

# The Missing Link – A Vocabulary Mapping Effort in Economics

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# Introduction

## Why do we do vocabulary mappings in general?

- Mappings enable an integrated search in a distributed search environment.
- Mappings translate search terms into the vocabulary of the target KOS.

The screenshot shows the ECONBIZ search interface. At the top, there's a navigation bar with 'Suche', 'Veranstaltungen', 'Merklisten', 'Suchhistorie', and 'Hilfe'. Below this, a breadcrumb trail reads 'Sie sind hier: Home > Erweitert'. The main search area is titled 'Erweiterte Suche' and includes a 'Suchen' button. A 'Suchtipps' box on the right offers 'Hilfe zur erweiterten Suche' and 'Hilfe zu den Suchoperatoren'. The search criteria section includes 'Übereinstimmung:' set to 'Mit ALLEN Wörtern', and three 'Suche nach:' input fields, each with a dropdown menu set to 'Alle Felder'. Below these are links for 'Suchfeld hinzufügen' and 'Suchmenge hinzufügen'. A checkbox for 'nur freie Volltexte' is present. The 'Begrenze auf' section includes 'Sprache:' (a list of languages), 'Format:' (a list of document types), and 'Datenbank:' (a list of databases, which is circled in red). The 'Datenbank:' list includes ArchiDok, BASE, ECONIS (ZBW), EconStor, OLC WiWi, RePEc, USB Köln (BWL-Volltexte), and USB Köln (WiSo). At the bottom, there are fields for 'Treffer pro Seite' (set to 10) and 'Erscheinungsjahr' (Von: Bis:). A 'Suchen' button is at the bottom right. The footer contains logos for ZBW, ZEW, DFG, and vufind.

# Introduction

## For what reason did we at ZBW do mappings in the past?

- ... to offer an integrated search space for our search portal for economics EconBiz,
  - e. g. Integrated Authority File
- ... to link the STW with other vocabularies for the development of semantic web applications.

The screenshot shows the ZBW website interface. The left navigation menu includes links like Home, STW Relaunch, Alphabetical descriptor list, Mappings, versions, **Web Services** (circled in red), Downloads, and About. The main content area displays 'Rural development' with various related terms and subject categories. In the 'Links to other Thesauri and Vocabularies' section, 'Ländliche Entwicklung' is circled in red. The footer contains information about the STW Thesaurus for Economics and its license.

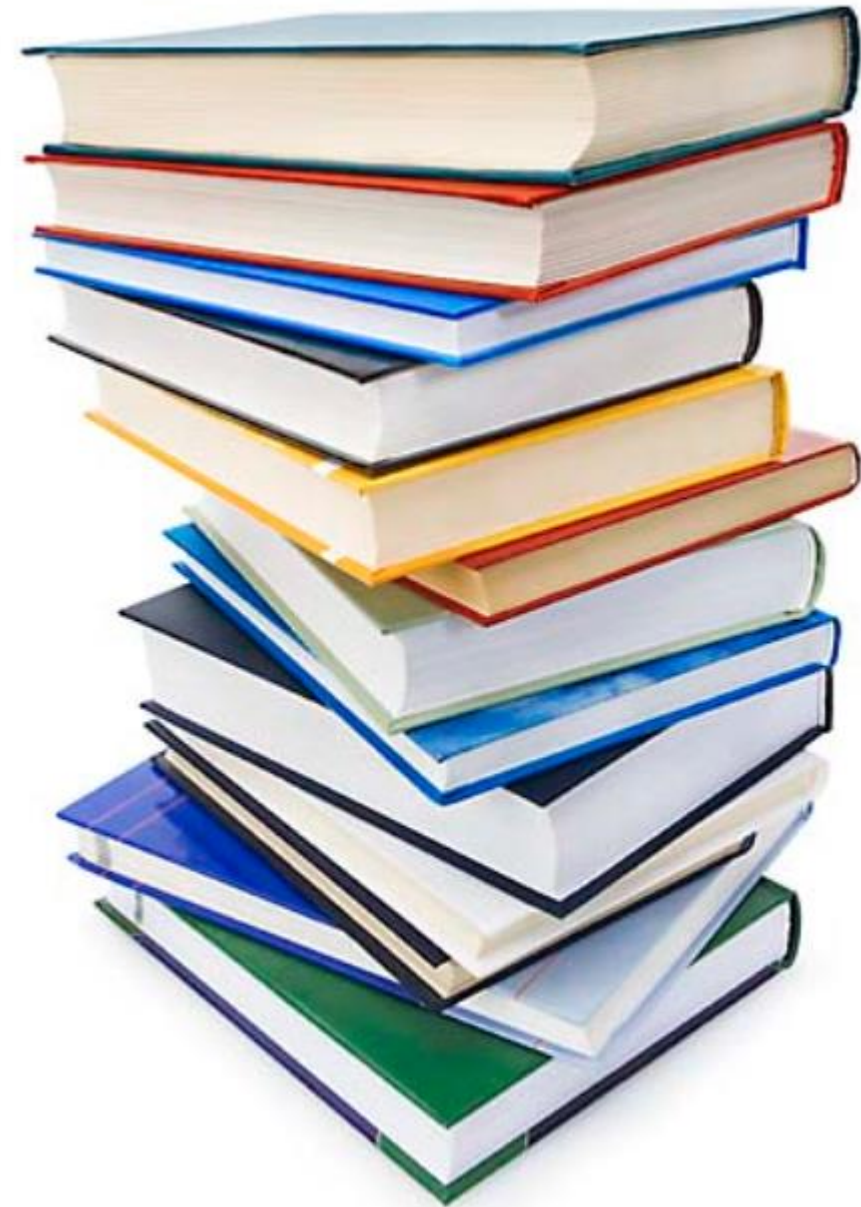
# Introduction

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## What is new about the current mapping effort?

### Context:

- ... increasing numbers of publications and decreasing personnel resources.
  - ... complementary approaches to conventional subject indexing are needed,
  - i. a. reuse of user-generated content.



# Introduction

## Current reuse scenario of user-generated content at ZBW:

Regarding working paper series:

- Verbal subject indexing:  
inclusion of **author keywords** into bibliographic records if available.
- Classificatory subject indexing:  
inclusion of **JEL classes** into bibliographic records if available.

