


# What has Capital Liberalization Meant for Economic and Financial Statistics



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What Has Capital Flow Liberalization Meant  
for Economic and Financial Statistics?

by Robert Heath

I N T E R N A T I O N A L M O N E T A R Y F U N D

**IMF Working Paper**

Statistics Department

**What has Capital Flow Liberalization Meant for Economic and Financial Statistics?<sup>1</sup>**

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**Abstract**

The liberalization of capital flows both in the domestic economy and cross-border has been among the most important policies adopted by IMF member countries over recent decades. The impact has been wide-ranging. This paper looks at the impact on the field of economic and financial statistics in the past two decades, as statisticians have responded to the changing policy needs. The paper considers the historical context of changes that have occurred, draws out the key trends, and asks where these trends might lead statisticians in the foreseeable future. The paper considers that there has been nothing short of a revolution in the field of economic and financial statistics over the past two decades led by a need for greater transparency; greater standardization; new data sets to support understanding of financial interconnections and financial sector risks; and the strengthening of the governance of the statistical function through greater independence of statistical agencies.

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## ACRONYMS

<i>1993 SNA</i>	<i>System of National Accounts 1993</i>
ARC	Advance Release Calendar
BIS	Bank for International Settlements
BSA	Balance Sheet Approach
<i>BPM5</i>	<i>Balance of Payments Manual, Fifth edition</i>
<i>BPM6</i>	<i>Balance of Payments and International Investment Position Manual, Sixth edition</i>
CDIS	Coordinated Direct Investment Survey
CPIS	Coordinated Portfolio Investment Survey
CPPI	Commercial Property Price Indices
DGI	Data Gaps Initiative
DQAF	IMF Data Quality Assessment Framework
ECB	European Central Bank
EU	European Union
FMCBG	Finance Ministers and Central Bank Governors
FSAP	Financial Sector Assessment Program
FSB	Financial Stability Board
FSF	Financial Stability Forum
FSIs	Financial Soundness Indicators
G-20	The Group of Twenty
GDP	Gross Domestic Product
GDDS	General Data Dissemination System
<i>GFSM</i>	<i>Government Finance Statistics Manual</i>
<i>GFSR</i>	<i>IMF's Global Financial Stability Report</i>
GGO	General Government Operations
G-SIBs	Global Systemically Important Banks
G-SIFIs	Global Systemic Financial Institutions
IAG	Interagency Group on Economic and Financial Statistics
IIP	International Investment Position
IMF	International Monetary Fund
IMFC	International Monetary and Financial Committee
INEGI	Instituto Nacional de Estadística y Geografía (National Institute of Statistics and Geography)
NSDP	National Summary Data Page
OECD	Organization for Economic Co-operation and Development
OTC	Over the Counter
RT	Reserve Template
ROSC	Data Report on the Observance of Standards and Codes
SDDS	Special Data Dissemination Standard
SDDS Plus	Special Data Dissemination Standard Plus
SNA	System of National Accounts
UN	United Nations

## I. INTRODUCTION

When the value of the Mexican peso collapsed in December 1994, Michel Camdessus, the IMF's Managing Director, called it the "first financial crisis of the 21st century," because it reflected a new level of globalization and rapid reactions in international financial markets. This was also a landmark moment in the evolution of economic and financial statistics as it resulted in the establishment of the IMF's data dissemination standards.

Following the Great Depression in the 1930's there was quantum leap in the production of economic statistics as economic policy needs adapted to changing global circumstances. The late 1940s and early 1950s saw the publication of the first comprehensive set of System of National Accounts and the first Balance of Payments Manual, as countries began to compile these data on a regular basis to support the new thinking in policy making. The creation of the IMF and other new international organizations promoted the collection and dissemination of these new datasets.<sup>2</sup>

This paper will argue that as capital flows have been liberalized, the past 20 years has seen a "revolution" in the availability, standardization and range of economic and financial statistics produced. That is, within the historical context of the development of economic and financial statistics, one important story of the last two decades has been the adaptations wrought by the changing landscape of capital markets, most notably the increasing size and freedom of capital flows. But the process has been more gradual than in the middle decades of the last century, because the evolution of policy making has been more gradual. The paper will further draw out the common themes of development in economic and financial statistics that have emerged over this period, and what they might hold for the foreseeable future.

The period under review has also seen a growing openness of trade in goods and services, including a substantial growth in outsourcing. This paper does not discuss the implications of the growth of these transactions for economic and financial statistics, considering them to be a different, but associated, story primarily focused on measures of output. Nonetheless, the globalization of the production processes has itself triggered significant capital flows, such as through foreign direct investment and international trade financing.

Finally, many international organizations have played their part in promoting the advances in economic and financial statistics as described in this paper, most notably the members of the Inter-Agency Group (IAG) on Economic and Financial Statistics.<sup>3</sup>

## II. BACKGROUND

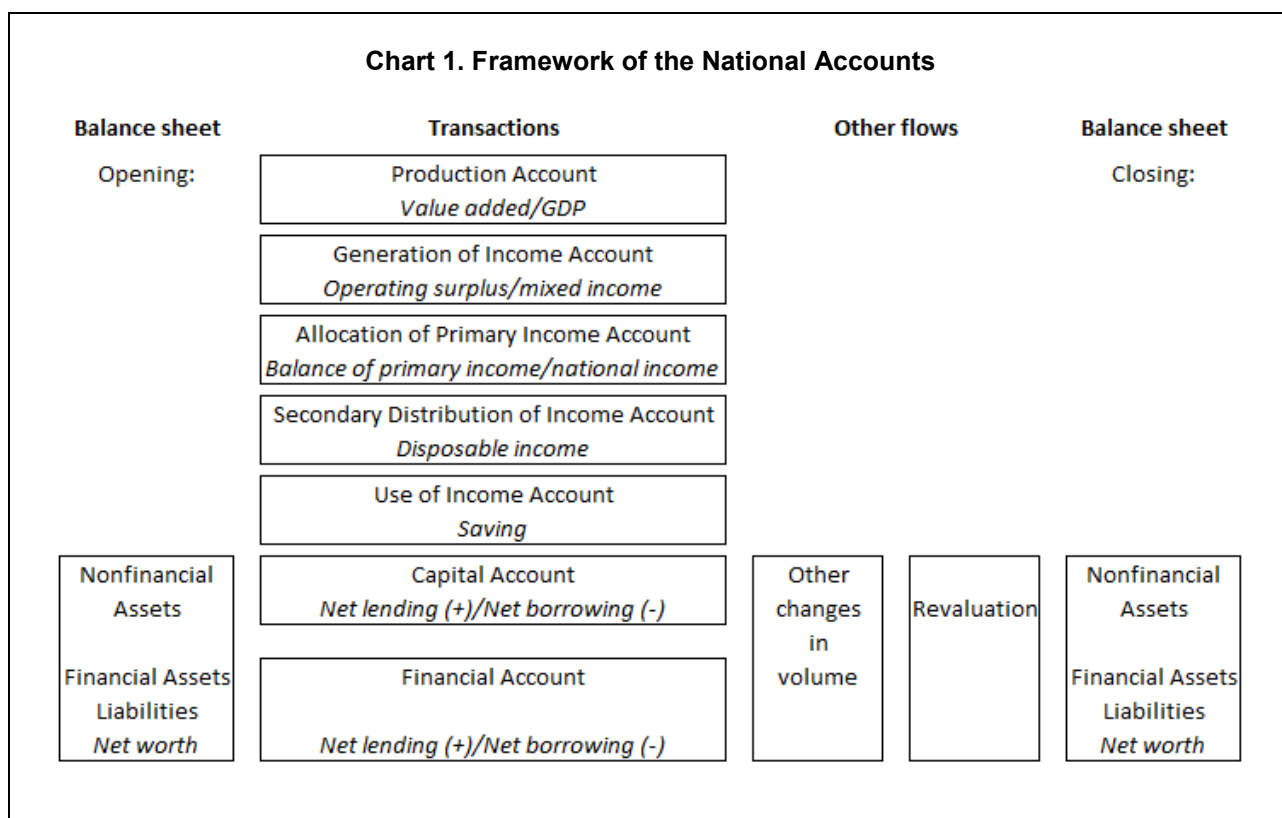
Economic and financial statistics adapt as economic and market conditions change and policy evolves. This is because at source, economic and financial statistics are produced to inform

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<sup>2</sup> The IMF first published *International Financial Statistics* in 1948 and the *Balance of Payments Yearbook* in 1949.

