

Part II

Specification of Financial Soundness Indicators

Chapter Six

Specification of Financial Soundness Indicators for Deposit-Takers

Introduction

6.1 This chapter brings together the concepts and definitions set out in Part I of the *Guide* to explain how FSIs for deposit-takers are to be calculated. The next two chapters cover the calculation of FSIs for other sectors and for financial market FSIs, respectively. The final chapter in Part II covers real estate price indices. The indicators set out in these chapters are those that the IMF's Executive Board determined to be core and encouraged FSIs at its meeting in June 2001.

Accounting principles

6.2 Guidance on the accounting principles for use in compiling the underlying series required for each FSI are set out in Chapters 2, 3, and 4. In summary:

- The definition of deposit-takers is provided in Chapter 2 (paragraph 2.4 to 2.10)
- Transactions and positions should be recorded on an **accrual** basis of accounting, and only existing actual assets and liabilities 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 to be the basis of valuation of transactions, and for positions in traded securities. For positions in nontradable instruments, the *Guide* acknowledges that nominal value (supported by appropriate provisioning policies) may provide a more reliable measure 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 a center of economic interest (see paragraphs 3.35-3.36).
- 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).
- Short-term **maturity** is defined as one year or less (or payable on demand), with over one year defined as long-term (see paragraphs 3.49 to 3.50). Duration is also defined (see paragraphs 3.51 to 3.52).

6.3 Except where otherwise noted, these are the concepts to be employed in compiling the underlying series used to calculate FSIs.

Underlying series

6.4 The underlying series to be used in calculating individual FSIs are defined in Chapter 4. In describing the FSIs ahead, some brief descriptions of the underlying series are provided, with reference to the more detailed definition provided in the earlier chapter. The sector data should be compiled on a consolidated-based approach as described in Chapter 5; that is, encompassing both consolidated group reporting and consolidation adjustments at the sector-level (Box 5.1).

Calculation of FSIs

6.5 Most FSIs are calculated by comparing two underlying series to produce a ratio, as described ahead. For some FSIs, when one or both of the underlying series can be defined in alternative ways, these alternatives are explained.

6.6 The *Guide* requires the calculation of FSIs on a domestically-controlled, cross border consolidated basis and encourages calculation on a domestically consolidated basis, as described in Chapter 5 (paragraphs 5.31 and 5.32). Additional possibilities arise—for instance, separate ratios could be calculated for foreign-controlled deposit-takers, or separate ratios for deposit-takers that are commercial banks and savings banks, etc. For all FSIs, ratios could be calculated for groupings based on these or other structural disaggregations of the financial sector described ahead.

6.7 Depending upon the analytical needs of users, the guidance provided in the *Guide* is intended to allow compilers the flexibility to calculate additional FSIs that are not specifically described in this *Guide*, using the concepts and definitions provided for the underlying series. Nonetheless, any dissemination of such FSI data should be accompanied by explanatory information (metadata) so that the basis of calculation is transparent.

Structural Indicators

6.8 Also, as noted in Chapter 2, each country has its own unique financial structure developed over time by history and culture, and it will affect the range of data available for calculating FSIs and any assessment of FSIs that are disseminated. Thus, before the description of individual FSIs for financial corporations, the *Guide* identifies a set of structural indicators that might be relevant for any such assessment. This list goes beyond the agreed FSIs.

6.9 To provide an overview of the size and ownership structure of the deposit-taking sector in order to support the interpretation of FSIs, the following key structural indicators could be disseminated on at least an annual basis:

- Number of domestically incorporated deposit-takers and number of branches of foreign banks.
- Numbers of deposit-takers opened or closed during the period.
- Number of domestic employees in all resident deposit-takers.
- Number of branch outlets of deposit-takers in the economy.
- Total value of assets (domestic and foreign) owned by resident deposit-takers.

of which: (i) domestically controlled deposit-takers¹²⁵

(a) government control

(b) private control

(ii) foreign controlled deposit-takers

(a) subsidiaries of nonresident parent entities

(b) branches of nonresident parent entities

¹²⁵ In those rare instances where the parent might be considered as being located both in the domestic and a foreign economy and the deposit-taker classifies such entities as domestically controlled, separately identifying such entities when disseminating any data on financial structure might be considered.

6.10 As described in Chapter 5, in the *Guide* control is defined as the ability to determine general corporate policy by choosing (or removing) appropriate directors. Any deposit-taker that is neither controlled by the government of the economy in which it is located, nor is foreign controlled (as defined in paragraph 5.11), is to be classified as private domestically controlled.

6.11 The number, employment, and value of assets owned by the deposit-taking sector provide information on the size of the sector. Information on the numbers of deposit-takers opened or closed, and information from FSIs such as the spread between deposit and lending rates provides some information on competitive pressures or whether the sector could be under stress. The number of branch outlets in the economy can be source of information on both cost pressures (or not), and about the size of deposit-taking industry within the economy.

6.12 Attributing the value of assets between domestically-controlled, including government-controlled, deposit-takers and subsidiaries and branches of foreign parent entities provides an indication of the ownership structure of the deposit-taking sector. Also, the value of assets could be divided into claims on residents and nonresidents, thereby indicating the importance of foreign business to deposit-takers (and potentially to deposit-taking subgroups). When the value of deposit-takers' assets and, in particular, the value of loans to nonfinancial corporations and households is compared to GDP, the importance of deposit-takers' financial intermediation to the economy is highlighted. In this regard, compilers could also disseminate information from national accounts data on the value added by domestic deposit-takers' compared with GDP.

6.13 In many economies, the deposit-taking sector may consist of specialist institutions described in Chapter 2. If so, the nature of the banking business undertaken by various types of specialist institutions may differ significantly. To further understand the structure of the financial system, compilers are encouraged to distinguish structural information on commercial banks and on distinctive types of specialist bank such as saving bank, cooperative bank, etc. Also, where appropriate, offshore deposit-takers—those licensed to

take deposits from and lend primarily, or even only, to residents of other economies—should be distinguished.

6.14 The concentration of deposit-takers' assets is also important to understanding the structure of the financial system. Thus, the *Guide* encourages dissemination of the additional indicators below:

- Names and, in terms of the value of deposit-takers' assets, the combined market share of the top five resident deposit-takers.
- Number of deposit-takers that account for 25, 50, and 75 per cent of the value of deposit-takers' total assets.
- Measures of concentration in the sector. One possibility is the Herfindahl Index, which is calculated as the sum of squares of the market shares of all firms in the sector, and is described in more detail, along with other measures of concentration, in Chapter 13.

