



Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

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Compiling external sector statistics: challenges and opportunities¹

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¹ This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.



BANK FOR INTERNATIONAL SETTLEMENTS

Compiling external sector statistics: challenges and opportunities

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Introduction

- In the compilation and analysis of external sector statistics; central banks face three important developments :
 - “Micro-data revolution” – to strengthen and complement Macro statistical framework (Tissot, 2016);
 - Big data and their relevance to Central Banks (IFC 2016);
 - New patterns of financial integration, statistics need to deal with the evolution of globalised financial markets (BOP, IIP...but also national accounts) (Avdjiev et al. 2018).



Outline

1. Sources for compilation of external statistics: traditional vs new datasets
2. Data quality and the challenges of globalisation
3. New data sources and techniques
4. International initiatives: the response of the statistical community
5. Conclusions



Compilation of External Statistics : Traditional vs New sources of data

Traditional datasets are still pre-dominant:

- Administrative datasets/Registries:
 - International Merchandise Trade Statistics/Customs data: Customs documents sent to the national statistical office where staff process the documents and compile data.
 - International Transaction Reporting Systems (ITRS): transactions vis-à-vis residents, reported by counterparties (originally, were elements of foreign exchange controls)
 - Other: external public debt, taxation, foreign investment applications.
- Surveys: are used to complement administrative data.



Compilation of External Statistics : Traditional versus New Datasets

- Some drawbacks of traditional datasets:
 - **Costly**: ad-hoc registers to collect certain information (ie custom data)
 - **Not flexible**: lack of identifiers/legal aspects/technical problems prevented data sharing and combination
 - **Inconsistencies (and reconciliation)**: datasets are not always consistent and need to be statisticians need to take decisions to reconcile them.
 - **Data gaps**: despite the effort, there are data gaps; the evolving nature of globalisation can create additional gaps



Compilation of External Statistics : New Datasets

- **Micro data** : to access granular information covering cross-broader activities;
- **New (reuse) administrative datasets**: to reuse datasets designed for a given purpose for other needs; for instance, regulatory data is used for statistical purposes (credit registers; US regulatory data);
- **Big data techniques**: combining structured and unstructured data to complement traditional external sector data;
- **Private data providers**: Reuters, Bloomberg, provide very good data that it is used every data by market participants to invest. It can be helpful, in particular, to monitor big corporations.
- **Data sharing**: data can be better harnessed and combined in different ways; common identifiers allow exchanging information (eventually, across countries).



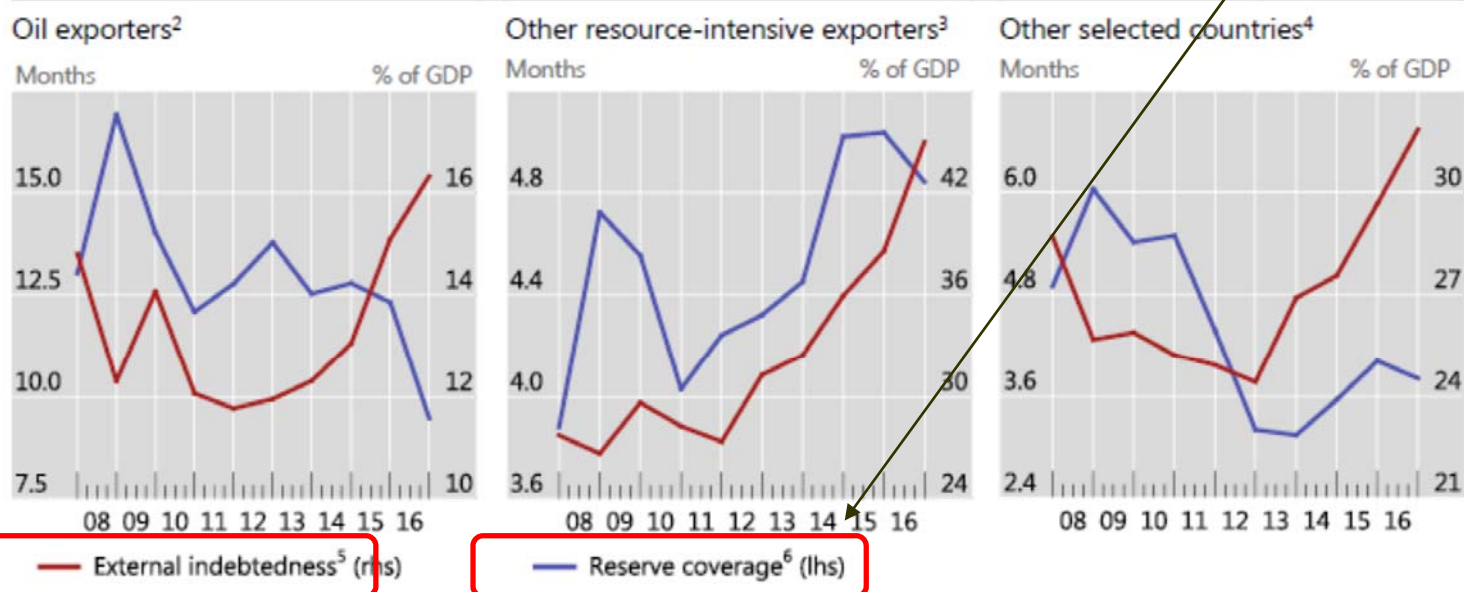
Data Quality and the challenges of globalisation: Problems of residence level data