EconBiz A-Z | EconBiz Mobile | Beta | About EconBiz | Thesaurus (STW) | Sitemap | Contact us | Imprint | Privacy | News | English

**ECONBIZ** Find Economic Literature

Search for publications All Fields Search Login

Open Access material only Advanced

Search Events Bookmarks Search History Help

You are here: Home > Search > Escaping the Great Recession > Holdings > FAQ on loan > Access ZBW account > Leave ZBW view

#1 of 38 Next »

**Escaping the Great Recession**  
Francesco Bianchi and Leonardo Melosi

While high uncertainty is an inherent implication of the economy entering the zero lower bound, deflation is not, because agents are likely to be uncertain about the way policymakers will deal with the large stock of debt arising from a severe recession. We draw this conclusion based on a new-Keynes... [Full description](#)

Year of Publication: 2014

Authors: Bianchi, Francesco; Melosi, Leonardo

Publisher: Chicago, Ill. : Federal Reserve Bank of Chicago

Edition: This draft: January 2014

Physical Description: Online-Ressource (44, 6 S.) graph. Darst.

Series: Working papers / Federal Reserve Bank of Chicago ; 2014-17

Language: English

Subjects: Policy uncertainty | macroeconomic uncertainty | Markov-switching models | shock-specific policy rules | zero lower bound

Classification: JEL-E31; JEL-E52; JEL-E62; JEL-E63; JEL-D83

Type of Publication (narrower categories): Arbeitspapier Working Paper Graue Literatur Non-commercial literature

Type of Publication: Book / Working Paper

Notes: Systemvoraussetzungen: Acrobat Reader

Title record from database: ECONIS - Online Catalogue of the ZBW

Availability: Full text More access options

Cite Email Export to ... Bookmark share tweet +1

Holdings Description Report Error

Available at ZBW

Link: <https://www.chicagofed.org/publications/working-papers/2014/wp-17>

Similar items by topic

- Escaping the Great Recession By: Bianchi, Francesco Published: (2014-08-01)
- Escaping the Great Recession By: Bianchi, Francesco Published: (2013-09)
- Escaping the Great Recession By: Bianchi, Francesco Published: (2013)
- More

Similar items by author

- Constrained discretion and central bank transparency By: Bianchi, Francesco Published: (2013)
- Dormant shocks and fiscal virtue By: Bianchi, Francesco Published: (2013)
- Modeling the evolution of expectations and uncertainty in general equilibrium By: Bianchi, Francesco Published: (2012)
- More



# Introduction

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## **Future reuse scenario for a JEL – STW (systematic display) mapping effort:**

- ... building on the fact that economists are usually quite familiar with the JEL classification codes.
- ... animate economists to use STW subject headings in order to provide a more fine-grained content description with a standardized vocabulary.

STW –  
Thesaurus for Economics  
(subject category system)



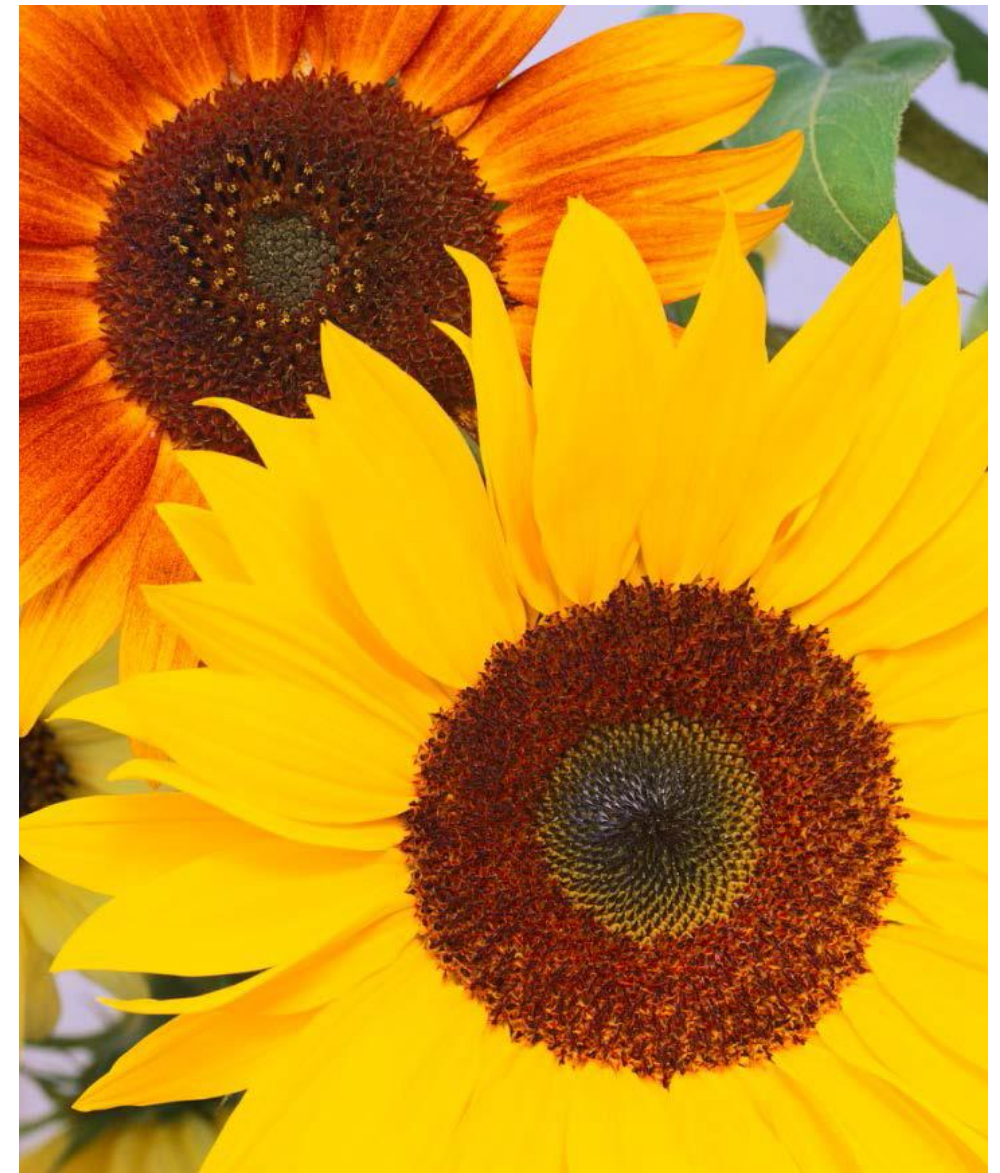
JEL –  
Journal of Economic  
Literature Classification  
System

# Research question

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Regarding the use case we have in mind to what extent is a useful mapping between both KOS possible?

