BEAUTY IS IN THE EYE OF THE BEHOLDER: LEVERAGING DISAGGREGATED MACROECONOMIC DATA

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I. INTRODUCTION

1.   **The Statistics Department (STA) of the International Monetary Fund (IMF) is entrusted with the global leadership of promoting internationally accepted standards for the compilation and public dissemination of a broad range of macroeconomic and financial statistics.** These statistics form the basis for the multilateral, regional, and bilateral surveillance work of the institution and are integral to undertaking its mandate. The promotion of data provision to the Fund to undertake surveillance and other activities is enshrined in the Fund's Articles of Agreement (*cf.* Article VIII, Section 5). The IMF also launched the Data Standards Initiatives in the mid-1990s, following a financial crisis that exposed how data deficiencies and lack of transparency contribute to market turmoil.

2.   **The IMF's focus on data dissemination and transparency has been further heightened in the wake of the global financial crisis beginning in 2008.** The crisis reaffirmed the importance and usefulness of macroeconomic statistics—especially those focusing on the financial, fiscal, and external sectors—for economic analysis and policy formulation. However, it also exposed glaring needs for additional data to better understand the build-up of risks in the financial sector, cross-border financial linkages, and the vulnerability of domestic economies to shocks as discussed in the 2009 Report to the Group of Twenty (G-20) Finance Ministers and Central Bank Governors.[2] Also, the 2008 financial crisis led to increased attention to financial stability and so-called macro-prudential analysis, leading to calls for new data sets, regulatory-based data, and micro, including bank-by-bank data. Consequently, macro-financial analysis and the provision of guidance on macro-prudential policy now form an integral part of the IMF's work program.[3]

3.   **Nonetheless, the increased focus on micro data should not be misinterpreted to mean, or imply, less importance of macroeconomic data.** On the contrary, we believe that micro and macro data are complementary. Uncovering the unexploited potential of disaggregated macro data by instrument and institutional sector could significantly improve economic and policy analysis. Indeed, digging deeper into the current macroeconomic datasets allows to focus the analysis on the relevant risks, financial linkages, and potential vulnerabilities, identifying specific areas where further micro investigation could better inform macro responses.

4.   **Further work remains to be done to exploit the full wealth of information in aggregate macroeconomic and financial statistics.** This paper attempts to showcase how exploiting disaggregated macroeconomic statistics enhances policy analysis and points to areas where further assessment at the micro level would be beneficial. The paper provides several examples where digging deeper into what lies beneath the traditional macro-aggregates holds unexploited potential.

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[2] See (IMF, 2009).

[3] Recent statements by the IMF's Managing Director on the work program of the Executive Board reinforced the focus on macro-financial surveillance as a core element of the IMF's work:
https://www.imf.org/external/np/pp/eng/2015/112315.pdf;
https://www.imf.org/external/np/pp/eng/2015/060315.pdf.

II. DATA DISSEMINATION AND TRANSPARENCY

5. **Whereas there has been a significant expansion in data dissemination since the inception of the Data Standards Initiatives, the focus now needs to shift to make more disaggregated macro data publicly available, beyond traditional aggregates.** The push to improve data transparency should entail a coordinated international approach, resulting in the dissemination of additional and more disaggregated data. To this end, the IMF is engaged in several initiatives. Recommendation 20 of the G-20 Data Gaps Initiative 2, led by the IMF and FSB, calls for "G-20 economies … to increase the sharing and accessibility of granular data….". Beyond the G-20, such a move to enhance the transparency of macroeconomic data would particularly benefit countries where resources are scarce and where "moving beyond the aggregates" (i.e. collecting micro data) may not be financially feasible at this time. Indeed, in these cases, a push for transparency related to the dissemination of available macroeconomic and disaggregated data could already go a long way to provide the input necessary to shed light on relevant policy issues. Further, the last two reviews of the Data Standards Initiatives (see Box 1) strengthened the focus on data dissemination and introduced the Special Data Dissemination Standard (SDDS) Plus and the enhanced General Data Dissemination System (e-GDDS). Finally, STA is working with member countries to promote the dissemination of more disaggregated data, which are currently not available publicly for many jurisdictions.

Box 1: The IMF's Data Standards Initiatives

The Data Standards Initiatives were launched after the financial crisis of 1994–95 on the realization that data deficiencies and lack of transparency can contribute to market turmoil.

The Special Data Dissemination Standard (**SDDS**) was established in 1996. It is a global benchmark for the dissemination of macroeconomic statistics to the public. It was initially intended for member countries that have or seek access to international capital markets. Members who subscribe to SDDS must follow good practices in the areas of data coverage, periodicity, timeliness, and public dissemination through a National Summary Data Page (NSDP).

The General Data Dissemination System (**GDDS**) was established in 1997 and was less prescriptive than the SDDS. It provided recommendations on how to identify opportunities for data improvement and prioritization for member countries with less developed statistical systems. In 2015 the enhanced GDDS (**e-GDDS**) replaced the GDDS. The main emphasis of the e-GDDS is on improving the availability and quality of macroeconomic data used in IMF surveillance work, mainly through the public dissemination of a range of relevant data categories (that are closely aligned with the SDDS). e-GDDS data are also to be disseminated via a NSDP.

The Special Data Dissemination Standard Plus (**SDDS Plus**) was established in 2012 to address data gaps identified during the global financial crisis. It serves as an upper tier of the IMF's Data Standards Initiatives for member countries with systemically important financial sectors.

Appendix II. Figure A.1 shows the current participation in each of these initiatives.

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6. **Transparency of macroeconomic data is closely related to data quality but it also covers several aspects beyond it. In particular, data transparency can be thought of as**

the availability to the public of *comprehensive*, *comparable*, *reliable*, *timely and relevant* data. Availability implies that users—including the general public, international investors, and credit rating agencies—should have easy access to data via an easily accessible platform. Comprehensiveness and comparability of data refer to the compliance with international standards, and reliability relates to the soundness of source data and underlying statistical techniques used to generate them. In other words, it refers to how accurately the statistics portray the "true state" of the world. Timeliness of data relates to how quickly the data are disseminated—i.e., the lapse of time between the end of a reference period (or a reference date) and public dissemination of the data. Relevance reflects the degree to which the data meet the needs of users, and whether the available information is fit for purpose and use. Also, an important aspect of data transparency relates to the interpretability of statistical information and toward this end, metadata accompanying releases allows users to fully understand what lies beneath the data. These various dimensions of transparency are essential to ensure that statistics serve as a useful input to robust policy analysis and decision making.

III. WHAT LIES BENEATH

7.   **To strengthen the call for further improvement of data transparency in macroeconomic statistics, we try to demonstrate the unexploited potential of some existing datasets whose details are often not published.** We draw examples on risks and vulnerabilities of the financial sector, cross border financial linkages, and spillover of risks from one sector to another using monetary, external, and government finance statistics. These datasets are the basis for IMF surveillance activities and are used by analysts and policy makers across the world. Disaggregated data can provide important insights that go beyond the "normal use" of the macroeconomic statistics. In this paper we elaborate on:

- **Financial sector:** The Standardized Report Forms (SRF)[4] and the detailed balance sheet breakdowns therein can both be used to construct headline indicators (e.g. broad money, credit growth), but also to assess macro-financial linkages and the health of the financial sector.

