

# Bringing the "STW Thesaurus for Economics" on to the Web of Linked Data

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### **ZBW and STW Thesaurus for Economics**



- German National Library of Economics (ZBW) / Leibniz Information Centre for Economics is the world's largest economics library
- STW Thesaurus for Economics was developed in the nineties by four economics institutions as "Standard-Thesaurus Wirtschaft", funded by German government, for the purpose of unifying the use of subject headings in economics
- now maintained by ZBW as a controlled vocabulary of about 5,800 terms in German and English

### **Project goals**



- Bring the STW on to the Web
- Support users in subject oriented searches
- Allow easy third party reuse of the data

### Assumptions:

- To publish the STW in a standard format
   not easy no standard or widely agreed upon
   serialization format for thesauri exists; upcoming
   ISO 25964 is still a work in progress.
   SKOS was already in place and looked promising
- To publish it under an open license we chose Creative Commons (by-nc-sa)

### **Conversion to SKOS**



- SKOS proved to be extensible enough to cover even the non-standard features of the STW
- e.g. subclassing of skos:Concept for descriptors and subject categories allowed a unified skos:narrower/skos:broader hierarchy of concepts and the separation for output and for custom integrity checks
- all further work accomplished on a SKOS representation of the thesaurus

- Home
- Alphabetical descriptor list
- A General descriptors
- ▶ B Business economics
- ▶ G Geographic names
- N Related subject areas
- P Commodities
- V Economics
  - V.00 Economics
  - V.01 Economic Theory
  - V.02 Microeconomics
  - V.03 Macroeconomics
  - V.04 Business Cycle, Growth, and Economic Structure
  - V.05 Money and Financial Markets

V.05.01 Monetary Theory

V.05.02 Monetary Policy

V.05.03 Inflation

V.05.04 Interest Rate

V.05.05 Credit

V.05.06 Financial Markets

V.05.06.01 Money Market

V.05.06.02 Securities Markets

V.05.06.03 Forward Market

#### V.05.06 Financial Markets

#### V.05.06 Finanzmärkte (qerman)

#### broader

V.05 Money and Financial Markets

#### narrower

- V.05.06.01 Money Market
- V.05.06.02 Securities Markets
- V.05.06.03 Forward Market
- V.05.06.04 Foreign Exchange Market

#### Descriptors

- Arbitrage
- Arbitrage pricing
- Beta Estimate
- Bid-ask spread
- Bubbles
- Capital asset pricing model
- Commodity exchange
- Credit market
- Effective rate
- Efficient-market hypothesis
- Euromarket
- Exchange 🥏
  - Exchange listing 🥥
- Financial crisis
- Financial derivative