Dealing with this question on the one hand includes a **theoretical reflection** on the structure of both KOS. On the other hand it includes the presentation of a specific **iterative semi-automatic mapping approach**.



# Outline

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- Introduction
- Knowledge organization systems in economics
- Definition of interoperability and structural models for mapping
- Mapping process
- Empirical examples
- Results
- Conclusion and future outlook

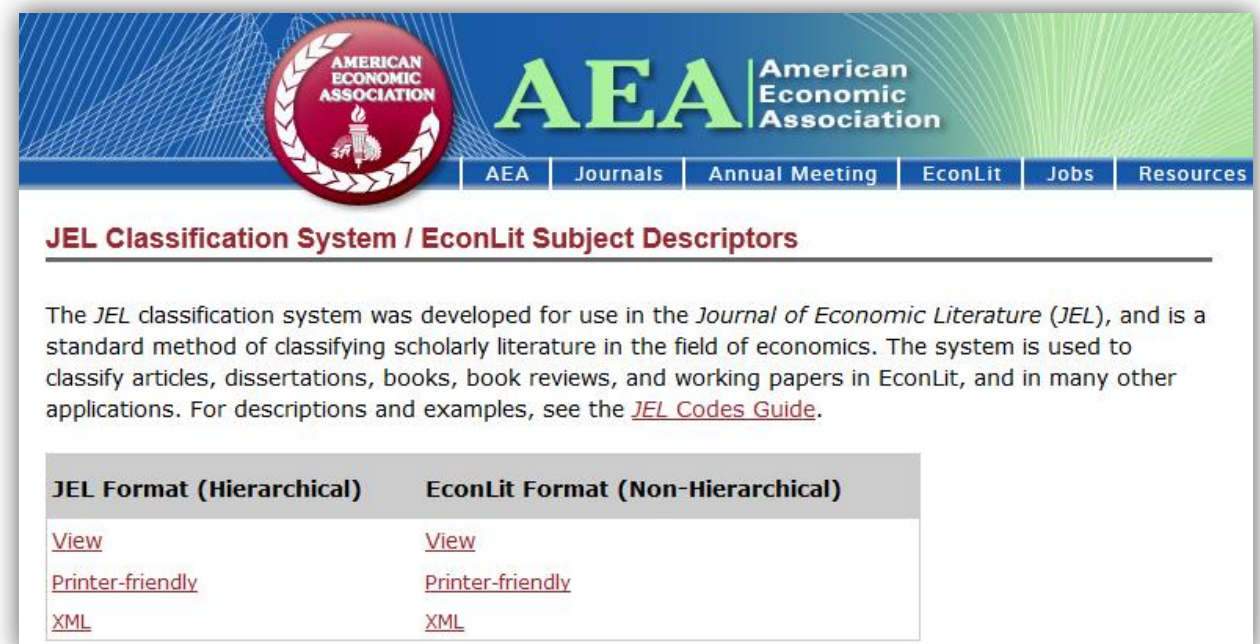


# JEL Classification System

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## Institutional background:

- It is published by the American Economic Association (AEA), which publishes the American Economic Review and maintains the searchable database EconLit.
- The AEA Executive Committee regularly reports on changes of JEL classes in the American Economic Review.



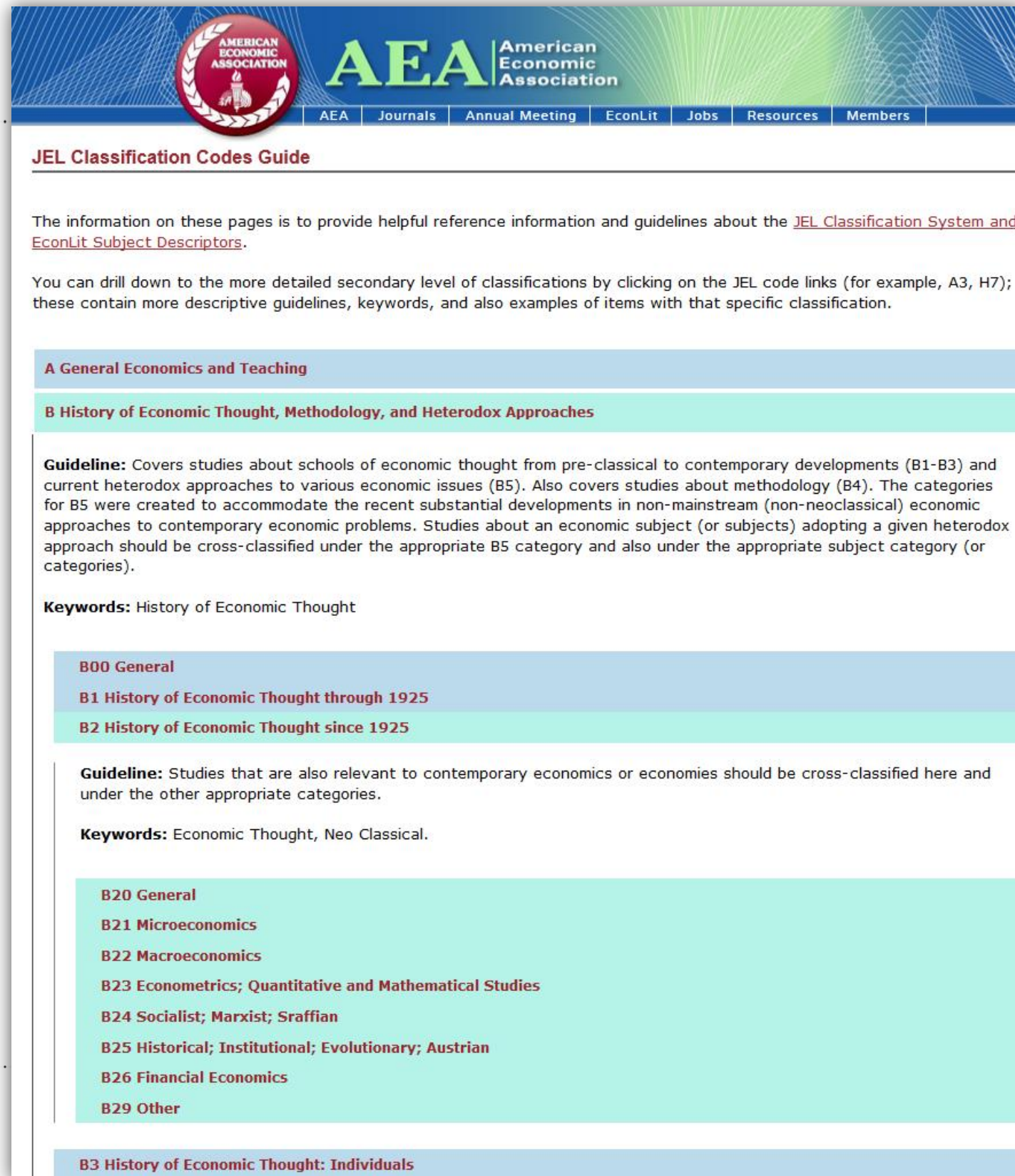
# JEL Classification

## Scope:

- It represents an **Anglo-American understanding of economics** mainly focusing on (national) economics [ger.: VWL].

