for compilers and sources of data*

**72.** Regarding capital, issues for compilers, including the definitions of capital, are discussed in the *return on equity* summary, and sources of data are discussed in the *nonperforming loans net of provisions to capital* summary.

**73.** Regarding total assets, issues for compilers and sources of data are discussed in the *return on assets* summary.

**Large exposures to capital***Definition*

**74.** This FSI is intended to identify vulnerabilities arising from the concentration of credit risk. The

*Guide* sets out three approaches to defining this FSI at the sector level:

- The total number of large exposures of deposit takers that are identified under the national supervisory regime (line 38 in Table 4.1).
- Total exposure of the five largest deposit takers (or about five, depending on national circumstances) to the five largest, by asset size, resident entities (including all branches and subsidiaries) in both the other financial corporations sector and nonfinancial corporations sector, in addition to the exposure to the general government (line 51), as a percentage of the five largest deposit takers' capital.
- Total exposures of deposit takers to affiliated entities and connected counterparties (line 52) as a percentage of capital.

**75.** The FSI is defined in paragraphs 6.27 to 6.30.

*Issues for compilers*

**76.** From a supervisory point of view, large exposures are defined as one or more credit exposures to the same individual or group that exceed a certain percentage of regulatory capital, such as 10 percent. It is intended to be applicable at the level of the individual deposit taker. The number of large exposures of deposit takers is that identified under the national supervisory regime (see paragraph 4.76).

**77.** However, at the sector level, lending by the largest deposit takers to the largest entities in other sectors, such as the other financial corporations and nonfinancial corporations sectors, could have systemic consequences in the event of failure of the largest entities in the economy (paragraph 4.94). Moreover, experience has shown the potential significance of connected lending (paragraph 4.95).

**78.** Indications of a buildup of concentrated positions within sectoral or geographic distribution data could allow compilers to identify sectors and/or countries for which more detailed information might be required.

**79.** Regarding capital, issues for compilers are discussed in the *return on equity* summary.

*Sources of data*

**80. Domestically controlled, cross-border consolidated data:** Data on large exposures should be available from supervisory sources. The BCBS (1991) stresses the need for a satisfactory regime for the



measurement and control of large exposures, including the need for appropriate levels of large exposure limits (to capital), with special attention paid to connected lending. Moreover, the BCBS (1991) notes the need to closely monitor risks arising from exposures to particular sectors and/or geographic areas. The extent to which national approaches to measuring large exposures meet the concepts in the *Guide* would require consideration. Regarding capital, data sources are discussed in the *nonperforming loans net of provisions to capital* summary.

**81. Domestic consolidated data:** Data on large exposures are not available from national accounts-based data but might be obtained from supervisory sources or additionally requested (see Table 11.1). Regarding capital, sources of data are discussed in the *nonperforming loans net of provisions to capital* summary.

### **Geographical distribution of loans to total loans**

#### *Definition*

**82.** This FSI provides information on the geographic distribution of gross loans, by region. It allows the monitoring of credit risk arising from exposures to a group of countries. The approach by which claims are distributed geographically is defined in paragraph 3.36, and gross loans (line 18(i) of Table 4.1) are defined in paragraphs 4.45 to 4.48. The FSI is defined in paragraphs 6.63 and 6.64. The suggested regional classification follows that used in the IMF's *World Economic Outlook* and is illustrated in Table 12.1.

#### *Issues for compilers*

**83.** Lending is classified geographically on the basis of the residence of the domestic reporting entity. Therefore, lending by any foreign branches and/or deposit-taking subsidiaries of the reporting entity to residents of the local economy in which they are located is classified as lending to nonresidents and allocated to the appropriate region of the world, while lending to residents of the economy for which the FSI data are being compiled is classified as lending to the domestic economy. If lending to any sub-region or countries is particularly significant, further disaggregation—and identification of the country or subregion—is encouraged.

**84.** Regarding total loans, issues for compilers are the same as in the *nonperforming loans to total gross loans* summary.

#### *Sources of data*

**85. Domestically controlled, cross-border consolidated data:** Supervisory sources might have available information on the geographic distribution of loans (see the sources of data entry in the *large exposures to capital* summary). The data prepared for BIS's consolidated international banking statistics can be used. Otherwise, additional data might be requested. Regarding total loans, the sources of data are the same as described in the *nonperforming loans to total gross loans* summary.

**86. Domestic consolidated data:** Information on the geographic distribution of loans might not be available from national accounts or supervisory sources, but the BIS's locational international banking statistics are a source for those countries that compile these BIS data. Otherwise, additional data might be requested. Any lending among deposit takers in the reporting population that are part of the same group should be excluded, but loans to deposit-taking branches and subsidiaries abroad are included in the data as lending to nonresidents. Regarding total loans, sources of data are the same as in the *nonperforming loans to total gross loans* summary.

### **Gross asset and liability positions in financial derivatives to capital**

#### *Definition*

**87.** These FSIs are intended to provide an indication of the exposure of deposit takers' financial derivative positions relative to capital. There are two FSIs under this heading. The first is calculated by using the market value of financial derivative assets (line 21 in Table 4.1) as the numerator, and the second is calculated by using the market value of financial derivative liabilities (line 29) as the numerator. Both FSIs use capital as the denominator. Financial derivatives are defined in paragraphs 4.56 to 4.58. The FSIs are defined in paragraphs 6.39 and 6.40.

#### *Issues for compilers*

**88.** The coverage of financial derivatives includes forwards (including swaps) and options.

**89.** Regarding capital, issues for compilers, including the definitions of capital, are discussed in the *return on equity* summary.

*Sources of data*

**90. Domestically controlled, cross-border consolidated data:** Data on the market value position of financial derivative assets and liabilities should be available from supervisory sources. Regarding capital, sources of data are discussed in the *nonperforming loans net of provisions to capital* summary.

**91. Domestic consolidated data:** The gross asset and liability positions in financial derivatives can be obtained from national accounts-based data (monetary and financial statistics), in the sectoral balance sheet. However, national accounts data are not on a consolidated basis, and any data should exclude financial derivatives positions among deposit takers in the reporting population that are part of the same group. Therefore, additional data might need to be separately requested (see Table 11.3). Regarding capital, sources of data are discussed in the *nonperforming loans net of provisions to capital* summary.

**Trading income to total income***Definition*

**92.** This FSI is intended to capture the share of deposit takers' income from financial market activities, including currency trading. This FSI is calculated by using gains or losses on financial instruments (line 4(ii) of Table 4.1) as the numerator and gross income (line 5) as the denominator. Gains and losses on financial instruments are defined in paragraphs 4.22 to 4.27, and gross income is defined in paragraph 4.20. The FSI is defined in paragraphs 6.71 and 6.72.

*Issues for compilers*

**93.** Compilers should be aware that the *Guide* encourages the inclusion of realized and unrealized gains and losses arising during each period on all financial instruments (financial assets and liabilities, in domestic and foreign currencies) valued at market or fair value in the balance sheet, excluding equity in associates, subsidiaries, and any reverse equity investments (paragraph 4.22). Traditionally, in deposit takers' accounts this item has covered gains and losses recorded on assets and liabilities held for a short period as deposit takers seek to take advantage of short-term fluctuations in market prices. The *Guide's* reasoning for its approach is set out in paragraph 4.24. The *Guide* acknowledges that the proposed coverage of gains and losses may not be feasible in

the short run and that data collection systems may need to be developed.

**94.** Moreover, at the sector level, gains and losses on deposit takers' ownership of equities of other deposit takers in the reporting population should be deducted (paragraph 5.69).

**95.** Regarding gross income, issues for compilers are discussed in the *interest margin to gross income* summary.

*Sources of data*

**96. Domestically controlled, cross-border consolidated data:** Data on gains and losses on financial instruments should be available to supervisory sources, but the extent to which they meet the definitions in the *Guide* could depend on national commercial accounting practice. It is likely that there will be a need for the sector-wide adjustments set out above (see Table 11.4). Regarding gross income, sources of data are discussed in the *interest margin to gross income* summary. The available information may need to be aggregated to calculate both the numerator and the denominator for this FSI.

**97. Domestic consolidated data:** Data on gains and losses on financial instruments could be available from the revaluation account of the 1993 SNA, but at the present time collection of these data is relatively limited, and thus additional data may need to be separately requested (Table 11.1). If revaluation data are used, data on gains and losses on sales of subsidiaries and associates need to be excluded (see Table 11.1). It is likely that the need for the sector-wide adjustments set out above will require consideration (see Table 11.2). Regarding gross income, sources of data are discussed in the *interest margin to gross income* summary.

**Personnel expenses to noninterest expenses***Definition*

**98.** This FSI compares personnel costs with total noninterest costs. It is calculated by using personnel costs (line 6(i) in Table 4.1) as the numerator and noninterest expenses (line 6 of Table 4.1) as the denominator. Personnel costs and noninterest expenses are defined in paragraphs 4.30 and 4.31. The FSI is defined in paragraphs 6.75 and 6.76.

*Issues for compilers*

**99.** No recommendations are made at this time regarding the possible inclusion of stock options. Methodological work on the treatment of stock options is ongoing.

**100.** Regarding noninterest costs, issues for compilers are discussed in the *noninterest expenses to gross income* summary.

*Sources of data*

**101.** *Domestically controlled, cross-border consolidated data:* The data for personnel costs available to supervisory sources may depend on national commercial accounting practice. National practice will also determine the extent to which the data meet the definitions in the *Guide*. Regarding noninterest costs, sources of data are discussed in the *noninterest expenses to gross income* summary. The available information may need to be aggregated to calculate both the numerator and the denominator for this FSI.

**102.** *Domestic consolidated data:* Data on personnel costs should be available from national accounts-based sources—Table 11.9 identifies the relevant line items in the *1993 SNA*. See also the entry for *personnel costs including wage and salaries* in Appendix IV. Regarding noninterest costs, sources of data are discussed in the *noninterest expenses to gross income* summary.

**Spread between reference lending and deposit rates***Definition*

**103.** This FSI is the difference (expressed in basis points) between the weighted average loan rate and the weighted average deposit rate, excluding rates on loans and deposits between deposit takers. To measure the spread, the *Guide* recommends at a minimum the calculation of the weighted average of all lending and deposit interest rates (excluding intra-sector loans and deposits) during a reference period in the portfolio of resident deposit takers. The interest rate spread could also be calculated on a domestically controlled, cross-border consolidated basis, thus providing an indication of overall profitability but combining activity in different markets. The FSI is defined in paragraphs 8.5 to 8.10.

*Issues for compilers*

**104.** A method of calculating the weighted average lending rate is to divide the accrued amount of interest income on loans reported by deposit takers for a given period (numerator) by the average position of loans (denominator) for the same period. The weighted average deposit rate can be computed by dividing interest expense on deposits (numerator) by the average position of deposits (denominator) for the same period. Positions should be averaged using the most frequent observations available.

**105.** Contracted interest rates (that is, price data) can also be used to calculate weighted average interest rates for a given reference period, using the loan amounts as weights. Chapter 8 discusses these approaches and considers the merits of using end- and average-period interest rates and of calculating interest rates on outstanding and new business. The treatment of interest on nonperforming loans and on lending at officially prescribed rates is also discussed in Chapter 8.

*Sources of data*

**106.** For the first method mentioned above, data on accrued amounts of interest on loans and deposits should be readily available from the accounting systems of deposit takers, while typically data on deposit takers' positions in loans and deposits are regularly reported to central banks in balance sheet reports required for the compilation of monetary statistics.

**107.** Compiling information on contracted interest rates by type of loan and deposit may require that separate information be requested.

**Spread between highest and lowest interbank rate***Definition*

**108.** This FSI measures the spread between the highest and lowest interbank rates charged to deposit takers in the domestic interbank market. It is defined in paragraphs 8.21 to 8.24.

*Issues for compilers*

**109.** There can be limitations with this indicator. The framework through which central banks provide liquidity to money markets influences the overall liquidity of these markets, while one outlier can change the value of the indicator substantially. In addition, a



perceived increase in risk might also be reflected in informal limits on the quantities (rather than the price) of funds that a deposit taker could borrow in the interbank market. While the agreed FSI is a spread, there might also be analytical interest in the dissemination of the highest and lowest interest rates so that they can be compared with other rates in the financial markets.

#### *Sources of data*

**110.** The source of these data is usually interbank dealers or brokers. The data might be available to supervisory authorities or the statistical departments of central banks.

### **Customer deposits to total (noninterbank) loans**

#### *Definition*

**111.** This FSI is a measure of liquidity, in that it compares a stable deposit base with gross loans (excluding interbank activity). The FSI is calculated by using customer deposits (line 24(i) in Table 4.1) as the numerator and noninterbank loans (line 18(i.ii)) as the denominator. Customer deposits are defined in paragraphs 4.42 to 4.44, and loans are defined in paragraphs 4.45 to 4.48. The FSI is defined in paragraphs 6.50 and 6.51.

#### *Issues for compilers*

**112.** Assessing the extent to which a deposit is stable involves judgment, although experience suggests that some types of depositors are less likely to move their funds than others in response to a perceived weakness in an individual deposit taker or in the banking system. The key factors that can be taken into account are the type of depositor, the extent to which deposits are covered by credible insurance schemes, and remaining maturity.

**113.** The *Guide* recommends that the type of depositor be the primary factor in defining customer deposits, both because of its relevance and general applicability. Thus, customer deposits include all deposits (resident or nonresident) except those placed by other deposit takers and other financial corporations (resident or nonresident).

**114.** However, it is recognized that there can be variations to this approach. Large nonfinancial corporations might well manage their liquidity similarly to other financial corporations, and, thus, compilers

might wish to exclude these deposits from the measure of customer deposits. Alternatively, customer deposits could also include those that have a remaining maturity of more than one year, regardless of the sector of the depositor.

**115.** In another approach, customer deposits could be determined by type of deposit—that is, deposits known for their “stability,” such as demand deposits, small-scale savings, time deposits, and/or those covered by a (credible) deposit insurance scheme.

**116.** Regarding total loans, issues for compilers are discussed in the *nonperforming loans to total gross loans* summary. Additionally, loans to other deposit takers in the reporting population are excluded from this measure of loans.

#### *Sources of data*

**117.** *Domestically controlled, cross-border consolidated data:* Supervisory sources might provide information that allows the compilation of a measure of customer deposits consistent with the approach of the *Guide*. Regarding total loans, sources of data are the same as in the *nonperforming loans to total gross loans* summary, while loans to other deposit takers in the reporting population should be available to supervisors.

**118.** *Domestic consolidated data:* Data on customer deposits based on the sector approach and data on interbank loans are available from monetary and financial statistics sources (subject to ensuring the appropriate sectoral coverage, see paragraph 2.4). Regarding total loans, data sources are discussed in the *nonperforming loans to total gross loans* summary.

### **Foreign-currency-denominated loans to total loans**

#### *Definition*

**119.** This FSI measures the relative size of foreign currency loans within gross loans. It is calculated by using the foreign currency and foreign-currency-linked part of gross loans (line 46 in Table 4.1) to residents and nonresidents as the numerator, and gross loans (line 18(i)) as the denominator. Foreign currency loans are defined in paragraph 4.90. Loans are defined in paragraphs 4.45 to 4.48. For cross-border consolidated data, the determination of what

is and what is not a foreign currency is determined by the residence of the parent entity of that specific consolidated group. The FSI is defined in paragraphs 6.65 and 6.66.

#### *Issues for compilers*

**120.** In the *Guide*, domestic currency is that which is legal tender in the economy and issued by the monetary authority for that economy or the common currency area. Any currencies that do not meet this definition are foreign currencies to that economy (paragraph 3.45).

**121.** The currency composition of assets (and liabilities) is primarily determined by the characteristics of future payment(s). Foreign currency instruments are those payable in a currency other than the domestic currency. A subcategory of foreign currency instruments are domestic-currency-linked instruments that are payable in a foreign currency but with the amounts to be paid linked to the domestic currency. Foreign-currency-linked instruments are those payable in domestic currency but with the amounts to be paid linked to a foreign currency. Foreign-currency-linked loans are included in the numerator, as movements in the domestic exchange rate will affect their value in domestic currency terms (paragraph 3.46).

**122.** In the special case where an economy uses as its only legal tender a foreign currency, this FSI could be compiled excluding borrowing in, and linked to, that foreign currency.

**123.** The most appropriate exchange rate to be used for conversion of a position into the unit of account is the market (spot) exchange rate prevailing on the reference date to which the position relates. The midpoint between buying and selling rates is preferred (paragraph 3.48).

#### *Sources of data*

**124.** *Domestically controlled, cross-border consolidated data:* Data on foreign-currency-denominated and foreign-currency-linked loans might be available from supervisory sources because of the supervisory interest in banks' exposure to foreign currency. If such data are not available, they may need to be additionally requested. Regarding total loans, the sources of data are the same as described in the *nonperforming loans to total gross loans* summary. The available

information may need to be aggregated to calculate both the numerator and the denominator of the FSI.

**125.** *Domestic consolidated data:* While some national accounts-based sources, in particular the monetary and financial statistics, may include data on foreign currency assets, data on foreign-currency-denominated and foreign-currency-linked loans may need to be additionally requested (see Table 11.1). If the data source is on an institutional unit basis, then foreign-currency-denominated and foreign-currency-linked loans among deposit takers in the reporting population that are part of the same group should be excluded. Regarding total loans, sources of data are the same as in the *nonperforming loans to total gross loans* summary.

#### **Foreign-currency-denominated liabilities to total liabilities**

##### *Definition*

**126.** This FSI measures the relative importance of foreign currency funding within total liabilities. The level of this ratio should be viewed along with the previous FSI: foreign-currency-denominated loans to total loans. The FSI is calculated using the foreign currency liabilities (line 47 in Table 4.1) as the numerator and total debt (line 28) plus financial derivative liabilities (line 29) less financial derivative assets (line 21) as the denominator. Foreign currency liabilities are defined in paragraph 4.90, while total debt is defined in paragraph 4.61, and financial derivatives are defined in paragraphs 4.56 to 4.58. The FSI is defined in paragraphs 6.67 and 6.68.

##### *Issues for compilers*

**127.** The definitions of foreign currency, foreign-currency-denominated and foreign-currency-linked instruments, as well as exchange rate conversion, are the same as those set out in the issues for compilers in the *foreign-currency-denominated loans to total loans* summary.

**128.** For total liabilities, it is recommended that the net market value position (liabilities less assets) of financial derivatives be included, rather than the gross liability position, because of the market practice of creating offsetting contracts and the possibility of forward-type instruments switching between asset and liability positions from one period to the next.

**129.** In the special case where an economy uses as its only legal tender a foreign currency, this ratio could be compiled excluding positions in, and linked to, this currency.

*Sources of data*

**130.** *Domestically controlled, cross-border consolidated data:* Data on foreign currency and total liabilities might well be available from supervisory sources. The extent to which the data meet the concepts in the *Guide*, particularly with regard to financial derivatives, would require consideration. The available information may need to be aggregated to calculate both the numerator and the denominator of this FSI.

**131.** *Domestic consolidated data:* While some national accounts-based sources, in particular the monetary and financial statistics and external debt data, may include data on foreign currency liabilities, data on foreign-currency-denominated and foreign-currency-linked liabilities may need to be additionally requested (see Table 11.1). Data on total liabilities should be available from national accounts sources, such as monetary and financial statistics (see paragraph 2.4). If the data are compiled on an institutional unit basis, then foreign-currency-denominated and foreign-currency-linked loans among deposit takers in the reporting population that are part of the same group should be deducted.

**Net open position in equities to capital**

*Definition*

**132.** This FSI is intended to identify deposit takers' equity risk exposure compared with capital. It is calculated by using a deposit takers' open position in equities (line 48 in Table 4.1) as the numerator and capital as the denominator. The FSI is defined in paragraphs 6.41 to 6.44. These paragraphs provide a detailed explanation as to how to measure the net open position in equities.

*Issues for compilers*

**133.** The guidance in the *Guide* for measuring the net open position in equity is based on that recommended by the BCBS. Therefore, deposit takers' net open position (positive if a long position is held and negative if a short position is held) is the sum of on-balance-sheet holdings of equities and notional positions in equity derivatives.

**134.** The long and short positions in the market must be calculated on a market-value basis. Own equity issued by the deposit taker is excluded from the calculation, as is equity held in associates and unconsolidated subsidiaries (as well as reverse equity investments).

**135.** The notional positions in equity derivatives comprise the notional positions for futures and forward contracts relating to individual equities, futures relating to stock indices, equity swaps, and the market value of equity positions underlying options.

**136.** Regarding capital, issues for compilers, including the definitions of capital, are discussed in the *return on equity* summary.

*Sources of data*

**137.** *Domestically controlled, cross-border consolidated data:* Data on the net open position in equities are likely to be available from supervisory sources. The extent to which national approaches to measuring the net open position meet the concepts in the *Guide* would require consideration. Regarding capital, sources of data are discussed in the *nonperforming loans net of provisions to capital* summary.

**138.** *Domestic consolidated data:* The net open position in equities is not available from national accounts-based data but might be obtained from supervisory sources or additionally requested (see Table 11.1). Regarding capital, sources of data are discussed in the *nonperforming loans net of provisions to capital* summary.

**Other Financial Corporations**

**Assets to total financial system assets**

*Definition*

**139.** This FSI measures the relative importance of other financial corporations within the domestic financial system. The numerator is other financial corporations' financial assets (line 3 in Table 4.2) and the denominator is total financial system assets. The latter is the total of financial assets owned by deposit takers (line 16, Table 4.1), other financial corporations, nonfinancial corporations (line 17, Table 4.3), households (line 11, Table 4.4), the general government, and the central bank. Financial assets are defined in paragraph 4.38. The FSI is defined in paragraph 7.6.

*Issues for compilers*

**140.** For total financial system assets, the coverage includes all entities resident in the domestic economy. Moreover, the *Guide* recommends that for each corporate sector—deposit takers, other financial corporations, and nonfinancial corporations—data be compiled on a consolidated basis; therefore, claims on other resident entities classified in the same sector should be eliminated. Cross-sector claims should not be eliminated.

**141.** For completeness, financial assets of NPISHs (see paragraph 2.17) could also be included within total financial system assets, but in many instances these might be relatively insignificant.

*Sources of data*

**142.** *Domestic consolidated data:* Data for total financial assets of other financial corporations and of the other sectors in the economy can be drawn from national accounts-based data, subject to the adjustments needed to exclude intragroup claims (see Tables 11.3, 11.5, and 11.7). To be able to make the adjustments, additional data might need to be requested.

**143.** *Domestically controlled, cross-border consolidated data:* For the larger entities, data might be drawn from published corporate financial statements and aggregated to derive the numerator of the FSI. However, the extent to which the resulting data would be consistent with the concepts in the *Guide* would require consideration.

**Assets to gross domestic product**

*Definition*

**144.** This FSI measures the importance of other financial corporations compared with the size of the economy. Other financial corporations' financial assets (line 3 in Table 4.2) is the numerator and GDP is the denominator. Financial assets are defined in paragraph 4.38. The FSI is defined in paragraph 7.7.

*Issues for compilers*

**145.** For other financial corporations' assets, issues for compilers are the same as in the *other financial corporations' assets to total financial system assets* summary.

*Sources of data*

**146.** GDP data are available from the national accounts sources.

**147.** For other financial corporations' assets, sources of data are the same as in the *other financial corporations' assets to total financial system assets* summary. For this indicator, data are compiled on a domestic consolidated basis only.

**Nonfinancial Corporations**

**Total debt to equity**

*Definition*

**148.** This FSI is a measure of corporate leverage—the extent to which activities are financed out of own funds. The FSI is calculated by using debt (line 29 in Table 4.3) as the numerator and capital and reserves (line 31 of Table 4.3) as the denominator. Debt is defined in paragraph 4.61, and capital and reserves are defined in paragraph 4.62. The FSI is defined in paragraphs 7.10 and 7.11.

*Issues for compilers*

**149.** Debt claims among nonfinancial corporations in the reporting population that are part of the same group should be excluded.

**150.** Equity investments in associates and unconsolidated subsidiaries (and reverse investments) are to be recorded in the investor's balance sheet (see paragraph 3.33) on the basis of the investor's proportionate share in the capital and reserves of the associate and unconsolidated subsidiary, and not using the market value of the traded equity.

**151.** In measuring sector-wide capital, all intrasector equity investments are deducted from the overall capital in the sector so that capital and reserves held within the sector are not double counted (see Box 5.2). Moreover, in line with the approach for deposit takers, goodwill is deducted.

*Sources of data*

**152.** *Domestic consolidated data:* Nonfinancial corporations' debt and capital can be drawn from national accounts-based data. However, additional data may be needed to make the adjustments noted above in the issues for compilers (see Tables 11.6 and 11.7).

**153.** *Cross-border consolidated data:* For the larger entities, data might be drawn from published corporate financial statements and aggregated to get both the numerator and the denominator of the FSI. How-



ever, the extent to which the resulting data would be consistent with the concepts in the *Guide* would require consideration, and there may be a need to make sector-wide adjustments.

### **Return on equity**

#### *Definition*

**154.** This FSI is commonly used to capture non-financial corporations' efficiency in using their capital. It is calculated by using EBIT (line 34 in Table 4.3) as the numerator and average value of capital and reserves (line 31) over the same period as the denominator. At a minimum, the denominator can be calculated by taking the average of the beginning- and end-period positions (for example, at the beginning and the end of the month), but compilers are encouraged to use the most frequent observations available in calculating the average. EBIT is defined in paragraph 4.116 (and see also 4.100 to 4.104). Capital and reserves are defined in paragraph 4.62. The FSI is defined in paragraphs 7.12 to 7.14.

#### *Issues for compilers*

**155.** As with deposit takers, income is calculated on a basis closer to commercial accounting and supervisory approaches than to national accounting. Therefore, the *Guide* encourages the inclusion of realized and unrealized gains and losses arising during each period on all financial instruments (financial assets and liabilities, in domestic and foreign currencies) valued at market or fair value in the balance sheet, excluding equity in associates, subsidiaries, reverse equity investments (paragraph 4.22), and gains and losses from the sales of fixed assets, which are measured as the difference between the sale value and the balance sheet value at the previous end period.

**156.** Sector-wide adjustments are also specified to prevent intrasectoral income from affecting the EBIT measure. Notably, dividends received and the parent's share of an associate's retained earnings (and similarly, arising from a reverse equity investment, an associate's share of a parent's retained earnings) are to be deducted from other income (net). Also excluded are any gains and losses on equity holdings in other nonfinancial corporations and sales of fixed assets to other nonfinancial corporations included in other income (net). Since goodwill is not classified as an asset, it is not amortized in the income account (see paragraph 4.110).

**157.** Because data are on a consolidated basis, transactions and positions among nonfinancial corporations in the reporting population that are part of the same group are excluded.

**158.** Regarding capital, issues for compilers, including the definitions of capital, are discussed in the *total debt to equity* summary.

#### *Sources of data*

**159.** *Domestic consolidated data:* Data can be drawn from national accounts-based data. However, additional data may be needed to make the adjustments noted above in the issues for compilers (see Tables 11.6 and 11.7).

**160.** *Cross-border consolidated data:* For the larger entities, data might be drawn from published corporate financial statements and aggregated to get both the numerator and the denominator in this FSI. The concept of earnings before tax and interest is one used in the analysis of corporate accounts. However, the extent to which the resulting data would be consistent with the concepts in the *Guide* would require consideration, and there may be a need to make sector-wide adjustments.

### **Earnings to interest and principal expenses**

#### *Definition*

**161.** This FSI measures nonfinancial corporations' capacity to cover their debt-service payments (interest and principal). It serves as an indicator of the risk that a firm may not be able to make the required payments on its debts. The FSI is calculated by using earnings (net income) before interest and tax (EBIT) (line 34 in Table 4.3) plus interest receivable from other nonfinancial corporations (line 33) as the numerator and debt-service payments (line 35) over the same period as the denominator. EBIT is defined in paragraph 4.116, interest receivable from other nonfinancial corporations is defined in paragraph 4.115, and debt-service payments are defined in paragraph 4.117. The FSI is defined in paragraphs 7.15 and 7.16.

#### *Issues for compilers*

**162.** The denominator, debt-service payments, includes payments to other nonfinancial corporations (excluding payments among nonfinancial corporations in the reporting population that are part of the

same group). The numerator includes interest payments receivable (excluding those among nonfinancial corporations in the reporting population that are part of the same group) from other nonfinancial corporations. Therefore, the denominator and numerator have the same coverage.

**163.** Regarding EBIT, issues for compilers are discussed in the *return on equity* summary.

*Sources of data*

**164. Domestic consolidated data:** While the external debt statistics methodology requires collection of data on debt-service payments on external debt, it is likely that additional data on debt-service payments may need to be separately requested, including on payments among nonfinancial corporations in the reporting population that are part of the same group (see Tables 11.6 and 11.7).

**165. Cross-border consolidated data:** For the larger entities, data might be drawn from published corporate financial statements and aggregated to calculate both the numerator and the denominator in this FSI. Debt service coverage (particularly interest coverage) is a concept used in the analysis of corporate accounts. However, the extent to which the resulting data would be consistent with the concepts in the *Guide* would require consideration, and there may be a need to make sector-wide adjustments.

**Net foreign exchange exposure to equity**

*Definition*

**166.** This FSI measures nonfinancial corporations' exposure to foreign currency risk compared with their capital. The larger the exposure to foreign currency risk, the greater the stress on the financial soundness of nonfinancial corporations from a significant currency depreciation and, as a consequence, the greater the stress on deposit takers. Nonfinancial corporations' net foreign exchange exposure for on-balance-sheet items (line 36 in Table 4.3) is the numerator, and capital and reserves (line 31) is the denominator. The open position should be calculated as described for deposit takers in paragraphs 6.32 and 6.33. The FSI is defined in paragraphs 7.17 to 7.19.

*Issues for compilers*

**167.** The net foreign exchange position is to be measured using the same methodology as that described

for deposit takers in the *net open position in foreign exchange to capital* summary.

**168.** Given the potential difficulty in compiling data on off-balance-sheet foreign currency exposures, the *Guide* encourages at least an initial focus on the *corporate net foreign exchange exposure for on-balance-sheet items*, but the FSI could also be calculated using total corporate net foreign exchange exposure (line 37) as the numerator.

**169.** Regarding capital, issues for compilers, including the definitions of capital, are discussed in the *total debt to equity* summary.

*Sources of data*

**170. Domestic consolidated data:** It is likely that additional data on the corporate net foreign exchange exposure may need to be separately requested, as it is not available from national accounts sources (see Table 11.6). Regarding capital, data sources are discussed in the *total debt to equity* summary.

**171. Cross-border consolidated data:** For the larger entities, data on the corporate net foreign exchange exposure might be available from published corporate financial statements for the larger firms and aggregated to get both the numerator and denominator, but the extent to which the resulting data would be consistent with the concepts in the *Guide* would require consideration. Regarding capital, data sources are discussed in the *total debt to equity* summary.

**Number of applications for protection from creditors**

*Definition*

**172.** This FSI is a measure of bankruptcy trends, but it is influenced by the quality and nature of bankruptcy and related legislation. It is a simple numerical addition of those nonfinancial corporations that have filed for protection from bankruptcy during the period. The FSI is defined in paragraph 7.20.

*Issues for compilers*

**173.** For sector-wide data, the data provided should be the total number of nonfinancial corporations resident in the economy that have filed for protection in a particular period. Filings by foreign subsidiaries of resident entities should not be included.

*Sources of data*

**174.** These data might be available from the national statistical office or the Department/Ministry of Commerce/Industry.

**Households****Household debt to GDP***Definition*

**175.** This FSI measures the overall level of household indebtedness (commonly related to consumer loans and mortgages) as a share of GDP. This FSI is calculated by taking household debt (line 20 in Table 4.4) as the numerator and GDP as the denominator. Debt is defined in paragraph 4.61. The FSI is defined in paragraphs 7.23 and 7.24.

*Issues for compilers*

**176.** The data for household debt comprise debt incurred by resident households of the economy only.

*Sources of data*

**177.** *Domestic data:* Information on household debt and GDP should be available from national accounts sources (see paragraph 11.15).

**Household debt service and principal payments to income***Definition*

**178.** This FSI measures the capacity of households to cover their debt payments (interest and principal). It is calculated by using household debt-service payments (line 24 in Table 4.4) as the numerator and gross disposable income (line 6) over the same period as the denominator. Household debt-service payments are defined in paragraph 4.122 (see also 4.117), and gross disposable income is defined in paragraph 4.120. The FSI is defined in paragraphs 7.25 and 7.26.

*Issues for compilers*

**179.** Obtaining data on the household sector is difficult. Coordination with the agency compiling data on the household sector for inclusion in national accounts statistics is essential.

*Sources of data*

**180.** *Domestic data:* Information on household disposable income should be available from national

accounts sources. However, data on debt-service payments might not be available from national accounts sources, so additional data may need to be separately requested (see paragraph 11.16).

**Market Liquidity****Average bid-ask spread in the securities market***Definition*

**181.** This FSI is the difference between the prices at which market participants are willing to buy (bid) and sell (ask) assets; it is a measure of market tightness—the relative cost of engaging in a transaction irrespective of the absolute level of the market price of the items being sold. It is calculated as the difference between the best (highest) bid and the best (lowest) ask price in the market, expressed as a percentage of the midpoint of the buy and sell price of an asset—a benchmark domestic government or central bank debt security in the first instance. Bid-ask spreads tend to be narrower in more liquid and efficient markets. The FSI is defined in paragraphs 8.27 and 8.44 to 8.46.

*Issues for compilers*

**182.** Because of the link between market-based liquidity indicators and the indicator on deposit takers' liquid assets, bid-ask spreads should be compiled, at a minimum, for financial instruments included in the wider measure of liquid assets. The natural starting point is to compile indicators (1) for domestic government or central bank bills that are used by the national authorities to influence liquidity conditions in their domestic economy, and (2) for corporate securities if they are included in the definition of liquid assets.

**183.** Similarly, the tightness of the local foreign exchange markets may also be relevant if foreign-exchange-denominated securities qualify as liquid assets.

**184.** The quantities of securities that can be traded at the best bid price and at the best ask price, respectively, provide important information for interpreting the bid-ask spread, and the *Guide* encourages the dissemination of this information along with the bid-ask spread (paragraph 8.47).

**185.** The bid-ask spread should be compiled on a daily basis or, at a minimum, on a weekly basis. The



frequency of price observations can be on a tick-by-tick basis, but preferably at least two quotes per day should be taken (for example at 10:30 a.m. and at 2:30 p.m.). If price observations are taken on a less than hourly basis, care is needed to avoid biases related to systematic volatility of intraday price quotes (paragraph 8.48).

**186.** The *Guide* provides other advice, on how to calculate the spread if the bid and ask quotes are in terms of yield rather than in terms of price (paragraph 8.46 and Box 8.1), and provides an additional way of calculating the bid-ask spread that takes into account the quantity of securities that can be traded at the quoted prices (paragraph 8.49).

#### *Sources of data*

**187.** Major exchanges located in the domestic economy can be used as a source of data for compiling bid-ask spreads. Other sources can include dealer associations, central banks, and commercial databases, although compilers who approach a commercial database vendor will need to make their own judgments about whether the product being offered meets their needs. Coverage of all market makers, the likely primary source of the information, may not be necessary. It is recommended that the top five market makers or at least those accounting for a minimum of 75 percent of market turnover should be covered. Automated electronic market making can also be covered.

#### **Average daily turnover ratio in the securities market**

##### *Definition*

**188.** This FSI is the ratio of average daily trades to the outstanding stock of securities; it is a measure of market depth—the ability of a market to absorb large trade volumes without a significant impact on market prices. It is calculated as the number of securities bought and sold during a trading period divided by the average number of securities outstanding at the beginning and the end of the trading period. The volume of all trades executed during official trading hours of the markets should be captured. The *Guide* recommends that turnover be calculated in the first instance for a benchmark domestic government or central bank debt security. The FSI is defined in paragraph 8.39.

##### *Issues for compilers*

**189.** As regards other types of securities to cover and the periodicity of compilation, the same considerations apply as described in the issues for compilers in the *average bid-ask spread in the securities market* summary.

**190.** There is a lack of data on foreign exchange market turnover outside of the triennial central bank survey of foreign exchange (and derivative market activity) conducted by the BIS.

##### *Sources of data*

**191.** Sources of data are the same as described in the *average bid-ask spread in the securities market* summary.

## **Real Estate Markets**

### **Real estate prices**

#### *Definition*

**192.** This FSI covers residential and commercial real estate price indices separately. Currently, there is limited international experience in constructing representative real estate price indices, reflecting the difficulty of the task: real estate markets are heterogeneous, both within and across countries, and illiquid. Therefore, the *Guide* describes a range of techniques whose application can be based on local needs, conditions, and resources rather than recommending a single set of indices or compilation methods. The need to prepare inventories of residential and commercial properties to provide a baseline for compilation of price indices is noted (paragraph 9.12).