- **External sector:** The Coordinated Direct Investment Survey (CDIS) and the Coordinated Portfolio Investment Survey (CPIS) shed more light on cross-border exposures, especially for those countries with deficient international investment position (IIP) data.

- **Public sector:** What lies beneath public sector debt, when we go beyond the attention-getting headline numbers (for example, the debt-to-GDP ratios)?

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[4] In 2004 the IMF introduced Standardized Report Forms (SRFs) for monetary data reporting to ensure methodological soundness and to facilitate cross-country comparability. SRFs provide a uniform way of monetary data reporting to the IMF. The unification is achieved by means of a harmonized accounting presentation of assets and liabilities of the financial corporations. SRFs include sectoral balance sheet data of the central bank, ODCs, OFCs according to the financial instrument, the currency of denomination and the sector of the counterparty. The pre-publication version of the Monetary and Financial Statistics Manual and Compilation Guide (MFSMCG, IMF 2016a) is available on the IMF website.

A. Financial Sector

8.   **The focus of economic statistics significantly shifted following the 2008 financial crisis, particularly zooming in on the financial sector.** First, central banks in many jurisdictions developed new responsibilities in the area of macro-prudential policy and regulation. In turn, these have shifted the focus of policymakers to systemic issues in the financial sector (such as common credit and funding exposures), as well as identifying and tracing financial linkages and networks within a jurisdiction and cross-border. As a result, this created the need for suitable data and indicators to signal vulnerabilities to financial stability and the buildup of risks in the financial sector, such as the IMF's Financial Soundness Indicators (FSIs), as well as other indicators of financial interconnectedness and possible spillover effects. Second, the crisis and subsequent sluggish recovery meant that policymakers also need new lenses to better understand the monetary policy transmission mechanism. This created some urgency for new types of disaggregated information and calls for disaggregated data.

9.   **From the financial stability perspective, new data needs focus primarily on financial linkages at a granular level allowing to map the financial networks and possible shock transmission channels.** The global financial crisis reinforced the notion that the limited data availability on individual counterparties left policy makers ill equipped to understand the financial linkages between market players and thus the financial risks and associated channels of contagion. In the wake of the crisis, increased importance has been attached to elaborate creditor-debtor relationships (i.e., counterparty–by–counterparty information), including by each individual financial instrument (i.e., contract–by–contract). Through these relationships policy makers aim to disentangle complex financial and economic networks, and to assess whether individual institutions are "too big to fail", "too many to fail", or "too connected to fail."

10.   **Nonetheless, the global financial crisis and the sluggish recovery that followed provided renewed interest for monetary statistics.** However, the focus on these data shifted from broad money and credit aggregates to individual components of those aggregates and to their balance-sheet counterparts. The IMF's SRFs compiled by 144 member countries contain such detailed information and can be used to complement headline indicators by providing insights into questions involving sectors, exposures, and instruments.

11.   **The full wealth of detailed monetary data available from the SRFs is often not exploited, especially when the analysis is based only on headline indicators like broad growth.** The analysis of money growth has its origin in the quantity theory of money according to which, if money growth exceeds the growth of GDP, inflationary pressures are predicted to follow. For this reason, the growth of the monetary aggregates is closely monitored as a gauge of inflationary pressure and, in some cases, as an intermediate target for the stance of monetary policy. With the onset of inflation targeting regimes and the use of interest rates as operational targets, the use of monetary analysis and monetary survey data has declined somewhat in many jurisdictions[5] since the measurement of broad money as intermediate target was no longer a need for policy makers. This has also been the case for
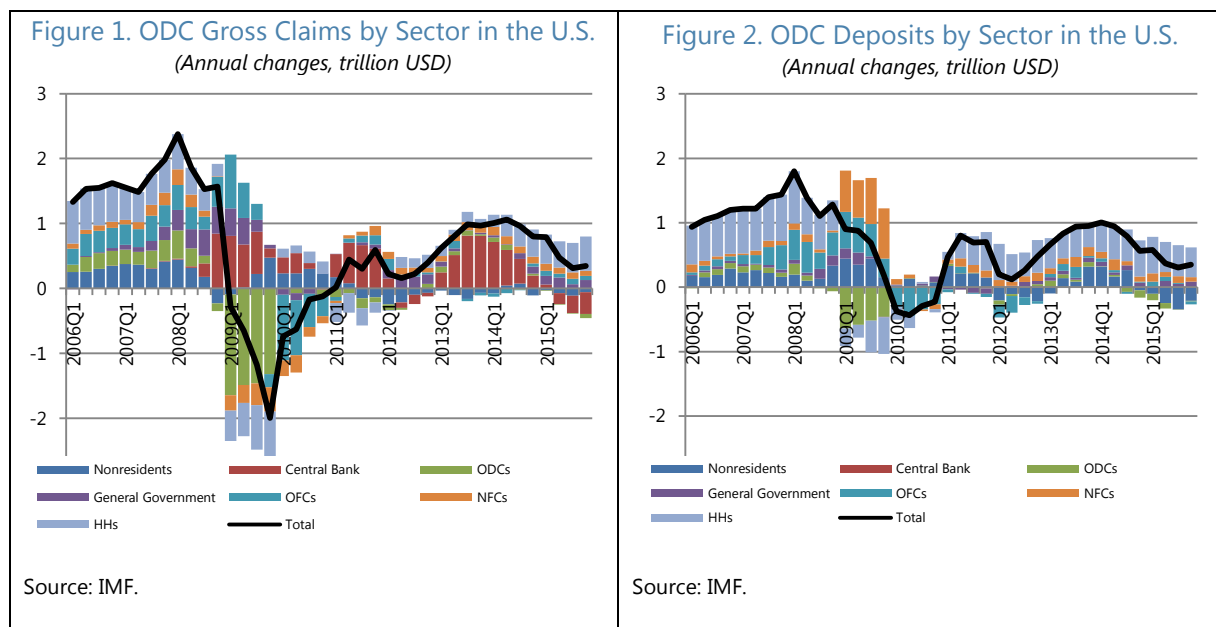
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[5] The ECB is a notable exception to this, as its monetary policy is based on two equally important pillars: the analysis of monetary and economic developments (ECB, 2011).

some of the IMF's bilateral surveillance.

