



# **Recommendation 4: Measures of aggregate leverage and maturity transformation**

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## Recommendation 4

“Further investigation of the measures of system-wide macroprudential risk to be undertaken by the international community. As a first step, the BIS and the IMF should complete their work on developing measures of aggregate leverage and maturity mismatches in the financial system, drawing on inputs from the Committee on the Global Financial System (CGFS) and the Basel Committee on Banking Supervision (BCBS). ”

(FSB-IMF Report to the G20 Finance Ministers and Central Bank Governors)



## Analytical and measurement challenges

- Aggregate maturity mismatches:
  - How can we capture the market liquidity of assets?
  - How can we capture the rollover risk of liabilities?
  - How can we capture short-term borrowing chains?
- Aggregate leverage:
  - How incorporate “instrument leverage” from derivative products?
  - How incorporate cross-holdings of debt/equity amongst financial institutions? Does it matter?
- Coverage:
  - Ideally, banks, non-bank financials and “shadow banking system”
  - Ideally, micro- and macro-level data



## Toward a framework for measurement

- **BIS Banking Statistics**

- *Rough* measures possible for USD (two examples follow)
- *Advantages:*
  - Broad coverage of banks
  - Geographic breakdown by office location
- *Disadvantages:*
  - No actual data on maturity, FX swaps, or dependence on MMFs
  - Limited analysis of different currencies
  - Aggregate rather than institution-level data
  - No coverage of “non-banks”

- **G-SIFI data template (recs #8-9)**

- Institution-level data
- Breakdowns with detail on currency, maturity and instrument
  - ➔ more refined measures possible
- Smaller sample of institutions

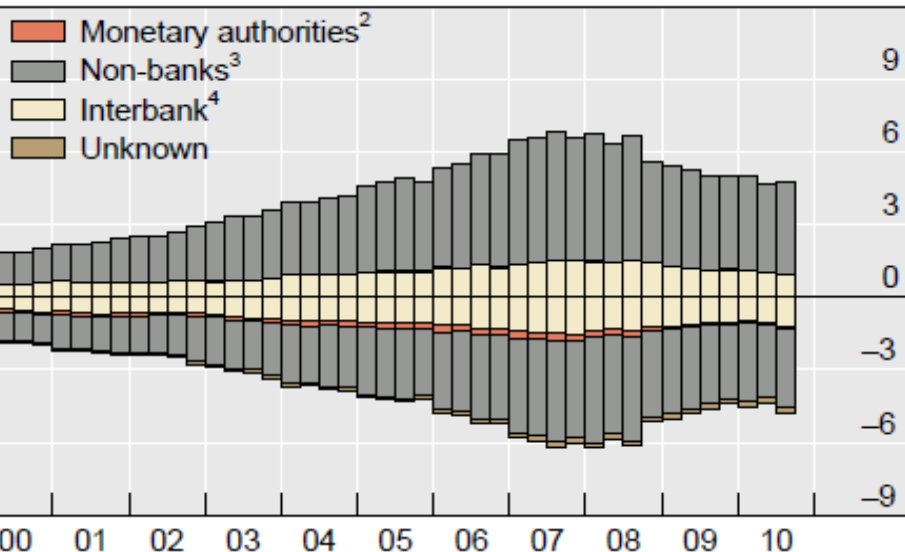


# Example 1: System level indicators

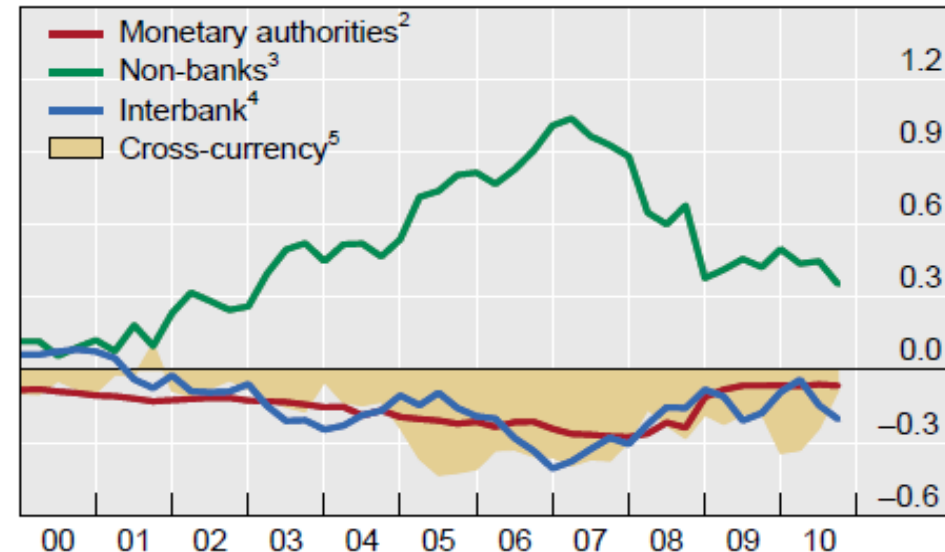
## Long-USD European banks' on-balance sheet USD positions<sup>1</sup>

