On the Quality of the Annotations with a Controlled Vocabulary

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SEMANTIC WEB COMPANY
linking data to knowledge

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Annotations

Annotation

An **annotation** *is a metadata (e.g. a comment, explanation, presentational markup) attached to text, image, or other data.*

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Why?

Add another layer of data representation, thereby improve

- Search;
- Comparison;
- Comprehensibility, etc.

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Controlled Vocabularies

Fixing the list of available annotations allows for:

- Control over focus;
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Example

Long Buy In forex trading, you are considered in a long position if you buy base currency and sell quote currency.

Short Buy The opposite of long buy. A position is considered short if you buy quote currency.

Ask The dealer has come to a decision to call on a currency quotation, he will be selling on an ask price a base currency in exchange of quote currency.

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- Clearly defined *semantic* relations between annotations.

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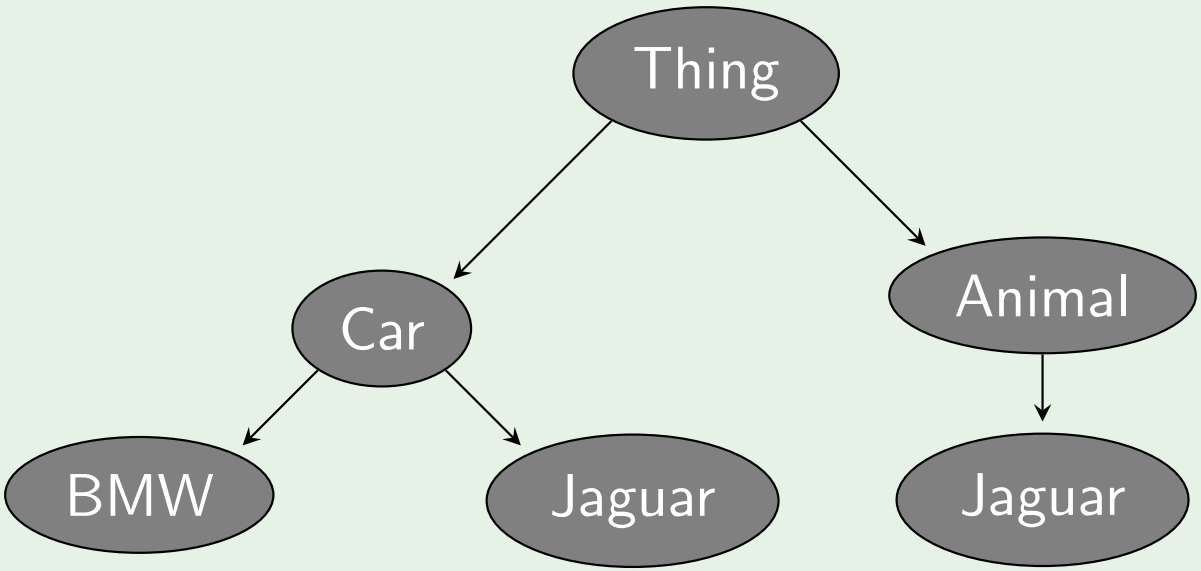
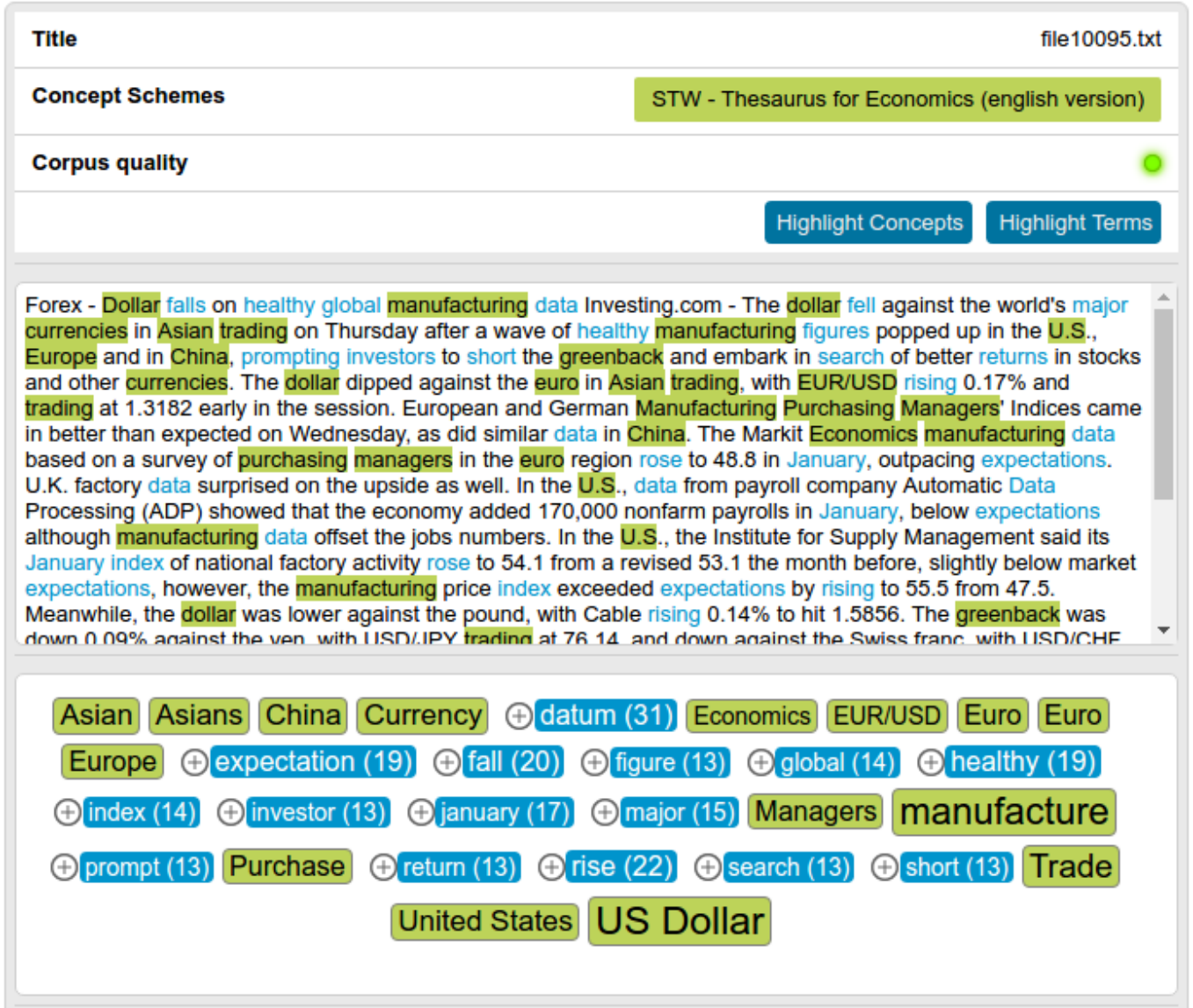
Example



