

The Balance Sheet Approach: Data Needs, Data at Hand, and Data Gaps (August 2009)

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Summary

This paper focuses on the data required for applying the Balance Sheet Approach (BSA) to assess strengths and vulnerabilities in economic sectors of an economy, discusses the availability of information, and identifies the data gaps that remain to be addressed to make possible meaningful assessments. The need to enhance data availability for those segments of the economy where the reporting of data is not well established has been highlighted by the current global financial crisis. Ongoing initiatives to address data gaps are also discussed. Rather than focusing on aggregate flows (e.g., fiscal and current account balances), the BSA focuses on stocks (e.g., asset and liability positions); it is a key component of a flow-of-funds framework. The BSA provides important insights into balance sheet mismatches that could exacerbate a sector's vulnerability to shocks, and helps identify interlinkages among sectors that could increase spillover risks. The BSA is consistent with the *System of National Accounts 1993 (SNA93 recently upgraded to 2008 SNA)* that provides the internationally accepted, integrated framework for both flows and stocks for an economy. Key official macroeconomic statistics methodologies consistent with the SNA and relevant for the BSA are the methodology for the balance of payments statistics (*Balance of Payments Statistics and International Investment Position Manual, Sixth Edition, BPM6; IMF, 2008; recently updated from BPM5*), the methodology for the monetary and financial statistics (*Monetary and Financial Statistics Manual, MFSM; IMF, 2000; and Monetary and Financial Statistics: Compilation Guide; IMF, 2008*), and the methodology for government finance statistics (*Government Finance Statistics Manual 2001, GFSM 2001; IMF, 2001*). The methodologies for external debt statistics (*External Debt Statistics, Guide for Compilers and Users; IMF, 2003*), the *Coordinated Portfolio Investment Survey, Second Edition, (CPIS)*; and the *International Reserves and Foreign Currency Liquidity, Guidelines for a Data Template (Reserves Template)* complement the methodological background for the BSA. The methodology for the Financial Soundness Indicators (*Financial Soundness Indicators: Compilation Guide; IMF, 2006*) provides a complementary framework for financial stability analysis. The operational basis of the BSA is a matrix summarizing the asset and liability positions of the main sectors of the economy (the central bank, the general government, other depository corporations, other financial corporations, the nonfinancial sectors (nonfinancial corporations, the households and nonprofit institutions serving households—NPISH), and the rest of the world. Ideally, the analysis starts with a compilation of the data needed to fill the cells of this matrix. Data for financial assets and liabilities are often readily available, except for the general government, and the nonfinancial sectors. Data for nonfinancial assets is often lacking. Although availability of data for applying the BSA has improved recently, due both to greater sectoral and financial instrument coverage, gaps remain. There is room for improvement in the timeliness and frequency of data on the nonbank financial sector, the external sector, and the general government. Coverage issues remain to be addressed, including regarding country coverage and data on nonbank financial corporations, and the nonfinancial sectors (households and corporations). Also, there are wide differences in coverage and definitions in national fiscal data. In addition, work is needed to fill gaps in information regarding ultimate risk and credit risk transfers. Data limitations notwithstanding, the insights from even a partial BSA analysis are useful.

¹ Disclaimer: The views expressed in this paper are those of the author and should not be attributed to the International Monetary Fund, its Executive Board, or its management.

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1. The Balance Sheet Approach

The balance sheet approach (BSA) has a long tradition in the International Monetary Fund (IMF). Development of crisis models based on analysis of sectoral balance sheets started after the 1994-95 Mexican crisis and included work at the Fund, for example, Bussière and Mulder (1999) and Johnston, et al. (2000). Allen et al. (2002) launched a systematic application of the BSA and since that time the IMF has used insights from balance sheet concepts in its surveillance work, crisis management, the design of IMF-supported programs, and financial stability and vulnerability analyses. An application to emerging-market countries is presented by Rosenberg, et al. (2005). An example of an earlier application to the analysis of private sector indebtedness is provided by Arriazu, Leone, and Lopez Murphy (1987). More recently, Mathisen and Pellechio (2006) provide practical guidance on how to design the framework to analyze vulnerabilities in a country and an overview of data sources that can be employed for this analysis, and discuss how new datasets are enhancing surveillance activities related to balance sheet vulnerabilities.

1.1. The Framework

An economy can be described by a system of balance sheets and accumulation accounts of all its agents. For a particular sector, a simplified version of this system is as follows:³

Table 1. Balance Sheet and Accumulation Accounts

Assets	Liabilities and Net Worth
A. Opening Balance Sheet	
Nonfinancial Assets Financial Assets	Liabilities Net Worth
B. Changes in Balance Sheet (accumulation accounts)	
B.1 Transactions	
Acquisitions less disposals of nonfinancial assets Net acquisition of financial assets	Net incurrence of liabilities Changes in the net worth due to saving and capital transfers
B.2 Other Changes in Volume of Assets Account	
Changes in Assets Nonfinancial Financial	Changes in Liabilities Changes in net worth due to other changes in volume of assets
B.3 Revaluation Account	
Nominal holding gains (+)/losses(-) Nonfinancial assets Financial assets	Nominal holding gains (+)/losses(-) Liabilities Changes in net worth due to nominal holding gains/losses
C. Closing Balance Sheet	
Nonfinancial Assets Financial Assets	Liabilities Net Worth

This simple framework shows the stocks of assets and liabilities and their changes for individual sectors and the economy as a whole for a specific period of time. In particular, the balance sheets show the values of assets and liabilities at the beginning and at the end of a period. They inform about the types of assets owned by an economy and the structure of its debt and other liabilities. The

³ See International Monetary Fund (2007).

difference between the total stock of assets and the total stock of liabilities is the net worth of the economy. Changes between the opening and the closing balance sheets are fully explained by the transactions (accumulation accounts) and the other economic flows (other changes in volume of assets and revaluation accounts).