6.15 Finally, countries are encouraged to disseminate information on their deposit insurance scheme, because the level of coverage of individual depositors' funds can affect economic behavior with implications for financial stability.

Financial Soundness Indicators

6.16 There are 14 core and 13 encouraged FSIs for deposit-takers. Other than the two interest rate based indicators, which are described in Chapter 8, the agreed FSIs are set out in the table below and described in this chapter. The core FSIs are indicated. For exposition purposes, *capital-based FSIs* are presented first, followed by *asset-based FSIs* and then *income and expense FSIs*.¹²⁶ In some instances, the chapter makes suggestions for additional data that enhance the usefulness of the FSI described. The text makes clear when data discussed are beyond the agreed FSIs.

¹²⁶ This presentation approach is also adopted in the dissemination tables in Chapter 12. But it is recognized that there are alternative approaches, such as grouping return on equity and assets together.

| Deposit-takers: Financial Soundness Indicators |
|---|
| <p><i>Capital-based</i></p> <ul style="list-style-type: none"> (i) Regulatory capital to risk-weighted assets (core) (ii) Regulatory Tier I capital to risk-weighted assets (core) (iii) Capital to assets (iv) Return on equity (net income to average capital [equity]) (core) (v) Nonperforming loans net of provisions to capital (core) (vi) Large exposures to capital (core) (vii) Duration of assets and of liabilities* (core) (viii) Net open position in foreign exchange to capital (core) (ix) Gross asset and liability positions in financial derivatives to capital (x) Net open position in equities to capital <p><i>Asset-based</i></p> <ul style="list-style-type: none"> (xi) Liquid assets to total assets (liquid asset ratio) (core) (xii) Liquid assets to short-term liabilities (core) (xiii) Customer deposits to total (non-interbank) loans (xiv) Return on assets (net income to average total assets) (core) (xv) Nonperforming loans to total gross loans (core) (xvi) Sectoral distribution of loans to total loans (core) (xvii) Residential real estate loans to total loans (xviii) Commercial real estate loans to total loans (xix) Geographical distribution of loans to total loans (xx) Foreign currency-denominated loans to total loans (xxi) Foreign currency-denominated liabilities to total liabilities <p><i>Income and expense-based</i></p> <ul style="list-style-type: none"> (xxii) Interest margin to gross income (core) (xxiii) Trading and foreign exchange gains (losses) to [gross] total income (xxiv) Noninterest [operating] expenses to gross income (core) (xv) Personnel expenses to noninterest expenses <p>* While capital is not in the denominator, duration is a measure of interest rate sensitivity and is used to estimate potential gains and losses arising from interest rate movements in the context of capital strength.</p> |

6.17 Unless otherwise stated, all the line references in this section refer to Table 4.1: Deposit-takers in Chapter 4.

Capital-based FSIs

6.18 For cross-border consolidated-based data, capital is defined in terms of the Tier 1 capital (line 32 in Table 4.1, and defined in paragraphs 4.67 and 4.70), regulatory capital (line 36, paragraph 4.65), and total capital and reserves (line 30, and defined in paragraph 4.59).

6.19 As noted by the Basel Committee in its' Capital Accord, ***Tier 1 capital*** is a common feature in all countries' banking systems, being the basis on which market and supervisory judgments of capital adequacy are made and having a crucial bearing on profit margins and on a bank's ability to compete. It is less affected than total capital and reserves by period-to-period unrealized valuation changes.

6.20 The data for ***total capital*** (compiled from the balance sheet data) is the residual interest of the owners in the assets of the sector after the deduction of liabilities. It provides a comprehensive measure of the capital resources available to the sector, not least to absorb losses. For instance, when total capital is employed in the "return on capital" FSI ratio, an insight is provided into the extent to which available capital resources are being put to profitable use, while when total capital is employed in the "nonperforming loans net of provisions to capital" ratio an indication is provided of the extent to which losses that can be absorbed before the sector becomes technically insolvent.

6.21 In the absence of Tier 1 data, ***funds contributed by owners and retained earnings*** (including those earnings appropriated to reserves) could be identified (paragraph 4.61).

(i) Regulatory capital to risk-weighted assets

6.22 The first two FSIs measure the capital adequacy of deposit-takers and are based on the definitions used in the Basel Capital Accord. They should be sourced from supervisory data sources.¹²⁷ As even a relatively high average ratio for the sector might mask potential

¹²⁷ The *Guide* encourages compilers to provide metadata for the two capital-based FSIs sourced for supervisory information, amongst other things, explaining the national treatment in Tier 1 of equity investments in other

(continued)

problems at individual deposit-takers, it is also useful to look at the distribution of capital adequacy ratios among individual or groups of deposit-takers using dispersion analysis (see Chapter 13).

6.23 This FSI is calculated by (1) aggregating data on regulatory capital for the reporting population as the numerator; (2) aggregating risk-weighted assets for the reporting population as the denominator; and (3) dividing (1) by (2). Regulatory capital (line 36) and risk weighted assets (line 37) are defined using regulatory standards and concepts and do not correspond directly to capital and assets as shown in the financial balance sheet. The concept of regulatory capital is described in paragraphs 4.65 to 4.70 and that of risk-weighted assets in paragraph 4.71.

(ii) Regulatory Tier I capital to risk-weighted assets

6.24 This FSI is a narrower measure of the previous FSI and is calculated by (1) aggregating data on Tier 1 regulatory capital for the reporting population as the numerator; (2) aggregating risk-weighted assets for the reporting population as the denominator; and (3) dividing (1) by (2). The concepts of Tier 1 capital (line 32) and risk-weighted assets (line 37) are defined in paragraphs 4.67 and 4.70, and 4.71, respectively. Tier 1 capital can be considered a core measure of capital.¹²⁸ As noted above, regulatory capital and risk-weighted assets are defined using regulatory standards and concepts and do not correspond directly to capital and assets shown in financial balance sheets.

(iii) Capital to assets

6.25 This FSI provides an indication of the financial leverage—extent to which assets are funded by own funds—and another measure of capital adequacy of the deposit-taking sector.

banks and financial institutions. Under the Basel Capital Accord, such investments are excluded or not from Tier 1 capital at the discretion of the national authorities.