Annotation in PROFIT PP Server



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Document 2

European Central Bank leaves interest rate at record-low 1%

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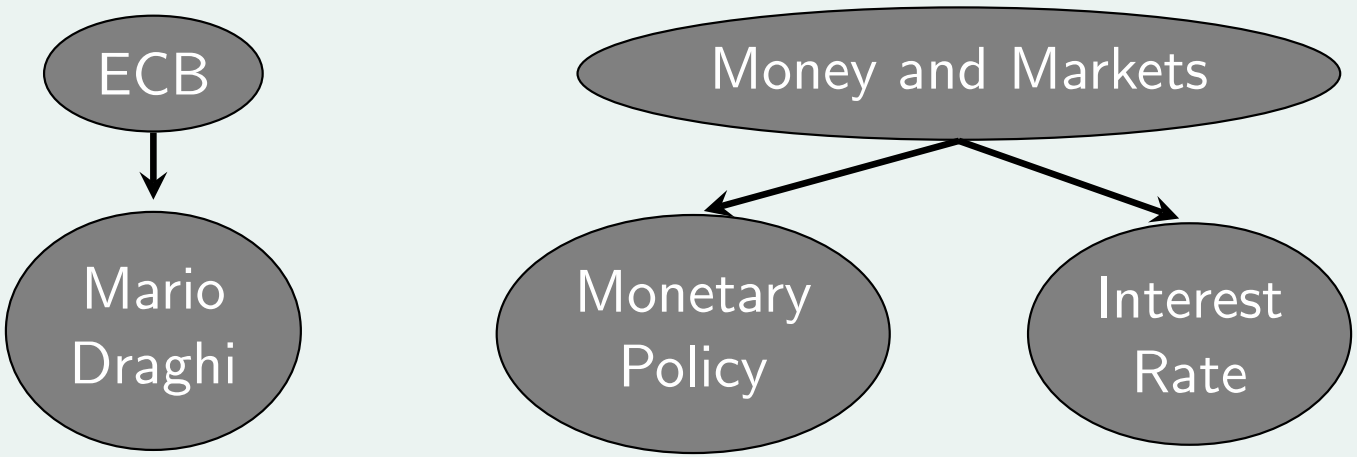
Thesaurus



