Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

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Micro data: making better use through data sharing[1]

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Micro Data:
Making Better Use through Data Sharing

Keynote Speech

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Irving Fisher Committee on Central Bank Statistics
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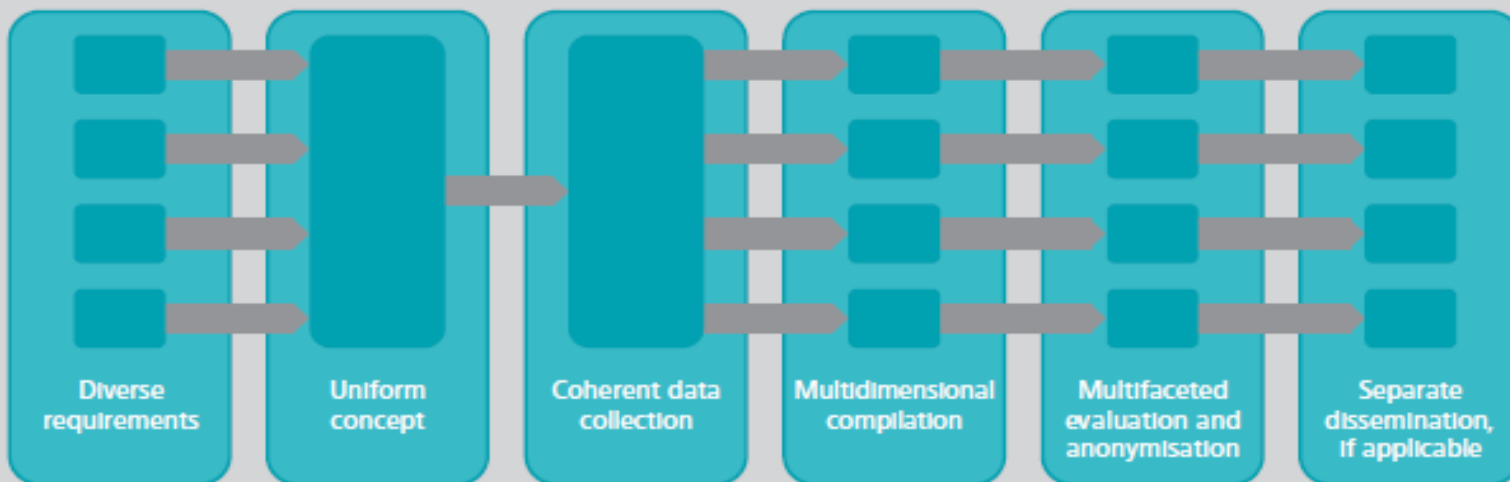
What's new in (central bank) statistics?

- **Micro data overhaul the traditional value-added chain in central banking statistics.**
  - Traditional central banking statistics are collected for a **specific purpose**.
  - Micro data are collected only once and can be used for **multiple purposes**: The statistical reporting burden declines.
  - **Data protection** becomes more challenging.

- **Technological innovations have revolutionized the infrastructure for collecting, storing, and using micro-data.**
  - Improved tools for analyzing and processing micro-data
  - Cheaper storage technologies
  - Standardisation

The statistical value chain

Traditional system

Objective → Planning and conception → Data acquisition → Compilation → Evaluation and anonymisation → Dissemination

Microdataset (new)

Diverse requirements | Uniform concept | Coherent data collection | Multidimensional compilation | Multifaceted evaluation and anonymisation | Separate dissemination, if applicable

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3

What's new in (central bank) statistics?

- **Micro data open up new possibilities for analyzing (financial) markets, and they provide new insights into the effects of policies.**
  - What are channels of transmission of monetary policy across different institutions?
  - What are sectoral and firm-level drivers of productivity?
  - How do risks to financial stability build up?
  - What are causal impacts of regulatory and monetary policies?

- **Micro data can provide significant benefits, but there are also two key obstacles for their enhanced use:**
  - Inadequate **IT infrastructure** both within central banks and private financial institutions
  - Legal and technological obstacles to **data sharing**

Why is data sharing important?