Rather than focusing on the analysis of flow variables occurring over a defined period of time (such as annual output, fiscal balance, current account balance, or investment flows), the BSA focuses on the analysis of stocks of assets and liabilities such as debt, foreign reserves, and loans outstanding at a certain point in time. The issue is not that the traditional flow-based analysis of gradual buildups of positions is not relevant (indeed the buildup of unsustainable fiscal and current account positions should be a matter of concern), but that the BSA can be a useful complement to identify shocks to the stocks of assets and liabilities that could trigger large adjustments in flows.

1.2.1. Sectoral Balance Sheets and their Interlinkages

Over the past 15 years, the statistical community has promoted the integration of macroeconomic databases. Of critical importance has been the development of a consistent and coherent economic statistics system that covers the main macroeconomic datasets: national accounts and prices; government; monetary and financial; and external statistics. The definition of residence, economic sectors, and instruments are harmonized; accrual accounting and valuation methods are consistent; positions and flows integrated; and *the System of National Accounts 1993 (SNA93, recently updated to 2008 SNA)* is accepted as the central organizing framework. Further, reflecting an increased emphasis in Fund work on vulnerabilities, the framework for statistics on assets and liabilities stocks has been strengthened. Central has been the BSA, which analyzes an economy as a system of interlinked sectoral balance sheets, and provides important insight into balance sheet mismatches (i.e., maturity, currency, and capital structure) that could exacerbate a sector's vulnerability to shocks.

The BSA is consistent with the SNA that provides the internationally accepted, comprehensive, integrated framework for both flows and stocks for an economy. Key official macroeconomic statistics methodologies consistent with the SNA and relevant for the BSA are the methodology for the balance of payments statistics (*Balance of Payments Statistics and International Investment Position Manual, Sixth Edition, BPM6; IMF, 2008; recently updated from BPM5*), the methodology for the monetary and financial statistics (*Monetary and Financial Statistics Manual, MFSM; IMF, 2000; and Monetary and Financial Statistics: Compilation Guide; IMF, 2008*), and the methodology for government finance statistics (*Government Finance Statistics Manual 2001, GFSM 2001; IMF, 2001*). The methodologies for external debt statistics (*External Debt Statistics, Guide for Compilers and Users; IMF, 2003*), the *Coordinated Portfolio Investment Survey, Second Edition, (CPIS)*; and the *International Reserves and Foreign Currency Liquidity, Guidelines for a Data Template (Reserves Template)*, complement the methodological background for the BSA. The methodology for the Financial Soundness Indicators (*Financial Soundness Indicators: Compilation Guide; IMF, 2006*) provides a complementary framework for financial stability analysis.⁴

The sectorization of the economy and components of the balance sheet in the BSA, depends on the focus of analysis and, as a practical matter, availability of data. For instance, Allen et al. (2002) provided a generic matrix encompassing four sectors (government, financial, nonfinancial, nonresident) with assets and liabilities broken down by maturity (short term, long term) and currency (domestic, foreign). Mathisen and Pellechio (2006) uses the same breakdown of assets and liabilities but expands it to seven sectors. For the purposes of this presentation we will use the same sectorization and breakdown used by Mathisen and Pellechio (2006). Given the difficulties in obtaining information on nonfinancial assets, the focus here will be on financial assets and liabilities. The BSA can be augmented to include off-balance sheet items, such as contingent claims or collateral that may have an impact on assets and/or liabilities at some point in time. Table 2 presents an intersectoral Financial Asset and Liability Position matrix.

⁴ For a comprehensive source of information on data published by the IMF as well as on data standards and statistical methodologies, manuals and compilation guides, please see the IMF website at: <http://www.imf.org/external/data.htm>

Table 2. Intersectoral Financial Asset and Liability Position Matrix

Holder of Liability (Creditor) ► Issuer of Liability (Debtor) ▼	Central Bank	General Government	Other Depository Corporations	Other Financial Corporations	Nonfinancial Corporations	Other Resident Sectors	Nonresidents
I. Central Bank Monetary Base Total Other Liabilities Short-Term Domestic Currency Foreign Currency Medium- and long-term Domestic Currency Foreign Currency Equity <i>Off-balance sheet items</i>							
II. General Government Total Other Liabilities Short-Term Domestic Currency Foreign Currency Medium- and long-term Domestic Currency Foreign Currency Equity <i>Off-balance sheet items</i>							
III. Other Depository Corporations Same components as in II above							
IV. Other Financial Corporations Same components as in II above							
V. Nonfinancial Corporations Same components as in II above							
VI. Other Resident Sectors Same components as in II above							
VII. Nonresidents Same components as in II above							

The sectorization and breakdowns presented in Table 2 are helpful to identify weaknesses in key sectoral balance sheets that could contribute to the emergence of country-wide imbalances and make a country vulnerable to reversals or sudden stops of external financing flows. The sectoral balance sheets presented in Table 2 also facilitate the understanding of the financial linkages among the various sectors of the economy and, thus, how difficulties in one sector can cascade into other sectors. Moreover, as noted by Rosenberg et al. (2005), the sectoral balance sheets are useful to highlight maturity, currency, and capital structure mismatches. Maturity and currency mismatches create exposure to changes in interest rates and exchange rates. Capital structure mismatches relate to the balance between debt and equity and can reduce a sector's ability to bear a range of risks. All these mismatches could lead to market, liquidity, and solvency risks.

