The IMF Balance Sheet Approach: towards from-whom-to-whom Information on Cross-border Portfolio Securities

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Outline

- The IMF Balance Sheet Approach
- Breaking down portfolio investment positions by geography and sector
- Exchanging information internationally to close the gap
- Conclusions
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The IMF Balance Sheet Approach

- Assets and liabilities of each sector (positions)
- Estimate inter-sectoral financial positions by instrument, maturity, and currency
- Objective: detect sector vulnerabilities / policies to reduce them

Three intra-sector mismatches:

- Maturity mismatches → LT illiquid assets vs. ST liabilities
- Currency mismatches → exchange rate risks
- Capital structure mismatches → not enough equity

Can turn into → Solvency or credit risk (financial assets < liabilities)
How to compile and analyze the Balance Sheet Approach

- The three-dimensional BSA provide counterpart information
Example: BSA network map for Indonesia

Source: Indonesia: Selected Issues Paper, 2016, Figure 1 on page 29, IMF.
Note: The thickness of the arrow indicates the size of gross exposure, while the color of the nodes distinguishes net creditors (green) from net debtors (red).
Abbreviations: NBFI – Non-bank Financial Intermediaries; NFCs - Non-financial corporations; HHs – Households; ROW – Rest of the World
Areas for future development

- **Maturity** breakdowns for all financial instruments
- Further breaking down **nonbank** financial sector
- Reconciliation of **asymmetries**
- Compiling matrices of **inter-sectoral financial flows**

And

Breaking down global cross-border positions with **from-whom-to-whom counterpart** (country and sector) detail
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Break down by geography cross-border positions

**Question:** Who holds national securities across the border (country’s liabilities)?

**Answer may come from:** IMF Coordinated Portfolio Investment Survey (CPIS)

Reporters provide:
Cross-border portfolio holdings (assets) by counterpart economy

Reporters receive mirror data:
Geographical distribution of portfolio investment liabilities

CPIS database (IMF STA)
CPIS : Participating economies

- Reporters cover:
  - All major industrialized economies
  - Most offshore financial centers
  - Most emerging markets
  - Lacking some oil-producing economies

- Results for December 2017 to be posted in September 2018
What is missing to permit identification of who (holder) finances whom (issuer)?

• We know which **domestic sectors** hold securities, but...
• ... don’t know which **non-resident sectors** they are financing:

**Very different risks depending on borrowing/issuing sector!**

- Government (state, local)?
- Banks?
- OFIs (e.g., hedge funds, FVCs, etc.)?
- NFCs?

• But how to sectorize non-resident issuers?
• Compilers sectorize resident entities to compile macro economic statistics, so **the economy where the issuer is resident** could provide this service to its counterparts
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Project: centralized exchange of data to improve sectorization of issuers in the CPIS

Economies send the ISINs or issuers’ IDs of their securities holdings (ASSETS)

IMF Groups ISINs/issuers by Country of Issuance Eliminate Duplicates

For their domestic ISINs/issuers, economies identify SECTOR of the issuer

Centralized Database of ISIN Codes and/or issuer sectors (IMF STA)

USE BY CPIS Participating Economies

Initiative follows request by Inter-Agency Group on Economic and Financial Statistics (IAG) and the Financial Stability Board (FSB) Secretariat

[ISIN: International Securities Identification Number]
IMF BOP Committee (Oct. 2017)

- Based on the pilot results, BOPCOM fully supported the initiative
- Underlined the importance of sectorization for IMF surveillance and to address asymmetries
- Need to address contractual issues with commercial data providers
- Automatized process requires standardization:
  - ISIN to identify securities
  - Legal Entity Identifier (LEI) to identify issuers
However:

- Implementation of the LEI can take time
- Around 1/3 of securities don’t have an ISIN
- Even fewer in certain parts of the world (e.g., Asia)

Therefore, combined approach:

- **Individual securities** (with ISIN) for countries collecting security-by-security data
- **Only issuer IDs** (domestic issuers with largest cross-border liabilities) for countries collecting aggregate data
What comes next?

