USES OF MIRROR DATA
examples from the
BIS International Banking Statistics
and other external statistics

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THE 2 MAIN QUESTIONS: WHY?

**WHY MIRROR DATA?**

- **Mirror data**: different sources that capture similar concepts
- **Mirror data** are **important statistical tools** that allows common data items to be validated across statistical domains. Promotes **consistency** and **accuracy**, raise **statistical quality standards**

**WHY THIS PAPER?**

- Existence of **common data elements**: BIS International Banking Statistics (BIS IBS), International Investment Position (IIP) and other external sources (IMF CPIS, BIS IDS)
- Validity of **mirror relationship** at a country aggregated data level [consistency tests]
- Possible **reasons for differences** between pair of mirror data [fill gaps?]

**Background:** This topic was discussed in Biennial meeting of central bank experts (2017) on BIS international banking and financial statistics (Swapan with a colleague from Bank of Canada explored the issues). Agreed to jointly explore further, develop methodological framework and provide guidance
CONSISTENCY TESTS

**LD1**

**INTERBANK CLAIMS** and **INTERBANK LIABILITIES** comparison for **LOANS** and **DEPOSITS** based on **BIS LOCATIONAL BANKING STATISTICS BY RESIDENCE (LBS\R)**

\[
\text{Interbank claims (liabilities)}_{i:j}^{LBS\ R} \approx \text{Interbank liabilities(claims)}_{j:i}^{LBS\ R}
\]

"i" is the reporting country and "j" the counterparty (reporting) country

This comparison is only possible among LBS reporting countries. We use reported bilateral positions and aggregate to overall positions.

For a give reporting country **i**, the **net interbank claims/liabilities** are defined by:

\[
\text{Net interbank claims} = \sum_{j=1}^{x} \text{Claims}_{i}^{j} - \sum_{j=1}^{x} \text{Liabilities}_{i}^{j} \quad \text{and} \quad \text{Net interbank liabilities} = \sum_{j=1}^{x} \text{Liabilities}_{i}^{j} - \sum_{j=1}^{x} \text{Claims}_{i}^{j}
\]
Between 2011 and 2017 the size of net claims differences, at the level of all reporting countries, fell from -2.2% to -1.5% of the stock of net interbank claims.

POSSIBLE REASONS TO THE DIFFERENCES

- Coverage CB’s positions
- Definition of bank sector
- Instrument breakdown
- Valuation
- Banking laws
- Legal/confidentiality restrictions
- Different reporting practises
CONSISTENCY TESTS

DOMESTIC CLAIMS in ALL CURRENCIES, LOCAL CLAIMS in ALL CURRENCY and LOCAL LIABILITIES in LOCAL CURRENCY vis-à-vis residents of the respective reporting countries between Consolidated Banking Statistics by Immediate Counterparty Basis (CBS\IC) and Locational Banking Statistics by Nationality (LBS\N)

\[ LBS\N \text{ claims}_{i}^{\text{Domestic All excl.intragroup}} \approx CBS\IC \text{ claims}_{i}^{\text{DomesticAll}} \]

\[ LBS\N \text{ claims}_{i}^{\text{Local in all currencies excl.intragroup}} \approx CBS\IC \text{ claims}_{i}^{\text{Local in all currencies}} \]

\[ LBS\N \text{ liabilities}_{i}^{\text{Local in local currency excl.intragroup}} \approx CBS\IC \text{ liabilities}_{i}^{\text{Local in local currency}} \]

POSSIBLE REASONS TO THE DIFFERENCES

- Coverage
- Different geographical coverage (CBS\IC vs LBS\N)
- Different scope of consolidation (CBS\IC vs LBS\N)
- Reporting issues
CONSISTENCY TESTS

**LD3** | **LOANS** and **DEPOSITS** comparison between BIS Locational Banking Statistics by Residency (LBS\R) and IMF International Investment Position (IIP)

\[
LBS\R \text{ assets}^{Loans \ and \ deposits}_i \approx IIP \text{ assets}^{Loans \ and \ deposits}_i
\]

\[
LBS\R \text{ liabilities}^{Loans \ and \ deposits}_i \approx IIP \text{ liabilities}^{Loans \ and \ deposits}_i
\]

**POSSIBLE REASONS TO THE DIFFERENCES**

- Geographical breakdown on interest owned not yet paid
- Reporting population may be different
- Inclusion of inter-office positions – equity and retained earnings in the LBS/R loans and deposits
- Exclusion of repo transactions in the IMF IIP and the inclusion of covered bonds in the LBS/R (Liabilities) ==> country specific reason
**CONSISTENCY TESTS**

**DS1 CROSS-BOARDER DEBT SECURITIES CLAIMS** comparison between BIS Locational Banking Statistics by Residency (LBS\R) and IMF International Investment Position (IIP)

\[
LBS\text{\textbackslash}R \text{assets}_i^{Cross-border debt securities} \approx IIP \text{assets}_i^{Debt securities}
\]

- Possble reasons to the differences:
  - Coverage sources
  - Definition treatment of instruments
CONSISTENCY TESTS

CROSS-BORDER DEBT SECURITIES LIABILITIES comparison between BIS Locational Banking Statistics by Residency (LBS\R) and the IMF Coordinated Portfolio Investment Survey (CPIS)

\[ LBS\R \text{ liabilities}_{i,j}^{cross-border debt securities} > CPIS \text{ liabilities}_{i,j}^{derived debt securities} \]

CROSS-BORDER DEBT SECURITIES LIABILITIES OF BANKS BY ISSUING COUNTRY
Amount outstanding; in billions of US dollars

POSSIBLE REASONS TO THE DIFFERENCES
- Frequency vintages
- Reporting population
- Practical issues in knowing residency of holder of liabilities (LBS\R)
- Different sources
- Different valuation
CONSISTENCY TESTS

INTERNATIONAL DEBT SECURITIES LIABILITIES comparison between BIS Locational Banking Statistics by Residency (LBS\R) and the International Debt Securities (IDS)

\[ \text{LBS}\text{\textbackslash R liabilities}_i^{\text{international debt securities}} \approx \text{International liabilities}_i^{\text{debt securities}} \]

INTERNATIONAL DEBT SECURITIES LIABILITIES OF BANKS IN LBS\R REPORTING COUNTRIES BY ISSUER REGION in billions of US dollars

POSSIBLE REASONS TO THE DIFFERENCES

- Concepts
- Definition
- Sources
- Practical issues in knowing residency of holder of liabilities (LBS\R)
**WHY SHOULD WE USE MIRROR DATA?**

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<td><strong>1</strong></td>
<td>Improve quality, better estimates and fill-in data gaps (need granular level details)</td>
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<td><strong>2</strong></td>
<td>Data availability in multiple sources albeit with reporting differences</td>
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<td><strong>3</strong></td>
<td>Our approach offers tools and consistency tests to validate data quality/reconciliation amongst countries, different datasets aiming to complement statistical analysis</td>
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<td><strong>4</strong></td>
<td>Similarities and differences between different data domains, once explored and explained would help data analysts to a better understand of correctly use statistical data</td>
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<td><strong>5</strong></td>
<td>BIS, IMF and other international institutions should play an active role in implementing consistency tests to permit comparable analyses and help countries to improve statistical data</td>
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USES OF MIRROR DATA
Examples from the BIS international banking statistics and other external statistics

QUESTIONS?

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