2. Data for the Balance Sheet Approach

2.1. Data Needs

To fill each of the cells of the matrix in Table 2 we need detailed information on the assets and liabilities of the central bank, the general government (all government units and all nonmarket nonprofit institutions that are controlled and mainly financed by government units⁵), other depository corporations, other financial corporations, nonfinancial public and private corporations, other resident sectors (households and NPISH), and the rest of the world. The information should include proper disaggregation of financial assets and liabilities according to currency of denomination and maturity composition. Maturity defined on a "remaining maturity basis" is more suitable for the assessment of risks and vulnerabilities (although most economic data is compiled on an original maturity basis). Moreover, detailed information on off-balance sheet positions is needed.

These data are needed because the purpose of the BSA is to analyze vulnerabilities of sectors and the interlinkages among them. Key vulnerabilities that the BSA framework aims to capture (as described, for instance, in Rosenberg et al (2005)) can be summarized as follows:⁶

- Maturity mismatches between short-term liabilities and longer-term assets expose borrowers to rollover risk (i.e., inability to refinance maturing debts) and interest rate risk (differential impact of interest rate movements on asset and liabilities, depending upon interest rate structure⁷). For instance, maturity mismatches in foreign currency may create difficulties if, due to a change in market conditions, domestic borrowers do not have enough liquid foreign currency assets to cover short-term foreign currency debt. Financial entities that borrow short term to invest in long-term debt instruments with fixed interest rates would suffer from a rise in interest rates which may have a significant impact on their liquidity or solvency.
- Currency mismatches arise when the composition of the borrowers' liabilities (foreign and domestic currencies) is different from the composition of its assets. One specific case is one in which the borrowers' liabilities are denominated in a foreign currency but their assets are denominated in the domestic currency. In the event of a sharp depreciation, these borrowers may well have trouble paying their creditors. Experience in a number of countries has shown that, in certain circumstances (e.g., long-standing exchange rate stability), borrowers and lenders may well underestimate exchange rate risk.
- Capital structure mismatches may occur when a private firm or a public corporation relies on debt rather than equity to finance investment. Equity provides a buffer during hard times to firms, because dividends drop along with earnings, whereas debt payments remain constant. At the country level, financing current account deficits with debt (particularly short-term debt) rather than with direct investment has typically been seen as generating greater crisis vulnerability.

⁵ See *Government Finance Statistics Manual 2001*, chapter 2.

⁶ Other market risks that stem from potential sharp declines in the price of assets such as government bonds, real estate, or equities should be considered key balance sheet risks if exposure is sufficiently large.

⁷ Assessing rollover risk is straightforward but assessing interest rate risk is more complex. Aspects such as duration and hedging are relevant in assessing interest rate risk and these are not captured in the BSA matrix.

Maturity, currency, and capital structure mismatches can all increase the risk that a negative shock will cause liquidity problems or drive large parts of one or more sectors into insolvency. Liquidity problems are generally associated with inadequate resources to cover short-term payment requirements. Solvency problems might arise when an entity's liabilities are not commensurate with its assets and the net present value of future net income streams—for example, when government debt is too high in comparison to government assets and the net present value of primary surpluses. Liquidity and solvency problems might be separate events, but can be related as, for example, when solvency problems spillover to liquidity problems or repeated liquidity problems raise concerns about solvency.

The BSA is designed to identify key indicators of a sector's vulnerability, including:

- Net financial position, defined as financial assets minus financial liabilities.⁸ A large negative position can point to solvency problems, especially if leverage—debt as a share of total liabilities—is high;
- Net foreign currency position, defined as foreign currency assets minus foreign currency liabilities. A sector with a large negative position is vulnerable to exchange rate depreciation; and
- Net short-term position, defined as short-term assets minus short-term liabilities. A large negative short-term position indicates vulnerability to interest rate increases and to rollover risk.

2.2. Data at Hand

In an optimal situation, we would count with the information to compile the data required to fill each of the cells of the matrix in Table 2 directly. In such a situation, the assets reported by a sector should match the corresponding liabilities reported by the counterpart sector. However, it may be the case that assets and counterpart liabilities do not match and the analyst has to decide which information is more accurate. Even in cases where the information is not complete to fill each of the cells we could be in a close-to-optimal situation when we have enough information on assets and/or liabilities to fill some of the cells directly and fill the remaining cells indirectly by using the counterpart assets and/or liabilities. The reality is, however, that there are wide differences among countries on whether they are in optimal, close-to-optimal, or far from optimal situations regarding availability of data.

As noted by Mathisen and Pellechio (2006), databases based on methodologies relevant for the BSA are potential sources of data for its application. The BSA can be applied to cross-sector analysis of vulnerability within an individual country or for cross-country analysis of vulnerability using information from statistical databases for monetary and financial statistics (MFS), in particular, the standardized report forms (SRFs), the balance of payments (BOP) and the International Investment Position (IIP), the Quarterly External Debt Statistics (QEDS), and the Joint External Debt Hub (JEDH), the Data Template on International Reserves and Foreign Currency Liquidity (Reserves Template), the Coordinated Portfolio Investment Survey (CPIS), and government finance statistics (GFS) data. Nearly all entries in the 7x7 intersectoral framework for the BSA could be filled using the SRFs, the BOP/IIP, the QEDS/JEDH, CPIS, and GFS data.