¹²⁸ See for instance, *International Convergence of Capital Measurement and Capital Standards*, page 3, BCBS (1988)

6.26 The FSI is calculated by taking the total capital and reserves as the numerator, and, for cross-border consolidated data, also Tier 1 capital. In the absence of Tier 1 data, funds contributed by owners and retained earnings (including those earnings appropriated to reserves) could be identified. As the denominator, total assets (line 14) are all nonfinancial and financial assets. Nonfinancial and financial assets are defined in paragraphs 4.34 to 4.35.

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

6.27 This FSI is intended to measure deposit takers' efficiency in using their capital. Over time it can also provide information on the sustainability of a deposit-takers' capital position. The ratio needs to be interpreted in combination with FSIs on capital adequacy, because a high ratio may indicate both high profitability as well as low capitalization, and a low ratio can mean low profitability as well as high capitalization.

6.28 Return on equity is calculated by dividing net income (gross income less gross expenses) 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 (e.g., at beginning and end month), but compilers are encouraged to use the most frequent observations available to calculate the average. The preferred definition of net income is net income (before extraordinary items and taxes) (line 8) as this provides an indication of net operating income. [Views of compilers are particularly welcome on whether this measure of net income or that of net income after extraordinary items and taxes is preferred for this and the return on assets FSI]. Net income and its components are defined in paragraphs 4.15 to 4.31. Capital is measured as total capital and reserves and, for cross-border consolidated data, also Tier 1 capital. In the absence of Tier 1 data, funds contributed by owners and retained earnings (including those earnings appropriated to reserves) could be identified.

6.29 Another additional approach would be to calculate the return on equity including purchased goodwill in the denominator, that is using a measure of capital and reserves closer to commercial accounting concepts.

(v) Nonperforming loans net of specific provisions to capital

6.30 This FSI is intended to compare the potential impact on capital of NPLs, net of provisions. It is an indicator of asset quality. Provided that there is appropriate recognition of nonperforming loans, this ratio can provide an indication of the capacity of bank capital to withstand NPL-related losses. However, 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; for instance, the borrower might well have provided the lender with collateral or other forms of credit risk mitigation.¹²⁹

6.31 The FSI is calculated by taking the value of nonperforming loans (line 42) less the value of specific loan provisions (line 18 (ii)) as the numerator, and capital as the denominator. Capital is measured as total capital and reserves, and, for cross-border consolidated data, also Tier 1 capital.¹³⁰ In the absence of Tier 1 data, funds contributed by owners and retained earnings (including those earnings appropriated to reserves) could be identified. NPLs and specific provisions are defined in paragraphs 4.80 and 4.47, respectively.

6.32 Beyond the agreed FSI, calculation of this FSI for resident and nonresident borrowers separately might be relevant because of differing economic circumstances in the domestic and foreign markets.

(vi) Large exposures to capital

6.33 This FSI is intended to identify vulnerabilities arising from the concentration of credit risk. Large exposure refers to one or more credit exposures to the same individual or group that exceed a certain percentage of regulatory capital, such as 10 percent. This supervisory

¹²⁹ In the terminology of the Basel Capital Accord, the expected recovery in the event of default (ERGD) is unlikely to be zero.

¹³⁰ On a cross-border consolidated basis, some countries may prefer to employ the total regulatory capital in calculating the remaining capital-based ratios instead of, or in addition to, Tier 1 capital. The measures employed should be outlined in the metadata accompanying any data release, and it is strongly recommended that a consistent approach be employed over time.

tool is intended to be applicable at the level of the individual deposit-taker. The *Guide* sets out three approaches to monitoring large exposures at the sector-level.

6.34 One approach is to report the total number of large exposures of deposit-takers that are identified under the national supervisory regime (line 38). For such a measure information on the distribution of number of large exposures among deposit-takers is particularly relevant in order to highlight whether large exposures are concentrated in a few or many deposit-takers. The number of large exposures at various percentages of regulatory capital could be additional analytically useful information, such as the total number of individual large exposures above 10 percent but below 20 percent of regulatory capital, between 20 and 40 percent, and above. In any metadata, the national supervisory approach to large exposures should be described.

6.35 Another approach is to assess large exposures in the context of lending to the largest entities in other sectors, such as the other financial corporations and nonfinancial corporations sectors, as failure of the largest entities in the economy could have systemic consequences. The FSI can be calculated by taking the total exposure of the five largest deposit-takers to the five largest resident entities by asset size (including all branches and subsidiaries) in both the other financial corporations sector and nonfinancial corporations sector, together with that to the general government, (line 51) as a percentage of the deposit-takers capital. Capital is measured as total capital and reserves, and, for cross-border consolidated data, also Tier 1 capital. In the absence of Tier 1 data, funds contributed by owners and retained earnings (including those earnings appropriated to reserves) could be identified.

6.36 Also, connected lending is important to monitor. This can be monitored as a measure of large exposures. It is calculated by taking total exposures to affiliated entities (line 52) as a percentage of capital (defined as in the previous paragraph).

6.37 Going beyond the agreed FSI to monitor large concentrated lending by deposit-takers in relation to their capital, as peer groups or as for the sector as a whole, FSIs that relate to the sectoral—particularly by industry—and geographic distribution of loans could be

investigated. Indications of a build-up of concentrated positions from these data could allow compilers to specify sectors and/or countries for which more detailed information might be required. Another approach to monitoring concentrated lending is to specify a minimum exposure amount in nominal terms at which any search for concentrated lending by deposit-takers could begin.

(vii) Duration of assets and liabilities

6.38 These FSIs (lines 53 and 54) are intended to identify the interest rate sensitivity of deposit-takers' portfolio of financial assets and liabilities.¹³¹ The greater the duration, the greater is the risk of loss/gain of value, and so the impact on capital, if interest rates rise/fall.

6.39 Duration is defined as the weighted average life of financial assets and liabilities, with the weights being the present value of each cash flow as a percentage of the total value of the asset or liability. In other words, duration adjusts maturity to account for the size and timing of payments between now and maturity. For any portfolio, duration will be shorter than maturity if prior to maturity any payment is expected on any of the instruments in the portfolio. Only if an instrument has a single payment at maturity, such as for a zero coupon bond, is duration equal to maturity. A more detailed discussion of the formula for calculating duration is provided in paragraphs 3.51 to 3.52.

6.40 An alternative approach to assessing interest rate risk of a portfolio of assets and liabilities is to use "gap" analysis (see Table 6.1). 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 on fixed-rate instruments.¹³² The net amounts (payment or receipt) expected to be received under single-currency interest rate-based financial derivatives are also entered.

¹³¹ Duration is only "accurate" for small changes in interest rates, as 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.

