



Balance of Payments Division
IMF Statistics Department



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

Carlos Sánchez-Muñoz

Irving Fisher Committee Conference; August, 2018

The views expressed herein are those of the author and should not be attributed to the IMF, its Executive Board, or its management.

Reproductions of this material, or any parts of it, should refer to the IMF Statistics Department as the source.



Outline

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



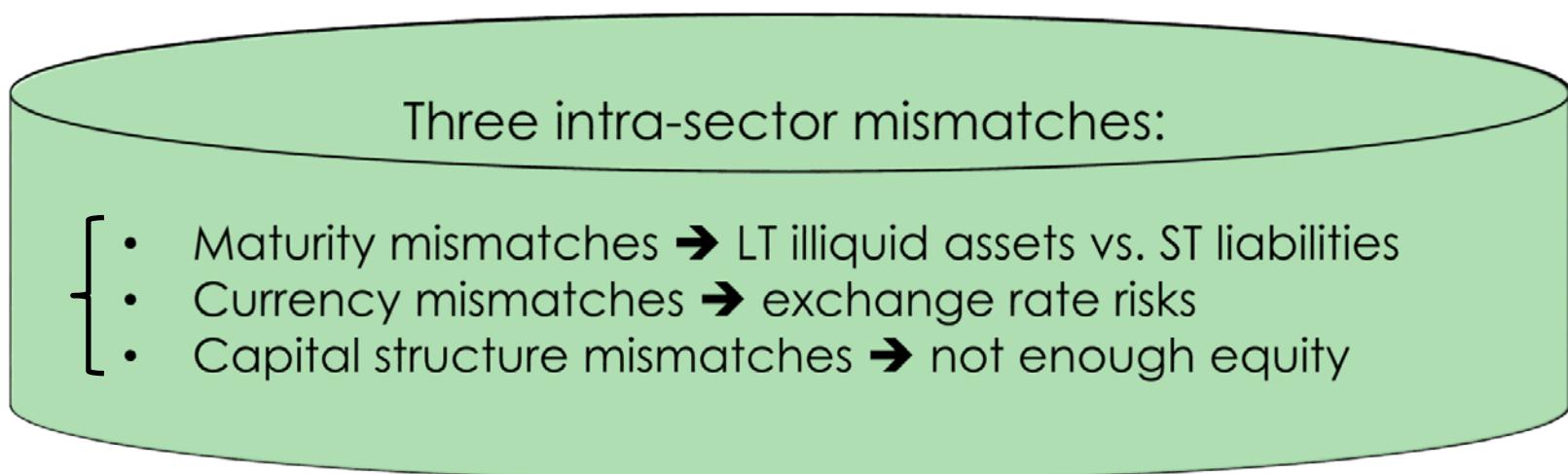
Outline

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



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

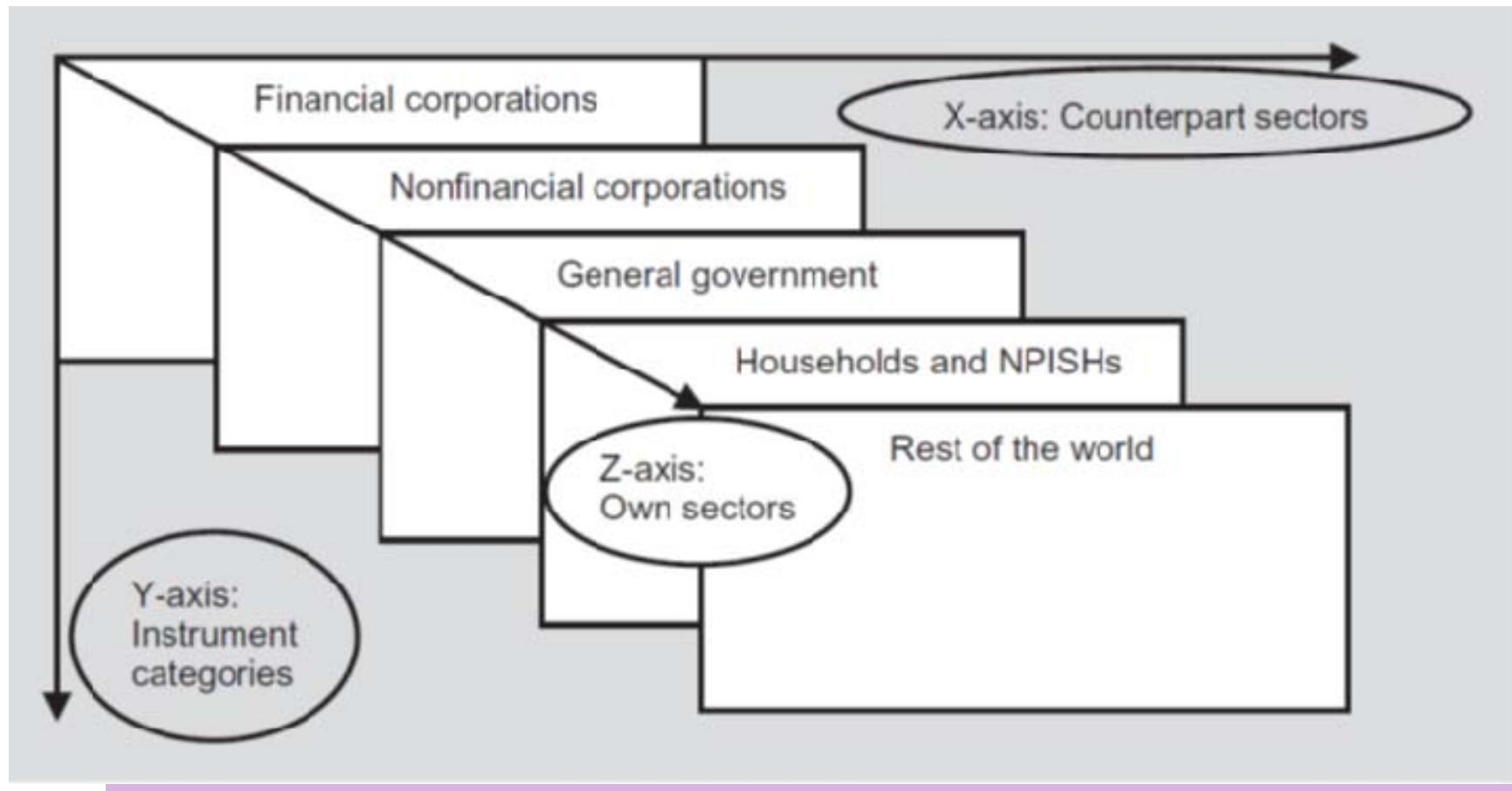


Can turn into → **Solvency or credit risk** (financial assets < liabilities)



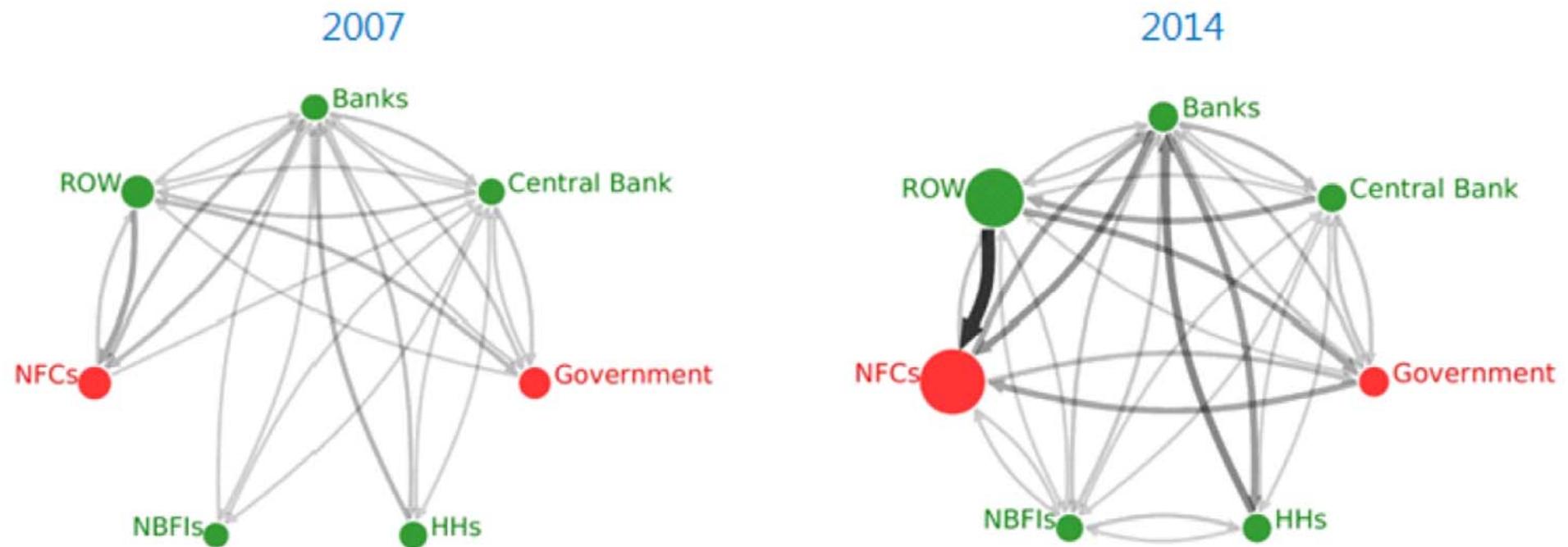
How to compile and analyze the Balance Sheet Approach