## Structural characteristics:

- It is a **precombined classification system** with a monohierarchical structure and polydimensional ordering principles.



The screenshot shows the 'JEL Classification Codes Guide' webpage. At the top is the American Economic Association (AEA) logo and navigation links: AEA, Journals, Annual Meeting, EconLit, Jobs, Resources, Members. The main heading is 'JEL Classification Codes Guide'. Below it, a paragraph states: 'The information on these pages is to provide helpful reference information and guidelines about the [JEL Classification System and EconLit Subject Descriptors](#).' Another paragraph says: 'You can drill down to the more detailed secondary level of classifications by clicking on the JEL code links (for example, A3, H7); these contain more descriptive guidelines, keywords, and also examples of items with that specific classification.'

The page lists classification categories in a hierarchical structure:

- A General Economics and Teaching**
- B History of Economic Thought, Methodology, and Heterodox Approaches**
  - Guideline:** Covers studies about schools of economic thought from pre-classical to contemporary developments (B1-B3) and current heterodox approaches to various economic issues (B5). Also covers studies about methodology (B4). The categories for B5 were created to accommodate the recent substantial developments in non-mainstream (non-neoclassical) economic approaches to contemporary economic problems. Studies about an economic subject (or subjects) adopting a given heterodox approach should be cross-classified under the appropriate B5 category and also under the appropriate subject category (or categories).
  - Keywords:** History of Economic Thought
  - B00 General**
  - B1 History of Economic Thought through 1925**
  - B2 History of Economic Thought since 1925**
    - Guideline:** Studies that are also relevant to contemporary economics or economies should be cross-classified here and under the other appropriate categories.
    - Keywords:** Economic Thought, Neo Classical.
    - B20 General**
    - B21 Microeconomics**
    - B22 Macroeconomics**
    - B23 Econometrics; Quantitative and Mathematical Studies**
    - B24 Socialist; Marxist; Sraffian**
    - B25 Historical; Institutional; Evolutionary; Austrian**
    - B26 Financial Economics**
    - B29 Other**
  - B3 History of Economic Thought: Individuals**

# STW Thesaurus for Economics

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## Institutional background:

- Developed in cooperation thanks to a project funded by the Ministry for Economy in the 1990s.

## Scope:

- It covers all economics-related subject areas and, on a broader level, the most important related subjects (e.g. social sciences).



## STW Thesaurus for Economics

Version 9.0 (*Changes*)

### Subthesauri

- V Economics
- B Business economics
- W Economic sectors
- P Commodities
- N Related subject areas
- G Geographic names
- A General descriptors



# STW Thesaurus for Economics

## Structural characteristics:

- STW is a **polyhierarchical** bilingual thesaurus.

## Types of relations:

- **equivalent relations**, including synonyms and quasi-synonyms (UF),
- **hierarchical relations**, including broader (BT) and narrower terms (NT)
- **associate relations**, including related terms (RT)

## Links to other vocabularies:

- Mappings to GND, TheSoz, AGROVOC, (DBpedia)

### Financial statement



**Jahresabschluss** (german)

used for: Annual accounts






Narrower Terms

- [Balance sheet](#) 
- [Consolidated financial statements](#) 
- [Income statement](#) 

Broader Terms

- [Accounting](#) 
- [Reporting](#) 

Related Terms

- [Cash flow statement](#) 
- [Corporate annual report](#) 
- [Financial statement analysis](#) 
- [Financial statement audit](#) 
- [Management commentary](#) 

Subject Categories

- [B.03.01.02 Financial statement](#) ▼

Links to other Thesauri and Vocabularies

- = [Jahresabschluss](#) (from GND)
- > [Versicherungsbilanz](#) (from GND)
- > [Kurzfristige Rechnungslegung](#) (from GND)
- < [Rechnungslegung](#) (from GND)
- = [Jahresabschluss](#) (from DBpedia) 
- = [year-end financial statement](#) (from TheSoz)
- = [rendering of accounts](#) (from TheSoz)

Persistent Identifier (for bookmarking and linking)

- <http://zbw.eu/stw/descriptor/12381-2>

# STW subject categories

## Structural characteristics:

- The STW subject categories (in total 497) constitute a monohierarchical structure with polydimensional
  - for subthesaurus V + B –
- consistently subject-specific ordering principles for vertical and horizontal subdivision.

	Subthesaurus V	Subthesaurus B
1st level	1	1
2nd level	15	10
3rd level	62	38
4th level	43	21
Total	121	70

The screenshot shows the ZBW website interface. On the left, a navigation menu lists various categories under 'V Economics', with 'V.11 Regional science' expanded. The main content area displays 'V.11 Regional science' and 'V.11 Regionalwissenschaft (german)'. It includes a 'broader' section with 'V Economics' and a 'narrower' section listing subcategories like 'V.11.01 Regional economics' through 'V.11.08 Spatial statistics'. Below this, a 'Descriptors' section lists terms like 'Deprived region', 'Economic area', 'Industrial region', etc., each with an 'EB' icon. At the bottom, a 'Persistent Identifier (for bookmarking and linking)' is provided as 'http://zbw.eu/stw/thsys/70058'.



# JEL Classification vs. STW Subject Categories

	JEL Classification	STW Subject Categories
<b>Definition</b>	Class (ISO 25964-2: 3.10, „concept (3.17) or group of similar or related concepts (3.17) (sic!) used as a division or subdivision in a classification scheme (3.12).“)	Concept group (ISO 25964-2: 3.18, „group of concepts selected by some specified criterion...“)
<b>Scope</b>	Domain-specific (USA, UK)	Domain-specific (GER > international) Here: Restriction to the subthesauri: V: Economics and B: Business economics.
<b>Purpose</b>	All-embracing systematization of a discipline.	Systematization of the thesaurus vocabulary
<b>Structural characteristics</b>	<ul style="list-style-type: none"> <li>- Precombined classification</li> <li>- Monohierarchical</li> <li>- Polydimensional ordering principles</li> </ul>	<ul style="list-style-type: none"> <li>- Monohierarchical</li> <li>- Polydimensional ordering principles</li> </ul>

- Because of the **structural heterogeneity** between the two vocabularies mapping relations for the most part are not expected to be relations of full equivalence. Rather they are presumed to oftentimes consist of inexact equivalent relations.

