



FEDERAL RESERVE BANK *of* NEW YORK

Capital Flow Measures and Research Challenges

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Data availability and analytical challenges

1. Structural changes to credit intermediation

- Banking organizations: diverse business models, complex financial conglomerates, global operations, internal capital markets
- Nonbank intermediation (shadow banking)
- Challenge to keep up with evolving intermediation

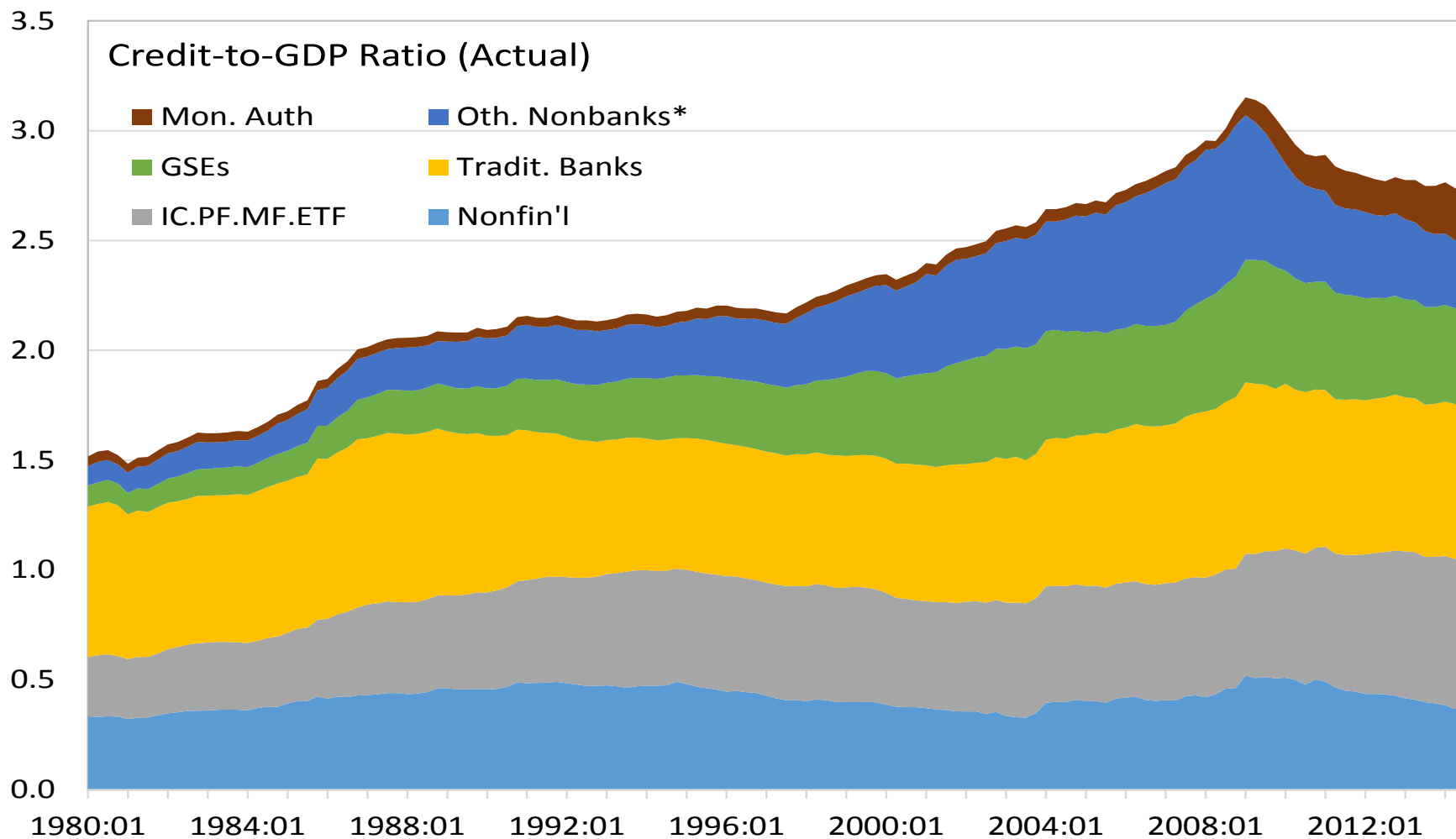
2. Post crisis: more availability of international capital flow data

3. Challenges remain

- Data Gaps
- Data Management
- Performing Analytical Work
 - Limitations in access and integration
 - Opportunities for collaboration

Structural changes to credit intermediation

Traditional Banks remain important, but have lots of company in credit provision.