**193.** The *Guide* discusses two major methods for constructing real estate price indices: the Laspeyres real estate price index (see paragraphs 9.20 to 9.24) and the hedonic or quality-adjusted regression price index (see paragraphs 9.25 and 9.26). Among other price measures discussed are average price (unit value) indices (paragraphs 9.16 and 9.17) and liquidity-adjusted price indices (paragraph 9.27).

##### *Issues for compilers*

**194.** The Laspeyres index calculates the weighted average change in prices over a period for a fixed basket of real estate in some base period. The hedonic regression price index derives the price series for a standard real estate unit by regressing and removing

the price influence of multiple specific quality factors that affect actual sales prices. However, hedonic approaches can be complex and expensive in terms of data demands and require professional knowledge of compiling such measures.

**195.** The *Guide* also describes the “unit-value index” which, although not a price index, is probably the most widely available price measure for real estate and sometimes provides useful information about large changes in prices. However, this index can be seriously biased by a few transactions with extreme values, changes in the mix of transactions, or changes in the quality of the units being sold (paragraphs 9.16 and 9.17).

**196.** Commercial real estate has specific features that can influence the task of compilation, including the great diversity of types of commercial real estate, which may be specialized because of the specific business of the occupant. On the other hand, the commercialized nature of the product permits many properties to be characterized as a commodity, consisting of a square footage of commercial space (see paragraphs 9.28 to 9.31).

#### *Sources of data*

**197.** Transactions data for real estate may be available from official registries of such information. These registries are responsible for recording the transfers of property ownership in their locality; when ownership changes hands, they update their records. Another source of transactions data is real estate agents, who bring together buyers and sellers of real estate. Data from these two sources may assist in the construction of a price index, particularly if the data are available over time for real estate of a similar or common type. Financial institutions active in lending to the real estate market may also be a source of information.

#### **Residential real estate loans to total loans**

##### *Definition*

**198.** This FSI is intended to identify deposit takers’ exposure to the residential real estate sector, with the focus on household borrowers. It is calculated by using residential real estate loans as the numerator (line 43 in Table 4.1) and gross loans (line 18(i)) as the denominator. Residential real estate loans are defined in paragraph 4.88, and loans are defined in

paragraphs 4.45 to 4.48. The FSI is defined in paragraphs 6.58 to 6.60.

##### *Issues for compilers*

**199.** For the compilation of this FSI, the consistent application by deposit takers of a definition of residential real estate is central: houses, apartments, and other dwellings (such as houseboats and mobile homes), and any associated land intended for occupancy by individual households.

**200.** Household borrowing collateralized by real estate can be used as the numerator (line 25 in Table 4.4). While not all real estate lending to households is collateralized by residential real estate, it is often the prevailing practice.

**201.** Regarding total loans, issues for compilers are the same as in the *nonperforming loans to total gross loans* summary.

##### *Sources of data*

**202.** *Domestically controlled, cross-border consolidated data:* Data on residential real estate loans may need to be additionally requested if they are not available from supervisory sources. The available information may need to be aggregated. Regarding total loans, the sources of data are the same as in the *nonperforming loans to total gross loans* summary.

**203.** *Domestic consolidated data:* Residential real estate loans may be available from monetary and financial statistics sources that provide an industrial classification of lending by type of economic activity (Box A3.1 in Appendix III). Otherwise, additional data may need to be separately requested (see Table 11.1). Regarding total loans, the sources of data are the same as in the *nonperforming loans to total gross loans* summary.

#### **Commercial real estate loans to total loans**

##### *Definition*

**204.** This FSI measures banks’ exposure to the commercial real estate market. It is calculated by using as the numerator loans collateralized by commercial real estate, loans to construction companies, and loans to companies active in the development of real estate (line 44 of Table 4.1), and by using gross loans (line 18(i)) as the denominator. Commercial real estate loans are defined in paragraph 4.88, and loans

are defined in paragraphs 4.45 to 4.48. The FSI is defined in paragraphs 6.61 and 6.62.

*Issues for compilers*

**205.** As with residential real estate loans, the consistent application by deposit takers of a definition of what constitutes commercial real estate lending is central. Commercial real estate lending among deposit takers in the reporting population that are part of the same group is deducted.

**206.** Regarding total loans, issues for compilers are the same as in the *nonperforming loans to total gross loans* summary.

*Sources of data*

**207.** *Domestically controlled, cross-border consolidated data:* Data on commercial real estate loans may

need to be additionally requested if they are not available from supervisory sources. The available information may need to be aggregated. Regarding total loans, sources of data are the same as in the *nonperforming loans to total gross loans* summary.

**208.** *Domestic consolidated data:* Commercial real estate loans may be available from monetary and financial statistics sources that provide an industrial classification of lending by type of economic activity (Box A3.1 in Appendix III). If so, lending among resident deposit takers that are part of the same group should be deducted. Otherwise, additional data may need to be separately requested (see Table 11.1). Regarding total loans, sources of data are the same as in the *nonperforming loans to total gross loans* summary.

## Appendix III. Additional Definitions of FSIs and Related Data Series

1. The main text discusses the set of core and encouraged FSIs. This appendix sets out ideas that arose during the drafting of, and consultation on, the *Guide* for additional definitions of the FSIs and for related data series. Issues relevant for the monitoring of financial conglomerates are also discussed. Information provided in this appendix may be useful to compilers when developing FSIs for use in their own national context.

### Extensions to FSIs as Specified in the *Guide*

#### Deposit Takers

2. Chapter 6 brings together the concepts and definitions set out in Part I of the *Guide* to explain how each FSI for deposit takers is to be calculated. Additional definitions of some FSIs were proposed during discussions on the preparation of the *Guide*, which are set out below. In some instances, more disaggregated data series would be needed to compile these FSIs.

3. The *Guide* recommends that sector-level data compiled to calculate FSI ratios include any intrasector positions in debt and financial derivatives on a gross basis (paragraph 5.49). This approach allows the interrelationships among groups in the sector, and hence potential contagion risks, to be identified. However, for FSI ratios where gross assets or liabilities are either the denominator or the numerator—for example, return on assets and the capital-to-assets ratio—they could also be calculated excluding intrasector positions in debt and financial derivatives, so that both the numerator and the denominator of the ratio exclude intrasector transactions and positions.

#### Capital-to-assets ratio

4. The *debt-to-capital ratio* is another measure of financial leverage that could be considered in addition to the capital-to-assets ratio.

#### Return on equity (net income to average capital)

5. *Return on equity* could be calculated including purchased goodwill in the denominator, which would amount to using a measure of capital and reserves closer to that used in commercial accounting.

#### Nonperforming loans net of provisions to capital

6. With a view to providing a broader measure of nonperforming assets, this FSI could be calculated using total debt claims in the numerator and not just loans.

7. This FSI could also be calculated for resident and nonresident borrowers separately. The approach might be relevant in the context of differing economic circumstances prevailing in the domestic and foreign markets.

8. In economies where collateral is widely used, *nonperforming loans net of provisions and collateral to capital* is an alternative FSI that might give a more realistic picture of the potential for losses by deposit takers than the FSI ratio, which is calculated by excluding collateral.<sup>1</sup> Any dissemination of this ratio would need to be supplemented with detailed metadata on collateral rules in use, including the valuation approach adopted by national supervisors.

#### Large exposures to capital

9. The number of large exposures at various percentages of regulatory capital could be considered, such as the total number of individual large exposures above 10 percent but below 20 percent of regulatory capital, between 20 percent and 40 percent of

<sup>1</sup>In addition to or instead of collateral, account could be taken of credit risk transfer instruments. However, at the time of writing there is little to no experience with measuring the credit risk offset at the sector level arising from the use of these instruments.

regulatory capital, and above 40 percent of regulatory capital.

**10.** To identify the location of the counterparties, the number of large exposures could be divided between resident and nonresident counterparties.

**11.** To monitor concentrated lending by deposit takers, as peer groups or as for the sector as a whole, FSIs could be constructed that relate to the sectoral—particularly by industry—and geographic distribution of loans. Indications of a buildup of concentrated positions derived from these data could allow compilers to specify sectors and/or countries for which more detailed information might be required.

**12.** Other approaches to monitoring concentrated lending include (1) specifying a minimum exposure amount in nominal terms at which any search for concentrated lending by deposit takers could begin, and (2) developing a credit concentration ratio (for example, the ratio of the total exposures to the largest 20 borrowers by each bank to the total exposures of banks).

**13.** Some economies rely on credit registers to monitor large exposures. Through such registers, the total exposure of the deposit-taking sector (and indeed of the financial system) to each individual borrower can be measured, and reports could, for example, be generated each quarter on the exposures to the 100 largest borrowers. An identification code attributed to each borrower would allow consistency of recording. However, the exposures of the foreign branches and subsidiaries of resident deposit takers might not be covered by such registers.

#### ***Net open position in equities to capital***

**14.** There may be analytical interest in presenting the net open position in equities by country to identify any large exposures to equity holding in particular economies.

#### ***Liquid assets to short-term liabilities***

**15.** This FSI could be calculated using very short-term liabilities—three months or less—as the denominator. Such liabilities would be closer to the liquidity concept used for liquid assets. Moreover, this FSI could be calculated excluding short-term customer deposits from short-term liabilities; that is, excluding

those short-term liabilities considered to be a more stable, less volatile form of funding. This FSI could also be calculated excluding financial derivatives positions—that is, calculating the ratio taking short-term debt only into consideration—particularly if a net derivative asset position is significantly affecting the ratio.

#### ***Nonperforming loans to total gross loans***

**16.** To identify the sectoral concentration of NPLs, this FSI could be calculated for each sector (using the same sectors as in calculation of the sectoral distribution of loans to total loans).

#### ***Sectoral distribution of loans to total loans***

**17.** A more disaggregated view of lending to the other financial corporations sector could be provided through dissemination of the ratios for loans to the five subsectors,<sup>2</sup> defined in Appendix VII, the Glossary of Terms.

**18.** An additional possibility is to classify loans by type of borrower using the International Standard Industrial Classification of all Economic Activities (ISIC). This approach might be particularly relevant when an economy has systemically important industries, such as petroleum and agriculture. The ISIC has 17 major categories of economic activity in the resident economy and places more emphasis on the type of activity undertaken than on the economic nature of the business, which is the basis of the sector distribution described in Chapter 2. The categories and short definitions of the activities covered in each category are set out in Box A3.1 of this appendix. An alternative approach is to classify loans by type, such as retail, commercial, and industrial.

**19.** If this FSI is compiled on a cross-border consolidated basis to also capture loans by deposit takers' branches and subsidiaries abroad, a complementary, but far more ambitious, approach would be to attribute loans by sector regardless of the residence of the borrower. For instance, total lending to nonfinancial entities worldwide, regardless of residence, could be compiled. In this way, exposures of deposit takers in

<sup>2</sup>These subsectors are insurance and pension funds, security dealers, investment funds, other financial intermediaries, and financial auxiliaries.



### Box A3.1. The International Standard Industrial Classification of All Economic Activities (ISIC)

The ISIC is an industrial classification developed by the United Nations that groups establishments that have the same principal activity by industry. An establishment is defined as an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added.

The industries identified in the ISIC are as follows:

- *Agriculture, hunting, and forestry*, including related service activities
- *Fishing*, including fish farming and service activities incidental to fishing
- *Mining and quarrying*, including service activities incidental to oil and gas extraction, excluding surveying
- *Manufacturing*
- *Electricity, gas, and water supply*
- *Construction*
- *Wholesale and retail trade, repair of motor vehicles, motorcycles, and personal and household goods*
- *Hotels and restaurants*
- *Transport, storage, and communications*
- *Financial intermediation*
- *Real estate, renting, and business activities*—such as computer and related activities, and research and development
- *Public administration*
- *Education*
- *Health and social work*
- *Other community, social, and personal service activities*
- *Private households with employed persons*
- *Extraterritorial organizations and bodies*

the reporting population to similar activities worldwide could be monitored.

#### **Residential and commercial real estate loans to total loans**

**20.** To identify the residence of the counterparty, these FSIs could be compiled for real estate lending to residents and to nonresidents separately.

#### **Geographical distribution of loans to total loans**

**21.** In the case where loans to nonresidents are significant, when compiling data on a cross-border consolidated basis, such loans to nonresidents could be categorized as either (1) local currency loans of the foreign branch or subsidiary in the local economy or

(2) other loans. The risks arising from lending funded primarily from local deposits are considered to be different from those arising in the context of cross-border lending.

**22.** This FSI could be expanded to a geographic distribution of deposit takers' total debt claims on nonresidents; that is, covering claims defined in paragraph 4.61 (lines 17 to 19, and 22 of Table 4.1).

#### **Foreign-currency-denominated loans to total loans**

**23.** Various disaggregations of the data in the numerator could be considered: by resident/nonresident, by sector, by major currencies (for example, U.S. dollar, yen, and euro), and by maturity (remaining maturity measure). Loans to nonresidents in foreign currency could be categorized as either (1) local currency loans of the foreign branch or foreign subsidiary in the local economy or (2) other foreign currency loans. This FSI could also be calculated using total debt claims and not just loans.

#### **Foreign-currency-denominated liabilities to total liabilities**

**24.** To identify the residence of the counterparties, the data in the numerator could be categorized as either liabilities to residents or liabilities to nonresidents. Liabilities to nonresidents in foreign currency could be categorized as either (1) local currency liabilities of the foreign branch or foreign subsidiary in the local economy or (2) other foreign currency liabilities.

**25.** This FSI could be calculated excluding financial derivatives positions—that is, including only debt positions—particularly if a net financial derivative asset position (foreign currency and/or total position) significantly affects the FSI ratio. In addition, short-term (remaining maturity) foreign-currency-denominated liabilities could be compared with total liabilities.

#### **Interest margin to gross income**

**26.** Since a major source of gross income of deposit takers typically comes from interest income, *interest margin to total assets* could be compiled in addition to the return on assets.

### **Noninterest expenses to gross income**

27. The ratio *noninterest expense to interest margin* could be calculated to assess whether interest income covers noninterest expenses.

### **Other Financial Corporations**

#### **Assets to total financial system assets**

28. To identify the relative importance of other financial corporations among financial corporations, this FSI could be calculated by including in the denominator only those financial assets owned by other financial corporations, deposit takers, and the central bank. Financial assets are defined in paragraph 4.38.

### **Nonfinancial Corporations**

#### **Total debt to equity**

29. This FSI could be calculated by excluding from the numerator debt owed to other nonfinancial corporations. The resulting FSI would indicate the amounts owed to other sectors as a percentage of capital and reserves in the nonfinancial sector. In addition, the ratio could be calculated using the narrow measure of capital and reserves (line 31(i) of Table 4.3 defined in paragraph 4.114) as the denominator.

30. This FSI could be extended to include liquid assets along with capital and reserves in the denominator, as such assets are available to meet liabilities.

31. It could be useful to identify the type of activity undertaken by those nonfinancial corporate borrowers that have high debt-to-equity ratios to discover whether corporate indebtedness is concentrated in sectors that are particularly vulnerable to shifts in economic activity. Corporate activities could be classified using the ISIC (see Box A3.1).

#### **Return on equity**

32. This FSI could be calculated using the narrow measure of capital and reserves (line 31(i) of Table 4.3, defined in paragraph 4.114) as the denominator. Another approach would be to calculate the return on equity by including purchased goodwill in the denominator; that is, using a measure of capital and reserves closer to that used in commercial accounting.

33. As with the previous indicator on corporate leverage, monitoring could also be undertaken at the subsector level, using the ISIC (see Box A3.1).

34. As for deposit takers, information on the return on equity could be supplemented with information on the *return on assets*.

#### **Debt-service coverage**

35. This FSI could be defined to include interest only (see line 38 of Table A3.4), as this is the standard ratio often reported in corporate press releases and corporate sector databases.

36. This FSI could be calculated by excluding interest receivable from other nonfinancial corporations (line 33 of Table 4.3) from the numerator and debt-service payments to other nonfinancial corporations (see line 39 of Table A3.4) from the denominator. The resulting FSI would provide a measure of debt-service coverage of nonfinancial corporations to other sectors.

37. Payments on operating leases could be included in the denominator, as such payments can be significant, and the items leased can be important for ongoing operations.

#### **Net foreign exchange exposure to equity**

38. This FSI could be calculated using the narrow measure of capital and reserves (line 31(i) of Table 4.3, defined in paragraph 4.114) as the denominator.

### **Households**

#### **Debt to GDP**

39. *Debt to total assets* might be compiled to provide an overall measure of the balance sheet position of households.

### **Financial Market FSIs**

#### **Spread between reference lending and deposit rates**

40. As other forms of lending become more important, an SLDR could be calculated that covers total debt claims and liabilities.



**Measuring resilience in securities markets**

41. Resilience and depth of markets can be measured by the Hui-Heubel Ratio (HHR). This ratio relates the volume of trades as a proportion of the outstanding stock of the given instrument to their impact on prices. Thus, the larger the volume of trades relative to the percentage price change—that is, the lower the HHR—the more resilient and deep the market is. The HHR is specified as follows:

$$HHR = \frac{[(P_{max} - P_{min}) / P_{min}]}{[V / (S \times \bar{P})]}$$

where  $P_{max}$  = highest price over the period  
 $P_{min}$  = lowest price over the period  
 $V$  = total value traded over the period  
 $S$  = average number of instruments outstanding during the period  
 $\bar{P}$  = average daily closing price of the instrument during the period.

42. Subject to data availability, the ratio could be calculated on a daily basis for a benchmark domestic government or central bank debt security to capture very short-term price movements. Alternatively, it could be calculated as the average of five-day period measures in a specified period of time (such as three months) to smooth volatility.

43. If there is a lack of data, the numerator in the HHR can be measured as the percentage change in the price of the asset over the period chosen. Other measures of trading volume could also be used, such as the number of securities traded.

44. Table A3.1 below provides an example of how the HHR can be calculated for a benchmark security over a three-month period. The highest and lowest daily prices observed in each week are shown in the first two columns. The value of securities traded and the number of securities outstanding are shown in the next two columns, and the average closing price of the instrument is shown in the fifth column. The HHR, calculated on a weekly basis, is shown in the last column; the monthly average HHR is also shown in that column. The average HHR for the month shown in Table A3.1 indicates that the resilience and depth of the market improved over the three-month period; the HHR declined from 0.9 in month 1 to 0.6 in month 3.

**Table A3.1. Calculating the Hui-Heubel Ratio**

	$P_{max}$	$P_{min}$	$V$	$S$	$\bar{P}$	HHR <sup>1</sup>
Month 1						
Week 1	10	8	120,000	30,000	8.6	0.5
Week 2	12	9	60,000	30,000	10.2	1.7
Week 3	12	9	150,000	30,000	8.2	0.5
Week 4	10	7	150,000	30,000	9.7	0.8
Monthly Average						0.9
Month 2						
Week 1	12	8	120,000	30,000	9.2	1.2
Week 2	13	9	80,000	30,000	10.2	1.7
Week 3	14	12	70,000	30,000	13.0	0.9
Week 4	14	13	130,000	30,000	13.4	0.2
Monthly Average						1.0
Month 3						
Week 1	10	8	120,000	30,000	8.6	0.5
Week 2	12	9	170,000	30,000	10.2	0.6
Week 3	9	8	120,000	30,000	8.2	0.3
Week 4	10	7	120,000	30,000	9.7	1.0
Monthly Average						0.6

<sup>1</sup>For instance, for week 1 of month 1, the HHR is calculated as follows:

$$[(10 - 8) / 8] / [120,000 / (30,000 \times 8.6)] = 0.25 / 0.465 = 0.5.$$

**Stock market indices**

45. As equities can serve as collateral for deposit takers' loans and can constitute a significant element of their assets, a representative stock market index could be monitored.

**Additional Data Series**

46. In developing the sectoral financial accounts for calculating FSIs, several additional data series could be considered. These series are provided below as elaborations of the tables in Chapter 4.

**Deposit Takers**

47. *Realized gains and losses on financial instruments* could be distinguished from unrealized gains and losses. (This series and those below are set out in Table A3.2, which is a continuation of Table 4.1.)

48. *Very short-term deposits* (one month or less on a remaining maturity basis) are those very liquid liabilities that customers can convert into cash or for-

**Table A3.2. Deposit Takers:  
Memorandum Series<sup>1</sup>***Additional series*

- 53. Duration of assets
- 54. Duration of liabilities
- 55. Realized gains and losses on financial instruments
- 56. Total gains and losses on the sale of fixed assets
- 57. Very short-term deposits
- 58. Gross new deposits during the period
- 59. Gross withdrawal of deposits during the period
- 60. Shares and other equity investments in deposit takers in the reporting population
  - (i) Associates
  - (ii) Other deposit takers
- 61. Net liabilities of branches of foreign deposit takers to their parents<sup>2</sup>
- 62. Gross loans to the public sector
- 63. Domestic government securities owned (market value)
- 64. Sectoral distribution of nonperforming loans
- 65. Percentage of replacement loans in total loans
- 66. Other nonperforming assets
- 67. Loan loss reserves
- 68. Specific provisions against total debt claims
- 69. Shortfall in provisions under the revised Basel Capital Accord
- 70. Arrears
- 71. Arrears of deposit takers
- 72. Assets transferred to special purpose entities
- 73. Guarantees
  - (i) Resident
  - (ii) Nonresident
- 74. Credit commitments
  - Resident
  - Nonresident
- 75. Assets managed but not owned by deposit takers

<sup>1</sup>This table is a continuation of Table 4.1.<sup>2</sup>For domestic consolidated data only, if branches of foreign deposit takers are located in the economy. Gross liabilities could also be identified.

eign currencies at very short notice. These liabilities can be compared with total deposits to assess the liquidity of deposit takers.

**49.** *Gross new deposits during the period* and *gross withdrawal of deposits during the period* provide information on the turnover of deposits.

**50.** *Shares and other equity investments in deposit takers in the reporting population* are the balance sheet value of such investments in associates (including reverse equity investments by associates) and other deposit takers that are also in the reporting population. These data are excluded from shares and other equity investments (assets) as well as from capital and

reserves at the sector level (see Box 5.1). Such information indicates ownership links within the sector.

**51.** *Net liabilities of branches of foreign deposit takers to their parents* provide information on the funding of branches from their parents in the domestic consolidated data. Typically, such branches are funded by interbank deposits from their parent rather than having their own capital—their capital requirements being indistinguishable from that of the parent deposit taker. Some host countries require resident branches of foreign banks to have “donation” capital as a sign of the bank’s commitment to the country and to help equalize competitive conditions between these branches and domestically incorporated deposit takers. Amounts of donation capital could be separately identified. However, in practice, donation capital might be in a form that can be moved abroad quickly. Data for such a series might be available from those responsible for compiling data on foreign direct investment.

**52.** *Gross loans to the public sector* are those made to the general government, the central bank, and entities that are public corporations (see paragraph 2.19). Information on lending to the public sector is identified in the BIS’s consolidated IBS data.

**53.** *Domestic government securities owned (market value)* provides an indication of the importance of domestic government securities in the deposit-taking sector’s balance sheet.

**54.** Within the total for NPLs (line 42 in Table 4.1), the sectoral distribution of NPLs could be identified to highlight in which sectors or industries (see Box A3.1) NPLs are concentrated.

**55.** The percentage of replacement (restructured) loans within gross loans (line 18(i) in Table 4.1) is a measure that helps in assessing the credit quality of a loan portfolio. Replacement loans are defined in paragraph 4.86.

**56.** Using the same criteria as for loans, the value of *other nonperforming assets*, including securities, could be identified; a rising level might suggest increased financial system vulnerability.

**57.** *Loan loss reserves* are the outstanding amount of reserves intended to absorb potential but unidentified losses arising from the deposit takers’ loan port-

folio. Additions, or reductions, to the amount of loan loss reserves (other than any net write-offs) are made through the general loan loss provisions included in the income and expense account. The size of such reserves in relation to nonperforming loans can be an indication of the adequacy of provisioning policy.

**58.** *Specific provisions against total debt claims* provides an indication of the adequacy of provisions vis-à-vis a broader measure of assets at risk than the ratio of specific provisions to loans.

**59.** As described in Chapter 4 (paragraph 4.71), using the IRB approach under the revised Basel Capital Accord, any shortfall in provisions for expected losses would be deducted 50 percent from Tier 1 and 50 percent from Tier 2 capital. If there are significant shortfalls in such provisioning, the nonperforming loans net of specific provisions-to-capital ratio (measured using total regulatory capital) will be affected (see paragraph 6.24). This series monitors the extent of underprovisioning against expected losses.

**60.** *Arrears* are amounts past due for payment on loans or other assets. Arrears can arise through the late payment of principal and/or interest on debt instruments as well as through the failure to meet the terms of other types of transactions, such as for goods and services provided. This statistic provides the actual amounts owed to deposit takers that have not been paid or written off. If time-series data are disseminated, this statistic provides the user with an indication of any difficulties on the asset side of the balance sheet and their development over time, irrespective of valuation or provisioning policies. If arrears are significant, distinguishing them by different types of instrument—loans and securities in particular—might be useful. Principal and interest arrears could also be identified separately.

**61.** *Arrears of deposit takers* are arrears on deposit takers' own liabilities. Rising amounts might suggest increased financial system vulnerability.

**62.** *Assets transferred to special purpose entities* are those assets that are still outstanding and that the originating deposit-taker has removed from its balance sheet by transferring them to an SPE or, as it is often called, a Special Purpose Vehicle (SPV). A change of ownership should have occurred before assets are removed from a deposit taker's balance sheet.

**63.** To highlight potential vulnerabilities, disaggregating the data in this item between those assets transferred to SPEs where a clean break has occurred and those where such a break has not occurred might be considered. Such a distinction is made in the revised Basel Capital Accord to help determine capital adequacy requirements. A clean break is defined as arising when (1) the transferred assets have been legally isolated from the transferring institution (transferor), and (2) the transferor does not maintain effective or indirect control over the transferred assets. A transferor is deemed to have maintained effective control over the transferred assets if it is able to repurchase the assets from the transferee to realize their benefits and is obligated to retain the risk of the assets. The retention of servicing rights to the asset does not necessarily constitute indirect control.

**64.** *Guarantees* are contingent liabilities arising from an irrevocable obligation to pay a third-party beneficiary when another party, such as a client of the guarantor, fails to perform some contractual obligation. Guarantees represent a potential liability for deposit takers. They include loan and other payment guarantees, letters of credit, and performance bonds. These are described in Chapter 3 (paragraphs 3.14 and 3.15). The intention of this item is to be consistent with the definition of guarantees used in the BIS's IBS data and so should include contingent liabilities of deposit takers as protection sellers of credit derivatives—that is, payments that would need to be made in the event of a default of the credit on which the derivative is written. If the guarantee data include such information on credit derivatives, it is suggested that they be separately identified and that separate data on deposit takers' purchases of protection through credit derivatives also be collected. Such information would allow the net and gross positions on protection bought and sold through credit derivatives to be identified. Guarantees (and credit derivatives) should be valued in terms of the maximum potential loss—that is, assuming 100 percent of the amount guaranteed (protected) will need to be paid.<sup>3</sup> A resident/nonresident disaggregation is useful to allow reconciliation with the BIS's IBS data.

<sup>3</sup>Valuing at the maximum potential loss has an obvious limitation: there is no information on the likelihood of the contingency occurring. However, calculating the likelihood of losses can be difficult, and international standards are still evolving.

**65.** *Credit commitments* irrevocably oblige a deposit taker to extend credit and hence could affect its liquidity position. They include lines of credit, other types of loan commitments, NIFs, and commitments to purchase securities (under NIFs, for example). These are described in Chapter 3 (paragraphs 3.16 and 3.17). The intention is to be consistent with the definition of credit commitments used in the BIS's IBS data. Credit commitments should be valued in terms of the maximum amount that could be advanced under the commitment. A resident/nonresident disaggregation is useful to allow reconciliation with the BIS's IBS data.

**66.** *Assets managed but not owned by deposit takers.* These assets represent a form of savings by other sectors that supplements savings captured in the deposit takers' information.

**67.** *Duration* measures the weighted average life of assets and liabilities, with the weights being the present value of each cash flow as a percentage of the value of the assets or liabilities. In other words, duration adjusts maturity to take account of the size and timing of payments between the current period and maturity, or (for floating-rate instruments) between the current period and the date of the next repricing (see paragraphs 3.51 to 3.56)

**68.** Duration is intended to identify the sensitivity of the value of deposit takers' portfolios of financial assets and liabilities to changes in interest rates.<sup>4</sup> The greater the duration, the greater is the risk of loss/gain of value, with the corresponding impact on capital, if interest rates rise/fall. Duration is measured for tradable debt assets and liabilities, that is, those debt instruments for which the expectation is that they are valued at market or fair value. If there is a lack of data, duration might be compiled only for domestic currency debt instruments, or for debt instruments denominated in other units of account if the debt instruments are not denominated in the domestic currency.<sup>5</sup>

<sup>4</sup>Duration is "accurate" for only small changes in interest rates, because duration itself changes as interest rates change. Convexity, which is the second derivative of an asset's price, indicates how duration changes in response to changes in interest rates and permits a more accurate estimate of interest rate sensitivity.

<sup>5</sup>Foreign-currency-linked instruments should be classified as foreign currency instruments, if changes in their value arise primarily through changes in foreign interest rates and exchange rates rather than domestic interest rates.

**69.** Appendix VI provides detail on measuring duration at the sector level and also introduces "gap" analysis, which is an alternative approach to assessing interest rate risk of a portfolio of assets and liabilities.

### Other Financial Corporations

**70.** As in the case of deposit takers, the memorandum series *shares and other equity investments in other financial corporations in the reporting population* provide information on the ownership links within the sector. (This series and those below are set out in Table A3.3, which is a continuation of Table 4.2.)

**71.** *Nonperforming loans owned by special asset management companies* is the nominal value of the loans owned by those entities that are usually created by the authorities for the purpose of managing NPLs and recovering assets. Even though the NPLs have been sold by deposit takers to the special asset management companies, these loans still exist in the economy, and the cost of their resolution may be considerable. Without monitoring these loans, the amount of NPLs in the financial system would be underestimated. However, caution should be exercised in interpreting these data, as it is also important to know the institutional arrangements under which NPLs are transferred and whether the value of the assets transferred are covered by the value of collateral (see also paragraph 6.22).

**72.** *Assets managed but not owned by other financial corporations.* These are assets managed by fund managers and other similar financial corporations. These assets represent a form of savings by other sectors that supplements savings captured in the deposit takers' information.

### Nonfinancial Corporations

**73.** *Debt-service interest payments* are defined in Chapter 4; interest payments are those periodic payments that meet interest costs arising from the use of another entity's funds. The use of this series in calculating the debt service coverage ratio was described earlier in this appendix. (This series and those below are set out in Table A3.4, which is a continuation of Table 4.3.)

**Table A3.3. Other Financial Corporations: Memorandum Series<sup>1</sup>***Additional series*

21. Shares and other equity investments in other financial corporations in the reporting population
  - (i) Associates
  - (ii) Other other financial corporations
22. Nonperforming loans owned by special asset management companies
23. Assets managed but not owned by other financial corporations

<sup>1</sup>This table is a continuation of Table 4.2.

**Table A3.4. Nonfinancial Corporations: Memorandum Series<sup>1</sup>***Additional series*

38. Debt-service interest payments
39. Debt-service receipts (interest and principal) from other nonfinancial corporations
  - (i) Interest
  - (ii) Principal
40. Shares and other equity investments in nonfinancial corporations in the reporting population
  - (i) Associates
  - (ii) Other nonfinancial corporations
41. Liquid assets (core measure)
42. Liquid assets (broad measure)
43. Variable-rate debt

<sup>1</sup>This table is a continuation of Table 4.3.

**74.** *Debt-service receipts from other nonfinancial corporations*<sup>6</sup> are a subset of the total debt-service payments (line 35 of Table 4.3); with these two series, both intrasector debt-service payments and those to other sectors can be identified. The use of this series in calculating the debt-service coverage ratio was described earlier in this appendix. Separately identifying interest allows the debt-service coverage ratio calculated using interest only in the numerator to also be calculated excluding intrasector interest payments.

**75.** As with deposit takers and other financial corporations, *shares and other equity investments in other nonfinancial corporations in the reporting population* provide information on the ownership links within the sector.

**76.** For nonfinancial corporations, the core and broad measures of liquid assets are defined as for deposit takers; however, for nonfinancial corporations, deposits at deposit takers available on demand or within three months or less are included in the core measure, whereas such deposits are excluded for deposit takers because they are intrasectoral claims.

**77.** *Variable-rate debt* is the total value of debt instruments on which interest costs are linked to a reference index, such as London Interbank Offered

<sup>6</sup>It is proposed that receipts from, rather than payments to, other nonfinancial corporations be presented, given that if tradable bonds are issued, the payer might not know the identification of the creditor. But, of course, debt-service receipts from the creditor perspective are debt-service payments from the debtor perspective.

Rate (LIBOR); the price of a specific commodity; or the price of a specific financial instrument that normally changes over time in a continuous manner in response to market pressures. All other debt instruments should be classified as fixed-rate instruments. When the value of the principal is indexed, the change in value resulting from indexation—periodically and at maturity—is classified as interest. Therefore, if principal only is indexed, such debt is to be classified as variable-rate debt regardless of whether interest is fixed or variable, provided the reference index meets the criterion above: that is, it normally changes over time in a continuous manner in response to market pressures. An attribution of debt by type of interest provides an indication of the exposure of nonfinancial corporations to interest rate movements. Nonetheless, interest rate derivative contracts, which are widely employed, can modify these risk characteristics. Thus, information on the notional amounts of such contracts and whether they receive fixed or variable-rate interest flows would also be useful.

### Financial Conglomerates

**78.** In many economies, financial conglomerates are important to domestic markets. Financial conglomerates are defined in the *Guide* as enterprises that have controlling interest in a range of entities that straddle the different types of financial activity described above. This could include bank holding companies. In other words, a holding company might own a de-



posit taker and an insurance company, and/or other entities. The *Guide* recommends that data be presented separately for each financial sector (deposit takers, other financial corporations, and so forth) because the nature of their financial activities differs; nonetheless, if financial conglomerates are significant within the economy,<sup>7</sup> subject to national confi-

<sup>7</sup>What is meant by “significant” can differ depending on country circumstances. Nonetheless, while it may be difficult to measure, a conglomerate might be considered “significant” if it either owns one of the top five (or about the top five) entities in any of the types of financial activities mentioned in Chapters 6 or 7 or, in broad terms, has a total value of assets (calculated on an aggregate basis) greater than any of the top five entities (or about the top five entities) in any of the types of financial activities in which the conglomerate is involved.

dentiality commitments, compilers could disseminate the information specified below:

- Names of large financial conglomerates.
- The value of assets owned on a basis that allows the information to be disaggregated by type of financial activity in which the conglomerate is involved, for example, deposit takers, insurance corporations, and security dealers.
- The balance sheet value of equity investments of non-deposit-taking conglomerate entities (resident and nonresident) in deposit takers in the reporting population. Such data would highlight cross-sector ownership patterns of conglomerate entities with relation to the deposit-taking sector.
- Return on equity and capital-to-assets ratios for the largest conglomerates.

# Appendix IV. Reconciliation Between the Guide's Methodology and National and Commercial Accounting

1. This appendix explains how the concepts outlined in Chapter 3 and the line-item series defined in Chapter 4 can be reconciled with similar concepts developed in the *1993 SNA* (national accounts) and the IASs.<sup>1</sup>

## Overview

2. The framework of national accounts in the *1993 SNA* provides for the construction of a range of tables that begin with production, income, and accumulation accounts, as well as balance sheets showing the stock of financial and nonfinancial assets and liabilities for the financial, nonfinancial, household, and general government sectors of an economy. The full sequence of accounts is set out in pages 601–674 of the *1993 SNA*.

3. For each group of assets and liabilities, and for net worth, changes between the opening and closing balance sheets that result from transactions and other flows are recorded in the so-called accumulation accounts. As explained below, many of the data series used in constructing FSIs for the other depository corporations (deposit takers in the terminology of the *Guide*), other financial corporations (OFC), non-financial corporations, and the household sector can be obtained from the national accounts framework or related frameworks such as monetary statistics. The derivation of FSI data series from the *1993 SNA* framework are set out in Tables 11.9–11.11.