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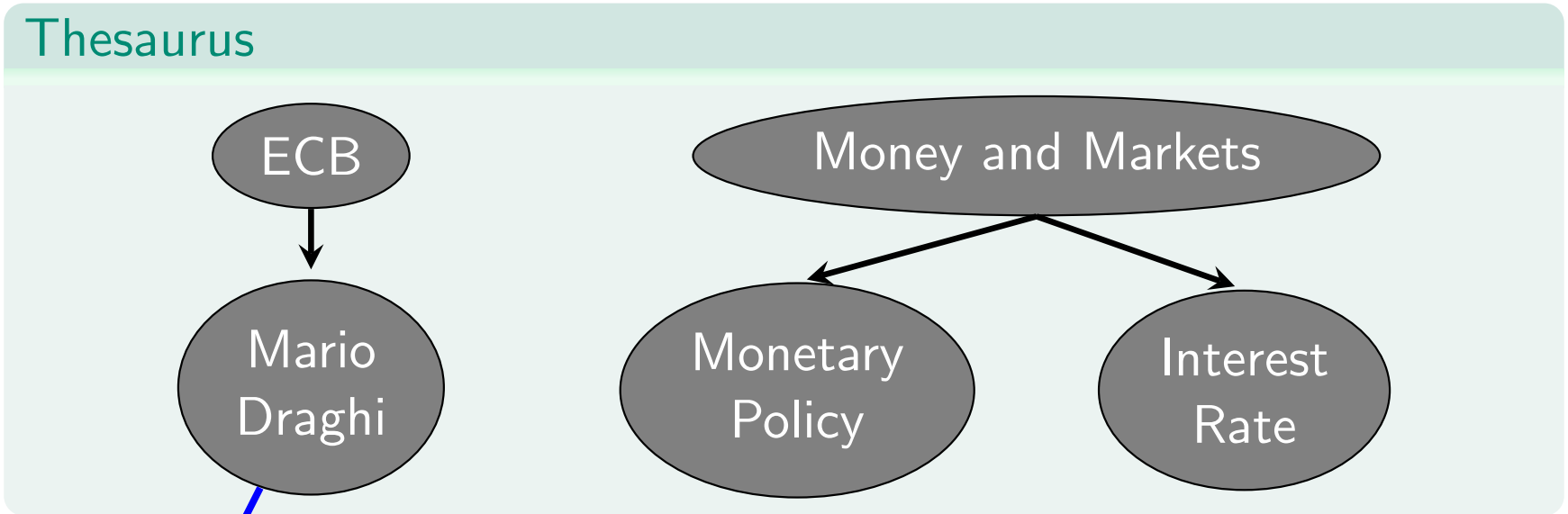

