JOHANNES KEPLER
UNIVERSITY LINZ

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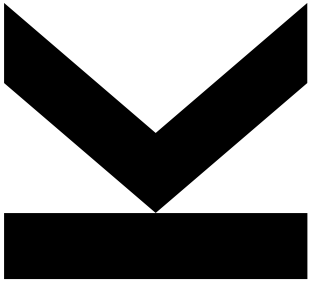
(Towards) exploring the genesis of competition in economic thought



Spatial Competition and Economic Policies

SPACE

Institute for Comprehensive Analysis of the Economy

Draft paper version prepared for the
Young Economists Conference 2019
1-2 October 2019, Vienna

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FWF Der Wissenschaftsfonds.

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Research background: SPACE project

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- Spatial Competition and Economic Policies (SPACE): Discourses, Institutions and Everyday Practices

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  - Investigating the impact of an increasingly strong reliance on competition as a prime mode of social organization
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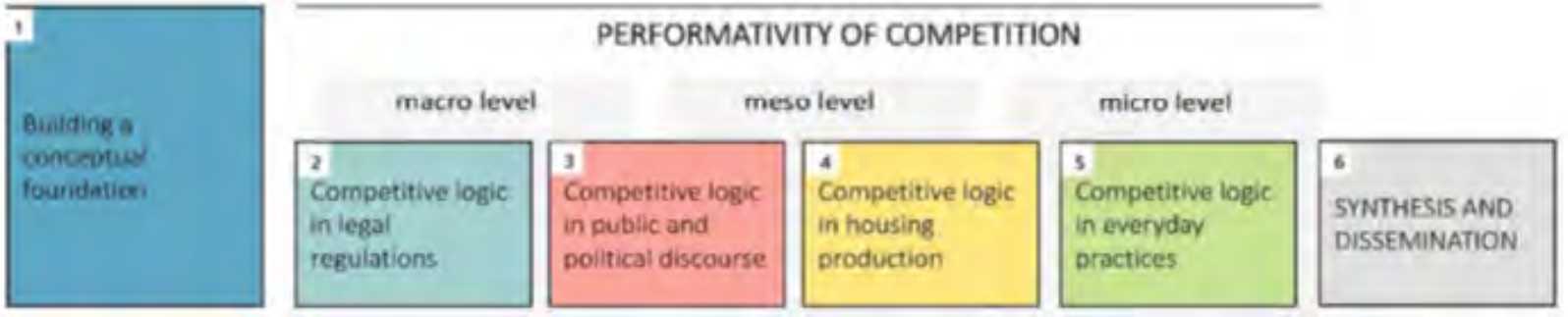
- Six Working Packages



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  - Analysis of economic research literature via **topic modeling**
  - Topic models = algorithms that discover the content of large collections of documents via **topics**
  - **Latent Dirichlet Allocation (LDA)** as a simple and widely used topic model (Blei et al. 2003)

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  - on a more comprehensive level (e.g. whole sub-fields for a given period (Angrist et al. 2017; Jelveh et al. 2015)
- In this paper: applying topic modeling to a part of the literature which is *ex ante* constraint by a specific research topic: competition.

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    - *Are there latent topics which can be assigned to economic paradigms?*

The LDA model and its main assumptions

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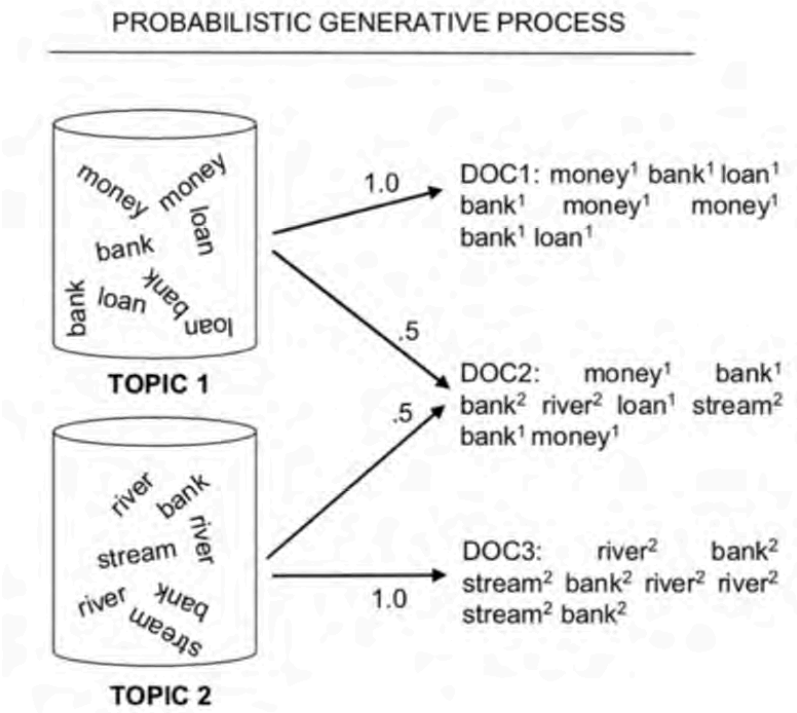

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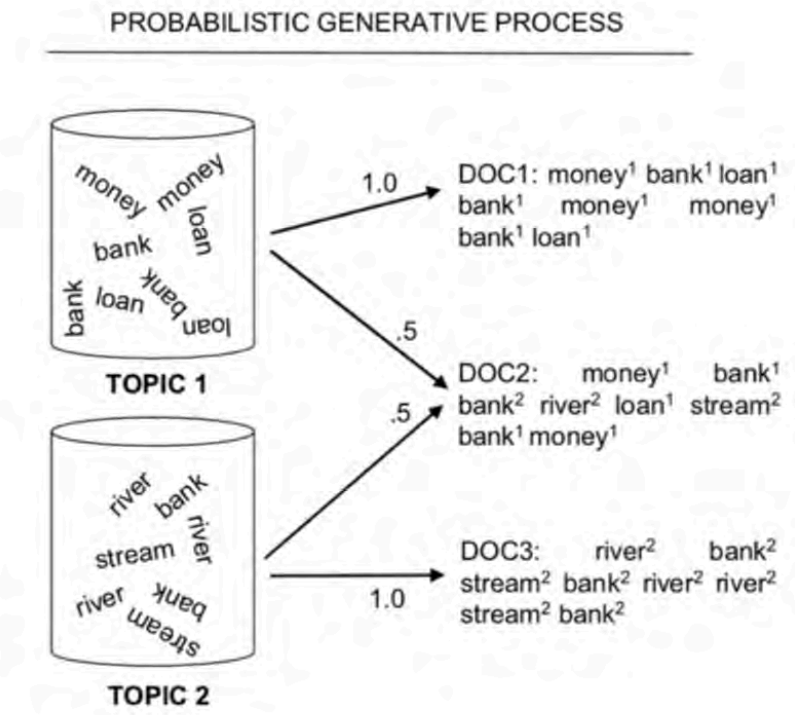

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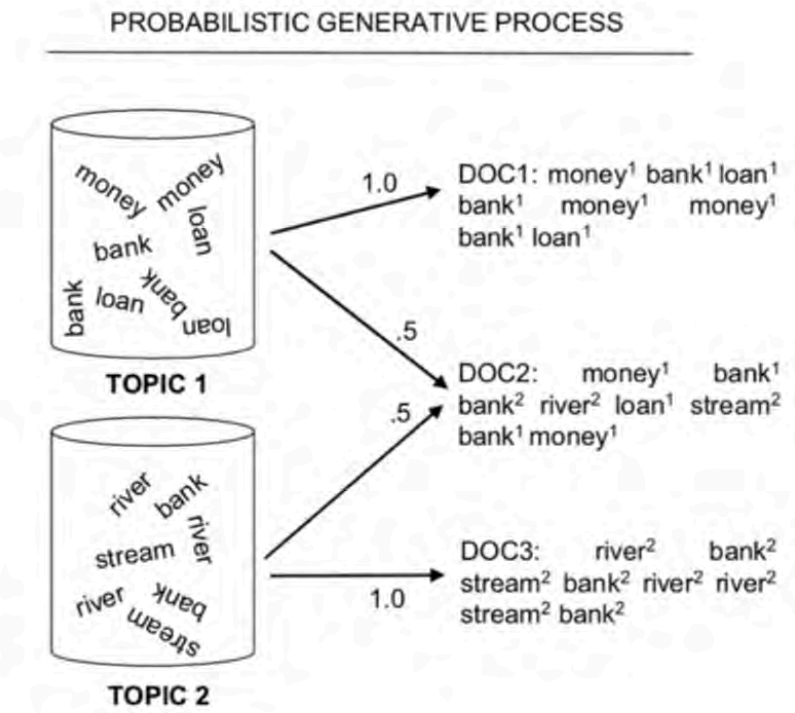

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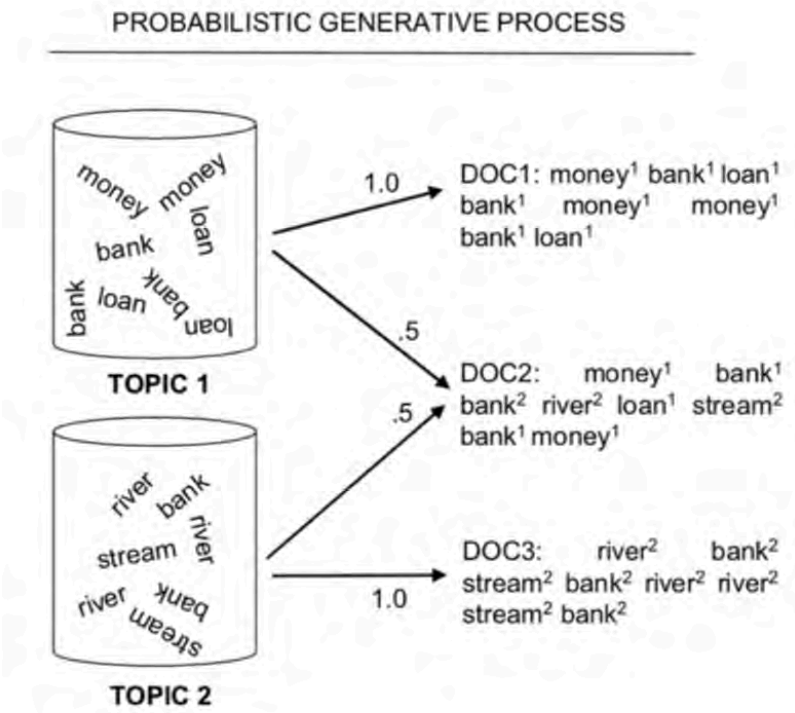
  2. Pick a word
  3. Place it in the bag
     until the document is complete



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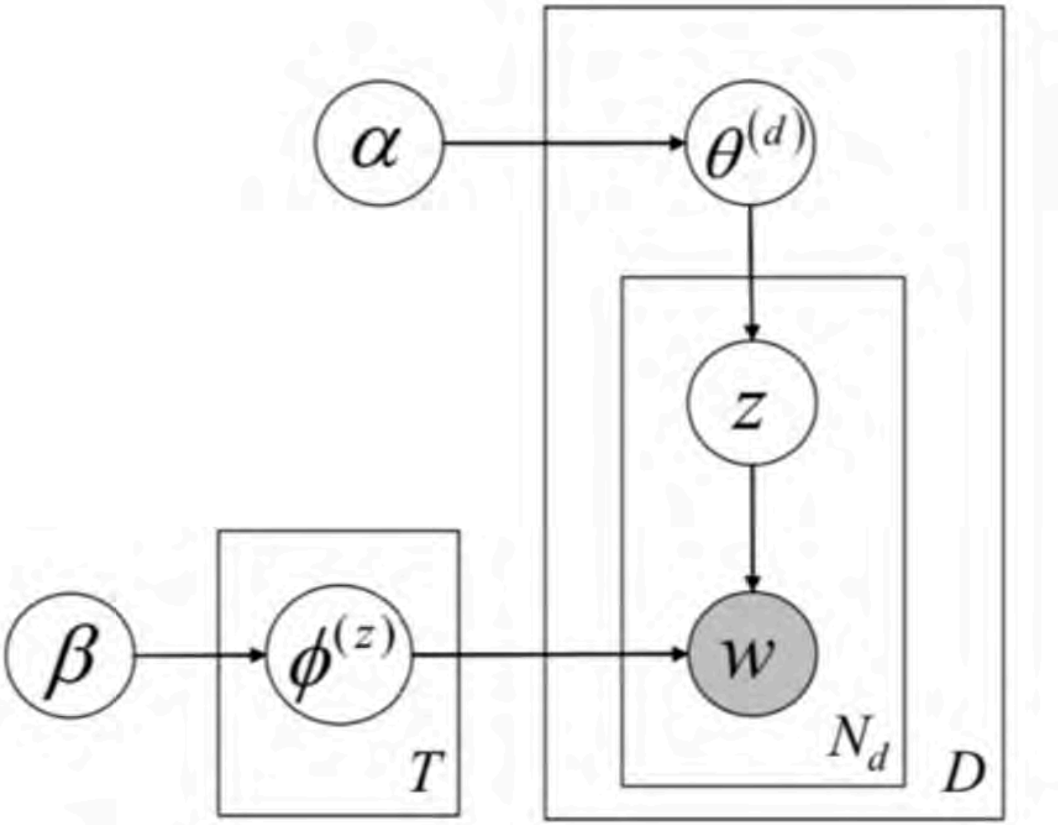

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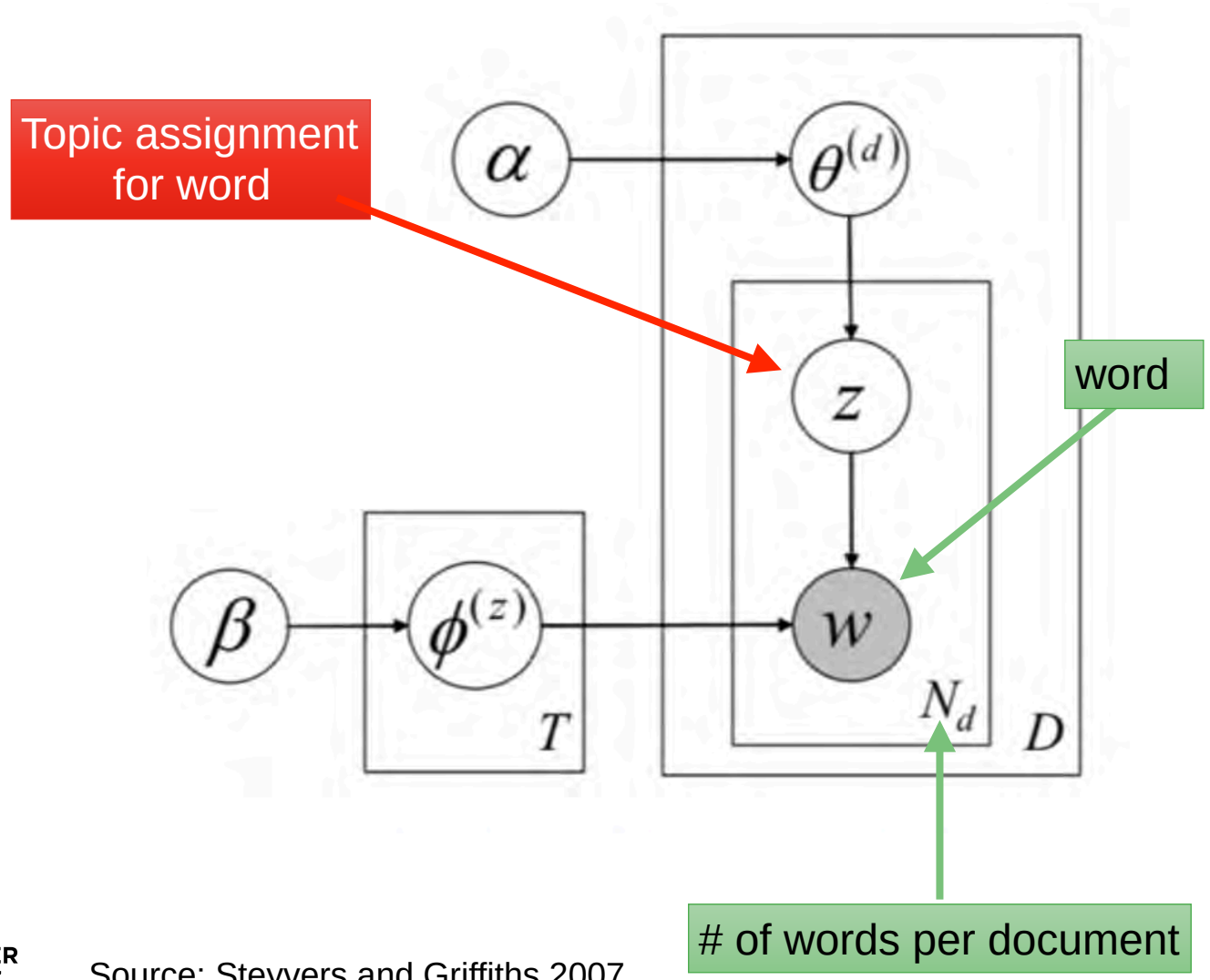

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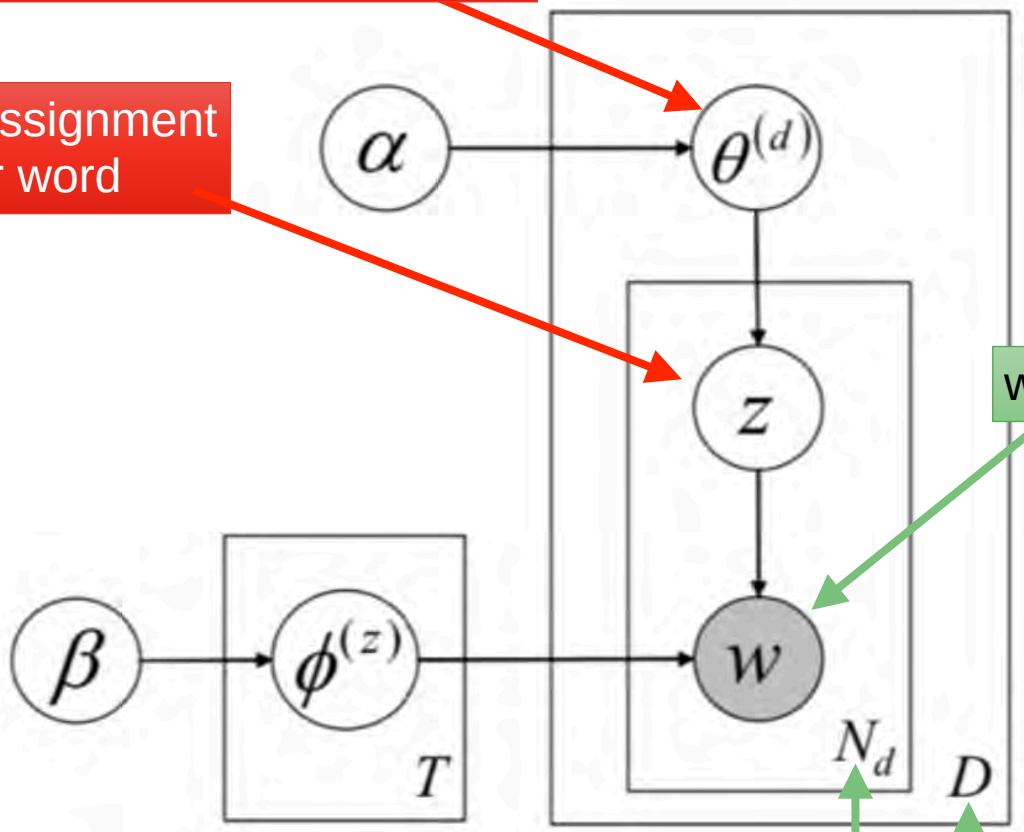
The LDA model and its parameters

topic-document distribtution
(which topics for which document?)

