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Risks and Spillovers: Use of National Balance Sheet Data

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Risks and Spillovers: Use of National Balance Sheet Data

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Context

- Crisis showed the world is highly interconnected
- Role of IMF surveillance: identify risks and policies to mitigate them
- 2014 Triennial Review of IMF Surveillance (TSR) priorities:
  - Deepen analysis of risks and spillovers
  - More tailored and expert policy advice for countries
  - Focus on engagement with countries and evenhandedness
- Key recommendation: strengthen analysis of national balance sheets

Why National Balance Sheets matter?

"National balance sheet analysis, examining vulnerabilities in all sectors individually and in aggregate, could have made a difference to preventing the global financial crisis."

Sir Paul Tucker, Former BOE Deputy Governor, from the 2014 Triennial Surveillance Review (TSR) External Study on Risks and Spillovers.

Outline of the presentation

- What is a National Balance Sheet?
- What is balance sheet analysis? – some examples using the BSA matrix
- Is BSA feasible now and how can we make it part of surveillance?
- What data are needed for BSA? – Indonesia example
- The future: Global Flow-of-Funds that links National Balance Sheets

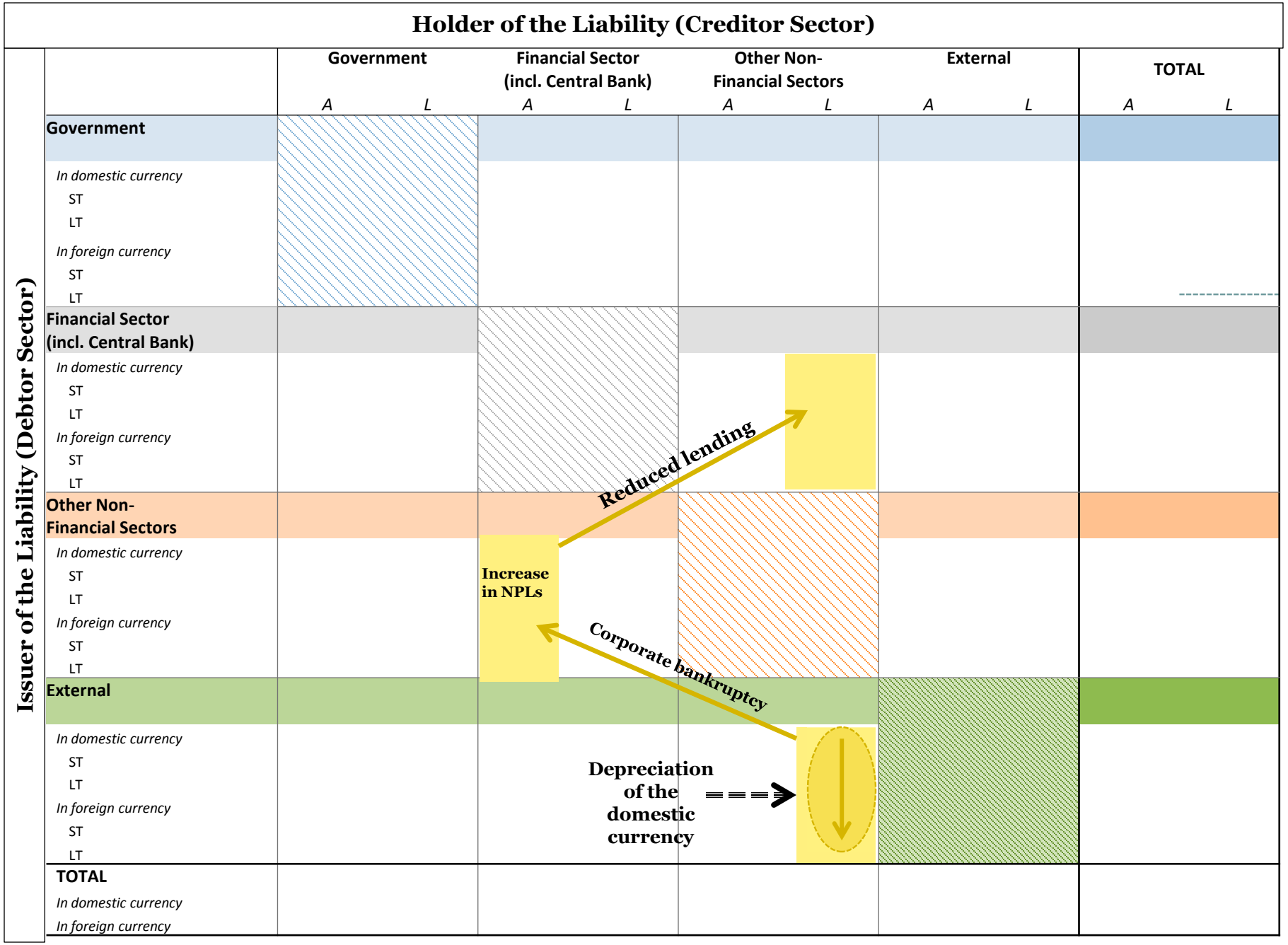
What is National Balance Sheet Analysis?

