

Nonbank Financial Intermediation and Financial Stability: Analytical Approaches

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*New challenges in safeguarding financial stability and
managing financial crises in a world of digital finance and
artificial intelligence: implications for central banks*

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Intervention is based on [G30 Report produced by a Working Group chaired by Agustín Carstens and Klaas Knot](#)
and [background paper for IMF 2026 5-year FSAP Review](#)

NBFI has many benefits but also risks. Liquidity and leverage, with spillovers to banks and core markets

Table 1. Conceptual Framing of Systemic Risk Related to NBFI

Sources of systemic risk			
	Within NBFI		Spilling over to the main system through interconnections
	Leverage	Liquidity	
Manifestations and channels of systemic impact	Large NBFI defaults.	Mainly the IFs' needs and margins calls (PFs, ICs).	Losses at banks (and public finance impact), reduced funding, market disfunction, valuation spillovers through fire sales.
Examples: past	Greensill, Archegos, First Brand, other NFCs, and NBFCs.	IFs (March 20, Covid), PFs (UK LDI-crisis), and HF's (various).	Shadow banking in the GFC, funding cuts, market disfunction.
Examples: potentially future	ICs, PFs, and other large NFC losses.	Large redemptions and margin calls for IFs, PFs, and ICs.	Private credit, other large defaults; HF's, others' liquidity needs.

Notes: The abbreviations stand for: IFs = investment funds; HF's = hedge funds; ICs = insurance companies; PFs = pension funds; NBFC = non-bank financial corporations; NFC = non-financial corporations.

Mapping of tools to systemic NBFI risks

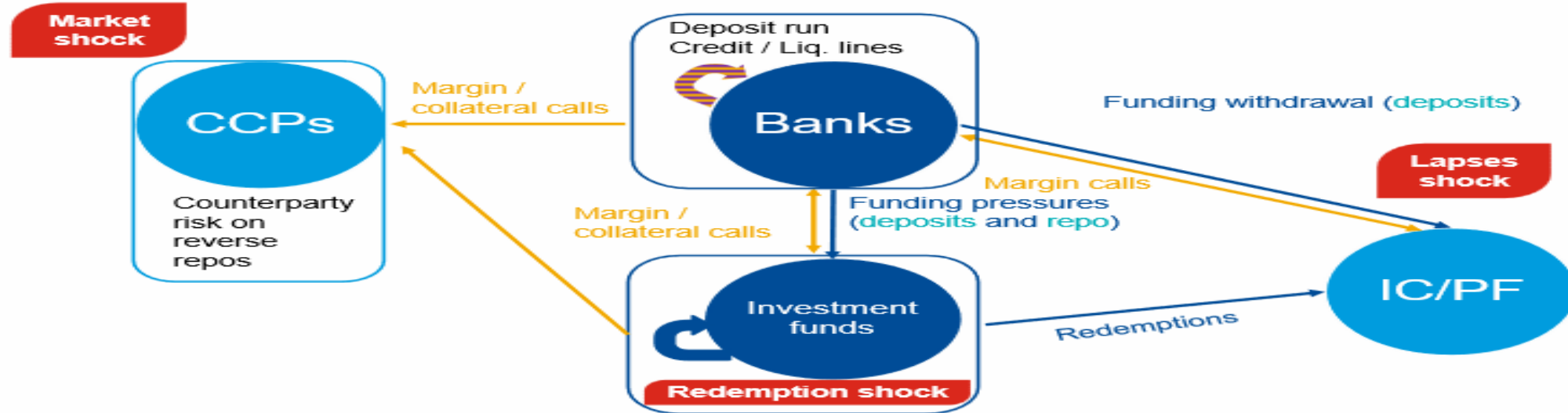
Table 3. Tools (existing and to be newly developed), Classified by Type of Systemic Risk

	Leverage	Liquidity	Interconnections
Existing, to be improved	1. Solvency stress tests (for ICs, PFs)	2. IFs tests and spillover analyses	3. Interconnections analyses 4. Systemwide liquidity
New, developing	5. Key FMI, CCPs resilience	5. Liquidity spillovers from margins	5. Solvency spillovers from private credit, other