Topic assignment
for word



# of documents

# of words per document

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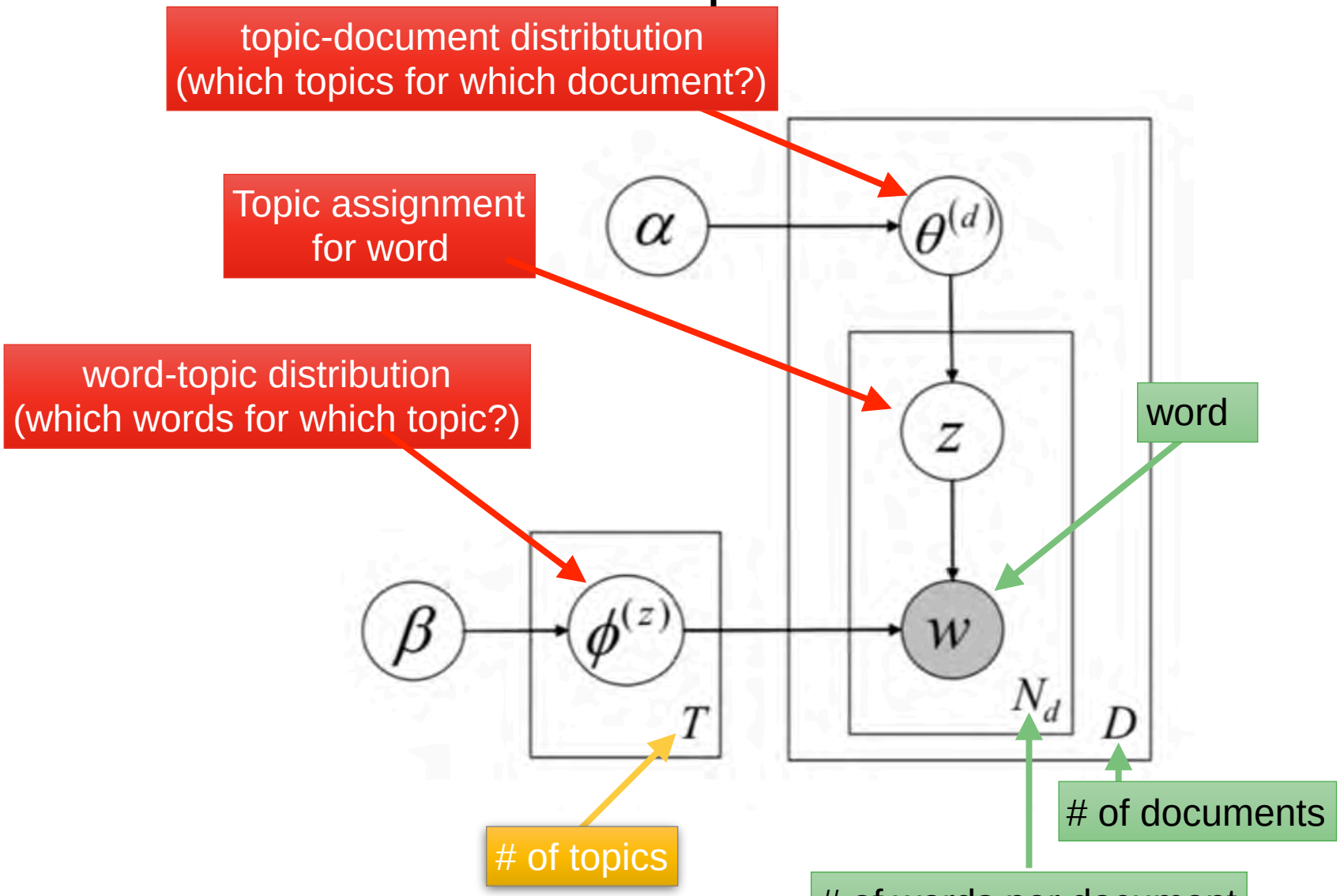

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Topic assignment
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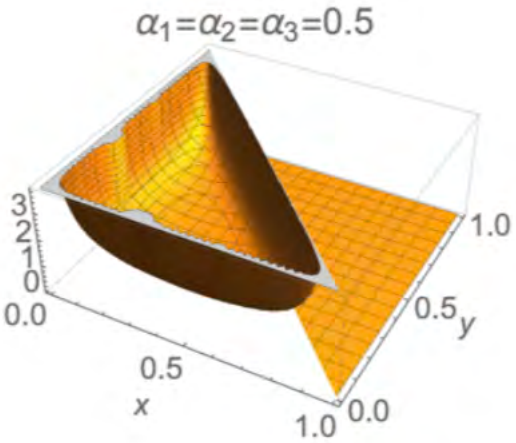
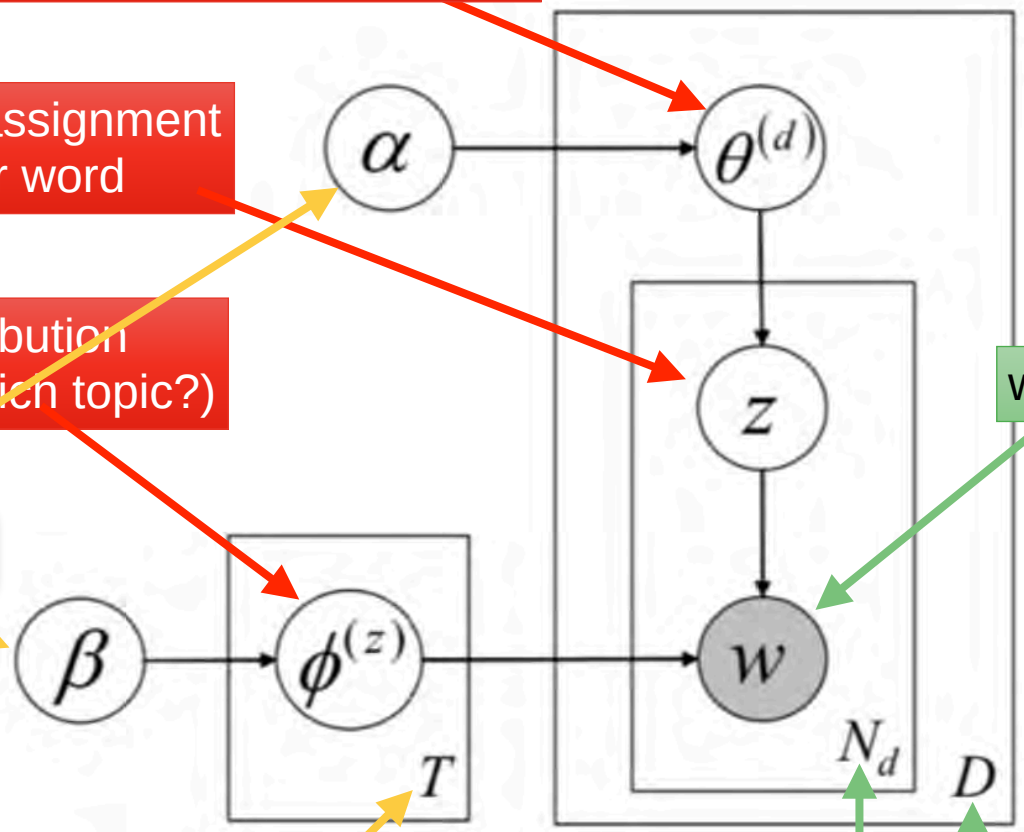
word-topic distribution
(which words for which topic?)

Hyperparameters (priors)

word





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Text preprocessing

Topic assignment
for word

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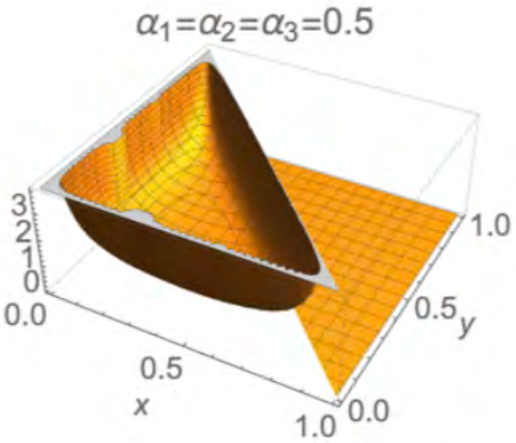

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The puzzle of statistical inference

- The posterior (conditional) distribution is

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➡ Summing up all possible ways of assigning each observed word (usually in the order of millions!) to one of the topics

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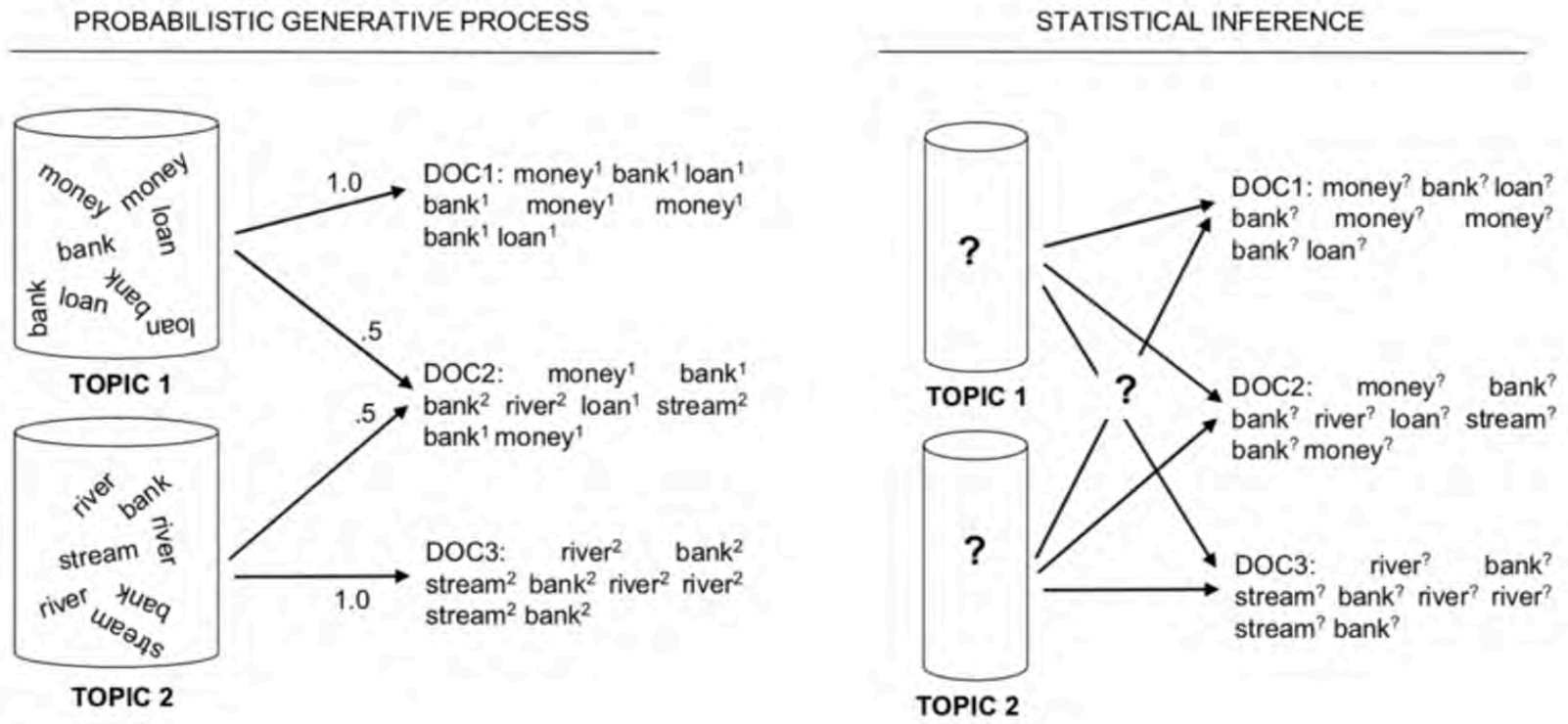

Figure 3: Illustration of the generative process of LDA and the corresponding puzzle of statistically inferring the topic structure. Source: [Steyvers and Griffiths 2007](), 3.

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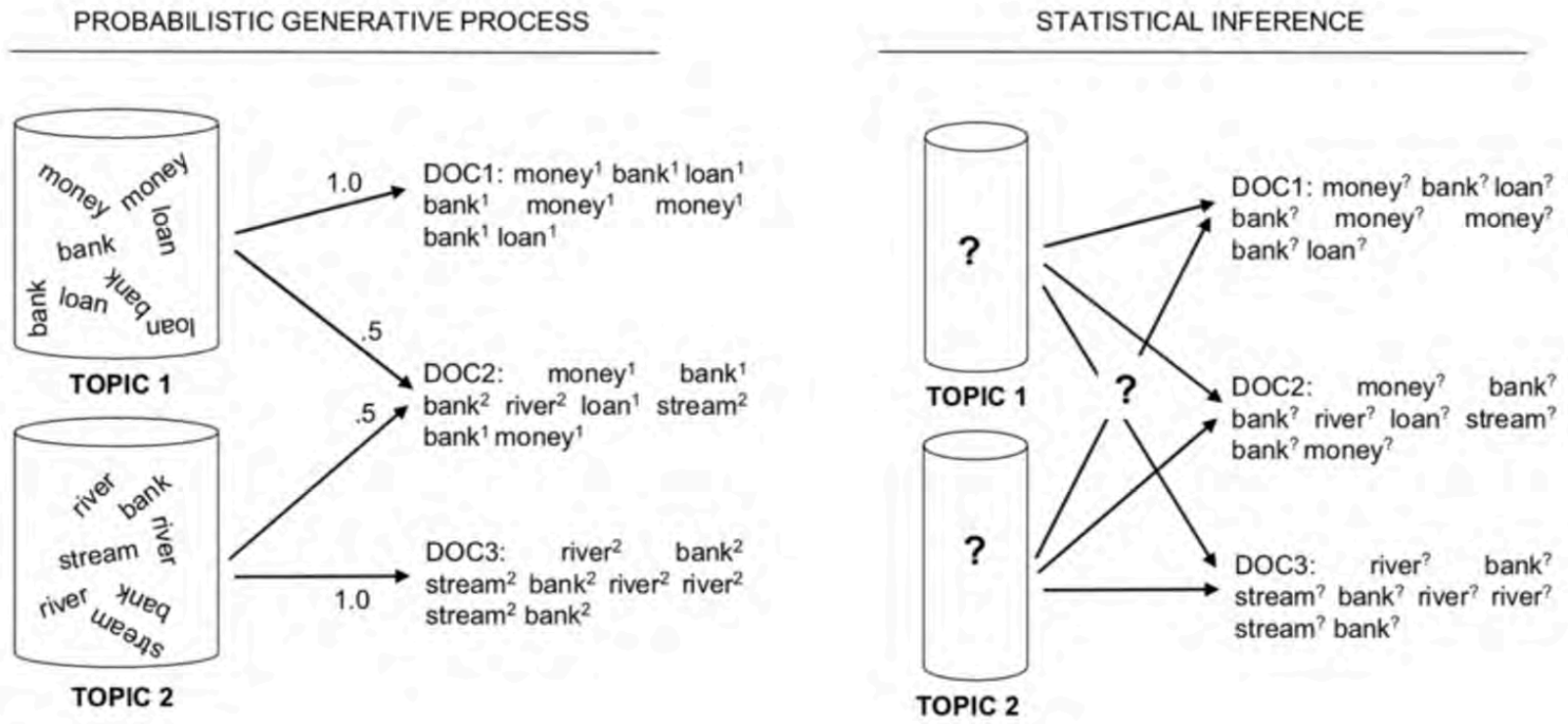