- Analysis of network of link sector balance sheets
  - Government, central bank, banks, NBFIs, corporates and households
  - These sum to the external asset and liability position (the IIP) versus ROW
- Assesses sector A&L positions and impact of changes in a sector on other sector balance sheets
- Balance sheet matrix: a statistical framework to analyze key risks
  - FX risk (i.e. currency mismatch in sector A & L positions)
  - Liquidity risk (i.e. maturity mismatch – failure to refinance debt)
  - Credit risk (i.e. fall in value of assets or contingent liability materializing)

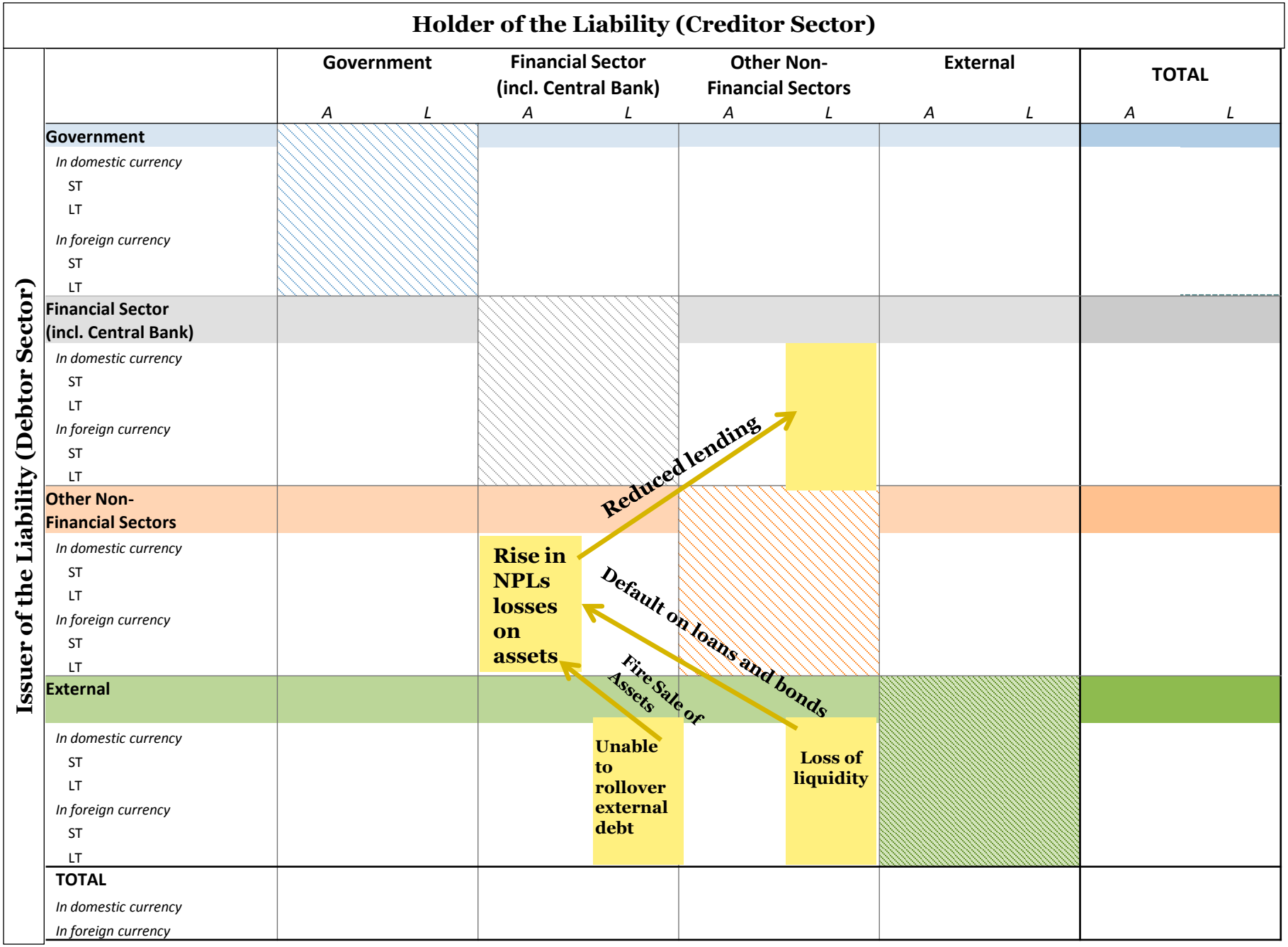
Why develop balance sheet analysis?