4. Business accounting is designed to assess the financial condition of individual productive units, measure their economic result, and determine inter-

ested parties' (mainly the shareholders' and tax authorities') entitlement to that result. There is a focus on two concepts: solvency (the value of net assets (or equity) held by an entity) and profitability (a component of the value added by the entity during the reporting period).<sup>2</sup> It relies on specific norms and standards (for example, as set out in IASs) to achieve its objectives with understandability, relevance, reliability, and comparability.<sup>3</sup> The *International Accounting Standards 2002* prepared by the IASB (IASB, 2002) are utilized in drafting this appendix.

5. At the time of writing, the IASs consist of 39 separate standards, numbered IAS 1 to IAS 41 (IAS 25 has been withdrawn and IAS 15 is no longer binding). The references below are to those standards and to the relevant paragraph numbers within the quoted standard. In contrast to the *1993 SNA*, there is no standardized set of tables for the presentation of commercial accounts. Moreover, while financial statements prepared in accordance with IASs should, at a minimum, present line items in accordance with IAS 1, for banks and similar financial institutions there is a more detailed specific standard (IAS 30).

## Income and Expense Account

### Interest Income and Expense

6. In both the *1993 SNA* and the IASs, it is recommended that interest accrue continuously on debt instruments, consistent with the approach in the *Guide*.

7. In the *1993 SNA*, as in the *Guide*, interest accrues at the contractual rate of interest—the effective rate on issuance. In the *Guide*, lines 1(i) and 2 in Table 4.1, lines 4 and 5 in Table 4.3, and part of line 2 in

<sup>1</sup>IASs of 2002 (IASB, 2002). The information presented within square brackets refers to relevant paragraph numbers in the International Financial Reporting Standards (IFRS) as of March 31, 2004, which will come into effect on January 1, 2005 (IASB, 2004). The IFRS also contains revisions affecting the treatment of financial instruments, which are found mostly in IAS 32 and IAS 39.

<sup>2</sup>The *1993 SNA* also has a concept of value added that is related to the production process.

<sup>3</sup>As in "Framework for the Preparation and Presentation of Financial Statements" of IASB (2002).

Table 4.4 in principle correspond to the 1993 SNA's full sequence of accounts to line D.41 in the Primary Income Account. Moreover, if FSIM<sup>4</sup> are calculated for deposit takers, they correspond in part to line P.11 of the Production Account for deposit takers, in part to line P.2 of intermediate consumption in the Production Account for enterprises and in part to line P.31 of final consumption in the Use of Income Account for households.

**8.** In IASs, interest income is defined as one type of revenue (besides royalties and dividends) arising from the use by others of an enterprise's financial assets (IASs 18.29–18.31) (also IASs 32.30–32.31) [IASs 32.35–32.36]. Interest income is recognized on an accrual basis over time, based on the effective yield on the asset, which is defined as the rate of interest required to discount the stream of future cash receipts expected over the life of the asset to equate to the *initial* carrying amount of the asset. Interest income includes the amount of amortization of any discount or premium arising from a difference between the issue price and the par value.<sup>5</sup> If debt instruments are traded and market prices are established, then for creditors there is a difference of approach between the *Guide* and the IASs in that the effective rate of interest on acquisition may be different from that on issuance. The greater the variability of market prices, the more significant this difference could be.

**9.** For creditors, interest on nonperforming assets is treated differently in the 1993 SNA and in IASs. In the 1993 SNA, creditors (and debtors) should continue to accrue interest on nonperforming assets unless the asset is written off. In contrast, IAS 39.116 [IAS 39. AG.93] states that impaired assets should be written down to their estimated recoverable amount and creditors should base the calculation of interest income on the rate of interest that was used to discount the future cash flows for the purpose of measuring the recoverable amount.

**10.** In “Sound Practices for Loan Accounting and Disclosure,” the BCBS (1999) recommends in stan-

ard 11 that when a loan is identified as impaired, a bank should cease accruing interest in accordance with the terms of the contract. Interest on impaired loans should not contribute to net income if doubts exist concerning the collectability of loan interest or principal. However, in some countries, when impaired loans are carried at the present value of expected future cash flows, interest may accrue at the effective rate implicit in the present value calculation.

**11.** The *Guide* follows BCBS in that interest on nonperforming assets should not contribute to net interest income.

### Fees and Commissions Receivable/Payable

**12.** In the 1993 SNA, fees and commissions receivable reflect the value of services provided (for deposit takers, 1993 SNA, paragraph 6.123). In the 1993 SNA's full sequence of accounts, line 4(i) in Table 4.1 in principle corresponds to the fees and commissions included in line P.11 in the Production Account.

**13.** In IASs, financial fees and commissions are a form of revenue, and they are defined in IAS 18.20 and in its Appendix paragraph 14. The latter distinguishes fees that are an integral part of the effective yield of an instrument from those that are earned on services provided (such as for servicing a loan) and from those that are earned on the execution of a significant act (such as commission on the allotment of shares to a client). Fees that are an integral part of the effective yield of a financial instrument—and hence affect the rate at which interest accrues—include commitment fees to originate or purchase a loan where it is probable that the enterprise will enter into a specific lending arrangement, and origination fees relating to the creation or acquisition of a financial instrument that is held by the enterprise as an investment. Such fees are regarded as an integral part of generating an ongoing involvement with the financial instrument, and as such are deferred and recognized as an adjustment to the effective yield. The *Guide* differs from IASs in that it does not adjust the effective yield of an instrument for these fees but prefers to record them under fees and commissions.

### Gains/Losses on Financial Instruments (Including Foreign Exchange)

**14.** In contrast to what appears in the *Guide*, in the 1993 SNA trading gains or losses do not appear in the

<sup>4</sup>FSIM measures the output of the deposit-taking sector arising from the margins earned from the borrowing and lending of funds. See 1993 SNA, paragraphs 6.124 to 6.131.

<sup>5</sup>Since loans are issued at par, the effective rate for loans is the same as the contractual rate. If the issue price of the asset is different from par, the effective yield would be different from the stated interest (coupon) rate.

distribution and use of income accounts. In the *1993 SNA* full sequence of accounts, such trading gains and losses in principle correspond within the Revaluation Account to lines AF.2 (currency and deposits—partial coverage of foreign currency gains and losses), AF.3 (securities other than shares), AF.5 (shares and other equity—excluding equity investments in associates and subsidiaries), and AF.7 (financial derivatives; see IMF, 2000b). Holding gains and losses in the *1993 SNA* include changes in the value of financial assets and liabilities due to changes in market prices and exchange rate movements. The change in value is measured as the difference in the unit of account between the value of an asset or liability at the end of the accounting period and its value at the start of the accounting period. Moreover, if the instruments were acquired during the period, the value at which they were first entered in the balance sheet is to be used. If they were sold during the period, their value at the start of the accounting period would have to be used. If, however, they were purchased during the period and sold during the period, then the value when they were purchased should be used. Thus, within an accounting period, the *1993 SNA* concept of holding gains/losses encompasses both realized and unrealized gains/losses. As line 4(ii) in Table 4.1 excludes some, and line 6 in Table 4.3 excludes all, unrealized gains and losses, additional data would need to be requested to extract the required information from the *1993 SNA* data. Line 6 in Table 4.3 includes the equivalent to the foreign exchange component of line AF in the Revaluation Account.

**15.** For banks and similar financial institutions, IAS 30.15 states that gains and losses from the following items are normally reported on a net basis: (1) disposals and changes in the carrying amount of dealing securities, (2) disposals of investment securities, and (3) dealings in foreign exchange. These items are consistent with the *Guide* (although, unlike the *Guide*, IAS 30.15 makes no reference to financial derivative instruments). Moreover, IASs 39.103–39.107 [IASs 39.55–39.57] state that a gain or loss on a financial asset or liability classified as at fair value that is not part of a hedging relationship should be included in net profit or loss; a gain or loss on an available-for-sale financial asset can be treated similarly, or it can be recognized in equity through the statement of changes in equity until the financial asset is sold, collected, or otherwise disposed of, or until it is determined to be impaired, at which point the cumulative

gain or loss should be included in net profit and loss for the period. For financial assets and liabilities carried at amortized cost, a gain or loss is recognized in net profit or loss when the financial asset or liability is derecognized or impaired [IAS 39.56]. The IASs 39.121–39.165 [IASs 39.85–39.102] provide separate guidance for hedging instruments. Clearly, while the different treatment in IASs of gains and losses according to the purpose for holding the instrument differs from the approach in the *Guide*, within the IASs the treatment of instruments held for trading and one of the alternative treatments for available-for-sale financial assets are in line with the *Guide's* recommendations.

**16.** IAS 21.15 explains the treatment of foreign exchange differences related to “monetary items,” which are in turn defined as money held and assets and liabilities to be received or paid in fixed or determinable amounts of money. It states that foreign exchange differences arising from the settlement of monetary items at rates different from those at which they were initially recorded during the period or reported in previous financial statements should be recognized as income or expenses in the period in which they arise, with two exceptions.

**17.** The first exception, set out in IAS 21.17, covers exchange-rate-related changes in the value of a monetary item that in substance forms part of an enterprise’s net investment in a foreign entity. Such differences should be classified as part of equity in the enterprise’s financial statements until the disposal of the net investment, at which time they should be recognized as income or expenses (depending on whether the cumulative amount of the exchange-rate-related differences that have been deferred and that relate to the foreign entity reflects a gain or a loss [IAS 21.37]).

**18.** The second exception, set out in IAS 21.19, covers exchange-rate-related changes in the value of a foreign currency liability accounted for as a hedge of an enterprise’s net investment in a foreign entity. Such differences should also be classified as part of equity in the enterprise’s financial statements until the disposal of the net investment, at which time they should be recognized as income or expenses (depending on whether the cumulative amount of the exchange-rate-related differences that have been deferred and that relate to the foreign entity reflects a gain or a loss [IAS 21.37]).

19. Both of these exceptions are consistent with the *Guide*'s approach of excluding gains and losses on those foreign exchange instruments related to equity holdings in subsidiaries, although the *Guide* does not recommend inclusion of gains and losses of earlier periods in present period earnings, when these instruments are disposed of.

### Rent, Rental, and Royalty Income Receivable

20. In the *1993 SNA*, as in this *Guide*, this item covers income from rents on land or subsoil assets; rentals from buildings, other structures, and equipment; and royalty income from other produced and nonproduced assets. Therefore, part of line 4(iv) in Table 4.1, line 6 in Table 4.3, and part of line 2 in Table 4.4 of the *Guide* in principle most closely correspond to line D.45 in the Allocation of Primary Income Account (rents) and line P.11 in the Production Account (rental and royalty income—classified as services)<sup>6</sup> in the *1993 SNA*. In concept, line D.45 covers only rent on land and subsoil, but the *1993 SNA* does acknowledge (paragraph 7.131) that in practice a single payment may cover rent on land and rentals on buildings. If a split can be made, rentals receivable should be classified as a provision of services (line P.11 in the Production Account). There is no specific standard for rent in IASs except insofar as it is mentioned generally in the IASB Framework, paragraph 74, that rent is part of the revenues of an enterprise. In accordance with IAS 40.66 (d)(i), rental income from investment property should be included in the income statement.

### Prorated Share of Income from Associates and Subsidiaries

21. For foreign affiliates, the reinvested earnings element within the “prorated earnings” line (4(iii) in Table 4.1 and line 6 in Table 4.3) of the *Guide* correspond to line D.43 in the *1993 SNA*. There is no equivalent concept for resident affiliates. The dividends element of the prorated share of income is covered below.

22. In IAS 28.3, under accounting by the equity method, the income statement reflects the investor's share of the results of the operations of the investee. This is applicable to associates, the subject of IAS 28,

<sup>6</sup>A corporation consuming these services would record them as intermediate consumption (P2) in the Production Account.

and is one of the three approaches that can be adopted for unconsolidated subsidiaries (IAS 27.30). IASs permit the use of the equity method for jointly controlled ventures, if the assets and liabilities of the joint venture are not proportionately consolidated with the venturer's financial statement (IASs 31.32–31.34).

### Dividends Declared

23. The standard in the *Guide* is the same as in the *1993 SNA* and in IAS 18.30 in recommending that property income to be distributed to shareholders in the entity be recognized as income when the shareholder's right to receive payment is established. Dividends within the “other income” line (4(iv) in Table 4.1; line 6 in Table 4.3) and dividends within “property income receivable” (line 2 in Table 4.4) of the *Guide* in principle correspond to lines D.421 and D.422 (resources) in the Allocation of Primary Income Account in the *1993 SNA*'s full sequence of accounts. Dividends paid or payable in Table 4.1 (line 12) and in Table 4.3 (line 11) also correspond to D.421 and D.422 (uses).

### Net Gains/Losses from Sales of Fixed Assets

24. In the *1993 SNA*, net gains or losses from the sale of fixed assets are defined as the change in the value of fixed assets due to changes in their market price. These gains and losses are included in line AN.11 (holding gains and losses in respect of fixed assets) in the Revaluation Account in the *1993 SNA*'s full sequence of accounts. The change in price is measured as the difference between the value of the fixed asset at the end of the accounting period and its value at the start of the accounting period or, if acquired during the period, its value on the date on which it was first entered in the balance sheet. This *1993 SNA* concept thus encompasses both realized and unrealized gains/losses. Since net gains/losses on fixed assets within line 4(iv) in Table 4.1 and line 6 in Table 4.3 of the *Guide* cover only realized gains during the period, additional data would need to be requested to extract the required information from the *1993 SNA* data.

25. IAS 16.56 states that gains or losses “from the retirement or disposal of an item of property, plant, and equipment should be determined as the difference between the estimated net disposal proceeds and the carrying amount of the asset and should be recognized as income or expense in the income state-



ment.” This concept is the same as in the *Guide*, although the *Guide* recommends market valuation of fixed assets, while IAS 16 favors valuation on the basis of historic value. IAS 40 permits enterprises to use either the model in IAS 16 or a fair value model for investment property (but not for owner-occupied property). Under IAS 40, if an enterprise chooses the fair value model, all changes in fair value should be recognized in the income statement (IAS 40.28).

### Other Income

**26.** In the *1993 SNA*, miscellaneous current transfers, such as compensation payments received, are included in D.75. IAS 8.18 covers income from litigation settlements.

### Personnel Costs Including Wages and Salaries

**27.** The concept of personnel costs (line 6(i) of Table 4.1 and implicit in line 2 of Table 4.3) in the *Guide* corresponds in the *1993 SNA's* full sequence of accounts to D.1, Compensation of Employees in the Generation of Income Account, and D.623, Unfunded Employee Social Insurance Benefits in the Secondary Distribution of Income Account. Wages and salaries from employment (line 1 in Table 4.4) correspond to line D.11. In the *1993 SNA* (paragraphs 7.21 to 7.47), compensation of employees is defined as the total remuneration, in cash or in kind, payable by an employer to an employee in return for work done during the accounting period. Included is remuneration payable to workers away from work for short periods. Compensation of employees can be broken down into the following: (1) wages and salaries in cash and in kind, and (2) employers' social contributions, actual and imputed, for such items as postemployment benefits.

**28.** The *1993 SNA* does not explicitly cover compensation in the form of options to buy the shares of the entity at some future time at an agreed price (stock options).

**29.** IAS 19.4 has a similar concept to the *1993 SNA*, defining employee benefits as including the following:

- Short-term employee benefits, such as wages and salaries and social security contributions. These benefits cover paid annual leave and paid sick leave, profit sharing and bonuses, and nonmonetary benefits (such as medical care, housing, cars, and free or subsidized goods or services).

- Postemployment benefits, such as pensions, other retirement benefits, postemployment life insurance, and postemployment medical care.
- Other long-term employee benefits, including long service leave or sabbatical leave, and long-term disability benefits.
- Termination benefits.
- Equity compensation benefits, including stock options (although no guidance is provided on recognition or measurement).

**30.** The first bullet above is close to the concept of wages and salaries in cash and in kind in the *1993 SNA*, except for social security contributions, which are included in employers' social contributions in the *1993 SNA*.

### Depreciation

**31.** Depreciation within line 6(ii) of Table 4.1 and line 2 of Table 4.3 of the *Guide* corresponds in the *1993 SNA's* full sequence of accounts to line K.1 (consumption of fixed capital (CFC)). CFC is defined (paragraphs 6.179–6.180) as the amount of fixed assets consumed during the period under consideration as a result of normal wear and tear and foreseeable obsolescence. CFC should be estimated on the basis of the stock of fixed assets, valued at purchasers' prices as of the current period, and the probable average economic life of the different categories of assets. CFC can be calculated according to the straight-line method by which the value of a fixed asset is written off at a constant rate over the whole lifetime of the asset or, depending on the pattern of decline in the efficiency of a fixed asset, according to a geometric depreciation method (*1993 SNA*, paragraphs 6.193–6.197).

**32.** IASs 16.41–16.48 describe a similar treatment for depreciation. They state that the depreciable amount of an item of property, plant, and equipment should be allocated on a systematic basis over its useful life. The depreciation method used should reflect the pattern in which the asset's economic value is consumed by the enterprise. These methods could include the straight-line method, the diminishing-balance method, and the sum-of-the-units method. Straight-line depreciation, as noted above, results in a constant charge over the useful life of the asset. The diminishing-balance method results in a decreasing charge over the useful life of the asset. The sum-of-the-units method results in a charge based on the

expected output of the asset. IAS 16.43 states that the useful life of a depreciable asset should be estimated after considering (1) the expected physical wear and tear, (2) obsolescence, (3) legal or other limits on the use of the asset, and (4) expected usage by the enterprise.

**33.** The main difference between CFC and the IASs' treatment of depreciation is in the valuation of the fixed assets, which is required to be the current purchasers' prices for CFC but tends to be at historical cost under IASs. CFC should also be distinguished from business accounting of depreciation for tax purposes. However, IASs also state that the depreciation method should be reviewed periodically and, if there has been significant change in the expected pattern of economic benefits, there should be a change in the depreciation charge for the current and future periods (IAS 16.52), which may narrow the difference between CFC and IASs valuations.

**34.** Losses due to unforeseen obsolescence, such as through the introduction of new technology or unforeseen damage (other than events covered under extraordinary items), are recorded as depreciation. This is consistent with IAS 16.50, and such losses correspond to K.9 in the *1993 SNA* (excluding exceptional losses in inventories, which like depreciation is covered in the line *cost of sales* in Table 4.3).

#### **Other Noninterest Expenses (Such as Plant and Equipment Expenses Including Rentals, Advertising Costs, and Premiums Paid for Deposit Insurance)**

**35.** These expenses are related to the ordinary operations of the entity other than those identified elsewhere in this appendix. The ongoing expenses of operating an enterprise, covered within line 6(ii) in Table 4.1 and line 2 in Table 4.3 of the *Guide*, correspond in the *1993 SNA*'s full sequence of accounts to line P.2 (intermediate consumption), together with D.71 (net nonlife insurance premiums) and D.75 (miscellaneous current transfers). However, unlike the *Guide*, the series in the *1993 SNA* do not include estimated costs related to product warranties.

**36.** In the IASB Framework paragraphs 70 and 78–80, expenses are defined to encompass those that arise in the course of the ordinary activities of the enterprise, although they are not defined in detail.

Expenses arising from product warranties are described in IASB Framework paragraph 98 and more fully in IAS 37.24. In principle, the IAS approach is consistent with the approach taken in the *Guide* for these expenses. IAS 8.18 covers expenses arising from litigation settlements.

**37.** Rentals payable on buildings, other structures, and equipment are included under this item, along with rents paid on land and subsoil assets, and royalties payable on the use of other produced and non-produced assets. Receipts for rents, rental, and royalty income were discussed earlier, in a separate section in this appendix.

#### **Taxes Other Than Income Taxes**

**38.** Taxes included in line 6(ii) of Table 4.1 and line 2 in Table 4.3 of the *Guide* correspond in the *1993 SNA*'s full sequence of accounts to line D.29 (taxes on production) and line D.59 (other current taxes). These taxes are compulsory, unrequited payments in cash and in kind levied in respect of the production (such as taxes on payroll or the workforce), as well as on the ownership or use of land or buildings and on other assets and net wealth (described in paragraphs 7.70 and 8.53–8.54 of the *1993 SNA*).

**39.** The IASs have no specific definitions for taxes that are not levied on income.

**40.** Operating subsidies from general government included in line 6(ii) of Table 4.1 of the *Guide* correspond in the *1993 SNA*'s full sequence of accounts to subsidies on production (line D.39). IAS 20.29 explains that government grants related to income could be presented as a credit in the income statement or deducted in reporting of the related expenses. The IAS regards either method as acceptable. These grants are defined in IAS 20.3 as assistance by government in the form of a transfer of resources.

#### **Loan Loss Provisions**

**41.** The *1993 SNA* does not have a concept of provisions for loan losses. However, the writing off of bad debts by creditors (K.10) provides some coverage of loan losses (and losses on other claims). The distinctions made in the *Guide* for loan loss provisions follow the IASs. The *Guide*, however, relies on national practice in identifying provisions.

42. IAS 30.45 states that for banks, provisions for specific loans (specific provisions—that is, losses that have been specifically identified) and provisions for losses not specifically identified (general provisions—which experience indicates are present in the portfolio of loans and advances) should both be recognized as expenses. Under IAS 30.51, local circumstances or legislation may require or allow a bank to set aside amounts for general banking risks, including future losses or other unforeseeable risks. However, such amounts set aside should be accounted for as appropriations of retained earnings and not expenses in determining net profit or loss for the period. A bank may also be required or allowed to set aside amounts for contingencies (IAS 37). Such amounts also do not qualify for recognition as provisions but should be recognized as appropriations of retained earnings (IAS 30.51) so as not to distort net income and equity.

#### Other Financial Assets Provisions

43. As with loans, the *1993 SNA* does not address the concept of provisions for securities or other financial assets.<sup>7</sup> IASs discuss provisions for losses on financial assets in IASs 39.109–39.111 [IASs 30.43–30.49, 39.58–39.70, and 39. IG.E.4], where it is stated that when the carrying amount of the impaired asset is greater than its recoverable amount—estimated by discounting the expected future cash flows using the financial instrument's original effective interest rate—the carrying amount of the asset should be reduced to its estimated recoverable amount either directly or through use of an allowance account, with the loss included in net profit or loss for the period. This concept is not identical to the *Guide's* recommendation that the market value of investment securities be recorded on the balance sheet. If the securities are not recorded at market value, provisions for securities may be greater or smaller than the change in the market value, depending on the deposit takers' views on recoverable amounts on the securities.

#### Bad Debt Recoveries

44. The IASs recommend that if there is an improvement in the standing of a debtor so that the amount

<sup>7</sup>Both the *Guide* and the *1993 SNA* recommend that securities be valued at market value and that gains and losses be reported under gains and losses on financial instruments, thus eliminating the need for provisions on securities.

of impairment or bad debt loss decreases, such a reversal should be included in net profits or loss for the period.<sup>8</sup> One approach would be to make adjustments to an Allowance Account. This approach is consistent with that for line 7 of Table 4.1 of the *Guide*, which allows for provisions to be reduced if there was an overprediction of expected losses in an earlier period.

#### Extraordinary Items

45. The extraordinary items in line 9 in Table 4.1 and line 8 in Table 4.3 of the *Guide* correspond in the *1993 SNA's* full sequence of accounts to line K.7 (catastrophic losses) and line K.8 (uncompensated seizures). The IAS 8.6 defines an extraordinary item as an event or transaction that is clearly *distinct from the ordinary activities* of an enterprise and is unlikely to recur frequently or regularly. The IAS 1.75 requires the separate disclosure of extraordinary items in the income statement for the period. Such items are determined by the nature of the event or transaction in relation to the business ordinarily carried out by the enterprise rather than by the frequency with which such events are expected to occur. For example, losses sustained as a result of an earthquake may qualify as an extraordinary item for many enterprises but not for insurance enterprises that insure against such risks. The IASs suggest that extraordinary items for most enterprises include an earthquake or other natural disaster and the expropriation of assets (IASs 8.11–8.15). The concept in the *Guide* is consistent with that in the IASs.

#### Income Tax Expense

46. Income tax expense, line 10 in Table 4.1 and line 9 in Table 4.3, corresponds in the *1993 SNA's* full sequence of accounts to line D.51. Consistent with the *Guide*, the *1993 SNA* defines these taxes as those assessed on the incomes, profits, and capital gains of individuals, households, corporations, and nonprofit institutions (paragraph 8.52). IAS 12.2 states that

<sup>8</sup>The revised version of IAS 39 provides for several methods to deal with decreases in the amount of impairment or bad debt loss depending on the valuation basis used to carry the instrument on the balance sheet [IASs 39.65, 39.66, and 39.70]. For some instruments, increased value as a result of reductions in impairment will be taken directly to income, but others are handled through adjustments to an allowance account.

“income taxes include all domestic and foreign taxes which are based on taxable profits.”

### Revenues from Sales of Goods and Services (Nonfinancial Corporations)

47. Line 1 in Table 4.3 of the *Guide* corresponds in the 1993 SNA’s full sequence of accounts to line P.11 (market output for nonfinancial corporations), which in turn equals line P.1 (gross output) less line P.12 (output for own use) less the value of changes in the inventories of goods produced as outputs (finished goods element of line P.52). However, as noted in the 1993 SNA (paragraph 6.43), under normal circumstances the available data are accounting data on sales, and thus the national accountant is required to adjust sales for changes in inventories to arrive at the data for production. Moreover, in the 1993 SNA, the system for recording transactions by retailers and wholesalers is not to record purchases of goods for resale but rather to measure the margin on goods purchased for resale (paragraph 3.30).

48. IASs 18.14 and 18.20 recognize the sale of goods when an enterprise has transferred to the buyer the significant risks and rewards of ownership of the goods and the amount of revenue can be reliably estimated. They also recognize the rendering of services when the amount of revenue can be reliably estimated and the stage of completion of the transaction at the balance sheet date can be measured reliably. This is consistent with the change-of-ownership concept in the *Guide*.

### Current Transfers (Households)

49. Line 3 in Table 4.4 of the *Guide* corresponds in the 1993 SNA’s full sequence of accounts to lines D.62 (social benefits) and D.7 (other current transfers) in the Secondary Distribution of Income Account. Social benefits include pensions and unemployment benefits (1993 SNA, 8.75–8.83) and other current transfers (1993 SNA, 8.84). The concept in the *Guide* is the same as in the 1993 SNA. IASs do not have a specific definition of current transfers.

### Other Income (Households)

50. Line 4 in Table 4.4 of the *Guide* corresponds in the 1993 SNA’s full sequence of accounts to lines B.2 (operating surplus) and B.3 (mixed income) in the Generation of Income Account for households.

### Taxes, Social Contributions, and Other Current Transfers Made (Households)

51. Line 5 in Table 4.4 of the *Guide* includes social security taxes. In the 1993 SNA’s full sequence of accounts, these taxes correspond to lines D.6112 and D.6113 (social contributions). IAS 12 defines income tax expense, but IASs do not have a specific definition for social security taxes. (Income taxes were discussed in a separate section, above.) *Other current transfers made* corresponds in the 1993 SNA’s full sequence of accounts to line D.7 (uses) and to line D.62 (social benefits other than social benefits in kind). As these transfers relate to households, they are not covered in the IASs.

### Gross Disposable Income (Households)

52. The concept in the *Guide* is intended to correspond in the 1993 SNA’s full sequence of accounts to line B.6 in the Secondary Distribution of Income Account (gross of any consumption of fixed capital).

## Balance Sheet

### Assets, Liabilities, and Net Worth

53. In the 1993 SNA, economic assets are stores of value over which ownership rights are enforced by institutional units, individually or collectively, and from which economic benefits<sup>9</sup> may be derived by their owners by holding or using them over a period of time. In the 1993 SNA, financial assets differ from other assets in that there is nearly always a counterpart liability on the part of another institutional unit.<sup>10</sup> Assets and counterpart liabilities that meet the definition are recognized on balance sheet.

54. In terms of specific assets and liabilities identified, the *Guide* is very close to the 1993 SNA, differing only in the presentation of capital. The concept of capital and reserves in the *Guide* is the residual after taking account of all assets and liabilities, and thus is a wider concept than equity and other shares in the 1993 SNA, as it also includes the 1993 SNA’s concept of net worth (total assets less total liabilities).

<sup>9</sup>The economic benefits of financial assets can include primary incomes derived from the use of the asset and the possibility of holding gains.

<sup>10</sup>In the 1993 SNA, by convention, monetary gold and SDRs are financial assets, although there is no counterpart liability.



**55.** IASB Framework, paragraph 49 defines an asset as a resource controlled by an enterprise as a result of past events and from which future economic benefits are expected to flow to the enterprise. It defines a liability as a present obligation of the enterprise arising from past events, the settlement of which is expected to result in an outflow from the enterprise of resources embodying economic benefits. The definition of financial assets and liabilities in IAS 32.5 [IAS 32.11] provides an overview of the categorization of financial assets and liabilities. Financial assets comprise (1) cash; (2) a contractual right to receive cash or other financial instruments from another enterprise, or to exchange financial instruments with another enterprise under conditions that are potentially favorable; (3) a contract that may be settled in the entity's own equity instruments; and (4) an equity instrument of another enterprise. Financial liabilities comprise contractual obligations (1) to deliver cash or another financial asset to another enterprise or (2) to exchange financial instruments with another enterprise under conditions that are potentially unfavorable. Equity is defined as the residual interest in the assets of the enterprise after deducting all of its liabilities.

**56.** There are potential differences between the *Guide* and the IASs as to what is deemed to be an asset or a liability. For example, unlike the *Guide*, IASs consider that unpatented know-how may meet the definition of an asset if, by keeping such knowledge secret, the enterprise controls the benefits that are expected to flow from it (IASB Framework, paragraph 57). Similarly, if an enterprise as a matter of policy rectifies products after the warranty period has expired, the expected costs are liabilities (IASB Framework, paragraph 60). However, under IASs, on-balance-sheet recognition also depends on whether the value of the asset or liability can be measured reliably (IASB Framework, paragraphs 89 and 91). This requirement for reliable valuation brings the IASs definitions of on-balance-sheet recognition of assets and liabilities close to the *Guide's*.

**57.** In the IASs, the presentation of assets and liabilities is less prescriptive and more dependent on the activity of the individual enterprise than in the *Guide*, and it is different from that in the *1993 SNA*. Moreover, the IASs' presentation of instruments varies between the asset and liability sides of the balance sheet, and the focus is more on the liquidity of

the enterprise, which differs from the emphasis in the *Guide* and in the *1993 SNA*.

### Nonfinancial Assets

**58.** Line 15 in Table 4.1, line 2 in Table 4.2, line 14 in Table 4.3, and line 8 in Table 4.4 of the *Guide* correspond in the *1993 SNA's* full sequence of accounts to nonfinancial assets (AN) in the balance sheet (excluding purchased goodwill, which is part of AN.22).

**59.** These lines from the *Guide* are closely equivalent to the sum of items identified in IAS 1.66 as (1) property, plant, and equipment; (2) inventories; and (3) intangible assets.

**60.** The definition of nonfinancial produced assets adopted in the *Guide* is in line with that in IAS 16.6, which defines property, plant, and equipment to include tangible assets that (1) are held by an enterprise for use in the production or supply of goods or services, for rental to others, or for administration purposes; and (2) are expected to be used during more than one period. Excluded from the scope of the IASs are (1) forests and similar regenerative natural resources, which are only classified as an asset in the *Guide* if they are cultivated assets; and (2) mineral rights, the exploration for and the extraction of minerals, oil, natural gas, and similar nonregenerative resources (IAS 16.2), because these activities are so specialized that they give rise to accounting issues that may need to be dealt with in different ways (IAS 38.6).

**61.** Inventories in the *Guide* are defined consistently with IAS 2, where they include assets that are (1) held for sale in the ordinary course of business, (2) in the process of production for such sale, or (3) in the form of materials or supplies to be consumed in the production process or in the rendering of services (IAS 2.4).

**62.** Intangibles are defined in IAS 38 as identifiable nonmonetary assets without physical substance held for use in the production or supply of goods or services for rental to others or for administrative purposes (IAS 38.7). This definition is broadly consistent with the one used in the *Guide* but, as noted above, could be interpreted more widely to include "assets," such as unpatented know-how, when the value of the benefits arising from these "assets" can



be reliably measured. Intangibles do not include goodwill (IAS 38.10), which is recognized as an asset in IASs when the cost of acquisition exceeds the acquirer's interest in the fair value of the assets and liabilities acquired as of the date of transaction (IAS 22.41). The *Guide* does not recognize goodwill as an asset.

### Nonfinancial Produced Assets

**63.** Line 15 in Table 4.3 of the *Guide* corresponds in the 1993 SNA's full sequence of accounts to nonfinancial produced assets (AN.1) in the balance sheet. This line also corresponds to the sum of items identified in IAS 1.66 as property, plant, and equipment that is produced (that is, excluding land (IAS 2)), such as inventories (IAS 16) and that part of intangible assets (IAS 38) that is produced, such as computer software and valuables.

### Nonfinancial Produced Fixed Assets

**64.** Line 15(i) in Table 4.3 of the *Guide* corresponds in the 1993 SNA's full sequence of accounts to nonfinancial produced fixed assets (AN.11) in the balance sheet.

**65.** In the IASs, produced fixed assets are recorded under item (a) identified in IAS 1.66 as property, plant, and equipment that is produced (that is, excluding land), as well as that part of item (b) intangible assets that are produced, such as computer software.

### Inventories

**66.** Line 15(ii) in Table 4.3 of the *Guide* corresponds in the 1993 SNA's full sequence of accounts to inventories (AN.12). In the IASs, this line corresponds to the item (e) identified in IAS 2, paragraph 4 as inventories in the balance sheet.

### Nonfinancial Nonproduced Assets

**67.** Line 16 in Table 4.3 of the *Guide* corresponds in the 1993 SNA's full sequence of accounts to nonfinancial nonproduced assets (AN.2) in the balance sheet. In the IASs, this line closely corresponds to that nonproduced part of the item (a) identified in IAS 1.66 as property, plant, and equipment—that is, land—and intangible assets that are nonproduced, such as goodwill, patents, leases, and other transferable contracts relating to nonfinancial assets (IAS

38). In the IASs, the value of nonpatented know-how can also be included, if it can be measured reliably.

### Residential and Commercial Real Estate

**68.** Residential and commercial real estate, which is reflected in line 9 in Table 4.4 of the *Guide*, is not explicitly identified either in the 1993 SNA or in the IASs. Nonetheless, in the 1993 SNA, dwellings and other buildings and structures are described in paragraphs 10.69–10.71 and included within nonfinancial produced assets (AN.1), while land is described in paragraphs 10.59 and 10.60 and included within nonfinancial nonproduced assets (AN.2) in the balance sheet. In the IASs, real estate is included within the item (a) identified in IAS 1.66 as property, plant, and equipment (IAS 16.35).

### Financial Assets

**69.** Line 16 in Table 4.1, line 3 in Table 4.2, line 17 in Table 4.3, and line 11 in Table 4.4 of the *Guide* correspond in the 1993 SNA's full sequence of accounts to financial assets (AF) in the balance sheet.<sup>11</sup>

**70.** In the IASs, there is a need to distinguish between deposit takers and other corporate entities. For deposit takers, IAS 30 sets out the assets that should be separately disclosed in their financial statements. These include cash and balances with the central bank; treasury bills and other bills eligible for rediscounting with the central bank; government and other securities held for dealing purposes; placements with, and loans and advances to, other banks; other money market placements; loans and advances to customers; government and other securities held for dealing purposes; and investment securities (IAS 30.19). IASs are clear that financial statements should include, but not be limited to, these items. For instance, in the list of instruments in IAS 30 no reference is made to financial derivatives, which under IAS 39 should be recognized on balance sheet at fair value (IASs 39.10 and 39.27) [IAS 39.9], except for derivatives that are designated and effective hedging

<sup>11</sup>To strictly conform with the *Guide*, interest should not accrue on nonperforming assets. However, it is proposed in Chapter 4 that if loan data are available for deposit takers only inclusive of such interest, the amount of accrued interest on nonperforming loans be reported and included together with specific provisions for loan losses. In principle, the same approach should be taken for other assets.

instruments. Moreover, in some instances IAS 1 is relevant for the presentation of the accounts of deposit takers, such as in the case of tax assets (see immediately below). With these exceptions, although presented differently, the definition of the items and the coverage of financial assets in the IASs are close to the *Guide*.