# Financial crisis



### Finanzmarktkrise (german)

used for: Financial instability

#### Narrower Terms

- Banking crisis
- Currency crisis
- Stock market crash



#### Broader Terms

Economic crisis



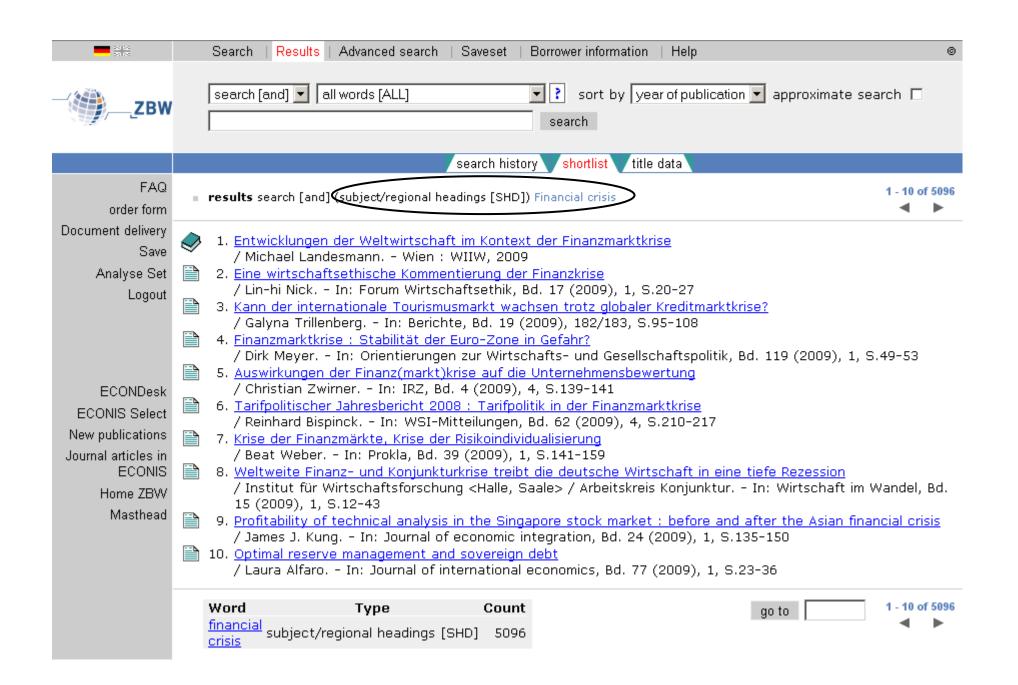
### Related Terms

International financial market



### Subject Categories

- V.05.06 Financial Markets
- V.07.07 International Financial Markets



### STW web services



Experimental services at http://zbw.eu/beta/stw-ws targeted at retrieval support (does not aim to cover the complete SKOS model)

/synomyms

takes any string, returns synonym terms, eg.

http://zbw.eu/beta/stw-ws/synonyms?query=free+trade+zone

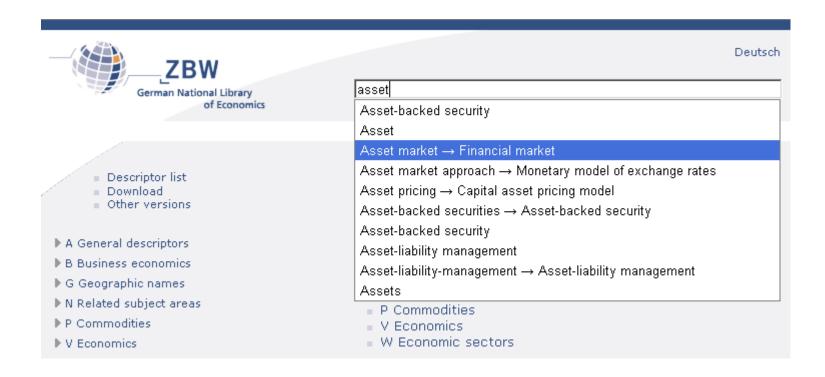
## STW Web Service Query Results

synonym
"Free trade zone" @en
"Foreign trade zone" @en
"Export processing zone" @en
"Foreign-trade zone" @en

# STW web services: /suggest



# /suggest powers STW website



### STW web services: /suggest SPARQL query



```
http://zbw.eu/beta/stw-ws/suggest?query=asset
SELECT DISTINCT ?term ?concept ?prefLabel
WHERE {
    ?concept rdf:type zbwext:Descriptor .
    ?concept skos:prefLabel ?term .
    ?concept skos:prefLabel ?prefLabel
    FILTER (regex(str(?term), \"^$query\", \"i\")) .
    FILTER (langMatches(lang(?prefLabel), \"$lang\")) .
  } UNION {
    ?concept rdf:type zbwext:Descriptor .
    ?concept skos:altLabel ?term .
    ?concept skos:prefLabel ?prefLabel
    FILTER (regex(str(?term), \"^$query\", \"i\")) .
    FILTER (langMatches(lang(?prefLabel), \"$lang\")) .
ORDER BY ?term
LIMIT 10
```

### **Further directions**



- To provide interfaces and widgets to select and aggregate descriptors
  - for retrieval (eg. to provide canned expressions like "financial crisis" OR "banking crisis" OR "stock market crash")
    - to include narrower terms for searches in fields with controlled values
    - to add synonyms for full text searches
  - for indexing (eg. to support authors in tagging their uploaded papers on document servers)
- To create or make use of existing mappings to other vocabularies in economics, e.g. the classification of the "Journal of Economic Literature" (JEL), and put them on to the web
- To enrich other library applications with semantic markup

### **Conclusions**



- SKOSifying and publishing an existing vocabulary as RDF(a) opens it up to the web and can make it useful far beyond the scope of a single organisation
- for the field of economics and its resouces, the STW provides an interlinking hub and an initial entry point into the web of the linked data
- for ZBW and other libraries, it opens up a broad range of more extensive applications, possibly in cooperation with interested people from the linked data community
- well defined technologies and practices made it possible



Thank you!

Questions?

Links:

http://zbw.eu/stw

http://zbw.eu/beta/stw-ws

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