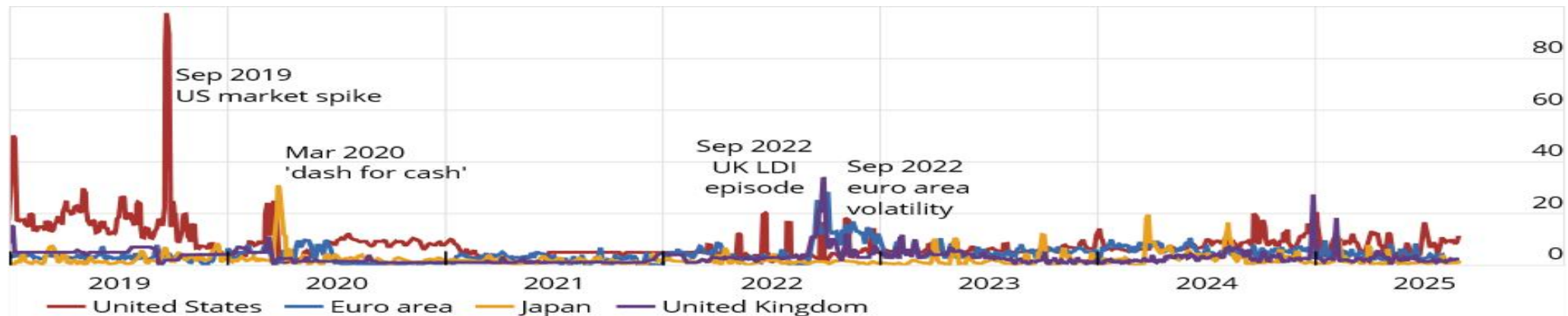
Abbreviations: IFs = investment funds; ICs = insurance companies; PFs = pension funds; CCPs = Central Clearing Parties; FMI = Financial Market Infrastructures

Challenges are mostly about transmission

Many Transmissions Channels Between NBFIs and Banks



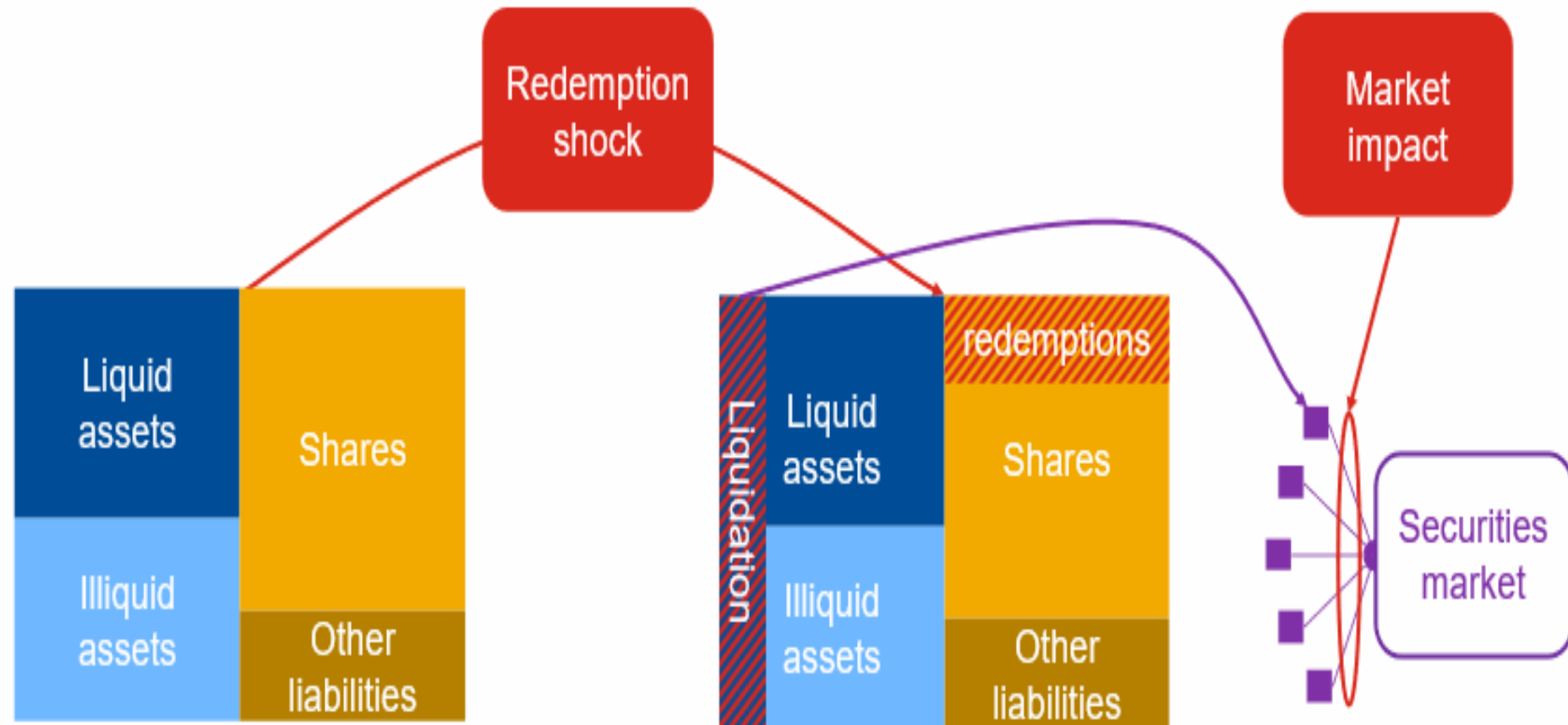
Liquidity Shortfalls and Repeated Stresses in Core Bond markets