- **Individual datasets provide insufficient information on drivers and effects of changing patterns in the data.**

- **Take the decline in cross-border banking activities as an example.**
  - Which banks have withdrawn from foreign markets?
  - Has the withdrawal been driven by regulation, by macroeconomic factors, or by bank-specific factors?
  - Are these patterns similar across countries?
  - What have been the effects on bank risk and lending?

- **Answering these questions is not possible without combining ("sharing") datasets from different sources:**
  - Bank income statements and balance sheets
  - Reports on external positions
  - International data

Structure of this talk

(1) What are the challenges for sharing micro data?

(2) What can we learn from other areas?

(3) What are the implications for central banking statistics?

What are the challenges for sharing micro data?

Recommendation # II.20 of the G20 Data Gaps Initiative calls for enhanced data sharing.

*The Inter-Agency Group on Economic and Financial Statistics (IAG) and G-20 economies [are called upon] to promote and encourage the **exchange of data and metadata** among and within G-20 economies, and with international agencies, to improve the quality (e.g., **consistency**) of data, and availability for policy use.*

*The G-20 economies are also encouraged to increase the **sharing and accessibility** of granular data, if needed by revisiting existing confidentiality constraints.*

Source: G-20 DGI-2 First Progress Report (2016)

Sharing *aggregate* data has been common practice.

- **Sharing aggregate data is common practice and brings many important benefits.**

  - *International Financial Statistics* (IMF) have been used for important analysis of macroeconomic developments, current account developments etc.

  - *Banking Statistics* (BIS) provide relevant information on global banking and international spillovers.

  - Many other examples (OECD, Eurostat, ESCB, …) could be added.

- **But …**

  - … different **compilation practices** and data definitions can constrain combining and using aggregate statistics.

  - … the financial crisis has highlighted that risks to **financial stability** cannot be monitored based on aggregate data.

Why risks to financial stability cannot be monitored on the basis of aggregate data.

- **Systemic risks** in financial systems arise if distress in one institution (or a group of institutions) threatens the functioning of the entire system:
  - **Direct contagion**: Domino effects due to direct contractual linkages
  - **Indirect contagion**: Informational contagion, fire sale externalities

- ➢ **Monitoring systemic risks requires analyzing distress events, the distribution of risks in the financial system, and linkages between markets and institutions.**

- **Macroprudential instruments internalize systemic risk externalities.**
  - Evaluating the effects of these instruments requires a structured **process of policy evaluation**.
  - The **availability** and flexible use of **granular data** early on is an integral part of this policy process.

Who could benefit from increased data sharing?

- **Many different stakeholders would potentially benefit:**

Report-ing agent	General Public	Central Bank					National or inter-national organisation	Acade-mics	Politics
		Sta-tistics	Banking super-vision	Econo-mic Analysis	Finan-cial Stability	Re-search			

- **Results of the IFC membership questionnaire on sharing of banking data:**
  - Full data sharing between central bank departments takes place in 57% of the cases.
  - Obstacles to data-sharing are legal constraints (31%) and inconsistencies in data requirements (31%)
  - The biggest hurdle to international data sharing are **legal constraints** (74%).

Hence, a large potential for data sharing remains unexploited.

| Demand \ Supply | | | Report-ing agent | General Public | Central Bank | | | | | National or inter-national organi-sation | Acade-mics | Politics |
					Sta-tistics	Banking super-vision	Econo-mic Analysis	Finan-cial Stability	Re-search			
			1	2	3	4	5	6	7	8	9	10
Reporting agent		1			X							
General public		2										
Central Bank	Statistics	3	X									
	Banking super-vision	4										
	Econo-mic An-alysis	5										
	Financial Stability	6										
	Re-search	7										
National and international organisations		8										
Academics		9										
Politics		10										

What can we learn from other areas?

Astronomy:

What is the distance between the sun and the earth?

- **Researchers have thought about the distance between sun and earth since millennia.**
  - Estimates have differed widely, today we know that the distance is **150 million kilometers**.