Source: Flows of Funds

Banking international focus and structure

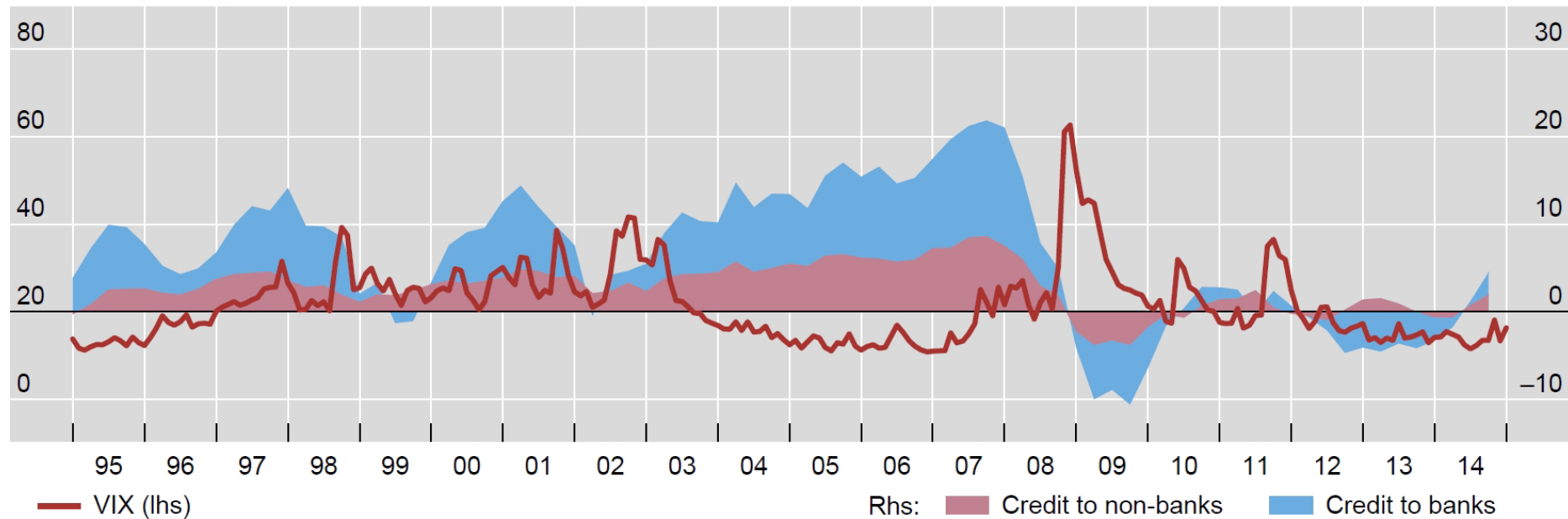
- ▶ Volume of international activity rose
 - Counterparties in transactions evolved: sovereigns to banks to bank/nonbank
 - Mode of servicing markets changed: growth in foreign bank branches and subsidiaries hosted by AEs and EMs.
 - Need for more information and better frameworks around these international entities

International banking counterparties change: especially high growth rates of interbank flows, with steeper reversals as global risk conditions shift.

Year-on-year growth, in per cent

Graph 1

International bank claims¹

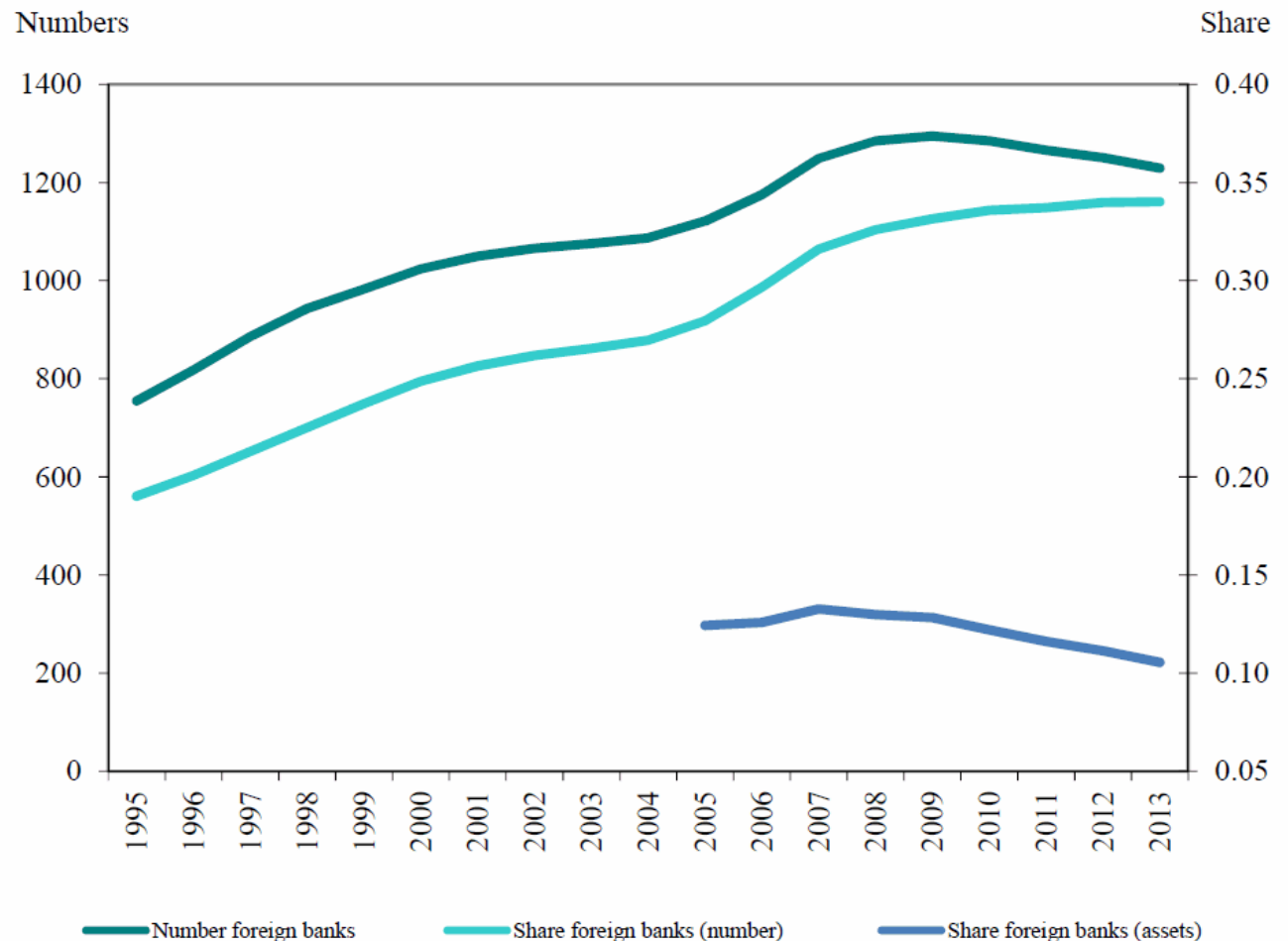


Source: Cohen & Koch, *BIS Quarterly Review*, March 2015. p. 15.

