Chapter 20
Policy and Statistical Issues Underpinning Financial Stability: The IMF Perspective

Robert W. Edwards[i]
Director, Statistics Department, International Monetary Fund

Notice of correction

This chapter replaces Chapter 20, pages 317-326 of
OECD (2008) *Statistics, Knowledge and Policy 2007: Measuring and Fostering the Progress of Societies*, OECD, Paris

Abstract

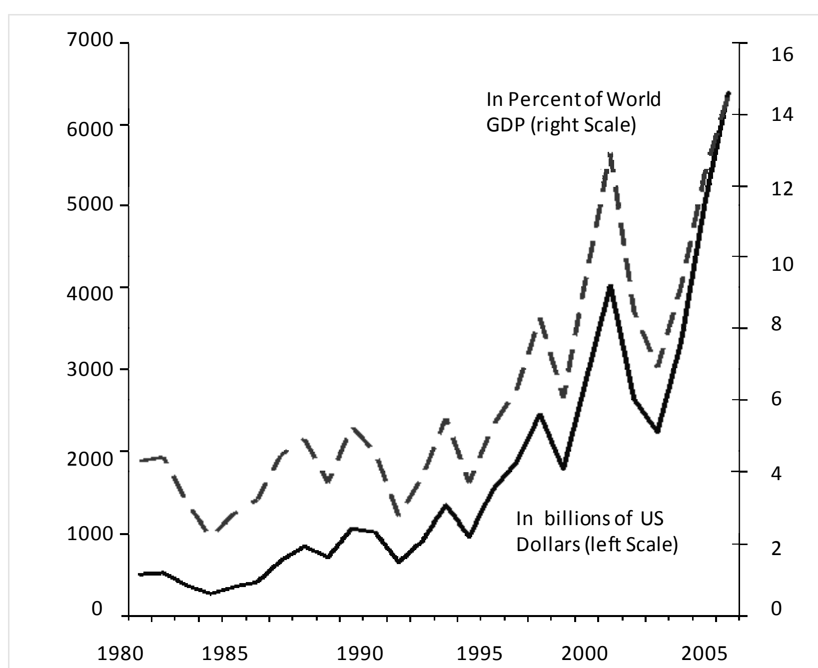
In the past decade, financial globalisation has led to an unprecedented deepening in financial markets and internationalisation in capital allocation. While it has brought benefits, financial globalisation has also brought new risks and challenges for policy makers, particularly through its linking of national economies into a vast network of closely interconnected balance sheets, and consequent potential for severe cross-border spillover effects. In this environment, financial instability in one country may be transmitted to other countries or affect developments in regional or global markets. To meet the new challenges, the IMF has been sharpening the focus of its financial surveillance. While continuing to emphasise its financial sector assessment programme (a joint effort with the World Bank), the IMF has been further integrating finance into its Article IV surveillance; strengthening its global surveillance through multilateral discussions on common issues of systemic importance; and expanding its framework for vulnerability assessments to include the analysis of balance sheet vulnerabilities and use of new data tools such as financial soundness indicators as well as market-based, forward-looking indicators. In the statistical area, the IMF has launched several initiatives in order to gather timely, comprehensive, and internationally comparable data to help meet the new data needs of financial surveillance, better track cross-border flows and positions, and support rigorous, diagnostic, analytical work. In meeting its challenges, the IMF will continue to leverage the use of its comparative advantage - its universal reach and expertise on macroeconomic and financial issues and on statistics.

i The author wishes to thank the following for their inputs into the drafting of this paper: Marina Moretti and Andrea Maechler of the IMF's Monetary and Capital Markets Department, and Armida San Jose and Ewe-Ghee Lim of the IMF's Statistics Department. The views expressed herein are those of the author and should not be attributed to the IMF, its Executive Board, or its management.

Financial stability in a Globalised World

The last decade has witnessed an unprecedented deepening in financial markets and internationalisation in capital allocation. The rise to $6.4 trillion in total cross-border inflows has been impressive – it now represents over 14% of world GDP (Figure 1). These flows have also been associated with the globalisation of financial institutions. Cross-border financial sector mergers and acquisitions, mostly concentrated in the banking sector, are now around 40% of all financial sector acquisitions, compared to less than one% a decade ago. The increase in foreign bank ownership has been particularly rapid in Eastern Europe and Latin America

Figure 20.1 Total Cross-Border flows, 1980-2005
(in % of world GDP and in billions of U.S. dollars)



Source: IMF staff calculations based on International Financial Statistics and World Economic Outlook.