**71.** With regard to nonbank entities, IAS 1.66 presets assets on a liquidity basis, in the same manner as for deposit takers. While IASs do not prescribe the order or format in which items are to be presented, these standards do regard each of the items presented as sufficiently different in nature or function so as to deserve separate presentation on the balance sheet, along with subtotals necessary to present fairly the enterprise's financial position. The coverage of assets is again close to that of the *Guide*, but the classification and definition of items used are quite different. The financial assets identified by IAS 1.66 are item (g) cash and cash equivalents—cash on hand, demand deposits, and short-term, highly liquid investments that are readily convertible to cash and that are subject to an insignificant risk of change in value (IAS 7.6); item (f) trade and other receivables—assets created by the entity providing money, goods, or services directly to a debtor; item (d) investments accounted for using the equity method—investments in associates (IAS 28) and unconsolidated subsidiaries (IAS 27.30); related tax assets (IAS 12.5), which are not considered assets in the *Guide* except to the extent that taxes have been overpaid and a refund is owed; and item (c) other financial assets, which include securities.

### Liabilities

**72.** Line 23 in Table 4.1, line 11 in Table 4.2, line 24 in Table 4.3, and line 17 in Table 4.4 of the *Guide* correspond in the 1993 SNA's full sequence of accounts to liabilities (AF) in the balance sheet.

**73.** As with assets, in the IASs it is necessary to distinguish deposit takers from other corporate entities. IAS 30.19 sets out the liabilities that should be reported by deposit takers in their financial statements as follows: (1) deposits from other banks, (2) other money market deposits, (3) amounts owed to other depositors, (4) certificates of deposit, (5) promissory notes and other liabilities evidenced by paper, and (6) other borrowed funds. As with assets, the list should include, but not be limited to, these items.

**74.** In regard to other corporate entries, IAS 1.66 presents liabilities as follows: item (h) trade and other payables (short-term liabilities); item (i) tax liabilities, which are recognized in the *Guide* if unpaid tax amounts are actually owed to the general government; item (j) provisions; and item (k) non-current interest-bearing liabilities (long-term liabilities). The latter are recognized when an enterprise has a present obligation as a result of a past event, it is probable that an outflow of resources will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation. These provisions include such items as product warranties and cleanup costs for environmental damage (IAS 37.19). The *Guide* prefers that provisions for estimated costs related to product warranties be included as a cost of sales and as a general reserve in capital. As with assets, the IASs do not prescribe the order or format in which items are to be presented but regard the items listed as sufficiently different in nature or function so as to deserve separate presentation on the balance sheet, along with subtotals as necessary, to present fairly the enterprise's financial position.

### Currency and Deposits

**75.** On the asset side, line 17 in Table 4.1, line 4 in Table 4.2, line 18 in Table 4.3, and line 12 in Table 4.4 of the *Guide* correspond in the 1993 SNA's full sequence of accounts to financial assets (AF.2) in the balance sheet. On the liability side, line 24 in Table 4.1 and line 12 in Table 4.2 of the *Guide* correspond in the 1993 SNA's full sequence of accounts to liabilities (AF.2) in the balance sheet.

**76.** In the IASs, for deposit takers, the closest equivalent to assets is the sum of items identified as cash and balances with the central bank and placements with other banks (IASs 30.19 and 30.21). For other sectors, the closest equivalent is cash (cash on hand and demand deposits) and, perhaps, some element of cash equivalents (short-term highly liquid investments (IAS 7.6)). In IAS 7.8, overdrafts can be recorded as part of cash and cash equivalents rather than as loans, as recommended in the *Guide*.

**77.** In the IASs, deposit takers' currency and deposits liabilities are equal to the sum of deposits from other banks and amounts owed to other depositors (IAS 30.19).

## Loans

**78.** On the asset side, line 18(i) in Table 4.1 and line 5 in Table 4.2 of the *Guide* correspond in the 1993 SNA's full sequence of accounts to loans (AF.4) in the balance sheet. Similarly, on the liability side, line 25 in Table 4.1, line 13 in Table 4.2, line 25 in Table 4.3, and line 18 in Table 4.4 of the *Guide* correspond in the 1993 SNA's full sequence of accounts to loans (AF.4) in the balance sheet.

**79.** In the IASs, for deposit takers, on the asset side, loans most closely equate to the sum of loans and advances to customers and loans and advances to other banks (other than the central bank) (IAS 30.19). The latter item can be easily identified as placements with other banks should be separately identified (IAS 30.21) and excluded from the item "placements with, and loans and advances to, other banks" to provide information on loans. On the liability side, loans would be a subitem within other borrowed funds. In the IASs, specific and general provisions for loan losses can be deducted from the carrying amount of the appropriate category of loans (IAS 30.45). However, deposit takers should disclose the aggregate amount of provisions for loan losses at the balance sheet date (IAS 30.43c). Loans are defined in IAS 39.10 [39.9].

**80.** For other corporate entities, on the asset side, loans will be a subitem of other financial assets. On the liability side, overdrafts can be included within cash and cash equivalents (IAS 7.8), while loans are also to be included within noncurrent interest-bearing liabilities (IAS 1.66).

**81.** On two specific issues, the treatment of securities repurchase agreements (repos) in the IASs is consistent with the collateralized loan approach in the *Guide* (IAS 39.10 and IASs 39.35–39.39) [IAS 39. AG.51]. Moreover, the IASs' treatment of financial leases is substantially the same as for loans (IAS 17) and is consistent with the classification of loans in the *Guide*.

## Interbank Loans

**82.** Line 18(i.i) in Table 4.1 of the *Guide* corresponds in the 1993 SNA's full sequence of accounts to loans to deposit takers (AF.4 S.122) in the balance sheet.

**83.** In the IASs, this line is equal to loans and advances to other banks and excludes placements with other banks (IAS 30.19 and 30.21). In other words, compared with the item in IAS 30.19, placements with other banks should be separately identified (IAS 30.21) and excluded from the item "placements with, and loans and advances to, other banks" to provide information on loans.

## Noninterbank Loans

**84.** Line 18(i.ii) in Table 4.1 of the *Guide* corresponds in the 1993 SNA's full sequence of accounts to loans (AF.4) less loans to deposit takers (AF.4 S.122) in the balance sheet. In the IASs, this line is equal to loans and advances to customers (IAS 30.19).

## Sectoral and Geographical Distribution of Loans

**85.** Line 18(i) in Table 4.1 of the *Guide* can be attributed by institutional sector. In the 1993 SNA's full sequence of accounts, this sectoral detail corresponds to items AF.4 S.1–AF.4 S.2.

**86.** The 1993 SNA does not specify the geographical location of the debtor, except for the resident and nonresident distinction.

**87.** IAS 14 establishes principles for reporting financial information by business and geographic segment. Business segments are determined by the type of products or services produced (IAS 14.9) and so could be considered broadly similar to the industrial classification of lending—one of the possibilities provided in the *Guide*. The geographic segment is based on providing goods and services within a particular economic environment and could be a single country, a group of two or more countries, or a region within a country (IAS 14.9). A country attribution would facilitate the regional attribution of lending described in the *Guide*. Moreover, sectoral and geographic analyses of concentrations of credit risk should be disclosed in accordance with IAS 30.40–30.41 and IASs 32.74–32.76 [IAS 32.83–32.85]. IAS 30.41 suggests that geographical areas may comprise individual countries or groups of countries, or regions within a country; customer disclosures may deal with sectors such as governments, public authorities, and commercial and business enterprises.

### Specific Provisions for Loan Losses

**88.** As with nonperforming loans (NPLs), the *1993 SNA* does not have a concept equivalent to specific provisions (line 18(ii) in Table 4.1) of the *Guide*. Loan values are not adjusted for provisions in the *1993 SNA*. Therefore, until the loans are written off, provisions for impaired assets are implicitly and indistinguishably included as part of net worth (B.90) in the *1993 SNA's* full sequence of accounts.

**89.** In IAS 30.43c, the aggregate amount of the provision for losses on loans and advances by banks at the balance sheet date should be disclosed, so that users of financial statements know the impact that losses on loans and advances have on deposit takers' financial positions (IAS 30.47). In contrast to the *Guide*, both specific and general loan loss provisions are included in the disclosure (IAS 30.45). (The difference arises because in the *Guide*, the FSI of *loans less provisions* nets specific provisions only, whereas in the IASs both specific and general provisions are netted against the value of loans.)

### Debt Securities

**90.** On the asset side, line 19 in Table 4.1, line 6 in Table 4.2, line 19 in Table 4.3, and line 13 in Table 4.4 of the *Guide* correspond in the *1993 SNA's* full sequence of accounts to securities other than shares (AF.3) in the balance sheet. Similarly, on the liability side, line 26 in Table 4.1, line 14 in Table 4.2, and line 26 in Table 4.3 of the *Guide* correspond to securities other than shares (AF.3) in the balance sheet in the *1993 SNA*.

**91.** For deposit takers, on the asset side, line 19 in Table 4.1 of the *Guide* corresponds to the sum of treasury bills and other bills eligible for discount at the central bank, other money market placements, the debt securities element of government and other securities for dealing purposes, and investment securities (IAS 30.19).<sup>12</sup> Separate identification of debt securities from within these latter two items may not

<sup>12</sup>In accordance with IAS 32. A20–21 [IAS 32.18a], a preferred share that provides for redemption for a fixed or determinable amount on a fixed or determinable future date or at the option of the holder meets the definition of a debt security if the issuer has an obligation to transfer financial assets to the holder of the preferred share. This is consistent with the *Guide's* definition of a debt instrument as being one on which future payments of interest and/or principal are required.

be provided in the main financial statements, but in accordance with IAS 32.60(c) [IAS 32.71(c)], supplementary information should indicate which of the enterprise's financial assets are not exposed to interest rate risk, such as some investments in equity securities. This supplementary information, used in conjunction with items on government and other securities for dealing purposes as well as investment securities, may permit the identification of holdings of debt securities, depending on the level of detail provided in the published accounts (see also IAS 32.64) [IAS 32.74].

**92.** For deposit takers, on the liability side, line 26 in Table 4.1 of the *Guide* corresponds to the sum of certificates of deposit, other money market deposits, promissory notes, and other liabilities evidenced by paper (IAS 30.19), and the debt securities element of "other borrowed funds."

**93.** For other corporate entities, on the asset side, debt securities correspond to the debt securities element of cash equivalents and financial assets not otherwise identified. Unless further subclassification is required, debt securities might not be identifiable in the IASs.

### Insurance Technical Reserves

**94.** On the assets side, line 8 in Table 4.2 of the *Guide* corresponds in the *1993 SNA's* full sequence of accounts to AF.6 in the balance sheet. Similarly, on the liability side, line 15 in Table 4.2 of the *Guide* corresponds to AF.6 in the balance sheet in the *1993 SNA*. IASs do not have disclosure requirements specific to insurance technical reserves. However, in accordance with IAS 1.67, additional items should be presented on the balance sheet, when such a presentation is necessary to fairly represent the enterprise's financial position. IFRS 4 concerns accounting for rights and obligations arising under insurance contracts.

### Trade Credit

**95.** On the asset side, line 21 in Table 4.3 of the *Guide* corresponds in the *1993 SNA's* full sequence of accounts to trade credit and advances (AF.81) in the balance sheet. Similarly, on the liability side, line 27 in Table 4.3 of the *Guide* corresponds to AF.81 in the balance sheet in the *1993 SNA*.



**96.** In the IASs, on the asset side, line 21 in Table 4.3 of the *Guide* corresponds most closely to trade and other receivables and, line 27 on the liabilities side, to trade and other payables (IAS 1.66).

### Shares and Other Equity

**97.** On the asset side, line 20 in Table 4.1, line 7 in Table 4.2, line 20 in Table 4.3, and line 14 in Table 4.4 of the *Guide* correspond in the 1993 SNA's full sequence of accounts to AF.5 in the balance sheet. However, in practice there may be a difference, depending on how equity investments in associates and unconsolidated subsidiaries are valued. This issue is briefly discussed in terms of foreign affiliates in paragraph 13.74 of the 1993 SNA.

**98.** In the IASs, for deposit takers, line 20 in Table 4.1 of the *Guide* corresponds to the equity securities element of government and other securities held for dealing purposes and to investment securities (IAS 30.19). Separate identification of equity securities from within these two items may not be provided in the main financial statements, but in accordance with IAS 32.60(c) [IAS 32.71(c)], supplementary information should indicate which of the enterprise's financial assets are not [directly] exposed to interest rate risk, such as some investments in equity securities. For nonbank corporations, equity securities are included within investments accounted for using the equity method and other financial assets (IAS 1.66). Accounting by the equity method refers to investments in associates (IAS 28.6) and unconsolidated subsidiaries (IAS 27.30), essentially valuing such investments initially at cost and thereafter at the investor's share of net assets of the investee (IAS 28.3).

### Financial Derivatives

**99.** On the asset side, line 21 in Table 4.1, line 9 in Table 4.2, line 22 in Table 4.3, and line 15 in Table 4.4 of the *Guide* correspond in the 1993 SNA's full sequence of accounts to financial derivatives (AF.7) in the balance sheet. On the liabilities side, line 29 in Table 4.1, line 18 in Table 4.2, line 30 in Table 4.3, and line 21 in Table 4.4 of the *Guide* correspond to AF.7 in the balance sheet in the 1993 SNA.<sup>13</sup>

**100.** In IAS 39.10 [IAS 39.9], financial derivatives are defined, and with the exception of commodity

derivatives (see below), this definition is consistent with that in the *Guide* (see also IASs 32.9–32.11). IAS 39.10 [IAS 39.9] makes it clear that financial derivatives are to be recognized as financial instruments and recorded at fair value in profit and loss, except when they are designated and effective hedging instruments. While the IASs do not make specific recommendations for the separate identification of positions in financial derivatives, in accordance with IAS 39.27 [IAS 39.14], financial derivatives are recognized on the balance sheet.<sup>14</sup> Regarding commodity derivatives, whereas the *Guide* includes such derivative contracts within its definition, in the IASs there is some flexibility in that contracts specifically settled in cash according to a formula are classified as financial derivatives, but not otherwise. This is because the IASs do not recognize as financial instruments contracts to deliver goods and services (IASs 32 A9–17) [IASs 32 AG.20–24].

### Other Assets

**101.** Line 22 in Table 4.1, line 10 in Table 4.2, line 23 in Table 4.3, and line 16 in Table 4.4 of the *Guide* correspond in the 1993 SNA's full sequence of accounts to the sum of insurance technical reserves (AF.6) and other accounts receivable (AF.8) (excluding trade credits (AF.81) for nonfinancial corporations, as it is separately identified in the *Guide*) in the balance sheet.

**102.** In the IASs, these lines most closely correspond to the trade and other receivables (IASs 1.66 and 39.10) [IAS 39 AG.26]—although the trade credit element for nonfinancial corporations is separately identified in the *Guide*—and to tax assets (IAS 1.66). However, in contrast to the *Guide*, when the future economic benefit is the receipt of goods or services rather than the right to receive cash or another financial asset, such benefits are not recognized as a financial asset (IAS 32.12) [IAS 32 AG.11]. Nonetheless, if taxes paid exceed the amounts due for the period, the excess should be regarded as an asset (IAS 12.12). Under certain circumstances, in contrast to the *Guide*, the IASs recognize deferred tax assets (IAS 12.24)—essentially

<sup>13</sup>IMF (2001b).

<sup>14</sup>Under IAS 39.23, among other things, if an instrument with an embedded derivative is not valued at fair value and changes in that value are reported in net profit and loss, the embedded derivative should be separately recognized. In the *Guide*, there are no circumstances under which an embedded derivative is separately identified.



when it is probable that taxable profits will be available against which tax benefits arising from past losses can be utilized. With regard to obligations under insurance contracts, IAS 32 explicitly excludes them from financial instruments (IAS 32.1) except for certain reinsurance and investment contracts issued by insurance companies (IAS 32.3). IAS 38 notes that contracts involving insurance companies are specialized and give rise to accounting issues that need to be dealt with in a different way (IAS 38.6).<sup>15</sup>

### Other Liabilities

**103.** Line 27 in Table 4.1, line 16 in Table 4.2, line 28 in Table 4.3, and line 19 in Table 4.4 of the *Guide* correspond in the 1993 SNA's full sequence of accounts to other accounts payable (AF.8) (excluding trade credits (AF.81) for nonfinancial corporations as they are separately identified elsewhere) and possibly insurance technical reserves (AF.6) (except for such liabilities of other financial institutions, which are separately identified elsewhere) in the balance sheet. In the IASs, these lines most closely correspond with the trade credit and other payables (excluding those elements included under other items) and with tax liabilities to the extent that they are amounts owed on profits already earned (IAS 12.5).

### Debt

**104.** Line 28 in Table 4.1, line 17 in Table 4.2, line 29 in Table 4.3, and line 20 in Table 4.4 of the *Guide* correspond in the 1993 SNA's full sequence of accounts to the sum of liabilities in the form of deposits (AF.2), securities other than shares (AF.3), loans (AF.4), liabilities for insurance technical reserves (AF.6), and other accounts payable (AF.8; see also IMF, 2000b) in the balance sheet.

**105.** In the IASs, for deposit takers, debt is the sum of deposits from other banks, other money market deposits, amounts owed to other depositors, certificates of deposit, promissory notes and other liabilities evidenced by paper, other borrowed funds (IAS 30.19), and tax liabilities (IAS 1.66), to the extent that they are amounts accrued and unpaid on profits

already earned. For other corporate entities, debt is the sum of trade and other payables, noncurrent interest-bearing liabilities, and tax liabilities, to the extent that they are amounts accrued and unpaid on profits already earned (IAS 1.66).

### Capital and Reserves

**106.** Line 30 in Table 4.1, line 19 in Table 4.2, line 31 in Table 4.3, and line 22 in Table 4.4 of the *Guide* closely correspond in the 1993 SNA's full sequence of accounts to the sum of shares and other equity (AF.5) and net worth (B.90) in the balance sheet. There is a difference in that in the *Guide*, unlike in the 1993 SNA, the level of capital and reserves is affected by specific provisions against loans and, where applicable, other assets and by the exclusion of purchased goodwill. Moreover, to avoid double counting of deposit takers' capital and reserves at the sector level, intrasector equity investments are excluded. In addition, a difference may arise from the different valuation approaches used to value equity investments in domestic associates and subsidiaries between the *Guide* and the 1993 SNA. In the *Guide*, the subcategorization of capital and reserves for deposit takers and nonfinancial corporations is derived from the IMF's *MFSM* (IMF, 2000a, p. 34), and not the 1993 SNA. However, beyond the differences with the 1993 SNA mentioned above, there are differences in coverage between the *Guide* and the *MFSM* at the subcategorization level. For example, in contrast to the *MFSM*, the *Guide* excludes general provisions from net income (and thus potentially from retained earnings) and includes them in capital and reserves.

**107.** In the IASs, capital and reserves most closely correspond in concept to total equity, which is the difference between assets and liabilities (and, as seen above, there are some differences in coverage of these instruments between the *Guide* and the IASs). Equity is the sum of issued capital, retained earnings, reserves representing appropriations of retained earnings, and reserves representing capital maintenance adjustments (IASB Framework, paragraph 65). Under IAS 1.74, information on issued capital should be disclosed. Capital maintenance adjustments are distinguished between financial and physical capital maintenance and are equivalent to holdings gains and losses on financial instruments that are not recorded in the income statement. The minority interest that may arise from consolidating a subsidiary is that part of the net assets of a subsidiary

<sup>15</sup>IFRS 4, which amends IAS 32 and IAS 38, concerns financial reporting for insurance contracts by any entity that issues such contracts. It allows the continuation of existing accounting practices until the IASB completes the second phase of its project on insurance contracts.

attributable to interests that are not owned directly or indirectly through subsidiaries by the parent (IAS 27.6). In accordance with IAS 27, Consolidated Financial Statements and Accounting for Investments in Subsidiaries, a financial instrument classified as an equity instrument by a subsidiary is eliminated on consolidation when held by the parent or presented by the parent in the consolidated balance sheet as a minority interest separate from the equity of its own shareholders. Hence, minority interest is part of capital and reserves.

## Selected Memorandum Series

### Liquid Assets

**108.** The *Guide*'s concept of liquid assets—as assets that are readily available to an entity to meet a demand for cash—does not have an equivalent in the *1993 SNA*. Therefore, lines 39 and 40 in Table 4.1, and lines 41 and 42 in Table A3.4 of the *Guide* do not conceptually correspond to any *1993 SNA* lines. Nonetheless, from the *1993 SNA*'s full sequence of accounts, an approximation of the core measure of liquid assets is possible by summing currency (AF.21), transferable deposits (AF.22), (very) short-term loans (AF.41), and other accounts receivable (AF.8). Adding holdings of short-term (less than one year maturity) securities other than shares (AF.31) and perhaps holdings for shares and other equity (AF.5) provides an approximation of the wider measure. These measures of liquid assets will differ from the *Guide* in that certain assets are not covered (non-transferable deposits of less than three months' maturity and long-term holdings of securities traded on liquid markets) and in that several assets that are covered should be excluded (nontradable short-term securities other than shares and other nontradable assets of more than three months' maturity). For deposit takers, the *Guide* excludes from liquid assets any nontraded claims on other deposit takers.

**109.** The IASs focus more closely on liquidity than does the *1993 SNA*. For deposit takers, from IAS 30.19 the following items equate most closely to liquid assets in line 40 in Table 4.1 of the *Guide*: cash and balances at the central bank, treasury bills and other bills eligible for rediscounting with the central bank, government and other securities held for dealing purposes, and market placements excluding those with other banks. However, any money market

placements of more than three months' maturity that cannot readily be converted into cash should be excluded. On the other hand, investment securities that are traded on liquid markets should be included. Moreover, IASs 30.30–30.39 require the disclosure of a breakdown of assets (and liabilities) into relevant maturity groupings based on the remaining period at the balance sheet date until the contractual maturity date—five maturity bands are suggested, the first two of which include assets with remaining maturities of three months or less.

**110.** For nonfinancial corporations, the closest equivalent to the concept of liquid assets used in the *Guide* is cash and cash equivalents—assets held for the purpose of meeting short-term cash commitments rather than for investment or other purposes (IAS 7.7). For an investment to qualify as a cash equivalent it must be readily convertible to a known amount of cash and be subject to an insignificant risk of change in value. Therefore, an investment normally qualifies as a cash equivalent only when it has a short maturity of, say, three months or less from the date of acquisition (IASs 7.6 and 7.7). Equity investments are excluded unless they are in substance cash equivalents (IAS 7.7). However, bank borrowings in the form of overdrafts that are repayable on demand can be included (deducted) as a component of cash and cash equivalents (IAS 7.8)—in contrast with the *Guide*, which classifies overdrafts as a liability item. Cash and cash equivalents, together with trade receivables with three months or less to maturity, are close in concept to the core measure of liquid assets in the *Guide*. Such instruments are covered within other financial assets (IAS 1.66).

### Short-Term Liabilities

**111.** The *Guide*'s definition of what is short term and its definition of liabilities are the same as in the *1993 SNA*. However, while in the *1993 SNA*'s full sequence of accounts, short-term liabilities in the form of securities other than shares (AF.31) and loans (AF.41) are identified, this is not the case for deposits, other accounts payable, and financial derivatives.

**112.** The IASs have a similar, but not identical, over- and under-one year maturity distinction to that used in the *Guide* (IAS 1.60 and the glossary in IASB [2002]), unless the enterprise's operating cycle is different from a one year—in which case the boundary with long term is different. Disclosure of

information on current liabilities in accordance with IAS 1.60 provides a measure of short-term liabilities that is broadly consistent with the *Guide's* definition. Moreover, a bank should disclose a breakdown of liabilities (and assets) into relevant maturity groupings based on the remaining maturity at the balance sheet date until the contractual maturity date, in accordance with IAS 30.30. As for assets, IAS 30.33 suggests distinguishing financial liabilities into five maturity groupings.

### Nonperforming Loans

**113.** As with liquid assets, the *1993 SNA* does not have a concept corresponding to nonperforming loans. In the *1993 SNA's* full sequence of accounts, such loans are indistinguishably included as part of loans (AF.4). Thus, the stock of NPLs cannot be derived from the *1993 SNA*.

**114.** IAS 39.110 [IAS 39.58–39.70] provides guidance on identifying assets that may be impaired that is broadly consistent with the approach in the *Guide*. Whereas the *Guide* places more emphasis on past due payments exceeding a time limit, guidance on impairment in IAS 39 covers both actual breaches of contract (although no overdue date is recommended) and other evidence of impairment. In addition, IAS 30.43 states that a bank should disclose (a) the accounting basis used to determine the carrying amount of uncollectible loans and advances, (b) details of changes in any allowance account for impairment allowances, (c) the aggregate amount of any allowance account for impairment losses at the balance sheet date, and (d) the aggregate amount included in the balance sheet for loans and advances on which interest is not being accrued.<sup>16</sup> The basis used to determine when to stop accruing interest may vary across enterprises and may differ from the 90-day guidelines suggested in the *Guide*.

### Foreign-Currency-Denominated Assets and Liabilities

**115.** The *1993 SNA* does not define foreign currency assets and liabilities (although this information may

<sup>16</sup>The IAS 39 recommends continuing accrual of interest on impaired loans at the discount rate used to revalue an impaired asset (IAS 39.116) [IAS 39.63], whereas IAS 30 discusses loans on which interest has stopped accruing.

be available to economic statisticians from the source data used to construct the national accounts).

**116.** IAS 32.43(i) [IAS 32.52(a)(i)] requires disclosure of information that assists users of financial statements in assessing the extent of risks associated with, among other things, currency risk—the risk that the value of financial instruments will fluctuate due to changes in foreign exchange rates. However, the standards do not prescribe either the format or level of detail of the information to be disclosed (IASs 32.44–32.45) [32.51–32.52].

### Net Open Position in Foreign Exchange

**117.** The *1993 SNA* does not provide any equivalent concept. Under IAS 30.40, a bank should disclose the amount of any significant net foreign currency exposures.

### Large Exposures

**118.** The *1993 SNA* does not have a concept of large exposures because it is concerned with aggregate economic statistics rather than with the credit risks faced by individual institutional units. Under IAS 30.40, a bank should disclose any significant concentration of its assets, liabilities, and off-balance-sheet items. Such disclosures should be made using breakdowns by geographical areas, customer or industry groups, or other concentration of risk that are appropriate in the circumstances of the bank. IAS 32.74 [IAS 32.83] notes that identification of significant concentrations is a matter of judgment by management, taking into account the circumstances of the enterprise and its debtors. Disclosure of concentrations of credit risk includes a description of the shared characteristic that identifies each concentration and the amount of the maximum credit risk exposure associated with all recognized and unrecognized financial assets sharing that characteristic (IAS 32.76) [IAS 32.85].

### Arrears

**119.** In the *1993 SNA's* full sequence of accounts, there is no separate identification of arrears (line 70 in Table A3.2), although such an item can be included as memorandum item (*1993 SNA*, 11.101). Arrears are not discussed in the IASs.

# Appendix V. Numerical Examples

## Introduction

1. This appendix provides a series of numerical examples to illustrate key compilation and methodological concepts described in the *Guide* and to provide guidance on how to calculate FSIs. The examples are grouped together in the following three sections.

Part 1: A **base data set** of examples consisting of income and expense and balance sheet statements, as an illustration of how the agreed FSIs can be calculated.

Part 2: Examples illustrating the **accounting rules** for (1) gains and losses on financial instruments and (2) interest income on nonperforming loans.

Part 3: Examples illustrating **consolidation and associated sector-level issues**, including (1) an extended base data set, (2) examples illustrating the sector-wide consolidation of capital, and (3) examples illustrating accounting for goodwill in sector-wide capital.

While the focus of these examples is on the deposit-taking sector, they can also apply to other corporate sectors. This appendix therefore includes in addition the following section:

Part 4: A discussion of **calculating FSIs for non-financial corporations**.

## Part I. Base Data Set

### Background

2. To illustrate the principles involved, a base data set for income and expense, balance sheet, and associated memorandum items is provided below, which is used to calculate FSIs. The data set provided is consistent with the guidance in Chapter 4 and Chap-

ter 6. Nonetheless, some simplifying assumptions are made to put aside the consolidation issues (and the additional data needs) relating to the interbank positions and flows that are described in Chapter 5. These simplifying assumptions are relaxed in the later examples on consolidation in Part 3.

### The Basic Data Set of Financial Accounts

3. In this example, the economy has three deposit takers. There are no financial relations among them, nor do they have foreign branches or investments in foreign subsidiaries and associates.<sup>1</sup> End-period financial statements (income and balance sheet accounts) for the three resident deposit takers are presented in Tables A5.1 and A5.2, together with the aggregated income and balance sheet statements.

4. All three deposit takers extend loans to residents of the local economy, but the sectoral allocation differs. Each deposit taker also extends some loans to non-residents; a geographical distribution is reported as an addendum to the balance sheet. Deposits from (non-bank) residents in the local economy are the main form of funding, but deposit takers 2 and 3 have also raised some significant amounts through the issuance of debt securities. Financial derivative instruments are used by all three deposit takers but are limited to interest rate swaps. On the income and expense side, deposit taker 1's performance is weaker than the other deposit takers', reporting zero net income for the period.

### Computation of a Base Data Set of FSIs

5. Using the guidance in Chapter 6 and the base data set of financial accounts, Table A5.3 presents the agreed FSIs at the sector level and, for illustrative

<sup>1</sup>As noted earlier, these assumptions are unlikely to hold in practice as deposit takers are expected to have financial relations with other deposit takers in the reporting population.

**Table A5.1. Income and Expense Statements: Deposit Takers—Aggregated Data<sup>1</sup>**  
(In millions of U.S. dollars; unless otherwise stated)

	Deposit Taker 1 A	Deposit Taker 2 B	Deposit Taker 3 C	Aggregation A + B + C
1. Interest income	400	800	300	1,500
(i) Gross interest income	400	800	300	1,500
(ii) Less provisions for accrued interest on nonperforming assets	—	—	—	—
2. Interest expense	100	140	100	340
3. Net interest income (= 1 minus 2)	300	660	200	1,160
4. Noninterest income	250	700	400	1,350
(i) Fees and commissions receivable	110	300	200	610
(ii) Gains or losses on financial instruments	50	100	100	250
(iii) Prorated earnings	50	140	20	210
(iv) Other income	40	160	80	280
5. Gross income (= 3 plus 4)	550	1,360	600	2,510
6. Noninterest expenses	500	600	150	1,250
(i) Personnel costs	300	300	100	700
(ii) Other expenses	200	300	50	550
7. Provisions (net)	50	80	10	140
(i) Loan loss provisions	50	80	10	140
(ii) Other financial asset provisions	—	—	—	—
8. Net income (before extraordinary items and taxes) (= 5 minus (6 + 7))	—	680	440	1,120
9. Extraordinary items	—	—	—	—
10. Income tax	—	272	176	448
11. Net income after tax (= 8 minus (9 + 10))	—	408	264	672
12. Dividends payable	—	300	140	440
13. Retained earnings (= 11 minus 12)	—	108	124	232

<sup>1</sup>For a description of the line items, refer to Chapter 4.

purposes, for each bank individually. Moreover, where relevant, the value of the numerator and denominator for each FSI is shown. Because of the lack of financial relations among the three resident deposit takers, the sector-level FSIs can be calculated using the aggregated balance sheet and income statement data shown in Tables A5.1 and A5.2, without the need for sector-level consolidation adjustments discussed in Chapter 5. Furthermore, since the deposit takers have no foreign operations, the construction of FSIs on a domestic basis is sufficient for this economy.

## Part 2. Accounting Rules

### Treatment of Gains and Losses on Financial Instruments in the Income and Expense Statement

6. In the *Guide*, it is recommended that gains and losses on financial instruments that are valued at market or fair value in the balance sheet be included in

the income and expense statement in the period in which they arise. Numerical examples are provided below to illustrate the application of the *Guide*'s recommendation and highlight the asymmetries that can arise at the sector level in the absence of consistent reporting of such gains and losses.

#### Example 1

7. This example, set out in Tables A5.4 and A5.5, illustrates the *Guide*'s approach to recording unrealized gains and losses on traded instruments and highlights the impact over time of adopting a different approach.

8. In this example, deposit takers 1 and 2 purchase a traded financial asset during period 1 at a purchase price of 100. Deposit taker 1 revalues the asset at its market price at the end of each period and records unrealized losses during periods 2 and 3 in the income statement. The asset is sold during period 4, and deposit taker 1 records a gain of 5 during this period. This approach is in line with the *Guide*'s recommendations.



**Table A5.2. Balance Sheets: Deposit Takers—Aggregated Data<sup>1</sup>***(In millions of U.S. dollars, unless otherwise stated)*

	Deposit Taker 1 A	Deposit Taker 2 B	Deposit Taker 3 C	Aggregation A + B + C
<b>Balance Sheet</b>				
14. <b>Total assets</b> (= 15 + 16 = 31)	12,450	18,201	7,450	38,101
15. <i>Nonfinancial assets</i>	500	500	300	1,300
16. <i>Financial assets</i> (= 17 through 22)	11,950	17,701	7,150	36,801
17. <i>Currency and deposits</i>	200	200	100	500
18. <i>Loans</i> (after specific provisions)	9,200	13,900	5,350	28,450
(i) <i>Gross loans</i>	9,250	14,400	5,600	29,250
(i.i) <i>Interbank loans</i>	1,000	900	600	2,500
(i.i.i) <i>Resident</i>	—	—	—	—
(i.i.ii) <i>Nonresident</i>	1,000	900	600	2,500
(i.ii) <i>Noninterbank loans</i>	8,250	13,500	5,000	26,750
(i.ii.i) <i>Central bank</i>	—	—	—	—
(i.ii.ii) <i>General government</i>	400	5,000	2,000	7,400
(i.ii.iii) <i>Other financial corporations</i>	500	2,000	—	2,500
(i.ii.iv) <i>Nonfinancial corporations</i>	7,000	2,000	—	9,000
(i.ii.v) <i>Other domestic sectors</i>	350	2,500	2,500	5,350
(i.ii.vi) <i>Nonresidents</i>	—	2,000	500	2,500
(ii) <i>Specific provisions</i>	50	500	250	800
19. <i>Debt securities</i>	2,250	3,000	1,300	6,550
20. <i>Shares and other equity</i>	100	301	200	601
21. <i>Financial derivatives</i>	200	200	200	600
22. <i>Other assets</i>	—	100	—	100
23. <i>Liabilities</i> (= 28 + 29)	11,050	16,501	6,850	34,401
24. <i>Currency and deposits</i>	10,200	11,700	5,150	27,050
(i) <i>Customer deposits</i>	10,200	11,200	3,650	25,050
(ii) <i>Interbank deposits</i>	—	500	1,500	2,000
(ii.i) <i>Resident</i>	—	—	—	—
(ii.ii) <i>Nonresident</i>	—	500	1,500	2,000
(iii) <i>Other currency and deposits</i>	—	—	—	—
25. <i>Loans</i>	200	300	150	650
26. <i>Debt securities</i>	400	3,000	1,500	4,900
27. <i>Other liabilities</i>	250	801	50	1,101
28. <i>Debt</i> (= 24 + 25 + 26 + 27)	11,050	15,801	6,850	33,701
29. <i>Financial derivatives</i>	—	700	—	700
30. <i>Capital and reserves</i>	1,400	1,700	600	3,700
(i) <i>Narrow capital</i>	1,160	1,160	500	2,820
31. <b>Balance sheet total</b> (= 23 + 30 = 14)	12,450	18,201	7,450	38,101
<b>Memorandum Series</b>				
<b>Other series needed to calculate the agreed FSIs</b>				
<b>Supervisory series</b>				
32. <i>Tier 1 capital</i>	900	1,200	500	2,600
33. <i>Tier 2 capital</i>	300	604	316	1,220
34. <i>Tier 3 capital</i>	—	—	—	—
35. <i>Supervisory deductions</i>	—	—	—	—
36. <i>Total net capital resources</i> (item 32 through item 34 minus item 35)	1,200	1,804	816	3,820
37. <i>Risk-weighted assets</i>	8,500	12,800	4,220	25,520
38. <i>Number of large exposures</i>	3	2	1	6
<b>Series that provide a further analysis of the balance sheet</b>				
39. <i>Liquid assets</i> (core)	1,000	2,500	500	4,000
40. <i>Liquid assets</i> (broad measure)	1,750	2,700	700	5,150
41. <i>Short-term liabilities</i>	6,000	10,050	2,000	18,050
42. <i>Nonperforming loans</i>	93	660	340	1,093
43. <i>Residential real estate loans</i>	350	1,000	2,000	3,350
44. <i>Commercial real estate loans</i>	—	2,000	—	2,000
45. <i>Geographic distribution of loans</i>	See addendum	See addendum	See addendum	See addendum
46. <i>Foreign currency loans</i>	1,000	3,000	600	4,600

Table A5.2 (concluded)

	Deposit Taker 1 A	Deposit Taker 2 B	Deposit Taker 3 C	Aggregation A + B + C
47. Foreign currency liabilities	1,200	2,500	1,500	5,200
48. Net open position in equities	100	301	200	601
49. Net open position in foreign currency for on-balance-sheet items	(200)	500	(900)	(600)
<b>Balance-sheet-related series</b>				
50. Total net open position in foreign currency	(200)	500	(900)	(600)
51. Exposures of largest deposit takers to largest entities in the economy	700	500	—	1,200
52. Exposures to affiliated entities and other “connected” counterparties	—	—	—	—
<b>Addendum</b>				
<b>Geographic distribution of loans</b>				
Total loans to nonresidents	1,000	2,900	1,100	5,000
Advanced economies	500	2,000	600	3,100
Regions excluding advanced economies	—	—	—	—
Africa	250	200	—	450
Of which: Sub-Saharan	—	—	—	—
Asia	250	700	500	1,450
Europe	—	—	—	—
Of which: Former Soviet Union, including Russia	—	—	—	—
Middle East	—	—	—	—
Western Hemisphere	—	—	—	—

<sup>1</sup>For a description of the line items, refer to Chapter 4.