¹ Includes all BIS reporting banks' cross-border credit and local credit in foreign currency.

Banks increasingly entered foreign markets by setting up local affiliates. Subsidiary activity reflects part of this.

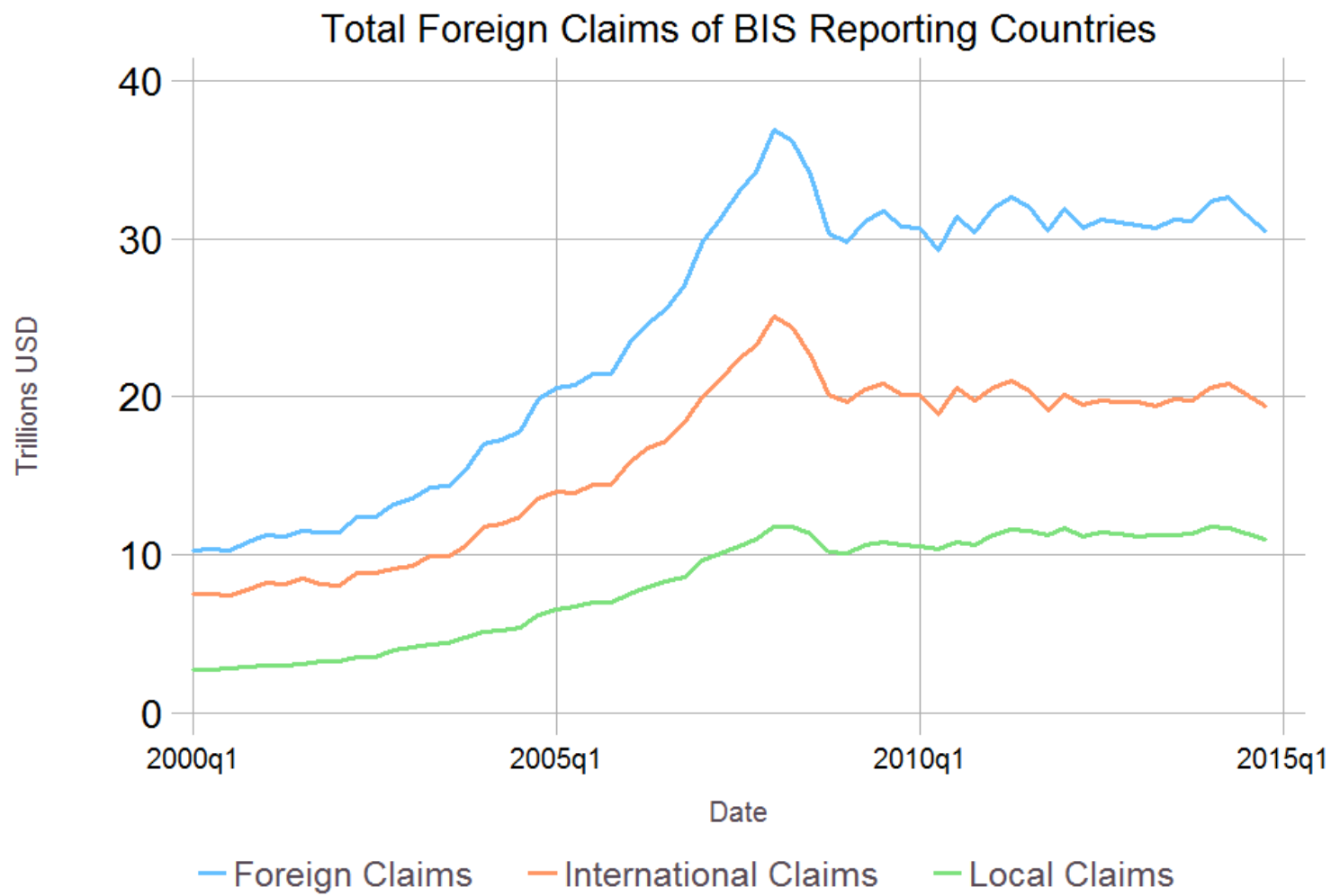
Figure 1
Number and share of foreign banks, 1995 - 2013



Source: Claessens and van Horen, 2015. "The Impact of the Global Financial Crisis on Banking Globalization" figure 1.

Cross-border lending joined by substantial local claims.

Diversified products offered; some locations for investment, others for funding (Cetorelli/Goldberg 2012)



Source: BIS Consolidated International Banking Statistics.

