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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.

Credit-to-GDP Ratio (Actual)

- Mon. Auth
- Oth. Nonbanks*
- GSEs
- Tradit. Banks
- IC.PF.MF.ETF
- Nonfin'l

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.

Graph 1

International bank claims\(^1\)


\(^1\) 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

Cross-border lending joined by substantial local claims. Diversified products offered; some locations for investment, others for funding (Cetorelli/Goldberg 2012)
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- Regulatory perimeters sometimes outdated.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).

Source: Goldberg and Shen, 2015, in progress.
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

<table>
<thead>
<tr>
<th>Coverage</th>
<th>Flow of funds</th>
<th>Financial Stability Board</th>
<th>Noncore liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nonbank financial institutions</td>
<td>Nonbank financial institutions</td>
<td>Banks</td>
</tr>
<tr>
<td></td>
<td>• Engaged in financial intermediation</td>
<td>• Engaged in financial intermediation</td>
<td>Nonbank financial institutions</td>
</tr>
<tr>
<td></td>
<td>• Providing long-term financing</td>
<td>• Providing long-term financing</td>
<td>MMFs</td>
</tr>
<tr>
<td>Excludes non-MMF investment funds</td>
<td>Includes non-MMF investment funds</td>
<td>Excludes non-MMF investment funds</td>
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<tr>
<td>Advanced economies</td>
<td>Advanced economies</td>
<td>Advanced economies</td>
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<tr>
<td>Former emerging market economies</td>
<td>Emerging market economies</td>
<td>Few emerging markets</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>Flow of funds statistics</th>
<th>Flow of funds and sector data, FSB</th>
<th>IFS</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Entities/Activities</th>
<th>Money market mutual funds</th>
<th>Money market mutual funds</th>
<th>Narrow measure includes:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Financial leasing corporations</td>
<td>Finance companies</td>
<td>• Restricted and nonresident deposits</td>
</tr>
<tr>
<td></td>
<td>Securitization vehicles</td>
<td>Securitization vehicles</td>
<td>• Securities</td>
</tr>
<tr>
<td></td>
<td>Broker/dealers</td>
<td>Broker/dealers</td>
<td>• Loans</td>
</tr>
<tr>
<td></td>
<td>Investment funds (bonds, equity, mixed)</td>
<td></td>
<td>• MMF shares/units</td>
</tr>
<tr>
<td></td>
<td>Hedge funds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country-specific entities</td>
<td>Country-specific entities</td>
<td>Country-specific entities</td>
<td>Broad measure consists of narrow plus the following intra-financial-sector positions:</td>
</tr>
<tr>
<td>• Financial holding corporations</td>
<td>• Financial holding corporations</td>
<td></td>
<td>• Securities</td>
</tr>
<tr>
<td>• Development capital companies</td>
<td>• Private development banks</td>
<td></td>
<td>• MMF shares/units</td>
</tr>
<tr>
<td>• Other entities</td>
<td>• Other entities</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Venture capital corporations | | | |

<table>
<thead>
<tr>
<th>Features</th>
<th>Entity based (narrower entity set)</th>
<th>Entity based (broader entity set)</th>
<th>Entity and activity based</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Entity breakdown not always available</td>
<td>Broad and narrow measures</td>
<td>Broad and narrow measures</td>
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<tr>
<td></td>
<td>Balance sheet breakdowns available</td>
<td>No balance sheet breakdowns</td>
<td>No balance sheet breakdowns</td>
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<tr>
<td></td>
<td>Somewhat more country specific</td>
<td>More cross-country consistency</td>
<td>Somewhat country specific</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not publicly available</td>
<td>Relates to financial fragility literature</td>
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<tr>
<td></td>
<td></td>
<td>Data more subject to valuation effects (due to importance of investment funds)</td>
<td>Captures shadowy banking activities</td>
</tr>
</tbody>
</table>

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.

Notes: CAGR = Compound annual growth rate
Example: debt securities by financial corporations nearly doubled relative to GDP over a decade.

Notes: Growth of debt securities market for a fixed sample of 17 countries for which reporting begins in 1991.

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

International debt securities\(^2\)

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

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

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

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 officially 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 GSIFIs common data template

- **Risk data aggregation and reporting principles**

- **Data collections**

- **Codes and standards**

- **Enhancing disclosure**

- **Regulatory requirements on IT and data governance**

- **Policies on data quality**

- **LEI**
- **UPI**
- **UTI**
- **Definitions and metadata**

Enhancing disclosure
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](http://www.newyorkfed.org/IBRN/index.html)
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

2010
Conceptual work

2011
Project Definition

2012
Development and consultation

2013
Phase 1

2014
Guidelines Ph. 2 + QIA Ph. 3

2015
Phase 2

2016
Phase 3

≥ 1 yr after final guidelines

2010

• Top 50 bilateral exposures
• Individual aggregated CBS
• Access to home country supervisors

2011

• Top 20 + 20 funding sources
• Access to home macro-prudential authorities

2012

• Granular I–A balance sheets
• Access to international financial institutions