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Data

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Data

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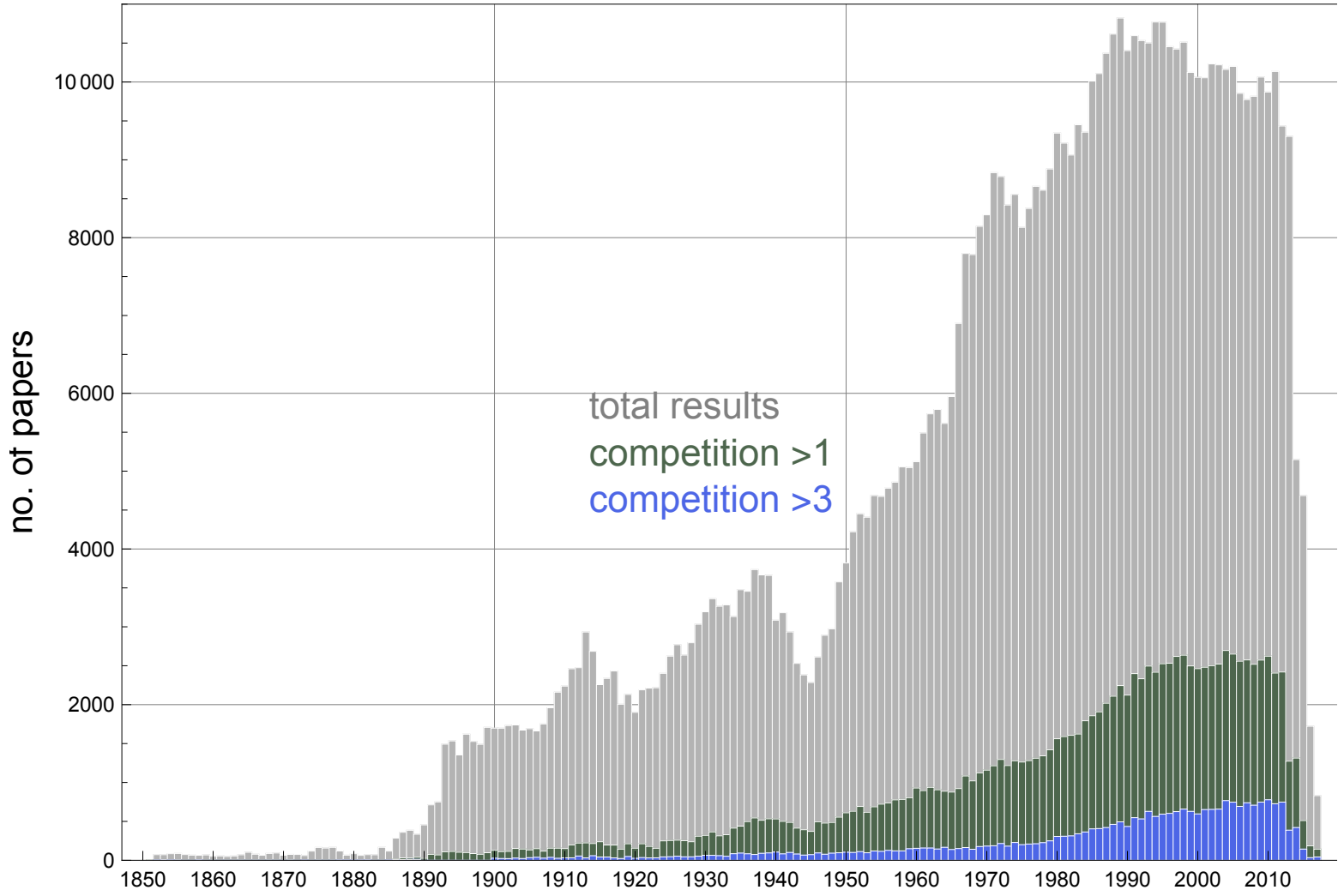
- Full text ngram counts + bibliometric meta-data
- “Narrow” sample: items containing “competition” > 3
  - 27.488 articles
  - 227 journals (thereof 34 heterodox journals)
  - Text preprocessing + “pseudo” abstracts as final input for the model
  - 98.572 unique words (5.496.608 total words in the corpus)

(preliminary) results I: descriptives



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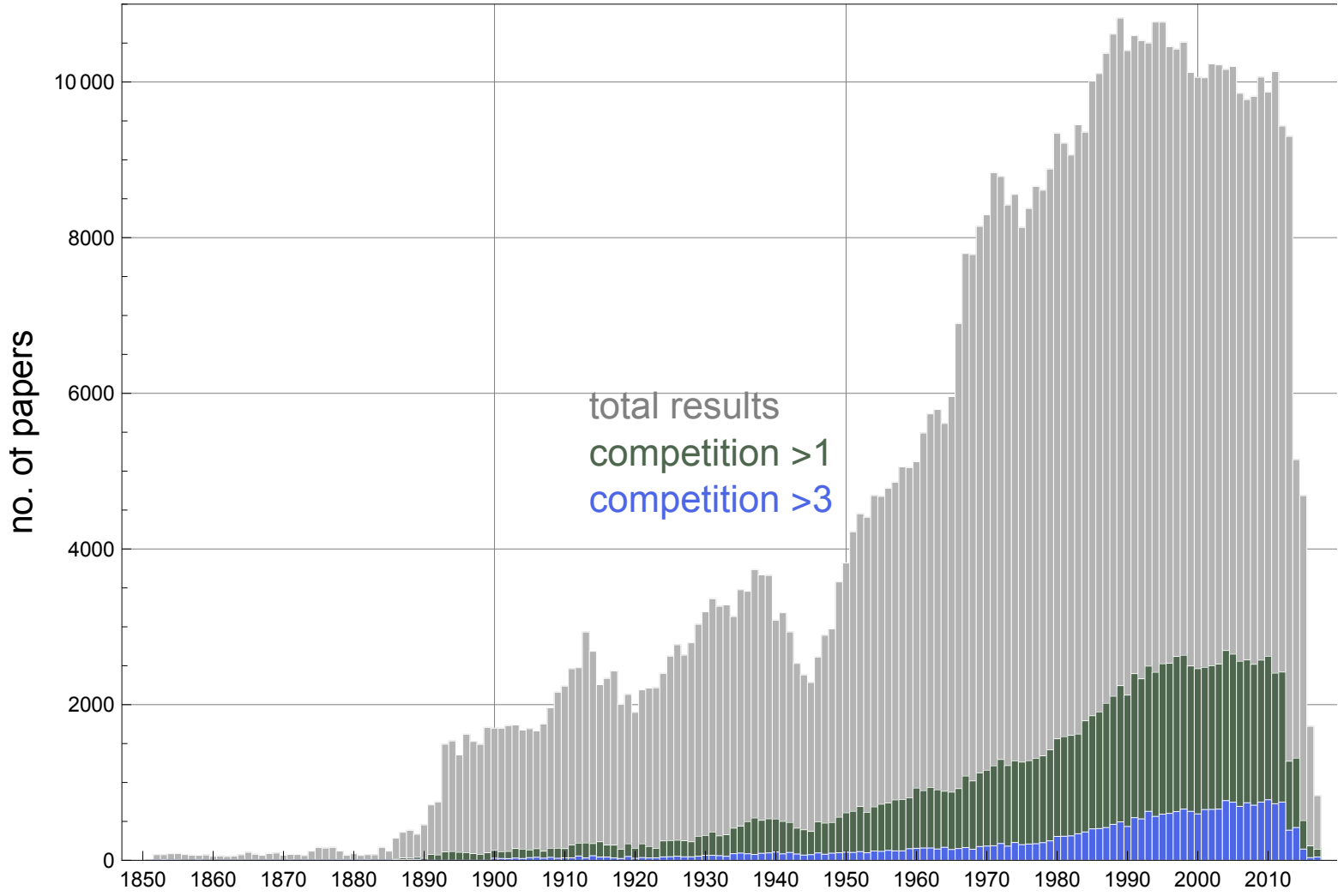

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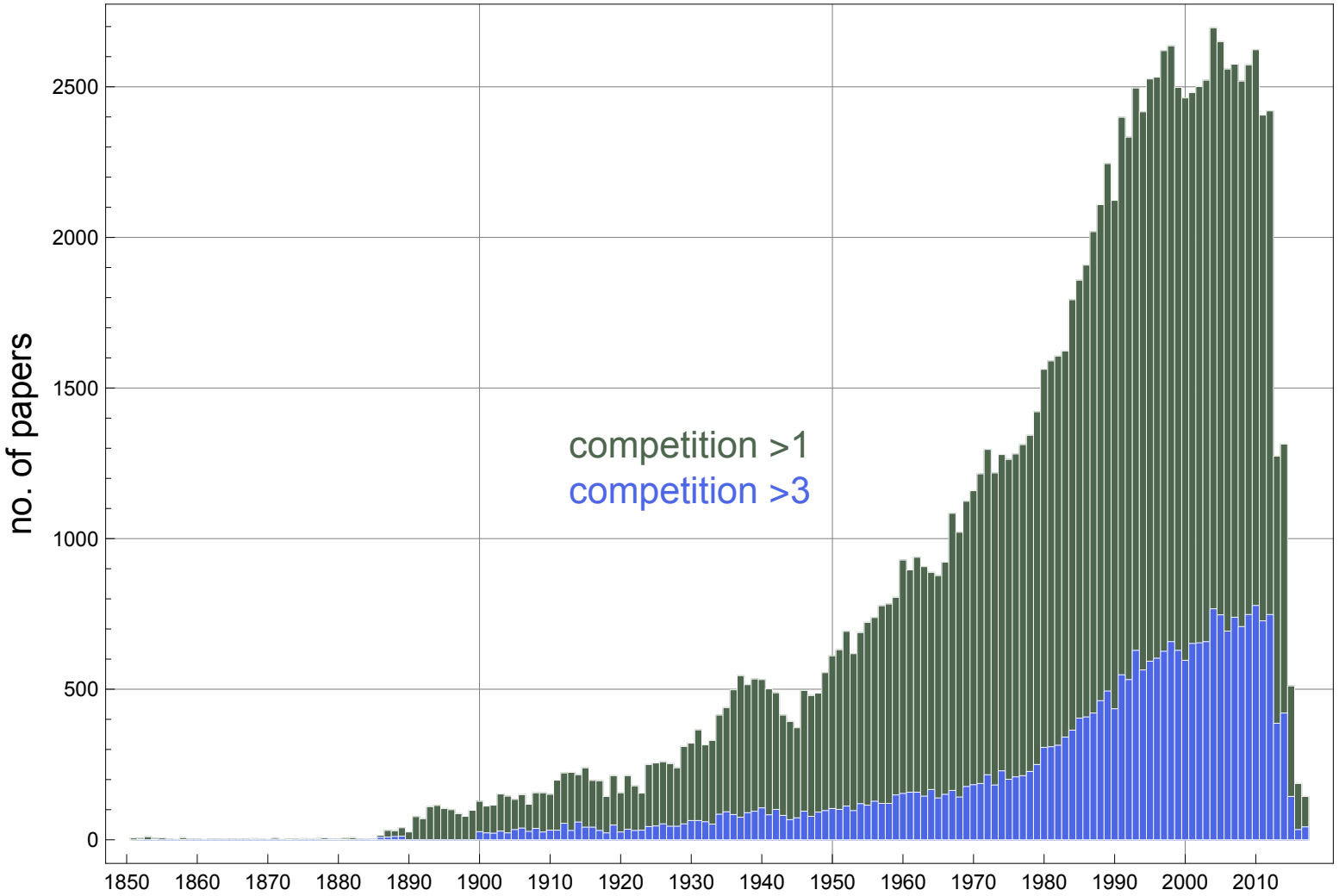

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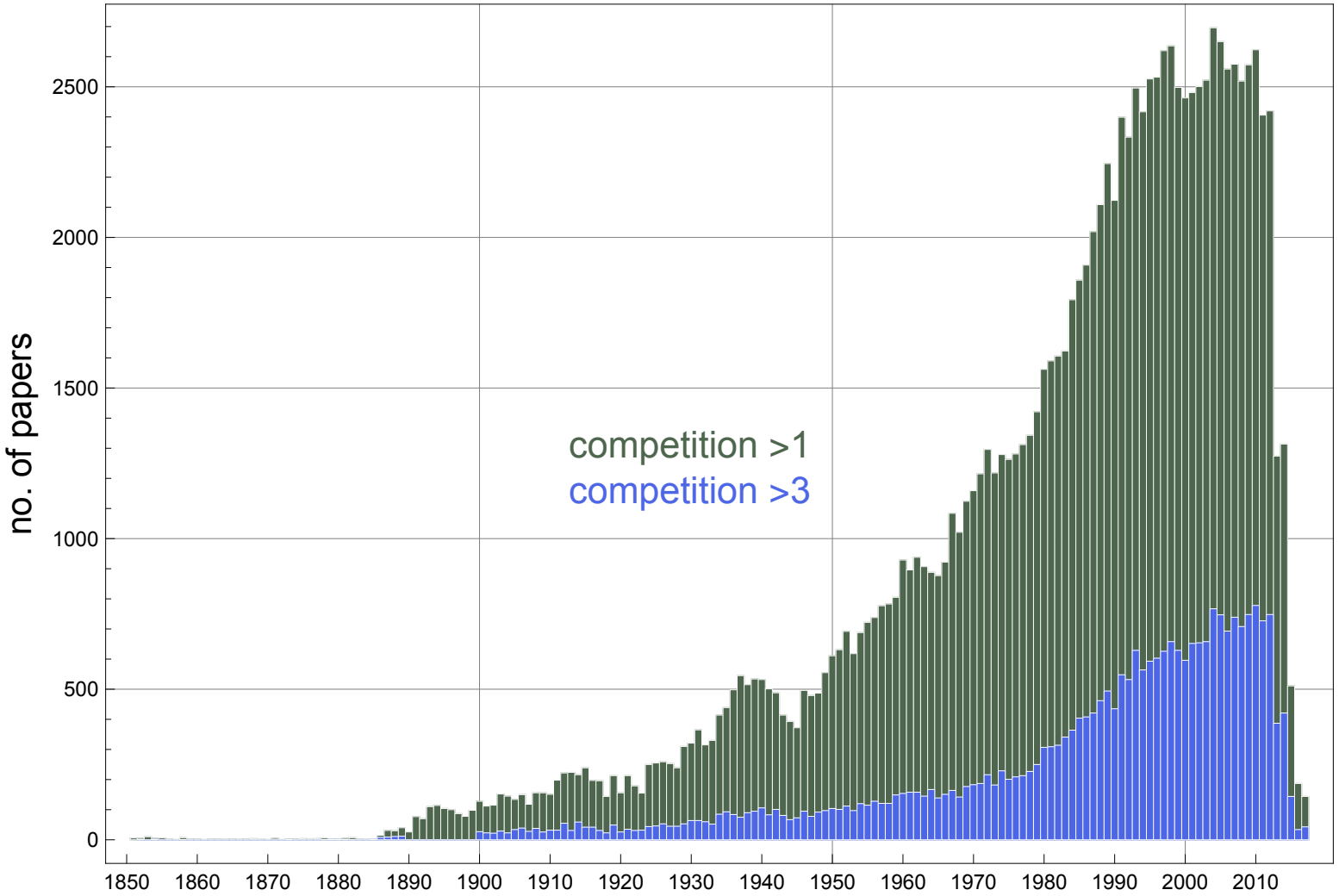

(preliminary) results I: descriptives

Table 1. The 20 most frequent journals in the data sample.

	journal (listed in JSTOR)	no. of articles (27.488)	relative share (100%)	cumulative share (100%)
1	The American Economic Review	1679	6.1	6.1
2	Economic and Political Weekly	1036	3.8	9.9
3	The Economic Journal	871	3.2	13.1
4	The Quarterly Journal of Economics	773	2.8	15.9
5	The Journal of Industrial Economics	739	2.7	18.6
6	Journal of Political Economy	711	2.6	21.2
7	Public Choice	710	2.6	23.8
8	Ann. Am. Acad. Political Soc. Sci.	700	2.5	26.3
9	Southern Economic Journal	640	2.3	28.6
10	The RAND Journal of Economics	602	2.2	30.8
11	Journal of Economic Issues	463	1.7	32.5
12	The Journal of Law & Economics	442	1.6	34.1
13	The Canadian Journal of Economics	437	1.6	35.7
14	Journal of Farm Economics	393	1.4	37.1
15	The Review of Economic Studies	371	1.3	38.4
16	Managerial and Decision Economics	357	1.3	39.7
17	American Journal of Agricultural Economics	354	1.3	41.0
18	Cambridge Journal of Economics	349	1.3	42.3
19	The Review of Economics and Statistics	348	1.3	43.6
20	The Business History Review	335	1.2	44.8