Therefore, as can be seen in Table A5.4, lower retained earnings are recorded in the periods 2 and 3 when unrealized losses arise, and a small gain is recorded in period 4, when the asset is sold.

9. In contrast, while deposit taker 2 also revalues the asset at market prices at the end of each period, it records only realized gains (losses) in the income statement. Unrealized gains (losses) are recorded in a valuation adjustment in the capital and reserves account—the counter-entry to the increase in the value of the instrument in the balance sheet. The asset is sold during period 4 at a (cumulative) loss of 25, which lowers retained earnings in that period. As can be seen in Table A5.4, the loss that accumulated over several periods is recognized only by deposit taker 2 in period 4, a period when the value of the instrument actually rose. The losses in the preceding periods were not reflected in income.

10. For deposit taker 2, Table A5.5 describes the impact on selected FSIs of not recording unrealized gains (losses) in the income statement compared with

following the *Guide*'s recommendation, as is done by deposit taker 1. For example, in period 2 the return on assets for deposit taker 2 is higher because income is higher than it would have been if an unrealized loss had been recorded in its income.

### Example 2

11. Table A5.6 illustrates how the exclusion of unrealized gains and losses on traded instruments from the income statement disguises the nature of a deposit taker's activity.

12. Deposit takers 1 and 2 both purchase a traded instrument. Both revalue the instrument at its market price; deposit taker 1 records unrealized gains and losses in the income statement as recommended by the *Guide*, but deposit taker 2 does not. As both deposit takers have other income of 5 each period, the result is that deposit taker 1 has net income that is both higher and more volatile than that of deposit taker 2. The relative importance of the business in traded instruments to the earnings of deposit taker 1 and the

**Table A5.3. Financial Soundness Indicators: Deposit Takers—Aggregated Data<sup>1</sup>***(FSIs are expressed in percentages; the underlying calculations are in millions of U.S. dollars, except as noted)*

	Deposit Taker 1	Deposit Taker 2	Deposit Taker 3	Sector Level				
<b>Capital-based<sup>2</sup> FSIs</b>								
<b>Regulatory capital to risk-weighted assets*</b>	<b>14%</b>	<b>14%</b>	<b>19%</b>	<b>15%</b>				
Numerator [line 36] <sup>3</sup>	1,200	1,804	816	3,820				
Denominator [line 37]	8,500	12,800	4,220	25,520				
<b>Regulatory Tier I capital to risk-weighted assets*</b>	<b>11%</b>	<b>9%</b>	<b>12%</b>	<b>10%</b>				
Numerator [line 32]	900	1,200	500	2,600				
Denominator [line 37]	8,500	12,800	4,220	25,520				
<b>Capital to assets</b>	<b>7%</b>	<b>11%</b>	<b>7%</b>	<b>9%</b>	<b>7%</b>	<b>8%</b>	<b>7%</b>	<b>10%</b>
Numerator [line 32, line 30]	900	1,400	1,200	1,700	500	600	2,600	3,700
Denominator [line 14]	12,450	12,450	18,201	18,201	7,450	7,450	38,101	38,101
<b>Nonperforming loans net of provisions to capital*</b>	<b>5%</b>	<b>3%</b>	<b>9%</b>	<b>9%</b>	<b>13%</b>	<b>15%</b>	<b>8%</b>	<b>8%</b>
Numerator [line 42 minus line 18(ii)]	43	43	160	160	90	90	293	293
Denominator [line 36, line 30]	1,200	1,400	1,804	1,700	816	600	3,820	3,700
<b>Return on equity*</b>	<b>—</b>	<b>—</b>	<b>57%</b>	<b>40%</b>	<b>88%</b>	<b>73%</b>	<b>43%</b>	<b>30%</b>
Numerator <sup>4</sup> [line 8]	—	—	680	680	440	440	1,120	1,120
Denominator <sup>5</sup> [line 32, line 30]	900	1,400	1,200	1,700	500	600	2,600	3,700
<b>Large exposures to capital Number [line 38]—(to large resident entities)</b>	<b>3</b>	<b>2</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>6</b>	<b>32%</b>
Numerator [line 51]	700	700	500	500	—	—	1,200	1,200
Denominator [line 32, line 30]	900	1,400	1,200	1,700	500	600	2,600	3,700
<b>—(to connected borrowers)</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Numerator [line 52]	—	—	—	—	—	—	—	—
Denominator [line 32, line 30]	900	1,400	1,200	1,700	500	600	2,600	3,700
<b>Net open position in foreign exchange to capital*</b>	<b>-22%</b>	<b>-14%</b>	<b>42%</b>	<b>29%</b>	<b>-180%</b>	<b>-150%</b>	<b>-23%</b>	<b>-16%</b>
Numerator [line 50]	(200)	(200)	500	500	(900)	(900)	(600)	(600)
Denominator [line 32, line 30]	900	1,400	1,200	1,700	500	600	2,600	3,700
<b>Gross asset position in financial derivatives to capital</b>	<b>22%</b>	<b>14%</b>	<b>17%</b>	<b>12%</b>	<b>40%</b>	<b>33%</b>	<b>23%</b>	<b>16%</b>
Numerator [line 21]	200	200	200	200	200	200	600	600
Denominator [line 32, line 30]	900	1,400	1,200	1,700	500	600	2,600	3,700
<b>Gross liability position in financial derivatives to capital</b>	<b>—</b>	<b>—</b>	<b>58%</b>	<b>41%</b>	<b>—</b>	<b>—</b>	<b>27%</b>	<b>19%</b>
Numerator [line 29]	—	—	700	700	—	—	700	700
Denominator [line 32, line 30]	900	1,400	1,200	1,700	500	600	2,600	3,700
<b>Net open position in equities to capital</b>	<b>11%</b>	<b>7%</b>	<b>25%</b>	<b>18%</b>	<b>40%</b>	<b>33%</b>	<b>23%</b>	<b>16%</b>
Numerator [line 48]	100	100	301	301	200	200	601	601
Denominator [line 32, line 30]	900	1,400	1,200	1,700	500	600	2,600	3,700
<b>Asset-based FSIs</b>								
<b>Liquid assets (core) to total assets*</b>	<b>8%</b>	<b>14%</b>	<b>7%</b>	<b>10%</b>				
Numerator [line 39]	1,000	2,500	500	4,000				
Denominator [line 14]	12,450	18,201	7,450	38,101				
<b>Liquid assets (core) to short-term liabilities*</b>	<b>17%</b>	<b>25%</b>	<b>25%</b>	<b>22%</b>				
Numerator [line 39]	1,000	2,500	500	4,000				
Denominator [line 41]	6,000	10,050	2,000	18,050				
<b>Customer deposits to total (noninterbank) loans</b>	<b>124%</b>	<b>83%</b>	<b>73%</b>	<b>94%</b>				
Numerator [line 24(i)]	10,200	11,200	3,650	25,050				
Denominator [line 18(i.ii)]	8,250	13,500	5,000	26,750				
<b>Return on assets*</b>	<b>—</b>	<b>4%</b>	<b>6%</b>	<b>3%</b>				
Numerator <sup>4</sup> [line 8]	—	680	440	1,120				
Denominator <sup>6</sup> [line 31]	12,450	18,201	7,450	38,101				
<b>Nonperforming loans to total gross loans*</b>	<b>1%</b>	<b>3%</b>	<b>3%</b>	<b>2%</b>				
Numerator [line 42]	93	360	140	593				
Denominator [line 18(i)]	9,250	14,400	5,600	29,250				
<b>Sectoral distribution of loans to total loans (percentages of total)*</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>				
Deposit takers	—	—	—	—				
[line 18(i.i) divided by line 18(i)]								

Table A5.3 (concluded)

	Deposit Taker 1	Deposit Taker 2	Deposit Taker 3	Sector Level
Central bank				
[line 18(i.ii.i) divided by line 18(i)]	—	—	—	—
Other financial corporations				
[line 18(i.ii.iii) divided by line 18(i)]	5%	14%	—	9%
Nonfinancial corporations				
[line 18(i.ii.iv) divided by line 18(i)]	76%	14%	—	31%
Other domestic sectors				
[line 18(i.ii.v) divided by line 18(i)]	4%	17%	45%	18%
Government				
[line 18(i.ii.ii) divided by line 18(i)]	4%	35%	36%	25%
Nonresident				
[(line 18(i.ii.ii) plus 18(i.ii.vi)) divided by 18(i)]	11%	20%	20%	17%
<b>Residential real estate loans to total loans</b>	<b>4%</b>	<b>7%</b>	<b>36%</b>	<b>11%</b>
Numerator [line 43]	350	1,000	2,000	3,350
Denominator [line 18(i)]	9,250	14,400	5,600	29,250
<b>Commercial real estate loans to total loans</b>	<b>—</b>	<b>14%</b>	<b>—</b>	<b>7%</b>
Numerator [line 44]	—	2,000	—	2,000
Denominator [line 18(i)]	9,250	14,400	5,600	29,250
<b>Geographical distribution of loans to total loans (percentages of total)</b>				
[addendum items divided by line 18(i)]				
Domestic economy	89%	80%	80%	83%
Advanced economies	5%	14%	11%	11%
Regions, excluding advanced economies	—	—	—	—
Africa	3%	1%	0%	2%
Of which: Sub-Saharan	—	—	—	—
Asia	3%	5%	9%	5%
Europe	—	—	—	—
Of which: Former Soviet Union, including Russia	—	—	—	—
Middle East	—	—	—	—
Western Hemisphere	—	—	—	—
<b>Foreign-currency-denominated loans to total loans</b>	<b>11%</b>	<b>21%</b>	<b>11%</b>	<b>16%</b>
Numerator [line 46]	1,000	3,000	600	4,600
Denominator [line 18(i)]	9,250	14,400	5,600	29,250
<b>Foreign-currency-denominated liabilities to total liabilities</b>	<b>11%</b>	<b>15%</b>	<b>23%</b>	<b>15%</b>
Numerator [line 47]	1,200	2,500	1,500	5,200
Denominator [line 23 minus line 21]	10,850	16,301	6,650	33,801
<b>Income- and expense-based FSIs</b>				
<b>Interest margin to gross income*</b>	<b>55%</b>	<b>49%</b>	<b>33%</b>	<b>46%</b>
Numerator [line 3]	300	660	200	1,160
Denominator [line 5]	550	1,360	600	2,510
<b>Trading income to total income</b>	<b>9%</b>	<b>7%</b>	<b>17%</b>	<b>10%</b>
Numerator [line 4(ii)]	50	100	100	250
Denominator [line 5]	550	1,360	600	2,510
<b>Noninterest expenses to gross income*</b>	<b>91%</b>	<b>44%</b>	<b>25%</b>	<b>50%</b>
Numerator [line 6]	500	600	150	1,250
Denominator [line 5]	550	1,360	600	2,510
<b>Personnel expenses to noninterest expenses</b>	<b>60%</b>	<b>50%</b>	<b>67%</b>	<b>56%</b>
Numerator [line 6(i)]	300	300	100	700
Denominator [line 6]	500	600	150	1,250

\*Core FSIs.

<sup>1</sup>For the specification of the FSIs, refer to Chapter 6.<sup>2</sup>Two sets of capital ratios are shown. The first set uses Tier 1 capital (except for the nonperforming loans net of provisions to capital FSI, which uses total regulatory capital). The second set uses total capital and reserves.<sup>3</sup>All line and addendum references are to Table A5.2.<sup>4</sup>The data entries shown for the numerator are net income before extraordinary items and taxes. As described in Chapter 6, net income after extraordinary items and taxes (line 11) might instead, or additionally, be used as the numerator.<sup>5</sup>The denominator should be the average value of capital over the period, rather than the end-period value.<sup>6</sup>The denominator should be the average value of assets over the period, rather than the end-period value.

**Table A5.4. Recording Gains and Losses on Traded Instruments: Case 1**

	Price	Deposit Taker 1		Deposit Taker 2	
		Δ Net income	Capital position (total)	Δ Net income	Capital position (total)
End period 1	100	—	1,700	—	1,700
End period 2	90	-10	1,690	—	1,690
End period 3	70	-20	1,670	—	1,670
End period 4	75	5	1,675	-25	1,675

potential for greater volatility can be monitored each period. In contrast, the net income of deposit taker 2 disguises the extent to which that deposit taker has invested in a potentially volatile instrument, increasing the potential for surprises when the instrument is sold and the entire holding gain or loss on the instrument is realized at once.

**Example 3**

**13.** Table A5.7 illustrates the problems of intra-sectoral consistency if deposit takers adopt different approaches to recording realized and unrealized gains and losses on traded instruments.

**14.** In the example, both deposit taker 1 and 2 purchase a traded financial asset during period 1 at a price of 100. In the first two columns of Table A5.7 the two deposit takers record gains (losses) on the asset in accordance with the recommendations of the *Guide*.

**Table A5.5. Recording Gains and Losses on Traded Instruments: Case 2**

FSIs	Level of FSI of Deposit Taker 2 Relative to Deposit Taker 1		
	Period 2	Period 3	Period 4
Return on equity	Higher	Higher	Lower
Return on assets	Higher	Higher	Lower
Interest margin to gross income	Lower	Lower	Higher
Trading gains (losses) to gross income	Higher	Higher	Lower
Noninterest expenses to gross income	Lower	Lower	Higher

**Table A5.6. Recording Gains and Losses on Traded Instruments: Case 3**

	Deposit Taker 1		Deposit Taker 2 Δ Net income
	Δ Net income	Of which: Trading gains (losses)	
End period 1	—	—	—
End period 2	30	25	5
End period 3	40	35	5
End period 4	-15	-20	5

Therefore, both deposit takers record the same entries in their respective income statements and balance sheets, regardless of whether the asset is sold (as deposit taker 2 does in period 4) or retained (as deposit taker 1 does), and regardless of whether the asset is held in the trading or investment book. At the sector level, changes in net income reflect unrealized losses (gains) of both deposit takers in the period in which they occur, as well as a weakening capital position for the sector.

**15.** Now, assume deposit taker 2 records only realized gains (losses) in the income statement (shown as 2\* in the fourth column of Table A5.7). On selling the asset in period 4, deposit taker 2\* records a loss of 25 in its income statement for that period. However, deposit taker 1 reflected such losses in earlier periods, when they arose, causing asymmetries to arise when aggregating data to produce sector-level data on net income and undermining the coherence of the sector-level data in the fifth column of Table A5.7.

**16.** Further, assume that deposit taker 1, like deposit taker 2\*, also records only realized gains (losses) in the income statement but does not sell the asset (shown as 1\* in the sixth column in Table A5.7). Even though both deposit taker 1\* and 2\* are using the same recording approach, there are asymmetries in the measurement of net income—one deposit taker reflects a loss, the other records nothing—between the two deposit takers, again undermining the coherence of the sector-level data (seventh column of Table A5.7).

**17.** The impact on the sector-level data, and thus on any analysis, of these different approaches is clear. For instance, when both deposit takers follow the



**Table A5.7. Recording Gains and Losses on Traded Instruments: Case 4**

		Deposit Taker 1	Deposit Taker 2	Subsector Total (Deposit Takers 1 + 2)	Deposit Taker 2*	Subsector Total (Deposit Takers 1 + 2*)	Deposit Taker 1*	Subsector Total (Deposit Takers 1* + 2*)
	Price	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
		Δ Net income	Δ Net income	Δ Net income	Δ Net income	Δ Net income	Δ Net income	Δ Net income
End period 1	100	—	—	—	—	—	—	—
End period 2	90	-10	-10	-20	—	-10	—	—
End period 3	70	-20	-20	-40	—	-20	—	—
End period 4	75	5	5	10	-25	-20	—	-25
End period 5	70	-5	—	-5	—	-5	—	—

*Guide's* recommendations, losses cease in the fourth period, and a small recovery in income takes place as market prices rebound. In contrast, in the case where one deposit taker records only gains and losses when realized, the losses recorded in the fourth period remain of the same magnitude as in the third, despite the small rebound in market prices. When both deposit takers record gains and losses only when they are realized, there is no evidence of any worsening performance until the fourth quarter, increasing the possibility of a surprise when the losses are taken.

#### Example 4

**18.** Table A5.8 illustrates the problems that can arise for sector-level data if a deposit taker records gains and losses on its own traded debt differently from another deposit taker that owns the debt.

**19.** Deposit taker 2 purchases a traded debt instrument issued by deposit taker 1 in period 1. Both deposit takers revalue the instrument at its market price and record unrealized gains and losses in the income statement each period, in line with the recommendations of the *Guide*. Consequently, both deposit takers record equal and opposite entries in their respective income statements, ensuring that net income (and capital) at the sector level is unaffected by the claims of one deposit taker in the reporting population on another.

**20.** Now, assume that deposit taker 1 does not record unrealized gains (losses) on its debt liability (deposit taker 1\* in the fourth column of Table A5.8). Consequently, asymmetric recording approaches are followed, and the sector's net income is boosted because the sector has recorded a gain in value arising from claims on itself, as shown in the fifth column of Table A5.8.

**Table A5.8. Recording Gains and Losses on Traded Instruments: Case 5**

		Deposit Taker 1	Deposit Taker 2	Subsector Total (Deposit Takers 1 and 2)	Deposit Taker 1*	Subsector Total (Deposit Takers 1* and 2)
	Price	Column 1	Column 2	Column 3	Column 4	Column 5
		Δ Net income	Δ Net income	Δ Net income	Δ Net income	Δ Net income
End period 1	90	—	—	—	—	—
End period 2	100	-10	10	0	0	10
End period 3	110	-10	10	0	0	10
End period 4	115	-5	5	0	0	5

### Treatment of Interest on Nonperforming Loans

21. The *Guide* recommends that interest accrue continuously on loans, unless the loan is nonperforming. Numerical examples are provided below that illustrate the application of the *Guide*'s recommendations on interest accrual on loans, particularly on those loans that are nonperforming.

#### Example 1: Loan performs through to maturity as envisaged by the contract (base case)

22. As a reference point, Table A5.9 sets out the entries under interest income in the income statement and loans in the balance sheet statement of a creditor deposit taker when a loan performs through to maturity as envisaged by the contract. Each month, the amount of interest that has accrued is recorded as interest income in the income statement, with the counter-entry increasing the outstanding value of the loan recorded in the balance sheet. As a payment of interest is made—quarterly in this example—the cash balances of the deposit taker increase by 3, and the outstanding loan amount decreases by 3 to 100. If the deposit taker compiles data on only a quarterly basis, the only entries would be the accrual of interest of 3 and an increase in cash balances of 3.

#### Example 2: Loan is classified as nonperforming, but interest is subsequently received

23. Table A5.10 sets out the entries under interest income and loan loss provisions in the income statement and under loans in the balance sheet statement when a deposit taker classifies a loan as nonper-

forming but subsequently receives payments on the loan. The contractual arrangements for the loan are the same as in example 1 above.

24. In this example, the first-quarter interest payment is missed by the debtor, so the end-first-quarter outstanding loan amount in the balance sheet is 103. The loan continues to accrue interest in the second quarter, but again the second-quarter interest payment is missed, resulting in an end-second-quarter loan amount outstanding of 106. At the start of the third quarter, with payment of interest more than 90 days overdue, the loan is classified as nonperforming. On reviewing the loan, the deposit taker considers that neither the amount of interest that has accrued in the first two quarters (6) nor all the amount originally advanced will be paid. Thus a loan loss (specific) provision of 66 is made in July, reducing the loan amount outstanding (after specific provisions).

25. As the loan is nonperforming, accrual of interest ceases, and the loan is placed on a cash basis—that is, no interest income is recorded until payment is made. Nevertheless, for consistency of recording between the debtor and the creditor, gross interest income continues to be recorded at the contractual rate of interest, although it is offset in the creditor's income statement by a provision for accrued interest on nonperforming assets.

26. At the end of the third quarter, the overdue interest for the six months January–June is paid together with the interest of 3 for the third quarter. The payment increases the deposit taker's cash balances by 9,

**Table A5.9. Treatment of Interest on Nonperforming Loans: Case I**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Income and expense</b>												
Interest income												
(i) Gross interest income												
(ii) Less provisions for accrued interest on nonperforming assets	—	—	—	—	—	—	—	—	—	—	—	—
Loan loss provisions	—	—	—	—	—	—	—	—	—	—	—	—
<b>Balance sheet (assets)</b>												
Loans (after specific provisions)	101	102	100	101	102	100	101	102	100	101	102	100
(i) Gross loans	101	102	100	101	102	100	101	102	100	101	102	100
(ii) Specific provisions	—	—	—	—	—	—	—	—	—	—	—	—
<b>Memorandum:</b>												
Cash interest payments by debtor	—	—	3	—	—	3	—	—	3	—	—	3

**Table A5.10. Treatment of Interest on Nonperforming Loans: Case 2**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Income and expense</b>												
Interest income	1	1	1	1	1	1	0	0	3	1	1	1
(i) Gross interest income	1	1	1	1	1	1	1	1	1	1	1	1
(ii) Less provisions for accrued interest on nonperforming assets	—	—	—	—	—	—	1	1	-2	—	—	—
Loan loss provisions	—	—	—	—	—	—	66	—	-6	—	—	—
<b>Balance sheet</b>												
Loans (after specific provisions)	101	102	103	104	105	106	40	40	40	41	42	40
(i) Gross loans	101	102	103	104	105	106	106	106	100	101	102	100
(ii) Specific provisions	—	—	—	—	—	—	66	—	60	—	—	—
<b>Memorandum:</b>												
Cash interest payments by debtor	—	—	0	—	—	0	—	—	9	—	—	3

with the following counter-entries: a negative loan loss provision of 6, partially reversing the provision made in July; a negative provision for accrued interest on nonperforming loans of 2 in the income statement, reversing the provision against interest accrued that was recorded in the first two months of the third quarter; and a recording of gross interest income in September of 1.

27. Once the interest payments are caught up, the expectation is that the debtor will continue to make interest payments according to the loan contract, so the accrual of interest resumes in the fourth quarter. Nonetheless, the deposit taker remains doubtful that

all the amount advanced will be repaid, and so a specific provision of 60 remains.

**Example 3: Loan is classified as nonperforming, but partial payment of interest is expected**

28. Table A5.11 sets out the entries under interest income and loan loss provisions in the income statement and under loans in the balance sheet when a deposit taker identifies a loan as nonperforming but expects partial payment of interest on the loan.

29. In the first quarter, interest accrues and is paid in accordance with the loan contract. At the end of that

**Table A5.11. Treatment of Interest on Nonperforming Loans: Case 3**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Income and expense</b>												
Interest income	1	1	1	0.5	0.5	2	0.5	0.5	0.5	0	0	4.5
(i) Gross interest income	1	1	1	1	1	1	1	1	1	1	1	1
(ii) Less provisions for accrued interest on nonperforming assets	—	—	—	0.5	0.5	-1	0.5	0.5	0.5	1	1	-3.5
Loan loss provisions	—	—	—	—	—	—	—	—	—	—	—	—
<b>Balance sheet</b>												
Loans (after specific provisions)	101	102	100	100.5	101.0	100	100	101	100	100	100	100
(i) Gross loans	101	102	100	100.5	101.0	100	100	101	100	100	100	100
(ii) Specific provisions	—	—	—	—	—	—	—	—	—	—	—	—
<b>Memorandum:</b>												
Cash interest payments by debtor	—	—	3	—	—	3	—	—	1.5	—	—	4.5

quarter, the outstanding loan value is 100. The deposit taker reviews the loan and determines that there is evidence that the loan will not fully perform in the future and expects that only partial payments of interest of 1.5 per quarter will be forthcoming. Therefore, 0.5 is recorded in provisions for accrued interest on nonperforming assets in both April and May. The balance sheet value of the loan at the end of each month includes the accrual of interest income less the provision for accrued interest on nonperforming assets. In this example, unexpectedly at the end of the second quarter interest is paid in accordance with the loan contract. Therefore, the entries in April and May for provisions for accrued interest income on nonperforming assets are reversed in June. At the end of the second quarter, the outstanding loan value is 100.

**30.** Despite the payment made at the end of the second quarter, the deposit taker continues to expect payment of 1.5 per quarter and so continues to include 0.5 every month in provisions for accrued interest on nonperforming assets. The deposit taker proves to be correct in its expectation, and at the end of the third quarter the debtor pays 1.5. The balance sheet value of the loan at the end of each month continues to include the accrual of interest income less the provision for accrued interest on nonperforming assets. During the third quarter, interest of 1.5 accrues and is actually paid, rendering the outstanding loan amount at the end of the quarter again 100.

**31.** In the fourth quarter, the deposit taker decides that the loan interest payments are expected to cease, and so accrual of interest ceases—the loan is placed on a cash basis in October. Entries are made in provisions for accrued interest on nonperforming loans to the full amount of the contracted rate of accrual per month. The balance sheet value of the loan at the end of each month is unchanged at 100 because no interest is accrued. However, full payment of interest, including past due interest, is made by the debtor in December. Therefore, the accumulated provisions of 3.5 for accrued interest on nonperforming loans are reversed, and 4.5 is recorded for interest income in the quarter. The outstanding loan amount at the end of the quarter remains at 100.

### Part 3. Consolidation and Associated Sector-Level Issues

**32.** Unlike the base case, within a financial system deposit takers are likely to have interrelations. Therefore,

the examples below illustrate the derivation of sector-level consolidated data when such interrelations exist.

#### Extended Base Data Set

##### Domestic consolidated data

**33.** The base case is extended to include interrelations among the three deposit takers. These transactions and positions are reflected in Tables A5.12 and A5.13, which follow the same format as Tables 11.2 and 11.3 of the *Guide*. Tables A5.14 and A5.15 present the income and expense statements and balance sheets for the three domestic deposit takers specified in the base case. The first three columns are similar to those in the base case,<sup>2</sup> while the remaining columns illustrate the derivation of sector-level data when interrelations exist. The derivation is shown in two steps to demonstrate that, consistent with the *Guide*'s recommendations, all intragroup flows and positions are eliminated, but intergroup debt and financial derivatives positions are not eliminated (see Box 5.1). For clarity, an intermediate step that aggregates the group consolidated data for banks in the population is also shown in the table.

##### (i) Consolidated group data

**34.** The derivation of consolidated group data involves the elimination of *all* intragroup transactions and positions. The fourth column in Tables A5.14 and A5.15 shows the consolidated group data for deposit taker 2 and its subsidiary, deposit taker 3. The adjustments made to eliminate intragroup transactions and positions are described below. The data that have been adjusted are shaded.

- Income and expense statement (Table A5.14)
  - **Fees and commissions** of 15 that are receivable/payable between deposit taker 2 and deposit taker 3 are eliminated from the group's income and expenses, as such fees and commissions are intragroup transactions.
  - Deposit taker 2 recognizes 134.6 of noninterest income as its **share of the net income** of deposit taker 3. This amount is recorded as 71.4 of dividends payable and 63.2 of retained earnings by deposit taker 3. To eliminate double counting in the group data, the following amounts are eliminated: 134.6 from noninterest

<sup>2</sup>This example differs somewhat from the base case because the balance sheets of deposit takers 1 and 2 incorporate interbank loans and deposits with resident deposit takers (see shaded cells in Table A5.15).

Table A5.12. Interbank Positions and Flows

	Domestic Deposit Takers		
	Bank 1	Bank 2	
	<i>Bank 1's positions with other deposit takers</i>	<i>Bank 2's positions with its subsidiary</i>	<i>Bank 2's position with other deposit takers</i>
1. Shares and other equity <sup>1</sup>	20	301	—
2. Shares and other equity <sup>2</sup>	—	—	—
3. Noninterest income (excluding trading gains and losses)	—	—	—
<i>Of which:</i> Fees and commissions	—	15	15
Dividends receivable	7	71.4	—
Prorated share of retained earnings	—	63.2	—
Gains or losses on sale of fixed assets to other deposit takers	—	—	—
4. Gains and losses on equity investments in other deposit takers	5	—	—
5. Nonperforming loans to deposit takers in the reporting population <sup>3</sup>	—	—	—
Current period	—	—	—
Provisions for accrued interest	—	—	—
Specific provisions	—	—	8
Outstanding position	—	—	—
Provisions for accrued interest	—	—	—
Specific provisions	—	—	8
6. Short-term claims on other deposit takers in the reporting economy (remaining maturity)	—	—	—

<sup>1</sup>Valued as the proportionate share of the parent deposit taker's stake in subsidiaries'/associates' capital and reserves (and similarly for reverse investments) or as the market value of any equity stake in other deposit takers. The associate investment is attributed to funds contributed by owners together with retained earnings (including those earnings appropriated to reserves)—a measure of narrow capital.

<sup>2</sup>As valued in the balance sheet, if different from line 1.

<sup>3</sup>These items might not be significant in some economies. If there are other nonperforming asset claims on other deposit takers in the reporting population, the data series specified in item 5 are required for these assets.

income, and 71.4 from dividends payable, and 63.2 from retained earnings.

- Balance sheet (Table A5.15)
  - Deposit taker 2 has **deposit liabilities** of 10 to deposit taker 3. These deposits are eliminated on consolidation from the group's currency and deposit liabilities to resident banks and claims on resident banks.
  - Deposit taker 3 has **loan liabilities** of 100 to deposit taker 2. These loans are eliminated on consolidation from the group's loans to and from resident banks.
  - Deposit taker 3 also has liabilities of 1,000 to deposit taker 2 in the form of **debt securities** issued. These are eliminated on consolidation from the group's assets and liabilities.
  - Deposit taker 2 has an **equity investment** of 301 in deposit taker 3, valued according to the prorated share in the capital and reserves of the associate. On consolidation, 301 is eliminated from shares and other equity on the asset side and from

capital and reserves on the liability side of the group's balance sheet. If the capital and reserves for deposit takers 2 and 3 were simply aggregated, there would be double counting of capital.

- Deposit takers 2 has liabilities of 100 to deposit taker 3 in the form of **financial derivatives**. These derivatives are eliminated on consolidation from the group's assets and liabilities.

(ii) Sector-level consolidated data

**35.** The sixth column in Tables A5.14 and A5.15 presents the sector-level consolidated income and balance sheet data for the banking system. These data are derived by aggregating the data of deposit taker 1 with the group consolidated data (covering the activities of deposit takers 2 and 3) and eliminating certain transactions and positions between deposit taker 1 and the group; as noted earlier, positions in debt instruments and financial derivatives among unrelated deposit takers are not eliminated (see Chapter 5) in the sector-level data. The data eliminated at the sector level on



Table A5.13. Other Intragroup Positions and Flows

	Domestic Deposit Taker Other Group Entities	
	Deposit taker 2	Deposit taker 3
<b>Balance Sheet</b>		
Liabilities to:	—	—
Deposits	10	—
Loans	—	100
<i>Of which: Foreign-currency-denominated</i>		
Foreign-currency-linked	—	—
Debt securities	—	1,000
Financial derivatives	100	—
Other liabilities	—	—
Foreign-currency-denominated liabilities	—	—
Foreign-currency-linked liabilities	—	—
<b>Income and Expense Statements</b>	—	—
Interest income receivable	—	—
<b>Memorandum Items Relating to Claims</b>	—	—
Liquid assets claims (core)	—	—
Liquid assets claims (broad)	—	—
Nonperforming loans	—	—

consolidation are described below. The data that have been adjusted are shaded.

- Income and expense statement (Table A5.14)
  - **Fees and commissions** of 15 receivable/payable between deposit taker 2 and deposit taker 1 are eliminated in the sector-level consolidated data. If this adjustment were not made, gross income of the sector would be overstated.
  - Deposit taker 1 made a gain of 5 on holdings of **equity investments** in other resident deposit takers. Because of the asymmetric valuation of capital on the two sides of the balance sheet, these gains are not offset by counterpart losses for the issuing bank. Thus, to avoid overstating net income for the sector, these gains are eliminated from gains and losses on financial instruments and retained earnings at the sector level. Examples that illustrate the *Guide's* recommendation for the measurement of sector-wide capital are provided below.
  - Deposit taker 1 has **dividends** of 7 receivable from other resident deposit takers, which are eliminated from noninterest income (other income) and dividends payable in the sector-level consolidated data.
  - Deposit taker 2 has expensed 8 in **specific provisions** against loans to deposit taker 1. This

provision is eliminated from sector-level provisions and retained earnings data.

- Balance sheet (Table A5.15)
  - The group consolidated data of deposit takers 2 and 3 show **loans to other resident deposit takers** of 50. These and any other intergroup positions in debt instruments and financial derivatives are *not* eliminated in the sector-level data.
  - Deposit taker 2 has a stock of 8 in specific **provisions** against loans to deposit taker 1. Following the elimination of such provisions in the income statement, these provisions are also eliminated from the stock of specific provisions in the sector-level balance sheet. The counteradjustment is higher retained earnings in capital and reserves.
  - Deposit taker 1 has a **portfolio equity investment** of 20 in other resident deposit takers. To avoid double counting of capital, the market value of this equity investment is deducted from shares and other equity on the assets side and from capital and reserves in the sector-level consolidated data. This adjustment is illustrated in the examples below covering the *Guide's* recommendation for the measurement of sector-wide capital.

### Cross-border consolidated data

**36.** In addition to the interrelations among resident banks discussed above, it is further assumed that deposit taker 2 has a foreign deposit-taking subsidiary and that deposit taker 1 has a foreign branch. Moreover, the foreign subsidiary of deposit taker 2 has a portfolio equity investment in deposit taker 1.

**37.** The intergroup positions and flows are set out in Table A5.16, which follows the same format as Table 11.4. The cross-border group consolidated income and balance sheet statements for deposit takers 1 and 2 are shown in the first and second columns of Tables A5.17 and A5.18. The financial statements of deposit taker 3 are subsumed within the group-consolidated financial statement of deposit taker 2.

**38.** The adjustments made to eliminate intergroup transactions and positions to derive sector-level cross-border consolidated data are described below. The data that have been adjusted are shaded.

- Income and expense statement (Table A5.17)
  - Deposit taker 2's group receives 15 in **fees and commissions** from deposit taker 1's group. These intergroup fees and commissions receivable/payable are eliminated from the sector-level data.

**Table A5.14. Income and Expense Statements: Deposit Takers—Sector-Level Consolidated Data (Domestic Consolidated Data)<sup>1</sup>**

	Deposit Taker 1 A	Deposit Taker 2 B	Deposit Taker 3 C	Step 1: Group Consolidated Data D (= B + C +/- [Group Consolidated Adjustment])	Aggregated Group Consolidated Data E (= D + A)	Step 2: Sector Level Consolidated Data F (= E +/- [Sector Consolidated Adjustment])
1. Interest income	400	800	300	1,100	1,500	1,500
(i) Gross interest income	400	800	300	1,100	1,500	1,500
(ii) Less provisions for accrued interest on nonperforming assets	—	—	—	—	—	—
2. Interest expense	100	140	100	240	340	340
3. <i>Net interest income</i> (= 1 minus 2)	300	660	200	860	1,160	1,160
4. Noninterest income	250	700	400	950	1,200	1,173
(i) Fees and commissions receivable	110	300	200	485	595	580
(ii) Gains or losses on financial instruments	50	100	100	200	250	245
(iii) Prorated earnings	50	140	20	25	75	75
(iv) Other income	40	160	80	240	280	273
5. <i>Gross income</i> (= 3 + 4)	550	1,360	600	1,810	2,360	2,333
6. Noninterest expenses	500	600	150	735	1,235	1,220
(i) Personnel costs	300	300	100	400	700	700
(ii) Other expenses	200	300	50	335	535	520
7. Provisions (net)	50	80	10	90	140	132
(i) Loan loss provisions	50	80	10	90	140	132
(ii) Other financial asset provisions	—	—	—	—	—	—
8. <i>Net income (before extraordinary item and taxes)</i> (= 5 minus (6 + 7))	—	680	440	985	985	981
9. Extraordinary items	—	—	—	—	—	—
10. Income tax	—	272	176	448	448	448
11. <i>Net income after tax and extraordinary items</i> (= 8 minus (9 + 10))	408	264	537	537	533	532
12. Dividends payable	—	300	140	369	369	362
13. <i>Retained earnings</i> (= 11 minus 12)	—	108	124	169	169	172

<sup>1</sup>For a description of the line items, refer to Chapter 4.