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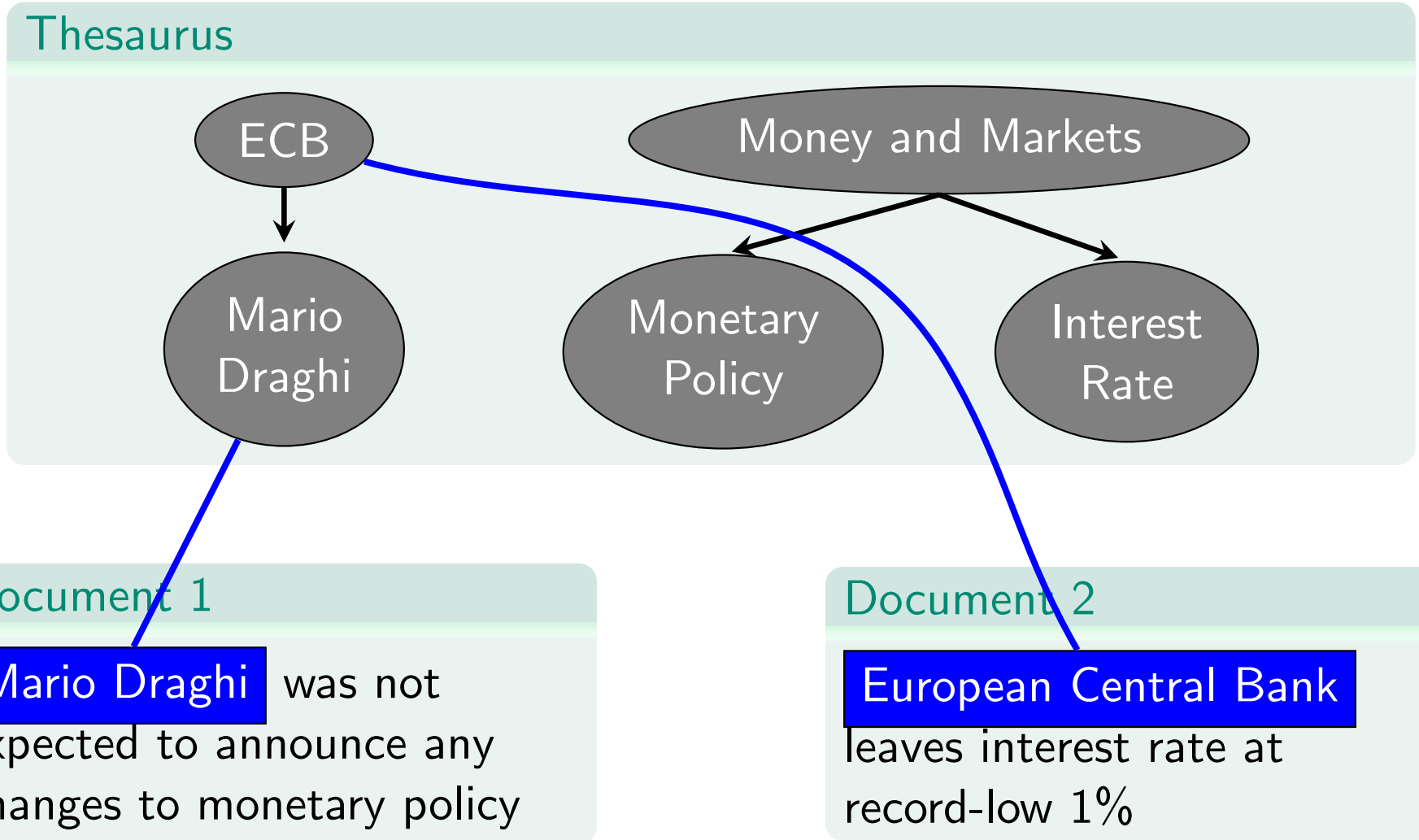