- TSR proposes expanding balance sheet analysis (BSA) in surveillance for:
  - Indicators of balance sheet vulnerability (i.e. FX mismatches)
  - Scenario analysis tracing transmission of shocks across sectors
  - Assess consistency of growth outlook and balance sheet condition
- Exploit data improvements using BSA matrix as surveillance tool
  - Start with basic sector disaggregation possible with IMF data and expand
- Allows analysis of linkages across sectors, not just one sectors at a time
- Initiatives to address data gaps makes BSA analysis more feasible now
  - IMF reporting systems: SRF, GFS and IIP collect consistent balance sheet data
  - IMF/FSB/BIS/G20 Data Gaps Initiative

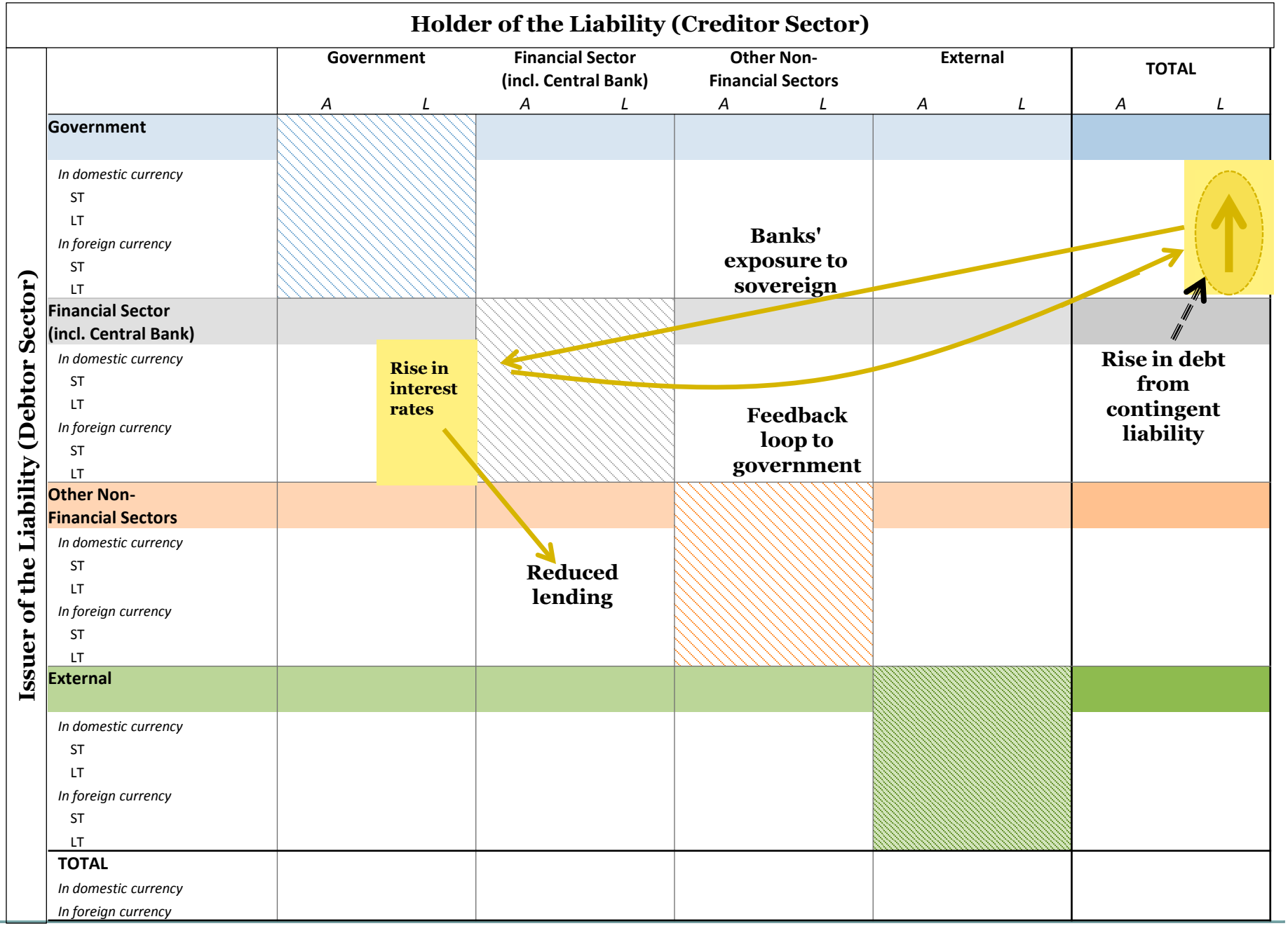
(Example 1: FX shock-corporates borrow in FX)