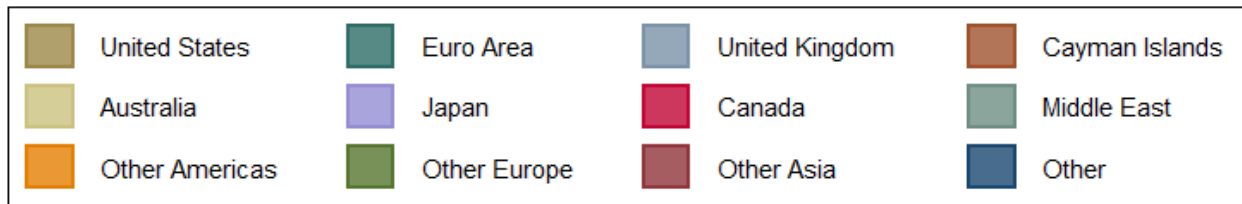
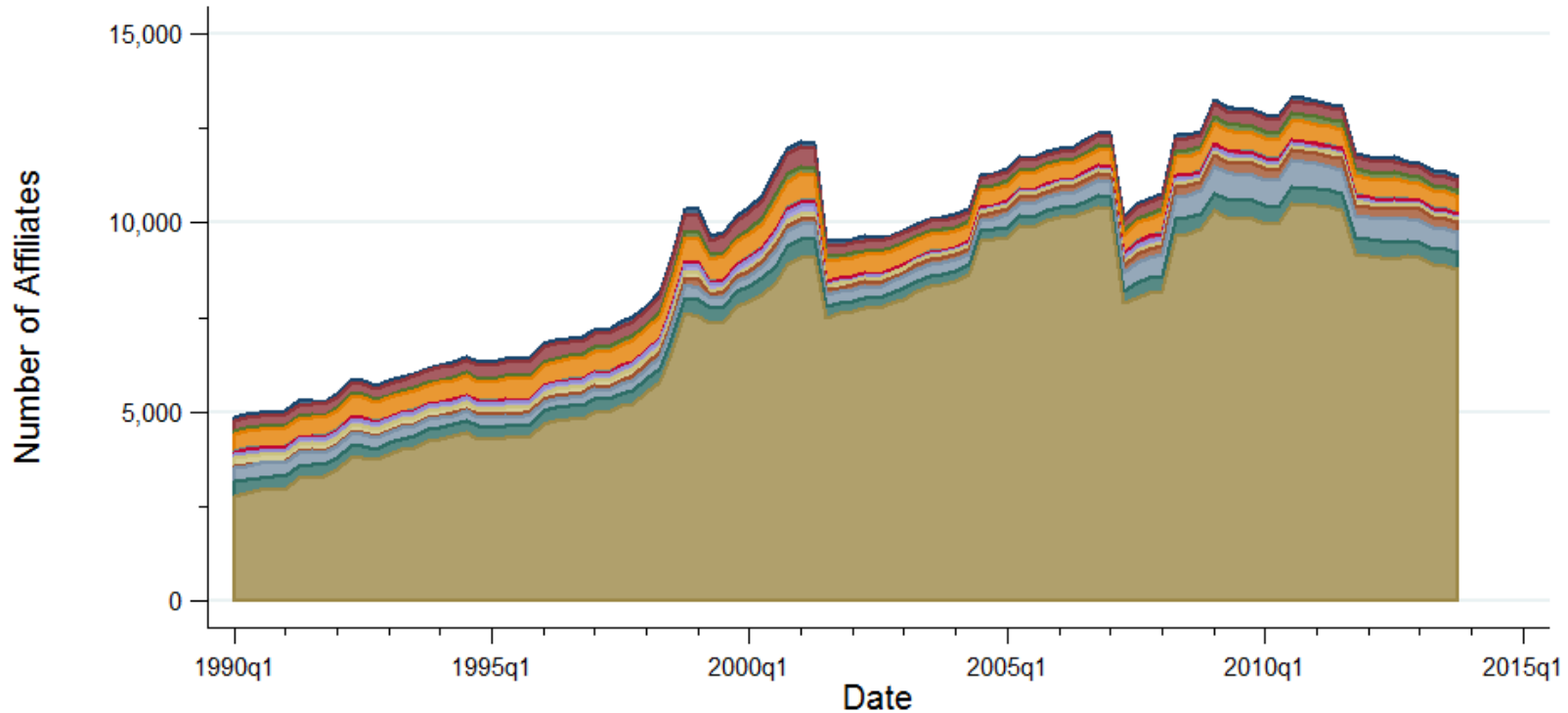
Organizations involved in credit intermediation evolve.

- ▶ Traditional banks more global and diversified.
- ▶ Financial conglomerates more prevalent
 - Growth in organizational and business complexity
 - Greater use of internal capital markets within organizations, to domestic and foreign affiliates.
 - Patterns and consequences of liquidity management not well understood.
- ▶ Nonbanks grew in importance, and are sometimes in BHCs.
- ▶ Data collection and coverage gaps.
- ▶ Regulatory perimeters sometimes outdated.

Evolving bank structure shown in counts of legal entities of US top 20 BHCs (conservative measure).

US BHC Affiliate Count by Region

Sample: Top 20 BHC's By Asset Size, Quarterly



All BHC's are publicly listed and file the Y-9C (financials) and Y-10 (organizational structure).
Excludes 6 BHC's that enter the sample in 2009: Goldman Sachs, Morgan Stanley, American Express, CIT Group, Ally, and Discover.

Outside of banks, credit intermediation evolving through shadow banking / shadow banks.