External debt of resident entities is not necessarily the right measure; important to focus on debt on a consolidated level

Reserves are central bank foreign currency assets- which institutional sectors have the debt?

Rising external indebtedness and worsening reserve coverage¹

Graph 3



¹ Weighted averages across listed countries based on rolling GDP and PPP exchange rates. ² Algeria, Angola, Cameroon, Chad, Republic of Congo, Equatorial Guinea, Gabon, Nigeria and Sudan. ³ Resource-intensive non-oil exporters: Botswana, Burkina Faso, Central African Republic, Democratic Republic of the Congo, Ghana, Guinea, Liberia, Mali, Namibia, Niger, Sierra Leone, South Africa, Tanzania and Zambia. ⁴ Other 27 economies. ⁵ Total external debt in percent of GDP. ⁶ Calculated as reserves in months of next year's imports.

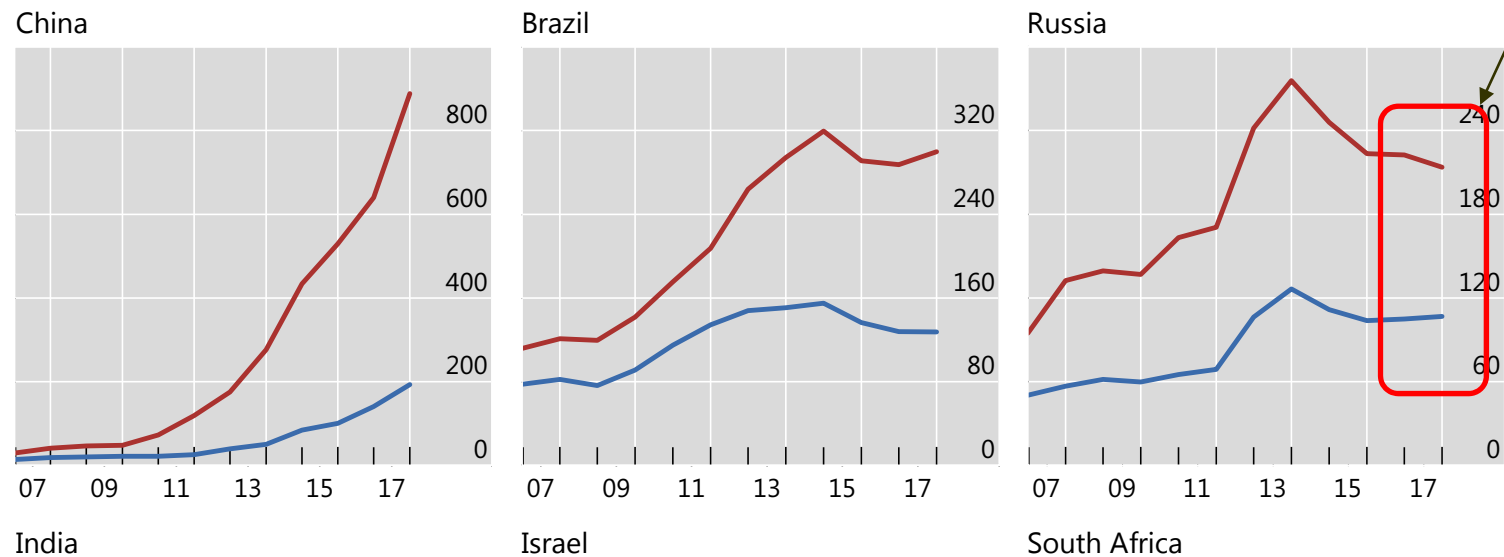
Sources: IMF, *World Economic Outlook*, April 2017; BIS calculations.