Sectoral Breakdowns

12.   **Although aggregate data are useful for policy work, they may disguise important underlying developments.** For instance, when looking at the US's other depository corporations (ODCs) gross claims by sector (Figure 1), we can clearly see ODCs' assets expanding through the first quarter of 2008, when the annual growth peaked. In the quarters that followed, the growth rate first declined and, starting in 2009, a severe deleveraging of ODCs balance sheets began. This message can be extracted by looking at the headline figure (black solid line). However, what could be missed in this figure are the sectoral developments underlying the decline in ODCs' assets. Compared with other downturns in credit cycles, the recent global financial crisis saw some marked developments within the financial sector itself. Namely, in addition to a decline in credit to nonfinancial corporations (NFCs) and households (HHs), the detailed monetary statistics show how the interbank lending market dried up in the post-Lehman quarters (green bars), while ODCs parked most of their excess liquidity at the central bank (red bars) or in government-issued instruments (purple bars). Importantly, the developments in the interbank lending market so far have not been reversed during the recovery.
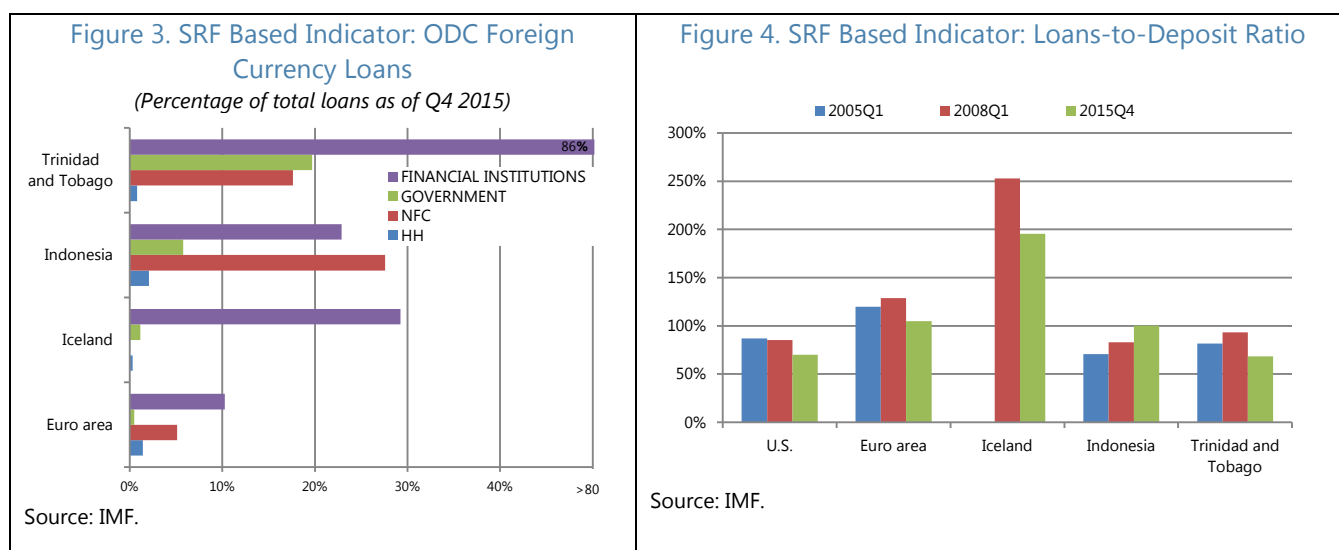
13.   **On the liability side (Figure 2), an important feature in the financial flows is the large withdrawals of deposits by HHs corresponding to the period of severe deleveraging by ODCs.** While this may be associated with the necessity of drawing down on savings during the crisis, the large withdrawals are a remarkable developments. HH deposits are "core liabilities" of the ODC sector, which typically remain stable during the credit cycle. Tapping into individual bank data would further develop this kind of analysis and enhance the understanding of the underlying developments, especially if some of the developments discussed were concentrated in specific institutions.

Figure 1. ODC Gross Claims by Sector in the U.S.
(Annual changes, trillion USD)

Source: IMF.

Figure 2. ODC Deposits by Sector in the U.S.
(Annual changes, trillion USD)

Source: IMF.

14.   **Historically in many countries credit growth has been closely related to money creation.** However, this link has been weakened after the crisis for reasons that the analysis of the SRFs might reveal. For instance, in some jurisdictions part of the core funding to finance credit has been replaced by liquidity provision by the central bank (which is not part of broad money); in others, broad money increase has funded an increase in Net Foreign Assets (NFAs) or in credit to government, crowding out credit to private sector.

15.   **Further, monetary statistics have proven useful as an input to macroprudential analysis.** In this context, the SRFs can provide detailed input in the analysis of sectoral exposures and foreign currency (FX) lending, which may render a country's banking system vulnerable to exchange rate volatility. Exchange rate changes directly affect the nominal amounts owed by the original borrowers and, therefore, their ability to repay and probability of default. For instance, in the case of Trinidad and Tobago, ODC FX loans (Figure 3) to financial institutions are largely issued (86 percent in 2015:Q4) in FX.

16.   **In the macro prudential domain, SRF data can also be used to construct aggregate supervisory indicators.** Examples of these measures include the loans-to-deposits ratio (LTD, Figure 4), measuring the banking system reliance on stable funding for its lending operations, as well as financial system leverage (capital-to-assets), measuring the banking system reliance on debt to fund its assets. While other statistical domains such as the FSIs may be more accurate for measuring supervisory concepts, the FSIs are not as widely and frequently collected as the detailed and monthly monetary statistics.

Figure 3. SRF Based Indicator: ODC Foreign Currency Loans
(Percentage of total loans as of Q4 2015)

Source: IMF.

Figure 4. SRF Based Indicator: Loans-to-Deposit Ratio

Source: IMF.

Balance Sheets

17.   **The crisis highlighted the need to strengthen the role of Balance Sheet Analysis (BSA) in surveillance work.** The traditional focus on flows overlooks major risks stemming from balance sheet positions, especially when large mismatches exist at an institutional, sectoral, or economy level.

18.   **To enhance the IMF's macro-financial surveillance toolkit, the IMF uses the BSA to increase the understanding of inter-linkages and vulnerabilities in key sectors of the economy.** The BSA examines stocks of assets and liabilities from data derived primarily from
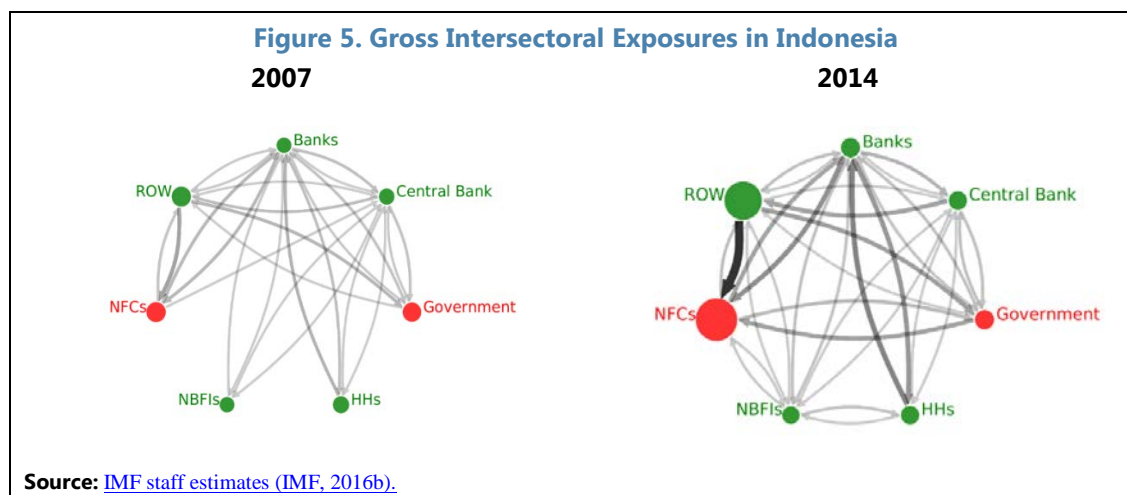
the SRFs, and complemented by external sector (ESS) and government finance statistics (GFS). The data reported in these three domains, as well as from national accounts, are used to construct a "from-whom-to-whom" matrix of balance sheet positions. The cells of the BSA matrix show inter-linkages among sectors, including macroeconomic imbalances stemming from excessive borrowing or lending. Table 1 shows the BSA constructed for Indonesia, where the most important macroeconomic imbalance lies in the large external indebtedness of the NFC sector. In the fourth quarter of 2014, this amounted to almost 60 percent of GDP. As these funds are borrowed in foreign currency, a depreciation of the exchange rate proportionally increases the macroeconomic imbalance.

