Future challenges for monetary statistics in a changing environment:

Rethinking Monetary Analysis and Statistics

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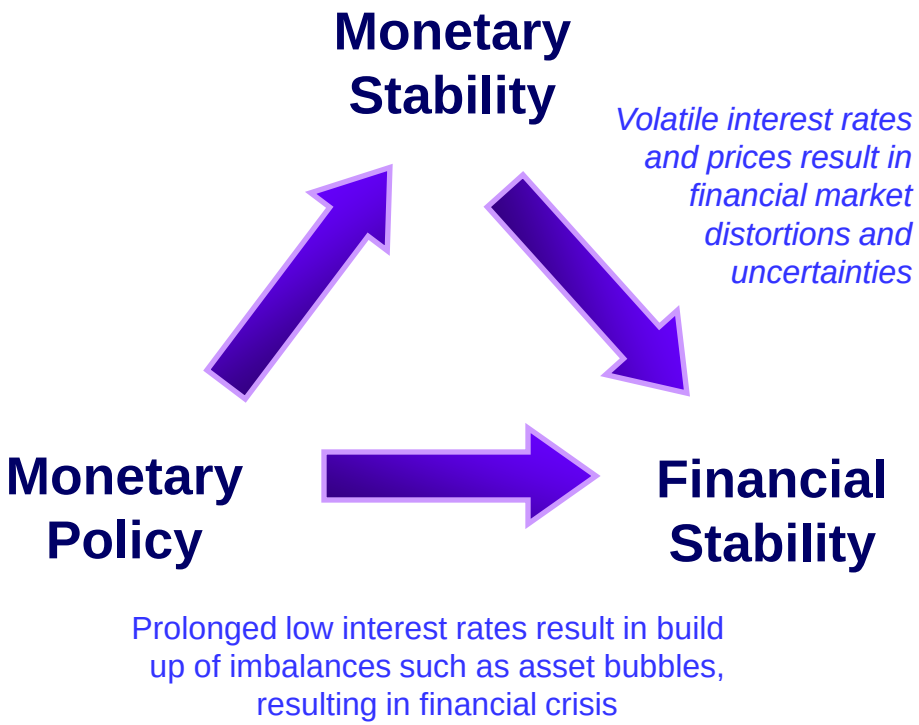
Lessons from the Recent Crisis

Observations	Lessons
MP and FS interlinked	1 MP and FS surveillance are mutually reinforcing.
Increased financial market sophistication	2 Re-regulation and greater oversight will require information gaps to be closed, including large off-balance sheet operations
International dimension	3 A more interconnected world means that impact of crisis and policies is not isolated to a single country or region.

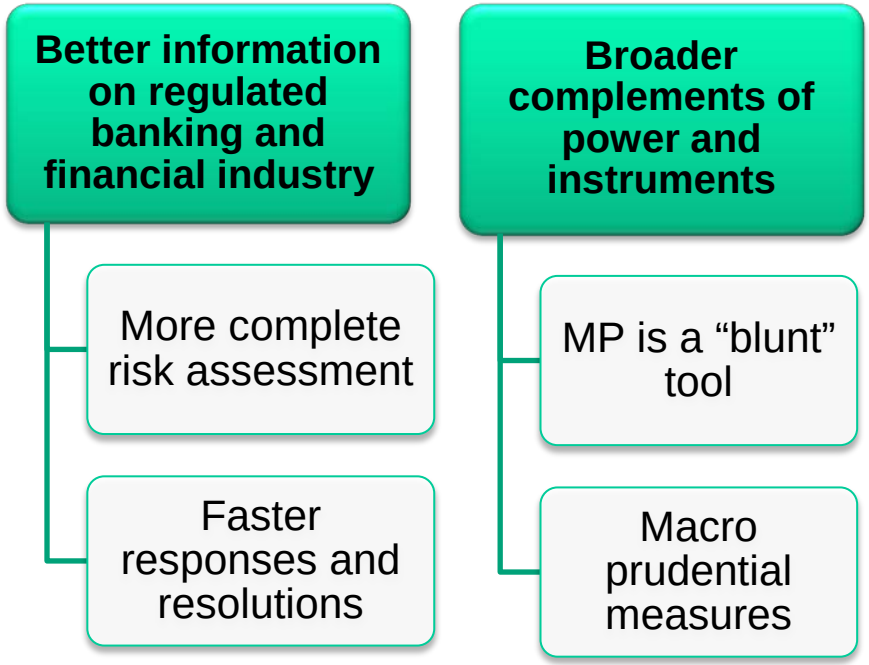
What do these lessons imply for monetary surveillance future data needs?

