How do central banks use big data to craft policy?¹

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

- Central banks’ growing interest for Big Data
- Main results of an IFC survey
- Working with Financial Big Data
- Lessons identified during the Workshop
- Looking forward
Central banks’ growing interest for Big Data

- **Private sector** use big data to produce new & timely indicators
- Opportunities for **Central Banks: new type of information**
- Not just the internet: **3 key developments in Financial Big Data**
  - The **internet** of things
  - **Digitalisation**
  - Expansion of **micro financial data-sets** in the aftermath of the Great Financial Crisis of 2007-09
Central banks’ growing interest for Big Data

- Recent IFC survey to **assess experiences and interest**
- **Report** on [www.bis.org/ifc/publ/ifc-report-bigdata.pdf](http://www.bis.org/ifc/publ/ifc-report-bigdata.pdf)
- Big Data concept is **not clearly defined**: different understanding and interest among institutions
- Not so much interest in exploring Big Data in general terms... ... but **focus on issues related to central banks’ mandates**
Main results of an IFC survey

- **Significant interest** in big data within the central banking community, esp. at **senior policy level**

- Yet central banks have **limited experience** in use of big data

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- **Is the topic of big data being formally discussed within your central bank?**
  - Yes, extensively: 1%
  - Yes, somewhat: 12%
  - No: 54%
  - No response: 33%

- **Are you already using big data sources?**
  - Yes: 3%
  - No: 30%
  - No response: 67%
Main results of an IFC survey (2)

- About 60% of the central banks are not ready to start a regular production and analysis of big data.

- Main challenge relates to accessing and processing the data.

How would you rate the readiness of your central bank to start regular production and/or analysis of big data (1: low readiness/not ready to 5: high readiness)?

Challenges of using big data
Main results of an IFC survey (3)

- A vast majority of central banks want to cooperate together

Selected big data pilot projects

- Administrative dataset (e.g., corporate balance sheet data)
- Web search data set (e.g., Google type search info)
- Commercial dataset (e.g., credit card operations)
- Financial market data (e.g., high-frequency trading, bid-offer spreads)
Working with Financial Big Data: 4 main areas

- Web-based indicators
- Commercial data
- BIG DATA
- Administrative records
- Financial market data
Working with Financial Big Data: Exploration

• Key objective for central banks is to **better understand**
  - The new data-sets and related methodologies for their analysis
  - The value added in comparison with “traditional” statistics

• Focus on **pilots**: how big data can help to
  - Better monitor the economic and financial situation
  - Enhance the effectiveness of policy
  - Assess the impact of policy actions

• Possible tasks may well **further expand**
  - Constant creation of new information/research needs
  - Exploring behaviours in a “virtual economy”
Working with Financial Big Data: Opportunities

• **Focus on sources** that can effectively support micro- and macro-economic as well as monetary and financial stability analyses
  - Other big data – eg geospatial information – of lower interest

• **Feedback loop** inherent to policy-making authorities
  - Big data sources can affect policy-making
  - In turn policies implemented can generate new data-sets

• Big data provide **new “business opportunities”** for central banks
  - Qualitative statements to decipher central banks’ communication
  - Large number of big data pools generated by financial regulations
  - In turn, big data can strengthen supervisors’ capacity
Working with Financial Big Data: Challenges

• **Handling big datasets** requires significant resources and proper arrangements for managing the information.

• **Using big data in policy-making** is not without risks:
  - Conveying a false sense of accuracy and precision
  - Undermining effectiveness / reputation / legitimacy of policy
  - Altering decision-making

→ bias towards responding quickly and more frequently to news, encouraging shorter horizons?

→ risk of excessively fine-tuning policy communication based on perceived expectations rather than actual economic developments
Lessons identified during the workshop (1)

1. **Potential use cases have expanded for central banks**, as monetary policy-makers and micro- & macro-prudential authorities.

2. **Authorities need to both have a bird’s eye view of the financial system** and also be able to zoom in depending on circumstances.

3. **Information needs evolve over time**: The building up of fragilities will typically require aggregated statistics to spot “abnormal patterns”; resolution work after a crisis calls for timely & granular data.
Lessons identified during the workshop (2)

4. Decisions on data have become of strategic importance

5. **What matters** is less the way public authorities organize their information management than **the coherence of the process transforming “data” into (useful) “information”**

6. Proper information frameworks needed to enhance the governance of big data-sets collected / used by central banks

7. Important challenges when accessing private information that is a by-product of commercial & administrative activities
Looking forward (1)

• What is still unknown is whether and how far big data will trigger a change in central banks’ “business models”
  ➢ They are **relatively new** in exploiting big data, in contrast to the greater experience gained by statistical offices

  ➢ They have traditionally been **data users rather than producers**, but the situation has changed since the crisis

  ➢ Central banks are **in a key position** to ensure that big data can be transformed in useful information supporting policy
Looking forward (2)

- Big data sources of information **still under evaluation**
  - **Cooperation** (both **internationally** among authorities working on financial stability issues as well as **domestically** among statistical authorities) is the way to go to learn from each other
  - **IFC ongoing collaborative work** to explore the synergies and benefits of using big data for policy purposes
  - Other initiatives to enhance **information sharing** should be promoted