Data quality and measurement : BIS nationality based debt security liabilities

International debt securities¹ amounts outstanding

National vs resident issuers², in billions of US dollar, at the end of year



Measures diverge because firms issue bonds using offshore affiliates

¹ All issuers and all maturities. ² Nationality basis refers to issuers with headquarters in the selected countries. Residence basis refers to issuers resident in the selected countries.

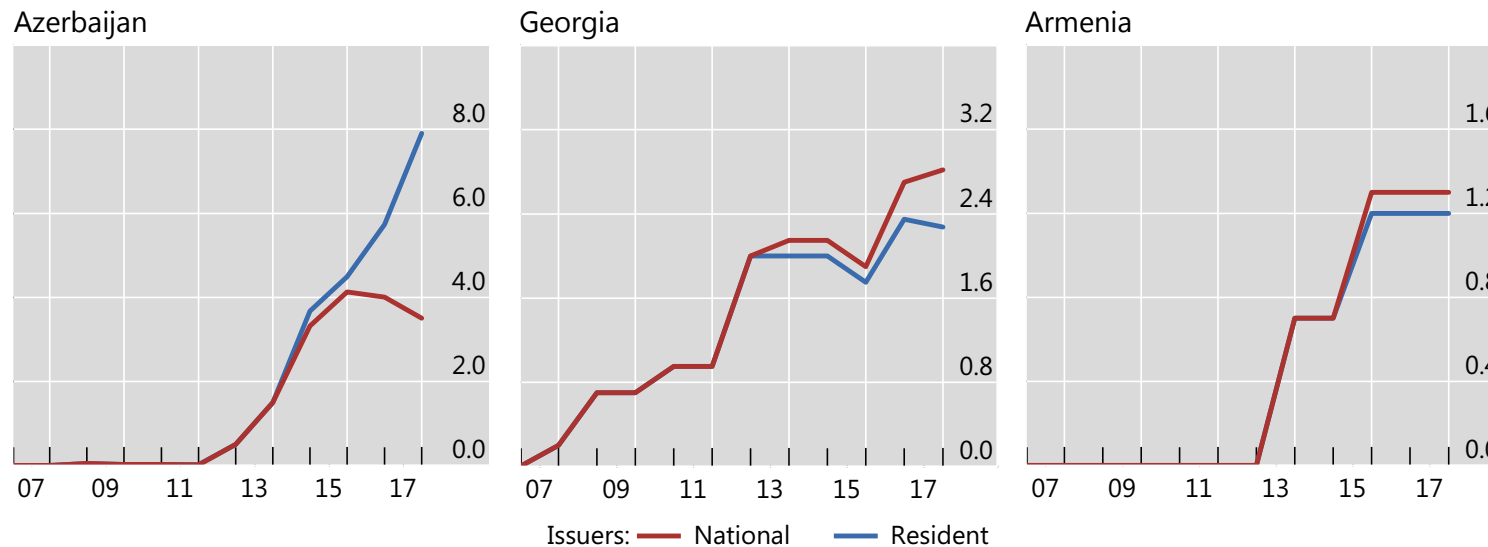
Sources: Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; BIS calculations.



Data Quality and measurement: BIS nationality based debt security liabilities

International debt securities¹ amounts outstanding

National vs resident issuers², in billions of US dollar, at the end of year



Not an issue in Armenia, or neighbor countries (at least to date)

¹ All issuers and all maturities. ² Nationality basis refers to issuers with headquarters in the selected countries. Residence basis refers to issuers resident in the selected countries.

Sources: Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; BIS calculations.