1 MP and FS surveillance mutually reinforcing

Fundamental linkage: MP to FS



Potential synergies between MP and FS



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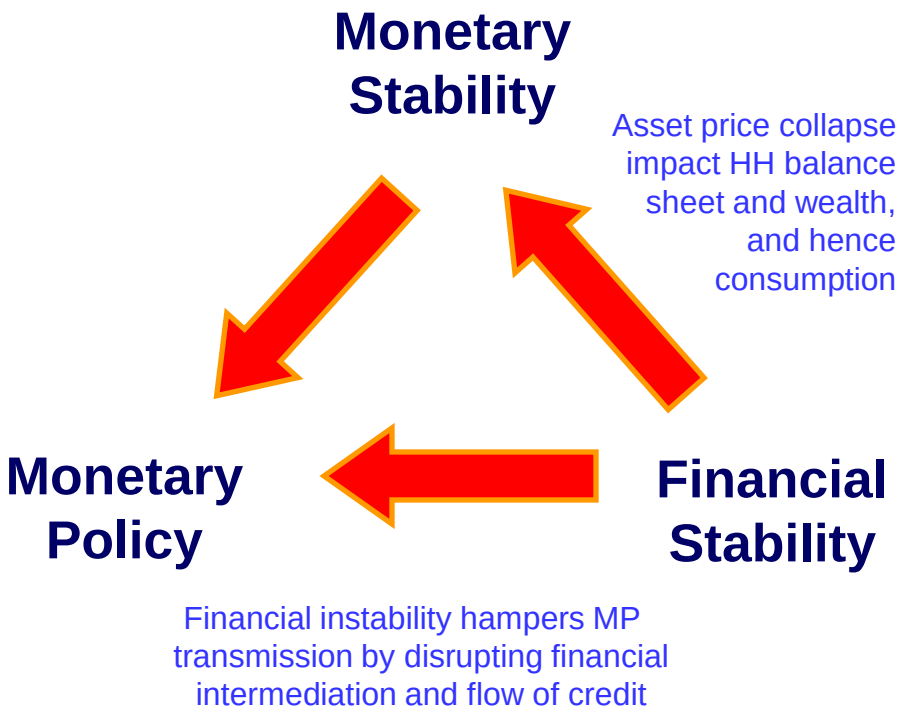