¹³² Amounts payable on demand are included in the first bucket—0-3 months.

Table 6.1: Interest Rate Risk*
(as at end xxx)

Thousand, unit of account

| | 0 to 3 months | 4 to 6 months | 7 to 12 months | 1 to 2 years | 2 to 5 years | 5 to 10 years | 10 to 15 years | 15 to 20 years | 20 years and above |
|---|--------------------------|--------------------------|---------------------------|-------------------------|-------------------------|--------------------------|---------------------------|---------------------------|-------------------------------|
| Assets | | | | | | | | | |
| Debt instruments | | | | | | | | | |
| Liabilities | | | | | | | | | |
| Debt instruments | | | | | | | | | |
| Interest-rate based, financial derivatives | | | | | | | | | |
| Difference | | | | | | | | | |
| Cumulative Difference | | | | | | | | | |

*For fixed rate instruments to receive/pay fixed rate linked payments, expected amounts to be paid/received are recorded according to their remaining maturity. So 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 to 12 months, and the remainder of the payments in the 1 to 2 years time bucket column.

For variable rate instruments or financial derivatives 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. So, 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 amount to be received (+) or paid (-) is to be recorded, in each time period as appropriate.

6.41 Like duration, the net difference (gap), or indeed the gross positions, in each time bucket can be multiplied by some assumed change in interest rates to gain an indication of the sensitivity of deposit-takers income to changes in interest rates.¹³³ 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.

(viii) Net open position in foreign exchange to capital

6.42 This FSI is intended to identify deposit-takers' exchange rate risk exposures compared with capital. It measures the mismatch (open position) of foreign currency asset and liability positions to assess the potential vulnerability of the deposit-taking sectors' capital position to exchange rate movements. For this FSI dispersion analysis would be particularly relevant. For instance, even if the sector as a whole did not have an exposed foreign exchange position this might not be true for individual deposit-takers or groups of deposit-takers.

6.43 A deposit-taker's open position in foreign exchange should be calculated by summing the foreign currency positions as set out ahead into a single unit of account.¹³⁴ As described in paragraph 3.46, foreign currency items are both those payable (receivable) in a currency other than the domestic currency (foreign currency denominated) and those payable in domestic currency but with the amounts to be paid linked to a foreign currency (foreign-currency linked). Foreign currency positions should be converted into the unit of account using the mid-market spot exchange rate as of the reporting date.

¹³³ Although if payments under interest-rate financial derivative contracts are expected to be significant, information on the notional amounts to both receive and pay variable rate-linked amounts would be required to gauge the extent to which positions are hedged. The notional amount is that underlying a financial derivatives contract which is necessary for calculating payments or receipts on the contract and is needed because the impact of a change in interest rates on income would be affected by whether the deposit-takers were net receivers or payers of variable rate-linked amounts.

¹³⁴ In the special case where an economy uses as its only legal tender a foreign currency, the net open position could be calculated vis-à-vis the legal tender currency.

6.44 While the FSI requires a single net position, set out in Table 6.2 is a disaggregation of the net position by type of exposure and by currency. This table allows for the identification of significant exposures to particular currencies and any mismatches across currencies (such as for the US dollar and the euro). It also allows for partial information on foreign currency positions to be compiled, such as the net open position for on-balance sheet items. For these reasons, the *Guide* encourages the use of the table to present data on the net open position. The component elements of the net position, as set out in Table 6.2 are as follows, and are based upon the approach recommended by the BCBS.¹³⁵ In line with BCBS guidance, gold is classified as foreign exchange.¹³⁶

- The net position in on-balance foreign currency debt instruments: all foreign currency debt asset items less all foreign currency debt liability items, including accrued interest. Debt instruments include currency and deposits, loans, debt securities, and other liabilities as defined paragraph 4.58;
- Net notional positions in financial derivatives: All foreign currency amounts to be received less all foreign currency amounts to be paid under forward foreign exchange transactions,¹³⁷ including currency futures and the principal on currency swaps not included in the spot position, the notional principal amounts for forward and future contracts where the notional amount is not exchanged, and the notional position in foreign currency options. A more accurate measure of the option position is the delta-equivalent as calculated by multiplying the market value of the underlying by the “delta” of the option, which is the first-order or linear approximation of changes in the value of the option with respect to exchange rates.¹³⁸ If these data can be

¹³⁵ *Amendment to the Capital Accord to Incorporate Market Risks*, page 23, BCBS, (1996).

¹³⁶ BCBS guidance regards gold as a foreign exchange rather than a commodity position because its volatility is more in line with foreign currencies and deposit-takers manage it in a similar manner to foreign currencies.

¹³⁷ Forward positions should be valued at current spot market exchange rates as using forward exchange rates would result in the measured positions reflecting current interest rate differentials to some extent. However, deposit-takers that base their normal management accounting on net present values are expected to use the net present values of each position, discounted using current interest rates and valued at current spot rates, for measuring their forward currency and gold positions.

¹³⁸ For deposit-takers with large short positions in foreign currency options, a more accurate second order approximation, such as gamma may need to be used instead of the first order (delta) approximation.

Table 6.2: Net Open Position in Foreign Currencies¹³⁹

(unit of account)

| | US\$ | Euro | Yen | Other | Total |
|---|------|------|-----|-------|-------|
| 1. Financial debt assets | | | | | |
| 2. Debt liabilities (-) | | | | | |
| 3. Net position on foreign currency debt instruments (1+2) | | | | | |
| 4. Principal of financial derivative contracts in a bought position (+) | | | | | |
| <i>of which: options in a bought position</i> | | | | | |
| 5. Principal of financial derivative contracts in sold position (-) | | | | | |
| <i>of which: options in a sold position</i> | | | | | |
| 6. Net position on foreign currency debt unhedged after derivatives (3+4+5) | | | | | |
| 7. Equity assets | | | | | |
| 8. Net open position in foreign exchange for on-balance sheet items (6+7) | | | | | |
| 9. Net receipts (+) and payments (-) not yet accrued but are fully hedged | | | | | |
| 10. Guarantees (and similar instruments) that are certain to be called and likely to be irrecoverable (-) | | | | | |
| 11. Other exposure | | | | | |
| 12. Total net open position in foreign exchange (8+9+10+11) | | | | | |

Notes:

- (a) This table covers foreign currency items only. Foreign currency items are those payable (receivable) in a currency other than the domestic currency, including foreign-currency denominated and foreign-currency linked instruments as described in paragraph 3.46.
- (b) Amounts to be reported should be converted into the unit of account using the mid-market spot exchange rate as of the reporting date.
- (c) Line items 1 and 2: Debt instruments comprise currency and deposits, loans, debt securities, and other liabilities, as defined in paragraph 4.58.
- (d) Line items 4 and 5: Financial derivatives include futures, swaps, and options, as defined in paragraph 4.53. The nominal (underlying) value of the contract to buy (positive) or sell (negative) foreign currency should be reported. The nominal amount underlying foreign currency options can be reported or the delta-based equivalent if available.
- (e) Line item 7: Equity assets comprise all instruments and records acknowledging, after the claims of all creditors have been met, claims on the residual value of a corporation, such as shares, stocks, and participations, as defined in paragraph 4.51.
- (f) Line item 9: Amounts to be reported are those not yet accrued but expected to be received with reasonable certainty and are already fully hedged.
- (g) Line item 10: Includes guarantees and credit commitments as defined in paragraph 4.96 and 4.97, that are certain to be called.
- (h) Line item 11: Depending on local accounting conventions, include amounts representing a profit or loss in foreign currencies not included elsewhere in the table.

¹³⁹ This table draws on the work of the Australian Bureau of Statistics (ABS). See "Measuring Australia's Foreign Currency Exposure," *Balance of Payments and International Investment Position*, December Quarter 2001.

compiled it is preferred. Given the potential measurement uncertainties surrounding options, separate identification of options positions is encouraged.¹⁴⁰

- Equity assets are on-balance sheet holdings of foreign currency equity assets as defined in paragraph 4.51, and include investments in associates and unconsolidated subsidiaries (and reverse equity investments).

6.45 The net position of the three items above equate to the *net open position in foreign exchange for on-balance sheet items*. The remaining items are off-balance sheet and for some reporters might be more difficult to compile.

- Net future foreign currency income and expenses not yet accrued but already fully hedged—this element should be applied on a consistent basis. The *Guide* prefers limiting the expected income and expenses to those falling due in the short-term, up to a year, as the reliability of the projections is likely to be diminish further into the future but accepts that the Basel Accord makes no such time restriction.
- Foreign currency guarantees and similar instruments that are certain to be called and are likely to be irrecoverable are a subset of guarantees as defined in paragraph 4.96.
- Depending upon national accounting practice, any other item representing a profit/loss in foreign currencies.

6.46 To calculate the overall net open position, the net position for each foreign currency and gold is first converted into a single unit of account (the reporting currency) using the spot rate,¹⁴¹ and then summed, as shown in Table 6.3 below.

¹⁴⁰ According to data published semi-annually by the BIS, notional values of foreign currency options are typically around 15-20 per cent of the notional amount of foreign currency over-the-counter foreign currency derivatives.

¹⁴¹ Where a deposit-taker is assessing foreign exchange risk on a cross-border consolidated basis, it may be technically impractical in the case of some marginal operations to include the currency positions of a foreign branch or subsidiary of the deposit-taker. In line with BCBS guidance, in such cases the internal limit in each currency may be used as a proxy for the positions.

Table 6.3

Example of measuring the net open position in foreign exchange

| Yen | Euro | Sterling | U.S. dollar | Gold | Net open position |
|------------|-------------|-----------------|------------------------|-------------|------------------------------|
| +50 | +100 | +150 | -180 | -35 | +85 |

6.47 For calculating the ratio, the numerator is either the net open position in foreign exchange for on-balance sheet items (line 49) or total net open position in foreign exchange (line 50) depending upon the availability of data for all deposit-takers. If data are available, the total net position is preferred. In disseminating data, it should be made clear which measure of the net open position is being employed. Capital is measured as total capital and reserves, and, for cross-border consolidated data, also Tier 1 capital. In the absence of Tier 1 data, funds contributed by owners and retained earnings (including those earnings appropriated to reserves) could be identified.

6.48 While a matched currency position will protect a deposit-taker against loss from movements in exchange rates, it will not necessarily protect its capital adequacy ratio. If a deposit-taker has its capital denominated in its domestic currency and has a portfolio of foreign currency assets and liabilities that is completely matched, its capital/asset ratio will fall if the domestic currency depreciates. By running a short position in the domestic currency the deposit-taker can protect its capital adequacy ratio, although the position would lead to a loss if the domestic currency were to appreciate.

(ix) Gross asset and liability positions in financial derivatives to capital

6.49 These FSIs are intended to provide an indication of the exposure of deposit-takers' financial derivative positions relative to capital. While a net matched position might suggest that the exposure is limited, counterparty risk is particularly relevant in the financial derivative market so the scale of the gross positions is important to monitor.

6.50 There are two FSIs under this heading. The first is calculated by taking the market value of financial derivative assets (line 21) as the numerator and the second is calculated by taking the market value of financial derivative liabilities (line 29) as the numerator. Both FSIs take capital as the denominator. Capital is measured as total capital and reserves, and, for cross-border consolidated data, also Tier 1 capital. In the absence of Tier 1 data, funds contributed by owners and retained earnings (including those earnings appropriated to reserves) could be identified. Financial derivatives are defined in paragraphs 4.53 to 4.55.

6.51 Beyond the agreed FSIs, information could additionally be provided on the notional value of outstanding financial derivatives to capital, both in total and by type of underlying risk (such as interest rate, foreign currency, and commodity risk).¹⁴² The notional amount is that underlying a financial derivatives contract which is necessary for calculating payments or receipts on the contract. This amount may or may not be exchanged. The notional amount provides a broad indication of the potential transfer of price risk underlying the financial derivatives contract.

(x) Net open position in equities to capital

6.52 This FSI is intended to identify deposit-takers' equity risk exposure compared with capital. As with the FSI on the net open position in foreign exchange, for this FSI dispersion analysis would be particularly relevant. For instance, even if the sector as a whole did not have an exposed equity position this might not be true for individual deposit-takers or groups of deposit-takers.

6.53 Equity risk exposure is the risk that stock price changes will affect the value of a deposit-taker's portfolio and hence impact on the capital position. It has a specific and a

¹⁴² The BIS's semi-annual report on the over-the-counter (off-exchange) derivatives market provides an example of how data on the notional and market values can be presented. These data are collected on global consolidated basis from major banks and dealers in G-10 countries (see <http://www.bis.org/press/p021108.htm>). Information on the methodology used to compile these data, and a wider range of data on foreign exchange and derivative market activity, is available in *Triennial Central Bank Survey: Foreign Exchange and Derivative Market Activity in 2001*, BIS (2002).

general component: specific when it is associated with movements in the price of an individual stock; general when it is related to movements of the stock market as a whole. As this FSI takes data on the net position, the focus is on the general market risk.