New data sources– Uses of Micro level data

- Micro data offers new opportunities to support macroeconomic analysis and policy decisions
- In bridging gaps in external sector statistics more granular access to information covering cross-border activities:
 - Shadow banking cannot be easily captured under traditional SNA or prudential reporting frameworks;
 - Cross-border dimensions of derivative reporting also need to be strengthened with granular data;
 - Globalisation of supply chains and value creation creates new challenges as does:
 - Residence versus nationality issues
 - Off-balance sheet exposures –derivative transactions data (trade repositories or direct reporting)



New data sources– Big Data

- **What is the potential of big data?** Big data can benefit macroeconomic and financial statistics and ultimately policymaking through at least three features:
 - By answering new questions and producing new indicators
 - By bridging time lags in the availability of official statistics and supporting the timelier forecasting of existing indicators
 - As an innovative data source in the production of official statistics



New data sources– Big Data

- Central Banks are actively exploring the use of big data and its related processing technologies (IFC 2016)
- Big data is characterized by three Vs, high volume, high velocity and high variety, which also adds a fourth V, veracity, the need to separate information from noise
- Big data is not necessarily big, but very granular and varied;
- Human sourced, machine sourced or business process sourced.
 - Data sources (human/households): social media, Internet search/web scraping, travel, tourism;
 - Data sources (business): official, private, e-commerce, credit cards
 - Data Sources (machine): mobile phone and GPS tracking



Big Data technologies in External Sector Statistics

- Ability to combine structured, semi-structured and unstructured information as innovation in official statistics;
- Opportunities to extract economic signals and leading sentiment indicators on a real-time basis;
- Using machine learning and AI techniques to gauge, refine and simulate indicators to predict trends and refine policy signals:
- Some applications:
 - Global financial flows monitoring: using SWIFT message traffic to monitor flow volumes; currency composition and ExIM indicators;
 - Internet based analysis of cross-border e-Commerce trades and tourist flows;
 - real estate price and volume data to estimate FDI flows in real estate sector



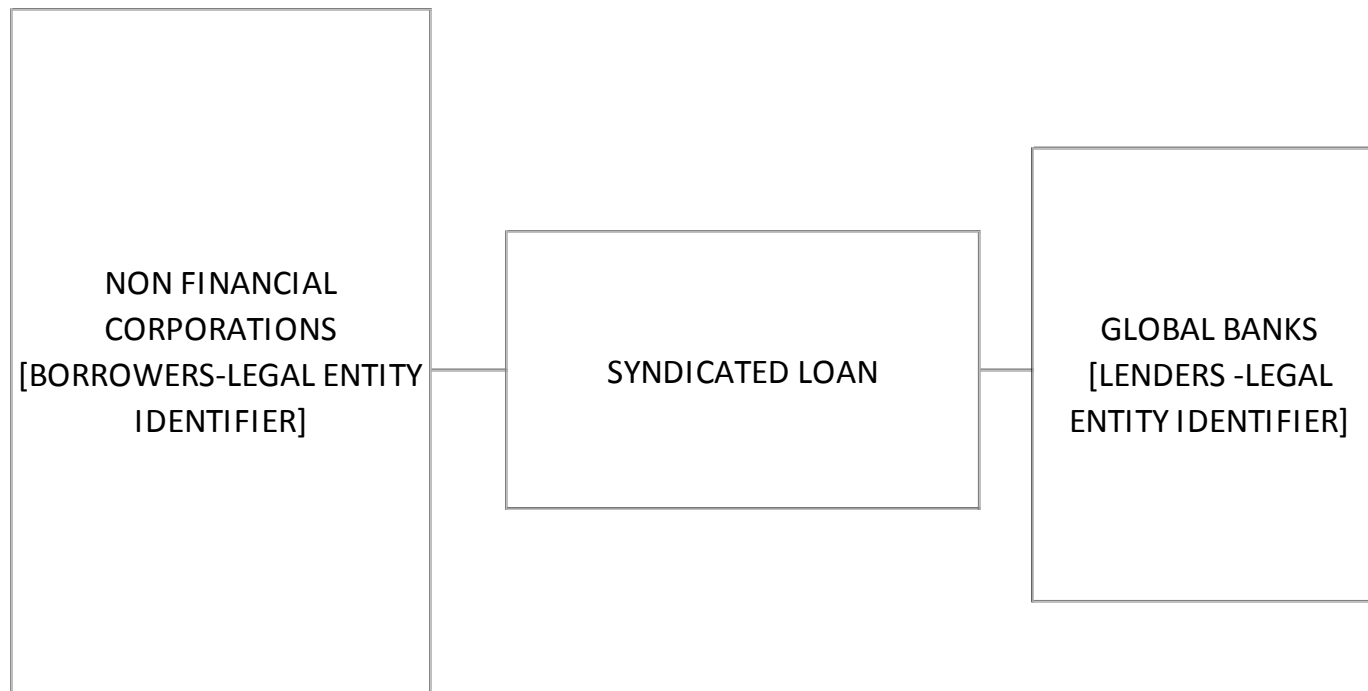
Progress on Data Gaps Initiatives (DGI 2) - external sector statistics