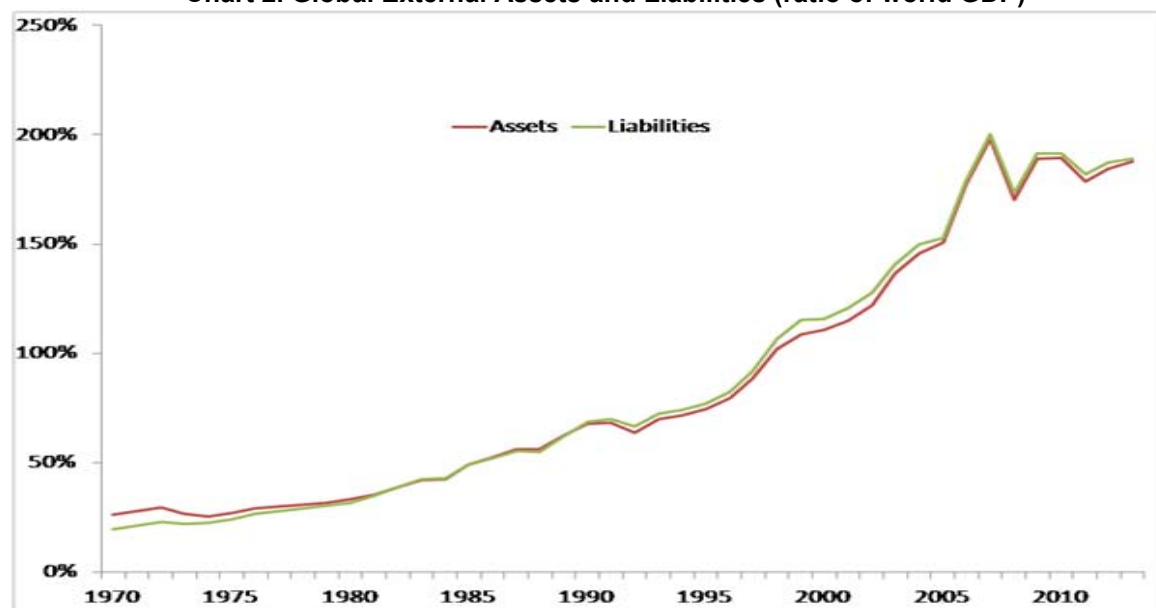
<sup>3</sup> This members are the Bank for International Settlements (BIS), Eurostat, European Central Bank (ECB), IMF, Organization for Economic Cooperation and Development (OECD), United Nations and the World Bank. The Financial Stability Board also participates in IAG meetings.

policy and the public more broadly. The most striking example was the development of national accounts and balance of payments statistics in the 1940s as policy makers began to more actively manage the economy and particularly aggregate demand, following the Great Depression of the 1930s. The intellectual and policy focus came to be concentrated on demand and supply factors in the economy, and on transactions rather than stocks (e.g., what is the growth of GDP, the size of the current account balance, and the scale of the government deficit). These remain relevant indicators, and the *System of National Accounts* (SNA) remains the overarching statistical framework (Chart 1).



Following the shift of exchange rate regimes from fixed-rate to floating-rate in the 1970s, the 1980s witnessed a trend towards capital flow liberalization, both domestically and cross border, particularly in advanced countries. Domestic credit restrictions were lifted and exchange controls relaxed or abolished. This development brought benefits in terms of greater competition among suppliers of financial services and an increasing range of financing options for investors and borrowers. However, this liberalization has also brought new risks and vulnerabilities, domestically and across border, and a growing policy focus on financial stability, as capital flows have increased (see Chart 2).

**Chart 2. Global External Assets and Liabilities (ratio of world GDP)**



Source: Lane, Philip R. and Gian Maria Milesi-Ferretti, 2007, "The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities," *Journal of International Economics* 73 (November), 223–250.

Unlike the fundamental advances made in the 1940s in a relatively short space of time, the impact of capital flow liberalization on economic and financial statistics has been more gradual, perhaps more pervasive, as this paper intends to demonstrate. Rather than the post-war advances, which met the data needs of a new analytical framework, the advances of the past 20 years have tended to arise from responses to crises without an overarching analytical policy framework.

### III. KEY LANDMARKS

There are a number of landmark events related to capital flow liberalization that have impacted economic and financial statistics.

#### A. Cross Report (1986)

The easing of exchange controls in the early 1980s led to a sharp increase in the growth of cross-border capital flows. Against this background, in the mid-1980s, at the request of central-bank Governors of the Group of Ten countries,<sup>4</sup> a Study Group under Sam Cross of the Federal Reserve Bank of New York was set up. The Study Group's aim was to develop a general framework in which the Group of Ten central banks and the BIS could consider the implications of recent innovations for the evolution of the structure and functioning of the international banking system. Along with the implications for macro-prudential and monetary policies, the impact on statistics was a core element of the report.

<sup>4</sup> The "Group of Ten" consisted of the central banks of Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, The Netherlands, Sweden, United Kingdom, and the United States.



The *Cross Report* was released in early 1986.<sup>5</sup> Among its conclusions the report saw a need for fuller and more detailed information on banks' involvement in the securities markets; information from outside the banking sector on outstanding bond indebtedness and short-term securities; and on banks' off-balance-sheet business.

The BIS staff responded by strengthening both their international banking and security statistics databases. Over the years these datasets have been further strengthened, as discussed ahead, and remain vital for monitoring developments in international banking and securities markets.<sup>6</sup>

## B. Godeaux Report (1992)

In the late 1980s, the IMF Executive Board became concerned about the increasing imbalances in the global balance of payments. Following a current account discrepancy report in 1987, in November 1989 the IMF Executive Board set up a working party under Baron Jean Godeaux a former Governor of the National Bank of Belgium to: evaluate statistical practices relating to the measurement of international capital flows, investigate the principal sources of discrepancy, and consider a course of action that could be adopted by the IMF to minimize these discrepancies.

The *Godeaux Report* was published in September 1992.<sup>7</sup> Using recorded balance of payments data, the report highlighted the sharp increase in capital flows during the 1980s, particularly in comparison with the growth of goods, services, and income transactions. It noted that as well as increasing flows, the nature of transactions had grown in complexity. The report considered that net errors and omissions had become so large that it was difficult to ascertain each country's true capital (and current) account balance. Also, at the global level, the sharp rise in errors and omissions indicated that the statistical problems had worsened dramatically and might well continue to worsen in the absence of a major effort to improve the data. The conclusion was that the world capital account statistical systems<sup>8</sup> were in a "state of crisis" and so there was an urgent need to enhance the systems.

The report made 12 specific recommendations including that countries should adopt the IMF's Balance of Payments Manual (*BPM5*), a coordinated benchmark survey of international assets and liabilities be undertaken, and that the IMF should create a small standing Committee of balance of payments compilers to oversee implementation of the

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<sup>5</sup> The Cross Report is available at <http://www.bis.org/publ/ecsc01.htm>.

<sup>6</sup> The International Banking Statistics have been constantly improved over time (since 1964) to respond to new policy needs; see for instance pp 3-4 of <http://www.bis.org/statistics/bankstatsguide.pdf>.

<sup>7</sup> *Final Report of the Working Party on the Measurement of International Capital Flows* (Washington: International Monetary Fund, 1992).

<sup>8</sup> The "capital account:" was renamed the "financial account" in *BPM5*. This renaming brought *BPM5* into line with the *SNA*, which makes a naming distinction between capital in the form of buildings, equipment, etc., included in the capital account in the *SNA*, and capital in the form of financial resources, included in the financial account.

recommendations in the two reports on current and capital account (Godeaux Report) discrepancies. The IMF Executive Board accepted all the recommendations.

The ensuing years have seen progress on all fronts, and while statisticians are never sanguine about the state of their statistical systems, a “state of crisis” is not a description of the world balance of payments systems today. Despite a continuing huge increase in transactions, systems have been strengthened and have by-and-large coped well with this expansion. There are many reasons for this but the recommendations of the Godeaux report have been a significant factor: *BPM5* and increasingly, its successor, *BPM6*, are widely adopted, the coordinated surveys of portfolio and direct investment are well established, and the IMF Committee on Balance of Payments Statistics remains an institutional bulwark in the international effort to ensure good quality balance of payments data.