The globalisation of financial institutions has complex implications for financial stability.[1] From the perspective of individual institutions, globalisation helps diversify risks and may well have improved financial stability, particularly in the face of relatively small shocks. But as national economies become part of a vast network of balance sheets, often closely interconnected through the financial sector, severe crises in the future may be more easily transmitted across borders and therefore may have become more broad-ranging and difficult to deal with. For instance, financial systems with substantial foreign bank presence may be more resilient to traditional domestic banking crises, but more vulnerable to foreign shocks that affect parent banks. More broadly, financial instability in one country may easily spill over to other countries or affect developments in regional or global markets, as was the case, for example, during the Asian and Russian crises in the late 1990s.

The global community is thus presented with new challenges. To maximise the benefits of globalisation while containing the potential risks, efforts need to continue to reduce the likelihood of systemic crises and limit their severity if they occur. This requires measures conducive to deep, broad, and resilient financial systems, which can support an optimal allocation of resources, an effective monetary policy, and a sound fiscal stance. In addition, policy makers need to ensure effectively coordinated oversight of internationalised financial institutions and to put in place cross-border crisis management and resolution arrangements that are sufficiently robust to handle a severe shock and minimise spillovers. Progress is being made in these areas, but more needs to be done, in a wider range of countries.

The International Monetary Fund (IMF) has an important role to play in helping countries meet the challenges of financial globalisation. Interactions between economies and financial sectors are becoming increasingly important, and addressing financial sector vulnerabilities and risks increasingly needs a global approach. Through the continued use of its comparative advantage – that is, its universal reach and expertise on macroeconomic and financial issues, the Fund can further enhance its monitoring of the global economy and help individual countries strengthen the resilience of their economies. In addition, it can use the same comparative advantage in the statistical area to help provide timely, comprehensive, and internationally comparable data to meet the new data needs of financial surveillance, better track cross-border flows and positions, and support rigorous, diagnostic, and analytical work.

The IMF Financial Surveillance Framework

The IMF is sharpening the focus of its financial surveillance to remain in step with a rapidly changing world. Financial surveillance is ultimately rooted in concerns about financial crises that are changing in nature. The late 1990s crises in emerging markets were largely financial account crises caused by abrupt shifts in global asset allocations (that is, crises that affect stocks or balance-sheets) rather than budgetary or current account crises caused by fiscal or terms-of-trade shocks (that is, crises affecting flows). What distinguishes these events from past episodes is the speed and amplitude at which they propagate, both domestically and cross-border. Efforts at preventing these phenomena require new directions in financial surveillance that recognise the complex networks of interconnected balance sheets and emphasise the spillovers of financial market disturbances, both between countries and between real and financial sectors.

New Directions in Financial Surveillance

Given the complexity of balance sheet linkages, there is no single, widely-accepted methodology for assessing financial sector stability. Financial stability assessments need to cover a potentially wide range of topics – depending on country circumstances – and to take a holistic view of the financial system. For this, financial surveillance needs to address two key questions:

- What are the critical channels of interaction between the macroeconomy, financial markets, and the financial institutions?

- What is the role of the financial sector per se in initiating, amplifying, or muting disturbances in the economy and in transmitting such effects internationally?

In addressing the first question, it is important to highlight that the linkage between financial institutions and markets, on the one hand, and macroeconomic performance and policies, on the other, runs in both directions. Financial soundness affects macroeconomic performance and policies, and macroeconomic performance and policies have consequences for the financial sector. In order to understand this two-way relationship, better use must be made of a broader set of indicators, including data on financial flows, the balance sheets of the financial and other sectors, and market-based price data. A great deal of progress has been made in this area in the last decade but more needs to be done.

In addressing the second question, it is important to understand the role of the financial sector as a risk transmission mechanism. Potential **risks** to the financial system – that is, events that might trigger a crisis – must be distinguished from the underlying **vulnerabilities** that will determine the impact of such events should they occur. Vulnerabilities in the financial sector are not merely exposures to risk, including balance sheet vulnerabilities across the various sectors, but also the system’s ability to absorb or withstand a shock (*i.e.* its resilience). To assess those risks and vulnerabilities, possible channels of contagion also need to be analysed explicitly, across borders, and in both directions.