- Deposit taker 1 made **gains of 5 on equity investments** in deposit taker 2's group, while deposit taker 2's group made losses of 10 on equity investments in deposit taker 1's group. These intergroup gains and losses are eliminated from gains and losses on financial instruments and retained earnings in the sector-level consolidated data.
- Deposit taker 1's group received 7 in **dividends** from deposit taker 2's group. These intergroup payments are eliminated from other income, as well as from dividends payable, in the sector-level data.
- Deposit taker 2's group has expensed 8 in **specific provisions** on loans to deposit taker 1's group. These expenses are eliminated from loan

loss provisions and retained earnings in the sector-level data.

- Balance sheet (Table A5.18)
  - The group of deposit taker 2 has accumulated a stock of **specific provisions** of 8 against loans to the group of deposit taker 1. Following the elimination of such provisions in the income statement, this stock of specific provisions is eliminated from the sector-level balance sheet data, resulting in a higher level of loans after specific provisions. The counteradjustment is higher sector-level retained earnings in capital and reserves.
  - The group of deposit taker 1 has **portfolio equity investments** of 20 in the group of deposit taker 2, and, conversely, the group of deposit taker 2 has

Table A5.15. Balance Sheets: Deposit Takers—Sector-Level Consolidated Data (Domestic Consolidated Data)<sup>1</sup>

	Deposit Taker 1 A	Deposit Taker 2 B	Deposit Taker 3 C	Step 1: Group Consolidated Data D (= B + C +/- [Group Consolidated Adjustment])	Aggregated Group Consolidated Data E (= D + A)	Step 2: Sector Level Consolidated Data F (= E +/- [Sector Consolidated Adjustment])
<b>14. Total assets (= 15 + 16 = 31)</b>	<b>12,450</b>	<b>18,201</b>	<b>7,450</b>	<b>24,140</b>	<b>36,590</b>	<b>36,578</b>
15. Nonfinancial assets	500	500	300	800	1,300	1,300
16. Financial assets (= 17 through 22)	11,950	17,701	7,150	23,340	35,290	35,278
17. Currency and deposits	200	200	100	290	490	490
18. Loans (after specific provisions)	9,200	13,900	5,350	19,150	28,350	28,358
(i) Gross loans	9,250	14,400	5,600	19,900	29,150	29,150
(i.i) Interbank loans	1,000	900	600	1,400	2,400	2,400
(i.i.i) Resident	300	150	—	50	350	350
(i.i.ii) Nonresident	700	750	600	1,350	2,050	2,050
(i.ii) Noninterbank loans	8,250	13,500	5,000	18,500	26,750	26,750
(i.ii.i) Central bank	—	—	—	—	—	—
(i.ii.ii) General government	400	5,000	2,000	7,000	7,400	7,400
(i.ii.iii) Other financial corporations	500	2,000	—	2,000	2,500	2,500
(i.ii.iv) Nonfinancial corporations	7,000	2,000	—	2,000	9,000	9,000
(i.ii.v) Other domestic sectors	350	2,500	2,500	5,000	5,350	5,350
(i.ii.vi) Nonresidents	—	2,000	500	2,500	2,500	2,500
(ii) Specific provisions	50	500	250	750	800	792
19. Debt securities	2,250	3,000	1,300	3,300	5,550	5,550
20. Shares and other equity	100	301	200	200	300	280
21. Financial derivatives	200	200	200	300	500	500
22. Other assets	—	100	—	100	100	100
23. Liabilities (= 28 + 29)	11,050	16,501	6,850	22,141	33,191	33,191
24. Currency and deposits	10,200	11,700	5,150	16,840	27,040	27,040
(i) Customer deposits	10,200	11,200	3,650	14,850	25,050	25,050
(ii) Interbank deposits	—	500	1,500	1,990	1,990	1,990
(ii.i) Resident	—	10	—	—	—	—
(ii.ii) Nonresident	—	490	1,500	1,990	1,990	1,990
(iii) Other currency and deposits	—	—	—	—	—	—
25. Loans	200	300	150	350	550	550
26. Debt securities	400	3,000	1,500	3,500	3,900	3,900
27. Other liabilities	250	801	50	851	1,101	1,101
28. Debt (= 24 + 25 + 26 + 27)	11,050	15,801	6,850	21,541	32,591	32,591
29. Financial derivatives	—	700	—	600	600	600
30. Capital and reserves	1,400	1,700	600	1,999	3,399	3,387
(i) Narrow capital	1,160	1,160	500	1,359	2,519	2,507
<b>31. Balance sheet total (= 23 + 30 = 14)</b>	<b>12,450</b>	<b>18,201</b>	<b>7,450</b>	<b>24,140</b>	<b>36,590</b>	<b>36,578</b>

<sup>1</sup>For a description of the line items, refer to Chapter 4.

portfolio equity investments of 50 in the group of deposit taker 1. To avoid double counting of capital, the market value of these equity investments is deducted from shares and other equity on the asset side and from capital and reserves in the sector-level consolidated data. This adjustment is shown in the examples below, which illustrate the *Guide's* recommendation for the measurement of sector-wide capital.

### Deriving Sector-Wide Capital

39. Accurately measuring sector-wide capital is central to monitoring the soundness of deposit-taking institutions. Therefore, it is important not to overestimate or underestimate the actual amount of capital resources available to the deposit-taking sector. In particular, the *Guide* recommends that any double counting of capital arising from intra-deposit-taking

**Table A5.16. Intergroup Positions and Flows (Cross-Border Consolidated Data)**

	Other Domestically Incorporated, Domestically Controlled Deposit Takers, Their Subsidiaries, <sup>1</sup> and Branches	
	Deposit taker 1 group	Deposit taker 2 group
1. Shares and other equity <sup>2</sup>	20	50
2. Shares and other equity as valued on balance sheet <sup>3</sup>	—	—
3. Noninterest income (excluding trading gains and losses):	—	—
Of which:		
Fees and commissions	—	15
Dividends receivable	7	—
Prorated share of retained earnings	—	—
Gains or losses on sale of fixed assets to other deposit takers	—	—
4. Gains and losses on equity investments in other deposit takers	5	-10
5. Nonperforming loans to deposit takers in the reporting population <sup>4</sup>	—	—
Current period	—	—
Provisions for accrued interest	—	—
Specific provisions	—	8
Outstanding position	—	—
Provisions for accrued interest	—	—
Specific provisions	—	8
6. Short-term claims on other deposit takers in the reporting economy (remaining maturity)	—	—

<sup>1</sup>Including deposit takers' branches of separately incorporated subsidiaries.

<sup>2</sup>Valued as the proportionate share of the parent deposit taker's stake in subsidiaries'/associates' capital and reserves (similar for reverse investments), or as the market value of any equity stake in other deposit takers.

<sup>3</sup>As valued in the balance sheet, if different from line 1.

<sup>4</sup>These items might not be significant in some economies. If there are other nonperforming asset claims on other deposit takers in the reporting population, the data series specified in item 5 are required for these assets.

sector equity investments be eliminated. The numerical examples below illustrate how such elimination is undertaken for equity investments other than in subsidiaries and associates under different scenarios.

**40.** As in the other examples, it is assumed that there are three deposit takers. Moreover, in the first period (1) deposit taker 1 owns 5 of 60 outstanding shares of deposit taker 2, and (2) the shares of deposit taker 2 have a stated or par value of 2 per share, which is also their market value. So, at end period 1, the equity holdings of deposit taker 1 are valued at 10, and the capital of deposit taker 2 is valued at 120, all "funds contributed by owners" ( $FC$ ). To facilitate exposition, in the examples below, the holdings of deposit taker 1 are explicitly shown in the accounts of deposit taker 2 as "Funds Contributed by Deposit taker 1," ( $FC_{(DT 1)}$ ), while funds contributed by owners outside the sector are shown as  $FC_{(Other)}$ .

### **Example 1: Consolidation of sector-wide capital (base case)**

**41.** Following the guidance in the *Guide*, Table A5.19 illustrates that sector-wide capital is not the aggregation of the capital of each of the three deposit takers, because some of their respective capital is obtained from within the sector: deposit taker 1 owns 5 shares of the capital of deposit taker 2 with a value of 10. This capital contribution by deposit taker 1 to deposit taker 2 must be eliminated by subtracting its market value from aggregated total capital (with the counter-entry being the elimination from sector-wide assets of the equity investment of deposit taker 1 in deposit taker 2). Therefore in this instance for period 1, where  $DT$  equals the deposit taker's capital,

Sector-wide capital (Period 1) =

$$\frac{40}{(DT 1)} + \frac{120}{(DT 2)} + \frac{40}{(DT 3)} - \frac{10}{FC_{(DT 1)} \text{ [market value]}} = 190.$$

**Table A5.17. Income and Expense Statements: Deposit Takers—Sector-Level Consolidated Data (Cross-Border Consolidated Data)<sup>1</sup>**

	Deposit Taker 1 Group Consolidated Data A	Deposit Taker 2 Group Consolidated Data B	Sector-Level Consolidated Data C  (= A + B +/- [Intergroup Consolidated Adjustment])
1. Interest income	500	1,200	1,700
(i) Gross interest income	500	1,200	1,700
(ii) Less provisions for accrued interest on nonperforming assets	—	—	—
2. Interest expense	100	440	540
3. <i>Net interest income (= 1 minus 2)</i>	400	760	1,160
4. Noninterest income	250	700	933
(i) Fees and commissions receivable	110	535	630
(ii) Gains or losses on financial instruments	50	-100	-45
(iii) Prorated earnings	50	25	75
(iv) Other income	40	240	273
5. <i>Gross income (= 3 + 4)</i>	650	1,460	2,093
6. Noninterest expenses	525	935	1,445
(i) Personnel costs	320	600	920
(ii) Other expenses	205	335	525
7. Provisions (net)	125	90	207
(i) Loan loss provisions	125	90	207
(ii) Other financial asset provisions	—	—	—
8. <i>Net income (before extraordinary items and taxes)</i> (= 5 minus (6 + 7))	—	435	441
9. Extraordinary items	—	—	—
10. Income tax	—	448	448
11. <i>Net income after tax (= 8 minus (9 + 10))</i>	—	-13	-7
12. Dividends payable	—	377	370
13. <i>Retained earnings (= 11 minus 12)</i>	—	-389	-376

<sup>1</sup>For a description of the line items, refer to Chapter 4.

42. Note that the equity of deposit taker 1 in deposit taker 2 is eliminated from funds contributed by deposit taker 1,  $FC_{(DT 1)}$ , and the consolidated sector-wide balance sheet reflects only capital resources from outside the sector.

**Example 2: Consolidation of equity among deposit takers: unrealized valuation gains—case 1**

43. In period 2, the net income and retained earnings of deposit taker 2 are 120. The capital resources (net assets) of deposit taker 2 thus double, and the market bids up the share price to 4 per share, doubling the market price of period 1 and reflecting retained earnings. On its equity investment, deposit taker 1 experiences an unrealized valuation gain of 10, increasing net income and retained earnings; deposit

taker 1 also marks up the value of its equity investment in the balance sheet to 20. In the example, neither deposit taker 1 nor deposit taker 3 generates any other net income.

44. Sector-wide capital in period 2 is calculated excluding the market value of the equity investment of deposit taker 1 in deposit taker 2. From the perspective of deposit taker 1, the market value is composed of 10 in purchase value and 10 in valuation gain (and is deducted from narrow capital).<sup>3</sup> By com-

<sup>3</sup>When Tier 1 data are not available, funds contributed by owners together with retained earnings (including those earnings appropriated to reserves) could be identified as a narrow measure.



**Table A5.18. Balance Sheets: Deposit Takers—Sector-Level Consolidated Data (Cross-Border Consolidated Data)<sup>1</sup>**

	Deposit Taker 1 Group Cross-Border Consolidated Data A	Deposit Taker 2 Group Cross-Border Consolidated Data B	Sector-Level Cross-Border Consolidated Data C (= A + B +/- [Intergroup Consolidated Adjustment])
14. <b>Total assets</b> (= 15 + 16 = 31)	13,300	35,469	48,707
15. <i>Nonfinancial assets</i>	500	1,300	1,800
16. <i>Financial assets</i> (= 17 through 22)	12,800	34,169	46,907
17. Currency and deposits	200	540	740
18. Loans (after specific provisions)	10,050	27,670	37,728
(i) Gross loans	10,250	28,070	38,320
(i.i) Interbank loans	1,000	1,550	2,550
(i.i.i) Resident	300	50	350
(i.i.ii) Nonresident	700	1,500	2,200
(i.ii) Noninterbank loans	9,250	26,520	35,770
(i.ii.i) Central bank	—	20	20
(i.ii.ii) General government	400	11,000	11,400
(i.ii.iii) Other financial corporations	500	5,000	5,500
(i.ii.iv) Nonfinancial corporations	7,000	2,000	9,000
(i.ii.v) Other domestic sectors	1,350	6,000	7,350
(i.ii.vi) Nonresidents	—	2,500	2,500
(ii) Specific provisions	200	400	592
19. Debt securities	2,250	5,300	7,550
20. Shares and other equity	100	259	289
21. Financial derivatives	200	300	500
22. Other assets	—	100	100
23. <b>Liabilities</b> (= 28 + 29)	11,900	32,700	44,600
24. Currency and deposits	11,200	26,940	38,140
(i) Customer deposits	11,200	24,850	36,050
(ii) Interbank deposits	—	2,000	2,000
(ii.i) Resident	—	—	—
(ii.ii) Nonresident	—	2,000	2,000
(iii) Other currency and deposits	—	90	90
25. Loans	200	350	550
26. Debt securities	400	3,500	3,900
27. Other liabilities	100	1,310	1,410
28. <b>Debt</b> (= 24 + 25 + 26 + 27)	11,900	32,100	44,000
29. Financial derivatives	—	600	600
30. Capital and reserves	1,400	2,769	4,107
(i) Narrow capital	1,160	1,890	2,988
31. <b>Balance sheet total</b> (= 23 + 30 = 14)	13,300	35,469	48,707

<sup>1</sup>For a description of the line items, refer to Chapter 4.

ponent, 10 is deducted from funds contributed, and 10 is subtracted from retained earnings of deposit taker 1 ( $RE_{(DT 1)}$ ):

Sector-wide capital (Period 2) =

$$\frac{50}{(DT 1)} + \frac{240}{(DT 2)} + \frac{40}{(DT 3)} - \frac{10}{(FC_{(DT 1)})} - \frac{10}{(RE_{(DT 1)})_{[market\ value]}} = 310.$$

45. Similar to sector-wide capital, an adjustment is required to sector-wide income. Aggregating the net income of the three deposit takers results in net income in period 2 of 70 (consisting of 10 as unrealized gains of deposit taker 1 and 60 as net income of deposit taker 2). However, 10 of the net income represents a valuation gain of the sector on itself. The *Guide* recommends that all unrealized gains/losses

**Table A5.19. Consolidation of Sector-Wide Capital: Base Case**

Period 1							
Deposit Taker 1				Deposit Taker 2			
Cash	40	Deposits	20	Loans	220	Deposits	100
Loans	10	Capital	40			Capital	120
DT 2 Equity	10	Of which: $FC_{(Other)}^1$	40			Of which: $FC_{(Other)}^1$	110
Purchase Value	10					Of which: $FC_{(DT 1)}^1$	10
Deposit Taker 3				Consolidated Sector-Wide Balance Sheet			
Cash	40	Deposits	20	Cash	80	Deposits	140
Loans	20	Capital	40	Loans	250	Capital	190
		Of which: $FC_{(Other)}^1$	40			Of which: $FC_{(Other)}^1$	190

<sup>1</sup>FC = Funds contributed by owners.  
 $FC_{(Other)}$  = Funds contributed by non-deposit-takers.  
 $FC_{(DT 1)}$  = Funds contributed by deposit taker 1.

on intrasectoral equity investments be excluded from the income account (which constitutes an exception to the *Guide's* general guidelines on the treatment of valuation changes on financial instruments).

46. Compared with end period 1, sector-wide capital has increased by 120, reflecting the retained earnings of deposit taker 2. The valuation gain experienced by deposit taker 1 adds to its retained earnings and capital but does not contribute any additional capital resources

to the sector as a whole, because it represents a valuation gain of the sector on itself. Table A5.20 sets out the entries in the sector accounts.

**Example 3: Consolidation of equity among deposit takers: unrealized valuation gains—case 2**

47. In Table A5.20, the increase in price of the shares of deposit taker 2 reflected higher retained earnings. In contrast, Table A5.21 covers the treatment of a rise

**Table A5.20. Consolidation of Sector-Wide Income and Capital: Unrealized Valuation Gains—Case 1**

Period 2							
Deposit Taker 1				Deposit Taker 2			
Cash	40	Deposits	20	Cash	120	Deposits	100
Loans	10	Capital	50	Loans	220	Capital	240
DT 2 Equity	20	Of which: $FC_{(Other)}^1$	40			Of which: $FC_{(Other)}^1$	110
Purchase Value	10	RE <sup>2</sup>	10			$FC_{(DT 1)}$	10
Unrealized Gain	10					RE <sup>2</sup>	120
Deposit Taker 3				Consolidated Sector-Wide Position			
Cash	40	Deposits	20	Cash	200	Deposits	140
Loans	20	Capital	40	Loans	250	Capital	310
		Of which: $FC_{(Other)}$	40			Of which: $FC_{(Other)}^1$	190
						RE <sup>2</sup>	120

<sup>1</sup>FC = Funds contributed by owners.  
 $FC_{(Other)}$  = Funds contributed by non-deposit takers.  
 $FC_{(DT 1)}$  = Funds contributed by deposit taker 1.  
<sup>2</sup>RE = Retained earnings.

**Table A5.21. Consolidation of Sector-Wide Income and Capital: Unrealized Valuation Gains—Case 2**

Period 2							
Deposit Taker 1				Deposit Taker 2			
Cash	40	Deposits	20	Cash	120	Deposits	100
Loans	10	Capital	130	Loans	220	Capital	240
DT 2 Equity	100	Of which: $FC_{(Other)}$	40			Of which: $FC_{(Other)}$	110
Purchase Value	10	RE	90			$FC_{(DT 1)}$	10
Unrealized Gain	90					RE	120
Deposit Taker 3				Consolidated Sector-Wide Position			
Cash	40	Deposits	20	Cash	200	Deposits	140
Loans	20	Capital	40	Loans	250	Capital	310
		Of which: $FC_{(Other)}$	40			Of which: $FC_{(Other)}$	190
						RE	120

in the value of the share price due to market movements unconnected with an increase in retained earnings. In Table A5.21, as in Table A5.20, the retained earnings of deposit taker 2 are 120 in period 2, but in this example the price of the shares of deposit taker 2 rises to 20 per share. This increase in share price results in a valuation gain and higher retained earnings of 90 for deposit taker 1 (see Table A5.21). However, as the unrealized gain arises from the sector's claim on itself, there are no new capital resources for the sector as a whole. Thus, the sector-wide adjustments are the same as in the previous example: the market value of the equity investment of deposit taker 1 in deposit taker 2 is deducted from sector-wide capital, and the associated valuation gains are subtracted from sector-wide net income.

**Example 4: Consolidation of equity among deposit takers: realized valuation gains—case 1**

48. In this example, in period 2, deposit taker 1 realizes the valuation gains on its equity investment in deposit taker 2 through a sale to another sector (Table A5.22). Otherwise, the assumptions are the same as in the first valuation example above (Table A5.20). At end period 2, the cash position of deposit taker 1 has increased by 20, while its retained earnings have increased by 10. Because of the sale of the shares of deposit taker 1 in deposit taker 2 to an entity outside the sector, the capital resources of all the deposit takers now come from outside the sector. Therefore,

$$\text{Sector-wide capital (Period 2)} = \underset{(DT 1)}{50} + \underset{(DT 2)}{240} + \underset{(DT 3)}{40} = 330.$$

**Table A5.22. Consolidation of Sector-Wide Income and Capital: Realized Valuation Gains—Case 1**

Period 2A							
Deposit Taker 1				Deposit Taker 2			
Cash	60	Deposits	20	Cash	120	Deposits	100
Loans	10	Capital	50	Loans	220	Capital	240
		Of which: $FC_{(Other)}$	40			Of which: $FC_{(Other)}$	110
		RE	10			$FC_{(DT 1)}$	10
						RE	120
Deposit Taker 3				Consolidated Sector-Wide Position			
Cash	40	Deposits	20	Cash	220	Deposits	140
Loans	20	Capital	40	Loans	250	Capital	330
		Of which: $FC_{(Other)}$	40			Of which: $FC_{(Other)}$	210
						RE	120

49. In other words, sector-wide capital in period 2 is now simply an aggregation of the capital of the three deposit takers, since there are no intrasectoral equity investments.

50. However, with respect to income, an adjustment is required for sector-level data. If the income data for the three deposit takers were aggregated, sector-wide net income would be 130 (net income of 120 of deposit taker 2 plus realized gain of 10 of deposit taker 1). At the same time, sector-wide capital has increased by 140, consisting of the net income of 120 of deposit taker 2 plus 20 arising from the sale of the equity investment of deposit taker 1 to another sector. Because the *Guide* treats all such transactions in deposit takers' equity as equity financing transactions—transactions that can increase/decrease capital without having to go through the income account—the realized gains/losses of deposit taker 1 on the equity it owns in deposit taker 2 must be excluded from the income account. Consequently, sector-wide net income and retained earnings is 120, equal to the net income of deposit taker 2, while sector-wide capital increases by 140, reflecting 20 in financing from outside the sector, achieving consistency in the relationship between net income and capital.

51. Why does the *Guide* treat transactions in deposit takers' equity as financing transactions? It is because from a *sector-wide perspective*, it is immaterial whether the deposit taker transacting in a deposit taker's equity is the original issuer of the equity operating in the primary market (in which case, the transaction would clearly be classified as financing) or is a

deposit taker buying or selling in the secondary market. All sales/purchases of deposit takers' equity vis-à-vis other sectors are exchanges of sector equity for capital resources with another sector. It follows that, if the transaction has occurred at a price higher than that initially recorded in the deposit taker's books (for example, a sale price of 4 per share as opposed to 2 per share in the books of deposit taker 2), the gain to deposit taker 1 has the nature of additional paid-in capital, which should be classified under funds contributed by owners.

52. In Table A5.22, the realized gain is recorded as an increase of 10 in the retained earnings of deposit taker 1, because that is the accounting treatment from the individual deposit taker's perspective. But from a sector-wide perspective, there is a deduction of 10 from sector-wide retained earnings for the reasons explained above.

**Example 5: Consolidation of equity among deposit takers: realized valuation gains—case 2**

53. In this example, in period 2, deposit taker 1 realizes the valuation gains on its equity investment in deposit taker 2 through a sale to deposit taker 3 (Table A5.23). The remaining assumptions are the same as in the first valuation example above (Table A5.20). At end period 2, the cash position of deposit taker 1 has increased by 20, while its retained earnings have increased by 10. In contrast to the previous example, the sale has not resulted in ownership of deposit takers' equity leaving the sector; ownership of the shares of deposit taker 2 remains within the deposit-taking

**Table A5.23. Consolidation of Sector-Wide Income and Capital: Realized Valuation Gains—Case 2**

Period 2							
Deposit Taker 1				Deposit Taker 2			
Cash	60	Deposits	20	Cash	120	Deposits	100
Loans	10	Capital	50	Loans	220	Capital	240
		Of which: $FC_{(Other)}$	40			Of which: $FC_{(Other)}$	110
		RE	10			$FC_{(DT\ 3)}$	10
						RE	120
Deposit Taker 3				Consolidated Sector-Wide Position			
Cash	20	Deposits	20	Cash	200	Deposits	140
Loans	20	Capital	40	Loans	250	Capital	310
DT 2 Equity	20	Of which: $FC_{(Other)}$	40			Of which: $FC_{(Other)}$	190
Purchase Value	20					RE	120

sector, with the shares now owned by deposit taker 3 rather than deposit taker 1.<sup>4</sup> Deposit taker 3 records the share value at 20:5 shares at 4 per share.

**54.** Sector-wide capital in period 2 is calculated excluding the market value of the equity investment of deposit taker 3 in deposit taker 2. From the point of view of the sector, in period 2, 10 is deducted from funds contributed and 10 is subtracted from retained earnings, as shown below. However, as funds contributed and retained earnings are not presented separately in the *Guide*, only 20 should be deducted from sector-wide total (and narrow) capital and reserves.

Sector-wide capital (Period 2) =

$$\frac{50}{(DT\ 1)} + \frac{240}{(DT\ 2)} + \frac{40}{(DT\ 3)} - \frac{10}{(FC_{(DT\ 3)})} - \frac{10}{(RE_{(DT\ 1)})} = 310.$$

[market value]

**55.** Sector-wide capital is the same as in period 2 in the unrealized valuation gain examples above. The realization of the valuation gain by a sale to another deposit taker has not changed total sector-wide capital, because no additional capital has been obtained from outside sectors. In essence, the deposit-taking sector has “gained” from selling its equity at a price higher than purchased (deposit taker 1 has a realized gain of 10) but has similarly “lost,” because as a sector it has bought equity at a price higher than originally recorded in its books (deposit taker 3 has purchased the equity at 4 per share rather than the initial sale price of 2 per share).

**56.** An adjustment is required for sector-level income data. If the income data for the three deposit takers were aggregated, sector-wide net income would be 130 (net income of 120 of deposit taker 2 plus a realized gain of 10 of deposit taker 1), but sector-wide capital has increased by only 120 (the net income of deposit taker 2). Because the *Guide* treats all transactions in deposit takers’ equity as equity financing transactions—transactions that can increase/decrease capital without having to go through the income account—the realized gains/losses of deposit taker 1 from holding the equity of deposit taker 2 must be excluded from the income account. Consistency is achieved in the relationship between net income and capital: sector-wide net income is 120, which is re-

flected in an increase of 120 in sector-wide capital as compared with period 1 (see example in Table A5.19).

**57.** In summary, from the four valuation examples above, it can be seen that:

- The market value of equity investments among deposit takers should be eliminated from the asset side of the deposit-taking sector’s balance sheet and from total (and narrow) capital and reserves.
- All realized and unrealized gains/losses from deposit takers’ ownership of and transactions in equity of other deposit takers must be excluded from sector-wide income.

### Accounting for Goodwill in Sector-Wide Capital

#### Example 1: Purchase with cash

**58.** In this example, there are three deposit takers in the economy. Deposit taker 1 has 1,000 shares outstanding at a market value of 10 per share, deposit taker 2 has 400 shares outstanding at 5 per share, and deposit taker 3 has 500 shares outstanding at 5 per share. Deposit taker 1 then buys all of the shares of deposit taker 2 with cash at a market price of 5 per share (total cost 2,000), becoming a 100 percent owner of deposit taker 2. The net asset value of deposit taker 2 is 1,500. The difference between the net asset value and the price paid is goodwill (500). This amount is not recorded as an asset by deposit taker 1.

**59.** Table A5.24 presents the balance sheets of deposit takers 1 and 2 prior to the purchase, the balance sheet of deposit taker 1 after the purchase, the balance sheet of deposit taker 3, and the sector-wide balance sheet. In line with *Guide* recommendations, the balance sheets are all assumed to be marked-to-market, including for fixed assets.

**60.** After the purchase, cash declines by 2,000 in the balance sheet of deposit taker 1, offset by a prorated claim on a subsidiary (1,500) and 500 of goodwill, which is deducted from assets and from capital and reserves. On consolidation at the sector level, the prorated claim of deposit taker 1 on the subsidiary is eliminated from assets, with the counteradjustment made in the capital of the subsidiary (deposit taker 2).

#### Example 2: Purchase by issuing new shares

**61.** In this example, the assumptions are the same as in example 1 above, except that deposit taker 1 purchases the 400 of shares of deposit taker 2 by issuing

<sup>4</sup>Strictly speaking, the sale means that deposit taker 3, rather than deposit taker 1, has the claim on the 10 of funds contributed to deposit taker 2 by its owners.



Table A5.24. Goodwill and Sector-Wide Capital: Purchase with Cash

	Positions Prior to Purchase (at market value)		Deposit Taker 1 (after purchase)	Deposit Taker 3	Amounts Eliminated in Consolidation	Sector-Wide Position
	Deposit taker 1	Deposit taker 2				<i>DT 1</i> (after purchase) + <i>DT 2</i> + <i>DT 3</i>
<b>Balance sheet</b>						
<b>Assets</b>						
Cash	4,000	500	2,000	400	—	2,900
Other assets	8,000	1,500	8,000	3,200	—	12,700
Prorated claim on subsidiary	n.a.	n.a.	1,500	n.a.	-1,500	0
Total assets	12,000	2,000	11,500	3,600	—	15,600
<b>Liabilities and capital</b>						
Liabilities	2,000	500	2,000	600	—	3,100
Capital	10,000	1,500	9,500	3,000	-1,500	12,500
Total liabilities and capital	12,000	2,000	11,500	3,600	—	15,600

200 of its own shares to the owners of deposit taker 1 at the market price of 10 per share.

62. In this example (Table A5.25), the cash on the balance sheet of deposit taker 1 does not decrease following purchase, and the prorated claim of deposit taker 1 on deposit taker 2 (1,500) increases assets. There is a corresponding increase in capital, reflected in the 2,000 of equity issued less the 500 of goodwill deducted. The rationale is that while deposit taker 1 has issued 2,000 of equity, it has pur-

chased “only” 1,500 in assets (net). On consolidation at the sector level, the prorated claim on the subsidiary is eliminated from assets. On the debit side of the sector-level balance sheet, there is a counteradjustment in the capital of the subsidiary (*DT 2*). Goodwill is eliminated from the debit side of the balance sheet of deposit taker 1, with the counteradjustment made in capital. However, because equity rather than cash was used for the purchase, the overall balance sheet (and capital) is 2,000 greater than in the example in Table A5.24.

Table A5.25. Goodwill and Sector-Wide Capital: Purchase by Issuing Shares

	Positions Prior to Purchase (at market value)		Deposit Taker 1 (after purchase)	Deposit Taker 3	Amounts Eliminated in Consolidation	Sector-Wide Position
	Deposit taker 1	Deposit taker 2				<i>DT 1</i> (after purchase) + <i>DT 2</i> + <i>DT 3</i>
<b>Balance sheet</b>						
<b>Assets</b>						
Cash	4,000	500	4,000	400	—	4,900
Other assets	8,000	1,500	8,000	3,200	—	12,700
Prorated claim on subsidiary	n.a.	n.a.	1,500	n.a.	-1,500	0
Total assets	12,000	2,000	13,500	3,600	—	17,600
<b>Liabilities and capital</b>						
Liabilities	2,000	500	2,000	600	—	3,100
Capital	10,000	1,500	11,500	3,000	-1,500	14,500
Total liabilities and capital	12,000	2,000	13,500	3,600	—	17,600

**Table A5.26. Income and Expense Statements: Nonfinancial Corporations—Sector-Level Consolidated Data<sup>1</sup>**

	Nonfinancial Corporation 1 A	Nonfinancial Corporation 2 B	Nonfinancial Corporation 3 C	Aggregation A + B + C	Sector-Level Consolidated Data A + B + C +/- (Sector Consolidation Adjustment)
1. Revenue from sales of goods and services (excluding indirect sales taxes)	80.0	400.0	1,700.0	2,180.0	2,180.0
2. Cost of sales	90.0	200.0	1,500.0	1,790.0	1,790.0
3. Operating income (= 1 minus 2)	-10.0	200.0	200.0	390.0	390.0
4. Interest income	0.4	2.2	9.3	11.9	11.9
5. Interest expense	12.6	14.0	20.0	46.6	46.6
6. Other income (net)	1.0	10.0	5.0	16.0	9.0
7. Net income (before extraordinary items and taxes) (= 3 + 4 minus 5 + 6)	-21.2	198.2	194.3	371.3	364.3
8. Extraordinary items	—	—	—	—	—
9. Corporate income taxes	—	40.0	38.9	78.9	78.9
10. Net income after taxes (= 7 minus (8 + 9))	-21.2	158.2	155.4	292.4	285.4
11. Dividends payable	—	108.0	105.0	213.0	211.0
12. Retained earnings (= 10 minus 11)	-21.2	50.2	50.4	79.4	74.4

<sup>1</sup>For a description of the line items, refer to Chapter 4.

## Part 4. Calculating FSIs for Nonfinancial Corporations

**63.** The following examples illustrate the application of the principles involved in deriving sector-level data and FSIs for nonfinancial corporations.

### The Data Set

**64.** A set of data for income and expense, balance sheet, and associated memorandum items is provided below and is used to calculate FSIs. The data set provided is consistent with the guidelines in Chapters 4 and 7.

**65.** In this example, the economy has three resident nonfinancial corporations.<sup>5</sup> There are financial relations among them in the form of cross-holdings of debt and equity securities, but none of the equity holdings qualify as an associate investment. End-period finan-

cial statements (income and balance sheet accounts) for the three resident corporations are presented in Tables A5.26 and A5.27, together with aggregated and sector-level income and balance sheet statements.

**66.** Among the corporations, it can be seen that corporation 3 is the largest in terms of total assets, followed by corporation 2. All three corporations have substantial holdings of nonfinancial produced assets (fixed assets and inventories) and nonproduced assets (for example, land) employed in the production of nonfinancial goods and services. Corporations 2 and 3 also have large holdings of financial assets and strong capital positions. By contrast, corporation 1 has minimal holdings of financial assets and a modest capital position. On the income and expense side, corporation 1 had a loss in the current period. Corporations 2 and 3 had profits for the period that exceeded dividends payable.

### Computation of Sector-Level Data and FSIs

**67.** Using the guidance in Chapter 7 and the financial statements of the three nonfinancial corporations, Table A5.28 presents the agreed FSIs at the

<sup>5</sup>As noted in Chapter 5, data might be compiled on both domestically controlled cross-border consolidated and domestic consolidated bases. The extended data set for deposit takers illustrates the issues involved in compiling domestically controlled cross-border consolidated data.

Table 5A.27. Balance Sheets: Nonfinancial Corporations—Sector-Level Consolidated Data<sup>1</sup>

	Nonfinancial Corporation 1 A	Nonfinancial Corporation 2 B	Nonfinancial Corporation 3 C	Aggregation A + B + C	Sector-Level Consolidated Data A + B + C +/- (Sector Consolidation Adjustment)
13. Total assets (= 14 + 17)	126.0	761.0	837.0	1,724.0	1,709.0
14. Nonfinancial assets	125.0	650.0	560.0	1,335.0	1,335.0
15. Produced	95.0	570.0	470.0	1,135.0	1,135.0
Of which: (i) Fixed assets	90.0	500.0	410.0	1,000.0	1,000.0
(ii) Inventories	5.0	70.0	60.0	135.0	135.0
16. Nonproduced	30.0	80.0	90.0	200.0	200.0
17. Financial assets	1.0	111.0	277.0	389.0	374.0
18. Currency and deposits	0.6	40.0	150.0	190.6	190.6
19. Debt securities	0.2	40.0	70.0	110.2	110.2
Of which: Issued by other nonfinancial corporations in reporting population	—	20.0	40.0	60.0	60.0
20. Shares and other equity	—	25.0	50.0	75.0	60.0
21. Trade credit	—	2.0	3.0	5.0	5.0
22. Financial derivatives	0.1	3.0	2.0	5.1	5.1
23. Other assets	0.1	1.0	2.0	3.1	3.1
24. Total liabilities (= 29 + 30)	104.0	201.0	400.0	705.0	705.0
25. Loans	20.0	—	—	20.0	20.0
26. Debt securities	84.0	200.0	400.0	684.0	684.0
27. Trade credit	—	—	—	—	—
28. Other liabilities	—	—	—	—	—
29. Debt (= 25 through 28)	104.0	200.0	400.0	704.0	704.0
30. Financial derivatives	—	1.0	—	1.0	1.0
31. Capital and reserves	22.0	560.0	437.0	1,019.0	1,004.0
(i) Narrow capital <sup>2</sup>	20.0	300.0	110.0	430.0	415.0
32. Balance sheet total = (24 + 31 = 13)	126.0	761.0	837.0	1,724.0	1,709.0
<b>Memorandum series<sup>2</sup></b>					
<b>Other series required to calculate the agreed FSIs</b>					
33. Interest income receivable from other nonfinancial corporations	—	2.0	4.0	6.0	
34. Earnings before interest and tax (items 3 + 4 + 6 minus 33)	-8.6	210.2	210.3	411.9	
35. Debt service payments	16.6	24.0	48.0	88.6	
36. Corporate net foreign exchange exposure for on-balance-sheet items	—	-4.0	40.0	36.0	
37. Total corporate net foreign exchange exposure	—	-2.0	22.0	20.0	
<b>Intrasector positions and flows</b>					
Dividends receivable from other nonfinancial corporations <sup>2</sup>	—	1.0	1.0	2.0	
Gains/losses on equity investments in other nonfinancial corporations <sup>2</sup>	—	2.0	3.0	5.0	

<sup>1</sup>For a description of the line items, refer to Chapter 4.<sup>2</sup>Included in Table 11.7 of the Guide.

