Enhancing user knowledge by providing (richer) context to microdata

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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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Based on a project with and contributions from:
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Motivation

Status Quo: One-directional information flow

- Researchers use microdata and metadata to produce outcome (publications)
- No structured knowledge flows back to data producers

Goal: Enable feedback loops

- Make knowledge generated in the research process usable
- Two sources of information to extract:
  1. Automatic: Text mining to find information in research publications
  2. Tacit knowledge: Enable and incentivize data users to feedback information
Knowledge Life Cycle (IDIS-R)II

Collaboration
- Knowledge sharing
- Metadata

Secure workspace
- Services and Tools

Data Stewardship
- Approval
- Monitoring
- Reporting

Rich Context

Publications

Research

User Specific Knowledge

Data Service
How do we do this?

- **Step 1**: Create the set of corpora and usage side metadata (machine learning techniques) - Competition

- **Step 2**: Figure out how you learn from it and automate it (machine learning techniques) – Dataset recommendation engine

- **Step 3**: Engagement – recognize and emphasize patterns (with human curation) – Rinse and repeat
Step 1: competition design

3 Data Description

The data sources used in our study are (i) Auxmoney for data on P2P lending; (ii) the Deutsche Bundesbank (Interest Rates Statistics) for data on bank lending; (iii) Schufa for data on credit ratings; (iv) the Deutsche Bundesbank (Balance Sheet Statistics) for data on loan loss provisions.

Auxmoney is the oldest and largest P2P lending platform in Germany. According to its website, from the day it began business in 2007 until late 2015, the total volume of credit provided was €219 million in 39,000 projects, with an average nominal interest rate of 9.65%.

Auxmoney provided us with two different datasets. The first includes all loans divided by state between January 2010 and September 2014, with no maturity information. The second includes the average interest rate and the average credit rating represented by the Schufa score for each state per month.

The Deutsche Bundesbank statistics used in this study are provided by two different datasets. The first is the Interest Rates Statistics (MIR, see [Bade and Beier (2016)] for further information on this data source), which is a stratified sample of the German banking sector used for supervisory activities and gives the amounts and the interest rates per bank and per month applied to nonconstruction consumer credit lines (outstanding and new business) for different maturities (overdraft, up to one year, and more than one year). The statistics are composed of monthly observations between January 2010 and September 2014. The second is the dataset from the Balance Sheet Statistics (BISTA, see [Beier, Krueger, and Schneider (2016)] for further information on this data source), which gives information on write-ups and write-downs, from which we derive the banks’ loan loss provisions.

Our analysis is at the bank-state level. The regional differentiation of bank loans is possible because of a feature of the German banking system: the presence of Sparkassen (savings banks) and Volksbanken (cooperative banks). Each bank is only present in one German state. Sparkassen are geographically restricted banks with a legal mandate to provide bank services to all creditworthy residents.

Schufa is a German private credit bureau with 473 million records on 66.2 million natural persons. Schufa provides credit ratings for each person requesting a loan and Auxmoney provides the Schufa score for each credit application.

For reasons of data confidentiality, Auxmoney provides its credit intermediation by month and state only if five or more loans were made in that month in that state.

The Interest Rates Statistics (MIR) is the German part of a larger dataset that is used by the ECE for regulatory purposes. It does not cover the whole German banking sector, only a stratified sample. For this reason, our sample does not cover all Sparkassen and Volksbanken in Germany, just the ones present in this data source.

P2P Lenders versus Banks: Cream Skimming or Bottom Fishing?
Step 2: use of user specific knowledge - input
Step 2: use of user specific knowledge

Related to data you've viewed

New data similar to data you've used

What others have done with similar data (recipes)

Recipes like yours

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Thanks to Julia Lane
Interaction with INEXDA’s metadata schema

- Based on the GESIS DOI registration service da|ra (GESIS is cooperating with DataCite):
  
  https://www.da-ra.de/en/home

- Is basis for INEXDA metadata database that was established to store and view metadata from INEXDA members.

- Conclusions:
  
  - Items are helpful for producing meaningful dataset recommendations for researchers (e.g. Temporal Coverage)
  
  - Need to amend schema to include usage metadata generated from project
Amend existing metadata to include information on use

“Classical” metadata

Produce

Dataset-centric metadata

Administrate

Use

Knowledge transfer

Automatization of workflows
Conclusion

WHAT WE DID

▪ Assess feasibility of meaningful dataset recommendations for researchers based on dataset recognition in publications
▪ Design a mechanism enabling automated knowledge flow back from publications
▪ Develop a concept to engage users to contribute knowledge to existing metadata

WHAT’S NEXT

End of Aug 2019  Pilot of dataset recommendation tool
15-16 Nov 2019  Rich Context Workshop hosted by NYU
2020           On-board tool to DSM (if possible)
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