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# Definition of interoperability

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## ISO 25964: Thesauri and interoperability with other vocabularies

Developed by an international working group (2008-2013)

- Part 1: Thesauri for information retrieval (published 2011)  
Contains guidelines for establishing monolingual and multilingual thesauri.
- Part 2: Interoperability with other vocabularies (published 2013)  
Deals with mappings between thesauri and other types of vocabularies for information retrieval.

# Definition of interoperability

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ISO 25964-2:2013(E)

**3.38**

## **interoperability**

ability of two or more systems or components to exchange information and to use the information that has been exchanged.

NOTE Vocabularies can support interoperability by including mappings to other vocabularies, by presenting data in standard formats and by using systems that support common computer protocols.

**3.40**

## **mapping**, gerund (verbal noun)

process of establishing relationships between the concepts (3.17) in one vocabulary and those of another

**3.41**

## **mapping**, noun

(product of mapping process) relationships between a concept (3.17) in one vocabulary and one or more concepts (3.17) in another

# Two different types of vocabularies

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## **Structural unity:**

The mapped vocabularies have the same structure.

The equivalence of the concepts of such vocabularies is expressed by their identical structural position in the vocabulary. All the relationships of the concepts correspond to each other (e.g. multilingual thesauri of public institutions)

## **Structural disunity:**

The mapped vocabularies do not have the same structure.

Equivalence of concepts has nothing to do with their position in the vocabularies. The mapping process produces either exact equivalence pairs or inexact equivalent pairs.

## **Different types of equivalences:**

(Real) exact equivalence: =EQ

Inexact equivalence: ~EQ (e.g. voc.have emerged from different cultural communities)

Partial equivalence: The concept is broader: BM („Broader Mapping“)

The concept is narrower: NM („Narrower Mapping“)

The concepts are somehow related: RM („Related Mapping“).

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# Structural models for mapping

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ISO 25964-2:2013(E)

## Three different structural models for mapping across vocabularies

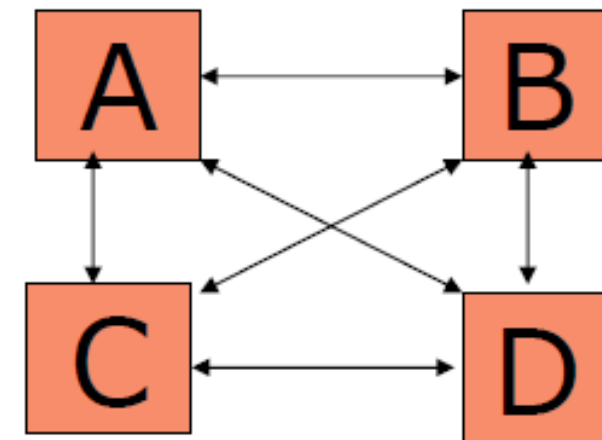
### Model 1: Structural unity (6.2)

„All the participating vocabularies share exactly the same structure of hierarchical and associate relationships between concepts...”

(e.g. multilingual thesauri)

### Model 2: Direct-linked (6.3)

The direct-linked model addresses linkages between two or more vocabularies that do not share the same structure. As well as differing in scope, language and structure, the vocabularies may include other types of vocabulary (classification scheme, name authority list, etc.) .



# Structural models for mapping

## Model 3: Hub structure (6.4)

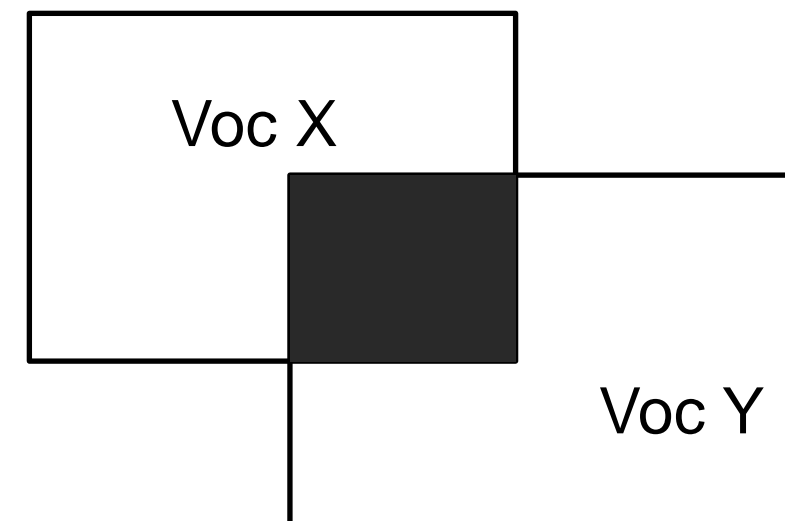
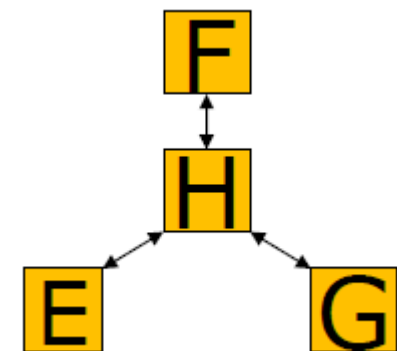
One vocabulary is designated as „hub“, or comprehensive structure to which each of the other vocabularies is mapped as „satellite“. The concepts of the different vocabularies are only mapped to the concepts of the one vocabulary which has the role of a hub. This model is appropriate if there is one vocabulary with a dominating position.

## Model 4: Selective Mapping (6.5)

In cases where there is only small overlap expected, it could be unnecessary to map the vocabularies comprehensively.

- In real applications combinations of these types often occur and the boundaries might be blurred (see ibd. p.20):

## ISO 25964-2:2013(E)



Selected mapping in area of overlap.