One recommendation of the Godeaux Committee that received little attention at the time was that countries should include regular collection of position data. In 1992 few countries reported International Investment Position (IIP) data to the Fund; by 1998 the number was still only in the low 30s. It was to take the crisis of the late 1990s before these numbers started rising, and then they rose sharply.

In retrospect the *Cross* and *Godeaux Reports* strengthened the statistical infrastructure for external statistics. However, the relaxation of controls on capital flows was increasing the risks and vulnerabilities to countries in ways that traditional policy analysis did not anticipate. This was brought home by successive major financial crises that had a significant impact on the field of economic and financial statistics.

### C. Mexican Crisis (1994/5)

As quoted above, the Mexican crisis of late 1994/early 1995 has been called the first crisis of the 21st century. International capital flows were central as international investors reassessed the share of their portfolios invested in Mexico when a weak external position was exacerbated by a series of unfavorable developments.<sup>9</sup> Almost immediately after the crisis there was recognition that the lack of reliable data had been a contributing cause.

In April 1995 the IMF Interim Committee (now known as the International Monetary and Financial Committee (IMFC)) stated the following:

“the Committee emphasized that timely publication by members of comprehensive data would give greater transparency to their economic policies; it requested the Executive Directors to work toward the establishment of standards to guide members in the provision of data to the public, and to submit proposals for consideration by the Committee at its next meeting.”

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<sup>9</sup> A discussion by Managing Director Michel Camdessus of the circumstances that led to the Mexican crisis of 1994/95 and the actions taken by the international community to support Mexico is available at <http://www.imf.org/external/np/sec/mds/1995/mds9508.htm>.

IMF Staff reacted quickly and the Special Data Dissemination Standard (SDDS) and the General Data Dissemination System (GDDS) were developed as consequence of this request. The SDDS was established in 1996 and the GDDS in 1997.

The underlying philosophy behind the SDDS is the need for the timely publication of economic data by members to enable markets to work more efficiently. So the SDDS introduced the need to provide an Advance Release Calendar (ARC) so that the market knows when data are due to be released; the list of indicators that were to be disseminated—these indicators included both comprehensive frameworks such as the GDP and balance of payments data, as well as leading indicators of the comprehensive framework, such as industrial production and external trade data; and specifies timeliness and periodicity requirements for the release of these indicators.<sup>10</sup> Countries that accessed the international capital markets were considered the target group for SDDS subscription.

These data dissemination standards were a quantum leap from what had gone before. Initially the SDDS only required countries to provide metadata on a specified set of data covering the four main domains of economic and financial statistics—real sector, financial sector, government sector, and external sector. Soon after, the National Summary Data Page (NSDP) was set up by which countries had to disseminate the data themselves on their NSDP. More recently subscribers to the SDDS have needed to explain deviations of their compilation practices from international methodological standards.

What was most significant was that countries voluntarily committed themselves to meet a set of international standards, with penalties for nonobservance, for the dissemination of data. Nothing like this had been tried before but that did not stop an immediate rush of countries willing to join. Subsequent evidence has shown that the subscription to the SDDS has lowered borrowing costs and possibly helped to reduce contagion among emerging market economies.<sup>11</sup>

The GDDS was a companion system to the SDDS that focused on countries that needed to develop their statistical system. The intention is for GDDS participants to provide plans for improvement for the indicators identified in the system. However over time it has become clear that without the incentive to disseminate data, statistical system do not develop as fast as they otherwise might. Consequently, enhancements have, and continue to be, made to provide incentives for data dissemination among GDDS participants.

Virtually every IMF member is now a subscriber/participant in the SDDS or GDDS.<sup>12</sup>

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<sup>10</sup> The SDDS includes so-called “flexibility options” for periodicity and timeliness only. Countries must disseminate the prescribed data.

<sup>11</sup> A discussion of the benefits of SDDS subscription to IMF member countries is provided in *The IMF’s data dissemination initiative after 10 years*, edited by William E. Alexander, John Cady, and Jesus Gonzalez-Garcia. Available at <http://www.imf.org/external/pubs/ft/books/2008/datadiss/dissemination.pdf-921k-PDF>.

<sup>12</sup> More information on the IMF’s Data Dissemination Standards Initiatives is available at <http://www.imf.org/external/data.htm>.

#### D. Asian Crisis (1997/8)

In late 1997, early 1998, a number of economies in Asia were severely hit by a crisis.<sup>13</sup> Once again international capital flows were central, as following large private capital inflows and rapid domestic credit expansion in liberated financial systems, a change in market sentiment caused by a variety of reasons and exacerbated, prior to the crisis, by an appreciation of the U.S. dollar, to which the currencies of the countries concerned were formally or informally pegged, led to a circle of currency depreciation, insolvency, and capital outflows. Contagion spread rapidly in the region after the devaluation of the Thailand baht, as other countries were perceived by investors as facing similar weaknesses that cast doubt on their credit-worthiness

As in the Mexican crisis, the lack of data was seen as a contributing factor, although not so central as that in the earlier crisis. Rather the focus of the response to the crisis switched more to vulnerabilities in the financial sector, and in the build-up of external debt. Out of this crisis the Financial Stability Forum ((FSF) (which is now the Financial Stability Board (FSB)) was created to coordinate regulatory work in the financial sector.

Still, the crisis highlighted concern about the information available on reserve and reserve related activities. Forward sales of foreign currency contracts by the Bank of Thailand were seen as having masked the true pressure on the international reserves, and when the full extent of the pressure became evident it had affected market sentiment adversely. In fact the use of forward contracts to mask exchange rate pressures on reported reserves data had been common practice in many economies for many years. The crisis highlighted how the market might be misled when only reserve assets totals are published.

One consequence of the crisis was a call for better data on reserves and related activity.<sup>14</sup> IMF staff and a working group of BIS's Committee on Global Financial Systems developed a Reserve Template (RT), which the IMF Executive Board added as a prescribed data category to the SDDS. The RT is a most unusual statistical product. It does not follow standard statistical approaches, except with regards to the measurement of reserve assets. But it provides a comprehensive picture of reserve and reserve-related activities. One could almost say that the designers were "poachers" turned "gamekeepers" as it became virtually impossible for reserve managers to undertake transactions that would not be reported in the RT. Only one minor coverage expansion has been made since it was introduced in 1999. For

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<sup>13</sup> A paper "Recovery from the Asian Crisis and the Role of the IMF" by IMF staff in June 2000 sets out the background to and recovery from the Asian crisis. The paper is available at <http://www.imf.org/external/np/exr/ib/2000/062300.htm#II>

<sup>14</sup> See the report of the G22 "Working Group on Transparency and Accountability," and the recommendations on page viii of the Executive Summary. In response to the Asian crisis, Finance Ministers and Central Bank Governors from 22 systematically significant economies met in Washington, D.C. in April 1998 to examine issues related to strengthening the international financial architecture. They identified three key areas where action was needed: enhancing transparency and accountability; strengthening national financial systems; and managing international financial crises. Working groups were set up to examine each of these issues. The reports are available at <http://www.imf.org/external/np/g22/#trans/>.

potential new entrants to the SDDS, among all the data categories, the RT remains the hardest for the authorities to accept in many instances because of the sensitivity of the data to be released combined with the stringent reporting requirements.

Similarly, high and particularly short-term external debt was seen as a contributing factor in the crisis in some instances. Yet international methodological standards for this data set were lacking and so data tended to be inconsistent across countries.<sup>15</sup> The Executive Board responded by adding an external debt data category to the SDDS and GDDS. For SDDS subscribers, the Executive Board specified the sector, instrument, and maturity coverage of the external data to be disseminated, providing comprehensive coverage of, and detailed information on, external debt.

IMF staff in consultation with other international agencies involved in debt statistics and member countries developed a guide—*External Debt Statistics: Guide for Compilers and Users* to help SDDS and GDDS countries implement the IMF Executive Board decision and more broadly to encourage the compilation and dissemination of consistent and reliable external debt data.<sup>16</sup>

It is worth noting at this point that the reserves and external debt data sets added to the SDDS were two sets of stock statistics. Further the Executive Board also “upgraded” annual IIP data from an “encouraged” item to a “prescribed” item in the SDDS. These additions to the prescribed list of data sets to be disseminated under the SDDS represented a turning point. The initial list of prescribed data categories under the SDDS was focused overwhelmingly on transactions data. In contrast, since 1999 the additions to the SDDS (and indeed the new data categories in the Special Data Dissemination Standard Plus (SDDS Plus)), have overwhelmingly been stock datasets. This issue is explored in more detail ahead, but clearly as financing constraints have lifted with the liberalization of capital flows, the vulnerabilities have become all too apparent in the stock data.