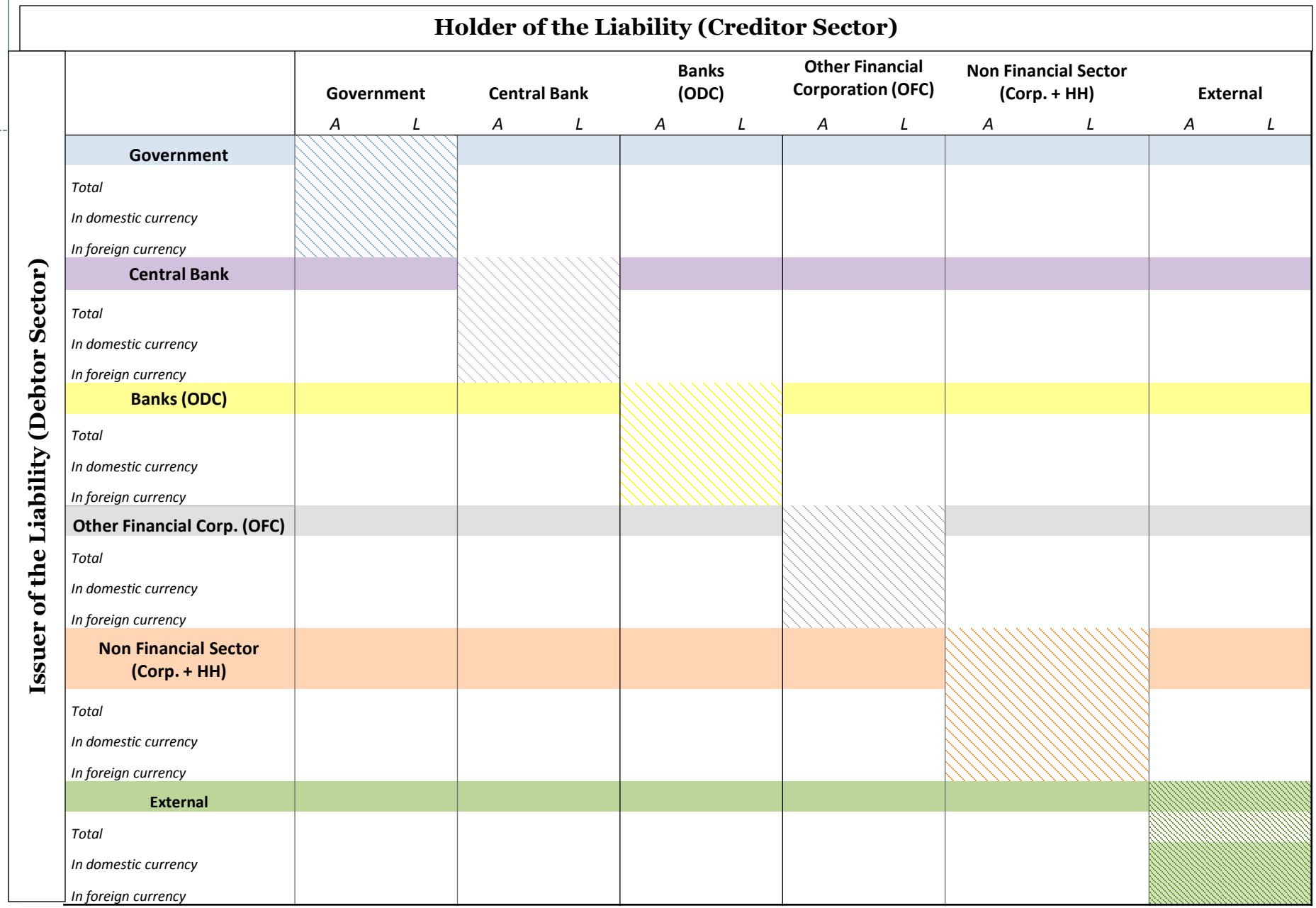
(Example 2: liquidity shock)