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# Mapping process

## Previous work:

- Outdated mapping JEL > STW (descriptor level)  
KoMoHe project context (2004-2007)

Mapping relations:

- equivalent relations (=)
- broader/narrower relations (>/<)
- associate relations (^)
- compound mappings (+)
- including a relevance rating  
(high, medium, low)

22	8	A10	>o	g	Zeitkonsistenz
22	8	A10	>o	g	Ökonomisches Prinzip
22	8	A10	>o	m	Wirtschaftsmodell
22	8	A10	>o	m	Wirtschaftswissenschaft
22	8	A11	<o	g	Wirtschaftsforschung
22	8	A11	>o	g	Wirtschaftswissenschaftler
22	8	A12	<	g	Wirtschaftswissenschaft
22	8	A13	^	m	Wirtschaftsethik
22	8	A14	=	h	Wirtschaftssoziologie
22	8	A19	<	g	Wirtschaftswissenschaft
22	8	A1	=	m	Wirtschaftstheorie
22	8	A20	<o	m	Pädagogik
22	8	A20	o	h	Wirtschaftspädagogik
22	8	A20	^o	m	Arbeitswissenschaft
22	8	A20	^o	m	Berufsbildung
22	8	A20	^o	m	Wirtschaftsstudium
22	8	A20	^o	m	Wirtschaftswissenschaft
22	8	A21	<	g	Wirtschaftsstudium
22	8	A22	<	g	Wirtschaftsstudium
22	8	A23	<	g	Wirtschaftsstudium
22	8	A29	<	g	Wirtschaftsstudium

- Outdated concordance  
**STW (classification system) > JEL**
  - On the third level of JEL classes,
  - No specified mapping relations.

STW classification system	STW subject categories	JEL classes
V02-000 Microeconomics	V.02 V.02.05	B21 D00 ...
V02-010 Household economics	V.02.01	D10 D11 ...

# Mapping process

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## What is new?

- ...mapping on the level of the STW subject category system (instead of the STW classification level),
- ...referring to a web-based interactive mapping platform,
- ...using the SKOS vocabulary to build and to manage the mapping  
Note: this goes along with the assumption that both vocabularies could be mapped bilaterally,
- ...referring to an iterative mapping process of a first and a second iteration and an approach of vocabulary enrichment of the mapping with additional keywords (JEL) and subject headings from STW together with equivalent concept relations from past vocabulary mappings .



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# Empirical examples


## Selection of STW subject categories:

### – STW subthesaurus V – Economics:

- V.02 – Microeconomics (1 subject category)  
V.02.01 – V.02.05 (5 s.c.)
- V.15 – Economic history (1 s.c.)  
V.15 – (-)














### – STW subthesaurus B – Business economics

- B.07 – Marketing (1 s.c.)  
B.07.01 – B.07.06 (6 s.c.)
- B.09 – Business information systems (1 s.c.)  
B.09.01 – B.09.03 (3 s.c.)



Leibniz-Informationszentrum  
Wirtschaft  
Leibniz Information Centre  
for Economics

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[Alphabetical descriptor list](#)  
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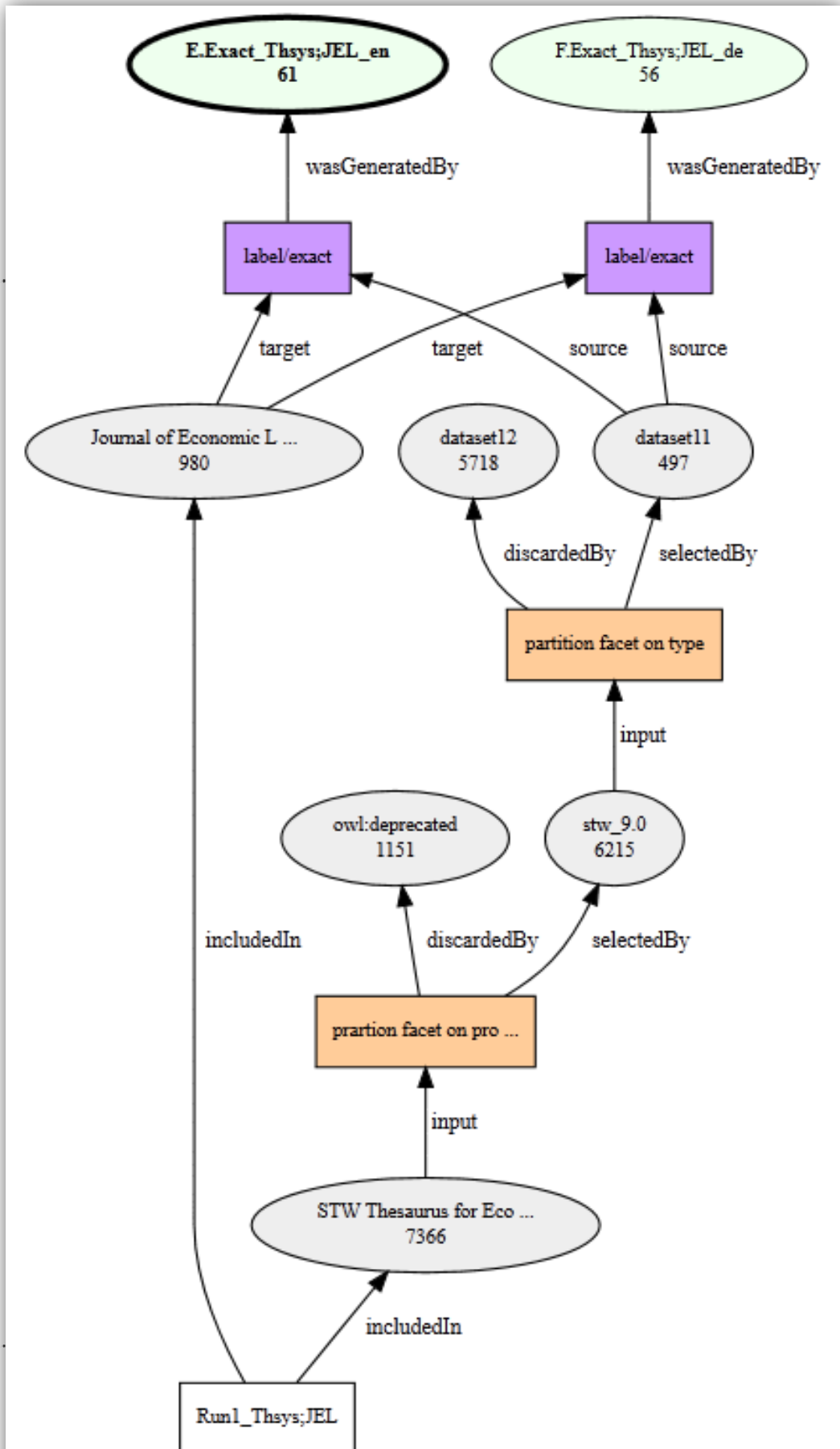
**V.02 Microeconomics**  
**V.02 Mikroökonomik** (german)  
broader  
■ [V Economics](#) ▾  
narrower  
■ [V.02.01 Household economics](#) ▾  
■ [V.02.02 Theory of the firm](#) ▾  
■ [V.02.03 Welfare economics](#) ▾  
■ [V.02.04 Economics of information](#) ▾  
■ [V.02.05 Economy of time](#) ▾  
Descriptors  
■ [Allocative efficiency](#) EB   
■ [Behavioral economics](#) EB   
■ [Bounded rationality](#) EB   
■ [Comparative statics](#) EB   
■ [Elasticity](#) EB   
■ [Marginal analysis](#) EB   
■ [Microeconometrics](#) EB   
■ [Microeconomics](#) EB   
■ [Opportunity cost](#) EB   
■ [Price elasticity](#) EB   
■ [Prospect theory](#) EB   
■ [Rationality](#) EB   
■ [Self-interest](#) EB   
■ [Theory of value](#) EB   
Persistent Identifier (for bookmarking and linking)  
■ <http://zbw.eu/stw/thsys/70180>

