Searching for a needle in a haystack - how SDMX IM can improve searching through economic data

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Exponential growth of the ECB disseminated data since the launch of SDW in 2005 while the core structure and appearance remained static.

User experience is undermined: accessing and searching data in SDW portal feels like search for a needle in a haystack.

Need for new tools aimed to improve the usability of the search engine for users.

How to go from this...

... to this
The new ECB Data Portal

- EDP → **key dissemination channel for ECB statistics** Primary source of **data & metadata** for end users
- Fully designed based on the **SDMX information model (SDMX IM)**
- Access the public SDW via: [https://data.ecb.europa.eu/](https://data.ecb.europa.eu/)
EDP and SDMX IM

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- Defined based on existing data structure definition (that includes dimensions and attributes)
- Uniquely represented by its dimensions that are composing the unique series keys
- Carries additional metadata information through observations, series and sibling level attributes
- Each dimension or attribute have conceptual meaning related to specific economics/statistics phenomenon
- Each coded dimension or attributes are linked to corresponding code lists
Opportunities of a metadata rich environment

The high integration of the data disseminated in the EDP and SDW with the SDMX Information Model can be leveraged in order to make the search engine more effective and user friendly.

ICP data structure definition - ECB_ICP1

Elasticsearch: storing documents in an index

Logstash: used for processing documents e.g. from a database

Kibana: visualization tool for Elasticsearch index
SDW and EDP Intelligent Search

**INPUTS:** internal SDW or EDP Oracle database

**FILTERS:** both built-in both custom analyzers are used by IS, implementing different filters such as English possessive stemmer, English_keywords, Lowercase, Synonyms, English_stop, English_stemmer

**OUTPUTS:** Elasticsearch index

**BOOSTING:** reference series and series included in ECB publications are currently boosted
Searching for an economic concept

Currently the new search engine uses:

- Dimensions meaning
- Attributes meaning
- Metadata on dataset level
- Appearance in publications
- Tagging of the series in our custom build “SDW taxonomy” based on SDW economic concept navigation (SDMX concept scheme)

Features to be included in future releases:

- Learning to rank, usage statistics, improvement of tags
EDP tagging process

Assigning meaningful key word to each disseminated series:

- Helpful for non expert users with no prior knowledge of DSD concepts/codification
- Used to improve the filtering of the search results
- More intuitive use of the search engine

NAVIGATION TAGS:
Assigned to time series based on the navigation hierarchy node (concept scheme SDMX IM) they are attached to

CODELIST TAGS:
Assigned to time series based on a meaningful codelist of the SDMX data structure definition

BUSINESS AREA DEFINED TAGS:
Defined and customized by data producers
Conclusions

Data modelled via the SDMX Information Model can be integrated with novel search technologies to improve the searchability of economic data and metadata.

Thank you for your attention!
Q&A