- **Survey** run with CPIS economies in 2018:
  - Volume of securities
  - Update frequency
  - Identifiers used (ISIN, CUSIP, SEDOL, etc.) + (LEI)
  - Confidentiality, copyright, contractual limitations to share information

- With survey results, IMF **feasibility study** of:
  - A centralized database hosted/managed by the IMF
  - Technical requirements
  - Associated costs

- Proposal to be presented to the IMF Committee on Balance of Payments Statistics **October 2018**
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Conclusions

- Detailed sectoral balance sheets fundamental to anticipate risks and spillovers
- Sectorizing non-resident counterparts necessary to achieve a full matrix of cross-border positions
- Exchanging information across countries could make it possible
- High level of standardization of portfolio securities enables automation ➞ progress could be faster
Conclusions (cont’d)

- IMF STA + BOPCOM studying the possibility to set up a centralized database of securities issuers and sectors
- Information to be used by CPIS reporters
- Sharing data with other CPIS countries would provide participants with mirror CPIS data by issuer sector to compile their portfolio investment liabilities
- Several issues to be addressed:
  - Potential copyright restrictions (commercial data providers)
  - High degree of standardization required
  - Benefits must outweigh set up and running costs
Thank you very much for your attention

Questions/comments welcome
Background Slides
Questions BSA can address

What Kind of Questions Can Balance Sheet Analysis Address?

- How healthy are the aggregate balance sheets of the household, nonfinancial corporate, bank, nonbank financial, and government sectors?
- Are there pockets of vulnerability within these sectors that are concealed by aggregate indicators?
- Is balance sheet repair constraining the transmission of macroeconomic policies to real activity?
- What balance sheet vulnerabilities could amplify and propagate the macro-financial impacts of systemic risks?
- How would these macro-financial feedback loops operate, and could they constrain the effectiveness of mitigating policies?
The Balance Sheet Approach: Analysis of Key Mismatches

**Maturity mismatches:** typically arise when assets are long-term, mainly illiquid, while liabilities are short-term. Maturity mismatches can arise in both domestic and foreign currency. Maturity mismatches create:
- rollover risk: the risk that it will not be possible to refinance maturing debts and that debtors will have to meet their obligations with liquid assets.
- interest rate risk for the debtor: the risk that the level and/or structure of interest rates on the outstanding debt will change.
- reinvestment risk: the risk that a creditor will not be able to reinvest a maturing claim at the previous higher interest rate.

**Currency mismatches:** This risk arises when assets and liabilities are denominated in different currencies. It creates:
- Exchange rate risk: If assets are held in domestic currency but liabilities are denominated in foreign currency, substantial losses may result if the domestic currency depreciates sharply in an exchange rate shock.

**Capital structure mismatches:** This risk results from excessive reliance on debt financing instead of equity. The absence of an equity buffer can lead to a financial crisis when a sector encounters a shock.
- Debt rather than equity risks

**Solvency or credit risk:** This risk emerges when a sector's financial assets no longer cover its financial liabilities. Solvency risk is closely linked to maturity mismatch risk, currency mismatch risk, and capital structure mismatch risk.
# Source Data for the BSA Matrix

<table>
<thead>
<tr>
<th>Holder of liability (creditor)</th>
<th>Central bank</th>
<th>General government</th>
<th>Other depository corporations</th>
<th>Other financial corporations</th>
<th>Nonfinancial corporations</th>
<th>Other resident sectors</th>
<th>Nonresidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central bank</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>General government</td>
<td>1. SRF 1SR (Liabilities)</td>
<td>1. SRF 1SR (Liabilities)</td>
<td>1. SRF 1SR (Liabilities)</td>
<td>1. SRF 1SR (Liabilities)</td>
<td>1. SRF 1SR (Liabilities)</td>
<td></td>
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</tr>
<tr>
<td>Other depository corporations</td>
<td>1. SRF 1SR (Assets)</td>
<td>1. SRF 2SR (Liabilities)</td>
<td>1. SRF 4SR (Liabilities)</td>
<td>1. SRF 2SR (Liabilities)</td>
<td>1. SRF 2SR (Liabilities)</td>
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<td>1. SRF 4SR (Liabilities)</td>
<td>1. SRF 4SR (Liabilities)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonfinancial corporations</td>
<td>1. SRF 1SR (Assets)</td>
<td>GFS</td>
<td>1. SRF 2SR (Liabilities)</td>
<td>n.a.</td>
<td>1. SRF 4SR (Liabilities)</td>
<td>1. IIP</td>
<td>2. QEDS 3. JEDH</td>
</tr>
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1/ This data gap can in the future be filled with data from the public debt data template (which also covers assets) which is being piloted in some countries.