(preliminary) results I: descriptives

Table 1. The 20 most frequent journals in the data sample.

	journal (listed in JSTOR)	no. of articles (27.488)	relative share (100%)	cumulative share (100%)
1	The American Economic Review	1679	6.1	6.1
2	Economic and Political Weekly	1036	3.8	9.9
3	The Economic Journal	871	3.2	13.1
4	The Quarterly Journal of Economics	773	2.8	15.9
5	The Journal of Industrial Economics	739	2.7	18.6
6	Journal of Political Economy	711	2.6	21.2
7	Public Choice	710	2.6	23.8
8	Ann. Am. Acad. Political Soc. Sci.	700	2.5	26.3
9	Southern Economic Journal	640	2.3	28.6
10	The RAND Journal of Economics	602	2.2	30.8
11	Journal of Economic Issues	463	1.7	32.5
12	The Journal of Law & Economics	442	1.6	34.1
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(preliminary) results I: descriptives

4 out of the 'Big 5'

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(preliminary) results I: descriptives

4 out of the 'Big 5'

HET journals

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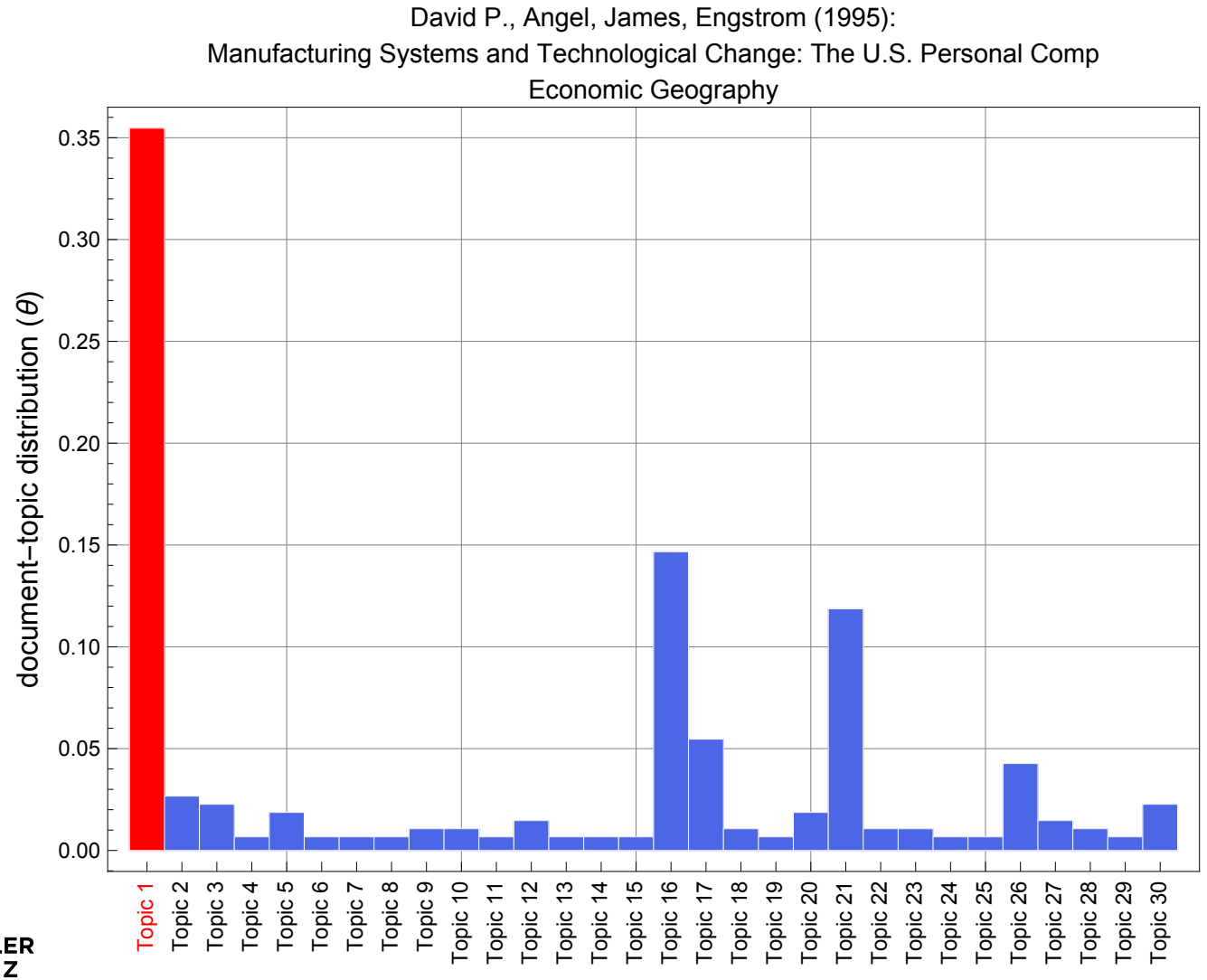
(preliminary) results II: a bird's eye's view on competition in economic research

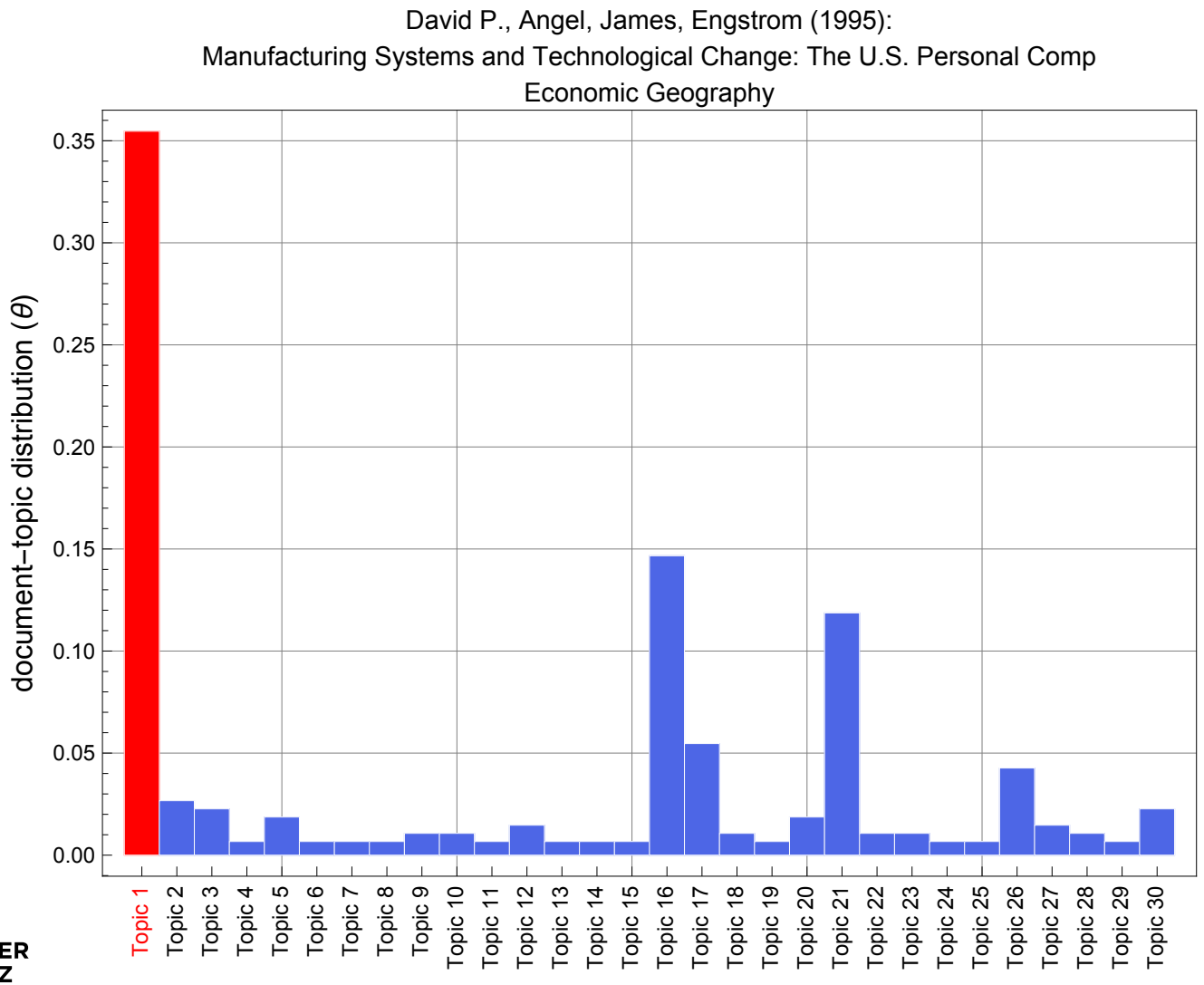
- CGS with overall "narrow" sample
  - Number of topics T=*30*
  - Dirichlet hyperparameters α = *50/T*, β = *0.01*
  - Number of iterations: 500

(preliminary) results II: some examples



(preliminary) results II: some examples

Topic 1	Weight (ϕ)
technology	0.0247
industry	0.0172
innovation	0.0164
firms	0.0158
product	0.0153
technological	0.0151
research	0.0147
production	0.013
process	0.0128
firm	0.0119
investment	0.0113
development	0.0108
industries	0.0104
products	0.0104
industrial	0.0103



(preliminary) results II: some examples

- Topic1: technological innovation and industrial development

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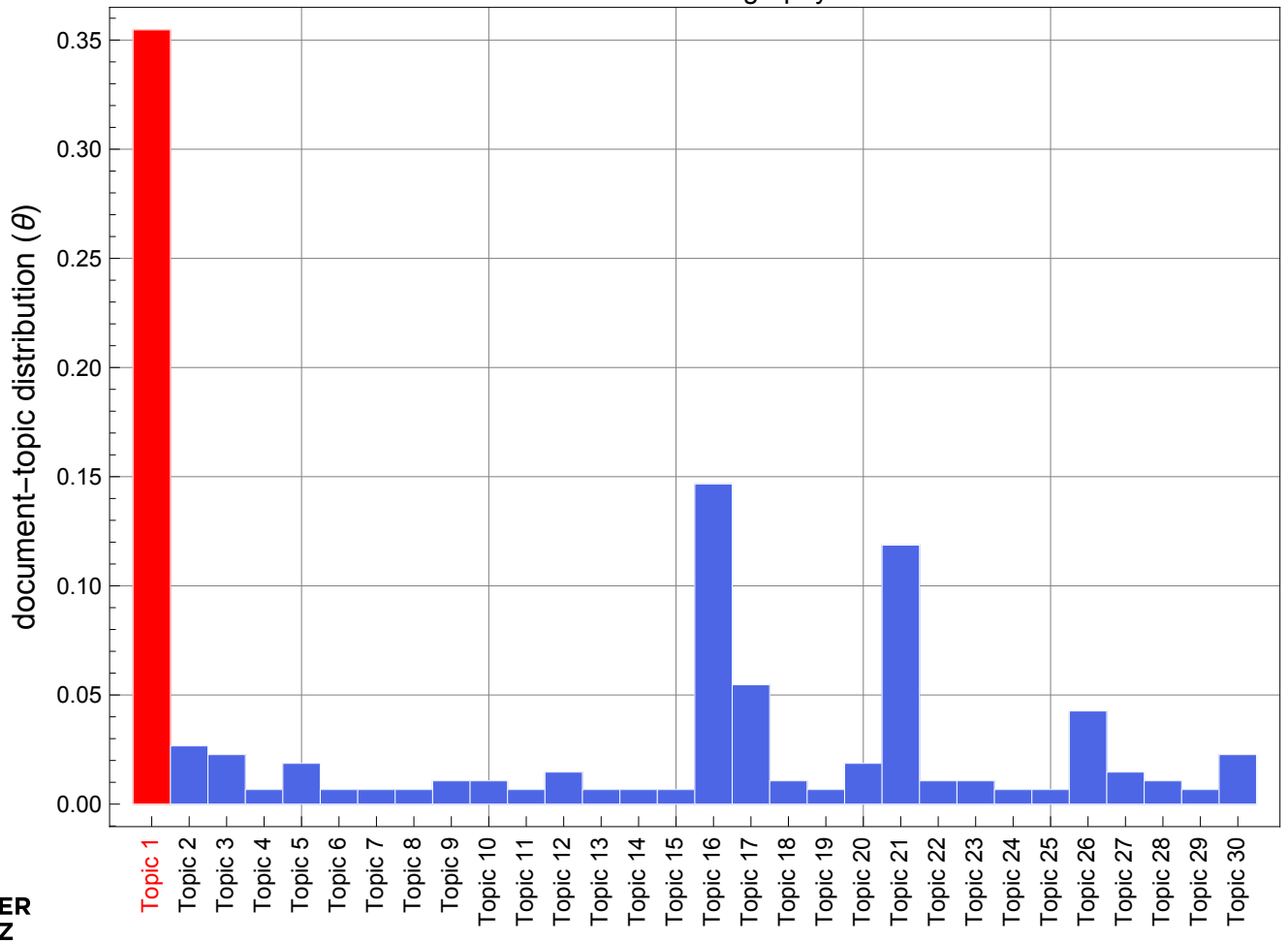
Manufacturing Systems and Technological Change: The U.S. Personal Comp
Economic Geography



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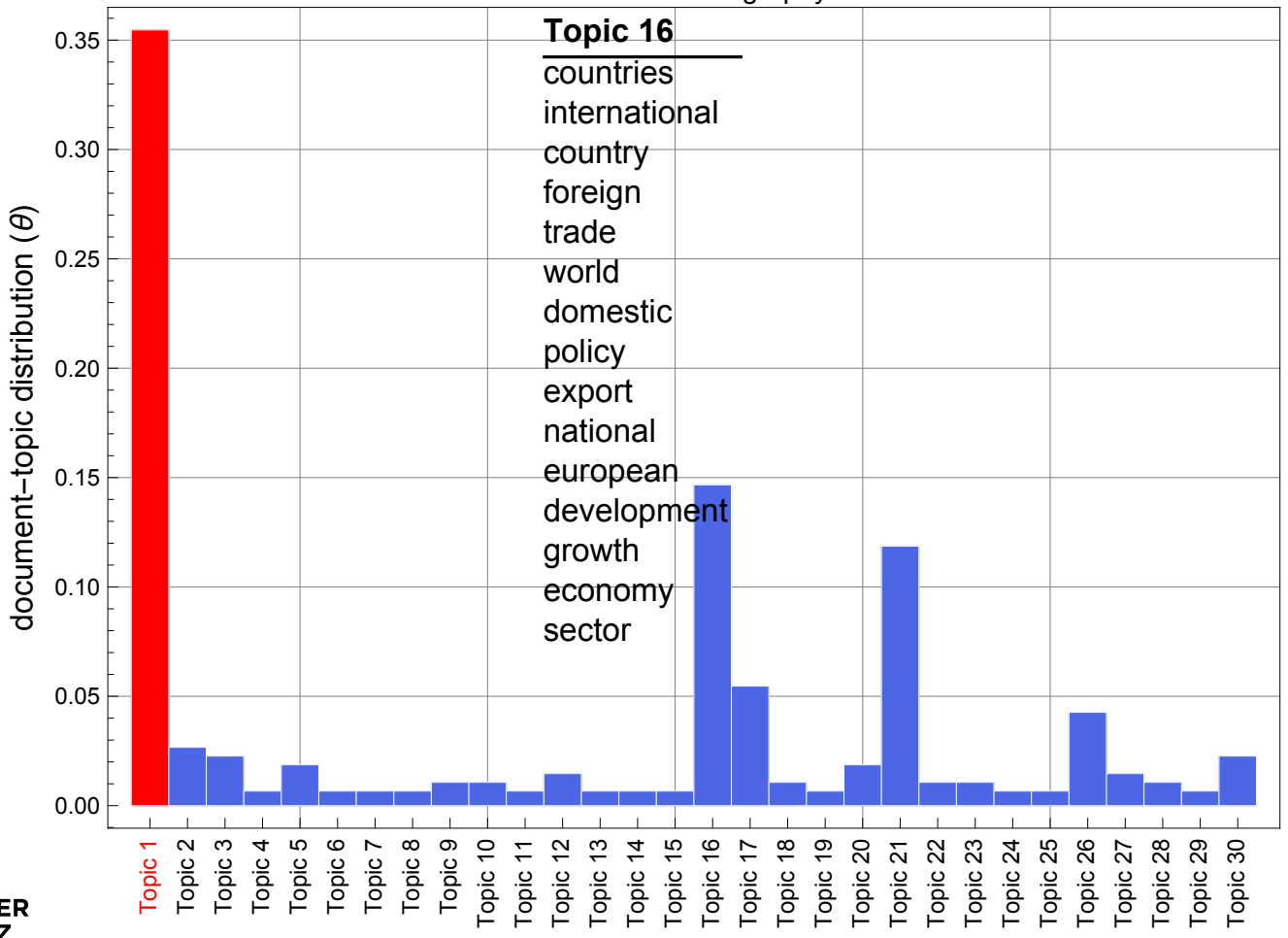