(Example 3: contingent liabilities materialize)



Balance Sheet Matrix (Expanded)



Is balance sheet analysis feasible with available data?

- Matrix constructed with balance sheet data from 3 IMF reporting systems
  - SRF form: balance sheet data for banks, OFC, central banks
  - GFS form: government balance sheet data
  - IIP form: external asset and liabilities
- Each defines some bilateral balance sheet linkage to other sectors
- Corporate and household data not collected by IMF
  - Can estimated A&L positions using IMF data and accounting identities

SRF - Based | IIP-Based

Indonesia Example

GFS-Based | BS Identity

(Trillions of Rupiah)

Holder of the Liability (Creditor Sector)

Issuer of the Liability (Debtor Sector)

	Government		Central Bank		Banks (ODC)		Financial Sector (OFC)		Non Financial Sector (Corp. + HH)		External		TOTAL	
	A	*L*	*A*	*L*	*A*	*L*	*A*	*L*	*A*	*L*	*A*	*L*	*A*	*L*
Government														
Total			351	52	262	188	0	0	417	1,370	1,124	7	2,154	1,617
In domestic currency			351	30	243	183	0	0						
In foreign currency			0	22	19	5	0	0						
Central Bank														
Total	52	351			763	3	0	0	2	6	67	1,155	884	1,516
In domestic currency	30	351			685	3	0	0	0	6	0	0	716	361
In foreign currency	22	0			78	0	0	0	2	0	33	1,092	135	1,092
Banks (ODC)														
Total	188	262	3	763			253	175	2,881	2,733	484	115	3,809	4,049
In domestic currency	183	243	3	685			231	141	2,427	2,300	43	3	2,887	3,371
In foreign currency	5	19	0	78			22	34	454	434	166	115	646	680
Non-Bank Financial (OFC)														
Total	0	0	0	0	175	253			44	299			219	552
In domestic currency	0	0	0	0	141	231			44	241	17	0	202	472
In foreign currency	0	0	0	0	34	22			0	58	70	5	104	85
Non Financial Sector (Corporate + Household)														
Total	417	1,370	6	2	2,733	2,881	299	44			1,703	383	3,728	6,112
In domestic currency			6	0	2,300	2,427	241	44						
In foreign currency			0	2	434	454	58	0						
External														
Total		915	1,092	33	118	209	5	87	383	1,703			1,660	3,377
In domestic currency			0	0	3	42	0	17						
In foreign currency			1,092	33	115	166	5	70						
TOTAL	1,617	2,154	1,453	851	4,051	3,533	557	306	3,728	6,112	3,377	1,660		
In domestic currency			361	716	3,371	2,887	472	202						
In foreign currency			1,092	135	680	646	85	104						

Issues in using Government Finance Statistics (GFS) and Public Sector Debt Statistics (PSDS) for BSA

Cross classification of financial instruments by sector, maturity, and currency composition in GFS needed for BSA

- Identifies sectors that provide financing to government
- Allows more complete understanding of fiscal risks
- Allows proper consolidation of asset and liability positions
- Disaggregation into central, local and SOE helps identify contingent liabilities

Cross classification uses fact financial claims associated with two parties

- Classify instrument of financial claims with counterpart sector
- Classify claims of counterparty according to whether resident or nonresident