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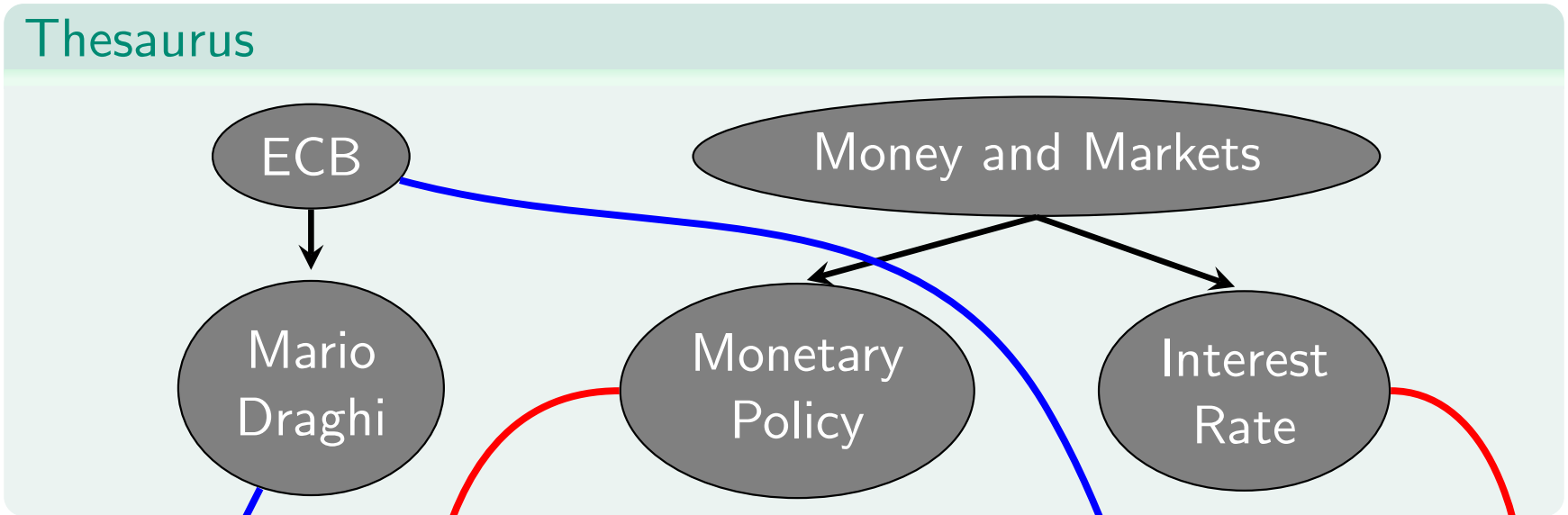

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⇔

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Lemmatization

The same word may appear in different inflected forms:

- Plural or singular,
- Gender,
- Tense,
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Lemmatization

The process of bringing the word to its “base” form.
Special rules for compound terms.

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Compound Terms

For the compound ones we use Mutual Information Score.

$$MI = \log_2(\frac{p(ij)}{p(i)*p(j)})$$ [Bouma, 2009]

Concepts

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Resources from the thesaurus. May have synonyms.

Experimental Settings

investing.com Corpora

eurostoxx	5834
eur/usd	19119
crude oil	14204

STW thesaurus

Original		Extended	
Concepts	6521	Concepts	6831
Broader/narrower	15892	Broader/narrower	16174

Extracted Keywords and Concepts

Intuition

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Concepts Captured focus.