- 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: NBFIs – 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

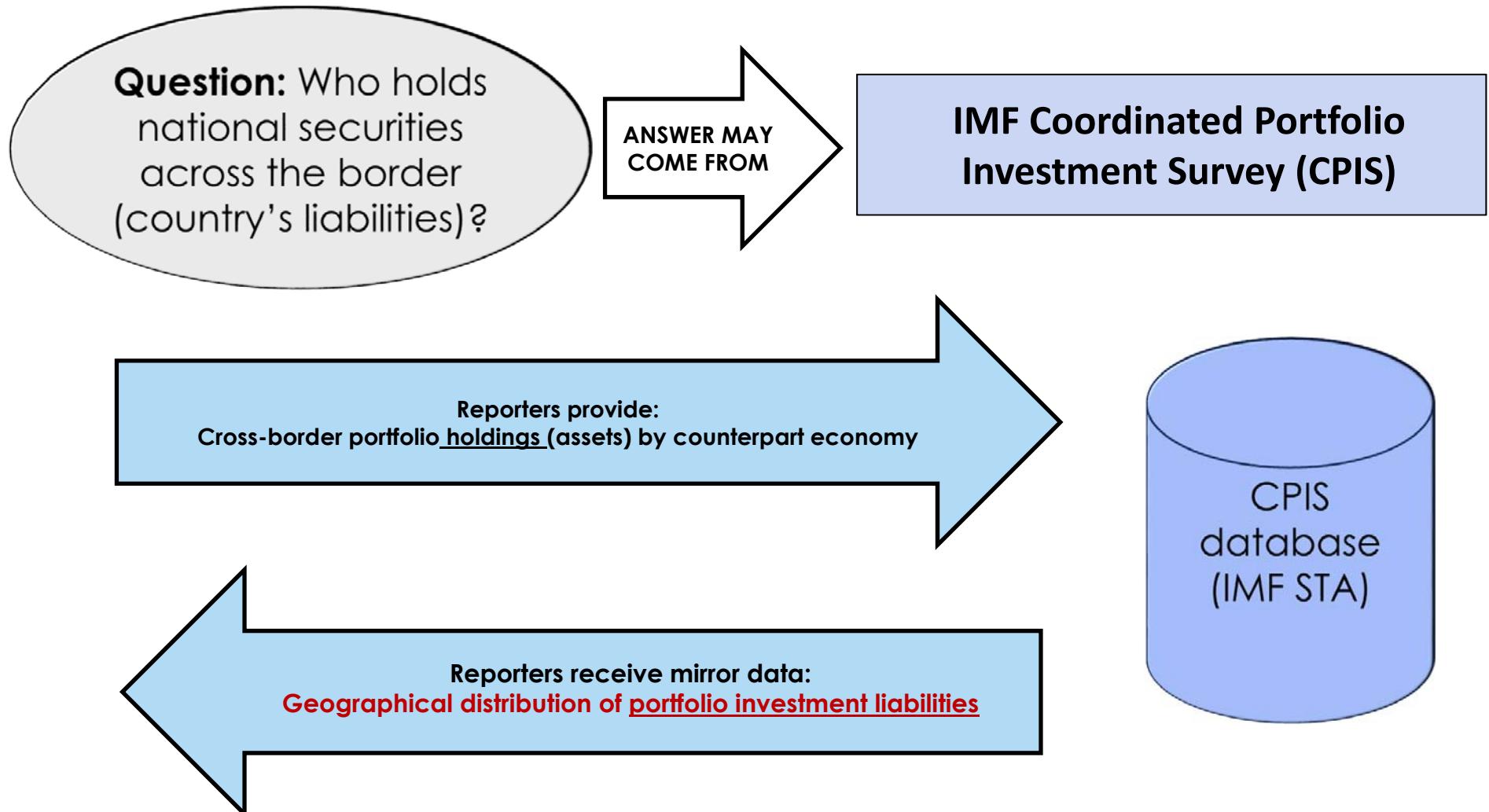


Outline

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



Break down by geography cross-border positions





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**

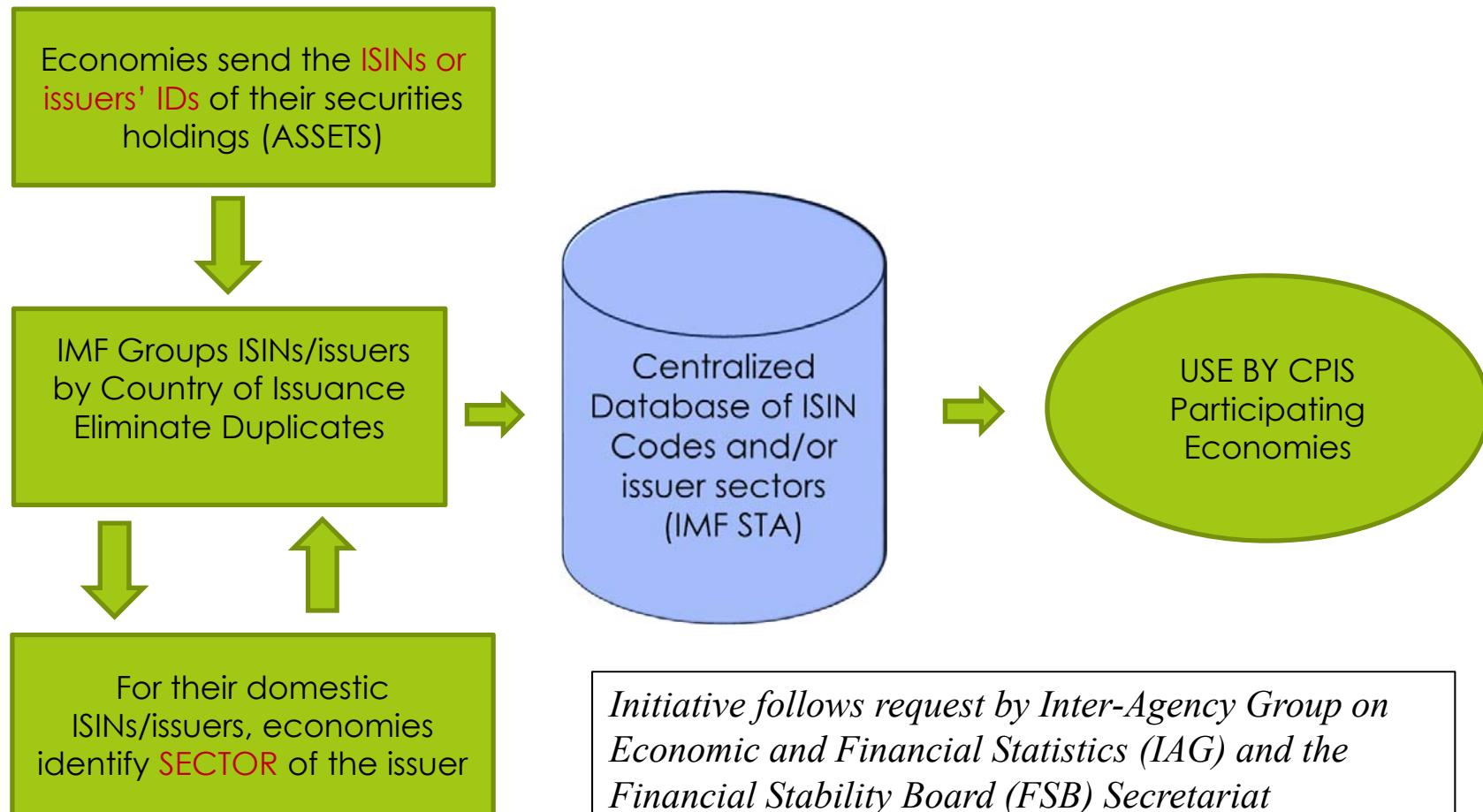


Outline

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



Project: centralized exchange of data to improve sectorization of issuers in the CPIS



[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



IMF BOP Committee (Oct. 2017)

- 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**



Outline

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



