USES OF MIRROR DATA

examples from the BIS International Banking Statistics and other external statistics

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BANCO DE PORTUGAL
EUROSYSTEM

BANK FOR INTERNATIONAL SETTLEMENTS

THE 2 MAIN QUESTIONS: WHY?

WHY MIRROR DATA?

- **Mirror data:** different sources that capture similar concepts
- **Mirror data** are **important statistical tools** that 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)**

$$Interbank\ claims\ (liabilities)_{i;j}^{LBS\backslash R} \approx Interbank\ liabilities(claims)_{j;i}^{LBS\backslash R}$$

"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.

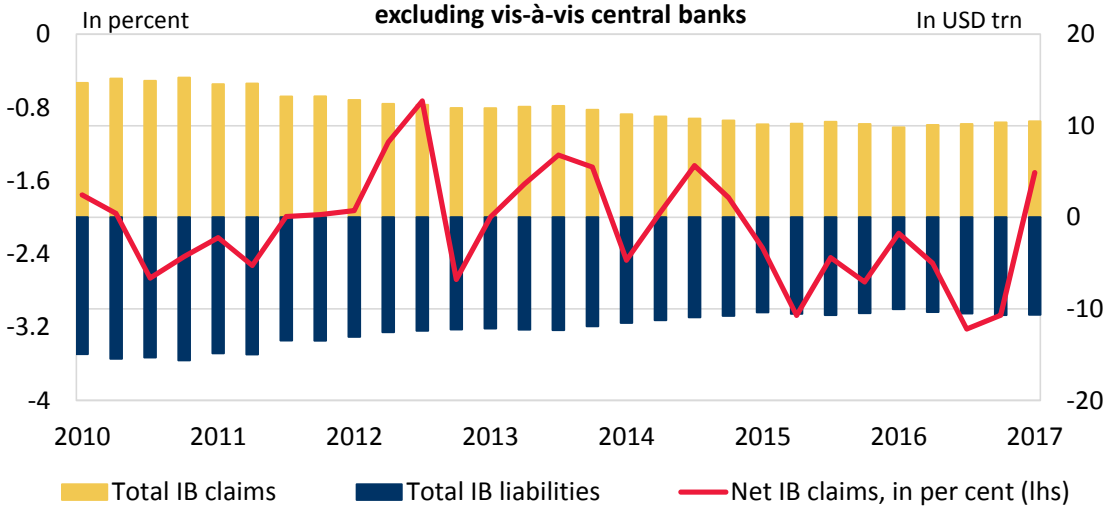
For a give reporting **country *i*,** the **net interbank claims/liabilities** are defined by**:**

$$Net\ interbank\ claims = \sum_{\substack{j=1 \\ i \neq j}}^{x} Claims_i^j - \sum_{\substack{j=1 \\ i \neq j}}^{x} Liabilities_j^i \quad \text{and} \quad Net\ interbank\ liabilities = \sum_{\substack{j=1 \\ i \neq j}}^{x} Liabilities_i^j - \sum_{\substack{j=1 \\ i \neq j}}^{x} Claims_j^i$$

CONSISTENCY TESTS

LD1

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



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

LD2

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)**

$$LBS\backslash N\ claims_i^{Domestic\ All\ excl.intragroup} \approx CBS\backslash \mathrm{IC} claims_i^{DomesticAll}$$

$$LBS\backslash N\ claims_i^{Local\ in\ all\ currencies\ excl.intragrop} \approx CBS\backslash IC\ claims_i^{Local\ \ in\ all\ currencies}$$

$$LBS\backslash N\ liabilities_i^{Local\ in\ local\ currency\ excl.intragroup} \approx CBS\backslash \mathrm{IC}\ liabilities_i^{Local\ in\ local\ currency}$$

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)**

$$LBS\backslash R\ assets_i^{Loans\ and\ deposits} \approx IIP\ assets_i^{Loans\ and\ deposits}$$

$$LBS\backslash R\ liabilities_i^{Loans\ and\ deposits} \approx IIP\ liabilities_i^{Loans\ and\ deposits}$$

POSSIBLE REASONS TO THE DIFFERENCES

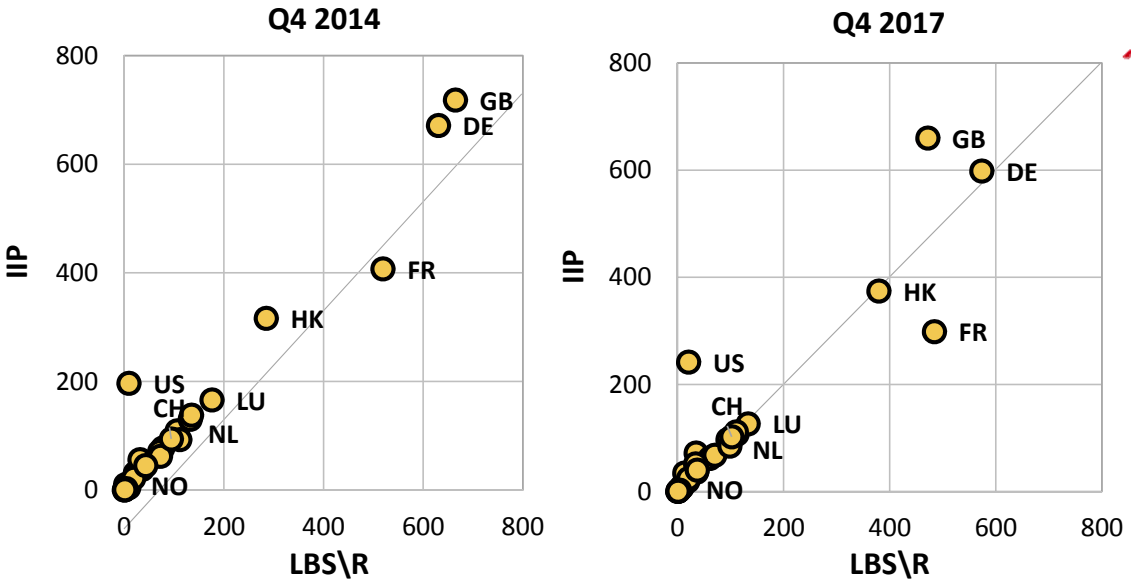
- Geographical breakdown on interest owned not yet paid
- Reporting population may be different
- Inclusion of inter-office positions – equity and retained earnings in the LBS/R loans and deposits
- Exclusion of repo transactions in the IMF IIP and the inclusion of covered bonds in the LBS/R (Liabilities)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