- **The Earth-Sun distance can be calculated from observations of the Venus transit taken from two places with different longitudes but lying on the same meridian.**

- **In the 18th century, the first collaborative effort of international researchers was started.**
  - 1761 : 130 expeditions from 10 countries
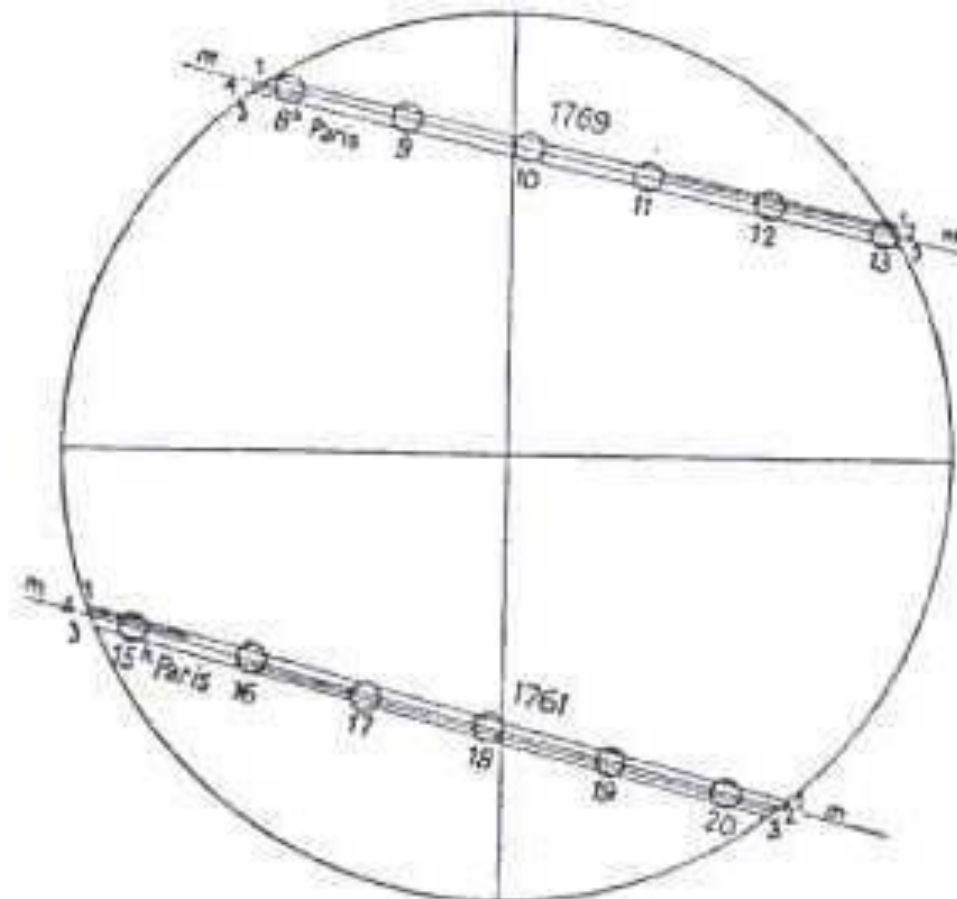 - 1769 : 151 expeditions from 10 countries