**Table A5.28. Financial Soundness Indicators: Nonfinancial Corporations—Sector-Level Consolidated Data<sup>1,2</sup>**

	Nonfinancial Corporation 1		Nonfinancial Corporation 2		Nonfinancial Corporation 3		Sector Level	
<b>Total debt to equity</b>	<b>473%</b>	<b>520%</b>	<b>36%</b>	<b>67%</b>	<b>92%</b>	<b>364%</b>	<b>70%</b>	<b>170%</b>
Numerator (line 29)	104.0	104.0	200.0	200.0	400.0	400.0	704.0	704.0
Denominator (line 31 and 31(i))	22.0	20.0	560.0	300.0	437.0	110.0	1,004.0	415.0
<b>Return on equity</b>	<b>-39%</b>	<b>-43%</b>	<b>38%</b>	<b>70%</b>	<b>48%</b>	<b>191%</b>	<b>41%</b>	<b>99%</b>
Numerator (line 34)	-8.60	-8.60	210.20	210.20	210.30	210.30	411.90	411.90
Denominator (line 31 and 31(i))	22.00	20.00	560.00	300.00	437.00	110.00	1,004.00	415.00
<b>Debt-service coverage</b>	<b>-52%</b>		<b>884%</b>		<b>446%</b>		<b>472%</b>	
Numerator (line 34 plus line 33)	-8.6		212.2		214.3		417.9	
Denominator (line 35)	16.6		24.0		48.0		88.6	
<b>Net foreign exchange exposure to equity (on balance sheet)</b>			<b>-1%</b>	<b>-1%</b>	<b>9%</b>	<b>36%</b>	<b>4%</b>	<b>9%</b>
Numerator (line 36)	—	—	-4.0	-4.0	40.0	40.0	36.0	36.0
Denominator (line 31 and 31(i))	22.0	20.0	560.0	300.0	437.0	110.0	1,004.0	415.0
<b>Total net foreign exchange exposure to equity</b>			<b>0%</b>	<b>-1%</b>	<b>5%</b>	<b>20%</b>	<b>2%</b>	<b>5%</b>
Numerator (line 37)	—	—	-2.0	-2.0	22.0	22.0	20.0	20.0
Denominator (line 31 and 31(i))	22.0	20.0	560.0	300.0	437.0	110.0	1,004.0	415.0
<b>Number of applications for protection from creditors</b>							<b>10</b>	

<sup>1</sup>For the specification of the FSIs, refer to Chapter 7.

<sup>2</sup>Two sets of ratios are shown for those using capital: the first set uses total capital, consistent with the definition of the FSI; the second set uses narrow capital, an additional approach (see Appendix III).

sector level and, for illustrative purposes, for each corporation individually. Moreover, where relevant, the numerator and denominator for each FSI are shown. The last columns in Tables A5.26 and A5.27 show the sector-level consolidated data that are used to calculate FSIs and incorporate the sector-level consolidation adjustments discussed in Chapter 5. The data series that have been adjusted are highlighted. The adjustments are described below.

- Income and expense statement (Table A5.26)
  - Corporation 2 and corporation 3 have valuation gains of 5 on their holdings of equity investments in other nonfinancial corporations in the reporting population (see the second item under *intrasector positions and flows* in Table A5.27), which are eliminated from other income (net) and from retained earnings in the sector-level consolidated data.
  - Corporation 2 and corporation 3 have dividends receivable of 2 from corporations in the reporting population (see the first item under *intrasector positions and flows* in Table A5.27), which are eliminated from other income (net) and dividends payable in the sector-level consolidated data.

- Corporation 2 and corporation 3 also receive interest income from corporations in the reporting population (see memorandum item 33), but these intrasector payments net out in the net income line and are therefore *not* eliminated from the gross interest income and interest expense lines (lines 4 and 5) in the sector-level consolidated income and expense statement.
- Balance sheet (Table A5.27)
  - Corporation 2 and corporation 3 have portfolio equity investments of 15 in corporations in the reporting population. To avoid double counting of capital, the market value of these equity investments is deducted from shares and other equity on the asset side and from capital and reserves in the sector-level data.
  - Corporation 2 and corporation 3 also hold debt instruments issued by corporations in the reporting population (see item 19 in the balance sheet statements), but these intrasector holdings are *not* eliminated in the sector-level data, thus enabling the monitoring of risk exposure and potential contagion.

# Appendix VI. Remaining Issues: Provisioning, Interest Rate Risk, and Stress Testing

1. The *Guide* provides guidance for the purpose of compiling and disseminating FSIs. Nonetheless, in the course of the discussions preparing the *Guide*, it became clear that on some issues related to the development of data for use in supporting macroprudential analysis, there was no international consensus or best practice to draw on. This appendix describes current practices and concepts on three such issues, (1) provisioning, (2) measuring interest rate risk, and (3) stress testing, with the objective of supporting national efforts to further develop this work.

## Part I. Approaches to the Classification of Assets and Provisioning

### Introduction

2. There is no international consensus on best provisioning practices, resulting in significant differences among countries in the reported financial statements of deposit takers. This undermines meaningful cross-country comparisons of FSI data. The BCBS and the IMF have published several papers to encourage best practices.<sup>1</sup> In this section, various approaches to provisioning are reviewed to help indicate a possible framework within which key decisions on provisioning policy could be addressed.<sup>2</sup> These approaches do not necessarily constitute international best practice. The *Guide* relies on national practice in identifying loan loss provisions.

3. In 2003, the World Bank undertook a study titled “Bank Loan Classification and Provisioning Practices

in Selected Developed and Emerging Countries” (hereafter referred to as BLCP) that provides the best overall information on current practices.<sup>3</sup> This text is largely based on that study.

### Loan Classification and Review

4. The BLCP found that authorities in all 29 countries surveyed require banks to establish loan review procedures to examine the quality of individual loans or portfolios of loans for classification and provisioning purposes. However, the practices adopted are diverse as is the frequency of review.

### Loan classification

5. While the BLCP found a very wide range of philosophies and practices, in almost all the countries surveyed, the supervisor has the authority to issue prudential regulations regarding classification of loans. These classifications vary across countries, but an example is provided in the loan classification scheme proposed by the Institute for International Finance (IIF).<sup>4</sup> It has five categories:

- *Standard*. Credit is sound and all principal and interest payments are current. Repayment difficulties are not foreseen under current circumstances, and full repayment is expected.
- *Watch (special mention)*. The credit is subject to conditions that, if left uncorrected, could raise concerns

<sup>1</sup>These include BCBS (1999); Cortavarria and others (2000); and Song (2002).

<sup>2</sup>At the IMF Executive Board meeting on FSIs in July 2001, in developing harmonized standards and practices for compiling FSIs, in consultation with relevant international standard-setting organizations, the Directors stated, “Special attention should be given to improving the international comparability of data for nonperforming assets and provisions, and the valuation of liabilities as well as assets.”

<sup>3</sup>See Laurin and Majnoni (2003). The study drew on data collected by the Basel Core Principles Liaison Group (CPLG) on practices of its 29 members. Countries surveyed included France, Germany, Italy, Japan, the Netherlands, the United Kingdom, and the United States, among the G-10 countries. Non-G-10 countries were Argentina, Australia, Brazil, Chile, China, the Czech Republic, Hong Kong SAR, India, the Republic of Korea, Mexico, Russia, Saudi Arabia, Singapore, South Africa, Spain, and the West African Monetary Union (WAMU).

<sup>4</sup>The IIF is a private sector association of financial institutions that analyzes risks in emerging market economies, serves as forum for members to discuss key policy issues in emerging markets’ finance and regulation, and promotes collaboration between members and multilateral institutions.



about full repayment. Such credit requires more than normal attention by credit officers.

- *Substandard.* Full repayment is in doubt due to inadequate protection (for example, on account of diminished obligor net worth or collateral), and/or interest or principal or both are more than 90 days overdue. These assets show underlying, well-defined weaknesses that could lead to probable loss if not corrected.
- *Doubtful.* Assets for which collection/liquidation in full is determined by bank management to be improbable due to current conditions, and/or interest or principal or both are overdue more than 180 days. Assets in this category are considered impaired<sup>5</sup> but are not yet considered total losses because some pending factors may strengthen the asset's quality (merger, new financing, or capital injection).
- *Loss (write-off).* An asset is downgraded to loss when management considers it to be virtually uncollectible, and/or principal or interest or both are overdue more than one year.

6. As further examples, the loan classification schemes of the United States and Japan are provided in Boxes A6.1 and A6.2.

### Review practices

7. Country practices differ on whether ex post or ex ante information should be used to assess loan classification. Ex post methods rely on specific observable evidence from past behavior (such as 90-day nonpayment of interest and/or principal) or from the current condition of the debtor. Ex ante methods assess future losses by considering forward-looking information and a wide range of factors that could affect the ability of the debtor to meet the loan conditions. Reliance on ex ante methods has been increasing with the shift toward more risk-focused supervision and the use of internal models to evaluate risk.

8. In addition, other differences among country practices are evident:

- Some countries follow standard regulatory prescriptions; others allow internal bank evaluations.
- Some countries evaluate the portfolio on an asset-by-asset basis; others require creditors to treat the entire portfolio of loans to a single borrower as

<sup>5</sup>*Impaired* is a supervisory term that implies that there are doubts over whether all the amounts due under a contract will be paid.

### Box A6.1. U.S. Loan Classification System (Commercial Bank Examination Manual)

- **Standard assets.** Loans in this category are performing and have sound fundamentals. (Fundamentals include the borrower's overall financial condition, resources and cash flow, credit history, and character. They also include the purpose of the loan and types of secondary sources of repayment.)
- **Specially mentioned loans.** Loans in this category are performing but have potential weaknesses that, if not corrected, may weaken the loan and the bank's asset quality. Examples are credit that the lending officer is unable to properly supervise, an inadequate loan agreement, uncertainty of the condition of collateral, or other deviations from prudent lending practices.
- **Substandard loans.** Loans in this category have well-defined weaknesses, where the current sound worth and paying capacity of the borrower is not assured. Orderly repayment of debt is in jeopardy.
- **Doubtful loans.** Doubtful loans exhibit all the characteristics of substandard loans, with the added characteristics that collection in full is highly questionable and improbable. Classification of "loss" is deferred because of specific pending factors that may strengthen the asset. Such factors include merger, acquisition, or liquidation procedures; capital injection; perfecting liens on additional collateral; and refinancing plans.
- **Loss loans.** These loans are considered uncollectible and of such little value that their continuance as bankable assets is not warranted. This classification does not mean that the asset has absolutely no recovery or salvage value but rather that it is not practical or desirable to defer full provision or writing off this basically worthless loan. Partial recovery may be effected in the future.

### Box A6.2. Loan Classification System of Japanese Financial Supervisory Agency

- **Category I.** Assets with no problems in terms of collectability.
- **Category II.** Assets with higher collectability risk than normal because of difficulties in fulfilling contracted conditions, or due to concerns about the credit risk of the borrower (15% provisioning required).
- **Category III.** Assets with concerns over final collection of value. Losses are likely to be incurred, but it is difficult to make estimates of the timing and scale of losses (70% provisioning required).
- **Category IV.** Assets that are assessed as uncollectible or of no value.

impaired if any of the loans to that borrower are impaired.

- The degree to which collateral, guarantees, or other mitigating factors can be taken into consideration varies.
- The definition of *restructured troubled assets* and whether they are treated as impaired varies across countries.

#### *Standard regulatory prescriptions versus allowing internal bank evaluations*

9. Some countries have prescriptive systems that specify definitions for classifying loans into different categories based on the likelihood of default. The BLCP suggests that countries with less sophisticated supervisory systems often opt for these more explicit systems because they can be easier to monitor, provide for greater comparability, create a more even playing field among banks, promote better public understanding, and facilitate the compiling of statistical measures for off-site supervision and dissemination. Although there seems to be some convergence among these prescriptive systems toward the use of the five categories of loan quality outlined above, numerous exceptions were found.

10. Some other countries have systems that stress management responsibility in classifying loans and setting the size of provisions, with supervisors and auditors focusing on the oversight of the adequacy of the banks' own internal evaluations and procedures and how well they are implemented. Depending on the country, banks may either be required to establish a classification system or be provided with a basic definition of what constitutes impaired assets, with little or no guidance regarding the appropriate size of provisions.

#### *Classification of multiple loans*

11. The BLCP shows that although just over half of the countries in its sample require the downgrading of all loans to a common debtor if any of these loans are classified as impaired, other countries permit a debtor's loans to be evaluated separately or leave the decision to the discretion of individual banks. Moreover, an important related issue is whether the standards apply to the specific debtor that issued the impaired asset or to broader groups of related enterprises, under the presumption that weaknesses within one part of a group suggest weakness throughout the group.

#### *Collateral and guarantees*

12. Collateral and guarantees are off-balance-sheet instruments that can reduce the ultimate loss on impaired credits; however, the BLCP found wide differences in supervisory practice. In some jurisdictions the type and amount of collateral and guarantees may be taken into consideration in determining (1) whether the credit is impaired, (2) the recoverable amount and thereby the classification of the credit, and (3) the size of provisions needed. Often, the types of acceptable collateral and their valuation are regulated, and real estate collateral often receives special attention.

13. The liquidity of collateral and the enforceability of claims on collateral and guarantees were found to sometimes affect classification and provisioning. For example, a more creditworthy classification of an asset may be permitted if liquid securities are used as collateral instead of real estate. Where real estate is used as collateral, several countries require reductions in its value (including down to zero) the longer the period of nonrepayment of the credit. Nonetheless, fewer than one-third of respondents considered the condition of collateral in classifying loans, giving weight to the view that the quality of a loan should be judged in its own right independent of collateral and guarantees. Moreover, collateral may involve different debtors, payment conditions and flows, and maturities; it may also be characterized by a different probability of payment than the original loan.<sup>6</sup> Indeed, there is some prevalence of the practice not to consider declines in the value of loan collateral or guarantees as a basis for classifying the loan as impaired, although in such circumstances special mention status could be justified.

14. Disclosures of the treatment of collateral would permit a more ready comparison of data from countries that follow different practices regarding provisions.

#### *Classification of restructured troubled loans*

15. Restructured troubled loans are those for which the lender grants concessions it would not otherwise grant because of the debtor's financial difficulty. Restructuring and the lending of new funds to cover

<sup>6</sup>Pillar II of the revised Basel Capital Accord (Basel II) recommends a general disclosure by all bank of total gross credit exposures, by major type of credit exposure (such as loans, securities, and OTC derivatives) without taking into account the effects of credit mitigation such as collateral. (See BCBS, 2003a, Table 4, p. 160.)

the nonpayment of older debts can disguise weakness in credits, and therefore some regulators have rules to define restructured troubled loans to prevent such practices.<sup>7</sup> Although payments on restructured troubled loans may continue, they often are treated identically with impaired assets for provisioning purposes until a record of payment is established, after which they can be upgraded.

**16.** The BLCP found that 15 of 23 countries define restructured troubled loans by regulation; explicit definitions were much more common outside the G-10 countries.

#### **Frequency of review**

**17.** The BLCP data indicate that 16 of 23 countries require loan review for classification purposes at least every quarter. Often, more frequent review is required for large exposures or for assets deemed less creditworthy.

#### **Provisioning**

**18.** Given the classification of an asset, what size of provision should be applied? Do provisions relate to specific and identifiable events resulting in loss, or to probable losses? When is specific and general provisioning used? How should collateral be treated? Are there specific levels of provisioning for each asset classification, or is this the prerogative of individual banks, or case by case? Different philosophies and practices exist on these matters.

#### **Do provisions relate to specific and identifiable events resulting in loss, or to probable losses?**

**19.** In practice, this issue appears to be closely related to whether classification standards are prescribed by regulation covering readily observable factors or whether they are based on more comprehensive and diffuse reviews of the condition of the borrower. The BLCP found that countries, especially emerging market economies, that prescribe classification rules also frequently prescribe provisioning

levels so that they are simple, verifiable, and enforceable. In contrast, countries that emphasize general guidance on classification tend to base provisioning more on estimates of probable losses, which sometimes are based on internal models and estimates of probabilities of default (PD) and of losses given default (LGD). These latter countries might permit provisions to be set within ranges.

#### **When are specific and general provisioning used?**

**20.** A specific provision is a current charge reflecting the loss in value of impaired assets. In contrast, a general provision is a reserve within the capital account that reflects the amount of losses that a portfolio may experience. A dynamic provision is a form of general provision that is adjusted over the course of the economic cycle—being built up during good economic times and drawn down in downturns—to provide for sufficient reserves over the entire life of the financial instrument. Dynamic provisioning is a new concept practiced only in Spain among the countries covered in the BLCP study.<sup>8</sup>

#### **How should collateral be treated?**

**21.** The discussion above on collateral and guarantees describes some of the ways in which collateral can reduce the ultimate loss on impaired credits. The BLCP found that 12 of the 23 countries permitted the use of collateral to reduce the size of provisions, with its use most common among the G-10 countries in the sample.<sup>9</sup> Where use of collateral was permitted in setting provision levels, wide variation was found in the types of collateral permitted in different situations and its valuation.

#### **Are there specific levels of provisioning for each asset classification, or is this the prerogative of individual banks?**

**22.** As noted above, different countries follow different philosophies. The BLCP provided data on the level of provisions set for different asset classifications in

<sup>7</sup>When general improvements in market borrowing conditions occur, banks may renegotiate loan conditions with their clients that are unrelated to any weaknesses in the loan. Such restructuring does not result in adverse classification of the loan or in provisioning. Thus, regulations must be able to distinguish between restructurings of troubled assets and beneficial restructuring of strong assets.

<sup>8</sup>See de Lis, Pagés, and Saurina (2000).

<sup>9</sup>The BLCP does not deal with possible reasons for this pattern, but if it stems from the greater recoverability of collateral in G-10 countries because of the depth of their markets and efficiency of their legal systems, then the use of collateral for setting provisions may be a special case rather than a general pattern. In any event, no simple one-to-one relationship exists between the market value of the collateral and the offset it can provide for provisioning purposes.

**Table A6.1. Levels of Provisions for Different Loan Classifications**

Classification	Number of Countries Specifying Provisions	Months of Nonpayment	Most Common Level of Provisions (In percent)	Typical Range of Provisions (In percent)
Standard	7/23	—	1	0.25–1
Special mention	6/23	Up to 3	3 or 5	2–5
Substandard	10/23	Over 3 or up to 6	20	10–25
Doubtful	12/23	Over 6	50	50–75
Write-off	10/23	No guidance	100	100

each country based on a classification system in line with that of the IIF, as summarized in Table A6.1.

- The column “Number of Countries Specifying Provisions” indicates the number out of the 23 countries at each classification level that requires specific levels of provisioning. It appears that only about one-half of the respondents require specific provisioning levels, which means that common international patterns have not yet been established, and that in many countries banks probably have substantial leeway in setting provisions.

The column “Months of Nonpayment” provides the number of months of nonpayment of principal or interest on the loan that is considered evidence of specific levels of impairment. There appears to be some convergence on three months as evidence of basic impairment, and six months as evidence of more severe impairment among those countries that provide such guidelines.

- The remaining columns provide information on the most common levels of provisioning for each loan category and a typical range for provisions, expressed as a percentage of the value of the asset. Although there are hints of convergence around certain values, there are too few cases among the 23 respondents to conclude that there are general international practices.

### Tax Treatment of Loan Loss Provisions

**23.** The tax deduction of specific provisions, which the BLCP found to be nearly universal, affects the reported income, balance sheet, and the capital adequacy ratio. However, variations in tax deductibility exist; fewer than one-third of respondents permit tax deductibility of general provisions, and various caps or special conditions apply to tax deductibility in some cases. The timing of tax deductibility for provisions varies, which affects the reported income: the study showed that a small number of respondents

permit tax deductions only in write-off or near write-off situations.

### Disclosure

**24.** In general, deposit takers are currently not expected to provide detailed information on the classification of loans. In contrast, the BLCP found that disclosure of aggregate information on total provisions in the current period is more common. Finally, the BLCP found that in practice, most G-10 and non-G-10 supervisors do not impose penalties on banks that breach disclosure requirements. In summary, with a few exceptions, the disclosure requirements of loan classification and provisioning are not strong.

### Conclusions

**25.** While there is increased awareness of the need for good classification and provisioning systems, the evidence also suggests that little convergence has occurred to date among countries. There are, however, a number of methods and approaches that are in practice in a large number of countries: carrying out loan review on a quarterly or more frequent basis, adopting a multistage classification system, and classifying loans independently of the condition of collateral and guarantees. Future movement in these areas could considerably contribute to improvements in the usefulness and comparability of FSIs, but they are the responsibility of international and regional standard setters in accounting, supervision, valuation, and auditing.

## Part 2. Measuring Interest Rate Risk

**26.** Because of their role in financial intermediation and the nature of their assets and liabilities, deposit takers need to manage interest rate risk—that is, the

**Table A6.2. Interest Rate Risk<sup>1</sup>***(In thousands of units of account, as of the end of period)*

	0–3 Months	4–6 Months	7–12 Months	1–2 Years	2–5 Years	5–10 Years	10–15 Years	15–20 Years	20 Years and Above
Assets									
Debt instruments									
Liabilities									
Debt instruments									
Interest-rate-based financial derivatives									
Difference									
Cumulative									

<sup>1</sup>For fixed-rate instruments to receive/pay fixed-rate-linked payments, expected amounts to be paid/received are recorded according to their remaining maturity. Thus, for a bond with just under two years to maturity and annual coupon payments, the amount of the annual coupon payment will be included in the time bucket column of 7–12 months and the remainder of the payments in the one to two years time bucket column.

For variable-rate instruments contracts to receive/pay variable-rate-linked payments, amounts expected to be paid or received are recorded in the time period at which the next repricing of interest rates is scheduled to occur. Thus, a bond on which the interest is due to be repriced every six months will include the redemption amount of the bond and the next scheduled interest payment under either the first or second time bucket columns, depending on how recently the repricing occurred.

For interest-rate-based financial derivatives, the net amounts expected to be received (+) or paid (–) are to be recorded in each time period, as appropriate.

exposure of capital to interest rate changes. However, standard practices do not exist for monitoring this risk at the sector level.<sup>10,11</sup> The techniques for monitoring interest rate risk are still being developed, by the BCBS and other institutions. Drawing on those approaches used by individual institutions, this appendix describes two common approaches—the “gap” model and duration. Measuring the effects of interest rate changes on interest income and expense using the “interest rate repricing gap” model is also described.

### The Gap Model

#### Price effects

**27.** One approach to assessing interest rate changes on the market price of a portfolio of assets and liabilities is to use *gap analysis*. Under this approach, expected payments on assets and liabilities are sorted

into various time “buckets” according to the time to repricing for floating-rate instruments and the time until payments are due for fixed-rate instruments.<sup>12</sup> As with duration, debt assets and liabilities that are market or fair valued could be covered. The net amounts (receipts minus payments) expected under single-currency interest-rate-based financial derivatives are also included. Table A6.2 provides an illustration of the time buckets that could be set.

**28.** The net difference (gap) or the gross positions in each time bucket can be multiplied by some assumed change in interest rates and discounted, to gain an indication of the interest rate sensitivity of deposit takers’ portfolio of financial assets and liabilities. For instance, one approach could be to consider the impact of the largest interest rate change observed in recent history or some multiple of the standard deviation of interest rates in recent times.

<sup>10</sup>Changes in interest rates change the present value of future cash flows and in some cases the cash flows themselves.

<sup>11</sup>Sources of interest rate risk are discussed in BCBS (2003c).

<sup>12</sup>Amounts payable on demand are included in the first bucket—zero to three months.



**29.** The gap approach has the advantage of simplicity and intuitive appeal. But by grouping different assets together under broad time buckets, it can mask mismatches in maturities among assets in the same time bucket. For example, liabilities may tend to be repriced toward the end of the range of maturities in a bucket, while assets may tend to be repriced toward the beginning. To avoid this problem, the measure of duration provides a more accurate measure of exposure to interest rate risk; it is described later in this appendix.

### Implementing the gap model

**30.** The use of the gap model can be demonstrated with reference to the first two columns of Table A6.3 showing the annual cash flow payments on two financial instruments. If instrument 1 is assumed to be an asset and instrument 2 a liability, the gain or loss associated with a change in the shape of the yield curve can be estimated as shown in Table A6.3:

**31.** The difference between  $NPV_1$  and  $NPV_2$  provides the capital gain or loss associated with the assumed change in interest rates. Thus, in Table A6.3, the steepening of the yield curve results in a capital loss of 32 (= 9 + 23). For a portfolio of assets and liabilities with cash flows occurring at different times within each bucket, a weighted average discount factor for each bucket can be used, with the weights given by the proportional size of the individual cash flows occurring in each bucket.

**32.** Positions in financial derivatives can be incorporated into the gap analysis by estimating changes in the

net present value of expected future payments/receipts as interest rates change. For instance, if the expected payment on a bond futures contract in five years' time changed from 0 to 10, the change in the present value of the expected payment of 6.1 would partially offset (hedge) the capital loss expected when the yield curve becomes more steep.<sup>13</sup>

### Net interest income effects

**33.** By considering the time to repricing of assets and liabilities, the effect of an interest rate change on interest income and expense can be estimated. The so-called repricing gap model allocates interest-bearing assets and liabilities into buckets according to their time to repricing, and the gap between assets and liabilities in each bucket is then used to estimate the net interest income exposure to interest rate changes.<sup>14</sup> For example, interest-rate-sensitive assets and liabilities with a time to repricing of one year or less are shown in Table A6.4.<sup>15</sup>

**34.** The one-day gap indicates a difference of minus 10 million between assets and liabilities being repriced in one day. A proportionate rise in interest rates on these assets and liabilities would therefore lower net interest income because there are more interest-rate-sensitive liabilities than assets in this bucket.

**35.** More generally, for a given change in interest rates ( $\Delta R_i$ ), the repricing gap can be used to calculate the changes in income in each bucket  $i$ :

$$\Delta \text{Net interest income}_i = \text{GAP}_i \times \Delta R_i^{16}$$

**36.** For the first bucket, the impact of a 1 percent rate increase ( $\Delta R_i = 0.01$ ) on future income is  $-100,000$ .<sup>17</sup> By repeating the calculation for each bucket, the overall effect on net interest income for a one-year horizon

**Table A6.3. Example of Gap Analysis**

Time	Asset	Liabilities	Gaps (Assets minus Liabilities)	$NPV_1^1$	$NPV_2^2$
0–1 years	80	70	10	9	9
1–2 years	80	70	10	8	9
2–3 years	80	70	10	8	8
3–4 years	80	70	10	7	7
4–5 years	80	1,070	-990	-609	-601
5–6 years	1,080	—	1,080	600	559
				23	-9

<sup>1</sup> $NPV_1$  = Net present value<sub>1</sub> = Gap × Discount factor specified in the first row of Table A6.8.

<sup>2</sup> $NPV_2$  = Net present value<sub>2</sub> = Gap × Discount factor specified in the second row of Table A6.8.

<sup>13</sup>Calculated by multiplying 10 by the discount factor of 0.6070.

<sup>14</sup>Measuring the effect of interest rate changes on interest income and expense should include all interest-bearing instruments, whether they are fair valued or not.

<sup>15</sup>Alternatively, cash flows associated with expected future interest income and interest expenses can be specified and discounted to the current period.

<sup>16</sup>If different interest rates are used for assets and liabilities, the assumed change in rates will need to be applied to assets and liabilities separately in each bucket, rather than to the gap between assets and liabilities in each bucket.

<sup>17</sup>(-10 million) × 0.01.

**Table A6.4. Interest-Rate-Sensitive Assets and Liabilities with a Time to Repricing of One Year or Less***(In millions)*

Time to Repricing	Assets	Liabilities	Gaps (Assets Minus Liabilities)	Cumulative Gap
1 day	20	30	-10	-10
More than 1 day to 3 months	30	40	-10	-20
More than 3 months to 6 months	70	85	-15	-35
More than 6 months to 12 months	90	70	20	-15

(if annualized interest rates are applied to each time bucket) can be estimated. Depending on the time horizon used, it may be necessary to discount the impact on the gaps to the current period.

**37.** Positions in interest-rate-based financial derivatives can be incorporated into this analysis by recalculating the expected future receipts and payments as interest rates change. For instance, if following the interest rate shock the change in expected net receipts/payments on an interest rate swap contract maturing in 12 months is +150,000, this partially offsets (hedges) the net interest income loss on nonderivative positions associated with the rate change.

### Duration

**38.** Duration<sup>18</sup> measures the maturity of an instrument by taking account of the size and timing of payments between now and maturity. Even if the maturities of financial assets and liabilities are matched, a difference in the timing of the cash flows on those assets and liabilities can expose institutions to gains (or losses) as interest rates change. Thus, the longer the duration of the portfolio of assets or liabilities, the greater the gains (or losses) for any given change in interest rates.<sup>19</sup>

**39.** A simple measure of duration (Macaulay Duration) can be calculated for any fixed-income security by using the general formula set out below:

<sup>18</sup>This section is based on Saunders (1999) and Jorion (1997).

<sup>19</sup>Duration is a direct measure of the interest rate sensitivity or elasticity of an asset or liability. The larger the numerical value of duration ( $D$ ), the more sensitive the price of that asset or liability is to changes in interest rates. For instance, for small changes in interest rates, bond prices move in an inversely proportional fashion according to the size of  $D$ :  $dP/P = -D[dR/(1 + R)]$ .

$$D_i = \frac{\sum_{t=1}^N CF_t \times DF_t \times t}{\sum_{t=1}^N CF_t \times DF_t} = \frac{\sum_{t=1}^N PV_t \times t}{\sum_{t=1}^N PV_t},$$

where

$D_i$  = Duration measured in years for instrument  $i$ ;  
 $CF_t$  = Cash flow to be received on the financial instrument at end of period  $t$ ;

$N$  = Last period in which the cash flow is received (maturity of instrument);

$DF_t$  = Discount factor =  $1/(1 + R)^t$ , where  $R$  is the yield or current level of interest rates in the market (the discount rates on government bonds are commonly used as the discount factor,  $R$ , to reflect the time value of money);

$\sum_{t=1}^N$  = Summation sign for addition of all terms for  $t = 1$  to  $t = N$ ; and

$PV_t$  = Present value of the cash flow due at the end of the period  $t$ , which equals  $CF_t \times DF_t$ .

### Duration of a single instrument

**40.** To illustrate how duration can be measured for a single debt security, suppose the annual coupon on a eurobond is 8 percent, the face value of the bond is \$1,000, and the current yield to maturity ( $R$ ) is also 8 percent. The calculation of duration ( $D$ ) is shown in Table A6.5.

**41.** Many bonds carry floating interest rates linked to market rates. The duration of such floating-rate instruments is the time interval to when the next coupon or interest payment is readjusted to reflect current interest rate conditions, referred to as the time to repricing of the instrument. For instance, if a floating-rate note with a coupon rate set at the beginning of each year is bought in the middle of the first year, it has duration of a half-year.

**Table A6.5. Duration (D) of a Six-Year Eurobond with 8 Percent Coupon and Yield**

Time	$CF_t$	$DF_t$	$CF_t \times DF_t$	$CF_t \times DF_t \times t$	Calculation of Duration (D)
1	80	0.9259	74.07	74.07	$D = \frac{4,992.71}{1,000.00} = 4.993 \text{ years}$
2	80	0.8573	68.59	137.17	
3	80	0.7938	63.51	190.52	
4	80	0.7350	58.80	235.21	
5	80	0.6806	54.45	272.23	
6	1,080	0.6302	680.58	4,083.50	
			1,000.00	4,992.71	

**Duration of a portfolio**

42. The duration of a portfolio of financial instruments can be calculated as a simple weighted average of individual durations. This is the measure of duration specified in the memoranda items to the deposit taker's balance sheet (Table A3.2). For example, if  $x_i$  represents the share of the portfolio invested in bond  $i$ , the portfolio duration is

$$D_P = \sum_{i=1}^M x_i D_i,$$

where  $D_i$  is the duration of bond  $i$ .

43. Thus a portfolio with \$100 million, equally invested in five-year bonds and one-year bonds with respective durations of 4.465 years and 1 year, has duration of  $(0.5 \times 4.465) + (0.5 \times 1) = 2.733$  years.

44. Table A6.6 provides an illustration for a portfolio of two asset and two liability interest-rate-sensitive instruments, where the portfolio duration for assets ( $D^A$ ) is 4.41 years and for liabilities ( $D^L$ ) is 6.25 years.

45. All traded debt instruments that are marked to market or fair valued on the balance sheet can be included in the calculation of portfolio duration.<sup>20</sup> Relevant positions in financial derivatives and off-balance-sheet instruments should also be included in the analysis of interest rate risk (see below).

<sup>20</sup>While demand deposits are not usually included in measures of duration used to assess price revaluation effects, at the end of this section there is a discussion of measuring duration for these instruments in the event that they are fair valued.

**Duration at the sector level**

46. Measures of duration at the *sector level* can be calculated as a simple weighted average of the individual deposit taker's asset and liability durations, using as weights the market value of the instruments included in the institution's measure of duration. The market values used as weights may be derived from the instrument analysis shown in Table 4.1 or may be obtained directly from the reporting institutions. To illustrate, Table A6.7 shows the derivation of sector-wide duration data.

47. While the concept is simple to express, experience has shown that there are practical difficulties in compiling sector-level duration data. For instance, there is a need to ensure consistency among reporting institutions in terms of instrument coverage and discount rate(s) applied to cash flows.

48. Once measures of duration for positions in the assets and liabilities included in the analysis are com-

**Table A6.6. Portfolio Duration**

	Duration $D_i$	Market Value	Weight $x_i$	Portfolio Duration $x_i D_i$
<b>Assets</b>				
$D^{A1}$	5	72	0.71	3.53
$D^{A2}$	3	30	0.29	0.88
$D^A$		102	1.00	4.41
<b>Liabilities</b>				
$D^{L1}$	4	20	0.25	1.00
$D^{L2}$	7	60	0.75	5.25
$D^L$		80	1.00	6.25

**Table A6.7. Sector-Level Duration**

	Duration $D_i$	Market Value	Weight $x_i$	Portfolio Duration $x_i D_i$
<b>Assets</b>				
Institution 1	2.6	200	0.51	1.33
Institution 2	3.7	72	0.18	0.68
Institution 3	4.6	<u>120</u>	<u>0.31</u>	<u>1.41</u>
		392	1.00	<b>3.41</b>
<b>Liabilities</b>				
Institution 1	2	180	0.49	0.97
Institution 2	7	60	0.16	1.14
Institution 3	3	<u>130</u>	<u>0.35</u>	<u>1.05</u>
		370	1.00	<b>3.16</b>

piled, assumed changes in interest rates can be measured in terms of their impact on the market values of those assets and liabilities and thus on the capital ( $E$ ) of an institution (sector), as follows:

$$\Delta E = -[D^A - kD^L] \times A \times \frac{\Delta R}{(1+R)},$$

where

$[D^A - kD^L]$  = Adjusted duration gap;

$A$  = Asset size; and

$\frac{\Delta R}{1+R}$  = Interest rate change.

**49.** In other words, the total effect of interest rate changes on the value of institutions' (the sector's) capital is composed of three effects:

- *The leverage-adjusted duration gap* =  $[D^A - kD^L]$ , where  $D^A$  = duration of assets;  $D^L$  = duration of liabilities; and  $k$  = the leverage ratio, which is equal to liabilities/assets. This gap is measured in years and reflects the degree of duration mismatch for the assets and liabilities included in the analysis. Specifically, the larger this gap is in absolute terms, the more exposed institutions are to interest rate changes.
- *The size of the institutions* =  $A$ , where the term  $A$  measures the size of institutions' assets included in the analysis. The larger the assets, the larger the potential capital exposure from any given interest rate changes.
- *The size of the interest rate shock* =  $\Delta R/(1+R)$ . The larger the interest rate change, the greater the impact on capital.