In trillions of US dollars

### Gross, by counterparty sector



### Net, by counterparty sector

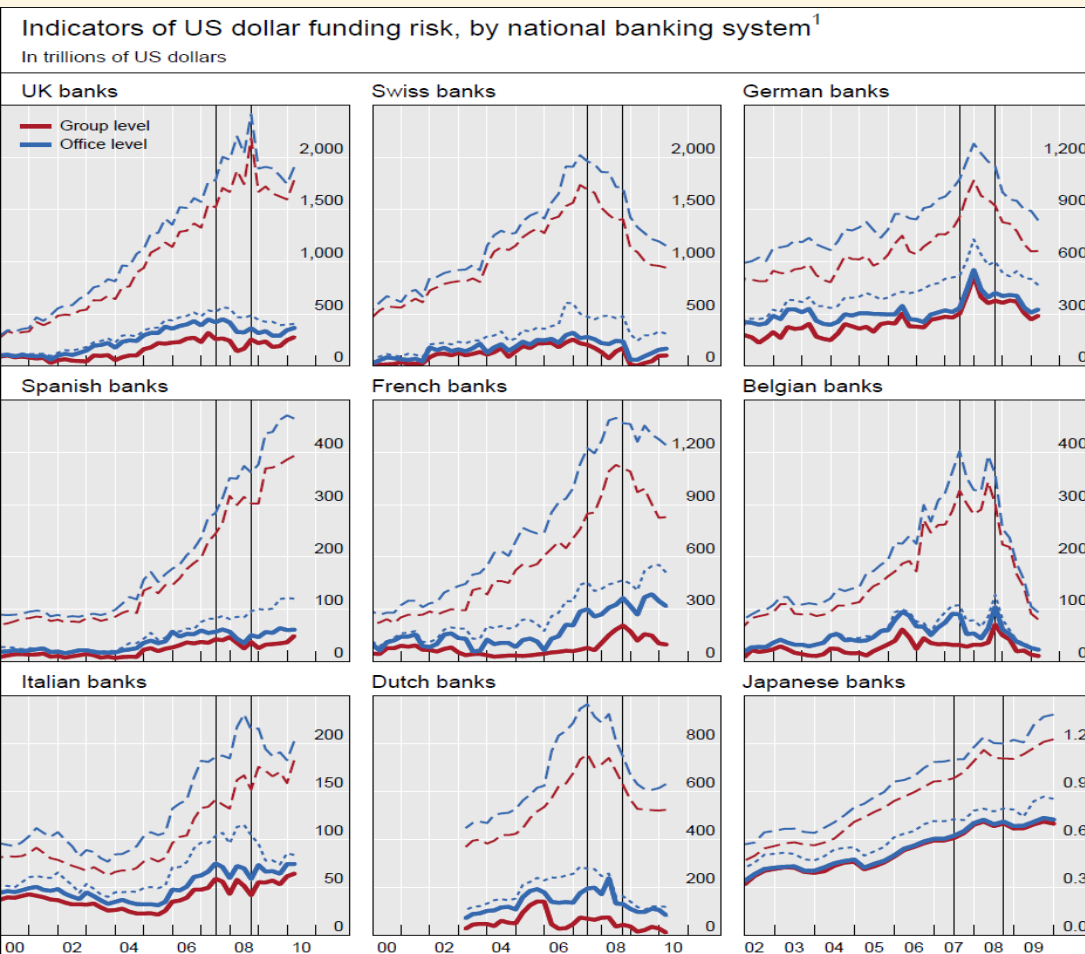


<sup>1</sup> Estimates are constructed by aggregating the worldwide on-balance sheet cross-border and local positions reported by internationally active banks headquartered in Germany, the Netherlands, Switzerland and the United Kingdom. <sup>2</sup> Positions vis-à-vis official monetary authorities. Excludes liabilities to Japanese monetary authorities placed in banks located in Japan. <sup>3</sup> International positions vis-à-vis non-banks plus local positions vis-à-vis US residents (all sectors) booked by banks' offices in the United States. No sectoral breakdown is available for these positions. <sup>4</sup> Estimated net interbank lending to other (unaffiliated) banks. <sup>5</sup> Implied cross-currency funding (ie FX swaps), which equates US dollar assets and liabilities.

Sources: Bloomberg; JPMorgan; BIS consolidated statistics (immediate borrower basis); BIS locational statistics by nationality.



# Example 2: Banking system-specific indicators



- Red lines: group level
- Blue lines: Office level
- Dashed lines: upper bound
- Solid lines: lower bound
- Dotted line: including IO
- Take aways:
  - Wide range → not useful for policy
  - Office level estimates are much higher

The two vertical lines are placed on end-Q2 2007 and end-Q3 2008.

<sup>1</sup> The graph indicates two sets of measures of US dollar funding risk, constructed as described in footnote 10. The group-level estimates (red lines) are constructed by aggregating banks' global balance sheets into a consolidated whole, and then calculating funding risk on this aggregated balance sheet. The office-level estimates (blue lines) are constructed by calculating funding risk at the office location level, and then aggregating the series up across office locations for each banking system. By construction, the office-level estimates should at least be as large as the corresponding group level.



## Improving the measures

- CGFS working group
  - Inclusion of missing pieces of banks' balance sheets
  - More currencies (GBP CHF)
- Incorporation of other statistics
  - BIS debt securities database → maturity information on banks' debt issues
  - OTC derivatives statistics