Comparing observations on the Venus transit from different locations provides information about the distance between earth and sun.
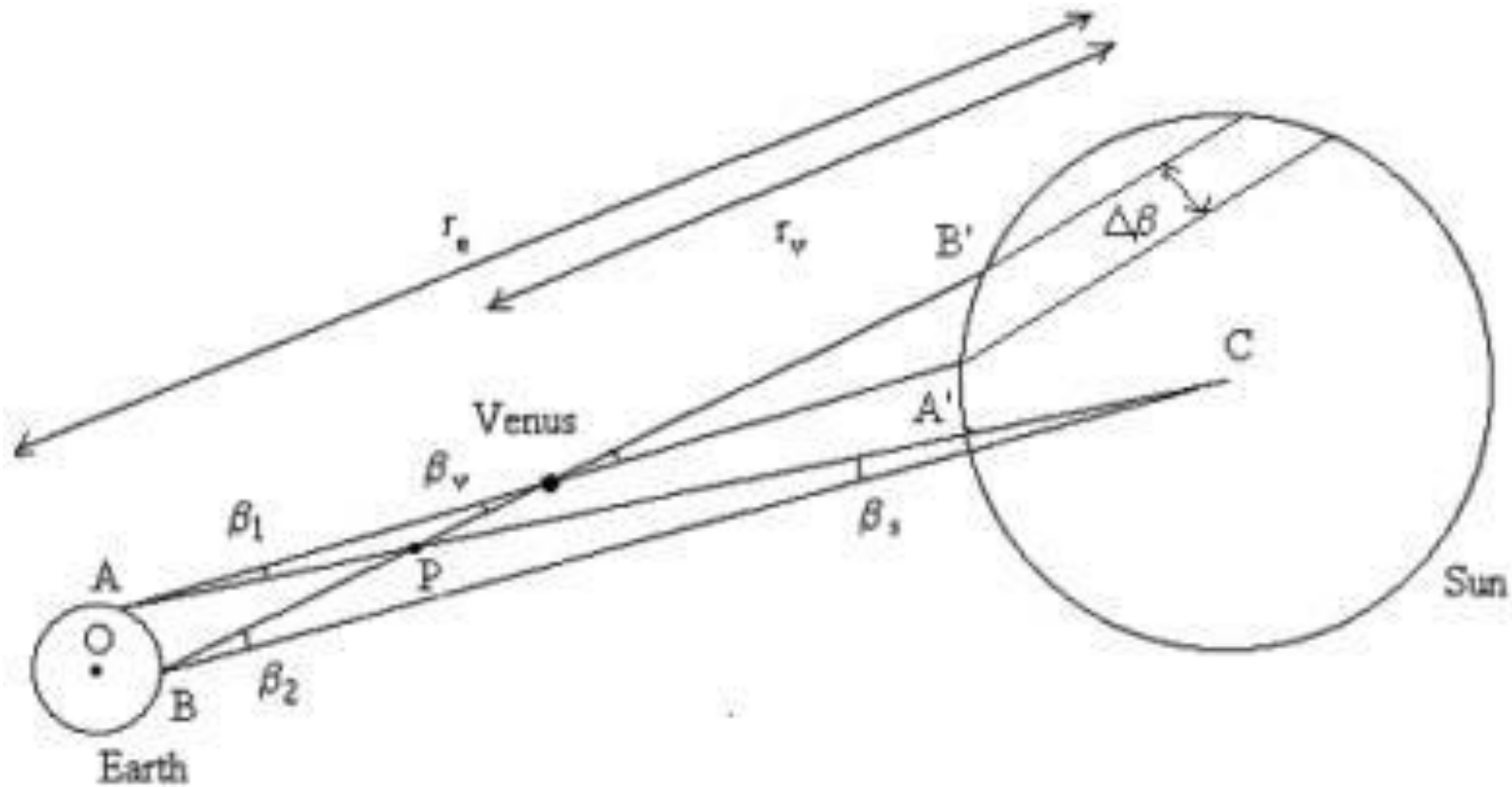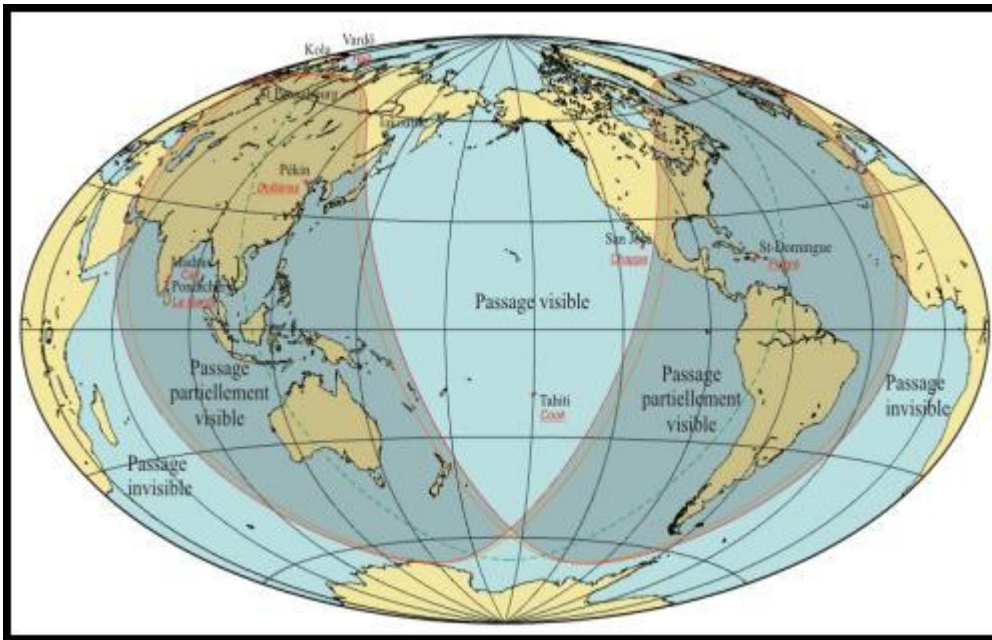