- ▶ Not uniquely defined across institutions, but covers some combination of financial activities and entities.
- ▶ Considerable innovation in both activities and entity types. Growth rates have varied over time across component types.
- ▶ The innovations and shifting players makes financial stability analysis and data collection challenging.
- ▶ Even as statistical agencies are challenged in collecting regulatory data from banks/BHCs, broader umbrella of coverage is needed for the (newer) activities and entities.
- ▶ Always chasing the frontier!

Table 2.1. Comparison of Shadow Banking Measures

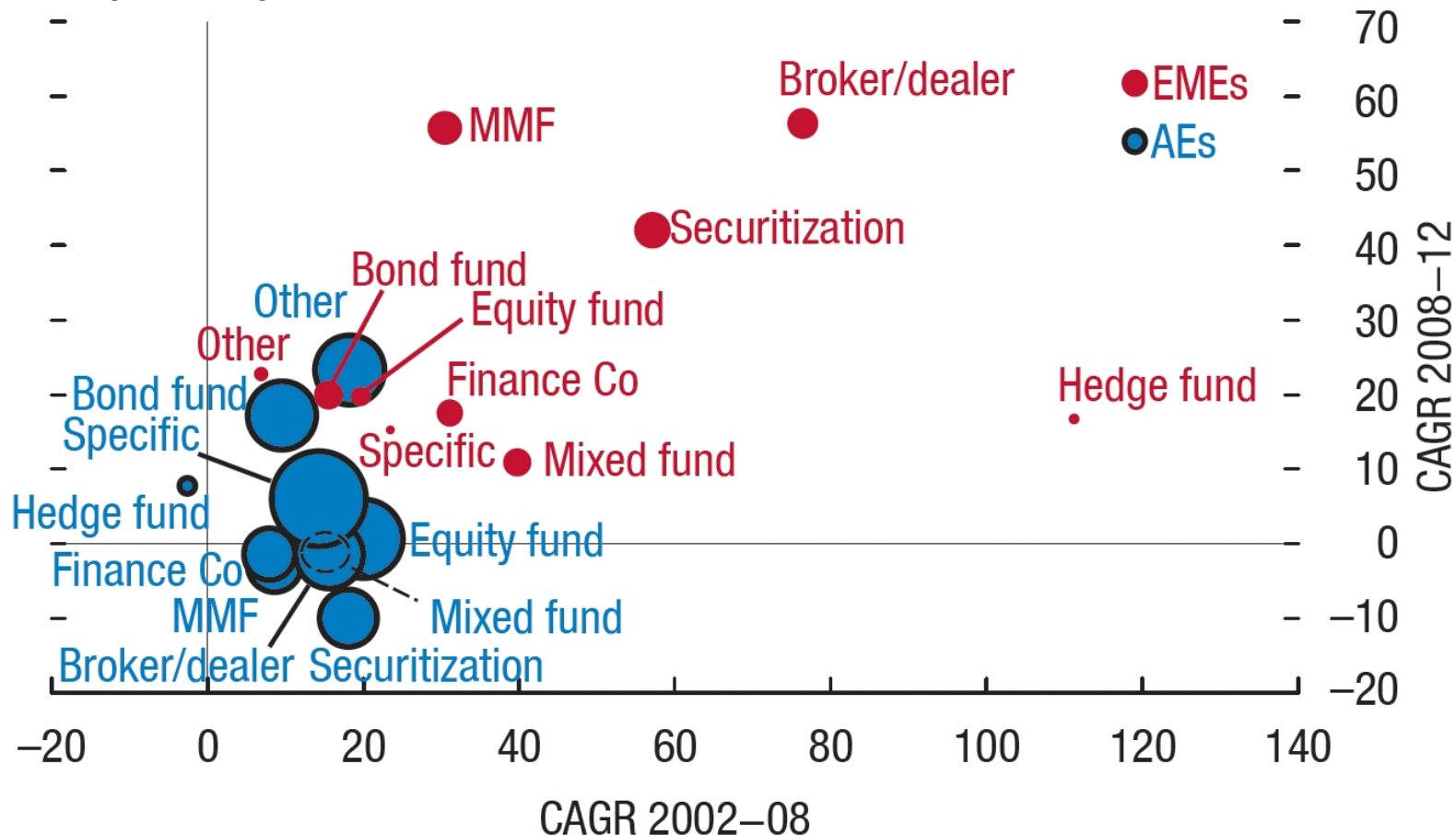
	Flow of funds	Financial Stability Board	Noncore liabilities
Coverage	Nonbank financial institutions <ul style="list-style-type: none"> Engaged in financial intermediation Providing long-term financing 	Nonbank financial institutions <ul style="list-style-type: none"> Engaged in financial intermediation Providing long-term financing 	Banks Nonbank financial institutions MMFs
	Excludes non-MMF investment funds	Includes non-MMF investment funds	Excludes non-MMF investment funds
	Advanced economies Former emerging market economies	Advanced economies Emerging market economies	Advanced economies Few emerging markets
Source	Flow of funds statistics Quarterly, long history, starting 1980s	Flow of funds and sector data, FSB Annual, short history, starting 2002	IFS Quarterly, short history, starting 2001
Entities/ Activities	Money market mutual funds	Money market mutual funds	Narrow measure includes: <ul style="list-style-type: none"> Restricted and nonresident deposits Securities Loans MMF shares/units
	Financial leasing corporations	Finance companies	
	Securitization vehicles	Securitization vehicles	
	Broker/dealers	Broker/dealers	
		Investment funds (bonds, equity, mixed)	
		Hedge funds	
	Country-specific entities <ul style="list-style-type: none"> Financial holding corporations Development capital companies Other entities 	Country-specific entities <ul style="list-style-type: none"> Financial holding corporations Private development banks Other entities 	Broad measure consists of narrow plus the following intra-financial-sector positions: <ul style="list-style-type: none"> Securities MMF shares/units
	Venture capital corporations		
	Other (not specified)		
Features	Entity based (narrower entity set) Entity breakdown not always available Balance sheet breakdowns available Somewhat more country specific	Entity based (broader entity set) Broad and narrow measures No balance sheet breakdowns More cross-country consistency Not publicly available Data more subject to valuation effects (due to importance of investment funds)	Entity and activity based Broad and narrow measures No balance sheet breakdowns Somewhat country specific Relates to financial fragility literature Captures shadowy banking activities

Source: IMF staff.