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

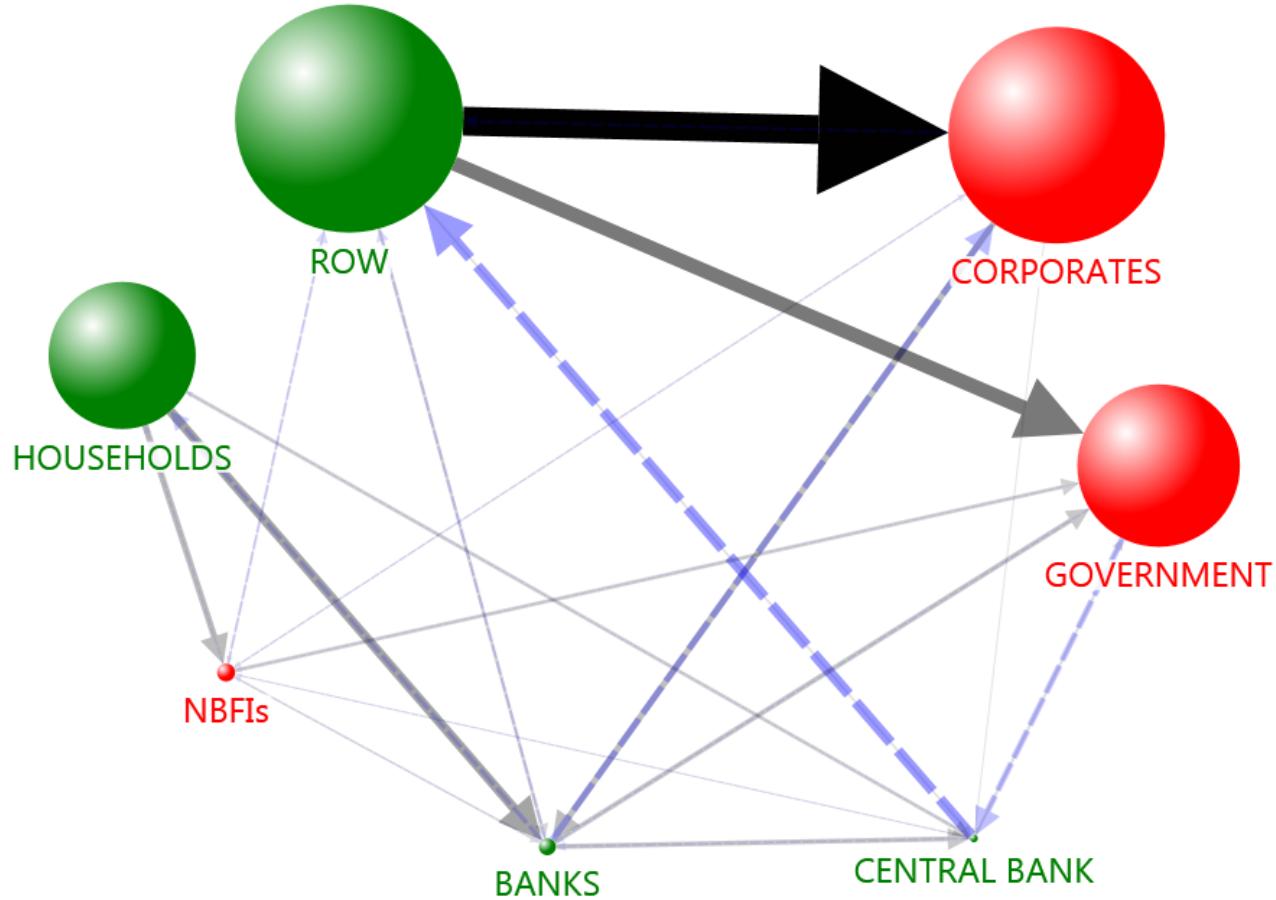
		Holder of liability (creditor)	Central bank	General government	Other depository corporations	Other financial corporations	Nonfinancial corporations	Other resident sectors	Nonresidents
Issuer of liability (debtor)									
Central bank				1. SRF 1SR (Liabilities)	1. SRF 1SR (Liabilities) 2. SRF 2SR (Assets)	1. SRF 1SR (Liabilities)	1. SRF 1SR (Liabilities)	1. SRF 1SR (Liabilities)	1. SRF 1SR (Liabilities) 2. IIP 3. JEDH
General government		1. SRF 1SR (Assets)			1. SRF 2SR (Assets)	1. SRF 4SR (Assets)	n.a. 1/	n.a. 1/	1. IIP 2. QEDS