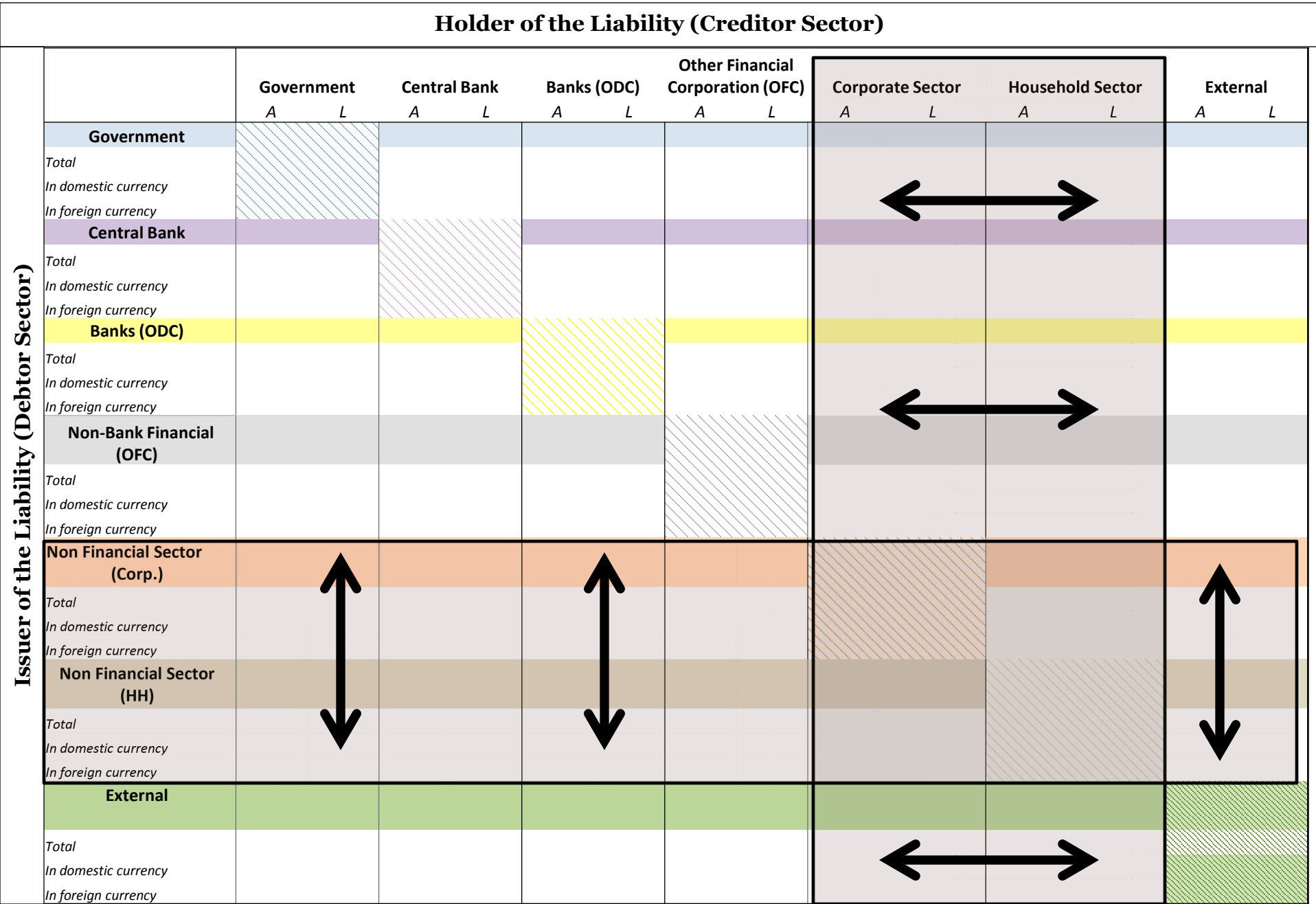
Sources of GFS and PSDS data for BSA Matrix

- Government sector in BSA constructed from two reporting systems
  - GFS: annual questionnaire of government balance sheet data and counterpart information
    - Table 6: asset and liability positions for 50+ countries (from 2015, Table 6a, 6b, gives currency and maturity and 8b the counterpart sectors)
    - Supplement with Quarterly GFS summary financial balance sheet data (GG for all EU members plus Brazil, Canada, USA)
  - PSDS: quarterly debt liabilities data for government and public sector
    - Covers Central and General Government, Nonfinancial and Financial Public Sectors, and total Public Sector Debt for around 70 countries
- Each system defines bilateral balance sheet linkage to other sectors
  - Enhance data consistency and coverage of all government sectors

How does data limit BSA? And, what can be done?