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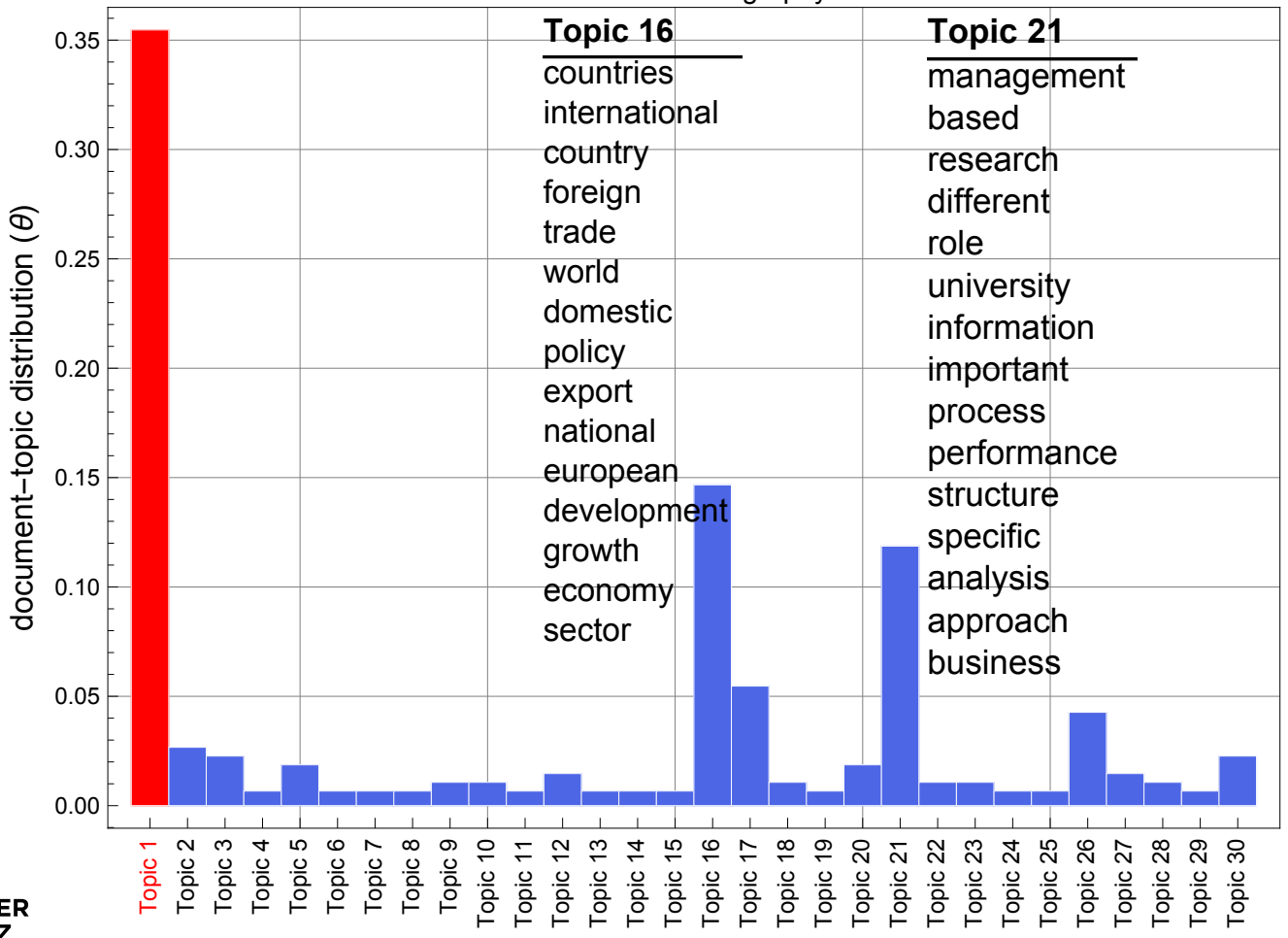

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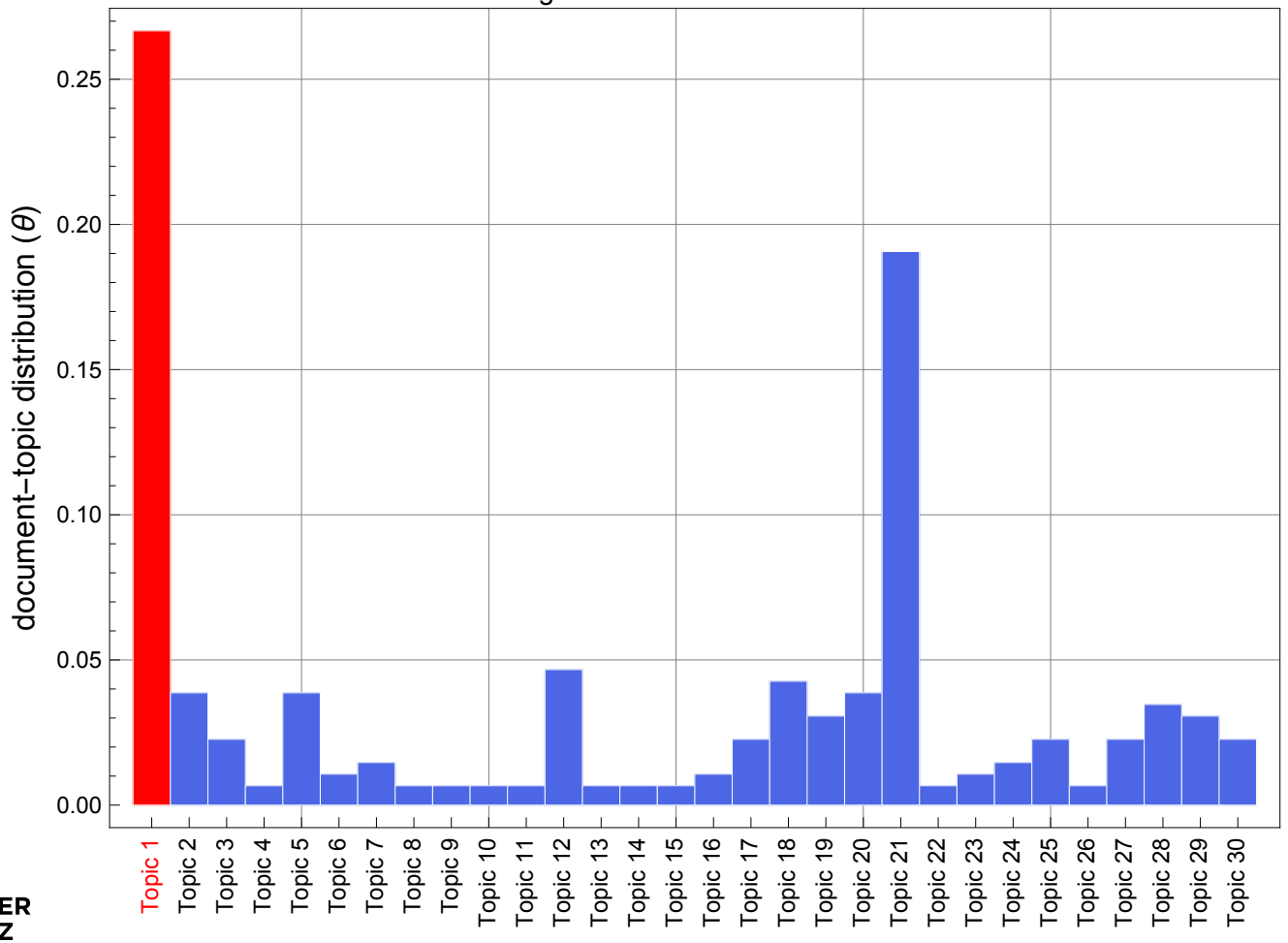

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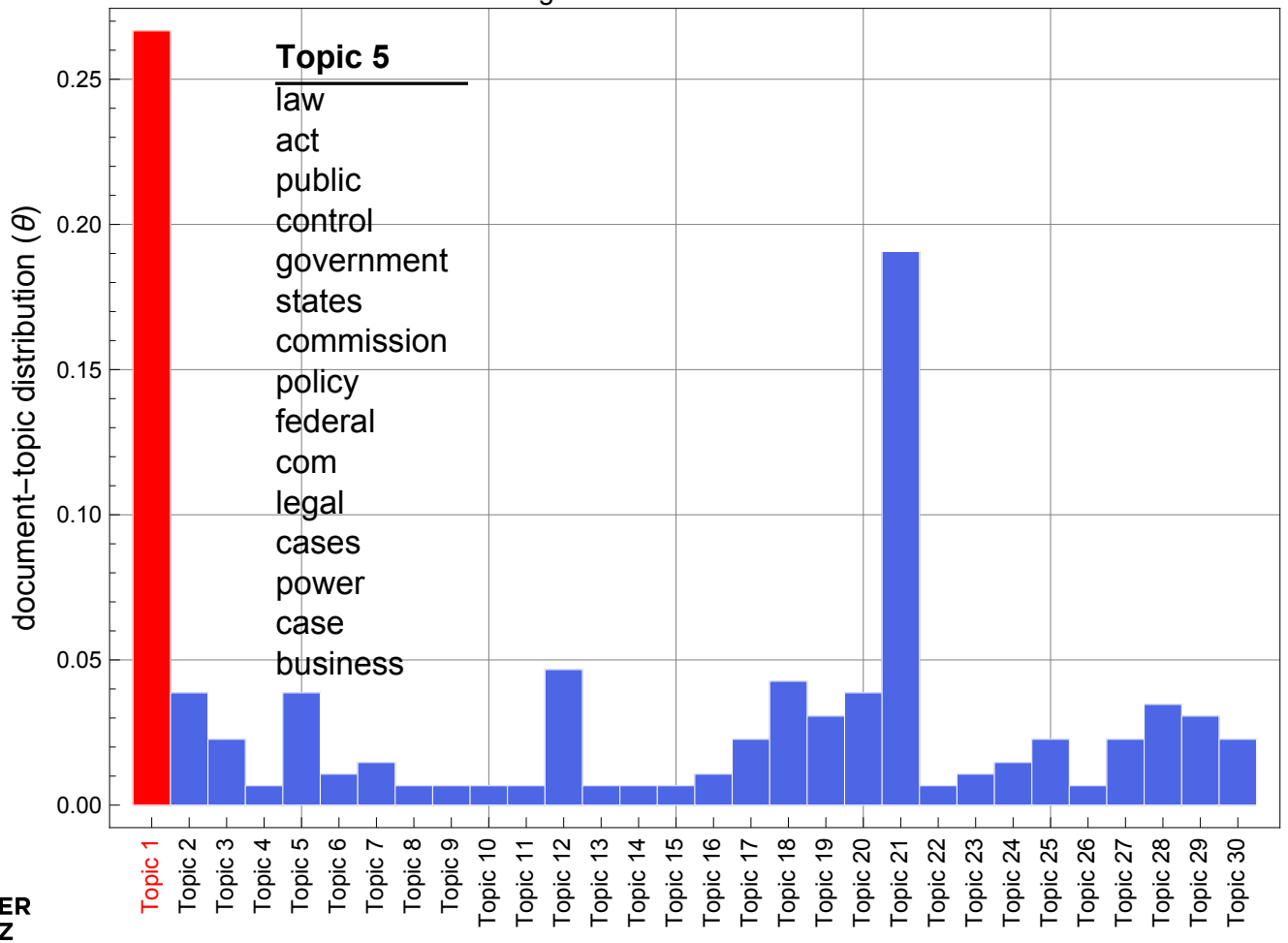

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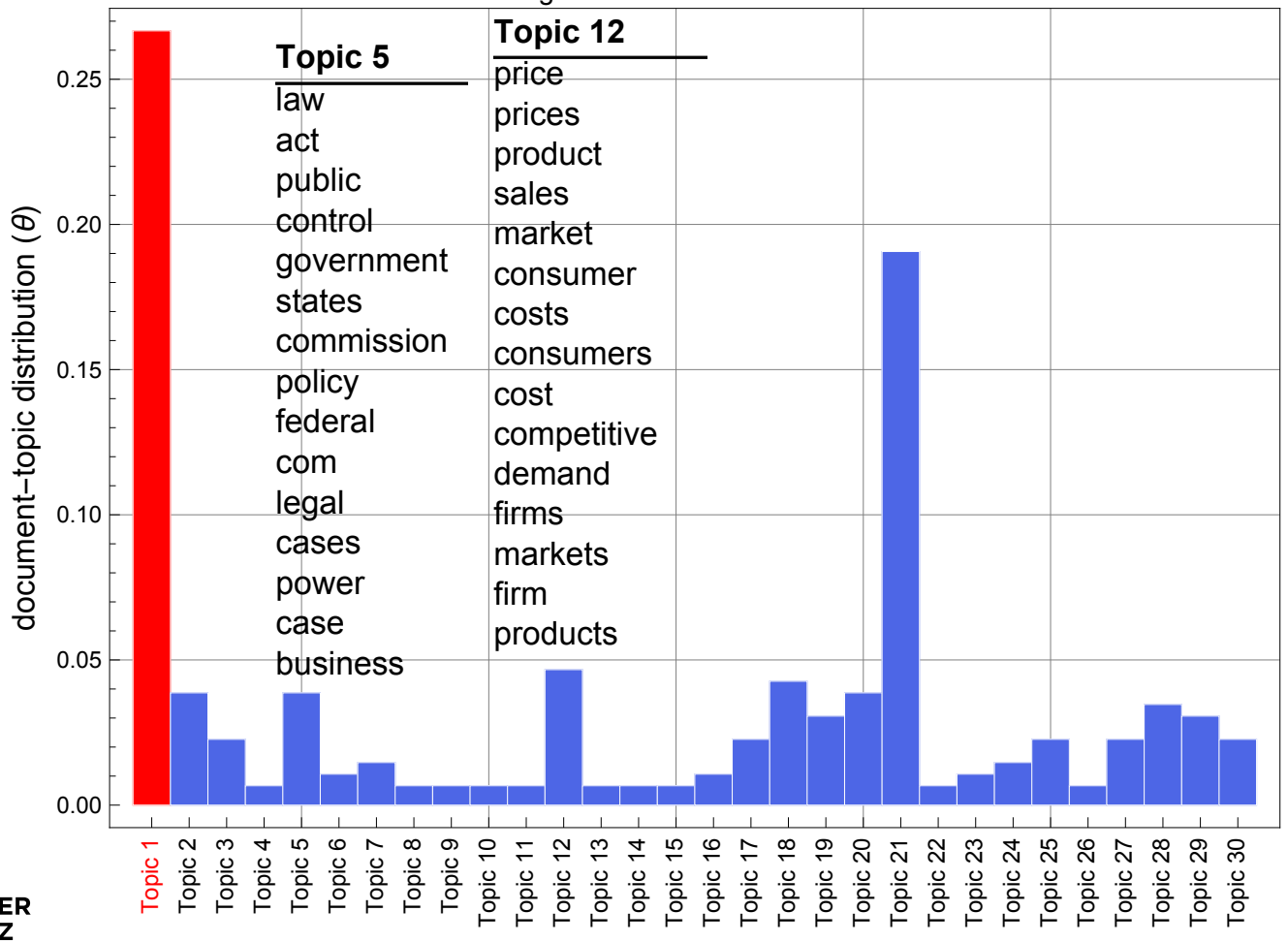

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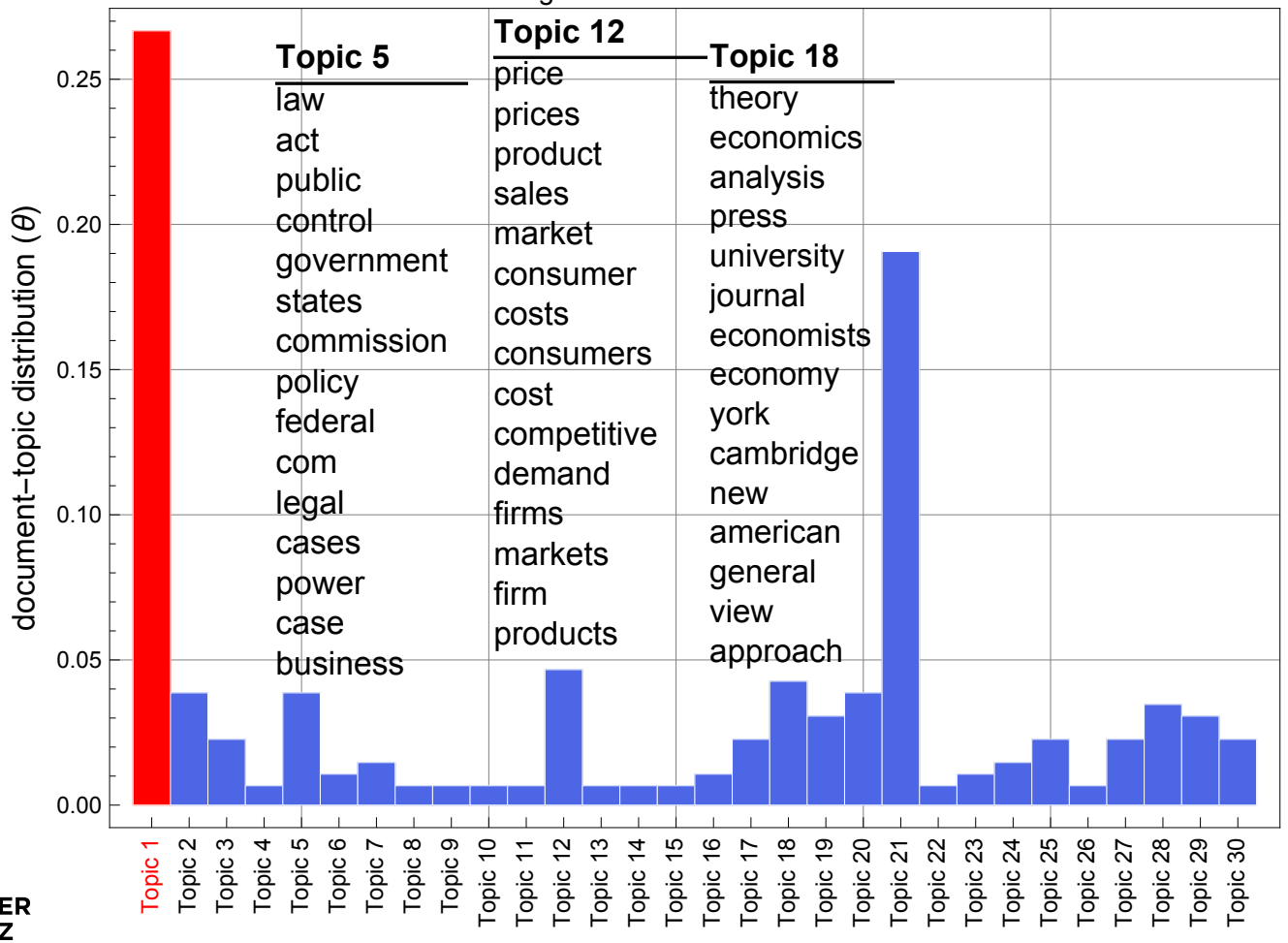