Table 1. Indonesia: BSA Matrix—Intersectoral Net Positions, 2014:Q4

	Government	Central Bank	Banks	NBFIs	NFCs	HHs	ROW
	(In trillions of rupiah)						
Government		9	113	0	-854	0	1,530
Central bank	-9		835	1	0	-6	-1,353
Banks	-113	-835		107	-698	683	246
NBFIs	0	-1	-107		-62	-257	111
NFCs	854	0	698	62			4,933
HHs	0	6	-683	257			0
ROW	-1,530	1,353	-246	-111	-4,933	0	
	(In percent of GDP, highlighted if > or < 30% of GDP)						
Government		0.11%	1.32%	0.00%	-9.97%	0.00%	17.85%
Central bank	-0.11%		9.75%	0.02%	0.00%	-0.07%	-15.79%
Banks	-1.32%	-9.75%		1.25%	-8.15%	7.97%	2.87%
NBFIs	0.00%	-0.02%	-1.25%		-0.73%	-2.99%	1.30%
NFCs	9.97%	0.00%	8.15%	0.73%		0.00%	57.57%
HHs	0.00%	0.07%	-7.97%	2.99%	0.00%		0.00%
ROW	-17.85%	15.79%	-2.87%	-1.30%	-57.57%	0.00%	

Source: IMF staff estimates (IMF, 2016b).

19.   **The intersectoral position in the economy provided by the BSA matrix could also be summarized using network representation.** Figure 5 shows the representation of the Indonesian economy in terms of financial linkages across sectors, and how this has evolved between the years preceding the global financial crisis and until the end of 2014. The thickness of the arrow indicates the size of each gross exposure, while the color of the nodes distinguishes net creditors (green) from net debtors (red). The network representation graphically illustrates three main messages in the case of Indonesia: (1) net creditors in 2007 remained so in 2014; (2) over the period, the size of both gross exposures (thickness of arrows) and net exposures (size of notes) increased; and (3) NFC borrowing from the ROW represents the largest exposure in 2007 and again in 2014. Missing arrows in the network representation reflect data gaps.

Figure 5. Gross Intersectoral Exposures in Indonesia

2007   **2014**

Source: IMF staff estimates (IMF, 2016b).

20.   **An analytical use of the BSA matrix is to construct scenario–based stress tests of aggregate sectoral exposures.** For instance, after having identified imbalances in foreign currency one could use the matrix to estimate the net effect of a currency depreciation on net assets or liabilities for each sector. Further, as the focus of the matrix is on linkages, the tool can be used to identify how vulnerabilities can spill from one sector to another, by analyzing the BSA for consecutive periods after the shock took place. For example, following a currency depreciation in a country where banks have lent large amounts to the nonfinancial sector in foreign currency, the BSA analysis will show an increase of the liabilities of the borrowing sectors, which may result in increased default rates or nonperforming loans (NPLs) and therefore a spillover of the vulnerability from the nonfinancial to the banking sector.

21.   **Further investigation at the micro level could focus on the largest NFCs borrowing from the rest of the world.** After disaggregated macro data identified the source of macro vulnerability, policy makers could take further steps to identify the largest institutions and their specificities such as economic activity, ownership structure, and interconnectedness with other sectors. This analysis at the micro level would deepen the assessment of potential propagation of shocks within the economy and complete this macro assessment.

B.   External Sector Statistics

22.   **In the external sector domain, the Coordinated Direct Investment Survey (CDIS) and Coordinated Portfolio Investment Survey (CPIS) are sources of cross border data that are not fully exploited.** The global financial crisis exposed the need for disaggregated data that would enable policy makers to better understand cross-border financial linkages and spillover effects. In event, the CDIS provides "inward" and "outward" direct investment positions cross-classified by counterparty economy, including disaggregated information on equity and debt positions and other breakdowns. In the same vein, the CPIS collects information on the stock of cross-border equities holdings and long- and short-term debt securities broken down by residency of the issuer. The CDIS and CPIS serve as a useful input in the analysis of the financial interconnectedness of economies as well as cross country vulnerabilities.
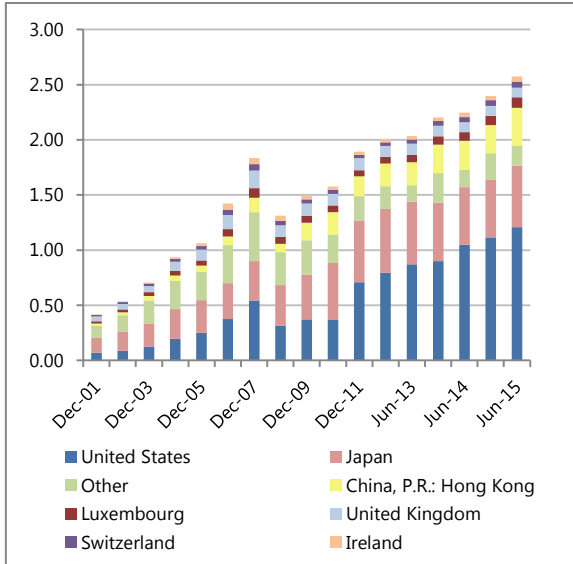
23.   **One way to use the CDIS data is to analyze the direct investment concentration across countries.** For instance, for end 2014 data, such an analysis indicates that direct

investment is concentrated in, and originated from a small number of countries in few regions.[6] These countries include the United States, China, Japan and large European countries, as well as a few European countries with well integrated financial systems (see Appendix I for further details). The survey data reveal high financial interconnectedness and exposure of these economies, and their potential cross-country vulnerabilities.