Another interesting aspect of the RT was the way in which it incorporated financial derivatives in the analysis of reserves. While not new instruments—derivatives have been around for centuries—the 1990s saw a sharp growth in activity. The *1993 System of National Accounts (1993 SNA)* introduced methodology for exchange-traded derivatives so these instruments could be captured in the national accounts. This methodology was soon updated to capture over-the-counter (OTC) derivatives.<sup>17</sup> Around the same time the BIS developed a

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<sup>15</sup> In 1988 a “Grey Book” published by the BIS, IMF, OECD and World Bank contained a definition of external debt.

<sup>16</sup> This work was undertaken through the Task Force on Finance Statistics, chaired by the IMF and also including BIS, Commonwealth Secretariat, ECB, Eurostat, OECD, World Bank and United Nations Conference on Trade and Development. The TFFS took the lead in creating two external debt on-line database: Joint External Debt Hub (creditor data) and the Quarterly External Debt Statistics Database (debtor data) hosted by World Bank, and available at <http://www.jedh.org/> and <http://datatopics.worldbank.org/debt/>, respectively.

<sup>17</sup> See the “The Statistical Measurement of Financial Derivatives,” 1998, IMF Working Paper No. 98/24. The conclusions of this work were reflected in the *SNA*; see <http://unstats.un.org/unsd/nationalaccount/docs/1993sna-supp.pdf>.

semi-annual survey of OTC derivatives to capture the global market—both notional and market values. But the RT was the first example of integrating derivative positions into a broader framework that provided an analytical context. The RT remains the most advanced work in this field.

As noted above the Asian crisis led to a greater focus on financial sector vulnerabilities. While supervisors monitored the activities of individual financial institutions, the view soon emerged that a new set of data were needed to monitor these activities at a macro level.<sup>18</sup> The type of indicators discussed included those covering non-performing loans, profitability, and capitalization ratios of deposit-takers. Starting in late 1999, and after an initial consultative meeting of experts and a survey of member countries, a list of core and encouraged Financial Soundness Indicators (FSIs) was endorsed by the IMF Executive Board in June 2001. The core indicators were grouped under “capital adequacy,” asset quality,” “earnings and profitability,” “liquidity,” and “sensitivity to market risk.”

Soon after the list was agreed work started on an *FSI Compilation Guide*, followed by a pilot coordinated compilation exercise. Regular reporting by member countries started in 2009. Presently around 100 countries provide FSI data to the IMF for re-dissemination with a subset published every sixth months in the IMF’s Global Financial Stability Report (GFSR). Presently a set of FSIs are encouraged items in the SDDS and prescribed items in the SDDS Plus. The FSI list was updated following the global crisis.<sup>19</sup>

### **E. Global Crisis (2008)**

In 2007/2008 the world experienced a global crisis as the problems in the financial sectors of a number of advanced economies, including the US, spilled across borders. Once again international capital flows were central—in particular the scale and depth of cross-border interconnections appeared to take policy makers by surprise. In retrospect the period for 1995 to 2008 had seen a ratcheting up of financial crises “of the twenty-first century” from a crisis originating from an emerging market (Mexico), to a crisis affecting a region (Asia), to a crisis that affected the core of the international financial system.

In the aftermath of the 2008 crisis the G-20 economies (a grouping created in the wake of the Asian financial crisis), agreed to take action on a number of fronts, most prominently relating to financial regulation. But among the requests for action was one to the IMF and FSB in April 2009 to explore information gaps and provide appropriate proposals for strengthening data collection and report back to the G-20 Finance Ministers and Central Bank Governors (FMCBG). This call was endorsed by the IMF’s IMFC. While a lack of data was not the cause of the crisis, the crisis highlighted certain gaps in the available information, notably on financial interconnections.

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<sup>18</sup> The G22 Working Group on “Transparency and Accountability” called for the inclusion of “financial sector indicators” in the SDDS (Chapter 2, page 9). See also “Financial Market Data for International Financial Stability,” Centre for Central Banking Studies, Bank of England, June 1999.

<sup>19</sup> Information on FSIs is available on the IMF website, under “data.”

From this request the IMF and FSB consulted widely among G-20 economies, including financial stability experts, and developed 20 recommendations that were endorsed by the G-20 FMCBG.<sup>20</sup> These recommendations covered data that would support the identification of the build-up of risk in the financial sector; support analysis of cross border interconnections; help identify vulnerabilities in the domestic economy; and promote improved communication of data.<sup>21</sup> The work is coordinated through the IAG, created in the wake of the global crisis through which senior management in international agencies working in the field of economic and financial statistics could cooperate.<sup>22</sup>

The recommendations cover a broad range of economic and financial data, as it is a most ambitious project. The emphasis is on developing and disseminating data that supports analysis of national balance sheets, cross-border interconnections, and financial sector vulnerabilities. This Data Gaps Initiative (DGI) also supports work in areas such as distributional data and real estate prices, which have also come to the fore in recent years as important topics for policy makers. The intention is to draw as much as possible on existing initiatives and governance structures to promote internationally comparable data that are relevant for national policy purposes.

Overall significant progress has been made in implementing the DGI recommendations as G-20 economies have recognized their key role in the global economy and have developed a sense of ownership in the project. In September 2014 the G-20 FMCBG asked the IMF and FSB to make proposals for a second phase of the DGI by the second half of 2015.

As with the Mexican and Asian crises, the question of whether to strengthen data dissemination standards soon arose. While the IMF Executive Board agreed to the IIP being a prescribed data item in the SDDS, on a quarterly frequency, the need for a higher tier of the data dissemination standards initiative soon became evident. The data categories of the SDDS had largely been unchanged over the previous decade not least to encourage and promote data dissemination in an increasing number of IMF member countries. But the crisis had shown that a further set of data, not least related to financial vulnerabilities, needed to be regularly disseminated.

As a consequence, the Executive Board endorsed an advanced standard that built on the SDDS to guide member countries on the provision of economic and financial data to the public in support of domestic and international financial stability. The SDDS Plus was established and the data categories grounded in a number of the datasets covered by the DGI. These data categories include sectoral accounts, general government gross debt, real estate prices, securities statistics, FSIs, as well as coordinated exercises such as the Coordinated

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<sup>20</sup> A key element of this consultation was a conference in Washington co-hosted by the IMF and FSB. The papers are available at <http://www.imf.org/external/np/seminars/eng/2009/usersconf/index.htm>.

<sup>21</sup> Annual reports on progress have been provided to the G-20 FMCBG. These are available at <http://www.imf.org/external/ns/cs.aspx?id=290>.

<sup>22</sup> The members of the IAG are the BIS, ECB, Eurostat, IMF (chair), OECD, World Bank and UN.

Portfolio Investment Survey (CPIS) and Coordinated Direct Investment Survey (CDIS) that have also developed to meet the emerging needs of users for cross-border information. The focus is primarily on position data. To become an SDDS Plus adherent an economy has to be a subscriber to the SDDS in full observance of all SDDS requirements. In November 2014 the first countries committed to adhered to the SDDS Plus and it was launched. By February 2015 eight countries (adherents) met the requirements of the SDDS Plus.

The SDDS Plus is primarily but not exclusively, intended for adherence by economies with systemically important financial centers. This designation was given by the IMF Executive Board to 29 economies that are to be subject to a mandatory Financial Sector Assessment Program (FSAP) at least every five years.<sup>23</sup> So the philosophy of the data standards initiative could be considered to have evolved such that the SDDS Plus covers economies that are endogenous to the international financial system—problems in those economies have potential systemic implications for the international financial system; while the SDDS covers economies considered exogenous to international markets—they are largely price takers in the international markets, with SDDS subscription helping to lower their borrowing costs. Having said this, in an increasingly integrated international financial market, systemic problems could arise anyway in the system.

#### **IV. WHAT ARE THE KEY TRENDS OF DEVELOPMENT?**

The past two decades has once again demonstrated that economic and financial statistics evolve in response to changing policy needs. By changing the policy environment, the liberalization of capital flows has had a pronounced effect on economic and financial statistics. This section attempts to draw out some key trends of development that capital flow liberalization has helped stimulate.