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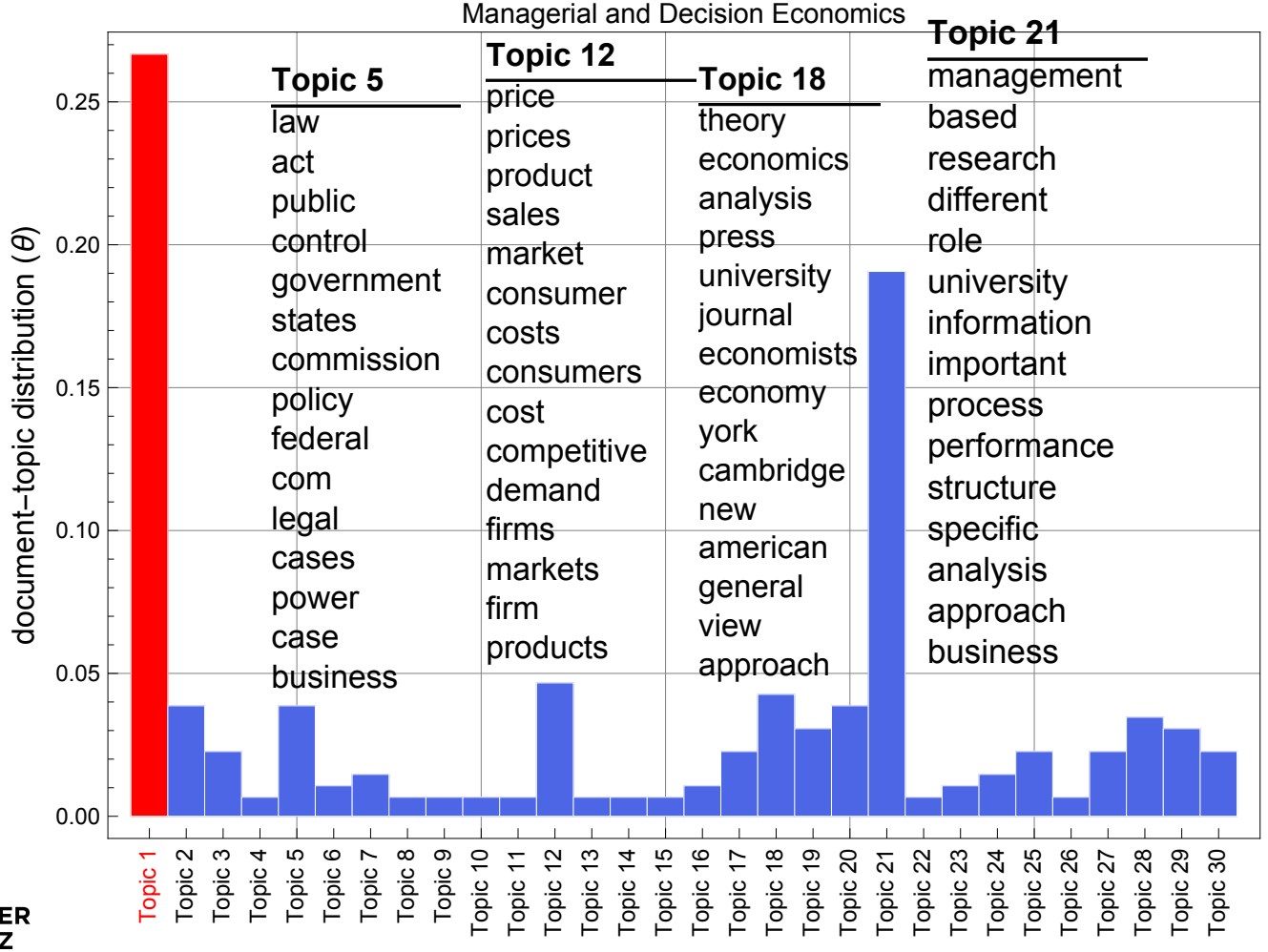

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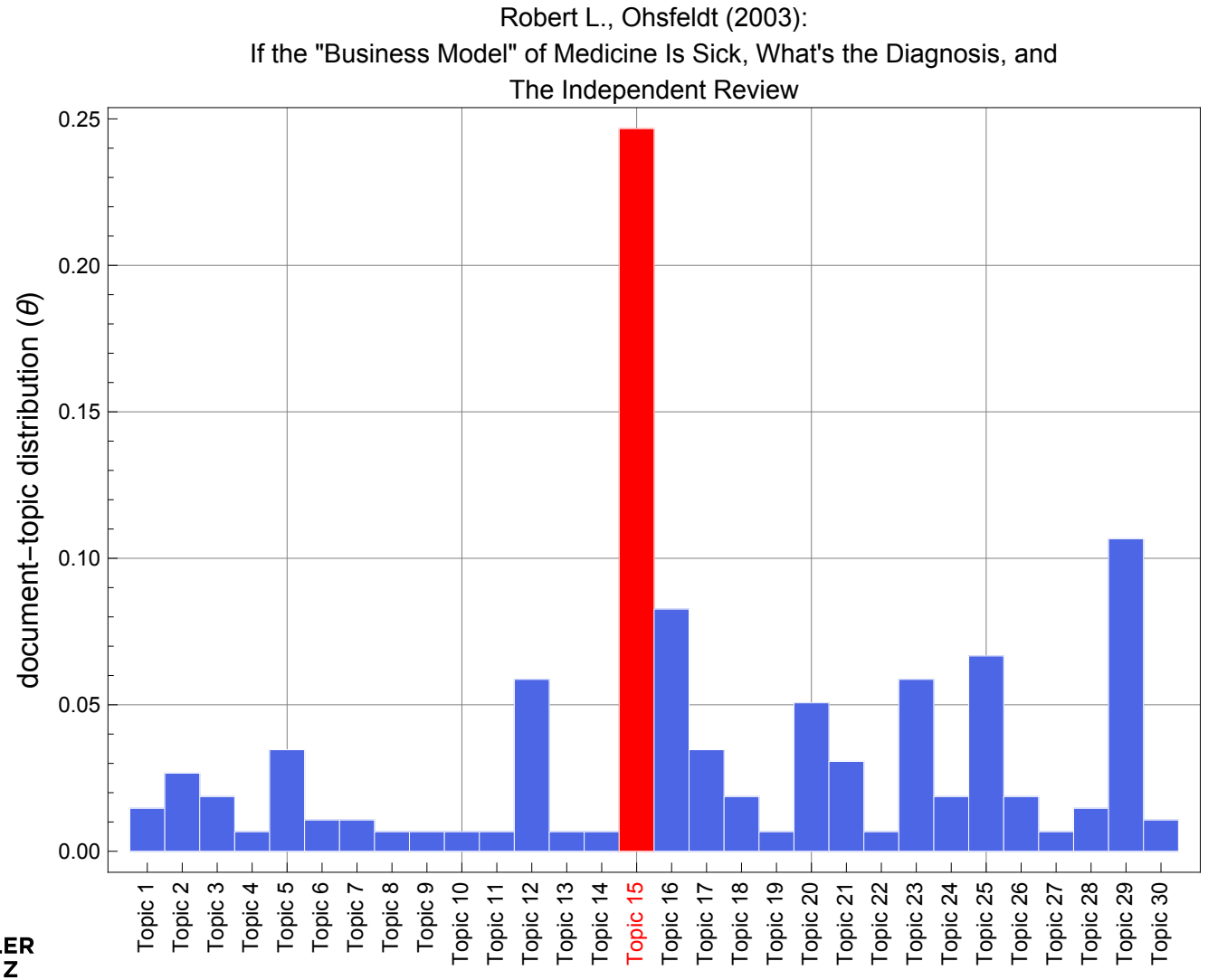
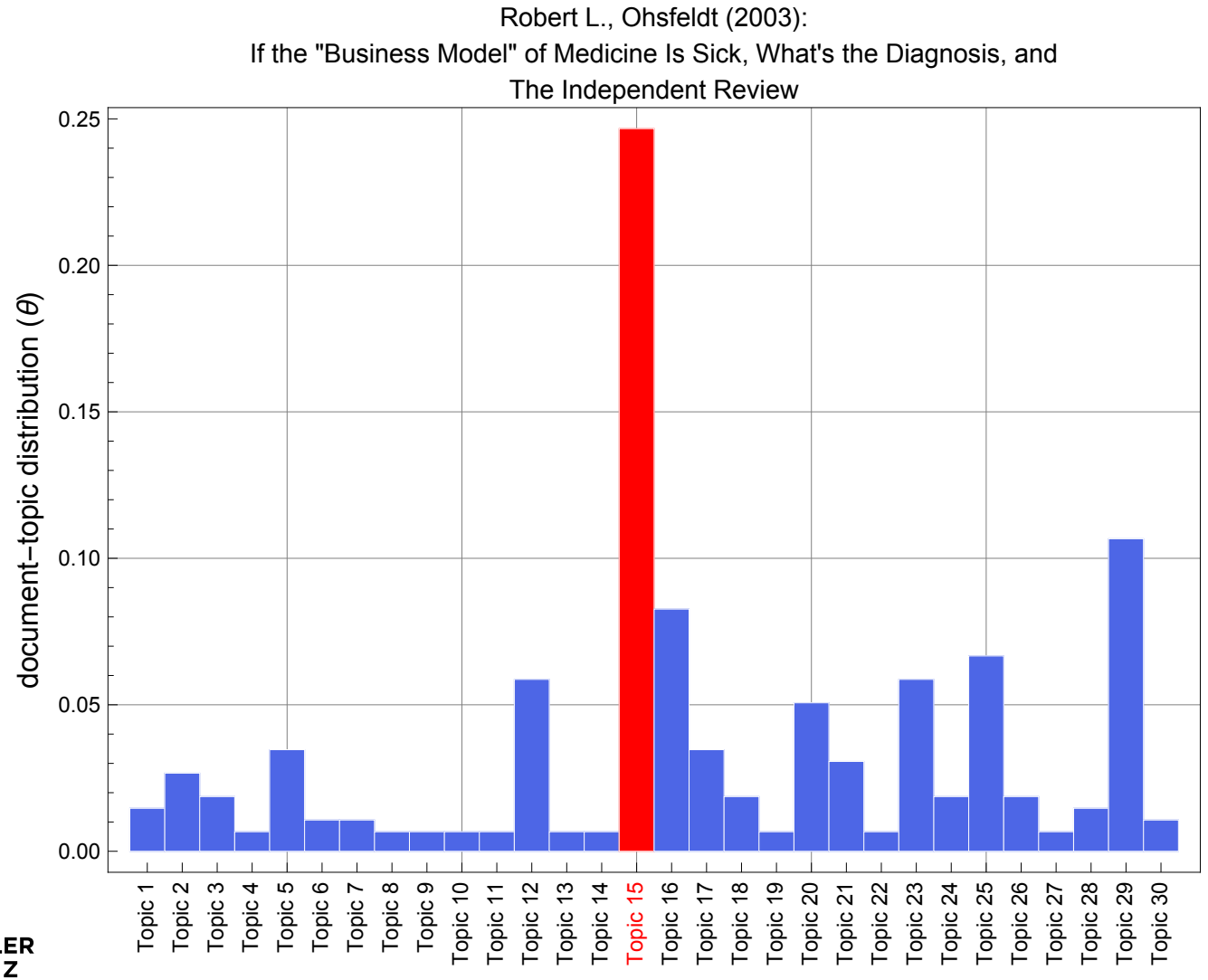


(preliminary) results II: some examples

Topic 15	Weight (ϕ)
health	0.0199
insurance	0.0166
care	0.0164
services	0.0146
service	0.0109
cost	0.0108
quality	0.0101
medical	0.01
coverage	0.0096
premium	0.0093
risk	0.0085
airline	0.0077
insurers	0.0077
airlines	0.0074
plans	0.0068



(preliminary) results II: some examples

- Topic15: health care and insurance

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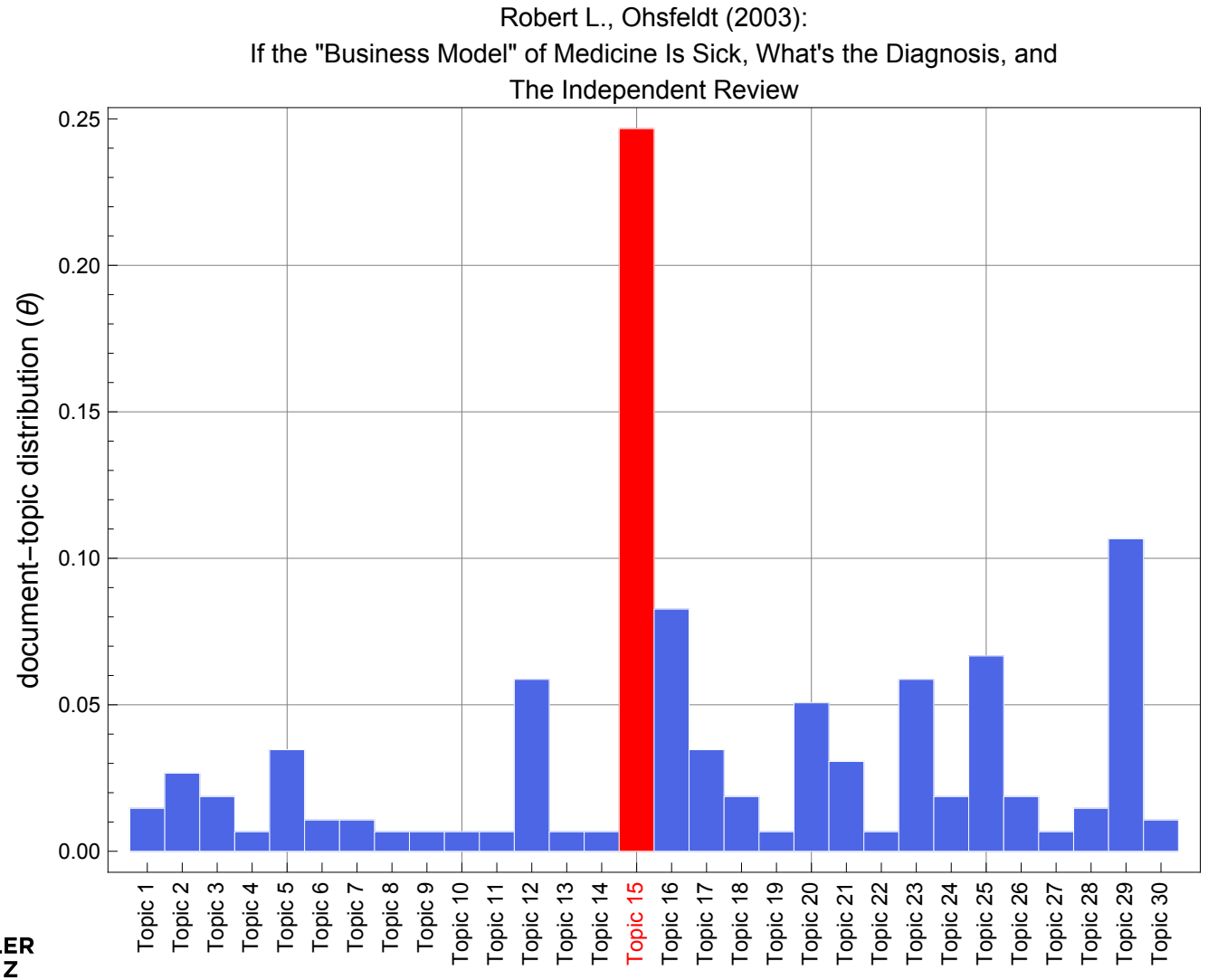