2/ CPIS data can be used to derive other resident sector's claims as residual.
BSA: An example of Network Representation
Capital Flight and Depreciation Simulation Results

Country Example: Net cross-sectoral exposures

<table>
<thead>
<tr>
<th>Sector</th>
<th>Government</th>
<th>Central Bank</th>
<th>Banks</th>
<th>NBFIs</th>
<th>NFCs</th>
<th>HHs</th>
<th>ROW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>0.05%</td>
<td>-0.05%</td>
<td>0.11%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>4.46%</td>
</tr>
<tr>
<td>Central Bank</td>
<td></td>
<td></td>
<td>0.44%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>-3.95%</td>
</tr>
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<td>Banks</td>
<td></td>
<td></td>
<td></td>
<td>0.03%</td>
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<td>0.58%</td>
<td>0.62%</td>
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(In percent of GDP, after 25 percent depreciation shock)

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(In percent of GDP, after combined shocks)

Source: Indonesia 2015 Article IV Consultation Selected Issues Paper.
Policy Implications

- Information in sectoral balance sheets should be timely:
  - allows policymakers to identify and correct weaknesses
- Focuses attention on policies that can reduce sectoral vulnerabilities:
  - in particular, the vulnerability to changes in key financial variables
- Allows policymakers to evaluate trade-offs between different policy objectives:
  - systemic threat to the financial and economic system
- Helps the official sector to assess the case for financial intervention:
  - to better understand the scale of official support
Pilot project: ECB and Federal Reserve

[September 2017]

- Limited to a bilateral exchange (limitation of ECB contracts with commercial data providers) completed in September 2017

  European Central Bank ➔ Centralized Securities Database – daily updates (from which: US securities held by 27 EU countries)

  US Federal Reserve ➔ Treasury International Capital (TIC) system – annual updates (from which: EU securities held by US investors)

- ECB sent 124,000 US securities (alive market capitalisation > EUR 10 million)

- FED sent 45,000 EU securities (held by US residents)
Pilot project: ECB and Federal Reserve

[September 2017]

ECB sends ISINs of US securities held by investors in the European Union countries [124,000 US securities]

FED sends ISINs of EU securities held by US investors [45,000 EU securities]

FED returns ISINs identifying SECTOR of US issuer

ECB returns ISINs identifying SECTOR of EU issuer
Federal Reserves data collection system

- U.S. cross-border securities dataset part of the Treasury International Capital (TIC) system
- Individual-security data collected annually: end-June (U.S. liabilities) and end-December (U.S. claims)
- Largest 125–150 reporters ➔ about 98% of market
- “Benchmark” surveys conducted once every five years covering all known reporters.
Federal Reserves data collection system

- Security characteristics: security type, currency of denomination, issue and maturity dates, issuer name, security description, etc.

- Securities characteristics are aggregated and reconciled across reporters to produce the reference security database.

- Additional securities characteristics (e.g., NAICS industry code, coupon type, dividend, coupon rates) obtained from a commercial vendor.
ECB Centralized Securities Database (CSDB)

What did we learn from the pilot?

- Exercise confirmed that the sector assignment by home-country reviewers is easier than for external reviewers

- Examples:
  - Government securities correctly classified, but the level of government (state or local) sometimes incorrect
  - Financing arms of nonfinancial firms: can be difficult to assign correct sector

- Home country reviewers best equipped to assign right allocation (sometimes even just based on the issuer name)
What did we learn from the pilot?

- FED permits to report using any security identifiers (ISIN, CUSIP, SEDOL, even internal codes): difficulty to be able to match both US and EU securities

  ➔ Therefore, standardization proves key:
  • ISIN to identify securities
  • LEI to identify issuers

- Sectorization not always following common (BPM/SNA) rules ➔ common methodology necessary

- Many securities insignificant in terms of cross-border holdings ➔ focus on the most relevant in terms of outstanding amounts/market capitalization