

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
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- Match non-financial firms by company name
- Supervised learning model

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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

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