6.54 This FSI is calculated by taking a deposit-takers' open position in equities (line 48) as the numerator, and capital as the denominator. The open position should be calculated as the sum (positive if a long position is held and negative if a short position is held) of on-balance sheet holdings of equities and notional positions in equity derivatives. 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 (and reverse equity investments). The approach adopted is based upon that recommended by the BCBS.¹⁴³ Capital is measured as total capital and reserves, and, for cross-border consolidated data, also Tier 1 capital. In the absence of Tier 1 data, funds contributed by owners and retained earnings (including those earnings appropriated to reserves) could be identified.

6.55 More specifically on the notional positions of equity derivatives:

- The notional positions for futures and forward contracts relating to individual equities should in principle be reported using the current market prices for the individual equities.
- Futures relating to stock indices should be reported as the marked-to-market value of the notional underlying equity portfolio.
- Equity swaps are to be treated as two notional positions. For example, an equity swap in which a bank is receiving an amount based on the change in value of one particular equity or stock index and paying a different equity index will be treated as a long position in the former and a short position in the latter. If one side of the swap is interest-rate based, only the equity side of the swap should be included in the calculation.
- The market value of the equity positions underlying the option can be employed. However, as with foreign exchange options discussed above, a more accurate

¹⁴³ *Amendment to the Capital Accord to Incorporate Market Risks*, page 19, BCBS (1996).

measure of the option position is the delta-equivalent as calculated by multiplying the market value of the underlying by the “delta” of the option, which is the first-order or linear approximation of changes in the value of the option with respect to exchange rates.¹⁴⁴ If these data can be compiled they are preferred (and any associated metadata provided along with the disseminated information should be clear as to which approach was adopted).¹⁴⁵

6.56 While beyond the agreed FSIs, there may be analytical interest in presenting the net open position in equities by country to identify any large exposures to particular economies.

Asset-based FSIs

(xi) Liquid assets to total assets (liquid asset ratio)

6.57 This FSI provides an indication of the liquidity available to meet expected and unexpected demands for cash. As noted in Chapter 4, assessing the extent to which an asset is liquid or not involves judgment, and particularly for securities, depends on the liquidity of secondary markets—which can be monitored using market-based indicators such as bid-ask spreads and turnover figures.

6.58 This FSI is calculated by taking the core measure of liquid assets (line 39) as the numerator, and total assets (line 14). This ratio can also be calculated by taking the broad measure of liquid assets (line 40). Liquid assets are defined in paragraphs 4.74 to 4.77, and nonfinancial and financial assets are defined in paragraphs 4.34 to 4.35.

(xii) Liquid assets to short-term liabilities

6.59 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 short-term withdrawal of funds without facing liquidity problems.

¹⁴⁴ For deposit-takers with large positions in equity options, a more accurate second order approximation, such as gamma may need to be used instead of the first order (delta) approximation.

¹⁴⁵ The BCBS also allows equity options together with the associated hedged underlying position to be excluded from the calculation.

6.60 This FSI is calculated by taking (1) the core measure of liquid assets (line 39), as the numerator, and (2) the short-term liabilities (line 41). This ratio can also be calculated by taking the broad measure of liquid assets (line 40). Liquid assets are defined in paragraphs 4.74 to 4.77; and short-term liabilities in paragraph 4.79. The FSI could also be calculated excluding financial derivative positions—that is calculating the ratio taking short-term debt only—particularly if a net derivative asset position was significantly affecting the ratio.

6.61 Beyond the agreed FSI, the data could be supplemented by a table that provides information on the expected cash flows underlying financial derivatives, and from the settlement of foreign currency spot positions. Increasingly such positions are important to deposit-takers in their liquidity analysis (see Table 6.4). The table provided three risk categories of derivative instruments: interest-rate based, which trade single-currency interest rate risks; currency based, which involve risk exposures to more than one currency; and other, which are primarily those that trade credit, commodity, and equity risk. If reporters are uncertain as to where to classify multi-risk exposure derivatives they are asked to classify them in the following order of precedence: other, currency-based, and single currency interest rate-based.¹⁴⁶

(xiii) Customer deposits to gross (non-interbank) loans

6.62 This FSI is a measure of liquidity, in that it compares the “stable” deposit base to gross loans (excluding interbank activity). When stable deposits are low relative to loans, there is a greater dependence on more volatile funds to fund the illiquid assets in deposit-takers’ portfolios. In such circumstances, if liquidity stresses arise, amongst other things, there is a greater risk of illiquidity than if a stable deposit base primarily funds the loans.¹⁴⁷

6.63 The FSI is calculated by taking customer deposits (line 24 (i)) as the numerator, and non-interbank loans (line 18 (i.ii)) as the denominator. Customer deposits are defined in paragraph 4.39 to 4.41, and loans are defined in paragraphs 4.42 to 4.45.

¹⁴⁶ This ranking is consistent with that used by the BIS in its surveys of over-the-counter derivative markets.

¹⁴⁷ For instance, see *Towards a Framework for Systemic Liquidity Policy* (2000), Claudia Dziobek, J. Kim Hobbs, and David Marston, IMF Working Paper (WP/00/34).

Table 6.4: Future cash flows arising from financial derivative contracts by maturity¹
(As end of xxx)

(Thousands, unit of account)

| | | | 1 th month | | | | | | | | 2 nd month | | | | | | | | 3 rd month | | | | over 3-12 mth | | | | |
|----------------------------|-------------------------------------|---------|-----------------------|------|-------|-------|------------|------|-------|-------|-----------------------|------|-------|-------|------------|------|-------|-------|-----------------------|------|-------|-------|---------------|------|-------|-------|--|
| | | | 1-15 days | | | | 16-31 days | | | | 11-15 days | | | | 16-31 days | | | | US\$ | Euro | Other | Total | US\$ | Euro | Other | Total | |
| | | | US\$ | Euro | Other | Total | US\$ | Euro | Other | Total | US\$ | Euro | Other | Total | US\$ | Euro | Other | Total | | | | | | | | | |
| Derivatives | Interest rate based | Receive | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Pay | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Foreign Currency Based ² | Receive | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Pay | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Other types | Receive | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Pay | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Sub-total | Receive | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Pay | | | | | | | | | | | | | | | | | | | | | | | | | |
| Unsettled spot Transaction | | Receive | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Pay | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | | Receive | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Pay | | | | | | | | | | | | | | | | | | | | | | | | | |

¹ Amounts to be recorded are those expected to be paid and received in each of the time bucket columns. All the data in this table should be presented in the same unit of account (such as the domestic currency).