Other depository corporations		1. SRF 1SR (Assets) 2. SRF 2SR (Liabilities)	1. SRF 2SR (Liabilities)			1. SRF 2SR (Liabilities)	1. SRF 2SR (Liabilities)	1. SRF 2SR (Liabilities)	1. SRF 2SR (Liabilities) 2. IIP 3. QEDS
Other financial corporations		1. SRF 1SR (Assets)	1. SRF 4SR (Liabilities)	1. SRF 2SR (Assets)			1. SRF 4SR (Liabilities)	1. SRF 4SR (Liabilities)	1. SRF 4SR (Liabilities) 2. IIP 3. QEDS
Nonfinancial corporations		1. SRF 1SR (Assets)	GFS	1. SRF 2SR (Assets)	1. SRF 4SR (Assets)		n.a.		1. IIP 2. QEDS 3. JEDH
Other resident sectors		1. SRF 1SR (Assets)	GFS	1. SRF 2SR (Assets)	1. SRF 4SR (Assets)	n.a.			1. IIP 2. CPIS 2/
Nonresidents		1. SRF 1SR (Assets) 2. IIP 3. CPIS	1. IIP 2. CPIS	1. SRF 2SR (Assets) 2. IIP 3. CPIS	1. SRF 4SR (Assets) 2. IIP 3. CPIS	1. IIP 2. CPIS	1. IIP 2. CPIS		