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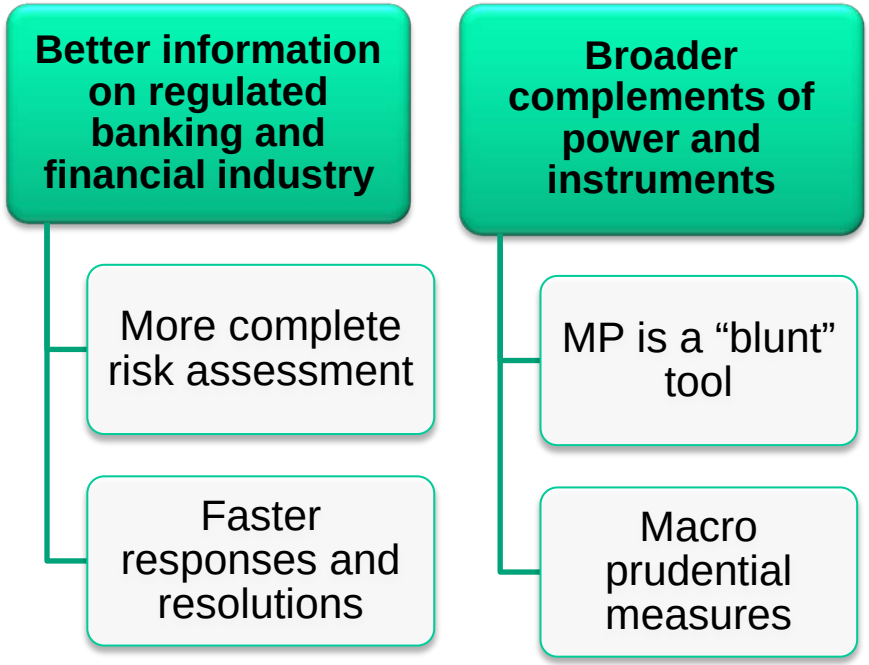
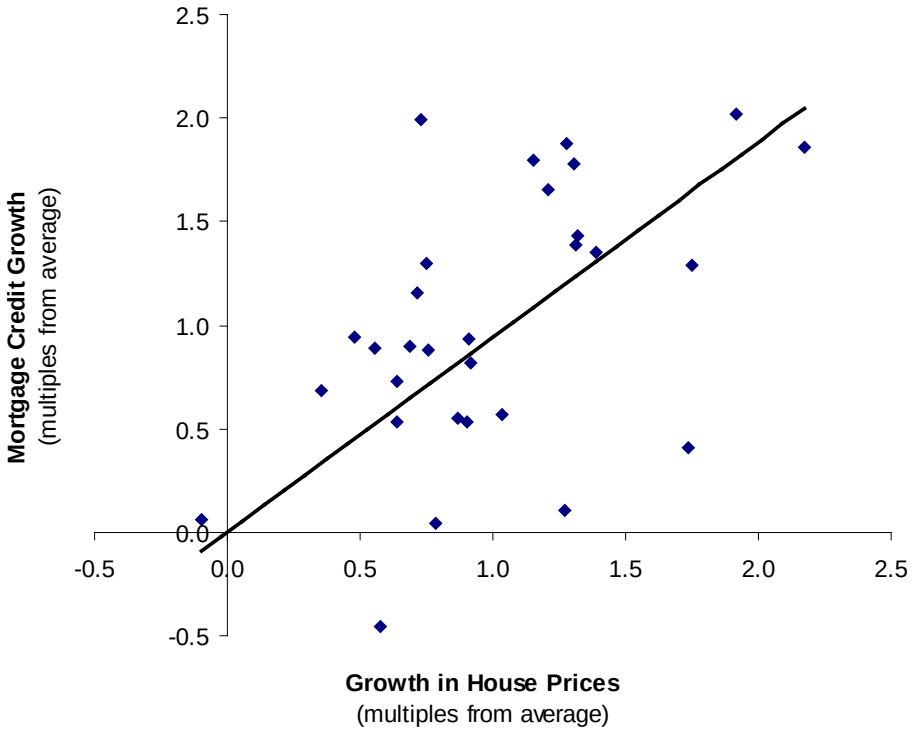


1 Monetary analysis should take account of financial imbalances and balance sheet vulnerabilities

- Close link between credit and asset prices; MP has a role in avoiding build up of asset bubbles
- State of B/S provide information on vulnerabilities and affect effectiveness of macroeconomic policies