2.2.1. Financial Sector

In 2005, the IMF introduced the SRFs which are consistent with the *MFSM and the MFS Compilation Guide*. The SRFs are based on sectoral balance sheets for the central bank, other depository corporations, and other financial corporations, as defined in the *MFSM*. They provide the required breakdown by domestic and foreign currency as well as information on the maturity structure, and the required decomposition by domestic sectors. A mapping of SRF data into the BSA framework can be

⁸ BSA is largely based on financial statistics. Nonfinancial assets, such as real estate—often a major component of households assets—are therefore not included as they are not sufficiently liquid to be useable in a crisis. Nonfinancial sectors have large nonfinancial assets and, therefore, large negative net financial positions. The concept of net financial position is therefore different from the net worth often used to assess whether the operations of the entity (or sector) can be sustained over the medium to long term. BSA is not intended to reflect the “true economic position” of an economy or sector, but merely its macroeconomic vulnerability.

made for all countries that compile and report SRFs. For countries submitting SRFs, the BSA template can be populated with a high level of detail to provide an up-to-date analysis comparable across countries. At present, 115 countries submit SRFs to the IMF covering the central banks and other depository corporations, but only 23 countries cover other financial corporations. With the exception of a few of these cases, information has a monthly periodicity (and for the rest of the cases the periodicity is quarterly). For remaining intersectoral relationships, other data sources, for example, BOP/IIP, QEDS/JEDH, CPIS, GFS data, can be used as noted below.

The SRF data can provide the information needed to fill in a majority of entries in the 7x7 intersectoral framework for the BSA (Table 2). For entries where the assets and liabilities overlap for the central bank, other depository corporations, and other financial corporations, the assets reported by a sector should match the corresponding liabilities reported by its counterpart. This is not always the case and the analyst has to decide which information is more accurate.

The Bank of International Settlements (BIS) International Banking Statistics (IBS) is also a relevant source of information for the BSA. The initiative to collect information on the cross-border activities of internationally active banks resides with the Committee on the Global Financial System (CGFS). Two sets of data are collected quarterly. The so-called locational banking statistics measure international claims and liabilities of all banks in the respective reporting countries using standard balance of payments concepts. The consolidated banking statistics cover worldwide consolidated claims of domestically owned banks, building on measures of country risk exposures used by banks in their internal risk management systems. The BIS IBS bring together national data in a consistent and comparable way. The reporting frameworks provide a detailed breakdown according to currency composition, maturity, sectoral allocation, trading counterparty, instrument and so-called vis-à-vis country. The statistics can be used for various purposes. For instance, the data allow the extension of domestic monetary and credit aggregates to capture cross-border and foreign currency positions. They allow the monitoring of stocks and flows of external debt with breakdowns that are often not available from debtor sources, for instance vis-à-vis nonbanks and by currency and maturity. Balance of payments compilers use the BIS statistics to fill gaps in reporting or to doublecheck national data sources. Finally, the data shed light on risk exposures of international creditor banks.

2.2.2. External Sector

The update of balance of payments statistics to the *BPM6* is very recent, and most countries still collect data on the basis of *BPM5* which does not explicitly call for a currency breakdown.⁹ This is not necessarily a serious problem for assets as, for nearly all countries, the vast majority of external assets are denominated in foreign currency. BOP, IIP, QEDS, and JEHD data present short- and long-term maturity breakdowns on an original maturity basis consistent with *SNA93*.

The IIP, the balance sheet of the stock of external financial assets and liabilities of an economy which presents data on a country's external financial position, is another useful data source for the BSA. It is a statistical statement that shows at a point in time the value and composition of: (a) financial assets of residents of an economy that are claims on nonresidents and gold bullion held as reserve assets, and (b) liabilities of residents of an economy to nonresidents. Data items include financial claims on and liabilities to nonresidents, equity assets and liabilities, financial derivative instruments, monetary gold, and SDRs. The liability component of the IIP data is closely related to QEDS. IIP data are currently available on an annual basis for about 70 economies.

The introduction in 2004 of the online QEDS dataset, based on the *External Debt Statistics, Guide for Compilers and Users*, provides information on external debt liabilities with breakdowns by currency and maturity that can be used in the BSA framework. The QEDS database, jointly developed by the World Bank and the IMF, brings together detailed external debt data of countries that subscribe to the IMF's Special Data Dissemination Standard (SDDS) and a selected number of countries that participate in the IMF's General Data Dissemination System (GDDS). The benefit of bringing together comparable external debt data is to facilitate macroeconomic analysis and cross-country data comparison. The participation of countries in this centralized database is voluntary. Currently, 61 countries have agreed to participate in the SDDS/QEDS database and 34 Low-Income Countries (LICs) to provide data to the GDDS/QEDS database. Other countries may be asked to participate on

⁹ Implementation of the *BPM6* is expected to begin in 2012.

the centralized database at a later stage. The database is updated quarterly (within one month of the end of a quarter), includes country and cross-country tables, and enables users to query and extract data, by country, group of countries, and specific external debt components. Breakdowns include short- and long-term maturity of the debt based on original maturity, and financial instruments (currency, deposits, money market instruments, bonds and notes, loans, trade credits, and other debt liabilities). QEDS also includes supplementary information on a remaining maturity basis.