Integrating Finance into the IMF’s Work

Continued Emphasis on the FSAP

The Financial Sector Assessment Program (FSAP), a joint effort by the IMF and the World Bank launched in 1999, is a key element of the Fund's engagement on financial issues with its member countries. Supported by experts from a range of national agencies and standard-setting bodies, work under the programme 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 prioritise policy responses. The programme is designed to assess the stability of financial systems as a whole, rather than individual institutions, and to emphasise prevention and mitigation rather than crisis resolution. As part of the process, the FSAP provides assessments of observance of various internationally-accepted financial sector standards and codes, set within the broader institutional and macroprudential context.

With a total of 120 initial assessments under the FSAP now completed or underway, and an additional 20 or so in the pipeline, the programme is increasingly moving into a phase of FSAP updates (27 updates have been completed or are underway, and 30 or so more are being planned). FSAP updates provide an opportunity to refresh the initial assessment, albeit with possible differences in scope. With the initial assessment as a reference point, updates can choose focus over comprehensiveness and concentrate on key stability and development issues.

Coverage of Financial Issues in Article IV Surveillance

Annual consultations with member countries under Article IV of the IMF’s Articles of Agreement provide another vehicle for financial surveillance. The coverage of financial sector issues and balance sheet vulnerabilities in Article IV reports is being enhanced with a view to better reflect the immediacy and extent to which financial

market developments can affect people's lives. This would strengthen the overall effectiveness of Article IV surveillance, in addition to ensuring continuity in the coverage of financial sector issues in-between FSAP assessments, which occur at relatively low periodicity (on average, every five to six years).

Efforts are also underway to integrate more fully financial analysis into the traditional macroeconomic framework examined as part of Article IV work. This requires more attention to macro-financial links, better use of available data and information – both quantitative and qualitative – and a strengthened focus on spillovers and cross-country links. A key challenge in this area is the absence of a clear intellectual framework for integrating financial sector analysis, much of which is microeconomic, with macroeconomic analysis. Incorporating these two different dimensions of surveillance is one of the most compelling aspects of the Fund's work.

A More Global Perspective

Integrating multilateral and regional aspects in financial surveillance represents a further challenge. Strengthening global surveillance can be achieved by facilitating discussions within groups of countries on common issues of systemic importance and strengthening the cross-country analysis of macroeconomic and financial risks and their interactions, as well as formulating regional work plans that focus on particular policy issues facing a region.

Some work on cross-border financial sector issues has already been undertaken and more is in train. Regional FSAPs are being conducted for currency unions, and are particularly appropriate where significant regulatory and supervisory structures are at the regional level. The IMF is also engaging in financial sector regional projects that examine special issues relevant to a particular region or group of countries – recent examples include studies on Central America, the Maghreb, and the Nordic-Baltic region. Efforts are equally underway to incorporate in the FSAP elements that transcend the borders of the country under consideration – such as heavy dependence on cross-border financing or the challenges of home-host supervision.

Analytical Tools and Indicators for Financial Surveillance

Surveillance must strive to extract diagnostically useful information about risks and vulnerabilities from all of the available financial data. This requires an in-depth understanding of existing data sources and their appropriate use through a wide range of financial analysis tools.

Use of Indicators in Surveillance

The ability to conduct financial surveillance presupposes the existence of indicators that can be used as a basis for analysing the health and stability of the financial system. These indicators comprise financial soundness indicators (FSIs) – that is, aggregated data on individual banking institutions and their non-bank clients, and indicators that are representative of the markets in which these institutions operate – as well as market-based data drawn from price and volatility measures of various capital market instruments.

The monitoring of FSIs is a key element of surveillance. They provide a measure of banks and non-banks' exposure to different types of risk and their capacity to handle

shocks (their resilience) that affect solvency or liquidity. FSIs consist mainly of aggregate balance sheet or income statement measures and their concept originates from prudential and commercial measurement frameworks that were developed to monitor individual entities. This type of aggregation of individual institution-level indicators (microprudential indicators) into financial soundness indicators (macroprudential indicators) necessarily involves a loss of information because the distribution of prudential indicators of individual institutions is also a crucial dimension of financial stability. Although aggregation is required for facilitating macroprudential analysis and international comparison, the stability assessments are strengthened by allowing some disaggregation through peer groups or the monitoring of the distributional characteristics of various indicators. In addition, FSIs themselves are concurrent indicators of financial soundness, available often with a lag. Therefore, proper interpretation of FSIs requires a range of forward-looking analytical tools, notably stress testing of individual institutions as well as analyses of the determinants of FSIs and forecasts of their future course.