24.   **The CPIS data can be used to derive total portfolio investment liabilities of an economy from other CPIS participating economies' portfolio investment assets data.** This is particularly interesting for economies where no IIP data are available. For instance, the Cayman Islands compile neither balance of payments nor IIP data. However, the Cayman Islands are a major offshore financial center providing cross-border financial services to many of branches of foreign banks. If not effectively supervised, such financial services may accumulate significant risks and potential spillover to home economies through the branches of foreign banks in the Cayman Islands.
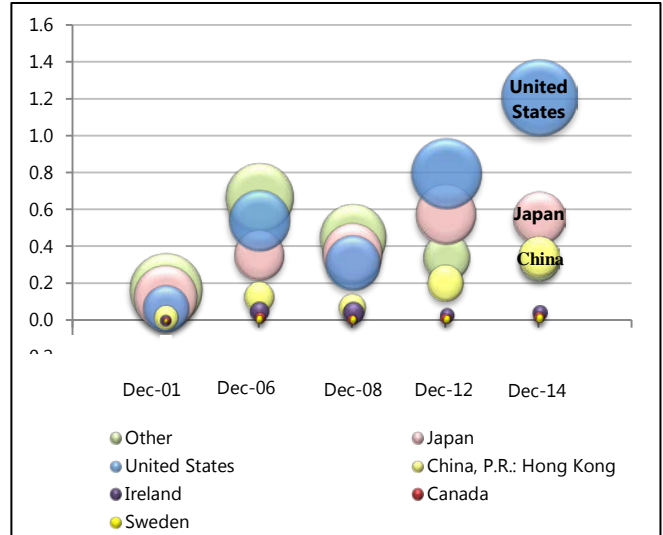
25.   **In 2014 the Cayman Islands inward portfolio investment stood at US$ 2.6 trillion.** The Cayman Islands Portfolio investment liabilities expanded up to 2007, when the total positions peaked (Figure 6). In the wake of the 2008 global financial crisis the total positions first declined, however, quickly recovered and even doubled up to 2015. Over the period 2001–14 the Cayman Islands recorded a high increase in portfolio investment liabilities.

Figure 6. Cayman Islands: Decomposition of Derived Portfolio Investment Liabilities
(End-of-Period, USD, trillions)

Other includes: Canada, Germany, France, China, P.R.: Mainland, Singapore, Finland, and Sweden.

Figure 7. Cayman Islands: Derived Portfolio Investment Liabilities by Economy of Nonresident Holder
(End-of-Period, USD, trillions)

Note: The size of the bubbles represents the percentage of the selected country's portfolio investment of the total portfolio investment in Cayman Island.
Other includes: Luxembourg, UK, the Netherlands, Germany, France, China, P.R.: Mainland, Singapore, and Finland.

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[6] See (IMF, 2015).

26.   **The country breakdown of CPIS data makes it possible to identify the countries that invested in the Cayman Islands (Figure 7).** The bulk of portfolio investment comes from the U.S. (blue bubble), Japan (pink bubble) and Hong Kong (yellow bubble). These three jurisdictions, along with Ireland, Canada, and Sweden, have increased their portfolio investment in the Cayman Islands over the period; in contrast, the UK, Germany and France have decreased their investments since 2008.

27.   **Financial linkages with vulnerable economies could be derived from the CPIS data.** During the recent global financial crisis and subsequent sovereign debt crises policy makers struggled to identify the financial linkages of stressed economies with the rest of the world. Although CPIS data have been available, their potential for analyzing cross-country financial linkages have not been fully exploited.

C.   Government Finance Statistics

28.   **Over the past several years, the focus on government debt has intensified.** In many economies annual deficits and debt-to-GDP ratios increased significantly since 2008–09, raising concerns about fiscal and debt sustainability. For example, in the European Union, the perceived debt default risk of peripheral countries resulted in financial markets and investors demanding higher yields, making it costlier for governments to raise financing.
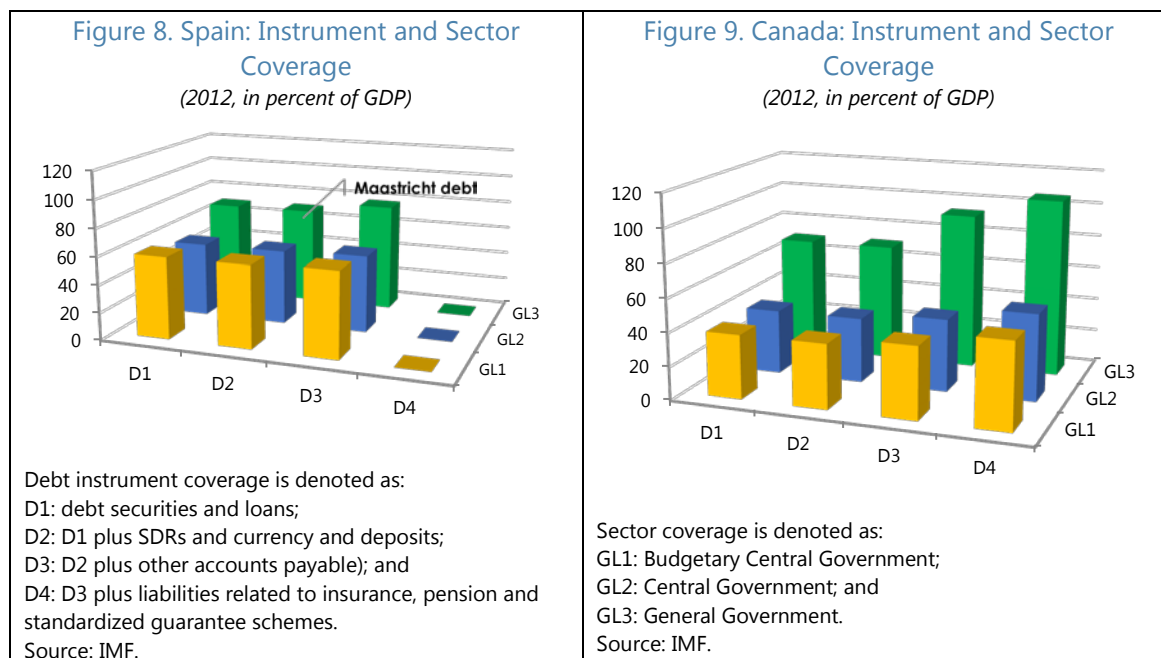
29.   **The availability of disaggregated government debt data can significantly improve the understanding of policy makers and market participants and provide a deeper view of fiscal developments in many countries.** Conventional indicators of governments' financial health, such as the gross debt-to-GDP ratio are useful but have limitations (see Dippelsman et al., 2012). Yet such headline indicators might be misleading if not complemented with additional information, such as the breakdown of debt instruments and the sectoral coverage. Finally, detailed information on assets improves the assessment of the government's net financial worth.

30.   **The international comparability of government debt data depends upon knowing the applied definitions, with regard to debt instrument and sector coverage.**[7] For instance, in 2012, the nationally defined gross debt-to-GDP ratio for Spain and Canada were 70.3 and 106.2 percent, respectively (Figure 8 and 9). At first glance, policy makers and market participants may interpret that Spain's debt is more sustainable than Canada's. However, the interpretation would be different if complemented with the additional information that Spain uses the Maastricht criteria to define its debt, while Canada uses a broader measure.[8] Spain thus has a narrower debt-instrument coverage, which encompasses debt securities, loans and currency and deposits (so-called D2A coverage). By contrast, Canada is applying a broader standard, which encompasses additionally SDRs, other accounts payable, and liabilities related to insurance, pension and standardized guarantee schemes (so-

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[7] In addition to sector coverage, the consolidation of intra-sectoral positions between components of general government may also affect the comparability across countries.