Source: www.eso.org

In 1761 and 1769, more than 100 teams of researchers travelled the globe to collect such data.

Transit of Venus across the solar disc
m=track of the planet by its central point

| 1761: | 1. Rodriguez | 2. Paris | 3. Tobolsk | 4. Tahiti |
| 1769: | 1. Tahiti | 2. Batavia | 3. Vardö | 4. Paris |

Source:
www.eso.org

16

These expeditions encountered many severe obstacles, including the ongoing 7-year war and lack of a global unit of measurement.

Source: www.eso.org

17

Medicine:
What are the effects and side effects of new drugs?

- **Approval of new medical treatments requires prior trials in controlled lab experiments.**

- **Standards involve:**
  - Randomization
  - Parallel groups, placebo-controlled
  - Double- (or triple-) blind designs
  - Approval by ethics committees
  - Data collection by independent contract research organizations
  - Independent data management organizations
  - Involving **several academic research centers in several countries**
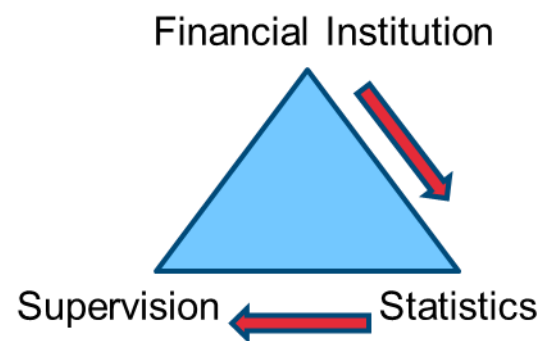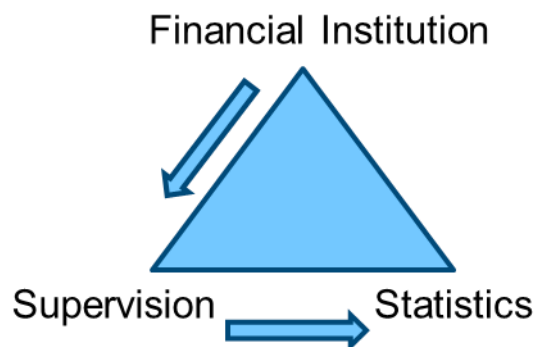
What are the implications for central banking statistics?

Overcoming constraints to data sharing can safe costs and improve analytics.

Demand \ Supply			Report-ing agent	General Public	Central Bank					National or inter-national organi-sation	Acade-mics	Politics
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	Banking super-vision	4			★							
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20

Solution #1:
Sharing of supervisory data

- Use administrative data to compile banking statistics

- But: For supervisors, it may be difficult to deal with queries from statistics to the financial institution.

- Supervisors can use the broad experience of statistics with processing extensive volumes and plausibility check of data.

- But: Supervisory action cannot be taken on the basis of statistical data.