- Around thirty countries report all needed data
  - Biggest gap: data on non-bank financial institutions (OFCs)
- Countries can support BSA by reporting all data on IMF forms
  - Euro area collects but does not report OFC data as systems are being adapted
- The BSA matrix is still useful for surveillance when data are incomplete
  - In some EMs and LICs, OFC balance sheets are small and can be ignored
  - Gaps need to be identified and filled from national sources
- Matrix a starting point: expand with data from national sources
  - Estimate for non financial sector replaced by national corporate/HH data

Balance Sheet Matrix (with Corporate and Households separated)



The future: A Global Flow-of-Funds analysis

- GFF matrix shows spillover channels between national balance sheets
- The IMF, Fed, BOE, BOJ and ECB constructed a GFF matrix
  - A proof-of-concept only: data needed for full matrix made it impractical
- We can construct partial GFF matrix to analyze financial spillovers
  - IIP, BIS IBS and CPIS data give cross country bilateral financial linkages
- Example: GFF matrix mapping shocks between country sectors

Global Flow of Funds: Bilateral Cross-Border Exposures between Country Sectors

(Example: Contingent Liability Shock in Country B → Liquidity Risk in Country A)

A= Assets, L = Liabilities, DC = Domestic Currency, FC = Foreign Currency

Country A: Holder of the External Liability (Creditor Sector)

Country B: Issuer of the External Liability (Debtor Sector)

	Government		Financial Sector (incl. Central Bank)		Other Non-Financial Sectors		External		TOTAL	
	A	*L*	*A*	*L*	*A*	*L*	*A*	*L*	*A*	*L*
Government										
In domestic currency										
ST										
LT										
In foreign currency										
ST										
LT										
Financial Sector (incl. Central Bank)										
In domestic currency										
ST										
LT										
In foreign currency										
ST										
LT										
Other Non-Financial Sectors										
In domestic currency										
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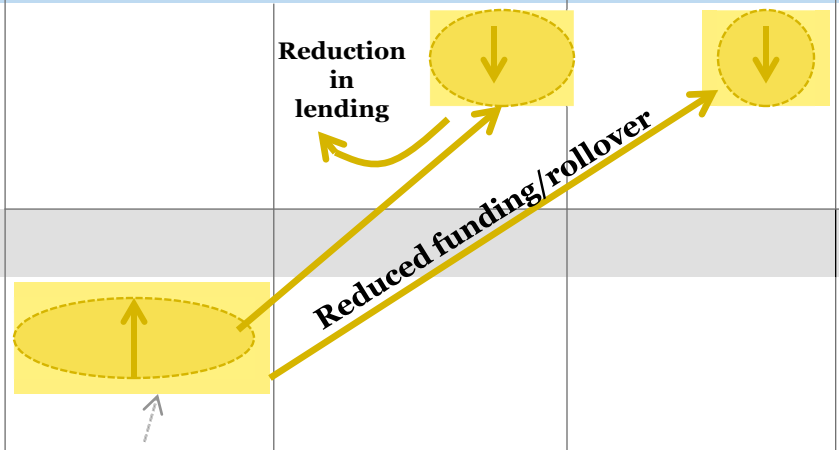
TOTAL										
In domestic currency										
In foreign currency										



Conclusions

- Make BSA a core part of surveillance: identify balance sheet risks and assess contagion through balance sheet linkages
- Develop statistical framework – the BSA Matrix – and ensure data are available
- Data improvements make BSA feasible now but data gaps still hamper surveillance: sustained effort needed to fill data gaps
- Use a global flow of funds framework linking national balance sheets to assess cross country spillovers: exploit IIP, BIS and CPIS data for this

Questions for the GFSAC

- How can we improve the coverage, periodicity and timeliness of balance sheet data?
- What are the trade offs between quarterly and annual reporting?
- How can the IMF better facilitate data provision?
- What are the challenges in measuring government assets?