- **II.10. International Investment Position**
 - Provide quarterly IIP data including currency breakdown and OFCs
- **II.11. International Banking Statistics**
 - Fully implement the agreed IBS enhancements
- **II.12. Coordinated Portfolio Investment Survey**
 - Reporting of semi-annual CPIS data including sector of holder
- **II.13. Coordinated Direct Investment Survey**
 - Reporting inward and outward data split by equity and debt
- **II.14. Cross-border Exposures of Non-bank Corporations**
 - Provision of IBS and Securities data separately identifying the non-financial corporations sector
 - Reporting of the Standardized Report Form 4SR



DATA GAPS INITIATIVE: LEGAL ENTITY IDENTIFIER and GLOBAL INTERCONNECTEDNESS

- LEIs can help to define interlinkages between institutions, through asset and liability-side exposures to securities: **An example is monitoring large exposures through syndicated loans.**



LEGAL ENTITIIY IDENTIFIER (LEI) and BUSINESS ID

- It is possible to link LEIs to other identifiers (ISIN, CUSI, SEDOL, ticker); importance of linking LEIs to administrative IDs. There is ongoing work.

Company	CUSIP	ISIN	SEDOL	Legal Entity Identifier	Ticker	Business ID
Zillow Group Inc	98954M200	US98954M2008	BYXJF62	.	Z	
ZAGG Inc	98884U108	US98884U1088	B1BYGH6	.	ZAGG	
Zayo Group Holdings Inc	98919V105	US98919V1052	BRJ3H07	.	ZAYO	
Zimmer Biomet Holdings Inc	98956P102	US98956P1021	2783815	2P2YLDVPES3BXQ1FRB91	ZBH	
Zebra Technologies Corp	989207105	US9892071054	2989356	PO0I32GKZ3HZMMDPZZ08	ZBRA	
Zendesk Inc	98936J101	US98936J1016	BMH0MR7	549300SLI6BN94BKKO36	ZEN	
Zillow Group Inc	98954M101	US98954M1018	BVYJBR3	.	ZG	
Zogenix Inc	98978L204	US98978L2043	BYTJZL1	54930089H3HF4C32SK78	ZGNX	
Zions Bancorp	989701107	US9897011071	2989828	YYQWUR1Z2BCX32HQS333	ZION	
Intrexon Corp	98973P101	US98973P1012	B0HZZ46	.	ZIOP	
Zynga Inc	98986T108	US98986T1088	B79PX49	.	ZNGA	
Zoetis Inc	98978V103	US98978V1035	B95WG16	549300HD9Q1LOC9KLJ48	ZTS	

Additional perspectives

- In some circumstances the old approach, based on the traditional BOP/IIP statistics fail to capture vulnerabilities.
- But there are good datasets able to complement (not supersede) BOP/IIP
- BIS has coordinated efforts to compile the International Banking Statistics; and produces the Debt Securities Statistics
- Importance of data sharing to use “mirror data”;
 - The BIS IBS could be used to complement BOP Statistics;
 - confidentiality constraint may need to be revised to improve data sharing across jurisdictions.



Conclusion

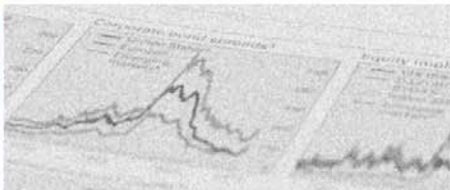
- Measuring external exposures is complex, and to compile external statistics statisticians need to use various inputs (administrative data, and surveys).
- There are challenges, partly as a result of globalization; and also opportunities, due to new datasets and techniques (eg big data).
- Newer techniques are here to stay – innovations are key;
- The statistical community is responding, as shown by the DGI and the datasets compiled as a result.





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THANK YOU FOR YOUR ATTENTION



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