Tools already used in FSAPs, but to expand across jurisdictions and to further improve

1. Leverage (Solvency) Stress Tests, Notably of ICs and PFs, and Related Spillovers
 - Do more routinely, for more jurisdictions
 - Assess better derivatives, margin calls, and fire-sale risk exposures
2. Investment Fund Liquidity Stress Tests and Related Spillovers Analyses
 - Cover more jurisdictions
 - Improve, capture better second-round spillovers from asset sales during redemption waves

Proxying second round effects and estimating aggregate impacts is hard



Tools already used in FSAPs, but to expand and improve, but with some trade-offs

3. Interconnectedness Diagnostics

- Map bank-NBFI exposures and identify critical transmission nodes

4. Systemwide Liquidity (SWL) Risk Analyses

- Sector-aggregate Balance Sheet Approach data for system-level analysis

Table 4. Comparison of Top-Down versus Bottom-Up Systemwide Analysis

Dimension	Top-down	Bottom-up
Objective	Identify systemwide linkages and amplification channels	Understand behaviors and interactions under stress
Data & inputs	Supervisory, balance-sheet, BSA, and transaction data	Firm submissions, market intelligence, supervisory dialogue
Strengths	Systemwide consistency, scalable across countries	More realistic behavior reveals expectation mismatches
Limitations	Resource-intensive for the authorities, data gaps, and stylized behavior	Resource-intensive for authorities and participants, partial system coverage
Examples	ECB (ISA model), Bank of Canada, Bank of Japan, various FSAPs	BoE (SWES), Banque de France, Reserve Bank of Australia

Source: Oura and Arnould (forthcoming).

5. Bespoke Tools and Approaches: When Material, Risks Increasing, and Data Available in Jurisdiction

- a. Private Credit
 - Bespoke and mainly qualitative analyses
- b. Liquidity spillovers related to NBFI entities, activities, includes margins
 - A standard tool unlikely, FSAP to collaborate with authorities
- c. Systemic risks from CCPs and other FMIs
 - More regular stress tests of CCPs; bottom-up exercise by jurisdiction's CCP regulators; CCP's margin practices embedded in SWLs
- d. New financial services related to digitalization (stablecoins, tokens, decentralized finance (DeFi), cryptocurrencies)
 - Mostly qualitative, whether links could be systemic. Complemented with Pillars 2 and 3 (assess regulatory, supervisory, data; and crisis-management frameworks)

Recommendations for process of pillar 1 - risk assessment in FSAPs - in the next five years

1 Deepen preparatory diagnostics before scoping missions to map NBFIs size, structure, and linkages

2 Incorporate bank exposures to key NBFIs segments into enhanced bank stress tests

3 Extend investment-fund liquidity analysis where funds are systemically relevant

4 Give greater attention to insurers' and pension funds' liquidity, derivatives, and margin-call risks

5 Assess resilience of core bond and funding markets where NBFIs are active leverage/repo users

6 Conduct selected in-depth, collaborative analyses for systemic and internationally important centers

Possible remedial Bagehot actions (G30 report)

Liquidity spillovers to core bond and other funding markets

- Avoid open-ended asset purchases
- Ensure effective, broadly accessible (contingent or standing) international liquidity facilities and swap lines for major currencies
- Adopt (contingent) liquidity facilities for some NBFI-types with concurrent tight regulation and oversight

Solvency spillovers to main banking systems

- Greater burden sharing between the private and public sectors in recovery and resolution

Green is continuation, i.e., maintaining existing policy and effort; Yellow is intensification; Red is innovation, i.e., introducing a new policy or action(s)

Improving data and its access urgently needed

Table 2. NBFi Data Sources, Gaps, and Access Limits

Data Source	Data Types	Data Usefulness	Data Gaps	Accessibility for FSAPs
Public Aggregate Data	National Financial Accounts	Allow construction of high-level interconnections within the financial sector	Connections with private markets and international firms are often missing or incomplete	High
Publicly Disclosed Data and Commercial Datasets	Balance sheet and return data available for banks, investment funds (often with look-through exposures), and some other NBFIs. Asset price data for many asset classes	Measures of firm leverage, market and fund liquidity, correlations	Typically, publicly listed banks and NBFIs only, with a focus on banks and investment funds. Data lags may be large	High, although may be costly and/or cumbersome to use
National Supervisory Data	Extensive balance sheet data for supervised institutions, particularly banks, insurance companies, investment funds	Allows construction of firm-level solvency and liquidity stress tests as well as interconnectedness analysis for covered institutions.	Private funds provide much less disclosure, complex instruments (e.g. derivatives and structured products) may be missing or difficult to analyze; transaction level data is often not available.	Country dependent, typically high for supervised institutions
International Data	BIS banking data	Bank to bank cross-border connections at entity, locational, and consolidated levels	Currently focused on banks	Not available at entity level