[8] Maastricht debt is a part of the Stability and Growth Pact (SGP) of the European Union (EU) entailing budgetary discipline by EU members. It covers the consolidated general government and is defined as the sum of currency and deposits, debt securities and loans (Council Regulation (EC) No 479/2009; No 220.2014).

called D4). In this example we only look at debt instrument coverage (i.e. D1 – D4) but the same logic applies to sector coverage (Figure 9, explains the GL1–GL3 sector coverage concepts).[9] Based on this information, it is apparent that the observed difference in debt levels is largely due to instrument and sector coverage and not sustainability.

Figure 8. Spain: Instrument and Sector Coverage
(2012, in percent of GDP)

Debt instrument coverage is denoted as:
D1: debt securities and loans;
D2: D1 plus SDRs and currency and deposits;
D3: D2 plus other accounts payable); and
D4: D3 plus liabilities related to insurance, pension and standardized guarantee schemes.
Source: IMF.

Figure 9. Canada: Instrument and Sector Coverage
(2012, in percent of GDP)

Sector coverage is denoted as:
GL1: Budgetary Central Government;
GL2: Central Government; and
GL3: General Government.
Source: IMF.

31. **So what is the comparable debt-to-GDP ratio for Spain and Canada under the same definition?** Since the broader D4 debt instrument coverage is currently not available for Spain, we focus on the narrower D2A debt instrument. In this case, Canada's gross debt-to-GDP ratio significantly declines from 106.2 percent to 70.4 percent and the gap between the two countries disappears. In this case, we excluded components from Canada's public debt to enhance comparability with Spain but this does not imply that these components are not relevant for Canada. On the contrary, the inclusion of other accounts payable and pension liabilities, which form most of Canada's public sector debt, is important from Canada's perspective and factors into its domestic policy debates about fiscal and debt sustainability.

32. **Net debt can also provide a complementary view on the fiscal position of governments that is currently not fully exploited.** Debt sustainability analysis (DSA[10]) focuses primarily on *gross* public sector debt, which provides a partial view of a government's
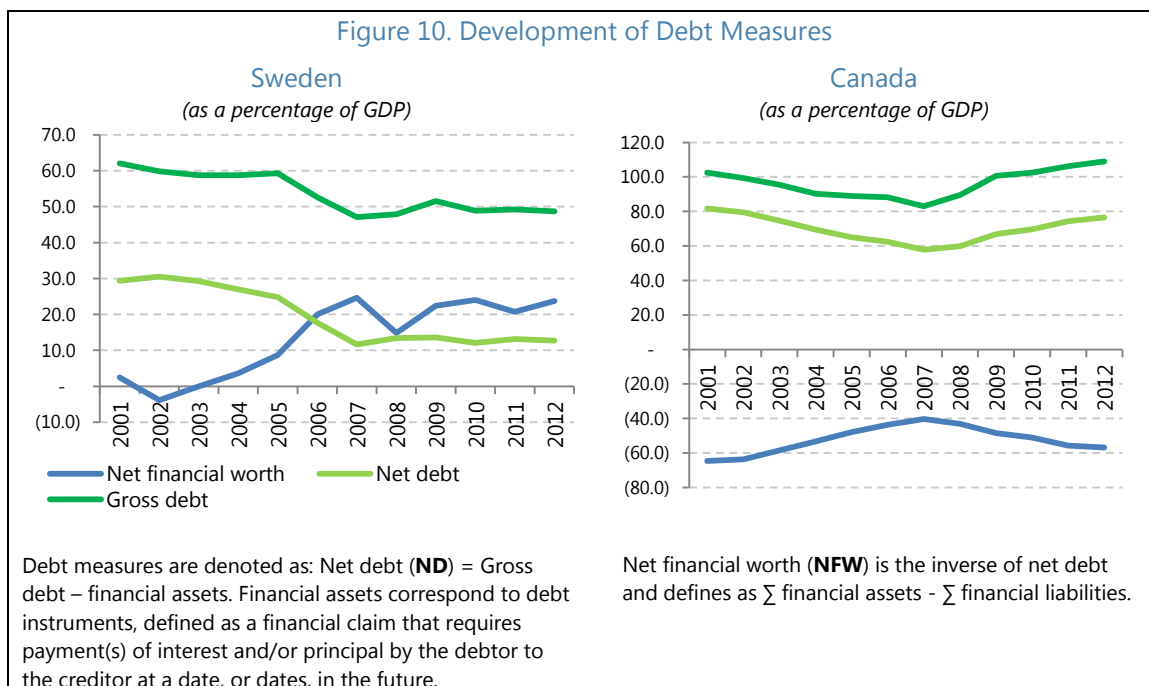

Maastricht debt is hence smaller than the IMF's definition, which additionally includes Special Drawing Rights (SDRs), insurance, pension and standardized guarantee schemes, and other accounts payable.

[9] The GL1–GL3 sector coverage concepts can also be usefully applied to cross-country analysis of issues pertaining to other key fiscal aggregates (revenue, expenditure, etc) and analytical balances (net lending/borrowing, primary balance, etc.).

[10] The joint World Bank–IMF DSA framework guides the lower income countries in borrowing decisions matching financing needs with present and future repayment abilities.
http://www.imf.org/external/np/exr/facts/jdsf.htm

balance sheet. Because it only examines the liabilities side and does not incorporate the assets side. Assets may generate income to service or redeem part of the debt. Consequently, this may leave a government that has considerable liabilities better off than a government that has low liabilities and hardly any assets. Hence, *net debt* (ND) could serve as a valuable complementary indicator to provide policy makers with a more "balanced" view of the fiscal sustainability of governments (Figure 10 explains the debt concepts). Appendix II. Figure A.3 depicts a ranking of gross debt of various economies. Note that this ranking changes when looking at the net debt rather than the gross debt: in particular, witness the drop in the ranking of Finland, Denmark and Sweden.

Figure 10. Development of Debt Measures

Sweden *(as a percentage of GDP)* — Net financial worth, Net debt, Gross debt

Canada *(as a percentage of GDP)*

Debt measures are denoted as: Net debt (**ND**) = Gross debt – financial assets. Financial assets correspond to debt instruments, defined as a financial claim that requires payment(s) of interest and/or principal by the debtor to the creditor at a date, or dates, in the future.

Net financial worth (**NFW**) is the inverse of net debt and defines as ∑ financial assets - ∑ financial liabilities.

33.   **The harmonized application of international standards in the area of public sector debt is essential for data transparency.** Although guidelines of general government and public sector debt are well defined[11], in practice, countries do not apply these guidelines in a harmonized manner—resulting in potentially misleading views about developments across them. Consequently, efforts to harmonize the applied debt definition may significantly increase data transparency, cross-country comparability, and better surveillance.

IV.   CONCLUDING REMARKS

34.   **The IMF has an ongoing and unwavering commitment to promote data transparency and through it, timely, comprehensive, and high quality data for policy making and surveillance.** The Fund's Data Standards Initiatives have proven to be a valuable instrument in this sense, as evidenced by the near universal membership (see Figure A.1. in Appendix II). The near universal acceptance of the Data Standards Initiatives reflects a

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[11] International guidelines on the compilation of general government and public sector debt are laid down in (IMF, 2013); (IMF, 2014a).

number of factors (IMF, 2014b) including: the "public goods aspect of data dissemination. The IMF also promotes data quality, standards, and harmonization through its Data Quality Assessment Framework (DQAF) and through periodic Reports on the Observance of Standards and Codes (ROSCs).