Note: FSB = Financial Stability Board; MMF = money market mutual fund; IFS = IMF, International Financial Statistics database.

Early patterns of shadow banking subsector growth are not necessarily indicative of future trends, posing challenges for data collection.

2. Compound Annual Growth Rates by Subsector (Percent)

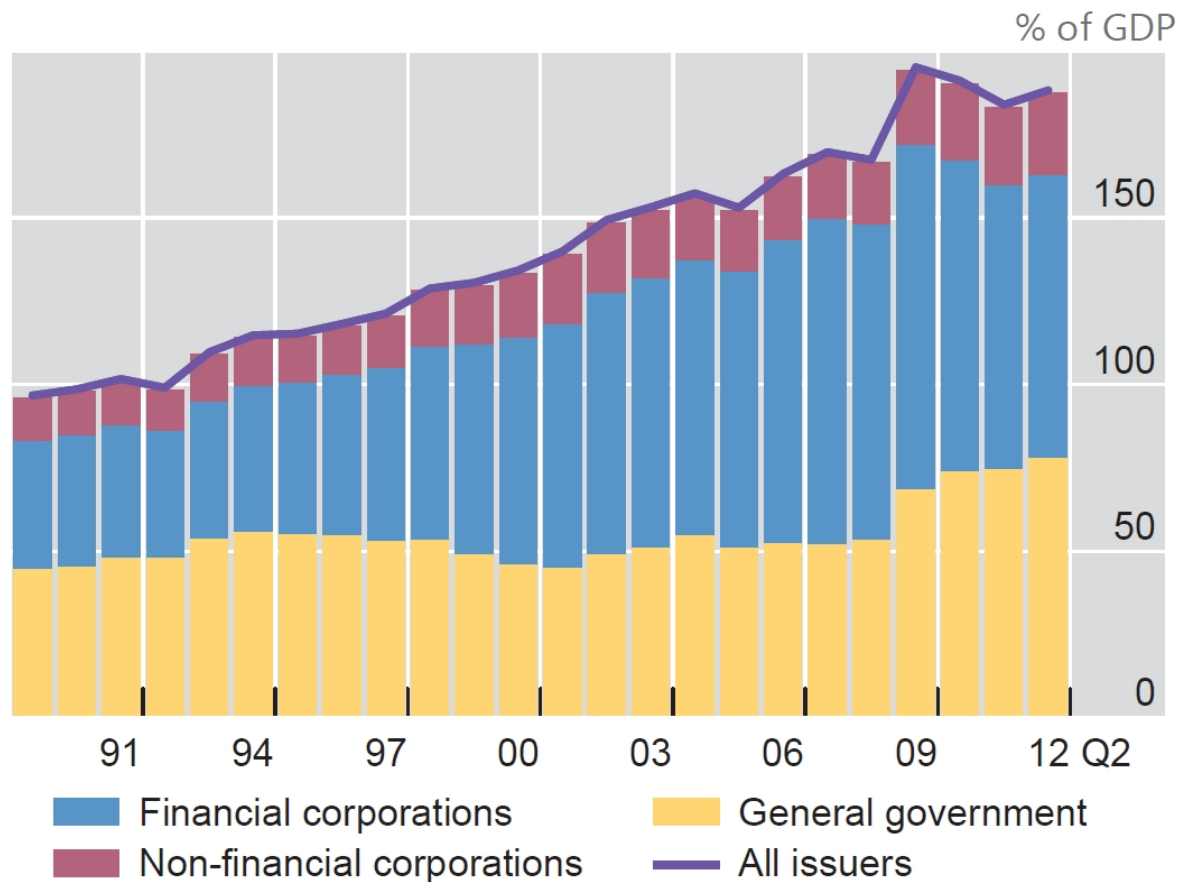


Notes: CAGR = Compound annual growth rate

Source: Valckx et al., IMF Financial Stability Report, Oct 2014. p. 74.

Example: debt securities by financial corporations nearly doubled relative to GDP over a decade.