Mortgage credit and House prices
(MY, HK, KR, CN, AU), 2006 to 2011



Source: Internal estimates; data from Haver Analytics

Balance sheet assessment of various crisis, 1990-2011

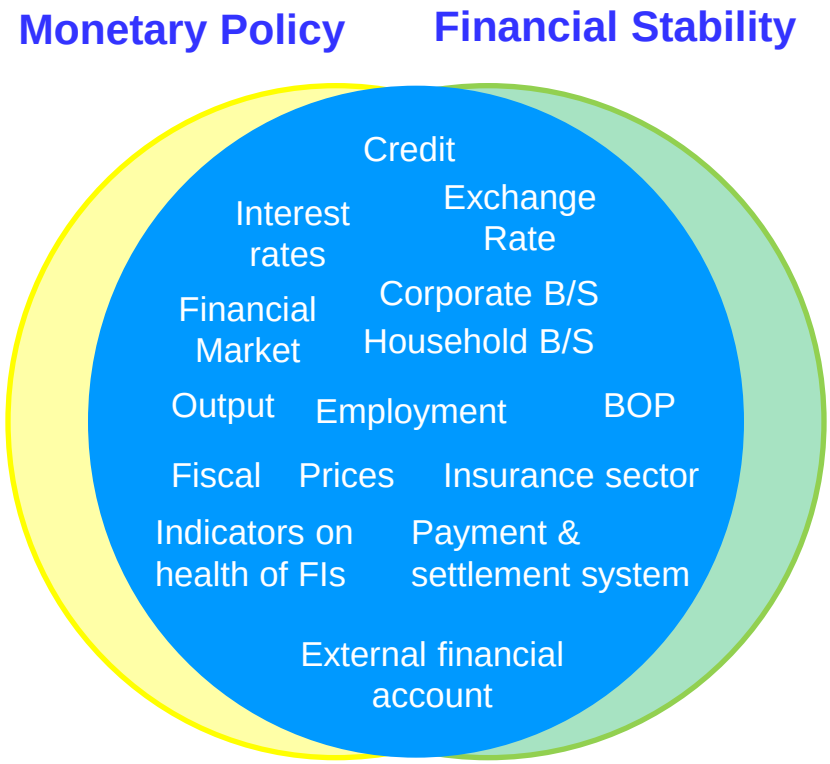
Balance Sheet \ Country	Finland (1991)	Sweden (1991)	Mexico (1994)	Argentina (1995)	Japan (1995)	Thailand (1997)	Korea (1997)	Indonesia (1997)	Malaysia (1997)	Russia (1998)	Brazil (1999)	Turkey (2000)	Argentina (2001)	Uruguay (2002)	US (2007)	Iceland (2008)	Ireland (2009)	Greece (2011)
Household	■	■			■				■						■		■	
Firms	■	■	■			■	■	■	■									
Financial Inst.	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	
Central Bank																		
Government			■			■				■	■	■	■	■	■			■

■ Source of vulnerability
■ Constraint on recovery

Source: Internal estimates; list of crisis from "IMF-FSB Early Warning Exercise" (September 2010)

1 Collection of data should serve both MP and FS surveillance

- Broadly similar data needs, but should distinguish the context of use for MP and FS