² These are derivatives that involve the payment and receipt of foreign currency and those on which payments and receipts are linked to a foreign currency.

(xiv) Return on assets (net income to average total assets)

6.64 This FSI is intended to measure deposit-takers' efficiency in using their assets. It may be interpreted in combination with return on equity, described above.

6.65 The FSI is calculated by dividing net income by the average value of total assets (line 14) over the same period. As a minimum, the denominator can be calculated by taking the average of the beginning and end-period positions (e.g., at beginning and end-month), but compilers are encouraged to use the most frequent observations available to calculate the average. The preferred definition of net income is net income (before extraordinary items and taxes) (line 8), and this item and its components are defined paragraphs 4.15 to 4.31. Total assets (nonfinancial and financial assets) are defined in paragraphs 4.34 to 4.35.

(xv) Nonperforming loans to total gross loans

6.66 This FSI is intended to identify problems with asset quality in the loan portfolio. It may be interpreted in combination with the nonperforming loans less specific provisions to capital ratio described above. An increasing ratio may signal deterioration in the quality of the credit portfolio, although this is typically a backward looking indicator in that NPLs are identified when problems emerge. Appropriate recognition of nonperforming loans is essential for this ratio to be meaningful. The indicator can be viewed in the context of those for the nonfinancial corporate sector as a deteriorating financial position for nonfinancial corporations in particular might well be mirrored in this ratio.

6.67 This FSI is calculated by taking the value of nonperforming loans (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 (line 42) and loans (18(i)) are defined in paragraphs 4.80, and 4.42 to 4.45 respectively.

6.68 An additional possibility is to calculate the ratio of NPLs to total loans for each different sector (see also item (xvi) below for information on sectors).

(xvi) Sectoral distribution of loans to total loans

6.69 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. A large concentration of aggregate credit in a specific resident economic sector or activity, may signal an important vulnerability of the deposit-taking sector to the level of activity, prices and profitability in that sector or activity.

6.70 The numerators and denominator for this FSI are respectively lending to each of the institutional sectors (line 18 (i.i) and 18 (i.ii)),¹⁴⁸ and gross loans (line 18 (i)). As all sectors are covered, the sum of the sectoral ratios should be unity. The resident sectors are defined primarily in Chapter 2: deposit-takers (see paragraphs 2.4 to 2.7), central bank (2.11), general government (2.15), other financial corporations (2.12), nonfinancial corporations (2.13), households (2.14), nonprofit institutions serving households (2.16), and nonresidents (3.35-3.36). Loans are defined in paragraphs 4.42 to 4.45. Further to the agreed FSI, for the other financial corporations sector, ratios for loans for the five sub-sectors,¹⁴⁹ defined in Appendix V, could be disseminated.

6.71 If this FSI was 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 that goes beyond the agreed FSI would be to attribute loans by sector regardless of the residence of the counterpart. For instance, total lending to nonfinancial entities worldwide, regardless of residence could be compiled. In this way, exposures of deposit-takers in the reporting population to similar activities worldwide are monitored.

6.72 Additional possibilities that could also be adopted, but beyond the agreed FSI, include classifying loans by type of borrower using the International Standard Industrial

¹⁴⁸ Within interbank lending, lending to nonresident deposit takers (i.i.ii) should be included in the nonresident data for the purpose of this FSI.

¹⁴⁹ These subsectors are insurance and pension funds, security dealers, investment funds, other financial intermediaries, and financial auxiliaries.

Classification (ISIC) of all Economic Activities and/or by type of loan, such as consumer, commercial and industrial, etc. This approach might be particularly relevant when an economy has specific systemically important industries, such as petroleum, agriculture, etc. The ISIC standard has 17 major categories of economic activity in the resident economy giving 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 2.¹⁵⁰ The categories, and short definitions of each activity, are set out in Box 6.1.

(xvii) Residential real estate loans to total loans

6.73 This FSI is intended to identify deposit-takers' exposure to the residential real estate sector, with the focus on household borrowers. History has shown that in many instances, a real estate boom characterized by a rapid rise in real estate prices, has been preceded or accompanied by a boom in banking credit to the private sector, perhaps encouraged by expansionary monetary policies. Then following a subsequent tightening of these policies, and/or a collapse in market prices, there has been episodes of financial sector problems—debtors have difficulty meeting their payments. Also, the fall in the value of the residential real estate collateral, often so that it falls beneath the value of the loans, worsens the situation. To determine the exposure of the deposit-taking sector to the residential real estate market, it is important to have information on the size of the credit exposures secured on residential real estate, and to monitor the riskiness of the exposure, by, for example, tracking real estate prices.

6.74 The FSI is calculated by taking 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 4.81 and loans are defined in paragraphs 4.42 to 4.45. The data in the numerator could be distinguished between residential real estate lending to residents and to nonresidents, and each be calculated as a percentage of total loans.

¹⁵⁰ Another further approach is to classify loans by type, such as retail, and commercial and industrial loans.

6.75 Additionally, household borrowing for real estate can be used as the numerator (line 25 in Table 4.4), as while strictly not all real estate lending to households is collateralized by residential real estate, the latter predominates.

(xviii) Commercial real estate loans to total loans

6.76 This FSI measures banks' exposure to the commercial real estate market. Many of the same considerations described above for residential real estate apply for commercial real estate, although the economic impact of booms and busts in commercial real estate can be different in that the range of borrowers is fewer than for households. On the other hand, the conditions that encourage booms in residential real estate borrowing may also encourage excessive commercial real estate borrowing.

6.77 This FSI is calculated by taking loans that are collateralized by commercial real estate, loans to construction companies, and to companies active in the development of real estate as the numerator (line 44), and gross loans (line 18 (i)) as the denominator. Commercial real estate includes buildings, structures, and associated land used by enterprises for retail, wholesale, manufacturing or other such purposes (paragraph 4.81). Lending to those companies involved in the development of multi-household dwellings is included in the denominator. Loans are defined in paragraphs 4.42 to 4.45. Beyond the agreed FSI, data in the numerator could distinguish between commercial real estate lending to residents and to nonresidents, and each be calculated as a percentage of total loans.