Total debt securities

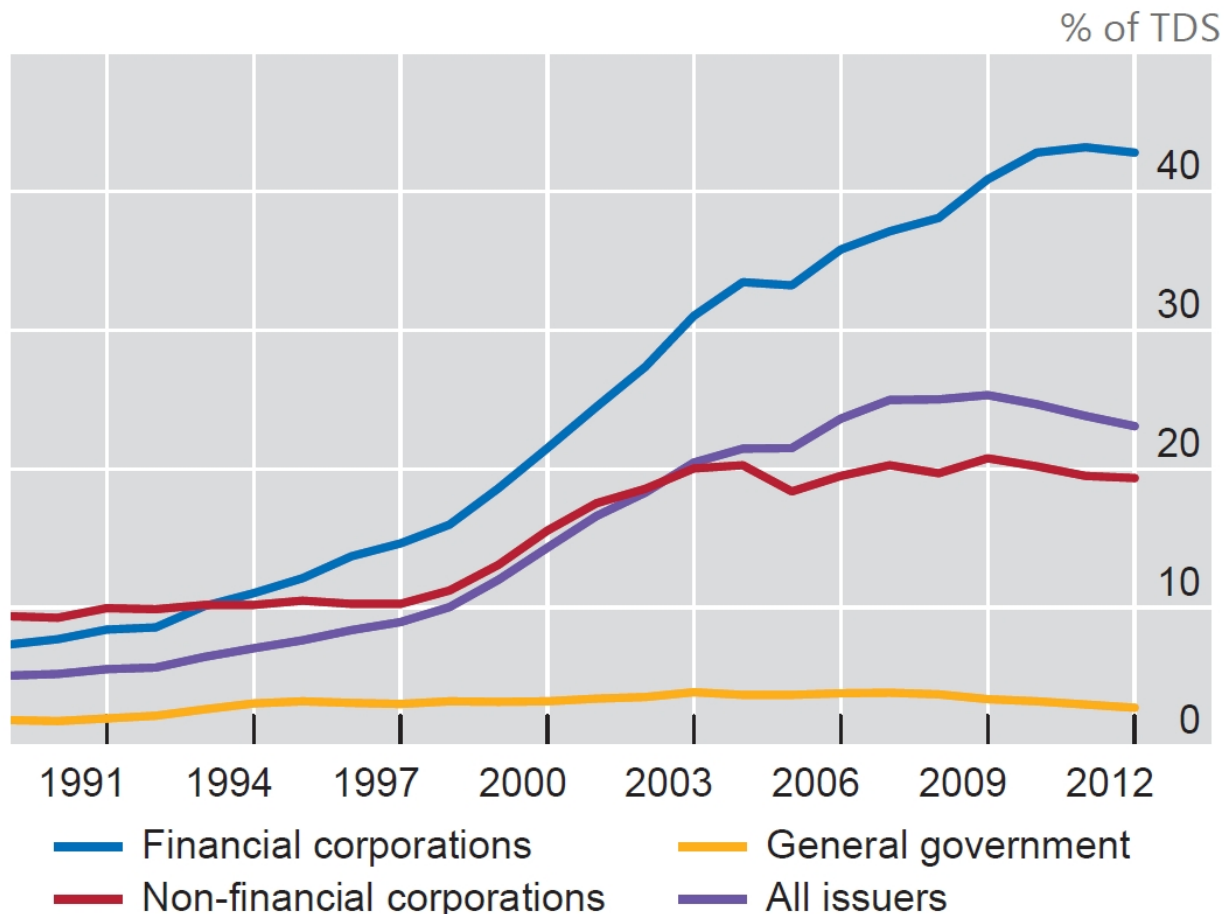


Notes: Growth of debt securities market for a fixed sample of 17 countries for which reporting begins in 1990.

Source: Gruic & Wooldridge, BIS Quarterly Review, Dec 2012, p. 74.

For international capital flows, financial corporation issuance grew quickly, as did nonfinancial issuance.

International debt securities²



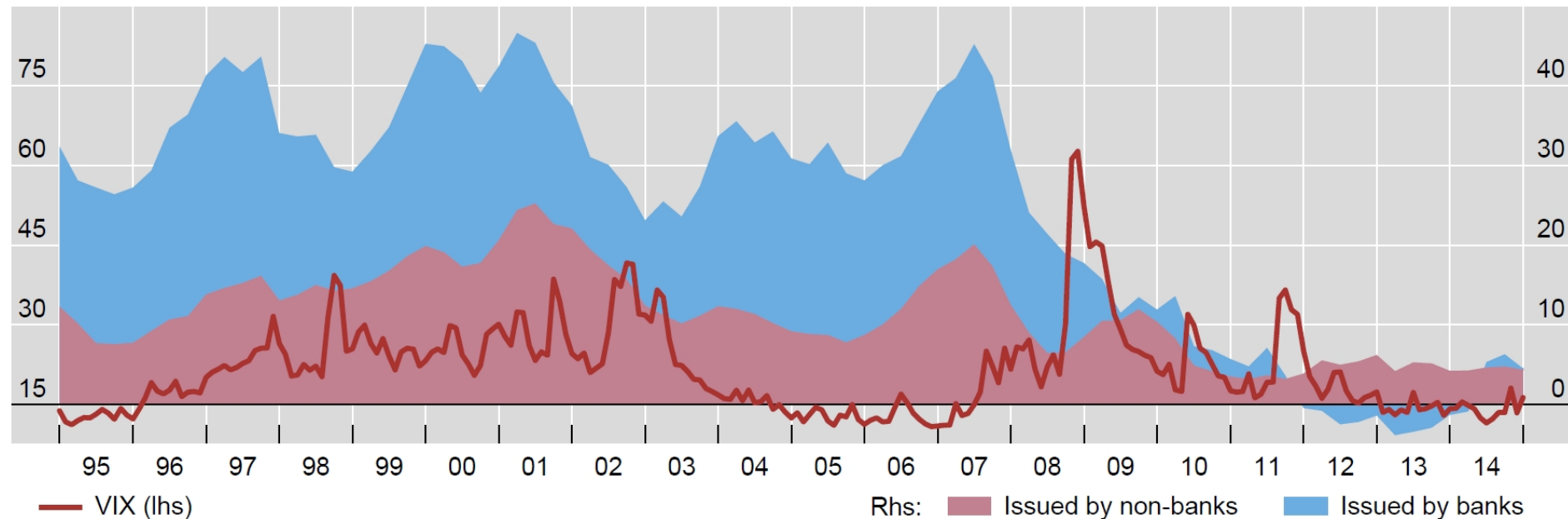
² For international debt securities, new BIS statistics.