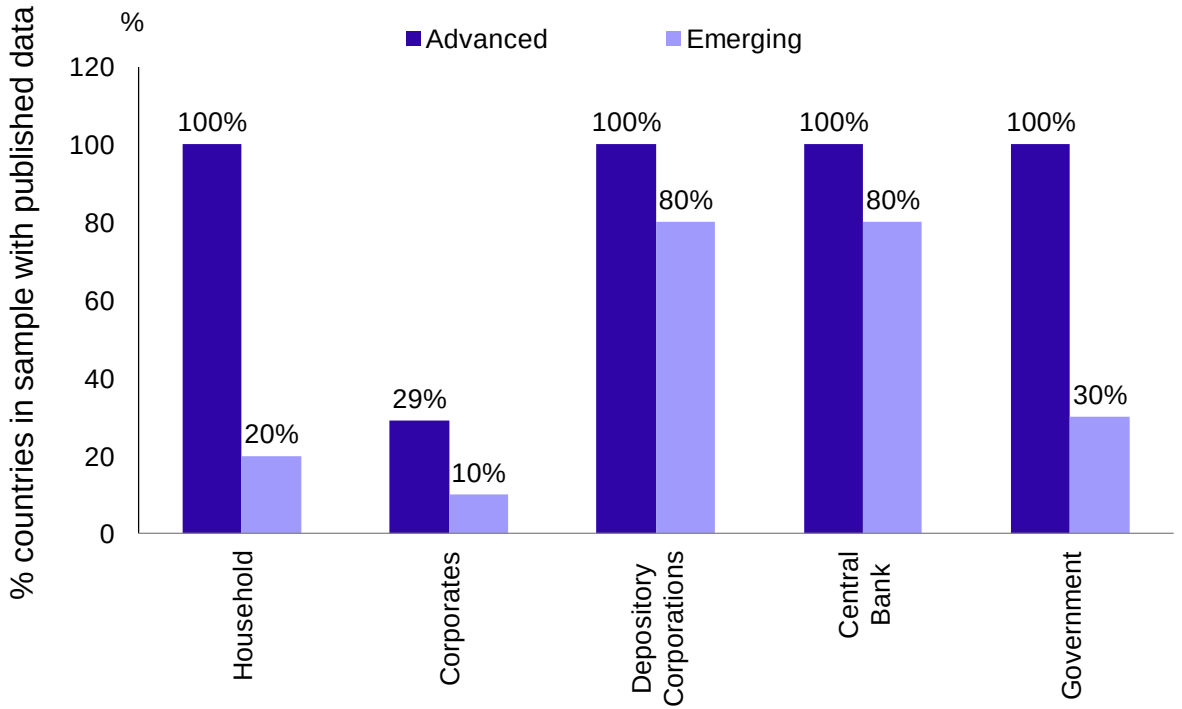


BANKING STATISTICS		
	MP	**FS**
Assessment	1. Is growth in credit adequate to sustain economic growth? 2. Will strength of financing result in overheating pressures?	1. Is credit growth excessive and contributing to financial imbalances and the build-up of institutional or systemic risk?

Dimension	• **By sector**
	• By purpose
	• **Aggregate data**
		• By purpose
		• **By institution**
		• **Granular data**
		  • **By localities**
		  • **By income group**

1 Balance sheet and cash flow information remains a blind spot, especially among EMEs

Survey of published balance sheet information, Advanced vs EMEs



Survey of published sectoral balance sheet information of 7 advanced economies and 10 emerging economies
Source: Internal estimates, National Authorities (Central Bank and Office of National Statistics), IMF, OECD.
Date: Data as at 15 March 2012.

1 Difficult to anticipate buildup of risk and propagation of shocks due to information gaps

Information gaps	Complications	Useful information
Granularity	Dimensions of data collected still limited, difficult to detect pockets of imbalances Aggregated data masked vulnerabilities in certain segments, i.e. low income	• Granular data with expanded dimension to include, for example, localities and income groups
Coverage	Significant gaps in balance sheet & cash flow data; difficult to detect vulnerabilities and anticipate transmission of shocks	• B/S of corporates, incl. SMEs • B/S of FIs to incl. non-depository corporations • Complete cash flow information, incl. outlays • Data on wealth dispersion
Timeliness	Published B/S data are high infrequency, therefore lags and infrequent data complicates surveillance	• More frequent and timely information on B/S