Another online external debt database useful for the BSA is the JEDH based on creditor and market sources for the external debt of developing and transition economies. The database was launched in March 2006 jointly by the BIS, the IMF, the Organization for Economic Co-operation and Development (OECD), and the World Bank (WB) and brings together external debt data for 217 economies that are available from the four agencies, including national external debt data for most SDDS subscribers. Data on selected external debt components (all- and short-term maturities), including bank loans, official bilateral loans, debt securities issued abroad, and insured export credit exposures, are disseminated on a quarterly basis. The database complements external debt statistics based on national sources, filling important coverage gaps particularly in the area of private sector external liabilities.

The Reserves Template provides a consistent framework for assessing a country's official foreign currency liquidity position on a comprehensive and timely basis. As part of the efforts to strengthen the SDDS, in March 1999 the IMF's Executive Board approved the incorporation of the Reserves Template into the SDDS as a prescribed component with a transition period to run through end-March 2000. Following the end of the transition period, SDDS-subscribing countries began disseminating the template data on a monthly basis, with no more than a one-month lag. Data was first disseminated for end-April 2000 by the end of May 2000. The Reserves Template establishes standards for the provision of information to the public on the amount and composition of official reserve assets, other foreign currency assets held by the monetary authorities and the central government, short-term foreign currency obligations, and related activities (such as financial derivatives positions and guarantees extended by the government for quasi-official and private sector borrowing) of the monetary authorities and the central government that can lead to drains on reserves and other foreign currency assets. Operational guidelines designed to assist countries in the preparation of template data were issued in October 1999. An IMF's website¹⁰ redisseminates IMF member countries' data on international reserves and foreign currency liquidity in a common template and in a common currency (the U.S. dollar). Historical data by country and selected topics are also available. The Reserves Template is currently disseminated by the 64 SDDS subscribers and New Zealand.

The CPIS provides survey data on cross-border holdings of securities, by counterpart jurisdiction of issuer. The CPIS is an annual survey of portfolio investment assets for 74 countries based on a methodology drawn from the *BPM5*. The CPIS has been undertaken on an annual basis since 2001, but data are also available for the 1997 CPIS. The CPIS collects comprehensive information on the stock of cross-border holdings of equities and short- and long-term debt securities valued at market prices and broken down by the economy of residence of the issuer. This global database includes data on reported cross-border holdings of securities and derived portfolio investment liabilities with the capacity for showing bilateral and partner economy data from the creditor or debtor perspective. The CPIS is a useful data source for estimating intersectoral asset and liability positions with nonresidents both directly and through derived counterparty country information. It contains some information on sector of holder and currency of issue, but lacks the necessary breakdown on sectoral liabilities to nonresidents. The data are available with a lag of one year or more.

2.2.3. General Government

Introduction of the *GFSM 2001* represented a significant step toward the presentation of GFS in a manner consistent with the BSA. An innovation of the *GFSM 2001* is the integration of a balance sheet in the framework for public sector statistics. As prescribed by the *SNA93*, this framework integrates transactions and other economic flows with stocks of assets and liabilities. It is similar to balance sheets for other sectors, thereby facilitating intersectoral comparisons. By breaking down the total assets and total liabilities into their constituents and establishing the sources of changes in them from

¹⁰ <http://www.imf.org/external/np/sta/ir/index.htm>

one period to another in terms of transactions and other economic flows, this framework provides a strong statistical explanation of the factors causing the change in the net worth of government. The IMF online GFS database contains detailed annual statistical data on revenue, expense, transactions in assets and liabilities, and stocks of assets and liabilities of the general government and its subsectors as reported by member countries. Subannual GFS are available through the online application relating to *International Financial Statistics (IFS)*. Nearly 100 countries have begun to report data, albeit only on an annual basis, according to the classifications, aggregates, and analytical balance sheet of the GFS framework for publication in the IMF's online GFS database.

3. Data Gaps

For some of the sectors in the BSA matrix of Table 2, complete information on their total financial assets and liabilities is hard to obtain because of gaps in reporting systems. There are also gaps in coverage, including country coverage, as well as in the data on off-balance sheet positions and contingencies, and derivatives, including some highly relevant to the ongoing crisis such as credit default swaps. Additional issues result from the securitization of assets held by special purpose vehicles.

3.1. Gaps in Timeliness and Frequency

Ideally, the BSA matrix presented in Table 2 should be populated with cross-country comparable, timely, and high-frequency data. Although data availability for a high-frequency and up-to-date BSA matrix is improving, significant issues remain to be addressed as highlighted by the ongoing global financial crisis.

A major improvement in filling the cells of the BSA matrix resulted from the introduction in 2004 of the SRFs for MFS data which provides the vast majority of the required intersectoral balance sheet positions. The key advantage of these datasets—which so far encompasses more than 115 countries—is that they are compiled monthly, with a high level of detail, and are standardized across countries. Data on government and nonfinancial corporations' liabilities to nonresidents can be obtained from the online QEDS. IIP data can be used to fill cells on sectoral positions vis-à-vis nonresidents. In cases where IIP data are not available, JEDH data can fill in some of the gaps, in particular of nonfinancial domestic sectors' liabilities to nonresidents, and the CPIS provides information on domestic sectors claims on nonresidents, albeit with a substantial lag and on an annual frequency. The Reserves Template provides additional information on foreign currency positions. Also, the online GFS database contains detailed country data on stocks of assets and liabilities for the general government and its subsectors. In general, except for the central government, the government liabilities to the nonfinancial domestic sectors are not readily available, nor are government claims on the nonfinancial domestic sectors as well as nonfinancial domestic sector holdings of claims on government although the latter two gaps are generally considered to be minor.¹¹