FSIs can be complemented by market-based indicators, which are forward-looking indicators of soundness and are available with higher frequency. Asset prices, for example, reflect market perceptions and can influence economic developments. In a world of highly integrated financial markets, expectations themselves are subject to a slew of heterogeneous influences. Information from high-frequency financial data (about expectations, arbitrage incentives volatility, risk premia, and the like) is useful to identify policy inconsistencies and warning signals. FSIs are part of the broader framework for vulnerability assessment, which includes a wide range of analytical tools, including scenario analysis, different methods of debt sustainability analysis, and a variety of balance-sheet-type methods of risk analysis.

The Balance Sheet Approach (BSA)

The analysis of vulnerabilities across various balance sheets and sectors is an increasingly important part of a country's risk assessment. Balance sheet weaknesses in the public and private non-financial sectors are now recognised as a key factor that exacerbated the financial account crises of the last dozen years.

The Balance Sheet Approach (BSA) is based on stock variables in countries' sectoral balance sheets (assets and liabilities of financial firms, nonfinancial firms, households, government, and their sub-sectors, as appropriate) and the consolidated aggregate balance sheet (for the country). The balance sheet analysis focuses on the determinants and evolution of stocks of assets and liabilities, and the likely shocks to the stock variables, both of which can trigger large adjustments in flows (including cross-border capital flows, shifts in holdings of domestic or foreign currency assets, etc.). An approach of this type can, therefore, be a useful complement to the traditional flow analysis that is based on data related to fiscal, balance of payments, and financial programming.

Where markets are deep enough to provide relatively reliable information, the Balance-Sheet Risk Approach can also be used to derive a set of risk indicators that can serve as barometers of financial sector vulnerability. This approach combines balance sheet data with high frequency financial market prices to impute the market value and volatility of assets, both of which are needed to understand changes in the overall level of risk facing each sector but are not directly observable. An important advantage is the ability to translate continuously adjusting financial market price information into current market value estimates of asset values, which is particularly important given the speed with which economic conditions change relative to the time span between releases of

consolidated accounting balance-sheet information. This framework allows to compute a forward-looking measure of credit quality (probability of default) and could be used as a metric for comparing the risk profiles of a sector/country under different policy assumptions.

Statistical Initiatives in Support of Financial Surveillance

Collecting and presenting high quality statistical data to support the analytical work needed for financial surveillance is a complementary challenge for the IMF. Indeed, it has been noted that the surprise element at the onset of a financial crisis is often the lack of high quality, comprehensive data. The Asian crisis, for example, revealed major gaps in statistical coverage of the domestic financial sector and the external sector that permitted serious vulnerabilities to remain undetected.

In general, two types of data are needed for effective financial surveillance. One, as already noted, is high frequency market-based price data, which are forward-looking and needed to assess changes in market views and expectations, and impending changes in vulnerabilities. The other is timely and internationally comparable economic and financial data. While market-based data are available from commercial vendors, the IMF has in recent years undertaken several initiatives aimed at meeting the economic and financial data needs stemming from these various new features of the financially globalised world:

- The intensification of cross-border financial flows and positions, greater potential for spillover effects, and need for a global, multilateral perspective on surveillance;
- The lack of good quality cross-country comparable financial soundness indicators; and
- The balance sheet nature of the major crises of the past dozen years.

Data on Cross-Border Financial Flows and Positions

To meet the data needs of global, multilateral surveillance, the IMF in recent years launched five major statistical initiatives to improve as well as increase the available data on the cross-border linkages among economies: the Coordinated Portfolio Investment Survey; data for the International Investment Position; the Data Template on International Reserves and Foreign Currency Liquidity; dissemination of quarterly data on the currency composition of official foreign exchange reserves; and the Joint External Debt Hub. In addition, it plans to launch a Coordinated Direct Investment Survey (CDIS).

The first four initiatives and the planned CDIS all involve external sector data which were deemed by the IMF's Executive Board in 2002 as important data for the assessment of an economy's vulnerabilities. The fifth initiative involves creating a platform that brings different databases together for worldwide dissemination.