##### **A. Transparency and Standardization**

Perhaps the most significant development over the past 20 years has been the pressure for greater transparency and standardization of economic and financial statistics. This trend has been driven by policy makers, financial markets, and other private sector users wanting greater reliability of data compilation and dissemination to help them better assess domestic economic conditions, and compare across countries.

However, on the flip side uncertainty over the quality of the numbers compiled and disseminated can undermine confidence and drain capital from any economy, particularly if a country is vulnerable to a crisis. Indeed, if it comes to light that a country is “misreporting” key aggregates, then the market reaction can be very adverse.

Increasingly policy makers are also encouraging the use of international standards, both to help ensure that international best practice is adopted and to help compare across countries. Indeed, the question of whether other peer countries are following the same standards as their

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<sup>23</sup> See <http://www.imf.org/external/np/pp/eng/2013/111513.pdf> for more information on this initiative.



own country can become a contentious issue for headline data. A recent example has been the inclusion or not of government employee pensions as liabilities in government debt data, given these pension liabilities can be very significant. The concern is that an economy may face higher borrowing costs than its peers due to differences in the way data are compiled.

This drive for standardization of economic and financial data has had implications at the international level both in terms of data dissemination and methodological development.

### **Almost universal adoption of Data Dissemination Standards**

The fact that virtually every IMF member country is either an adherent to the SDDS Plus, a subscriber to the SDDS, or a participant in the GDDS emphasizes the relevance of the data standards initiative. Countries voluntarily subscribed because they saw it in their interest to do so. Indeed, the data dissemination standards might possibly be considered the flagship product of the drive towards greater comparability and standardization of economic and financial statistics.

Separate from the Data Standards Initiatives, is the trend towards “free data.” This trend is to release non-confidential data to the public free of charge. There is a budgetary cost in that time and other resources are involved in compiling the data, but the benefits of releasing data free to the public, not least in promoting transparency and openness, is seen to outweigh the costs.<sup>24</sup>

There is also pressure for more frequent and timely data. Datasets that used to be provided on an annual frequency are increasingly requested on a quarterly frequency, be it IIP data, sectoral accounts, general government debt, or FSIs. For GDP data in advanced countries the quarterly estimates are increasingly coming out in a more timely manner, although of course there is a trade off with quality. As a consequence, more estimated data are appearing and users must accept that the scope for revisions is greater.<sup>25</sup>

### **A proliferation of standards**

In 1988 national accountants and balance of payments compilers met and agreed to harmonize their standards. Arising from this important decision, which led to consistency between *1993 SNA* and *BPM5*, has been an underlying trend towards integration of conceptual standards across the various statistical domains, and a viewing of the family of macroeconomic conceptual standards in a holistic interconnected manner rather than as standalone documents. When manuals and guides are updated instead of asking why should the new standard be consistent with the other macroeconomic statistical standards, the question now is why not.

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<sup>24</sup> It is also noticeable that an increasing number of websites of statistical agencies provide the option of viewing an English language version.

<sup>25</sup> For instance see “Quarterly GDP Revisions in G-20 Countries: Evidence from the 2008 Financial Crisis” Manik Shrestha and Marco Marini, IMF WP/13/60.

This agreement to integrate what are arguably the two central macroeconomic statistical standards came at a time when the only other significant manual in the field of economic and financial statistics was the *1986 Government Finance Statistics Manual*, which was not consistent with either the *SNA* nor *BPM*. But the subsequent two decades has seen a remarkable growth of international manuals and guides due to the strong demand for the comparability of data across country and spread of best practice.

From around the turn of the century, just taking into account those that the IMF has either drafted or been very closely associated with, the new manuals and guides have included:

- Reserve Template Guidelines (1999, updated 2013)—developed as a consequence of the inclusion of the Reserves Template in the SDDS.
- Monetary and Financial Statistics Manual (2000, updated 2015)—developed to support more standardization of monetary and financial statistics data.
- Manual on Statistics of International Trade in Services (2002, updated in 2010)—developed because of the growing user interest in the reliable measurement of cross border trade in service.
- External Debt Guide (2003, updated 2013)—developed as a consequence of the inclusion of external debt data in the SDDS and GDDS.
- Producer Price Index Manual (2004),<sup>26</sup> Consumer Price Index Manual (2004),<sup>27</sup> and Export and Import Price Index Manual (2009)<sup>28</sup>—developed to bring greater international comparability and methodological soundness to these important inflation indicators.
- FSI Guide (2006)—developed to meet the emerging need for these data following the Asian crisis.
- International Transactions in Remittances Guide (2009)—developed to meet the growing policy interest in remittances data.
- Public Sector Debt Guide (2011)—developed to meet the growing public interest in government debt data
- Residential Real Estate Price Handbook (2013)—developed to meet the need of statistical agencies for advice on compiling real estate price indices given the growing policy interest as identified through the G-20 DGI.

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<sup>26</sup> In 1979 a Manual on Producer Price Indices for Industrial Goods was issued.

<sup>27</sup> This volume is an expanded revision of Consumer Price Indices: An ILO manual, published in 1989.

<sup>28</sup> In 1981 the UN published the Strategies for Price and Quantity Measurements in External Trade.

- Handbook on Security Statistics (2015)—developed following the request of the G-7 in 2007 and later the G-20 through the DGI for better securities statistics.

In addition there has been a fundamental revision of the *Government Finance Statistics Manual (GFSM)* (2001 and 2014) from the 1986 version.

Countries are increasingly adopting the guidance in these publications both because they help spread best practice, but also because their adoption enhances the message to users of quality and comparability across countries. Europe has been a special case where the European Union (EU)-level economic policy and the adoption of a single currency by many countries has required consistent and comparable data among EU Member States.

It is also important to note that the increasing integration of guidance across manuals is allowing greater comparability across data sets, so enhancing their analytical value. Further this is coming at a time when policy makers are becoming more interested in integrated statistics in order to identify interconnections across the domestic economy and across border. The Balance Sheet Approach (BSA) is one manifestation of this interest. By using data from the monetary and financial statistics, and the external and government data, an integrated picture of the financial interconnections of an economy can be developed through the BSA, that both has the consistency of approach across economic sector combined with the depth of information available in specialist data sets.<sup>29</sup>

## B. New Data Demands

Many of the new data demands over the past two decades have been described above, but what are the main trends that have emerged?

### Increased emphasis on position data

As noted above, when the SDDS was created, with a few exceptions the data categories covered transactions data. Traditional economic and financial data focused on transactions as often vulnerabilities arose from imbalances in flow data, not least because of the financing constraints. However the easing of these constraints with the liberalization of capital flows bought forth an increased focus on stock positions, given that sources of vulnerability build up in these positions.

The global crisis illustrated this latter point. The traditional macroeconomic data looked good across many economies in the build up to the global crisis. Growth was strong, unemployment generally relatively low, inflation low, although there were global external imbalances that raised some policy concern. However, in the position data currency and maturity mismatches were emerging and debt levels were becoming unsustainable in certain

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<sup>29</sup> See “[Using the Balance Sheet Approach in Surveillance: Framework, Data Sources, and Data Availability;](http://www.imf.org/external/pubs/ft/wp/2006/wp06100.pdf)” Johan Mathisen and Anthony Pellechio; IMF Working Paper 06/100; April 1, 2006 - <http://www.imf.org/external/pubs/ft/wp/2006/wp06100.pdf>.

sub-sectors of the economy. When the crisis struck, these vulnerabilities became all too apparent.

A good example for this changing attitude towards stock position data is reflected in the IIP. As noted above, in the late 1990s there were relatively few reporters of IIP data to the IMF Statistics Department. Today quarterly IIP data is a prescribed data category in the SDDS and over 140 countries compile this statistic, of which around 90 report quarterly.

Within the IMF, sectoral balance sheet analysis is becoming central to IMF surveillance. Two eminent observers commenting on IMF surveillance in 2014 considered that “the Fund should make national-balance-sheet analysis a priority.”<sup>30</sup> Further the IMF Executive Board in completing the Triennial Surveillance Review in 2014 concluded that “they generally saw the usefulness of national balance sheet analyses in capturing risks from gross as well as net flows... Further efforts by both the Fund and its members are therefore needed to address data gaps.” Indeed, an analysis of stock positions may provide a better indication of possible future behavior than flow data (e.g., future household consumption can be affected by present debt levels).