Notwithstanding the noted improvements, there are gaps in timeliness and frequency of data required for the BSA, particularly regarding nonbank financial corporations, external sector, and GFS. Timely, monthly MFS are available for about 115 countries, and the Reserves Template provides additional timely information on foreign exchange positions also with a monthly frequency but for only 65 countries. The remaining gaps to populate the BSA matrix could be filled with data on external debt statistics coming from the QEDS and the JEDH, but these are only available on a quarterly basis. Statistics from the IIP (for just 70 economies), the CPIS (for 74 countries), and the GFS (for more than 100 countries) are only available with an annual frequency which is not ideal to monitor trends.

3.2. Gaps in Coverage

Even in the case of financial sector data, which normally is best in terms of timeliness and frequency, there are gaps in country coverage. Not all countries report sufficiently detailed data to fill the information required by the BSA. Gaps in country coverage are most significant in the data for other financial corporations, GFS (except for the central government), nonfinancial corporations, and other residents.

¹¹ These gaps are expected to be closed by a proposed public debt template which covers detailed sectoral claims of and liabilities to the government.

Gaps in coverage persist even for the depository corporations with implications for the BSA. The ongoing financial crisis has highlighted information gaps regarding the systemic risk posed to banks (and other financial sector entities) by off-balance sheet (special purpose) entities and positions, exposures arising from complex structured products (and their valuation), and cross-border counterparty exposures. Since these issues are also of interest to regulators and accountants, statisticians need to keep apprised of their work, because regulatory and accounting data serve as inputs in the production of economic and financial statistics. These information gaps highlight the need for greater granularity/disaggregation of data even for the banking institutions and, in particular, for systemically important global financial institutions.

Nonbank financial corporations have traditionally been less well covered than banks. Over recent years, a so-called “shadow financial system” has developed involving financial intermediaries not subject to prudential regulation. The current crisis suggests that the systemic importance of these other financial corporations may have been underappreciated, not least with regard to their interconnectedness with banks.

The crisis has raised a number of challenges for GFS. There are data gaps and difficulties in comparing government finance data across countries because of wide differences in coverage and definitions in national fiscal data. For example, for one country data may cover only budgetary institutions, while for another it may include extra-budgetary units and social security funds. While it is possible that, for national purposes, countries may use different coverage depending on the way they undertake fiscal policy, comparable data is needed to facilitate cross-country comparisons.

The importance of sectoral balance sheets, not just for the financial sector and the government but also the nonfinancial corporate and households sectors, has also been highlighted by the current crisis. There is a lack of official data on the balance sheets of the nonfinancial sectors, particularly the nonfinancial corporate and household sectors, that are important for producing comprehensive and integrated sectoral balance sheets for the economy. Increased availability of the financial accounts and balance sheets of these sectors would advance the analysis of the systemic risks and vulnerabilities, and of the interlinkages between the real and the financial sectors. For the BSA purposes, better information is needed, in particular, on the financial operations of nonfinancial corporations that have significant links in national economies and across borders, to identify vulnerabilities, such as foreign currency exposures. This issue ties in with the ongoing work on the SNA implementation programs and includes improving timeliness, frequency and country coverage.

The impact of house prices on household net worth is highly relevant to the current crisis, but country practices in compiling these data are uneven.¹² The availability of other housing-related data, such as housing finance, also varies across countries. Real estate prices, residential real estate loans to total loans, and commercial real estate loans to total loans are all identified in the list of encouraged Financial Soundness Indicators (FSIs), described below, but there is a need to develop methodologies and improve data availability. Over the past few years, several workshops have been held on the topic of real estate price indices (IMF, BIS, and OECD). Under the auspices of the Inter-Secretariat Working Group on Price Statistics (the UN Economic Commission for Europe, International Labor Organization, IMF, OECD, WB, and Eurostat), a handbook on real estate price indices is being developed, sponsored by Eurostat.

As indicated above, the external balance sheet of an economy is the IIP. At present, even though it is encouraged by the SDDS, quarterly reporting of these data is not widespread—just under 50 economies report quarterly IIP data to the IMF. The ongoing crisis has focused increased attention on vulnerabilities in the external position data, thereby complementing the more traditional focus on transactions data. Further, while financial statistics are compiled on an original maturity basis (the maturity at the time of issuance), the recent crisis has highlighted the importance of data on a remaining maturity basis to facilitate the liquidity analysis arising from the need to rollover or repay debt that is falling due in the short term.

¹² A volume on a joint IMF/BIS conference which took place in 2003, *Real Estate Indicators and Financial Stability* (<http://www.imf.org/external/pubs/ft/reif/2005/eng/index.htm>) focuses on the relationship between the real estate price cycle, and economic cycles and financial sector vulnerabilities. Several papers in this volume highlight challenges in compiling information on real estate prices and real estate market conditions.

Information on ultimate risk and credit transfer instruments indicating where the risks lay and their scale is lacking. While traditional frameworks remain relevant, the concepts of ultimate risk (including the use of off-balance sheet structures and special purpose vehicles) and credit risk transfers, including through structured products, need to be explored because the lack of information on where the risks lay and their scale disguise interlinkages within and among economies. This issue is multi-faceted, and includes developing conceptual frameworks, drawing on existing practice as far as possible.