External Sector Data – Portfolio Investment, IIP, and Direct Investment

In 1997, the IMF launched the first **Coordinated Portfolio Investment Survey (CPIS)**, in response to global asymmetries in reported balance of payments data, particularly those in portfolio investment flows of equities and debt securities. Starting

with 29 economies, the CPIS's distinguishing feature is that it provides data by partner countries by requiring all participants to provide a breakdown of their stock of portfolio investment assets by the country of residency of the nonresident issuer. This feature allows the derivation of a country's foreign portfolio investment liabilities from creditor sources, facilitating cross-checking of data and improving data quality. From 2001, the IMF began to undertake the survey on an annual basis and presently, about 70 countries participate in the survey.

After 1998, the IMF placed a greater emphasis on collecting data on countries' **International Investment Position (IIP)**. The IIP is important for vulnerability assessment because it provides a balance sheet snapshot of the levels, sectoral distribution, and maturity of a country's external liabilities (*e.g.*, external debt), and the size and composition of its external claims (*e.g.*, banks' foreign claims), that may be available to meet its external obligations. The IIP also complements the IMF's existing collection of balance of payments data. In 2001, the IMF Board further promoted IIP data by including it as a prescribed category of the IMF's Special Data Dissemination Standard (SDDS). As a result, the number of countries reporting IIP data increased from 37 in 1998 to around 110 countries presently, albeit with varying degrees of component detail.

Plans are underway to launch a **Coordinated Direct Investment Survey (CDIS)** in order to improve understanding of the pattern and direction of foreign direct investments worldwide. The CDIS, which will be modeled after the CPIS in terms of collecting partner data, has a targeted reference date of end-2009. The survey will be a collaborative effort with several international partners, namely, the European Central Bank, Eurostat, the Bank for International Settlements (BIS), the OECD, UNCTAD, and the World Bank.

External Sector Data – International Reserves

Two of the initiatives involved data on international reserves, another critical input for vulnerability assessments. In 1999, the IMF launched the **Data Template on International Reserves and Foreign Currency Liquidity (Reserve Template**) with the objective of improving the assessment of a country's official foreign currency liquidity position. The Reserve Template disseminates data on international reserve assets and potential short-term foreign currency obligations (and claims) including on off-balance sheet activities (such as those arising from derivative operations). This initiative inter alia helps to rectify the problem indicated earlier regarding the lack of data on off-balance sheet derivative activities during the Asian crisis. All SDDS subscribers are required to provide data for the Reserve Template.

In December 2005, the IMF published for the first time quarterly data on the **currency composition of official foreign exchange reserves (COFER)** on its website. COFER data, which distinguish reserves denominated in U.S. dollars, euros, pounds sterling, Japanese yen, Swiss francs, and other currencies had previously been published only on an annual basis in the IMF Annual Report. In response to heightened public interest, the IMF decided to make the data publicly available on a quarterly basis. Presently, COFER data are reported on a voluntary basis by 119 member countries of the IMF, comprising all 24 industrial countries and 95 out of the 160 developing countries.

External Sector Data – common Platform for Dissemination

The fifth external sector data initiative involved the creation of a platform for worldwide dissemination of different databases on external debt. In May 2006, the IMF, BIS, OECD, and the World Bank jointly launched the Joint External Debt Hub (JEDH) to bring together the data that they each compile on the external debt of countries. This database complements external debt statistics based on national sources, filling important coverage gaps, particularly in the area of private sector external liabilities. It disseminates data provided by over 60 SDDS subscribers, for whom it is a reporting requirement; data from creditor and market sources; and comprehensive metadata. Altogether, the database facilitates cross-country comparisons of external debt flows and positions for 214 economies.

Financial Soundness Indicators

To encourage compilation of internationally comparable FSIs for financial sector surveillance, the IMF undertook the following initiatives.