The type of data needed for balance sheet analysis has also evolved. Traditionally the balance sheet, except perhaps in the banking sector, has focused on short term maturity on an original maturity basis. There is an increasingly demand for remaining maturity to better understand the liquidity risk of the various sectors of the economy. Further, the currency composition is becoming increasingly relevant in analyzing risks and vulnerabilities in a world of shifting capital flows and more flexible exchange rates. The *SNA* barely mentions these characteristics of position data, while they were only introduced into BPM with *BPM6*.

### **Data on financial interconnections**

It is a truism to state that the world has become more interconnected. Before the liberalization of capital flows, there may have been interest in bilateral cross-border trade connections, but economic theory took the view that the flows vis-à-vis the rest of the world primarily reflected the domestic policy stance, with say a large current account deficit reflecting excess demand in an economy. In the latter case, shifts in relative exchange rates would support adjustment by discouraging consumption (raising cost of imports) and boosting investment (through import substitution and stronger export price competitiveness).<sup>31</sup>

Against this background of policy analysis, the bilateral financial positions were not closely monitored by policy makers. Indeed, in the early 1990s the BIS sent around a questionnaire

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<sup>30</sup> David Daokui Li and Paul Tucker in a paper on “Risks and Spillovers;” available at <http://www.imf.org/external/pp/longres.aspx?id=4902>.

<sup>31</sup> While not a subject of this paper, the increasing integration of global supply chains for goods trade has also affected this analysis. Some of the price competitiveness arising from a depreciating currency may be lost because the cost of imported materials used in domestic goods production rise in price. This is one of the reasons for the growing policy interest in value-added trade data.

asking central banks if there remained interest in the locational banking statistics as they had noticed a significant drop-off in the use of these data.

While interest in the current account balance remains, the policy interest in bilateral exposures has grown significantly. There is considerable policy interest in understanding the bilateral financial linkages—to whom do my residents lend, who funds my residents and who funds them. This interest is in the gross exposures as much as the net position. It complements the interest in domestic financial interconnections through the sectoral accounts. The experience of the US sub-prime market in 2007/2008 clearly illustrates the possibilities, as the problems in that market spread through the economy and overseas, impacting other economies.

An IMF paper on “Interconnectedness and Clusters” (2012)<sup>32</sup> brought home the type of analysis that can be undertaken with regard to cross-border financial inter-connections. The paper characterized the architecture of cross-border trade and financial interconnectedness, considering that global interconnectedness has three elements: (i) a global *core*, comprising the major systemic economies; (ii) *clusters* or groups within which economies are more connected to one another than those outside (e.g., Asian supply chain); and (iii) *gatekeepers* or economies that link clusters to one another or the core to clusters. This type of work is still in an early stage but policy makers have been made aware that problems in financial markets in one economy can spread quickly, and as noted in the Second IMF Statistical Forum in 2014, “the spark that could set off the fire could take place anyway in the world given global interconnections.”<sup>33</sup>

So the demand for data on financial interconnections has grown dramatically. The IMF has introduced and over the years strengthened the CPIS, and the CDIS, as well as introduced Standardized Report Forms that cover the financial interconnections of the domestic financial sector. The BIS has strengthened significantly its international banking statistics (IBS), both locational and consolidated over the years. There is a new initiative to collect data on financial interconnections of Globally Systemically Important Banks (GSIB).<sup>34</sup>

Much of the data being collected through these initiatives is set up in such a way that it becomes increasingly likely that a global “flow of funds” could be developed. The idea was first introduced in the second progress report on the DGI to the G-20 FMCBG and set out more substantively in a 2013 paper by IMF staff.<sup>35</sup> The idea is to link cross border financial stock data with sectoral accounts balance sheet data to build up a powerful picture of

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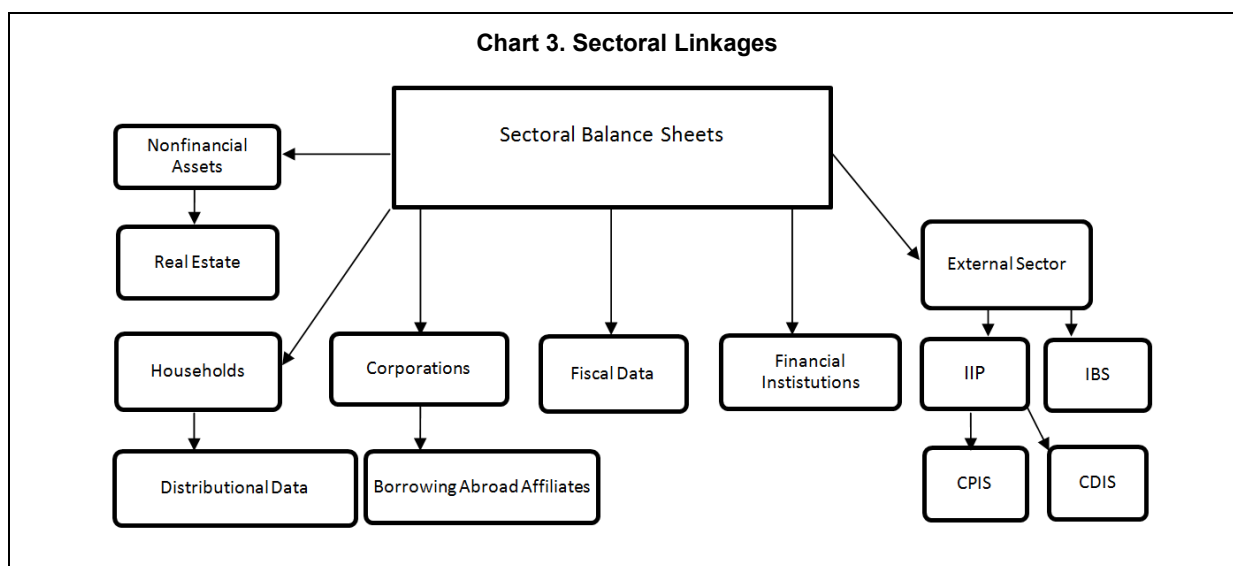
<sup>32</sup> Available at <http://www.imf.org/external/np/pp/eng/2012/031512.pdf> - 176k - PDF.

<sup>33</sup> The papers for the Second IMF Statistical Forum are available at <http://www.imf.org/external/np/seminars/eng/2014/statsforum/>.

<sup>34</sup> See [http://www.financialstabilityboard.org/2014/05/r\\_140506/](http://www.financialstabilityboard.org/2014/05/r_140506/).

<sup>35</sup> “Global Flow of Funds: Mapping Bilateral Geographic Flows,” Luca Errico, Richard Walton, Alicia Hierro, Hanan AbuShanab, Goran Amidzic (2013) available at [www.statistics.gov.hk/wsc/STS083-P1-S.pdf](http://www.statistics.gov.hk/wsc/STS083-P1-S.pdf).

financial interconnections domestically and across border, with a link back to the real economy through the sectoral accounts.<sup>36</sup> This framework is sketched out in Chart 3.<sup>37</sup> Most of the data sets identified in this chart are covered by the G-20 DGI recommendations.



As interest has grown in financial connections across border, so interest is growing in the activities of institutions that straddle many economies and so can move funds and investment from economy to economy within their own institution.<sup>38</sup> Both the BIS IBS consolidated statistics and the GSIB data are compiled on a consolidated basis - that is, consolidating the activities of an institution regardless of the residence of the entities within that institution, rather than the traditional residence-based data used in other macroeconomic datasets. As discussed in the next section, interest in reconciling the relationship between the residence and consolidated data may continue to grow.

### Focus on the financial sector

Traditionally economic and financial statistics focused on the major economic aggregates and in particular transactions data. However, the greater flow of capital across border has led to more attention on both financial sector instruments and institutions.

<sup>36</sup> National accounts transactions and financial accounts position information broken out by sector are integrated in a sequence of accounts that runs from the production account down to the net worth from the financial account. This framework links the transactions data with the balance sheet.

<sup>37</sup> To give a full representation of the interconnections among sectors the chart would need arrows to and from each sector.