35.   **The advantages of transparent and disaggregated macroeconomic data are many fold.** Such data would (1) contribute to the smooth functioning of economies via evidence-based policy-making predicated on reliable data, which objectively depict economic conditions; (2) reduce data uncertainties for analysts and thereby improve the assessment of economic and financial risks; (3) promote credibility of policy makers and encourage informed public-policy debate, and (4) provide an objective basis to hold governments accountable.

36.   **Although the recent global financial crisis did not originate because of data gaps, the latter severely hampered a timely policy response to understand and possibly contain spillovers across sectors and countries.** In turn this exposed the need for additional, more disaggregated data to better understand the build-up and transmission of risks. Moving forward, as the global economy becomes more interconnected and financial architecture more complex, sound macroeconomic policies require the integration of micro and macro economic data, which provide complementary perspectives.

37.   **In this regard, the dissemination of more disaggregated macro data is essential in order to bridge the analysis of traditional aggregates with micro level assessment.** If used in parallel, micro and macro data allow a broader and more thorough assessment of financial and economic developments, as demonstrated by the examples in this paper. For this reason, the IMF continues to attach high priority to data transparency, increasingly promoting the dissemination of disaggregated data.

References

Dippelsman R., C. Dziobek and C. A. Gutierrez Mangas, IMF Staff Discussion Note, "What Lies Beneath: The Statistical Definition of Public Sector Debt", Washington, July 2012. (https://www.imf.org/external/pubs/ft/sdn/2012/sdn1209.pdf)

European Central Bank (ECB), 2011, "The monetary policy of the ECB". (https://www.ecb.europa.eu/pub/pdf/other/monetarypolicy2011en.pdf)

International Monetary Fund (IMF), "Guide to the Data Dissemination Standards, Module 1: The Special Data Dissemination Standard", Washington, May 1996.

———, 2009, "The Financial Crisis and Information Gaps: Report to the G-20 Finance Ministers and Central Bank Governors". (http://www.imf.org/external/np/g20/pdf/102909.pdf)

———, 2012, 2012 Review of Data Provision to the Fund for Surveillance Purposes. (http://www.imf.org/external/pp/longres.aspx?id=4713)

———, 2013, Public Sector Debt Statistics: Guide for Compilers and Users. (http://www.tffs.org/pdf/method/2013/psds2013.pdf)

———, 2014a, Government Finance Statistics Manual 2014. (http://www.imf.org/external/np/sta/gfsm/index.htm)

———, 2014b, 2014 Triennial Surveillance Review, IMF Policy Paper. (http://www.imf.org/external/np/spr/triennial/2014/)

———, 2015, Twenty-Eight Meeting of the IMF Committee on Balance of Payments Statistics. (https://www.imf.org/external/pubs/ft/bop/2015/pdf/15-10.pdf)

———, 2016a, Monetary and Financial Statistics Manual and Compilation Guide. (http://www.imf.org/external/~/media/BA1EEFCA3BAD47F291BBFDFA8D99F05D.ashx)

———, 2016b, Indonesia : Selected Issues, Series: Country Report No. 16/82. (http://www.imf.org/external/pubs/ft/scr/2016/cr1682.pdf)

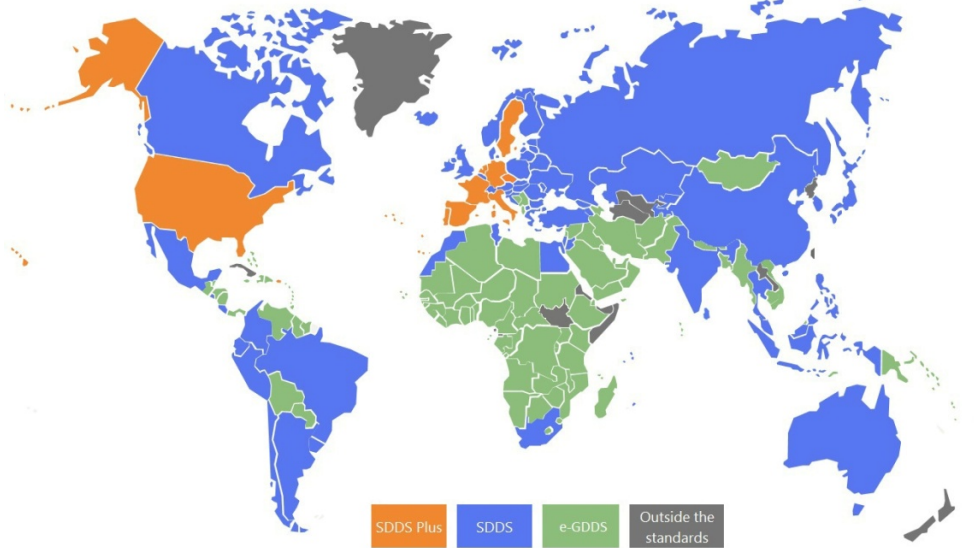| Table 1-i: Inward Direct Investment Positions: Top 10 Reporting Economies Cross-classified by Counterpart Economy, as of end-2014											
(U.S. Dollars, Millions)											
Counterpart Economy (Investment from):	Reporting Economy (Investment in):										
	Netherlands	United States	Luxembourg	China, P.R.: Mainland	United Kingdom	Hong Kong, SAR	Germany	Singapore	Switzerland	France	All Other Economies	Total Investment
United States	818,337		626,483	70,264	405,313	47,962	93,919	109,999	101,417	76,056	1,221,903	3,571,654
Netherlands		304,848	395,091	26,477	286,195	87,099	148,556	73,520	179,794	112,770	1,346,242	2,960,593
Luxembourg	712,172	242,862		3,941	130,705	C	163,186	21,787	187,472	136,606	827,303	2,426,033
United Kingdom	407,733	448,548	269,564	18,375		16,515	66,998	47,703	26,010	78,445	648,147	2,028,037
Hong Kong, SAR	C	7,604	34,151	1,107,874	20,773		1,427	28,792	C	1,608	85,337	1,287,566
Germany	225,933	224,114	40,763	53,806	98,507	C		14,512	24,740	75,633	420,460	1,178,467
Japan	55,878	372,800	C	134,368	70,710	28,502	22,194	58,768	3,958	13,832	365,798	1,126,808
Virgin Islands, British	45,129		72,489	313,384	21,015	532,593	2,845	61,167	C	195	72,918	1,121,734
France	113,977	223,164	8,417	19,020	127,578	5,611	45,635	13,781	40,140		494,851	1,092,174
Switzerland	202,388	224,021	104,132	11,612	77,846	10,327	55,378	29,173		61,180	258,222	1,034,279
All Other Economies	1,431,932	853,098	794,830	572,634	506,077	605,078	230,524	347,566	235,092	172,822	3,326,003	9,075,657
Total Investment	4,013,479	2,901,059	2,345,920	2,331,755	1,744,718	1,333,687	830,662	806,768	798,624	729,147	9,067,184	26,903,003