Ultimate risk can be distinguished from credit risk transfer in the sense that ultimate risk is a term more focused on institutional units. Indeed, the recent crisis raised this issue in terms of ascertaining the total amount of debt outstanding when “onshore” corporates, both financial and nonfinancial, use offshore entities to raise finance and provide implicit guarantees. Measuring external debt on an ultimate risk basis is set out in the Interagency Task Force on Finance Statistics’ (TFFS),¹³ *External Debt Guide* (paragraphs 9.25 to 9.29), which drew on the BIS work with the consolidated banking data on an ultimate risk basis.

Credit risk transfers is a term more focused on the instruments used to transfer risk, such as credit default swaps. In this context, the BIS’s CGFS is presently looking at credit risk transfer data, particularly on credit default swaps. It has established a Task Force on Credit Risk Transfers chaired by the European Central Bank (ECB), to which the IMF is contributing with comments through the BIS.

In sum, there is room for improvement in data availability to ascertain the systemic risk posed to banks (and other financial sector entities) by off-balance sheet (special purpose) entities and items, exposures arising from complex structured products (and their valuation), and cross-border counterparty exposures. Moreover, the ongoing global financial crisis has highlighted the need to enhance data availability for those segments of the financial sector where the reporting of data is not well established, such as the nonbank financial corporations, and the nonfinancial sectors (households and corporations). There are also data gaps and difficulties in the comparability of government finance data, with wide differences in coverage and definitions in national fiscal data. In addition, work is needed to fill gaps in information regarding ultimate risk and credit risk transfers.

4. New Initiatives

The challenge to enhance the power of the BSA is improving the frequency, timeliness, and coverage of the relevant datasets. Against the background of the lessons from the current crisis, the Statistics Department (STA) of the IMF has launched new initiatives to focus on data availability and timeliness and to help identify statistics that could shed further light on financial stability issues.¹⁴ The latter includes the work on FSIs and securities. These initiatives involve intensive dialogue with internal users and other international agencies as well as with member countries.

In late 2008, the Fund created the Inter-Agency Group on Economic and Financial Statistics (Inter-Agency Group) involving the BIS, the ECB, Eurostat, the OECD, the United Nations (UN), and the WB. The Inter-Agency Group agreed in February 2009 to set up a common public online website, the Principal Global Indicators (PGI) website,¹⁵ that displays:

- predetermined tables of statistics and links to national websites, for central banks, regulatory agencies and national statistical offices of G-20 economies, as well as to the SDDS National Summary Data Page (NSDP) of G-20 economies that subscribe to the SDDS; and
- links to relevant websites, including the constituent agencies of the Inter-Agency Group; papers that are relevant to the site; cross-country datasets (a high priority for many users); and a queries link that allows users to ask questions and provide feedback.

¹³ The international agencies represented on the TFFS are BIS, Commonwealth Secretariat, Eurostat, ECB, IMF, OECD, Paris Club, UNCTAD, and the WB.

¹⁴ See also Burgi-Schmelz (2009).

¹⁵ <http://financialdatalink.sharepointsite.net/default.aspx>

The website was launched in April 2009 and will be enhanced over time. One idea is to develop a set of “Principal Global Economic Indicators” similar to the European set of “Principal European Economic Indicators,” with an obvious starting point being the datasets of the SDDS, given their global acceptance. Another idea is the inclusion of some non-G-20 economies members of the Financial Stability Board (FSB) as a possible expansion.

The benefits of this inter-agency approach are that it mobilizes existing resources, builds on the comparative advantages of each agency, and supports data sharing in a coordinated manner. The international agencies have access to selected country datasets that they present in a manner broadly comparable across countries. For instance, the IMF maintains the *International Financial Statistics (IFS)* Database, for which data are voluntarily reported by member countries. The intent is to draw on these international agency databases in an innovative and cooperative manner, as encapsulated in the PGI website, to form a global source of key economic and financial data. This is modeled to some extent on the experience of the JEDH, which successfully brings together external debt data from the BIS, IMF, OECD, and the WB. The PGI website, by focusing on existing data of international agencies, is a separate but complementary initiative to the SDDS, which has a focus on the dissemination of standard datasets by individual economies.

The work of the Inter-Agency Group was referenced in the G-20 Working Group #2 (Reinforcing International Co-operation and Promoting Integrity in Financial Markets) which notes that: “The Working Group also recognized that for effective early warnings data collection needs to be strengthened. The IMF is already seeking to enhance its collaboration with national authorities responsible for financial stability assessments to enhance data availability, including with regard to cross-border exposures. For example, an interagency group has been established to strengthen finance statistics, chaired by the IMF and including the BIS, ECB, OECD, Eurostat, the UN, and the World Bank. The Group recommends asking the IMF and the FSB to explore gaps and provide appropriate proposals for strengthening data collection before the next meeting of G-20 Finance Ministers and Central Bank Governors.” In April 2009, the International Monetary and Financial Committee (IMFC), the governing body of the IMF, welcomed the work of the IMF with the FSB to provide better indicators of systemic risks and address data gaps, and underlined the importance of international cooperation in preventing such systemic risks.¹⁶

