Panel Discussion: Other CBs’ perspective
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The presentation represents the author’s personal opinions and does not necessarily reflect the views of the Deutsche Bundesbank or its staff.
Applications

Machine Learning and Data Science

- Survey by ECB TF on Machine Learning:
  Bundesbank as early adopter among central banks

- Applications by department:
  - Statistics: Automation, record linkage, DQM
  - Payments and Settlement System: Clustering payment profiles
  - Risk Controlling: Identification of counterparties, rating of bonds
  - ...

- Informal and formal exchange and network of data scientists
Examples of Applications (Statistics Department)

Anomaly Detection with Network Embedding

- Data on financial interrelations → Network data
- Deep learning (Autoencoder)
- Use reconstruction error and position (clustering) in lower dimensional space
- Results inspire econometric investigation
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Record Linkage

- Internal and external firm-level data
- Match non-financial firms by company name
- Supervised learning model
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Supervised Learning for Prediction of Reporting Errors (DQM)
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Supervised Learning for Prediction of Reporting Errors (DQM)

- Tomorrow, Session 7 at 09:30
Way Ahead

Opportunities and Challenges

– Opportunities
  
  • Efficiency gains if we use ML for automation
  • Larger toolbox for analyses
  • Data driven perspective on problem solving

– Challenges
  
  • Performance gain contingent on datasets with complex data structure
  • Implementation of new technologies in existing IT landscape
  • Trade-off between openness (open data, open source) and data privacy/security
  • Challenges in two fields of applications:
    • Agnostic: Finding relevant $\hat{y}$ cases
    • Econometric: Causal inference
Way Ahead

Do we need data scientists in the medium (long) run?

- Increasing power/availability of AutoML
- Increasing availability of new (big) data sources
- Rising importance of specialists (as compared to generalist, i.e. data scientist):
  - Technical: Data Engineers
  - Analytical: Economists, experts on financial markets