### Weaknesses in using duration measures

#### Large interest rate changes and convexity

**50.** While duration accurately measures the price sensitivity of fixed-income instruments for small changes in interest rates,<sup>21</sup> for large interest rate increases, duration overpredicts the fall in bond prices, and for large interest rate decreases, duration underpredicts the increase in bond prices. This arises because the bond price-yield relationship is convex rather than linear, as assumed by the basic duration model. Further precision can be obtained by recognizing the second derivative of yield changes (convexity) by measuring the change in the slope of the price-yield curve around a given point. Just as duration ( $D$ ) measures the slope effect ( $dP/dR$ ), a new parameter can be specified ( $CX$ ) to measure the curvature effect ( $d^2P/dR^2$ ) of the price-yield curve so that the estimated price change for a fixed-income bond, for example, is given by

$$\frac{\Delta P}{P} = D \frac{\Delta R}{(1+R)} + \frac{1}{2} CX (\Delta R)^2.$$

**51.** The first term in the equation is simple duration ( $D$ ), and the second term is the second-order effect of an interest rate change, that is, the convexity or curvature adjustment.

**52.** As in the case of duration, the convexity of a portfolio of fixed-income instruments can be derived from a simple weighted average of the components of the portfolio convexity. Thus, if  $x_i$  is the proportion invested in bond  $i$  with convexity  $CX_i$ , portfolio convexity ( $CX_p$ ) can be approximated by

$$CX_p = \sum_{i=1}^N x_i CX_i.$$

**53.** A similar approach can be used to derive the convexity of portfolios at the sector level, where  $CX_i$  represents the convexity of institution  $i$ 's portfolio, and  $x_i$  represents the amount invested by institution  $i$  in the portfolio as a proportion of the aggregate investment by all reporting institutions.

#### The term structure of interest rates

**54.** A key assumption of the simple duration model outlined above is that the yield curve or the term struc-

<sup>21</sup>Saunders (1999) suggests that duration provides an accurate measure of sensitivity to interest rate changes when such changes are of the order of one basis point.

ture of interest rates is flat (that is,  $R$  is the same across all maturities). This assumption is unlikely to hold in practice—the yield curve is often upward or downward sloping across maturities, depending on the expected future path of interest rates. For more precision, alternative measures of duration can account for the possibility of changes in the shape of the yield curve by using specific discount factors for each maturity:

$$D^* = \frac{\sum_{t=1}^N t \times \frac{CF_t}{(1+R_t)^t}}{\sum_{t=1}^N \frac{CF_t}{(1+R_t)^t}}$$

55. To illustrate, the example in Table A6.8 calculates duration for a two-instrument portfolio when the yield curve is not flat. The first row of Table A6.8 uses an upward-sloping yield curve, and the second row repeats the calculation using a yield curve with a steeper slope.

*Financial derivative positions*

56. To assess the extent to which the interest rate duration gap is covered (hedged) by financial derivative positions, the expected gain (loss) on derivative positions for the sector needs to be estimated for the assumed change in interest rates. Such information may be difficult to compile, even if the data are avail-

able. While for forwards the change in value arising from changes in interest rates is of a linear nature, this is not true for options, which are complex instruments to price and reprice.

57. The interplay of factors in determining the impact of interest rate changes on deposit takers' capital is a reason for the growing interest in the use of stress tests. These are described in the next section of this appendix.

**Measuring duration for mortgages, mortgage-backed securities, and demand deposits**

58. The duration of some instruments can be difficult to calculate, notably mortgages, mortgage-backed securities, and demand deposits.

59. The difficulty with mortgages and mortgage-backed securities arises from the risk of prepayment of principal (prepayment risk). As the level of interest rates falls, mortgage debtors have an incentive to prepay their existing fixed-rate mortgage and refinance with a new mortgage at a lower rate of interest, making the projection of future cash flows uncertain. Most probably, the prepayment behavior of mortgage debtors should be modeled on past behavior.

**Table A6.8. Duration ( $D^*$ ) When the Yield Curve Is Upward Sloping**

Time (t)	Instrument 1 $CF_t$	Instrument 2 $CF_t$	$\Sigma CF$	Upward Sloping Yield Curve	$DF_t$	$\Sigma CF \times DF_t$	$\Sigma CF \times DF_t \times t$	Calculation of Duration
1	80	70	150	8.0%	$1/1.08 = 0.9259$	138.89	138.89	$D^* = \frac{8,285.33}{1,790.72} = 4.62681$ years
2	80	70	150	8.8%	$1/(1.088)^2 = 0.8448$	126.72	253.43	
3	80	70	150	9.4%	$1/(1.094)^3 = 0.7637$	114.56	343.68	
4	80	70	150	9.8%	$1/(1.098)^4 = 0.6880$	103.20	412.80	
5	80	1,070	1,150	10.2%	$1/(1.102)^5 = 0.6153$	707.60	3,538.02	
6	1,080	—	1,080	10.3%	$1/(1.103)^6 = 0.5553$	599.75	3,598.50	
						1,790.72	8,285.33	
				Steepening of Yield Curve	$DF_t$	$\Sigma CF \times DF_t$	$\Sigma CF \times DF_t \times t$	$D^* = \frac{8,003.98}{1,745.36} = 4.58586$ years
				6.8%	$1/1.068 = 0.9363$	140.45	140.45	
				8.1%	$1/(1.081)^2 = 0.8558$	128.36	256.73	
				9.1%	$1/(1.091)^3 = 0.7701$	115.51	346.53	
				9.6%	$1/(1.096)^4 = 0.6930$	103.96	415.82	
				10.5%	$1/(1.105)^5 = 0.6070$	698.05	3,490.25	
				11.6%	$1/(1.116)^6 = 0.5176$	559.03	3,354.21	
						1,745.36	8,003.98	



**60.** The difficulty with demand deposit accounts arises because, while payable on demand, the actual timing of repayment is uncertain. There are several possible approaches to defining the duration for such deposits.

- Demand deposits can be considered as bonds that are instantly repayable. Under this assumption, the duration of demand deposits is approximately zero.
- More directly, the net withdrawal sensitivity of demand deposits ( $\Delta DD/DD$ ) to interest rate changes ( $\Delta R$ ) can be examined. Because demand deposits pay either low explicit or implicit interest—where implicit interest takes forms such as subsidized checking fees—there tend to be increased withdrawals and switching into higher yielding instruments as interest rates rise. Regression analysis can be used to estimate this sensitivity.
- Simulations, based on forecasts of future interest rates and the net withdrawals of depositors over some future time period, can be used to estimate cash flows. Taking the discounted present values of these cash flows, a duration measure can be calculated.

**61.** In addition, banks may choose not to move rates paid on deposits in line with market rates, further complicating the measurement of interest rate risk exposure.

### Part 3. FSIs and Stress Testing

**62.** FSIs can be used in conjunction with stress testing to enhance the quality of financial stability analysis. This section of the appendix outlines how this can be done, while highlighting their different roles and the limits this places on their comparability. It briefly describes what a stress test is but does not discuss how to conduct one. Rather, it references relevant analytical work that provides an overview of this complex topic.<sup>22</sup>

**63.** Stress testing aims to assess the impact of potential shocks on the soundness of a financial system by applying them to a model of the system. The type of shock is chosen to represent identifiable risks, while the model is customized to reflect the structure of the financial system. For many countries, the model can

be quite simple—a spreadsheet of the balance sheets and income statements of banks in the system—while in complex financial systems, institutions’ risk management models can be used.<sup>23</sup> Typically, stress tests will evaluate the change in the capital of the financial sector stemming from a particular macroeconomic event, such as an exchange rate depreciation or a recession-induced deterioration in asset quality. The size of stress test shocks should be “large but plausible,” since the results of a shock that is regarded as too extreme may not be credible. Stress tests are used to represent macroeconomic scenarios that can involve several simultaneous (“correlated”) shocks. They are also used for sensitivity analysis where the shock’s impact is evaluated separately to assess the vulnerability of the financial system to specific risk factors.

**64.** Stress testing and FSIs play different but complementary roles in surveillance. Stress testing is a tool for analyzing the financial system that is forward looking in the sense that it seeks to assess the impact of possible macroeconomic events whose probability is uncertain. In contrast, FSIs are data showing the current condition of the system. Each surveillance tool can contribute to the effectiveness of the other in several ways.

- An analysis of FSIs can be used prior to a stress-testing exercise to help identify the vulnerabilities that need to be analyzed further through stress testing. For example, if FSIs show that the net open position in foreign currency is significant in either the banking or corporate sectors, this would suggest that stress testing using an exchange rate shock is needed.
- The output of simple stress tests is often shown as a change in an FSI—the regulatory capital ratio. In some stress tests, changes in other FSIs are also reported, in which case they can provide information on (or “benchmark”) the relationship among the FSIs, allowing them to be used together more effectively.<sup>24</sup> For example, shocks to assess credit risk could reveal how much the NPL to gross loans FSI would need to increase to push the capital ratio FSI below 8 percent. This relationship would be based on an assumption built into the stress test about how banks provision against NPLs derived from supervisory guidelines. This information

<sup>22</sup>An overview of stress-testing methods is provided in Jones, Hilbers, and Slack (2004) and in Blaschke and others (2001).

<sup>23</sup>For a description of how a stress test was implemented in a complex financial system, see Hoggarth and Whitley (2003).

<sup>24</sup>This point is developed in IMF (2003d).

would help users of FSIs judge how concerned they should be when they observe a deterioration in asset-quality FSIs.

- Stress tests can shed light on the sensitivity of FSIs to institutional or regulatory changes. For example, they could reveal how a change in loan classification or provisioning rules would affect the capital ratio FSI.
- Stress tests can shed light on vulnerabilities in areas where data for the FSIs are lacking by relying on informed assumptions, which could be based on analogous situations in other countries or qualitative information. For example, if data on the foreign currency liabilities of the corporate sector are lacking, partial data from a few banks could be used as the basis for an assumption about this exposure in a stress test. Of course, the limitations that these assumptions impose on the analysis must be taken into account.

**65.** The scope for exploiting the complementarity between stress testing and FSIs is probably greatest in the area of market risk, because of the relatively advanced state of market risk modeling and stress testing. This can be an attractive option, because market risk FSIs for interest rate risk (that is, duration) and foreign exchange risk can be technically difficult to compile.<sup>25,26</sup> It is most likely to be feasible in more sophisticated financial systems where financial institutions that face significant market risk conduct frequent market risk stress tests as an integral part of their risk management. In principle, the output of these stress tests could be used to generate a measure of potential loss arising from market risk that could serve as a soundness indicator. Since the cost of implementing additional stress tests is low, the authorities may be able to work with these institutions to implement standardized shocks at regular intervals that can then be aggregated (which protects confidentiality) to produce it. The results from these stress tests could be presented in a form comparable to a market risk FSI (for example, as a measure of loss relative to capital for a shock of a given size). However, in implementing such an approach, a number of technical issues would need to be addressed,

<sup>25</sup>Market interest rate risk should be distinguished from the liquidity risk arising from the maturity mismatch on banks' balance sheets, deriving from their maturity transformation role, that is captured by other FSIs such as the ratio of liquid assets to short-term liabilities.

<sup>26</sup>The section on interest rate risk in this appendix highlights how difficult it is to measure this risk.

such as how to accommodate differences in risk management models across institutions.<sup>27</sup>

**66.** In using FSIs and stress testing together, however, due attention needs to be paid to their different roles in surveillance and the limits this places on their comparability.

- Experience has shown that stress testing can play a valuable role in focusing discussions on financial soundness. Specifically, it often helps develop a consensus on the risks a financial system faces and the possible policy responses by highlighting the potential effect and cost of shocks. To serve this purpose, each stress-testing exercise must be tailored to the features of a financial system and needs of the country. Thus, there can be no "standard" method for conducting stress tests comparable to the statistical methodology developed for compiling FSIs and presented in this *Guide*.
- Stress tests rely on judgments and assumptions with respect to the size of the shocks and the structure of the models used. They are also subject to the limitation that the probability of a shock is not known with any degree of precision. Thus, stress test output should not be reported or used outside the context of the stress test exercise. This implies that stress test output cannot be regarded as equivalent in any sense to FSIs, which are based on data and measure the actual condition of a financial system. In particular, FSIs can be used on a stand-alone basis and are subject to rigorous standards of data quality.

**67.** A final consideration when using stress tests and FSIs together is that, to the extent possible, they should rely on the same data sources, as well as methods of aggregation and consolidation. The bank balance sheets and income statements to which shocks are applied in simple stress tests should also be the data on which the FSIs are based. From this perspective, such stress tests can be viewed as a tool for analyzing these data that complements the analysis of FSIs.

**68.** The output of these stress tests is typically subjected to peer group analysis (for example, domesti-

<sup>27</sup>This complementarity with respect to market risk reflects the close relationship between FSIs and stress testing at the analytic level. For example, the estimated direct loss from a stress test of an exchange rate shock can be approximated by the change in the exchange rate (that is the shock) multiplied by the net open foreign exchange position FSI. This is explained in IMF (2003e).

cally owned banks and foreign bank subsidiaries) to analyze the distribution of the impact of shocks across different parts of a financial system. To effectively integrate the analysis of FSIs and stress testing, they would need to use the same peer groups (which would be natural since they are focusing on the same risks). Similarly, for stress tests applied to individual bank balance sheets—which usually are cross-border consolidated and could alternatively be

cross-sector consolidated—attention should be paid to whether FSIs are based on the same data consolidation approach. Finally, in the case of more sophisticated approaches to stress testing that rely on macroeconomic models and banks' risk management models, it may be difficult to achieve a high degree of comparability, and close attention may need to be paid to the specification of the models when using FSIs and stress tests together.

# Appendix VII. Glossary of Terms

## Part I. Financial Corporations

1. This appendix provides more detailed definitions of certain types of institutions in the financial corporations sector than is provided in Chapter 2.<sup>1</sup>

### Insurance Corporations and Pension Funds

2. *Insurance corporations* consist of incorporated, mutual, and other entities whose principal function is to provide life, accident, sickness, fire, and other types of insurance to individual units or groups of units through the pooling of risk. Because of the different risks to be managed, insurance companies can be subdivided into nonlife (casualty) insurance companies and life insurance companies, which include commercially provided pension and annuity services. For nonlife insurance companies, payment to a policyholder depends on an event occurring that triggers a claim. In contrast, for life insurance companies there is a certainty that a claim will occur, and the payment of premiums may be viewed as savings that are withdrawn when claims are made. Usually the expectation is that there is a considerable lapse of time between the initiation of a life insurance policy and the payment of a claim.

3. *Pension funds* are constituted in such a way that they are separate institutional units from the units that create them. They are established for the purpose of providing benefits on retirement for specific groups of employees and, perhaps, their dependents. These funds have their own assets and liabilities, and engage in financial transactions on the market on their own account. As with life insurance policies, pension fund liabilities tend to be long term in nature.

4. Pension funds are organized and directed by private or government employers, or jointly by individ-

ual employers and their employees. They are funded by the employees and/or employers through regular contributions and from income earned from financial assets. In the *Guide*, pension funds do not include pension arrangements for the employees of private or government entities that do not maintain a separately organized fund, nor do they include arrangements organized by nongovernmental employees and for which the reserves of the fund are simply added to that employer's own reserves or invested in securities issued by that employer.

5. While maintaining a pool of liquid assets, because of the long-term nature of their liabilities, pension funds and insurance companies (particularly life insurance companies) usually invest in longer-term security market instruments, both bonds and equities, or in real estate. This investment behavior helps support the development of capital markets, both in terms of breadth and depth, and thus contributes to the broadening of the financing base for borrowers.

### Securities Dealers

6. *Securities dealers* include individuals or firms that specialize in security market transactions by (1) assisting firms in issuing new securities through the underwriting and market placement of new security issues and (2) trading in new or outstanding securities on their own account. Only underwriters and dealers that act as financial intermediaries are classified within this category. Security brokers and other units that arrange trades between security buyers and sellers but do not purchase and hold securities on their own account are classified as financial auxiliaries.

7. By their nature, securities dealers facilitate both primary and secondary market activity in securities. In particular, these institutions can help provide liquidity to markets, both by encouraging borrower and investor activity—not least through the provision of

<sup>1</sup>These definitions are drawn from national accounts sources. For instance, see paragraphs 96 to 101 of the *Monetary and Financial Statistics Manual (MFSM)* (IMF, 2000a).

information on market conditions—and through their own trading activity.

### Investment Funds

**8.** *Investment funds* are institutional units, excluding pension funds, that consolidate investor funds for the purpose of acquiring financial assets. Examples are mutual funds, including money market funds; investment trusts; unit trusts; and other collective investment units. Investors usually purchase shares in the fund that represent a fixed proportion of the fund.

**9.** In investment funds, professional fund managers make the selection of assets, thereby providing individual investors with an opportunity to invest in a diversified and professionally managed portfolio of securities without the need for detailed knowledge of the individual companies issuing the stocks and bonds. Usually, the type(s) of investment undertaken are specified, and the investment funds' managers must adequately inform investors about the risks and expenses associated with investment in specific funds, not least because the value of some types of funds can be highly variable.

**10.** The liquidity of investment funds can vary considerably. Some types of funds are illiquid or have limited liquidity. Such funds are more likely to be investing in longer-term securities. In other cases, shares issued by investment funds are as (or nearly as) liquid as deposits and other liabilities issued by depository corporations. Money market funds are included in this latter category. Because of the liquidity of their liabilities, they tend to invest in short-term debt instruments, such as certificates of deposit and commercial paper.

### Other Financial Intermediaries

**11.** *Finance companies* are primarily engaged in the extension of credit to nonfinancial corporations and households. Many finance companies are captive subsidiaries that raise funds to be used by the parent corporations. Captive finance companies that are separate institutional units and that do not issue deposits or close substitutes for deposits should be classified as other financial intermediaries. Finance companies that are not separate should be included as part of the parent corporations in the appropriate subsector.

**12.** *Financial leasing companies* engage in financing the purchase of tangible assets. The leasing company is the legal owner of the goods, but ownership is effectively conveyed de facto to the lessee, who incurs all benefits, costs, and risks associated with ownership of the assets.

**13.** *Vehicle companies* are financial entities created to be holders of securitized assets or assets that have been removed from the balance sheets of corporations or government units as part of the restructuring of these units. Many are organized as trusts or special purpose vehicles created solely to hold specific portfolios of assets or liabilities.

**14.** *Specialized financial intermediaries* include financial holding corporations, companies that provide short-term financing for corporate mergers and takeovers (but do not take deposits), export/import finance firms, factors or factoring companies, venture capital and development capital firms, and pawnshops that predominantly engage in lending rather than retailing.

### Financial Auxiliaries

**15.** *Financial auxiliaries* consist of those resident corporations and quasi corporations that engage primarily in activities closely related to financial intermediation but that do not themselves perform an intermediation role.

**16.** *Public exchanges and securities markets* are organized exchanges and entities such as security depository companies, accounting and clearinghouses, and other companies providing exchange-related services. Depositories and electronic clearing systems operated by financial corporations fall into this category, as do national self-regulatory organizations that regulate or supervise exchanges and related units.

**17.** *Brokers and agents* are individuals or firms that arrange, execute, or otherwise facilitate client transactions in financial assets. Included are brokers and agents handling the purchase and sale of securities or other financial contracts for clients, and financial advisory services that provide specialized services to brokers and their customers. Because many brokerage firms also trade in financial securities or financial derivatives on the firm's own account, it can be difficult to distinguish the brokers and agents from the underwriters and dealers (who are classified as



financial intermediaries). By convention, this grouping includes only brokers and agents that clearly specialize in brokerage and related activities rather than the intermediation activities generally undertaken by underwriters and dealers.

**18.** *Foreign exchange companies* comprise units that buy and sell foreign exchange in retail or wholesale markets.

**19.** *Financial guarantee corporations* insure customers against losses to specified financial corporations or against financial loss on specific contracts. Guarantors must have the financial capability to fulfill potential obligations. They also typically agree—usually for a fee—to ensure that investors receive payment on securities or other financial contracts. In addition, the financial guarantee corporations grouping includes specialized corporations that protect depositors and investors against the failure of individual financial corporations. Distinguishing precisely between financial guarantee corporations and insurance corporations is difficult. Guarantee corporations

- Do not have a definable pool of assets constituting insurance technical reserves,
- Do not carry positions off balance sheet,
- May not be regulated as insurance corporations, and
- May be limited to specific types of financial transactions.

In borderline cases, these units should be classified as insurance corporations.

**20.** *Insurance and pension auxiliaries* include agents, adjusters, and salvage administrators. The unique nature and, in some countries, the large scale of activity of these units justify their separate identification.

**21.** *Other financial auxiliaries* comprise all other auxiliaries not classified elsewhere. The grouping includes independent units affiliated with the government and established to regulate financial institutions. The *System of National Accounts 1993 (1993 SNA)* recommends classifying these units as part of the central bank subsector. However, these units are not intermediaries, and the activities of some units (such as securities commissioners or insurance regulators) have little relationship to well-recognized central bank activities. Therefore, the *Guide* recommends classification of these units in the financial auxiliaries subsector. Also classified in this category are financial units that facilitate issuance and trad-

ing in financial derivatives but do not actually issue derivatives, and representative offices of foreign depository corporations that do not accept deposits or extend credit, even though they promote and facilitate transactions of the nonresident parent company.

## Part 2. Selected Financial Stability Terms

### Basel Capital Accord

Adopted by the Basel Committee on Banking Supervision (BCBS) in 1988 and amended in 1996, the Basel Capital Accord is an internationally agreed set of supervisory regulations governing the capital adequacy of international banks—capital is measured in relation to the perceived credit and market risk of the assets owned by the banks. The objectives behind the Accord are to strengthen the soundness and stability of the international banking system and to diminish sources of competitive inequality among international banks. At the time of writing, a new Accord is being developed.

### Basel Committee on Banking Supervision

Established by the Central Bank Governors of the Group of Ten (G-10) countries at the end of 1974, the BCBS formulates broad supervisory standards and guidelines. It also recommends statements of best practice in the expectation that individual authorities will take steps to implement them through detailed arrangements—statutory or otherwise—that are best suited to their own national systems. It encourages convergence toward common approaches and common standards without attempting detailed harmonization of member countries' supervisory techniques. One of its major objectives is to close gaps in international supervisory coverage in pursuit of the two following basic principles: (1) no foreign banking establishment should escape supervision, and (2) supervision should be adequate.

### Basel Concordat

The Basel Concordat refers to the document, "Principles for the Supervision of Banks' Foreign Establishments" prepared by the Basel Committee in 1983. The Basel Concordat sets out the principles for sharing supervisory responsibility for banks' foreign

branches, subsidiaries, and joint ventures between host and parent (or home) supervisory authorities.

### **Basel II**

The BCBS's *International Convergence of Capital Measurement and Capital Standards: A Revised Framework*, released in June 2004, is a comprehensive revision of the Basel capital adequacy standards. It includes three "pillars" for ensuring the strength of banking institutions. The first pillar covers the minimum capital requirements for banks, including changes in the risk weights for assets of banks in order that they better reflect the underlying risk incurred, and it includes alternative methodologies for assessing risk, based on banks' internal risk assessment procedures. The second pillar focuses on enhancing the supervisory review process. The third pillar focuses on enhancing market discipline over banking institutions through increased disclosures.

### **Bid-Ask Spread**

The bid-ask spread is an indicator of market tightness, a dimension of market liquidity. It is calculated as the difference between the bid and ask (offer) prices of a financial instrument. *Bid* is the highest price a prospective buyer is prepared to pay at a particular time, and *ask* is the lowest price acceptable to a prospective seller for trading a unit of a given security.

### **CAMELS Framework**

CAMELS is a commonly used supervisory framework that groups indicators of bank soundness into six categories. The categories are (1) capital adequacy, (2) asset quality, (3) management soundness, (4) earnings, (5) liquidity, and (6) sensitivity to market risk.

### **Capital Adequacy Ratio**

The capital adequacy ratio is the central feature of the Basel Capital Accord. It is an analytical construct in which regulatory capital is the numerator and risk-weighted assets are the denominator. The minimum ratio of regulatory capital to risk-weighted assets is set at 8 percent (the core regulatory capital element should be at least 4 percent). These ratios

are considered the minimum necessary to achieve the objective of securing over time soundly based and consistent capital ratios for all international banks.

### **Capital and Reserves**

Capital and reserves is the difference between total assets and total liabilities in the balance sheet. It represents the equity interest of the owners in an entity and is the amount available to absorb unidentified losses.

### **Committee on Payment and Settlement Systems**

Created in 1990, this Committee originally served as a forum for the central banks of the G-10 countries to monitor and analyze developments in domestic payment, settlement, and clearing systems, as well as in cross-border and multicurrency settlement schemes. In recent years, it has extended its work by developing relationships with non-G-10 central banks, particularly those of emerging market economies. The Bank for International Settlements (BIS) hosts the secretariat.

### **Consolidation**

Consolidation is the elimination of positions and flows that occur among institutional units that are grouped together for statistical purposes. For Financial Soundness Indicator (FSI) purposes, reporting on a consolidated group basis preserves the integrity of capital by eliminating its double counting.

### **Contagion**

Contagion refers to the transmission or spillover of financial shocks or crises across institutions, countries, and/or asset classes.

### **Contingencies**

These are contractual financial arrangements whose principal characteristic is that one or more conditions must be fulfilled before a financial transaction takes place. Contingencies are not recognized as financial assets (liabilities) on balance sheet because they are not actual claims (or obligations). However, these arrangements can potentially affect financial soundness.

### Convexity

Convexity is a measure of the sensitivity of prices of fixed-rate instruments (for example, bonds) to interest rate changes. It is the second derivative of a bond's price with respect to interest rates—duration is the first derivative. The longer the maturity of an instrument, the greater the convexity; for instruments with the same duration, the more dispersed the cash flows, the greater the convexity. The higher the convexity, the greater the price gain or price loss for a given change in interest rates. Used together with duration, convexity provides a more accurate approximation of the gains and losses on a fixed-rate instrument portfolio from a given change in interest rates than does duration alone.

### Credit Risk

This is the risk that one party to a financial contract will fail to discharge an obligation and thus cause the other party to incur a financial loss. Because of deposit takers' role as financial intermediaries, monitoring the credit risk of their assets through FSIs (such as nonperforming loans to total loans) is central to any assessment of financial soundness.

### Deposit Insurance Scheme

This refers to a formal scheme normally established by law that is designed to limit the losses of depositors in the event of bank failure(s). Typically, the scheme is intended to support the confidence in the financial system of small-scale depositors and thus reduce the risk of systemic crises being caused by panic withdrawals of deposits. The scheme can be privately or government operated and funded.

### Double Leveraging of Capital

These are situations where related entities share capital. For example, if a deposit taker owns equity in another deposit taker in the group, capital is said to be double leveraged because both entities are resting activity on the same pool of capital. When capital is double leveraged, the capital actually available to the group to meet unanticipated losses is less than the data imply.

### Financial Sector Assessment Program (FSAP)

A joint IMF and World Bank program introduced in May 1999, the FSAP aims to increase the effective-

ness of efforts to promote the soundness of financial systems in member countries. Supported by experts from a range of national agencies and standard-setting bodies, work under the program seeks to identify the strengths and vulnerabilities of a country's financial system, to determine how key sources of risk are being managed, to ascertain the sector's developmental and technical assistance needs, and to help prioritize policy responses. It also forms the basis of Financial System Stability Assessments, in which IMF staff address financial sector issues of relevance to IMF surveillance, including risks to macroeconomic stability stemming from the capacity of the financial sector to absorb macroeconomic shocks.

### Financial Stability Forum (FSF)

The FSF was created in February 1999 to promote international financial stability through enhanced information exchange and international cooperation in financial market supervision and surveillance. The FSF brings together, on a regular basis, national authorities responsible for financial stability in significant international financial centers, international financial institutions, sector-specific international groupings of regulators and supervisors, and committees of central bank experts. The FSF is serviced by a secretariat housed at the BIS.

### Global Financial Stability Report

Launched in March 2002, this semiannual IMF publication focuses on current conditions in global financial markets, highlighting issues of financial imbalances and structural problems that could pose risks to financial market stability and sustained market access by emerging market borrowers.

### Hedonic Price Indices

Hedonic price indices are quality-adjusted price indices. Using regression analysis, a hedonic price index measures the underlying price changes of goods and/or other assets, unaffected by changes in price due to quality changes. In the *Guide*, the hedonic regression method is one approach to compiling real estate price indices.

### Herfindahl Index

This index is a measure of industry concentration. The value of the index is the sum of the squares of

the market shares of all firms in an industry. Higher values indicate greater concentration.

### **Hui-Heubel Ratio**

This ratio is a measure of resilience and depth in financial markets. The ratio relates the volume of trades (as a proportion of the outstanding stock of the instrument) to its impact on prices. The larger the volume of trades relative to the price changes, the deeper and more resilient the market is.

### **Internal Ratings Based (IRB) Approach**

The IRB approach of the Basel Capital Accord provides a single framework by which a given set of risk components or “inputs” are translated into minimum capital requirements. The framework allows for both a foundation method and more advanced methodologies. In the foundation method, banks estimate the probability of default associated with each borrower, and the bank supervisors supply the other inputs. In the advanced methodology, a bank with a sufficiently developed internal capital allocation process is permitted to supply other necessary inputs as well.

### **International Accounting Standards (IASs)**

These are a series of standards, developed by the London-based International Accounting Standards Board, that provide the underlying conceptual framework and specific standards for the preparation and presentation of financial statements of commercial, industrial, and business reporting enterprises, whether in the public or the private sector.

### **International Banking Statistics (IBS)**

These data cover international banking business and are compiled and disseminated by the BIS on a quarterly basis. The IBS system has two main data sets: locational banking statistics, which provide data on a residence basis, and consolidated banking statistics, for which reporting banking institutions provide data on a worldwide consolidated basis.

### **International Financial Reporting Standards 2004 (IFRS)**

The IFRS is the new title for the International Accounts Standards, indicating the body of stan-

dards in effect as of March 31, 2004 and applicable beginning on January 1, 2005. The IFRS incorporate many changes to the standards, but among the most important are those relating to the recognition, measurement, and disclosure of financial instruments.

### **Islamic Financial Services Board**

Established in Malaysia in November 2002, the Board is an association of central banks and monetary authorities, as well as other institutions, that are responsible for the regulation and supervision of the Islamic financial services industry.

### **Kurtosis**

This is a measure of dispersion that can be used in peer group analysis. It measures the extent to which observed data fall near the center of a distribution or toward its tails. The kurtosis of a normal distribution equals three; a kurtosis value greater than three indicates a high peak, a thin midrange, and fat tails; and a value less than three denotes a distribution with a fat midrange on either side of the mean and a low peak. An alternative formulation subtracts three from the calculated value, so that the normal distribution has a value of zero; positive values indicate a high peak and negative values a low peak.

### **Laspeyres Index**

This index is a method of calculating a price index using fixed weights drawn from a specified base period. One common use for the Laspeyres method is to compile real estate price indices for the assessment of the soundness of the financial system.

### **Leverage**

Leverage refers to having access to the full benefits arising from holding a position in a financial asset without having to fully fund the position with own funds. Leverage can magnify the rate of return (positive and negative) on a position or investment beyond the rate obtained by direct investment of own funds. It can be built up by borrowing (on-balance-sheet leverage, commonly measured by debt-to-equity ratios) and/or by using financial derivatives. The buildup of leverage positions can be associated with rising asset prices and risk exposures.

### Liquidity

In terms of markets, liquidity generally refers to the ability to buy and sell assets quickly and in large volume without substantially affecting the asset's price. In terms of instruments, liquidity generally refers to those assets that can be converted into cash quickly without a significant loss in value.

### Liquidity Risk

This is the risk that assets may not be readily available to meet a demand for cash. Because deposit takers' assets are typically of longer maturity than their liabilities, monitoring deposit takers' liquidity risk through FSIs (such as liquid assets to total assets and liquid assets to short-term liabilities) is important for financial soundness analysis.

### Loan Loss Provisions

These are net allowances that deposit takers make against bad or impaired loans, based on their judgment as to the likelihood of losses occurring. Loan loss provisioning affects both income and, depending on the type of provisions made, capital.

### Macroprudential Analysis

This is the assessment and monitoring of the strengths and vulnerabilities of financial systems. It encompasses quantitative information from both FSIs and macroeconomic indicators that provide (1) a broader picture of economic and financial circumstances such as GDP growth and inflation, along with information on the structure of the financial system, and (2) qualitative information on the institutional and regulatory framework—particularly through assessments of compliance with international financial sector standards and codes—and the outcome of stress tests.

### Market Depth

Market depth is a dimension of market liquidity and refers to the ability of a market to handle large trade volumes without a significant impact on prices.

### Market Risk

This is the risk of losses on financial instruments arising from changes in market prices. Market risk covers interest rate, foreign exchange, equity price, and commodity price risk. As financial intermedi-

aries that take positions in financial instruments, such losses in value affect the income and capital of deposit takers. The duration of assets and liabilities can be used to estimate potential losses arising from changes in market interest rates. Another approach is through the use of stress tests.

### Market Tightness

Market tightness is a dimension of market liquidity. It is measured by the general cost incurred in a transaction irrespective of market price.

### Notional Amount

Sometimes described as the nominal amount, the notional amount is the amount underlying a financial derivative contract that is used for calculating payments or receipts on the contract. It provides an indication of the potential risk exposure associated with the financial derivative contact. For instance, if a bond is issued and the amount raised is swapped into another currency, the notional value of the derivative is equal to the amount swapped.

### Price Discovery

Price discovery is the process of establishing a market price at which demand and supply for an item are matched. By bringing buyers and sellers together and making the process transparent, financial markets facilitate price discovery.

### Red Book (Committee on Payment and Settlement Systems)

The *Red Book* is a publication on payment systems, produced by the BIS's Committee on Payment and Settlement Systems. Its objective is to provide a comprehensive description of a country's payment systems. The *Red Book* is revised periodically.

### Regulatory Capital

Regulatory capital refers to a specific definition of capital developed by the BCBS and used as the numerator in the BCBS's capital adequacy ratio. The definition includes, beyond the traditional capital and reserve account items, several specified types of subordinated debt instruments that need not be repaid if the funds are needed to maintain minimum capital levels.



**Resilience**

Resilience is a dimension of financial market liquidity and is the speed with which price fluctuations arising from trades are dissipated or the speed with which imbalances in orders (such as more buy than sell orders) are reversed with new orders. It can be measured using the Hui-Heubel Ratio.

**Risk Exposures**

In terms of financial stability analysis, among the types of risk exposures faced by a deposit taker that require monitoring are included credit risk, market risk, liquidity risk, foreign exchange risk, large exposures risk, equity price risk, and real estate price risk.

**Risk-Weighted Assets**

In the *Guide*, risk-weighted assets refer to a concept developed by the BCBS for the capital adequacy ratio. Assets are weighted by factors representing their riskiness and potential for default.

**Skewness**

Skewness is a measure of dispersion that can be used in peer group analysis. It indicates the extent to which data are asymmetrically distributed around the mean. Symmetrical distributions have a skewness value of zero. A distribution with negative skewness has more observations in the left tail (left of the peak), and a distribution with positive skewness has more observations in the right tail.

**Triennial Central Bank Survey**

The Triennial Central Bank Survey is a survey of foreign exchange and derivatives markets coordinated by the BIS. The objective is to obtain reasonably comprehensive and internationally consistent

information on the size and structure of foreign exchange and over-the-counter derivatives markets.<sup>2</sup> The purpose of these statistics is to increase market transparency and thereby help central banks, other authorities, and market participants to better monitor activity in the global financial system.

**Turnover Ratio**

The turnover ratio is an indicator of market depth, a dimension of market liquidity. It is calculated as the number of securities bought and sold during a trading period, divided by the average of the number of securities outstanding at the beginning and the end of the trading period.

**Variance**

Variance is a measure of dispersion around the mean calculated as the sum of squared deviations of each observation from the mean, divided by the number of observations (for population variance) or the number of observations minus one (for sample variance).

**Volatility**

Volatility is the tendency of quantities or prices to vary over time. Usually measured by the variance or annualized standard deviation of changes, volatility is said to be high if quantities or prices move significantly both up and down. The higher the volatility, usually the higher the risk, as the ability to convert an asset into cash quickly without a significant loss in value is less certain.

<sup>2</sup>The BIS also produces semi-annual data on the over-the-counter (off-exchange) derivatives market. These data are collected on a global consolidated basis from major banks and dealers in G-10 countries and cover notional and market values (see <http://www.bis.org/press/p021108.thm>).