<sup>38</sup> See for instance: “The architecture of global banking: from international to multinational?” Robert McCauley, Patrick McGuire, and Goetz von Peter, BIS Quarterly Review, March 2010 - [http://www.bis.org/publ/qtrpdf/r\\_qt1003e.pdf](http://www.bis.org/publ/qtrpdf/r_qt1003e.pdf).

The Asian crisis was a catalyst to heightening policy interest in the link between the strength of the financial sector and the performance of the real economy, and the need to ensure a robust financial sector—both institutions and markets. The most outward expression of this heightened interest was the creation of the FSF (now FSB) whose remit is to promote international financial stability by coordinating national financial authorities and international standard-setting bodies as they work toward developing strong regulatory, supervisory and other financial sector policies.

For statisticians an immediate consequence of the interest in the financial sector was the development of the FSIs, as described above. The development of these indicators brought together statisticians, accountants and supervisors. This was because this data set did not conform to standard national accounts-based methodologies but rather to the data coming from supervisory agencies, based on commercial accounting concepts, blended with some traditional national accounting concepts. The need for statisticians and supervisors in particular to agree on concepts and coverage was in many ways a unique experience, but one that would be repeated after the global crisis.

But beyond the need for statisticians and supervisors to cooperate, the important premise underlying the development of FSIs was the intention to complement the micro data on financial institutions available to supervisors with macro-data available to statisticians. No longer was the world of macro data and micro data totally separated, if it ever was. But it became increasingly obvious that micro analysts needed more macro data and the macro analysts needed more granular, micro data. Again this premise would be reinforced after the global crisis. Indeed as noted in an IMF working paper,<sup>39</sup> “various datasets emerging from the DGI recommendations support the intersection of analysis between the macro-prudential, macro-economic, and micro-prudential and so are relevant to policy makers in these fields.”

The interest in improving understanding of the activities of financial institutions both for macro-prudential and micro-prudential policy reasons continues to grow. This includes interest in the nonbank financial sector, so-called shadow banking sector, and the global systemic financial institutions (G-SIFIs). This interest is reflected in the recommendations of the G-20 DGI.

But in addition to the activities of financial institutions, there is also a growing interest to gain a better understanding of the workings of financial markets. This interest is another consequence of the global crisis in that during the crisis, the structure of the market in terms of the institutions involved, the sources of liquidity in the market, and the asymmetric position taking<sup>40</sup>—notably by American International Group (AIG) in the credit default swap market, all had implications for policy makers when the crisis struck.

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<sup>39</sup> “Why are the G-20 Data Gaps Initiative and the SDDS Plus Relevant for Financial Stability Analysis?” IMF WP 13/06 available at <http://www.imf.org/external/pubs/cat/longres.aspx?sk=40227.0>.

<sup>40</sup> For a discussion of these issues please see the IMF’s *Global Financial Stability Report*, October 2014, Chapter 1, Rising Market Liquidity Risks.

The present response in terms of data initiatives includes obtaining better data on securities markets (long term funding), repurchase agreements and securities lending (short-term funding) and derivatives markets. The demand for more data on these activities arises from growing financial stability policy interests, such as concerns over market liquidity (repos) and leverage (derivatives), and financial policy and macro-economic policy interests such as the provision of long-term capital for productive purposes.

But the issues go deeper still. In order to assess vulnerabilities and risks in a world of capital flow liberalization, where problems in one sector can translate to another sector, macro analysts are increasingly interested in more granular (micro) information.

The interest among policy makers in concentration and distribution measures and tail risks within the financial sector—given examples like the disruptions to markets in the UK caused by the failure of Northern Rock, a medium sized building society in 2007, is spurring the development of new data collections, such as the recent IMF exercise to collect concentration and distribution measures for a selected group of FSIs, and a closer relationship between statisticians and supervisors. It is also raising concerns about confidentiality—who can see the micro data?

Interestingly the demand for more granular data is also emerging with national accounts-based data, particularly for the household sector. The reasons for growing income, consumption and wealth inequality in many advanced countries are still debated. Nonetheless, it is clear in a world of capital flow liberalization and few credit constraints, widening distributions of income, wealth and consumption can lead to potential financial vulnerabilities even if the aggregate data look reassuring. The global crisis illustrated this point all too well.

### **C. Independence of Statistical Agencies**

Finally one impact of greater global interest in national statistics has been to focus more attention on the credibility of data disseminated. As the need for greater comparability and reliability of data has increased, there has been an increased focus on the role of the statistical agency and statistical functions in other government agencies as a guarantor of quality and independence.

An important development in promoting the independence of national statistical agencies was the endorsement in 1994 of the Fundamental Principles of Official Statistics by the United Nations Statistical Commission.<sup>41</sup> The principles gave strong emphasis to the requirements for independence, autonomy and impartiality of official statistics in compilation of statistics. Independence of official statistics was stressed as the prerequisite for their credibility and for the reliability and high quality of statistics.

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<sup>41</sup> The United National General Assembly endorsed the Fundamental Principles of Official Statistics on January 23, 2014 during its 68th session.



Further in the early 2000s the IMF designed a Data Quality Assessment Framework (DQAF) for use in its Data Report on the Observance of Standards and Codes (ROSC). The introduction of the DQAF was a natural follow-up to the introduction of data dissemination standards as users questioned the quality of the data available through the SDDS and GDDS. The first section of the DQAF focuses on the institutional arrangements in an economy for the compilation and dissemination of statistics including the legal and institutional environment, resources and relevance (meeting users' needs). The IMF Statistics Department undertook broad program of Data ROSC, a voluntary exercise, and published the reports, with the consent of the assessed country.<sup>42</sup> Requesting a ROSC helped focus policy makers' attention on the need to consider the institutional arrangements for statistical work, including the extent to which data were compiled free of political interference.

The consequence of all these and other influences has been an increasing focus on giving legislative backing to the operational independence of statistical agencies. Furthermore, markets have become far more aware of the credibility of national statistical agencies. In Europe in the late 1990s, in the build up to monetary union, the European Union adopted statistical legislation<sup>43</sup> that called on community statistics to be governed by the principles of impartiality, reliability, relevance, cost-effectiveness, statistical confidentiality and transparency. Among the many countries that have strengthened their institutional arrangements for the production of statistics are Mexico, where the statistical agency INEGI was given technical and management autonomy in 2008 and the UK, which has created an independent UK Statistics Authority.<sup>44 45</sup>

The integrity of economic and financial statistics has always been important, but the increased investor interest in data because of its role in investment decisions, both long and short term, has raised the cost to governments of any appearance of data manipulation through political pressure. Also, the assurance of confidentiality of the statistical process—that is, individual data reported by economic agents are used solely for statistical purposes, is reinforced by independence of the statistical function.

## V. WHERE IS THIS ALL LEADING US?

So where are present trends leading us?

***Dissemination of data:*** The pressure on statisticians towards greater transparency seems destined to continue, including both the dissemination of data and improving the dialogue

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<sup>42</sup> The reports are available at <http://www.imf.org/external/np/rosc/rosc.aspx?sortBy=Topic&sortVal=Data%20Dissemination>.

<sup>43</sup> Council Regulation (EC) No 322/97 of 17 February 1997 on Community Statistics, Official Journal of the European Communities No L 52, 22/2/97, pp. 1–7. A later Regulation (No 223/2009) subsequently enhanced and broadened these principles.

<sup>44</sup> See “Independence for UK official statistics: the new UK Statistics Authority,” 15 December 2008, Richard Laux, Richard Alldritt, and Ross Young (UK Statistics Authority).

<sup>45</sup> See also “Statistical Legislation Toward a More General Framework” Sarmad Khawaja and Thomas K. Morrison IMF WP/02/179.

with users to help ensure full use of the disseminated data. The IMF is moving in this direction with its “free data” initiative<sup>46</sup> and the initiative to strengthen the GDDS by providing incentives for participants to disseminate more data.

***Greater integration of datasets:*** The spread of globalization is facilitating an increasing interest in financial interconnections. This would seem to indicate that the trend towards greater standardization and integration of datasets will continue, along with interest in the datasets of other economies, particularly those of systemically important countries.

It is possible that integration will also go further in new directions.

- Reconciling transactions and stock positions and more accurately measuring revaluations and other changes in volume will provide a more integrated picture of the economic and financial developments. And the bottom line may increasingly mean a focus not just the balance on current accounts, but the impact on the net worth of the sector, such as is highlighted in the *GFSM 2014* (Figure 4.1).
- Integrating micro and macro data could provide a more complete analysis of economic and financial developments. Such analysis would be subject to confidentiality constraints. The work of the OECD on an integrated framework on the distribution of household income, consumption, and wealth,<sup>47</sup> and the IMF on concentration and distribution measures for FSIs are such examples.