Solution #1:
Sharing of supervisory data
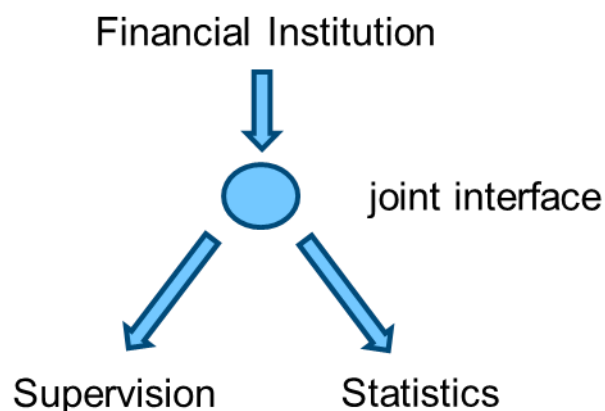
- **Use of a joint interface by statistics and supervisors (and by other users) requires …**

  - … clarifying legal access rights

  - … finding adequate IT solutions

- **Current European initiatives: Banks' Integrated Reporting Dictionary (BIRD), European Reporting Framework (ERF)**

Solution #1:
Sharing of supervisory data

- **Banks' Integrated Reporting Dictionary (BIRD)**
  - Standardized model for integrating banks' internal data warehouses
  - Transformation rules in the reports of banks
  - Voluntary application
  - **Advantages**: Higher data quality, more efficient production of reports, more consistent data, a univocal interpretation, clarity of regulations

- **European Reporting Framework (ERF)**
  - Ensure that data have to be collected only once, using a harmonized procedure for different purposes.
  - Involves reporting requirements of the ECB and of the European Banking Authority (EBA)
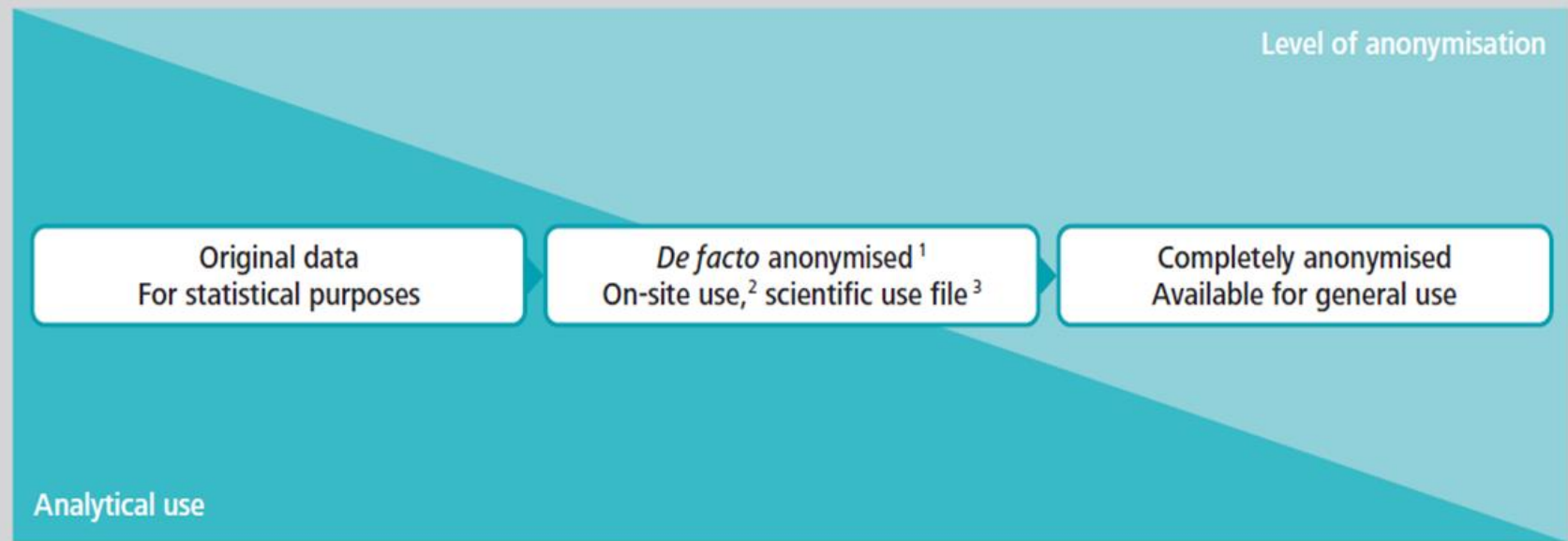
Solution #2:
Sharing of data with external researchers

- **Research data centers can be an effective institutional structure to improve accessibility to (confidential) data.**

- **The Bundesbank's Research and Data and Service Centre (RDSC) aims at better us of existing data – both internally and externally – by overcoming time-, legal, and IT-constraints.**
  - Encourage cooperation with (external) researchers
  - Promote evidence-based policy-making: **Accountability** to the public!
  - Support policymaking processes

- **Key principles:**
  - Data as a public good
  - Democratic data access
  - Data protection

Balancing usability and confidentiality is key.