Within the IMF, work is progressing to help fill the remaining information gaps through the further implementation of SRFs for nonbank financial corporations. In addition, the IMF has developed indicators to measure financial soundness (FSIs). Having developed the methodology and undertaken a pilot compilation earlier in the decade, STA is initiating regular compilation and dissemination of data on indicators of the current financial health and soundness of financial institutions and, to a lesser extent, their client sectors. FSIs capture the global activities of banking groups located in an economy and are compiled closely following supervisory and international accounting standards. Measures of liquidity and real estate indicators are also included. Based on the *Compilation Guide on Financial Soundness Indicators*, 62 countries have made a coordinated effort to compile FSIs data and metadata. Data, for about 40 of those countries, started to be disseminated by the IMF in July 2009. The FSI data, in particular those for key nonfinancial sectors covered, will usefully support and complement financial stability analysis and BSA applications. In particular, the cross-sector and cross-border consolidated data underlying the FSIs of financial institutions cover complex banking systems with significant foreign subsidiary and branch networks. Such data may not be used directly in the BSA framework but provide additional information on vulnerabilities, not least arising from foreign subsidiaries and branches. The lack of regular and uniform reporting of FSIs for the banking sector has been a clear lacuna, along with incomplete information on other financial institutions.

The importance of identifying the size and key segments of securities markets, particularly in emerging-market countries, was identified in 2007 by the Group of Eight finance ministers and has led to the preparation of a *Handbook on Securities Statistics*—a major initiative of the Working Group on Securities Databases (WGSD), chaired by the IMF (and involving the BIS, the ECB, and the WB). The first part of the *Handbook*, focusing on statistics for debt securities issuance, was issued in May 2009. The second part of the *Handbook*, focusing on debt securities holdings, is under preparation.

¹⁶ Communiqué of the International Monetary and Financial Committee of the Board of Governors of the International Monetary Fund, April 25, 2009: <http://www.imf.org/external/np/cm/2009/042509.htm>

Regarding GFS, STA intends to work with countries to promote high-frequency (quarterly) fiscal data covering the general government sector on a harmonized basis, not least by initiating projects with some major countries. Also, in consultation with the agencies in the TFFS, STA is developing a *Public Debt Statistics Guide (Guide)* for the compilation and dissemination of public sector debt statistics. The TFFS agreed that the IMF will prepare, with contributions from the other agencies, a full draft version of the *Guide* for agencies' review at the 2010 TFFS meeting.

Another initiative which will benefit the BSA is the Coordinated Direct Investment Survey (CDIS) which the IMF is conducting in conjunction with its interagency partners, including the OECD, the Statistical Office of the European Communities, the ECB, and the UN Conference on Trade and Development. As of the end of May 2008, more than 130 economies had indicated interest in the CDIS, including virtually every major FDI investing and FDI receiving economy. The purpose of the CDIS is to improve the quality of direct investment position statistics in the IIP and by immediate counterpart economy. Specifically, the objectives of the CDIS are to collect comprehensive and harmonized data, with geographic detail, on direct investment positions, with equity reported separately from debt investment. The measurement date is end-2009. Data for both inward and outward direct investment positions are sought. Nonetheless, for countries where outward direct investment is not material, data on inward direct investment positions are sufficient for participation in the CDIS. The first estimates are to be reported to the IMF by the end of September 2010, and are expected to be published by the end of 2010 or early in 2011. More comprehensive data will become available later in 2011.

5. Concluding Remarks: Challenges Ahead

While the current global economic crisis points to the need to reinforce the ongoing initiatives, recent events also further challenge economic statisticians to come up with fresh data initiatives, particularly in five key areas.

On sectoral balance sheet data, the availability, timeliness, frequency, and coverage of data on the assets and liabilities of bank and nonbank financial institutions, the general government, nonfinancial corporations, and the household sectors need to be improved. In particular, the ongoing crisis highlighted the need to capture activity in segments of the financial sector where the reporting of data is not well established and in which sizable risks may have developed. Nonfinancial firms have had unexpected vulnerabilities arising from, for example, derivative and foreign currency exposures. Housing assets on household balance sheets and the impact of house prices on household net worth have been highly relevant to the current crisis. Work is also needed in capturing off-balance sheet positions for financial corporations.

On the public sector (including central banks), the costs resulting from intervention in response to the crisis need to be appropriately and transparently recorded, and reported in both gross and net terms. This is particularly important in light of the booming contingent liabilities and lending by the governments in the context of the ongoing crisis. Many special transactions to deal with the crisis have involved new institutions and accounts dealing with financial instruments with complex valuations and characteristics. A solid accounting framework (along the lines of the public sector accounting principles, which are compatible with the IMF's *GFSM 2001*) is a core building block.

On the ultimate risk and credit risk transfer framework, the crisis has highlighted the complexities in analyzing the spread and transfer of risk and in finding out how much debt is outstanding. The issues include capturing the activity of special purpose entities and off-balance sheet positions and assessing the transfer of risk through instruments such as credit default swaps and derivatives. In addition, structured products such as collateralized debt obligations and asset-backed securities mask where the risks in the system lie.

On data to monitor developments in housing markets, the changes in housing prices and markets, and their impact on the economic behavior of households and financial institutions were central to recent economic developments in many countries. While plenty of information is readily available in some countries, information availability is not universal, and data available is not cross-country comparable.

Macroprudential risks, including resulting from high levels of leverage (assets to capital) and liquidity risks that built up in the financial system, as well as the delinking of financial cross-border from real

activity for industrial countries are other features highlighted by the current crisis. Within economic statistics, original maturity has always been favored as the measure of maturity, but with the problems faced by many institutions when the flow of capital suddenly dried up, greater attention needs to be given to remaining maturity measures, more clearly identifying rollover risk.

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