**V Economics**  
V.00 Economics  
▶ V.01 Economic theory and methodology  
▼ V.02 Microeconomics  
V.02.01 Household economics  
V.02.02 Theory of the firm  
V.02.03 Welfare economics  
V.02.04 Economics of information  
V.02.05 Economy of time  
▶ V.03 Macroeconomics  
▶ V.04 Business cycles and growth, economic structure  
▶ V.05 Money and financial markets  
▶ V.06 Economic systems  
▶ V.07 International economics  
▶ V.08 Development economics  
▶ V.09 Public finance  
▶ V.10 Industrial organization  
▶ V.11 Regional science  
▶ V.12 Environmental and resource economics  
▶ V.13 Labour  
▶ V.14 Social economics, education and health economics  
V.15 Economic history

# Empirical examples

## Mapping procedure:

- Use of the interactive alignment server **AMALGAME** (AMsterdam ALignment GenerAtion MEtatool)
  - Upload of the STW (v 9.0) in SKOS
    - <http://zbw.eu/stw/versions/latest/download/about.de.html>
  - Upload of the JEL classification in SKOS
    - [http://zbw.eu/beta/external\\_identifiers/jel/about.en.html](http://zbw.eu/beta/external_identifiers/jel/about.en.html)
- Exact language dependent string match of STW subject categories and JEL classes.



AMALGAME Mapping graph of the first run

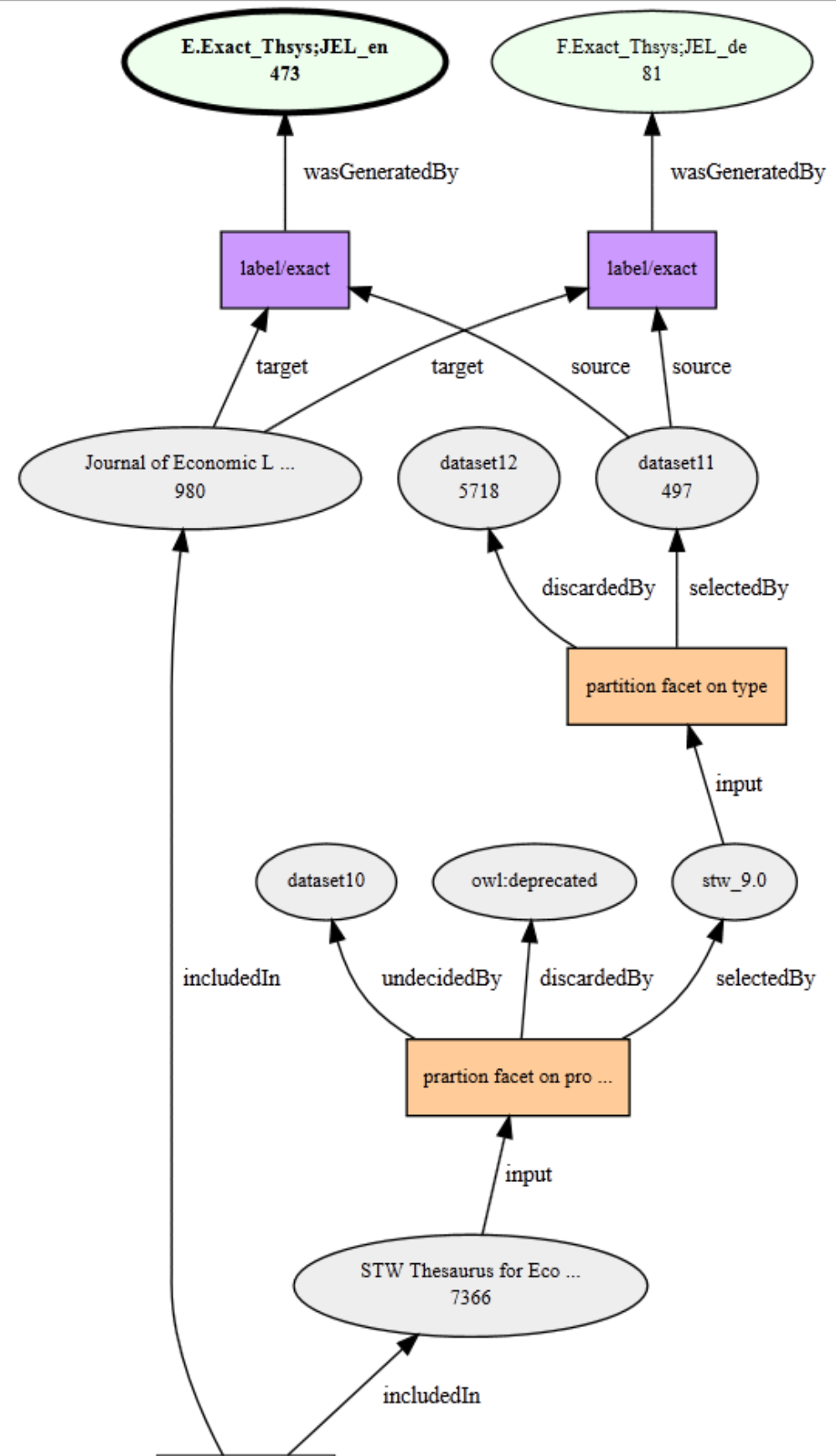
# Empirical examples

## Second run:

(Same selection of subject categories.)