(xix) Geographical distribution of loans to total loans

6.78 This FSI provides information on the geographical distribution of gross loans, by region. It allows the monitoring of credit risk arising from exposures to a group of countries, and can help in an assessment of the impact of adverse events in these countries on the domestic financial system. If lending to any region or countries is particularly significant,

further disaggregation—and identification of the country—is encouraged.¹⁵¹ The geographic distribution of claims is defined in paragraph 3.36. Gross loans (line 18 (i)) are defined in paragraphs 4.42 to 4.45. The suggested regional classification in the dissemination tables in Chapter 12 is based on the approach in the IMF's World Economic Outlook.

6.79 For cross-border consolidated data, lending is attributed on the basis of the residence of the domestic reporting entity. So, 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.

6.80 Beyond the agreed FSI, an additional possibility is to expand the coverage to a geographic distribution of all deposit-takers' debt claims on nonresidents, that is covering claims defined in paragraph 4.58 (line 17 to 19, and 22).

(xx) Foreign currency-denominated loans to total loans

6.81 This FSI measures the relative size of the foreign currency loans within gross loans. Particularly in countries where domestic lending in foreign currency is permitted, it is important to monitor the ratio of foreign currency-denominated loans to gross loans because of the increased credit risk associated with the ability of the local borrowers to service their foreign currency denominated liabilities, particularly in the event of large devaluations, and a lack of foreign currency earnings.¹⁵²

¹⁵¹ The BIS collects and publishes international banking statistics on both a locational (residence) and consolidated basis from a group of economies with significant international banking activities. In this field of monitoring lending internationally, the intention is that the definitions and institutional coverage in the *Guide* are consistent with those of the BIS. For countries meeting BIS data needs, such data serve the purpose of this FSI.

¹⁵² In the special case where an economy uses as its only legal tender a foreign currency, this ratio could be compiled excluding borrowing in, and linked to, this currency.

6.82 The FSI is calculated by taking the foreign currency and foreign currency-linked¹⁵³ element of gross loans (line 46) to residents and nonresidents as the numerator, and gross loans (line 18 (i)) as the denominator. Foreign currency, foreign currency instruments, unit of account and exchange rate conversion are defined in paragraphs 3.44 to 3.48. Foreign currency loans are defined in paragraph 4.83. Loans are defined in paragraphs 4.42 to 4.45. For cross-border consolidated data, the determination of what is and what is not a foreign currency is determined by the residence of the domestic reporting entity.

6.83 Beyond the agreed FSI, the data in the numerator could be disaggregated on a resident/nonresident basis, by sector and major currencies (e.g., U.S. dollar, yen and euro) and calculated as a percentage of total loans.

(xxi) Foreign currency-denominated liabilities to total liabilities

6.84 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 loans to total loans. Extensive foreign currency lending funded by foreign currency borrowing in the same currency can help reduce the deposit-takers' foreign exchange exposure (although if the lending is to domestic borrowers and they have difficulty servicing the loans, in practice, the deposit-taker would remain exposed). But a high reliance on foreign currency borrowing (particularly of short-term maturity) may signal that deposit-takers are taking greater risks, by increasing their exposure to exchange rate movements and foreign currency funding reversals.¹⁵⁴

6.85 The FSI is calculated by taking the foreign currency liabilities (line 47) as the numerator, and total debt (line 28) plus financial derivative liabilities (line 29) less financial

¹⁵³ As with foreign currency denominated loans, devaluation of the domestic currency will increase the value, in domestic currency terms, of foreign-currency linked loans.

¹⁵⁴ In the special case where an economy uses as its only legal tender a foreign currency, this ratio could be compiled excluding borrowing in, and linked to, this currency.

derivative assets (line 21) ¹⁵⁵ as the denominator. Foreign currency liabilities are defined in paragraph 4.83. Foreign currency, foreign currency instruments, unit of account and exchange rate conversion are defined in paragraphs 3.44 to 3.48. Total liabilities equal debt (paragraph 4.58) and financial derivative liabilities (paragraphs 4.53 to 4.55).

6.86 Beyond the agreed FSI, the data in the numerator could be distinguished between liabilities to residents and nonresidents, and calculated as a percentage of total liabilities. Also, the ratio could be calculated excluding financial derivative positions—that is calculating the ratio for debt positions only—particularly if a net financial derivative asset position (foreign currency and/or total) was significantly affecting the ratio.

Income and expense-based FSIs

(xxii) Interest margin to gross income

6.87 This FSI is a measure of the relative share of net interest earnings—interest earned less interest expenses—within gross income. This ratio may be affected by the deposit-takers' capital to asset ratio: to support a given level of assets, higher capital results in lower borrowing needs, so lowering interest expenses, and increasing net interest income.

6.88 This FSI is calculated by taking net interest income (line 3) as the numerator, and gross income (line 5) as the denominator. Net interest income and its components are defined in paragraph 4.15 to 4.17, while gross income is defined in paragraph 4.18.

(xxiii) Trading and foreign exchange gains (losses) to gross income

6.89 This FSI is intended to capture the share of deposit-takers' income from financial market activities, including currency trading, and so help in assessing the sustainability of profitability.

¹⁵⁵ For financial derivative liabilities it is recommended that the net market value position (liabilities less assets) be included rather than the gross liability position because of the market practice of creating offsetting contracts, and the possibility of forward-type instrument switching from asset to liability positions and vice versa from one period to the next.

6.90 This FSI is calculated by taking gains or losses on financial instruments (line 4 (ii)) as the numerator, and gross income (line 5) as the denominator. Gains and losses on financial instruments are defined in paragraph 4.20 to 4.25, and gross income is defined in paragraph 4.18.

(xxiv) Noninterest [operating] expenses to gross income

6.91 This FSI measures the size of administrative expenses to gross income (interest margin plus noninterest income).

6.92 The FSI is calculated by taking operating expenses (line 6) as the numerator, and gross income (line 5) as the denominator. Operating expenses are defined in paragraph 4.27, and gross income in paragraph 4.18.

(xxv) Personnel expenses to noninterest [operating] expenses

6.93 This FSI measures the incidence of personnel costs in total administrative costs.

6.94 This FSI is calculated by taking personnel costs (line 6 (i)) as the numerator, and operating expenses (line 6), that is, not including provisions, as the denominator. Personnel costs and operating expenses are defined in paragraphs 4.27 and 4.28.

Chapter Six: Specification of Financial Soundness Indicators for Deposit-Takers

Box 6.1

The International Standard Industrial Classification (ISIC) of all Economic Activities

The ISIC is an industrial classification developed by the United Nations, which 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:

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

Extra-territorial organizations and bodies