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

	Government	Central Bank	Banks	NBFIs	NFCs	HHs	ROW
(In percent of GDP, after 25 percent depreciation shock)							
Government		-0.05%	0.11%	0.00%	0.00%	0.00%	4.46%
Central Bank	0.05%		0.44%	0.00%	0.00%	0.00%	-3.95%
Banks	-0.11%	-0.44%		-0.03%	-0.63%	0.58%	0.62%
NBFIs	0.00%	0.00%	0.03%		-0.16%	0.00%	0.23%
NFCs	0.00%	0.00%	0.63%	0.16%			14.39%
HHs	0.00%	0.00%	-0.58%	0.00%			0.00%
ROW	-4.46%	3.95%	-0.62%	-0.23%	-14.39%	0.00%	
(In percent of GDP, after combined shocks)							
Government		-0.05%	0.11%	0.00%	0.00%	0.00%	4.46%
Central Bank	0.05%		0.44%	0.00%	0.00%	0.00%	-3.95%
Banks	-0.11%	-0.44%		-0.03%	-6.90%	0.58%	0.62%
NBFIs	0.00%	0.00%	0.03%		-0.16%	0.00%	0.23%
NFCs	0.00%	0.00%	6.90%	0.16%			8.12%
HHs	0.00%	0.00%	-0.58%	0.00%			0.00%
ROW	-4.46%	3.95%	-0.62%	-0.23%	-8.12%	0.00%	

Source: Indonesia 2015 Article IV Consultation Selected Issues Paper.