Table 20.1 Financial Soundness Indicators: The Core and Encouraged Sets

Core Set	
Deposit takers	
Capital adequacy	Regulatory capital to risk-weighted assets
	Regulatory Tier 1 capital to risk-weighted assets
	Nonperforming loans net of provisions to capital
Asset quality	Nonperforming loans to total gross loans
	Sectoral distribution of loans to total loans
Earnings and profitability	Return on assets
	Return on equity
	Interest margin to gross income
	Noninterest expenses to gross income
Liquidity	Liquid assets to total assets (liquid asset ratio)
	Liquid assets to short-term liabilities
Sensitivity to market risk	Net open position in foreign exchange to capital
Encouraged Set	
Deposit takers	Capital to assets
	Large exposures to capital
	Geographical distribution of loans to total loans
	Gross asset position in financial derivatives to capital
	Gross 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 gross domestic product (GDP)
Nonfinancial corporations sector	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 1/

	Average daily turnover ratio in the securities market 1/
Real estate markets	Real estate prices
	Residential real estate loans to total loans
	Commercial real estate loans to total loans

1/ Or in other markets that are most relevant to bank liquidity, such as foreign exchange markets.

After several rounds of extensive consultation with experts from international agencies, standard setting bodies, and member countries, the IMF completed and published the Compilation Guide: Financial Soundness Indicators (Guide),[2] which provides guidance on the concepts, definitions, sources, and techniques used in compiling FSIs so as to encourage compilation of internationally comparable FSIs. The Guide provides guidance for compiling the 12 core and 27 encouraged FSIs (Table 20.1). To pilot the implementation of the Guide, the IMF in 2004 launched a Coordinated Compilation Exercise (CCE). In particular, the objective of the CCE is to develop member countries' capacities to compile FSIs; promote cross-country comparability of FSIs; and disseminate methodologically sound FSIs. Sixty two countries participated in the CCE, whose terms of reference required the compilation of the 12 core FSIs while encouraging compilation of as many of the encouraged FSIs as possible. As a result of the CCE, metadata and end-2005 FSI data for 57 of the participating countries have been posted on the IMF's website. Posting for the remaining countries is expected in the coming months.

Relevant international and regional organizations as well as compilers/coordinators from countries participating in the CCE met on May 29–31, 2007 to discuss their views and experience in compiling FSIs. A report to the IMF's Board later in 2007 will draw lessons from the CCE and make proposals for future IMF work on FSIs.

Meeting the data needs of the Balance Sheet Approach (BSA)

The BSA is a data intensive framework that requires significant amounts of stock/position data on economic sectors, and on currency denomination and maturities of sectoral assets and liabilities.

The development of the BSA has advanced with the introduction in 2005 of the standardized report forms (SRFs) for reporting monetary and financial statistics. The SRFs are based on sectoral balance sheets for the central bank, other depository corporations, and other financial corporations (as defined in the *1993 SNA*) and provide breakdowns by sectors and by domestic and foreign currency for both domestic and external assets and liabilities. SRF data can provide most of the information needed for the intersectoral framework of the BSA.

The external sector initiatives discussed above provide the other major source of data for the BSA – particularly CPIS, data in the IIP, and JEDH. These databases can be used to identify positions of the domestic sectors with the nonresident sector, often with breakdowns by maturity and instruments, and in some instances, currency.

The IMF recently studied the feasibility of organizing the available monetary and external sector data in the form of BSA matrices. It found that construction of BSA matrices was feasible for countries reporting SRF monetary data and data for the CPIS and the IIP. However, given differences in frequency and timeliness, monthly updates of BSA matrices must rely exclusively on SRF data at this stage. The work on the BSA

matrices is ongoing. Presently, about 80 countries report SRF data to the IMF, which are published in the *IFS Supplement on Monetary and Financial Statistics*.

Conclusion

Looking ahead, much work remains to be done. On the policy and analytical front, efforts need to continue to enhance the analytical framework of financial surveillance with a view to providing timely insights about the financial risks and vulnerabilities that individual countries face in a global economy. For this, more attention must be paid to macro-financial linkages, better use must be made of available data and information – both quantitative and qualitative – and there needs to be more focus on spillovers and cross-country links.

In the statistical area, wider production and reporting of more timely data is essential to further elucidate the patterns of global financial flows and understanding of the direction of direct investment worldwide. Continued efforts are also needed to expand the coverage of monetary statistics essential for the analysis of balance sheet linkages, particularly in the area of non-bank financial institutions and the non-financial private sector. Possible directions of future work on FSIs might include the regular collection of time series data as well as an expansion of the set of indicators to include additional FSIs for the non-bank sector.

Notes

1 For a detailed discussion on financial stability implications of globalisation of financial institutions, see Chapter 3 of the 2007 Global Financial Stability Report (Washington, International Monetary Fund).

2 The Guide was released in electronic format in 2004 and issued as an official IMF publication in 2006.