$$LBS\backslash R\ assets_i^{Cross-border\ debt\ securities} \approx IIP\ assets_i^{Debt\ securities}$$



POSSIBLE REASONS TO THE DIFFERENCES

- Coverage sources
- Definition treatment of instruments

CONSISTENCY TESTS

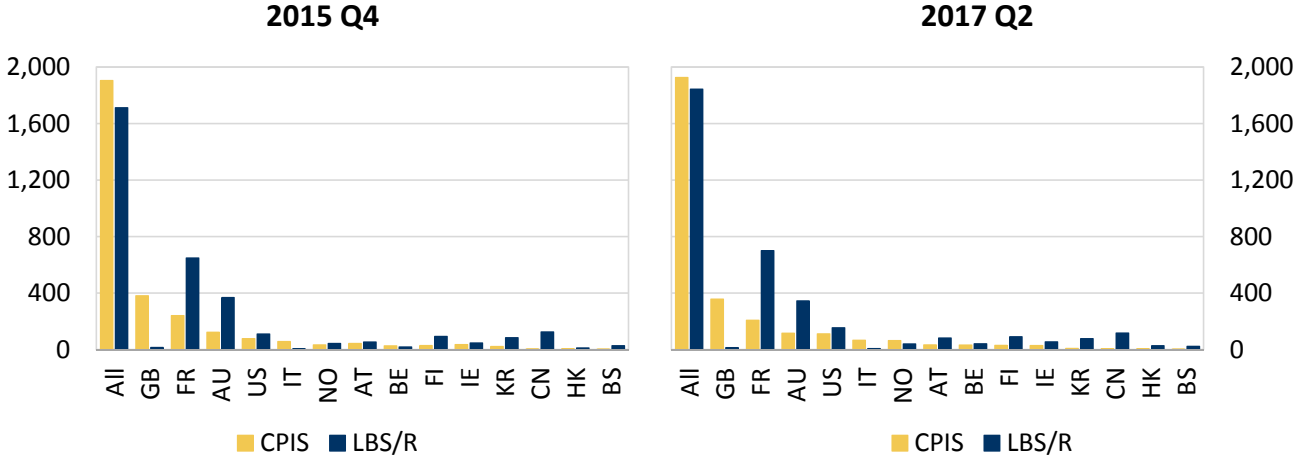
DS2

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

$$LBS\backslash R\ liabilities_{i,j}^{Cross-border\ debt\ securities} > CPIS\ liabilities_{i;j}^{Derived\ debt\ securities}$$

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

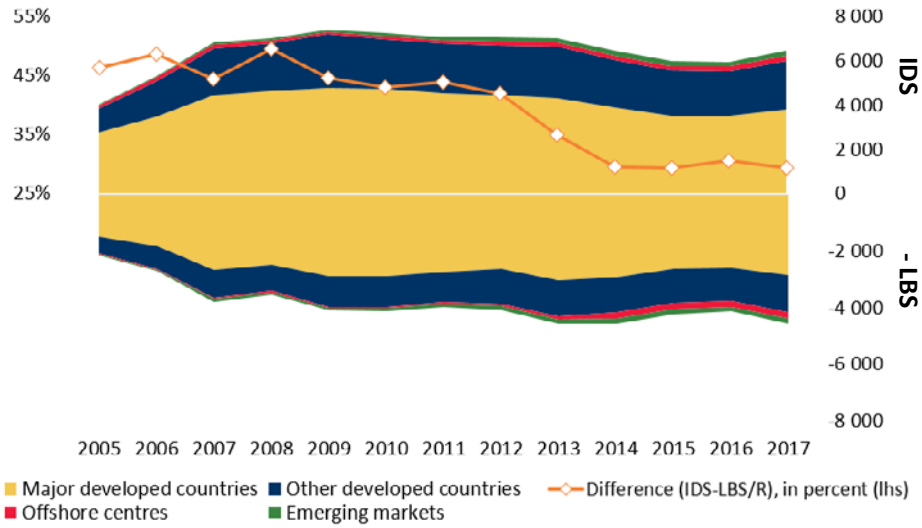
DS3

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

$$LBS\backslash R\ liabilities_i^{international\ debt\ securities} \approx International\ liabilities_i^{debt\ securities}$$

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)

THE ANSWER …

WHY SHOULD WE USE MIRROR DATA?

1

Improve quality, **better estimates** and **fill-in data gaps** (need granular level details)

2

Data availability in **multiple sources** albeit with **reporting differences**

3

Our approach offers tools and consistency tests to **validate data quality/reconciliation** amongst countries, different datasets aiming to complement statistical analysis

4

Similarities and **differences** between different **data domains**, once explored and explained would help data analysts to a better **understand** of **correctly** use **statistical data**

5

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

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Examples from the BIS international banking statistics and other external statistics

QUESTIONS?

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