Banking system overall not very exposed to FX shocks

The depreciation increases corporate external liabilities

Liquidity withdrawal involves financial system



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

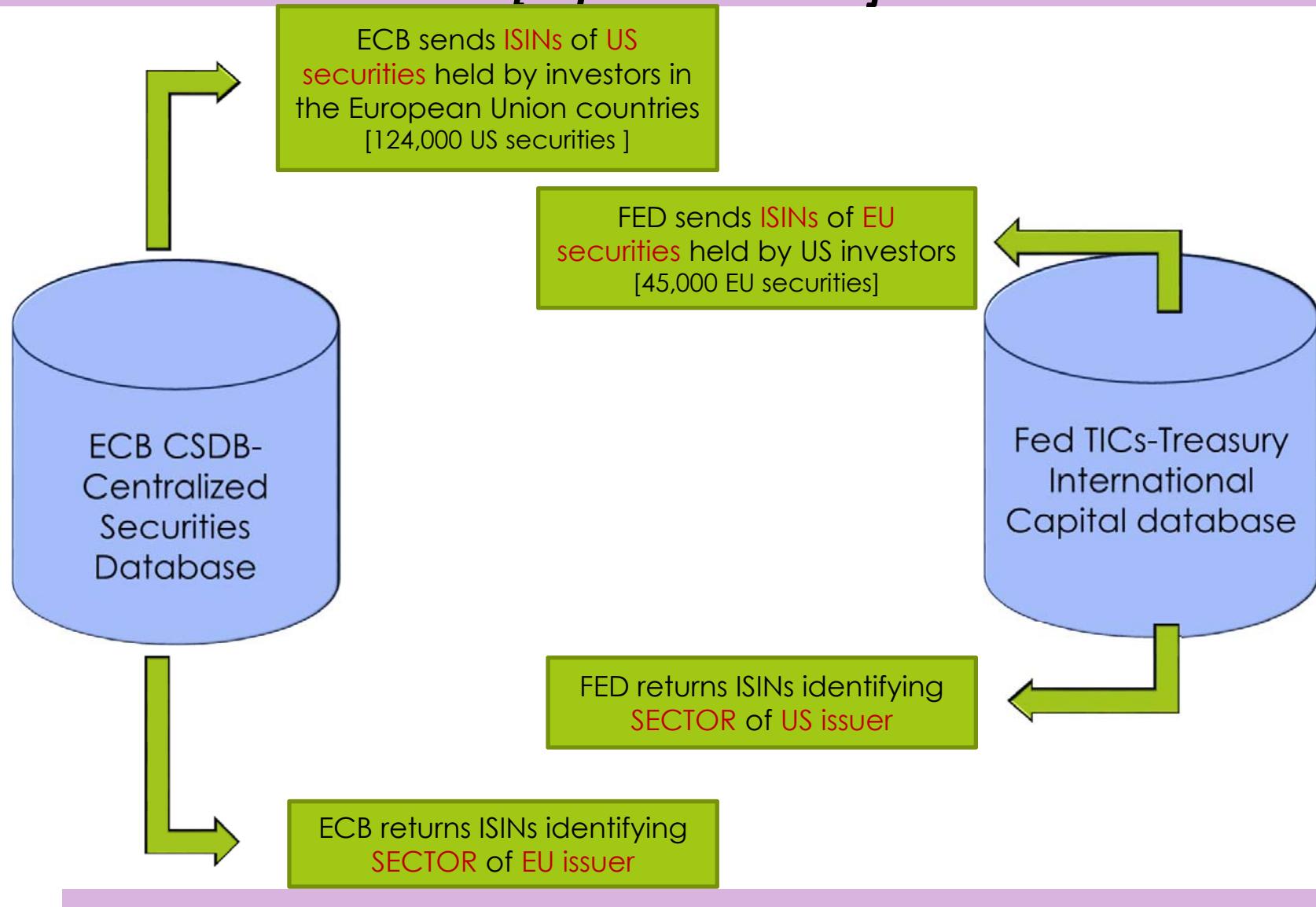
[September 2017]

- 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]





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.