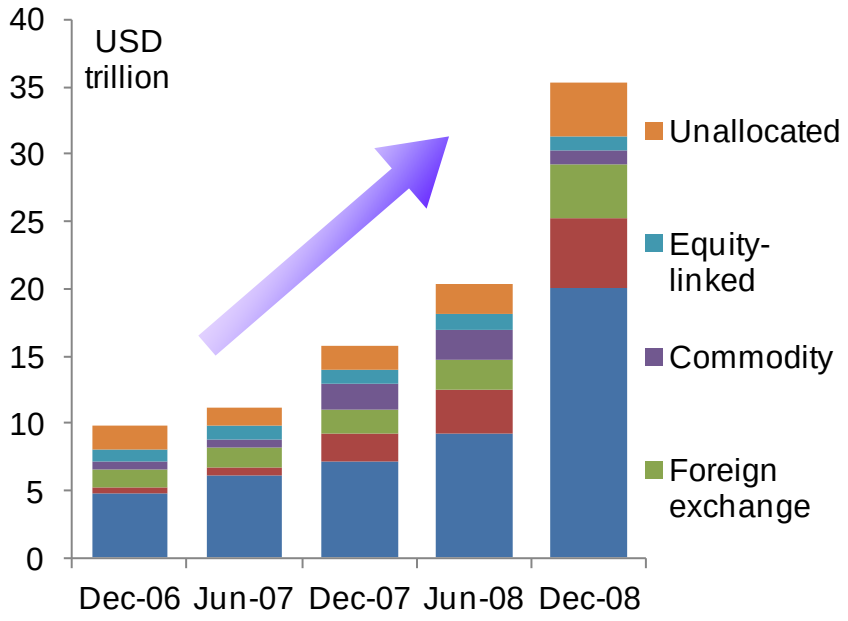
2 Several regulatory blind spots were discovered during the crisis

Failure to regulate excessive speculation — Lack of oversight on rapidly growing financial innovation

Failure to correctly assess risk — Underestimated the risk of off-balance sheet items and structured products

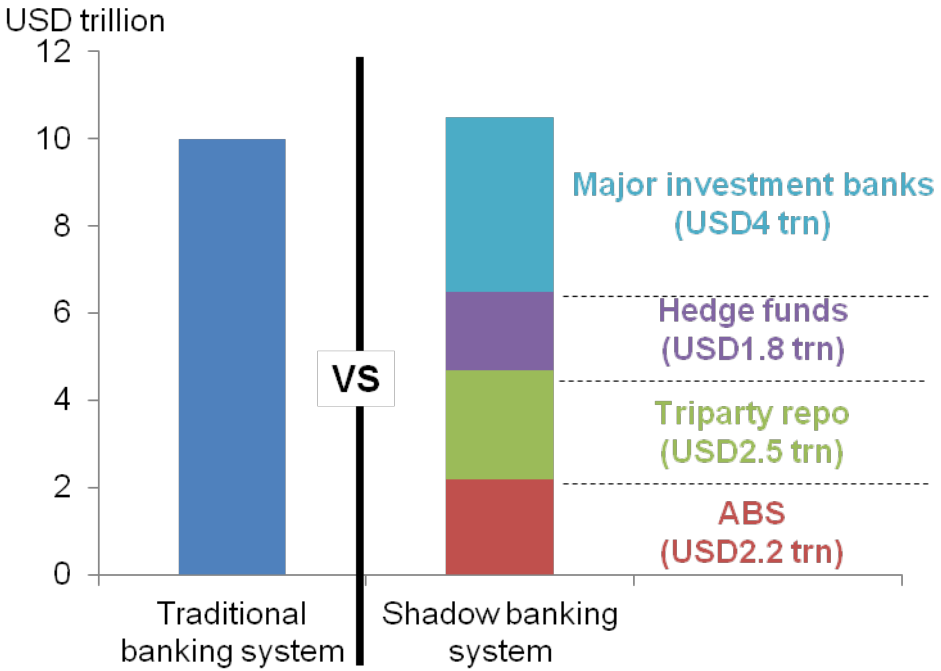
Interlinkages worsened the crisis — Systemic risk should not be underestimated even if non-systemic (individual) risk is minimal

Global OTC Derivatives Markets :
Gross Market Values of Outstanding[1] Contracts



[1] Gross market values are calculated as the sum of the total gross positive market value of contracts and absolute value of gross negative market value of contracts with non-reporting counterparties