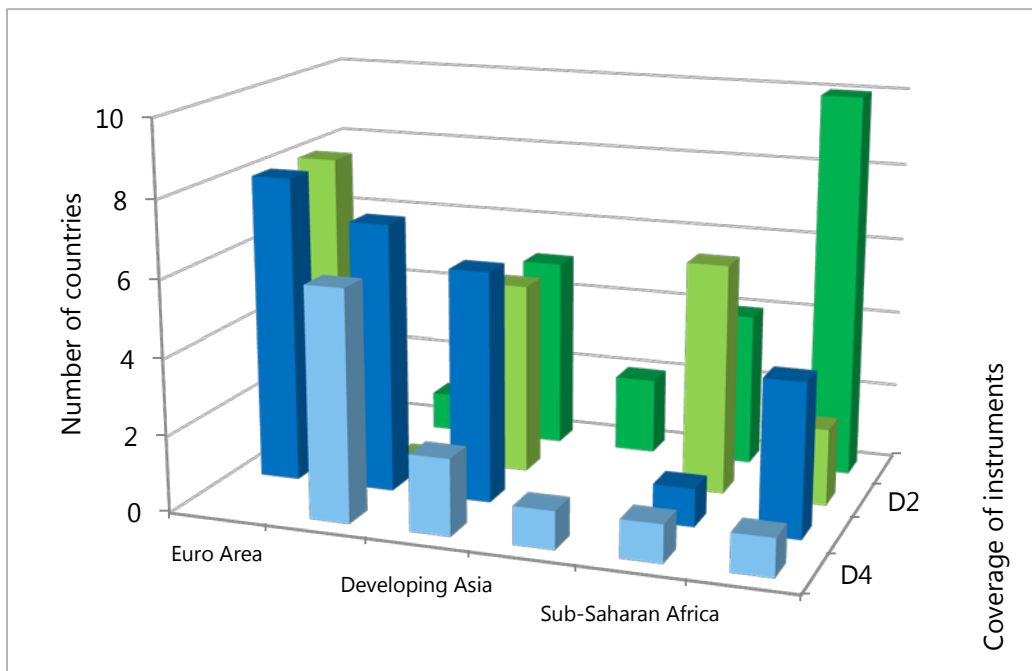Source: IMF Coordinated Direct Investment Survey (CDIS).

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APPENDIX II. ADDITIONAL CHARTS AND FIGURES

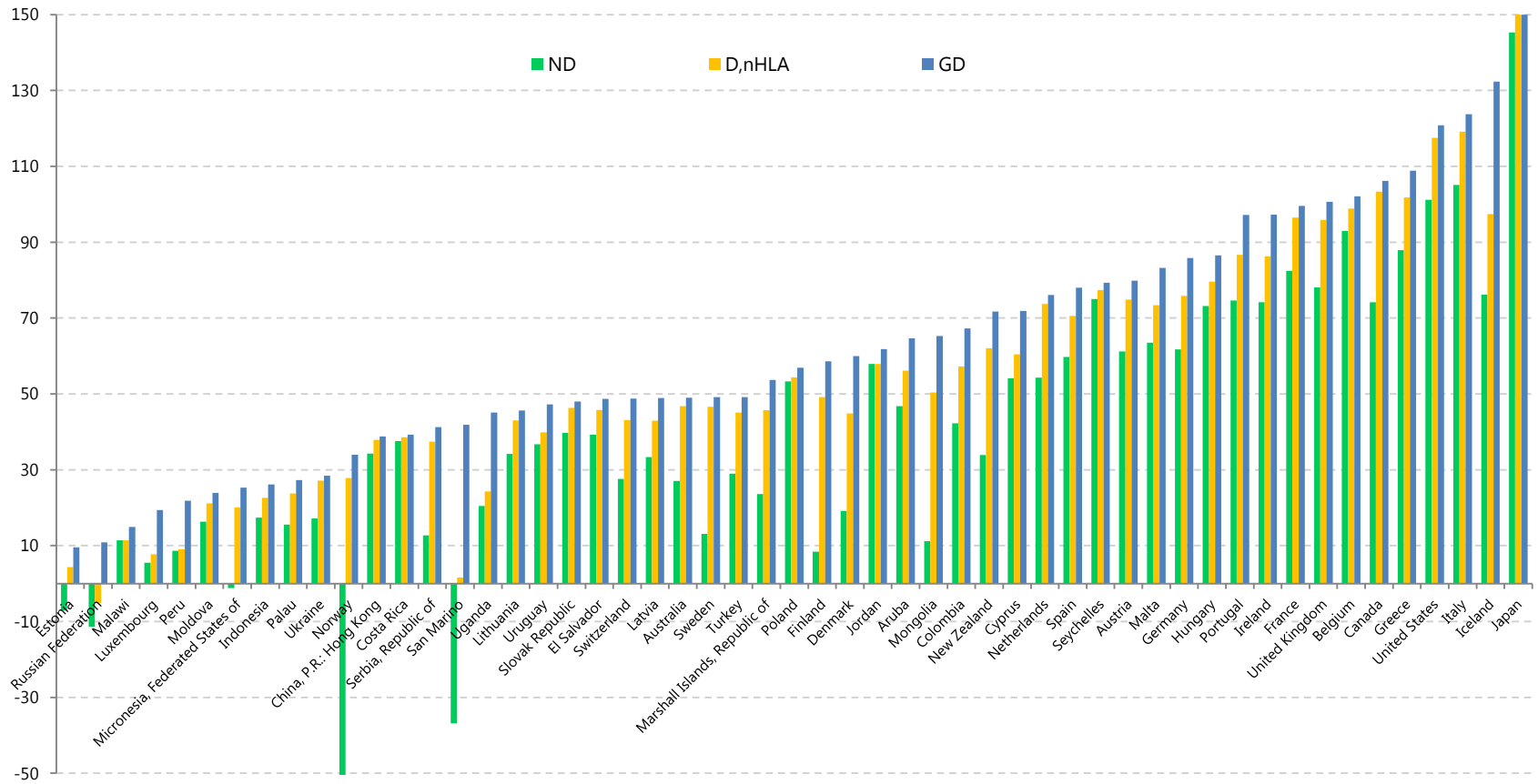Figure A.1. The IMF's Data Standards Initiatives: Members' Participation

Source: IMF's Dissemination Standards Bulletin Board.

Figure A.2. Instrument Coverage by Region
(Number of Economies per Region)

Debt instrument coverage is denoted as: D1 (debt securities and loans); D2 (D1 plus SDRs and currency and deposits), D3 (D2 plus other accounts payable); and D4 (D3 plus liabilities related to insurance, pension and standardized guarantee schemes).
Source: IMF.

Figure A.3. Countries Ranking by Gross Debt, Net Debt, and Debt Net of Highly Liquid Assets *(percentage of GDP at end-2011)*

Note: Debt measures are denoted as: Net debt (ND); gross debt (GD); debt net of highly liquid assets (D,nHLA).
Source: IMF.