Notes: Growth of debt securities market for a fixed sample of 17 countries for which reporting begins in 1989.

Source: Gruic & Wooldridge, BIS Quarterly Review, Dec 2012. p. 74.

Bank issuance was particularly strong, and collapsed after the recent crisis.

International debt securities²



² Net issuance. All instruments, all maturities, all issuers.

Source: Cohen & Koch, BIS Quarterly Review, March 2015. p. 15.

Post crisis: more availability of international capital flow data

Significant efforts to improved prudential supervision of bank holding companies.

- ▶ Integration of **exposures** and **funding**
 - Assets AND Liabilities
 - Consider different business models
 - Mismatches within and between entities
- ▶ **Consolidated** and **connected** entities
 - Avoid gaps or biases due to reporting groups' organizations
- ▶ Collect **multiple risk determinants**
 - Crossing dimensions to assess systemic risk
 - Anticipate potential for changing and correlated risk factors
 - Flexibility to aggregate data according to relevant risk factors
- ▶ Stages of data collection changes organized through FSB, BIS

If history is a guide, relying on bank (or bhc) data, and regulatory reporting, will not be enough

- ▶ Flexibility and adaptability required of statistical and data departments in countries/organizations
- ▶ Need to rely on diversity of data sources
- ▶ Design data processing systems with easy extensibility, so that new data can be integrated quickly and at relatively low cost as financial entities or activities change
- ▶ Hopefully processing and technological advances are used to make official data more accessible, and integrate private data
- ▶ Data asset management very important, with domestic and international financial statistics.

FSB established an integrated framework

- G-20 DGI
 - #4 Securities financing transactions
 - #5 OTC derivatives – TR reporting
 - #8-9 GSIFs common data template

Risk data aggregation and reporting principles

- Regulatory requirements on IT and data governance
- Policies on data quality

Enhancing disclosure

Data collections

Codes and standards

- LEI
- UPI
- UTI
- Definitions and metadata



Challenges to conducting research

Data availability and analytics are challenging

- ▶ Within central banks, can view some confidential data for individual institutions, with access controls
 - can be held closely by particular departments
 - extensive restrictions for external analysts
- ▶ Integrated view of complex (banking) organizations difficult to come by. Pertains to
 - Bank and non-bank balance sheets
 - Details of domestic v. foreign capital flows
- ▶ Data and basic definitions can follow regulatory perimeters.
- ▶ Broader access and coverage still on the horizon.
- ▶ Combining with other data sources remains difficult.

IBRN: Sharing insights not data

- ▶ The International Banking Research Network brings together **central bank researchers** to analyze issues on global banks.
 - Researchers have access to micro-data underlying the BIS international banking statistics.
 - Micro-banking data are key to design analytical experiments and providing insights beyond case studies.
- ▶ The network has been established in **2012**.
 - Austria, Germany, UK, US
- ▶ First project in **2013** with **11 central banks** + BIS, IMF
 - International banking and liquidity risk transmission
- ▶ Current project with **~23 central banks** + BIS, IMF, ESRB, ECB
 - International banking and regulatory spillovers

“Cross-Border Regulatory Spillovers: How Much? How Important?”

1. Empirical methods

Experiment design using state-of-the-art considerations

2. Cross-country and time series database on prudential policies

Collaboration of IBRN team with IMF GMPI Survey team

3. Country implementation

i. Use own propriety data, share results and insights

ii. Own names on research paper

iii. Full policy relevance

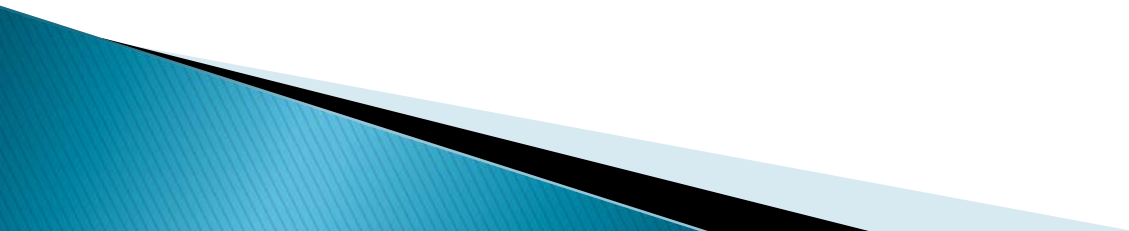
4. Proposal for journal symposium, submissions

5. Lessons for international policy community

Homepage of the IBRN: <http://www.newyorkfed.org/IBRN/index.html>

Concluding remarks.

- ▶ Recent decades are defined by considerable innovation in both activities and entity types.
- ▶ Developments are not always predictable.
- ▶ Even as statistical agencies are challenged in collecting regulatory data from banks/BHCs, broader umbrella of coverage is needed for the (newer) activities and entities.
- ▶ Flexible approaches are need to integrate new datasets with existing data, for example through identifiers and platforms.
- ▶ Many opportunities for collaboration in the community of researchers and statisticians of international capital flows.



Collection of G-SIBs data