Analysis potential, data anonymisation and data access

Level of anonymisation

| Original data
For statistical purposes | *De facto* anonymised [1]
On-site use,[2] scientific use file [3] | Completely anonymised
Available for general use |

Analytical use

1 Data access in accordance with section 16 (6) of the Federal Statistics Act (Bundesstatistikgesetz). Microdata may be provided to academic institutions for the purposes of academic research if these data can only be traced to their source with a disproportionately large amount of time, costs and labour (de facto anonymisation). 2 Use only within the Research Data and Service Centre. Results are subject to a mandatory disclosure control. 3 Scientific use files are anonymised in such a way that they may be used on the premises of the academic institution requesting the data.

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Solution #3:
International data sharing

- **Legal constraints are likely to remain a key obstacles to data sharing across countries.**

- ➢ **The International Banking Research Network (IBRN) was established in 2012 to bring together researchers from 25 central banks as well as international organizations (BIS, ECB, IMF) to analyze issues pertaining to international banking: A model for future policy work?**

- **Empirical approach:**
  - Analyze (confidential) bank-level datasets locally, share results only
  - Use common methodology and perform meta-analyses

- **Research topics:**
  - Adjustment of banks to liquidity risk (published: *IMF Economic Review*)
  - Cross-border effects of macroprudential tools (submitted to: *International Journal of Central Banking*)
  - Cross-border effects of (unconventional) monetary policy

The way forward

Why data sharing is important

- **Individual datasets provide insufficient information on drivers and effects of changing patterns in the data.**

- **Improving mechanisms for enhanced data sharing across countries and business areas in central banking (and beyond) is not *l'art pour l'art*.**
  - Statisticians do not always want "more data" but rather high-quality data that can be used for state-of-the-art analytical work in several business areas of central banks.
  - Collecting and processing data needs to be cost efficient.

- **Using existing data efficiently is part of our accountability to the general public.**
  - Regulatory interventions need to be based on solid evidence.
  - Good data are a necessary – not a sufficient condition – for the surveillance and management of risks to the financial system.

Priorities for closing gaps in the micro-data landscape

- **Results of the IFC report on data sharing:**
  1. Communication with stakeholders and institutional endorsement
  2. Ensure a clear legal basis to support data-sharing
  3. Establish fully fledged cooperation at all levels
  4. Collect common data using joint methodological and technical standards
  5. Ensure sound measures to protect confidential information
  6. Formalize governance and cooperation arrangements

- **Key next steps:**
  1. Harmonization of datasets
  2. Alignment of data access
  3. Central information centre on datasets (search engines)

- ➢ **G20 work on this will continue: Workshop in Frankfurt in 2017!**

Further reading

- Buch, C.M., Focus on micro data: Potential benefits for the industry?, speech at the 8th European Central Bank Conference on Statistics, Frankfurt a.M., 6July 2016

- Deutsche Bundesbank, Micro data – paradigm shift in central banks' statistics, Annual Report 2015, Frankfurt a.M., pp 47-59.

- Deutsche Bundesbank, Micro data and macroprudential policy, Financial Stability Review 2015, pp 80-81.

- Heath R., Goksu E.-B., G-20 Data Gaps Initiative II: Meeting the Policy Challenge, IMF Working Paper, WP/16/43.

- Iriving Fisher Committee on Central Bank Statistics, 2012 IFC Survey on Membership Satisfaction and Data Sharing, 2012 Annual Report, pp 23-26.

- Iriving Fisher Committee on Central Bank Statistics, Data-sharing: issues and good practices, Report to BIS Governors prepared by the Task Force on Data Sharing, January 2015.