***Closing the gap between residence and consolidated bases of reporting:*** Residency data remains central to macro-economic policy because data on the activities of a country’s residents matters and is influenced by the policies of the authorities. But in an integrated world, corporations and even individuals are active in more than one jurisdiction: corporations have branches and subsidiaries in foreign economies and activities in sectors other than the sector of the parent. As was noted in a BIS working paper, the ability of multinational firms to borrow dollars through offshore affiliates limits the effect of national policies to restrict access to or to raise the cost of dollar credit.<sup>48</sup> Data on international debt securities by residence and nationality of issuer can help monitor this activity.<sup>49</sup>

Banking regulation is undertaken on a consolidated basis, and among data sets, the BIS consolidated banking and international debt securities data, GSIB dataset, and the FSIs are

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<sup>46</sup> See <http://www.imf.org/external/pubs/ft/survey/so/2015/new012615a.htm>.

<sup>47</sup> See “Measuring inequality in income and consumption in a national accounts framework,” Maryse Fesseau and Peter van de Ven, OECD Statistics Brief, 2014: <http://www.oecd.org/std/na/Measuring-inequality-in-income-and-consumption-in-a-national-accounts-framework.pdf>.

<sup>48</sup> See BIS Working Papers No 483, “Global dollar credit: links to US monetary policy and leverage,” Robert N McCauley, Patrick McGuire and Vladyslav Sushko. Available at <http://www.bis.org/publ/work483.htm>.

<sup>49</sup> See for instance, “Enhancements to the BIS debt securities statistics,” Branimir Gruić and Philip Wooldridge, *BIS Quarterly Review*, December 2012, graph 4, [http://www.bis.org/publ/qtrpdf/r\\_qt1212.htm](http://www.bis.org/publ/qtrpdf/r_qt1212.htm).

compiled on a consolidated approach; that is, consolidating the activities of branches and subsidiaries across border with the parent.<sup>50</sup> The BIS is now developing datasets that can map from the residence basis to the consolidated basis for banking groups, by identifying the nationality of the subsidiaries and branches in foreign economies. Interest in this kind of two-way mapping is likely to grow as corporations and countries become more interconnected.

***Close collaboration across national and international agencies.*** The increased demand for data, combined with increased standardization of concepts and formats of dissemination is likely to put pressure on national and international statistical agencies to cooperate more closely. Why have data collected twice at the national level when it can be collected once by one agency.<sup>51</sup> Why have inconsistencies in the sectoral accounts when national agencies can sit down and examine the strengths and weaknesses in the whole system.

Further there is scope for national agencies to cooperate across border in a world where there is growing interest in bilateral geographical information—my data liabilities to your country can be compared with your data on the claims on my economy. Perhaps over time, I might use your data on claims on my economy rather than my liability data and you use my claims data on your economy. Indeed, some international surveys support the use of counterparty “mirror” data; perhaps most prominently, the BIS international banking statistics can help to monitor cross-border banking activity of domestic sectors.

Similarly at the international level, why should a country report the same data to different international agencies? Data can be provided to one international agency who then provide then to other international agencies after validation. Better still, countries can post data in standardized form and international agencies can take them from a common website. This will reduce the cost to national compiling agencies. The IAG is working along these lines,

***Improvements in data sources:*** From the supply side, surveys, supplemented by administrative data, will remain relevant in order for statistical agencies to get reliable information on the activities of economic agents within the economy. But how does big data fit into this picture? Clearly big data provides more up-to-date information and when, as noted above, users want more frequent and timely information, big data that are related to economic activity might provide leading indicators of such activity. However, when compiling reliable macro-data it is necessary to ensure that the appropriate sample is being covered and statistical concepts are being followed. Only time will tell what role big data may play.

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<sup>50</sup> Each dataset has its own specific approach based on this broad concept. See Irving Fisher Committee Working Paper 8, “Residency/Local and Nationality/Global Views of Financial Positions,” available at <http://www.bis.org/ifc/publ/ifework08.htm>.

<sup>51</sup> In Australia for example, the Australian Prudential Regulation Authority and the Australian Bureau of Statistics have a memorandum of understanding under which “the agencies mutually understand that, subject to legislative provisions information available to one agency, which is relevant to the responsibilities of the other agency will be shared.” Available at <http://www.apra.gov.au/AboutAPRA/Pages/ArrangementsandMoUs.aspx>.

But perhaps more relevant are initiatives such as the Legal Entity Identifier, which are starting to capture financial transactions using a common code. If such initiatives can incorporate characteristics that are relevant for compiling statistical data, the possibility exists for more timely, frequent and reliable data at a lower cost for the economic agents to report. It might also support the development of from-whom-to-whom data. A prototype of this possibility exists with security-by-security database in which individual securities are stored with unique identifiers along with relevant statistical information, such as sector of issuer, coupon rate, issue price, market price etc., and the economic agent reports the quantity securities held and the unique code and the compiler does the rest. The European Central Bank has developed such a database.<sup>52</sup>

***Growth of private sector data providers:*** There is a growing demand for financial statistics. Such data are often made available by private commercial companies. Indeed, statistics published by private data providers tend to be more frequently updated and cover areas that official data sources do not. In addition to the statistics related to the financial sector, some private data sources let users retrieve the official statistics, which these companies have obtained from national statistical agencies.

At present data from private providers tend to complement official statistics, particularly when they provide far more timely data on financial developments than it is possible from the official sector. Going forward rather than the relationship between two official agencies (i.e., national and international), there may be a need to look at the interaction among three actors (i.e., national, international, and private).

***Development of human resources:*** The job of the statistician is becoming increasingly difficult as new policy demands result in the need for statisticians to develop both a deeper and broader set of skills, while keeping on top of new developments in the economy. This makes the work more interesting but more intellectually challenging.

Among the skills needed is that of developing and implementing the new collections that the user demands and having a broader understanding of more than one domain. Also, increased dialogue between statisticians and users may be needed, as statisticians are close to the data and so pick up trends more quickly, including emerging vulnerabilities. The extent to which statisticians should draw out these trends and vulnerabilities, and bring them to the attention of users when compiling and disseminating data, is a judgment they have to make.

But there is also an obligation on the part of the user, to understand and use all the new data that are coming available. There is already evidence that some datasets are almost too complex so that only a few specialist users can interpret them. At the end of the day unless the data collected and disseminated are used, it would be more efficient not to collect them.

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<sup>52</sup> See “The Centralized Securities Database in brief,” ECB, February 2010  
<https://www.ecb.europa.eu/pub/pdf/other/centralisedsecuritiesdatabase201002en.pdf>.

## VI. CONCLUSION

The field of economic and financial statistics develops over time as policy needs adapt. This paper argues that the past two decades has seen nothing short of a revolution in this field largely as a consequence of the liberalization of capital flows, both domestically and cross border. The initial response of statisticians and policy makers to the changing environment was to strengthen the infrastructure of external statistics.

However, while necessary, subsequent crises demonstrated that strengthening the existing system was not sufficient. Rather the need has been demonstrated for greater transparency,<sup>53</sup> led by the data standards initiative; greater standardization, supported by new methodologies that spread best practice; new data sets to support understanding of financial interconnections (e.g., CPIS and CDIS) and financial sector risks (e.g., FSIs and G-SIBs); and the strengthening of the governance of the statistical function through greater independence of statistical agencies and transparency as to national practices.

The sense is that the impact on economic and financial statistics of the deep underlying forces unleashed by the liberalization of capital flows has not yet fully worked through the system. Partly this is because the framework to analyze financial stability is itself still a work in progress. Until the analytical needs are comprehensively articulated, the data needs cannot be settled. But it is also partly because the changes set in motion are still being digested and understood by statisticians. This paper has been an attempt to help statisticians and users of statistics by placing the past two decades in a broader historical context and demonstrating that common trends of development have emerged to be built upon in the coming years.

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<sup>53</sup> Despite the pressure for greater transparency, there are exceptions. For instance, the global crisis highlighted the need for micro data analysis. Such data are, by definition, confidential, and so in this context there is a need to clarify who needs to know what. As the demand for granular data increases, this could become more of an issue.

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