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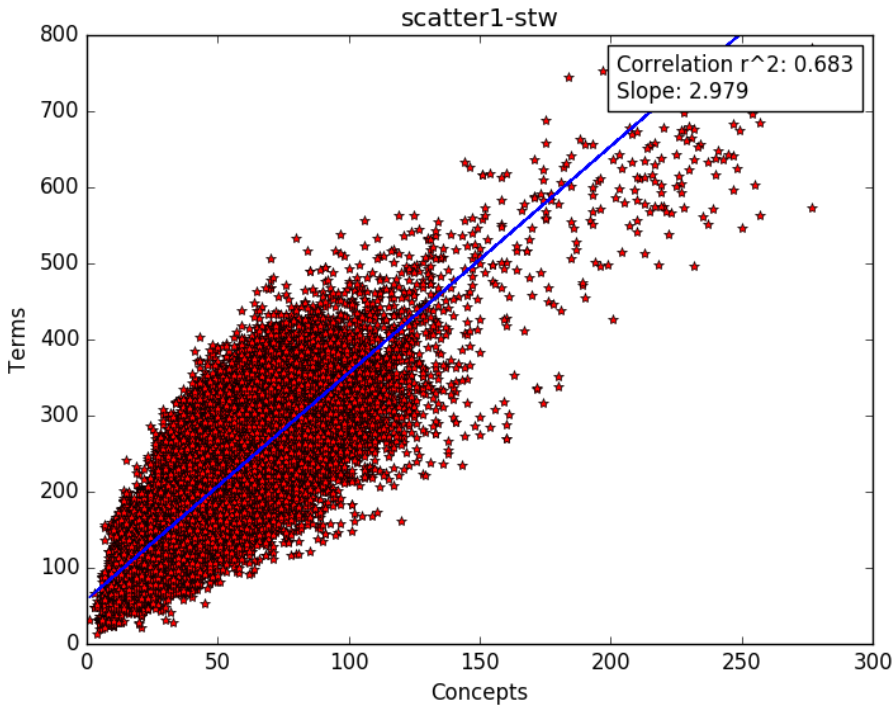
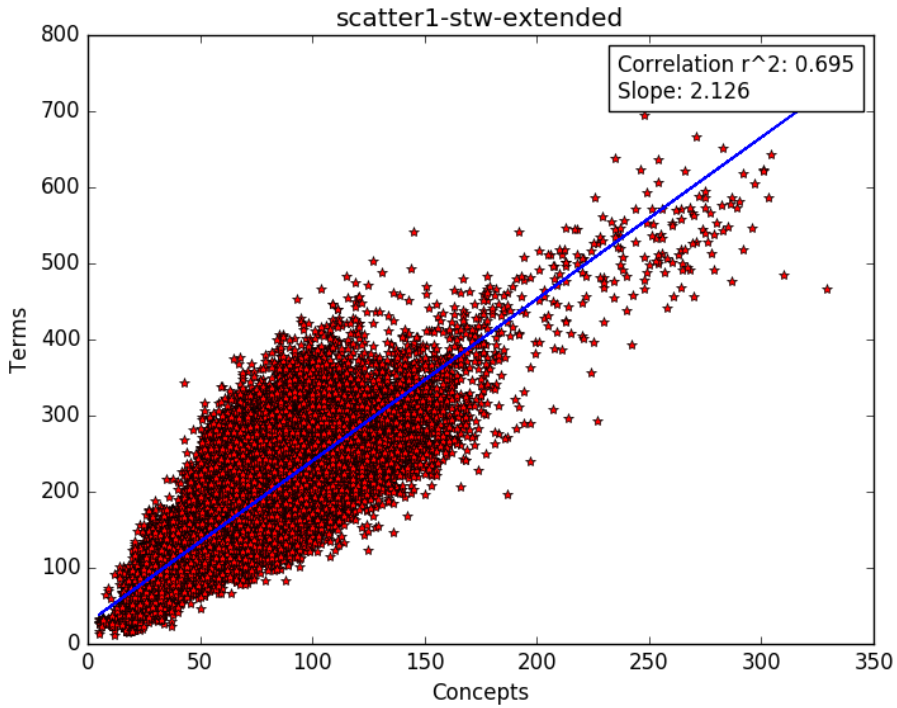
It is better if they correlate.

Old vs Extended

Number of terms, threshold 1 ($C > 1$)