Assets of US banking system vs. shadow banking in 2007



Source: Remarks by Timothy Geithner at The Economic Club of New York, New York City, 2008

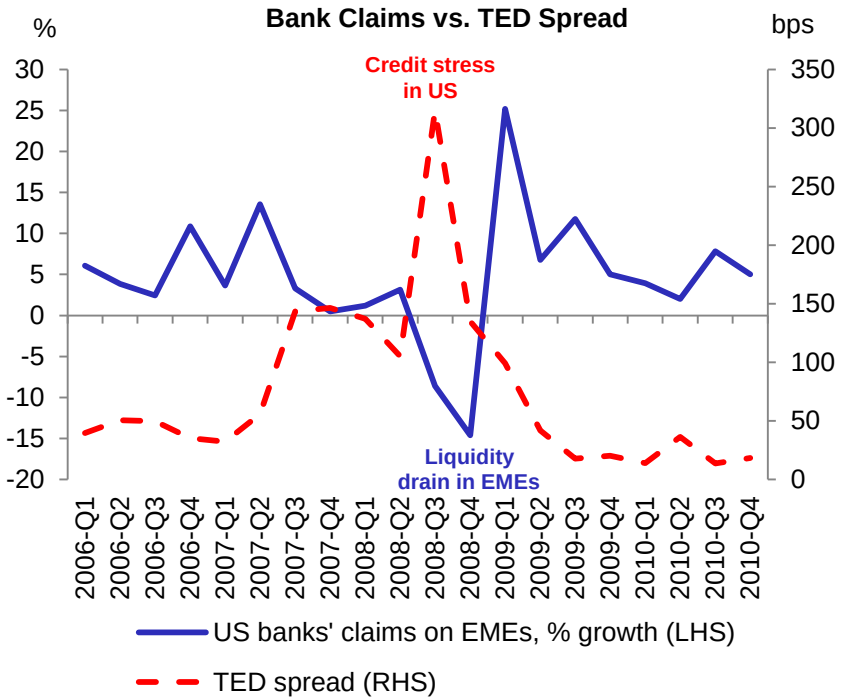
2 Difficult to anticipate extent of systemic risk due to information gaps

- Central banks and authorities now have expanded mandates, but not expanded data sets

Information gaps	Complications	Useful information
Coverage	• Inability to accurately detect excessive speculation • Incomplete data sets that do not enable the correct assessment of individual risk, and to separate from systemic risk	• Wider coverage on OTC derivative, structured products, leverage ratios, and off-balance sheet items • Exposure of unregulated institutions like hedge funds and corporations • Coverage on size and structure of unregulated shadow banking
Granularity	• Inability to differentiate investments for hedging, for real activity, or for speculation • Unclear picture of inter-institutional exposures • Unclear picture of probability of cascading failure	• Deeper categorisation into investment purpose • Deeper coverage of non-resident presence in domestic markets, products, type of investment, duration and maturity profile.
Standardisation	• Different regions have different levels of coverage and granularity in terms of domestic market information	• Have a standard format in reporting non-resident holdings, off-balance sheet items, and purpose of investments

3 Greater interconnectedness resulted in large spill-over from the global financial crisis

- Credit stress in the US banking system also affected EMEs through deleveraging
- Co-movement in equity market across regions during the crisis



Note: The TED spread measures the difference between 3-month LIBOR and 3-month T-bill interest rate and is used as an indicator of credit stress in the US banking system

Market movements (Jan '08 vs. Oct '08)		
	Main stock market indices (% chg)	
US	▼	-30
UK	▼	-26
Brazil	▼	-37
China	▼	-61
India	▼	-45
Indonesia	▼	-52
Malaysia	▼	-38
Mexico	▼	-29
Thailand	▼	-47