### Enrichment of STW subject categories and JEL classes:

- STW subject categories enriched by:
  - STW descriptors + synonyms
  - Mapped (exactMatch) concepts from other vocabularies – descriptors + synonyms (GND, TheSoz, DBpedia, AGROVOC)
- JEL classes enriched by:
  - JEL keywords scraped from JEL guide
- German + English (if available)



# Empirical examples

STW subject categories enriched by:

- STW descriptors + synonyms
- Mapped (exactMatch) concepts from other vocabularies – descriptors + synonyms (GND, TheSoz, DBpedia, AGROVOC)

JEL classes enriched by:

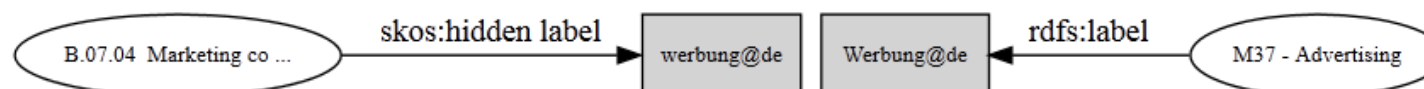
- JEL keywords scraped from JEL guide <https://www.aeaweb.org/jel/guide/jel.php>

## B.07.04 Marketing communications

B.07.04 Marketingkommunikation, Marketing communications, Marketingkommunikation, absatzförderung, acoustic branding, ad journal, advertisement, advertising, advertising ban, advertising effects, advertising material, advertising media, advertising medium, advertising music, advertising planning, advertising regulation, advertising response, advertising restriction, advertising strategy, after-sales service, after-sales-management, akustische markenführung, ambush marketing, anzeigenblatt, anzeigenwerbung, audio branding, außenwerbung, bandenwerbung, banner advertising, bannerwerbung, beschwerdemanagement, betriebliche informationspolitik, brand placement, cause marketing, cause related marketing, cause-related marketing, celebrity endorsement, celebrity-werbung, clearance sales, comparative advertising, complaint, complaint management, consumer complaints, consumer promotion, corporate communication, corporate communications, crossmedia marketing, customer complaints, customer segmentation, customer service, deceptive advertising, dialogmarketing, direct advertising, direct mail, direct mailing, direct marketing, direct-to-consumer advertising, direktmarketing, direktvermarktung, direktwerbung, duftmarketing, emotional branding, emotional marketing, emotionale werbung, emotionales marketing, empfehlungsmarketing, erlebnismarketing, erlebnisorientierung, erlebnisweiten-inszenierung, event management, event marketing, event-marketing, experience marketing, experiential marketing, fernsehwerbung, guerilla marketing, guerilla-marketing, handzettel, hörfunkwerbung, imagepflege, impact of advertising, in-store marketing, in-store music, inserat, internet advertising, internet marketing, internet-marketing, internet-werbung, irreführende werbung, lipole, konsumententvologie, konsumantenwerbung, kunden-hotline, kundenbetreuung, kundendienst, kundensegmentierung

4 individual motivations:

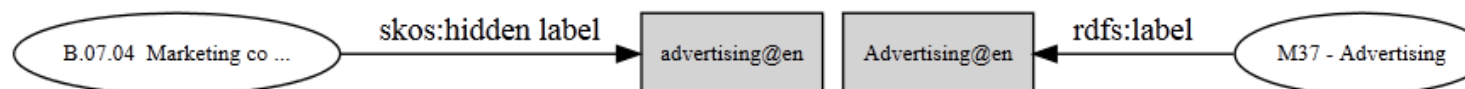
match: exact\_label



match: exact\_label



match: exact\_label



## M37 - Advertising

Advertising, Brand, Brand Preference, Differentiation, M37 - Publicidad, M37 - Publicité, M37 - Werbung, Publicidad, Publicité, Werbung

definition: Covers studies about issues related to advertising, including brands. Advertising studies about consumer behavior that are not based on economic models or analysis are classified only here., notation: M37

definition

Covers studies about issues related to advertising, including brands. Advertising studies about consumer behavior that are not based on economic models or analysis are classified only here.

hierarchy

M - Business Administration and Business Economics; Marketing; Accounting

M3 - Marketing and Advertising

M37 - Advertising



# Outline

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- Introduction
- Knowledge organization systems in economics
- Definition of interoperability and structural models for mapping
- Mapping process
- Empirical examples
- **Results**
- **Conclusion and future outlook**

		Intell. eval.	1 <sup>st</sup> run (=)	(+)	Certain overlap ~	Wrong (-)	2 <sup>nd</sup> run (=)	(+)	Certain overlap ~	Wrong (-)
V.02	Microeconomics	5					1 (13)	1	3	7
V.02.01	Household economics	5					3 (21)		6	11
V.02.02	Theory of the firm	4					2 (10)	1		7
V.02.03	Welfare economics	6					3 (10)		2	5
V.02.04	Economics of information	4					2 (4)			2
V.02.05	Economy of time	7					1 (9)			8
V.15	Economic history	74					9 (15)		4	2
B.07	Marketing	3	1 (5)		4		2 (20)	1	1	
B.07.01	Marketing management	6					(-)			
B.07.02	Product Management	2					1 (15)		5	9
B.07.03	Pricing strategy	1					- (11)		2	9
B.07.04	Marketing communications	2					1 (2)			1
B.07.05	Distribution	1					- (12)		2	9
B.07.06	Market research	3					- (2)		1	1
B.09	Business information systems	1					- (5)			5
B.09.01	Information system components	1					- (4)		1	3
B.09.02	IS development and management	1					1 (6)			5
B.09.03	Corporate information systems	1					- (4)			4

# Outline

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# Conclusion and future outlook

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- String match can only generate mapping candidates it is blind to structural differences.
- The approach of vocabulary enrichment including JEL keywords, STW descriptors, synonyms, translations and equivalent terms and their synonyms from past vocabulary mappings led to a substantial increase of mapping candidates also included in the intellectual mapping.  
Note: A new use case for already established vocabulary alignments.
- Vocabulary enrichment has also led to new mapping candidates worth revisioning the current intellectual mapping.
- Optional mapping procedure in the future:  
The STW as access vocabulary to JEL classes.

# Thank you for your attention!

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<http://zbw.eu/stw>

<https://www.aeaweb.org/econlit/jelCodes.php>

Inofficial multilingual/LOD version:

[http://zbw.eu/beta/external\\_identifiers/jel](http://zbw.eu/beta/external_identifiers/jel)

<http://semanticweb.cs.vu.nl/amalgame/>

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