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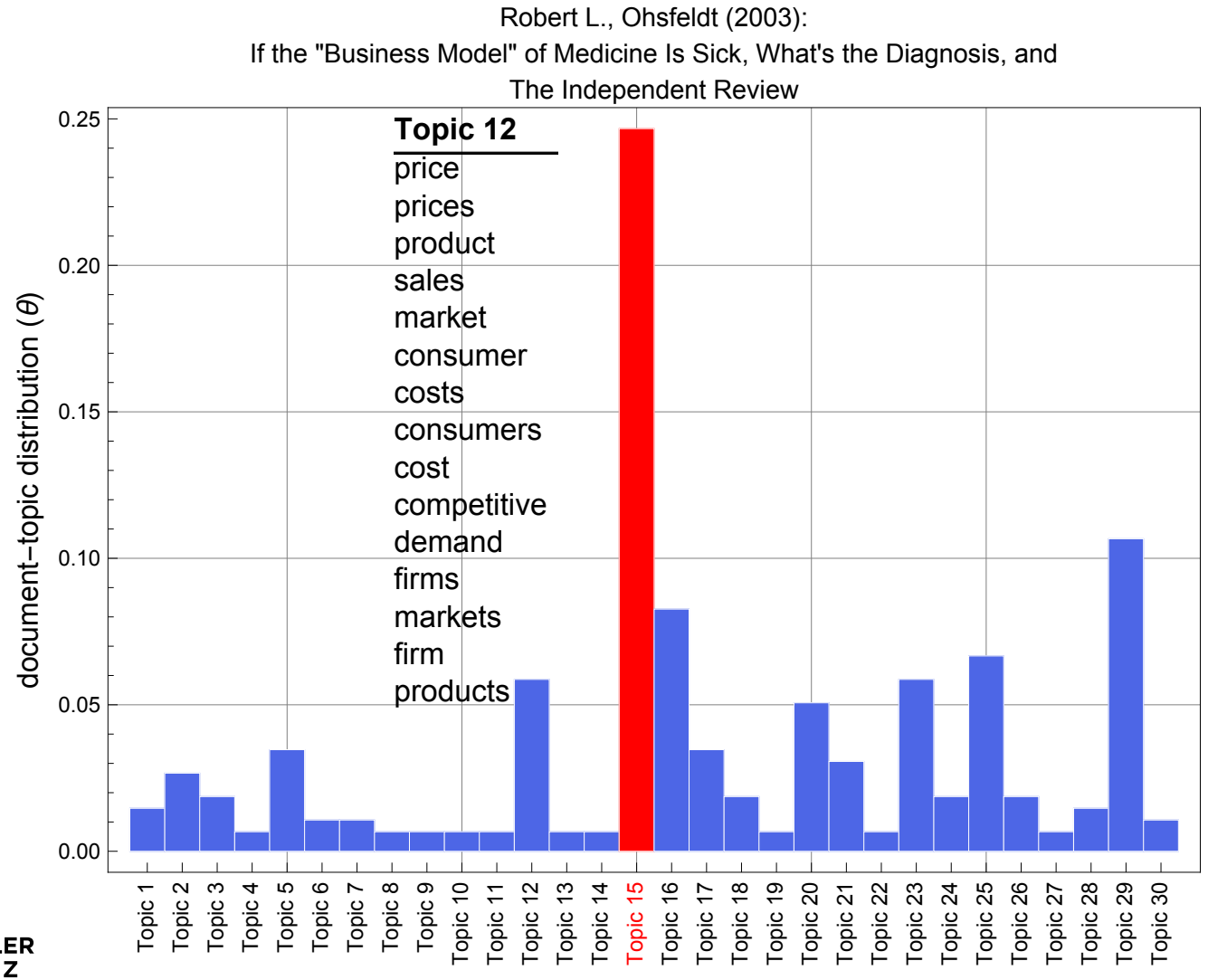

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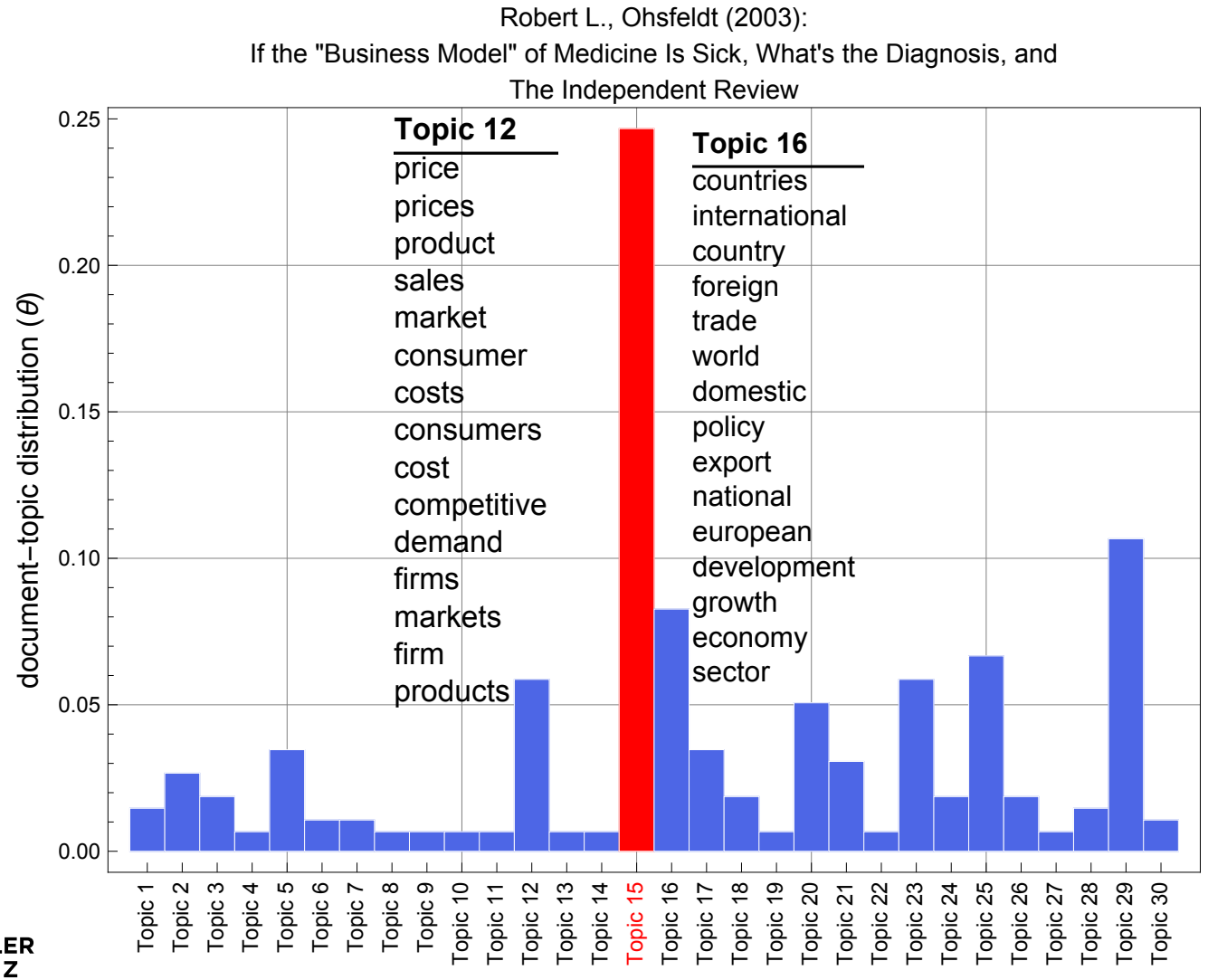

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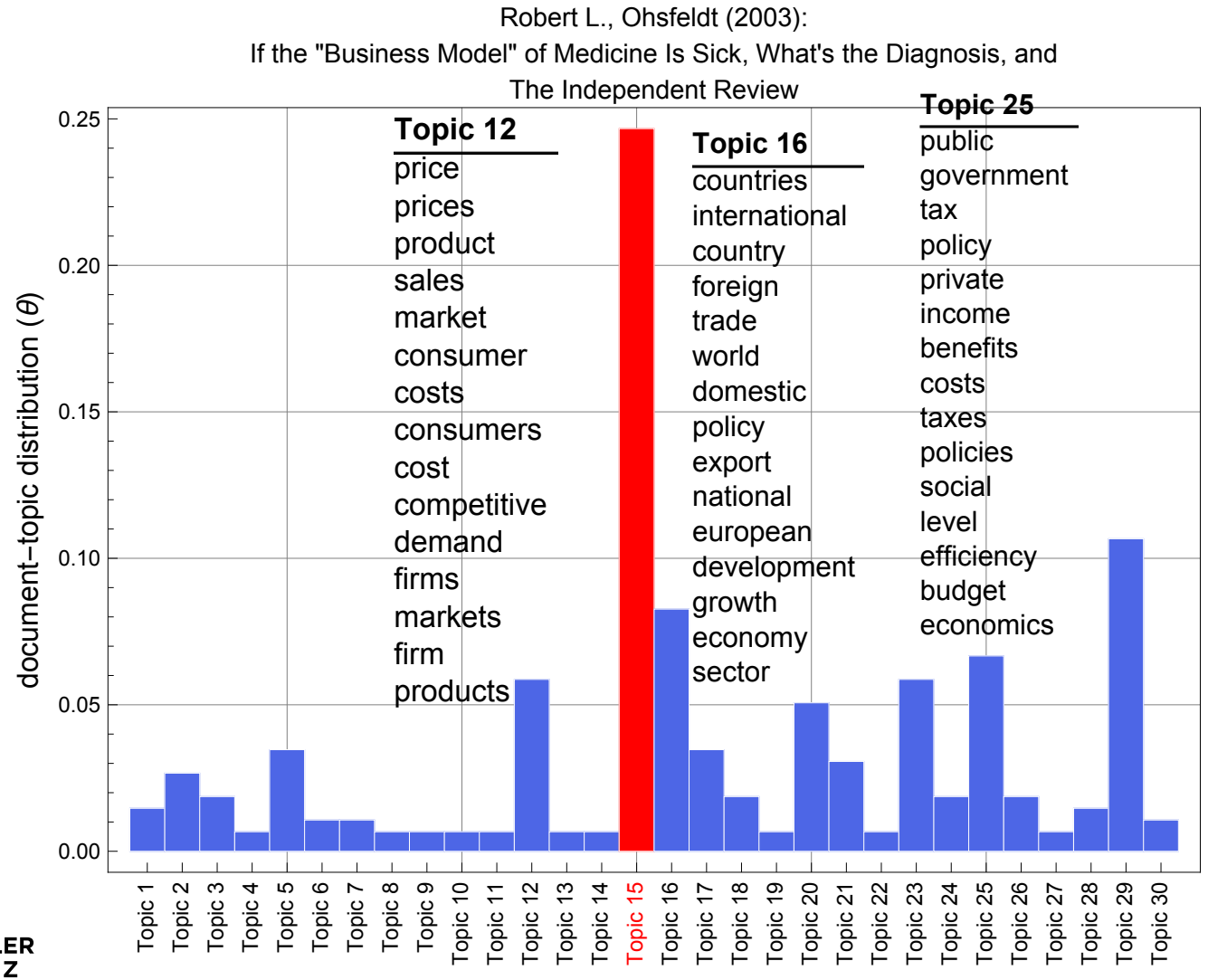

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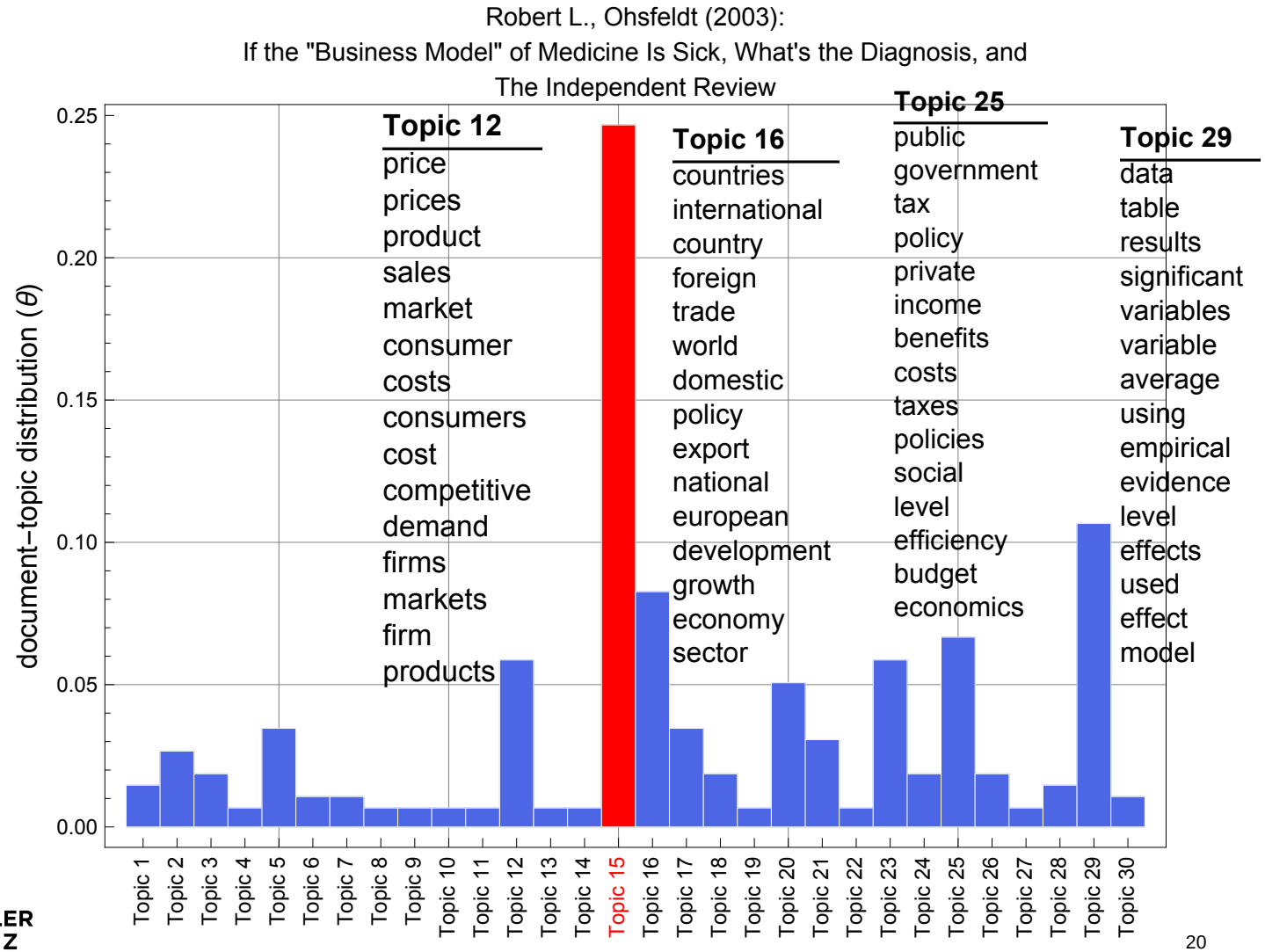

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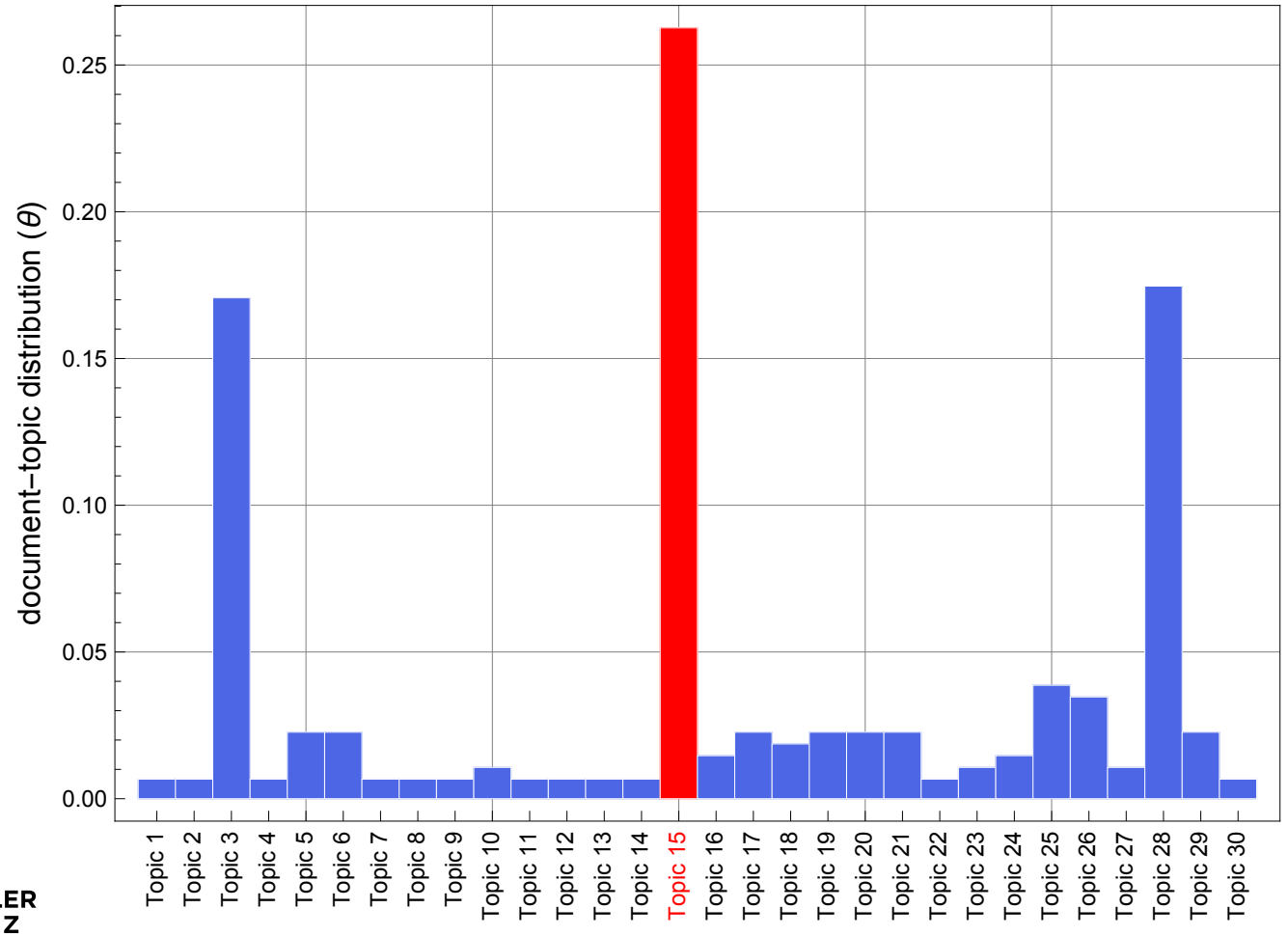
Karen, Eggleston (2000):
Risk Selection and Optimal Health Insurance–Provider Payment Systems
The Journal of Risk and Insurance