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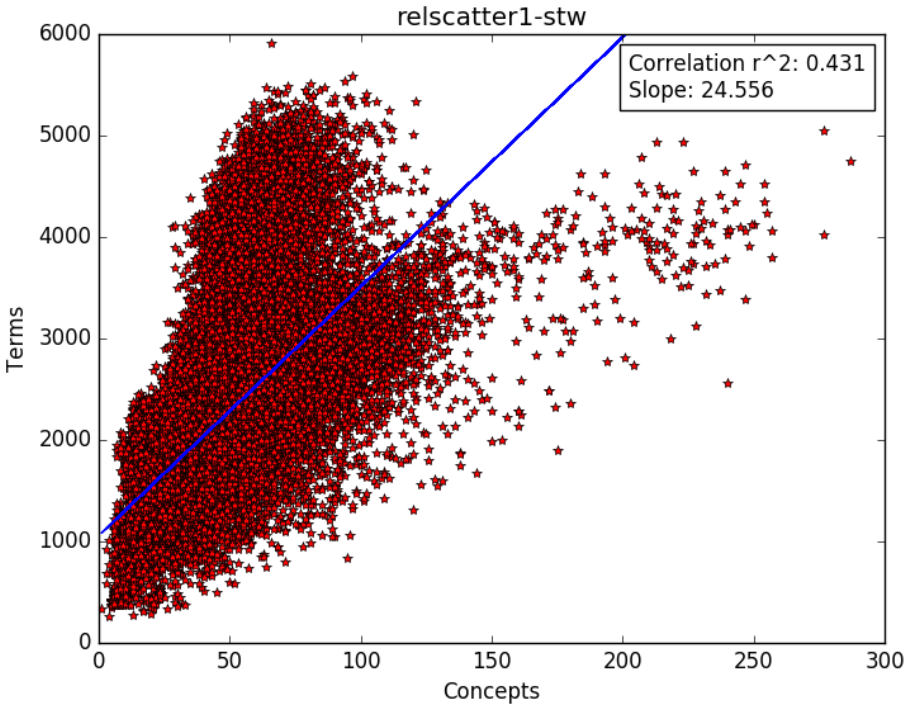
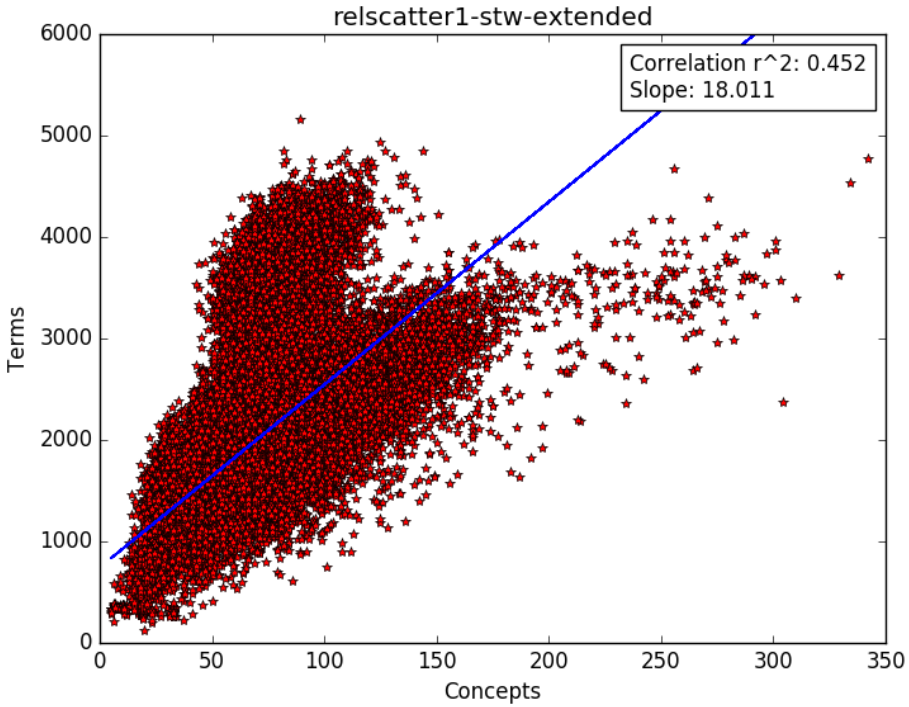
Old vs Extended

Sum of scores





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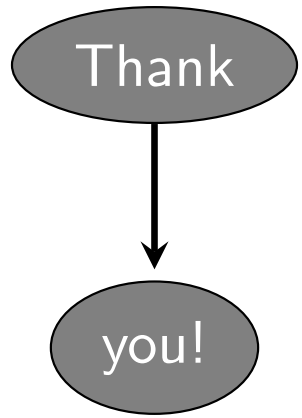
Conclusion

- The usefulness of annotations depends on the underlying tokens;
- Keywords provide a useful measure of the density of indormation, but they are not always good for annotations;
- The improvement of the thesaurus and annotation quality may be measured wrt the keywords.


Thank
you!


Bouma, G. (2009).
Normalized (pointwise) mutual information in collocation extraction.
Proceedings of GSCL, pages 31–40.


Manning, C. D. and Schütze, H. (1999).
Foundations of statistical natural language processing, volume 999.
MIT Press.