Source: Bloomberg

3 Difficult to anticipate buildup of risk due to information gaps in available cross-border statistics

Information gaps	Complications	Useful information
Timeliness	Banking system/financial markets movements are high frequency, therefore lags and infrequent data complicates surveillance	• Close to real-time portfolio and bank flows data
Coverage	Not all countries participate in data reporting; layers of risk not apparent	• Bank flows data with higher participation by EME countries • Immediate and ultimate holder of risk
Granularity	Standardised and published cross-border data still lacks granularity, restricting scope of analysis	• Non-resident holdings of domestic securities • Portfolio flows by sector and instrument
Standardisation	Countries compile and calculate data differently, difficult to benchmark	• Standardised data e.g. across BIS Consolidated Statistics, IMF Coordinated Portfolio Investment Survey, EPFR country flows

Are current statistical initiatives enough?

Current Gaps	Recent Initiatives	Sufficient?
Monetary & Financial • Coverage: B/S of non-depository financial corporations and corporates, incl. SMEs, cash flow incl. outlays, wealth dispersion, • Granularity: Locality and income group • Timeliness: More frequent and timely	• Coverage: Shadow banking, interconnectedness of financial exposure, expand FSI reporting countries, aggregate leverage and maturity mismatches, • Granularity: Micro data such as income and credit, flow of funds, and national balance sheet by sector	The recent initiatives have: • Strengthened compilation of statistics on unregulated institutions and improve collection of micro data, particularly in debt, income and securities • Improved understanding of interrelated financial exposure of individual FI and financial system as well as balance sheet of non-FIs • Facilitated understanding of build up of risks and propagation of shocks Nevertheless, • Compilers need to be proactive in identifying and collecting advance indicators due to dynamic and evolving financial environment • Policy makers should have sound understanding and early analysis of statistics to identify potential risks
Financial Market • Coverage: Unregulated institutions, OTC derivatives, structured products, leverage ratios, off balance sheet • Granularity: Investment purpose and type, non-resident presence, products, maturity profile	• Coverage: Securities holdings • Granularity: Micro data such as securities by securities holdings, risk transfer instruments	
International • Coverage: Bank flows, risk holders • Granularity: Non-resident holding of securities, portfolio flow by sector and instrument • Timeliness: Close to real time	• Coverage: Ultimate controlling parties, reporting countries for IIP, CPIS and IBS • Granularity: Remaining maturity by instrument, ultimate risk/credit transfer instruments, institutional sector of foreign debtors	

Guiding Principles

Design	**Clarity**	Be clear on what is needed (Data is costly and having too much information could also be a problem)
	Limitations	Even with sophisticated systems, we cannot fully capture risk – need to work around limitations
	Pre-emptive	Data collection should aim to prevent the next generation of crisis
Compilation	**Integrity**	Data reported honestly and without tampering
	Oversight	Cross-check of information to ensure data reliability
Publication	**Access**	Widely available data in a user friendly and timely manner

Recap and summary

1. The recent crisis has taught us important lessons:
   - MP and FS are interlinked
   - Financial markets have become more sophisticated
   - The world has become more interconnected
2. There is pressing need to close information gaps in terms of coverage, granularity, timeliness and standardisation of data
3. Current statistical initiatives are moving in the right direction, but there is still need to do more
4. Effective data collection must have clarity, transcend limitations, be pre-emptive, have a high degree of integrity and appropriate oversight, and have the user in mind

Areas for Thoughts…

1. Data compiled has become more comprehensive, timely, granular and accessible for closer examination and research. Yet, crisis still occurs. To policy-makers and statisticians, what have we missed?

2. Are we doing enough in terms of data collection and assessment to be able to detect and prevent the reoccurrence of the last crisis and to avoid the next generation of crisis?

3. In this context, how should policy-makers collaborate with statisticians to ensure gaps are closed and data needs are met?

4. Are there enough investments in data compilation? Is the cost-benefit equation in collecting additional information too skewed towards cost consciousness, while not giving adequate priority and resources to statistics collection?

5. What is the best way to ensure data integrity and consistency? Who should play this governing role?

Thank you