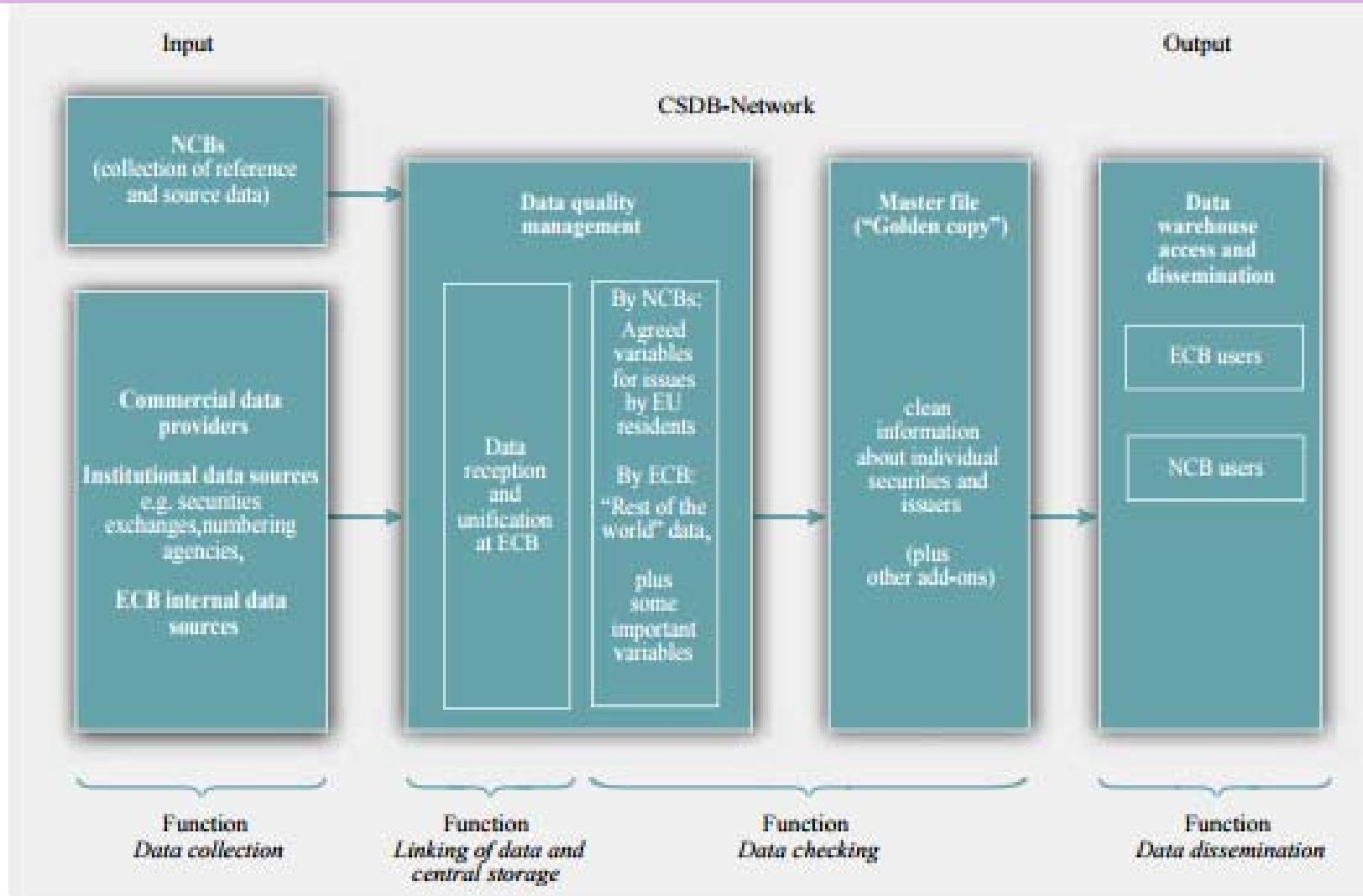


Federal Reserves data collection system

- 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