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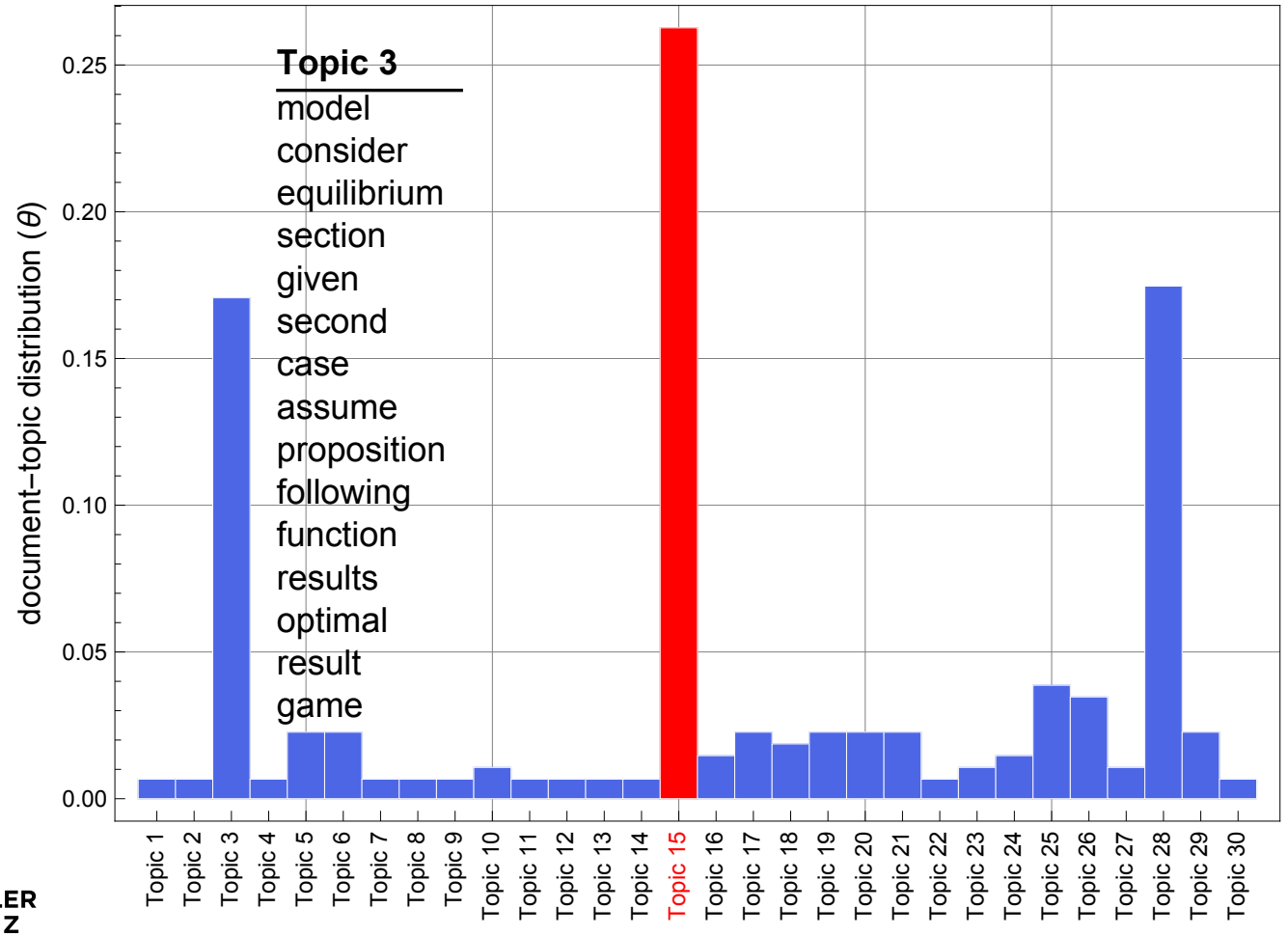

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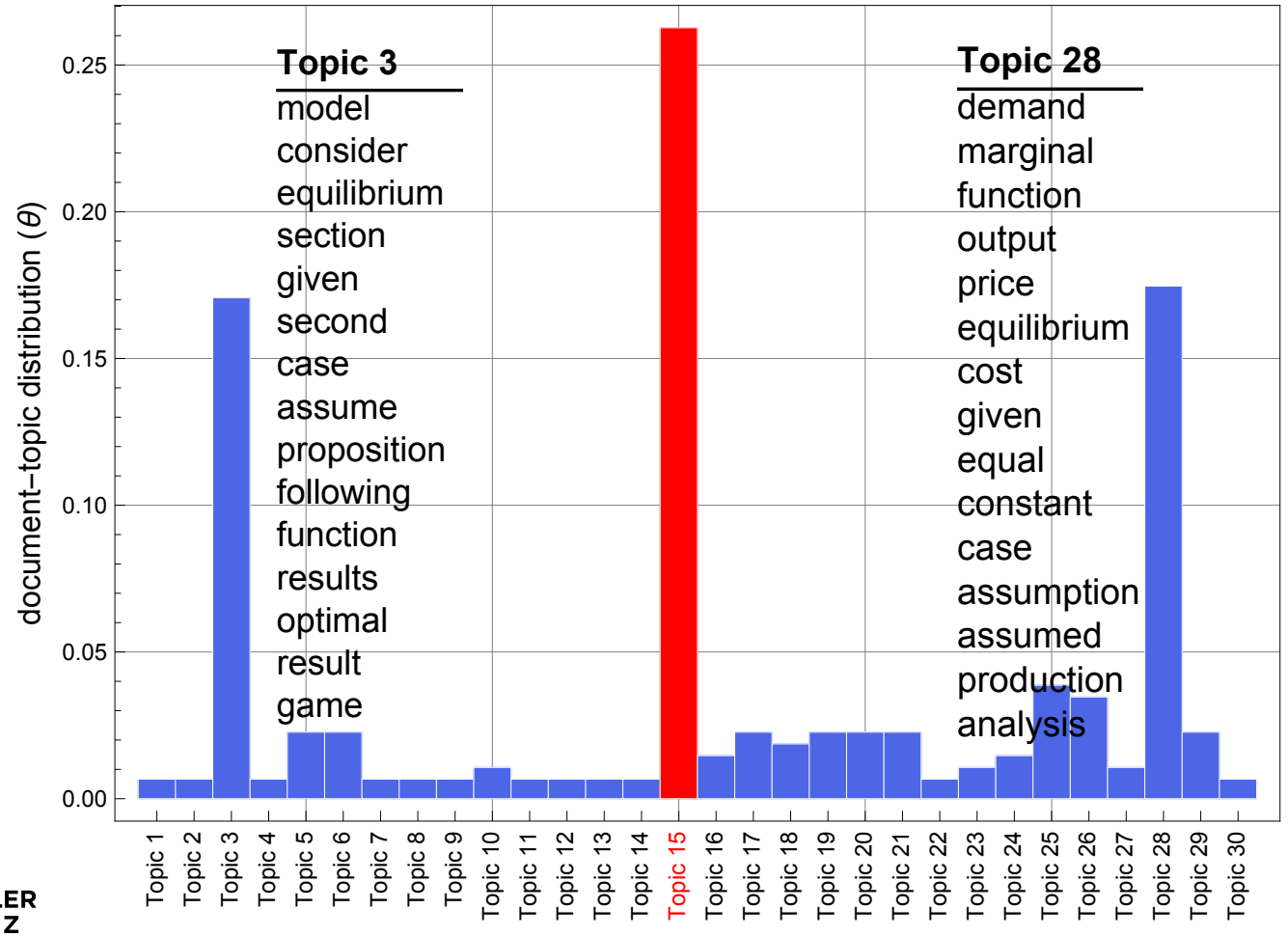

(preliminary) results II: some examples

- Topic15: health car

Question to the audience: Whats the difference between these two topics? Some suggestions?

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insurance	0.0166
care	0.0164
services	0.0146
service	0.0109
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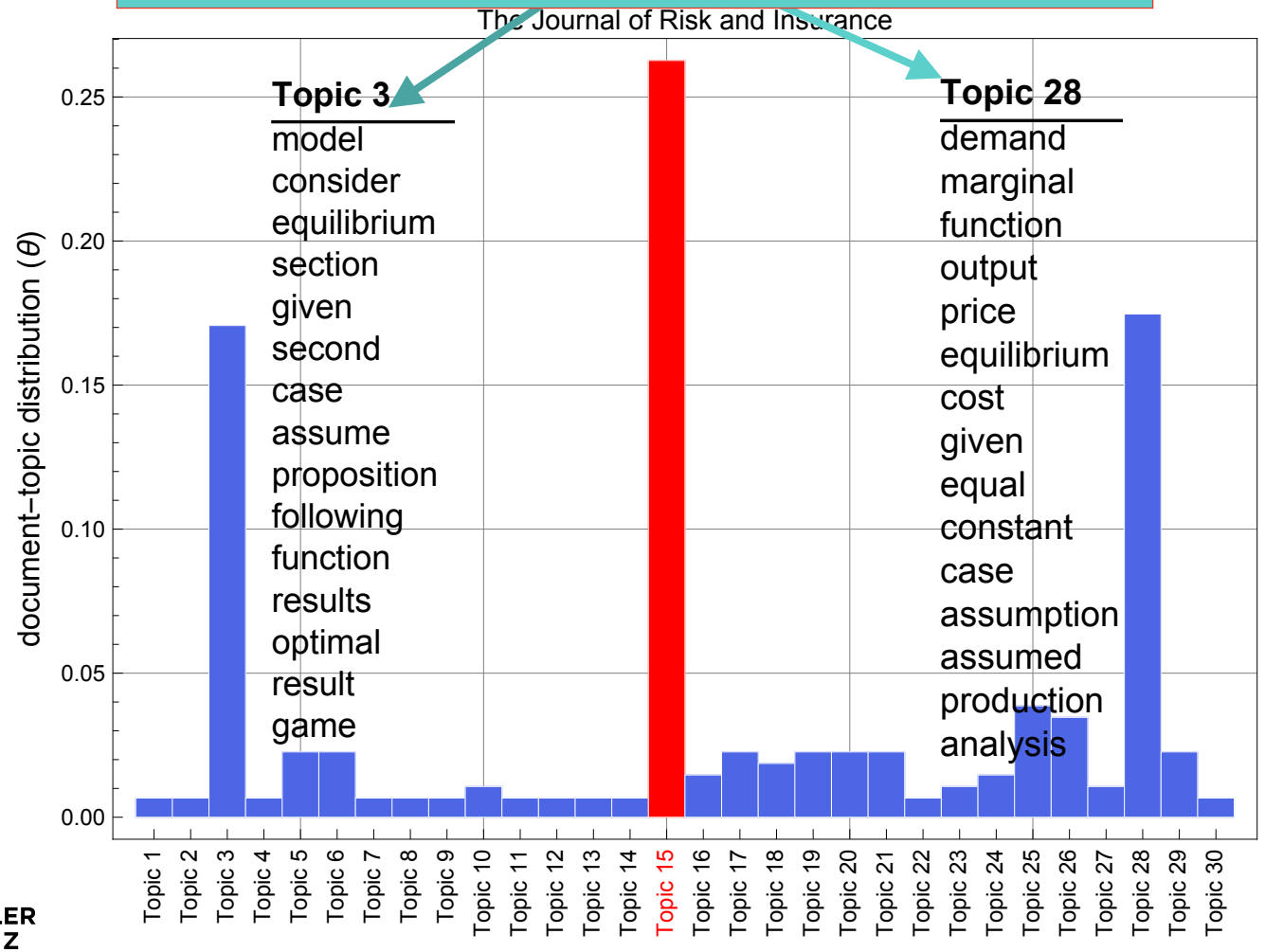

(preliminary) results II: some examples

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Topic 22	Weight (ϕ)
anthony	0.0087
morris	0.0066
occurring	0.0064
klaus	0.0053
capturing	0.004
observers	0.0036
tighter	0.0036
chowdhury	0.0034
tai	0.003
phillip	0.0025
stayed	0.0025
quiet	0.0023
vic	0.0023
fication	0.0023
stacking	0.0021

(preliminary) results II: some examples

- Topic22:???

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(preliminary) results II: some examples

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Topic 22	Weight (ϕ)
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morris	0.0066
occurring	0.0064
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capturing	0.004
observers	0.0036
tighter	0.0036
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stayed	0.0025
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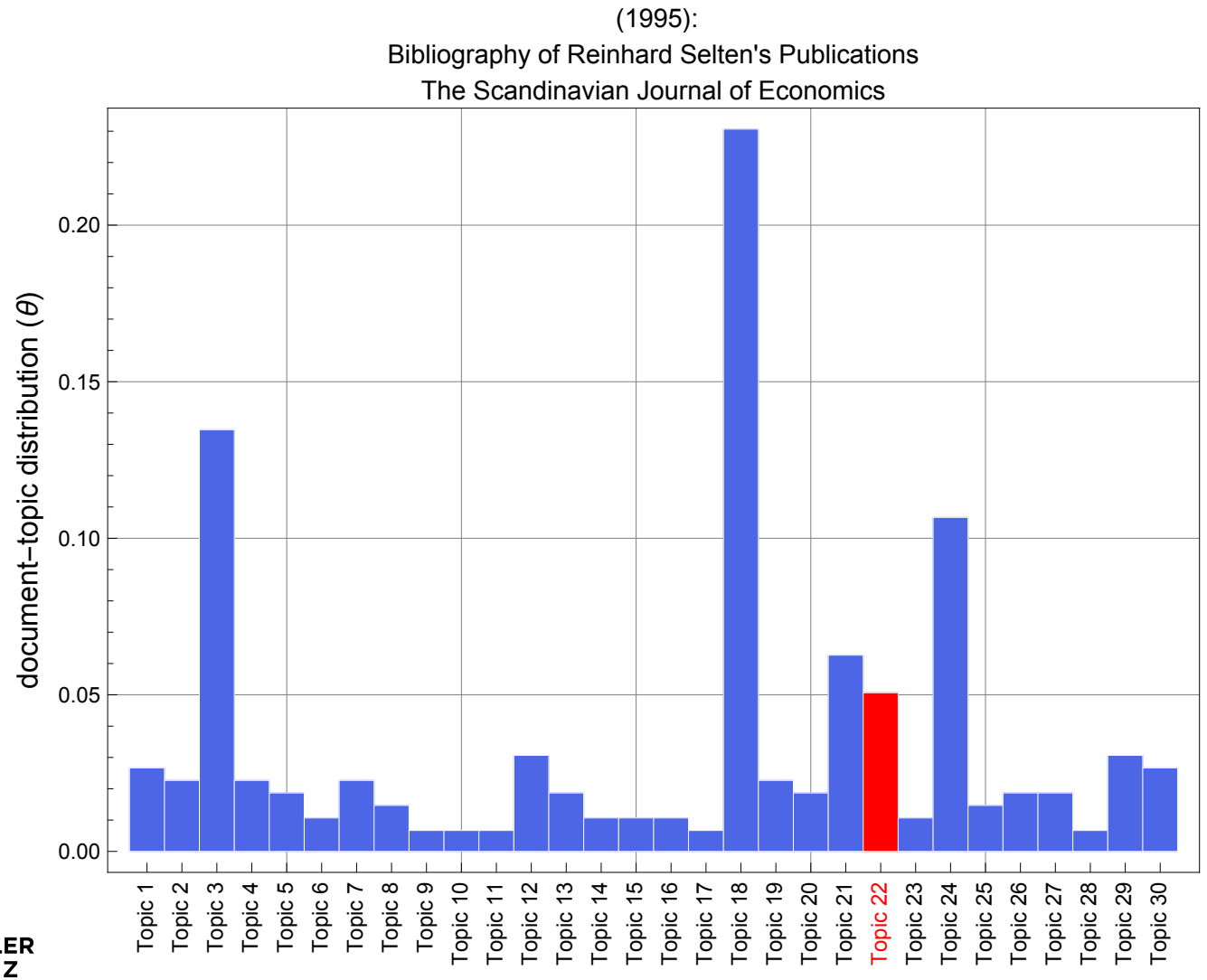

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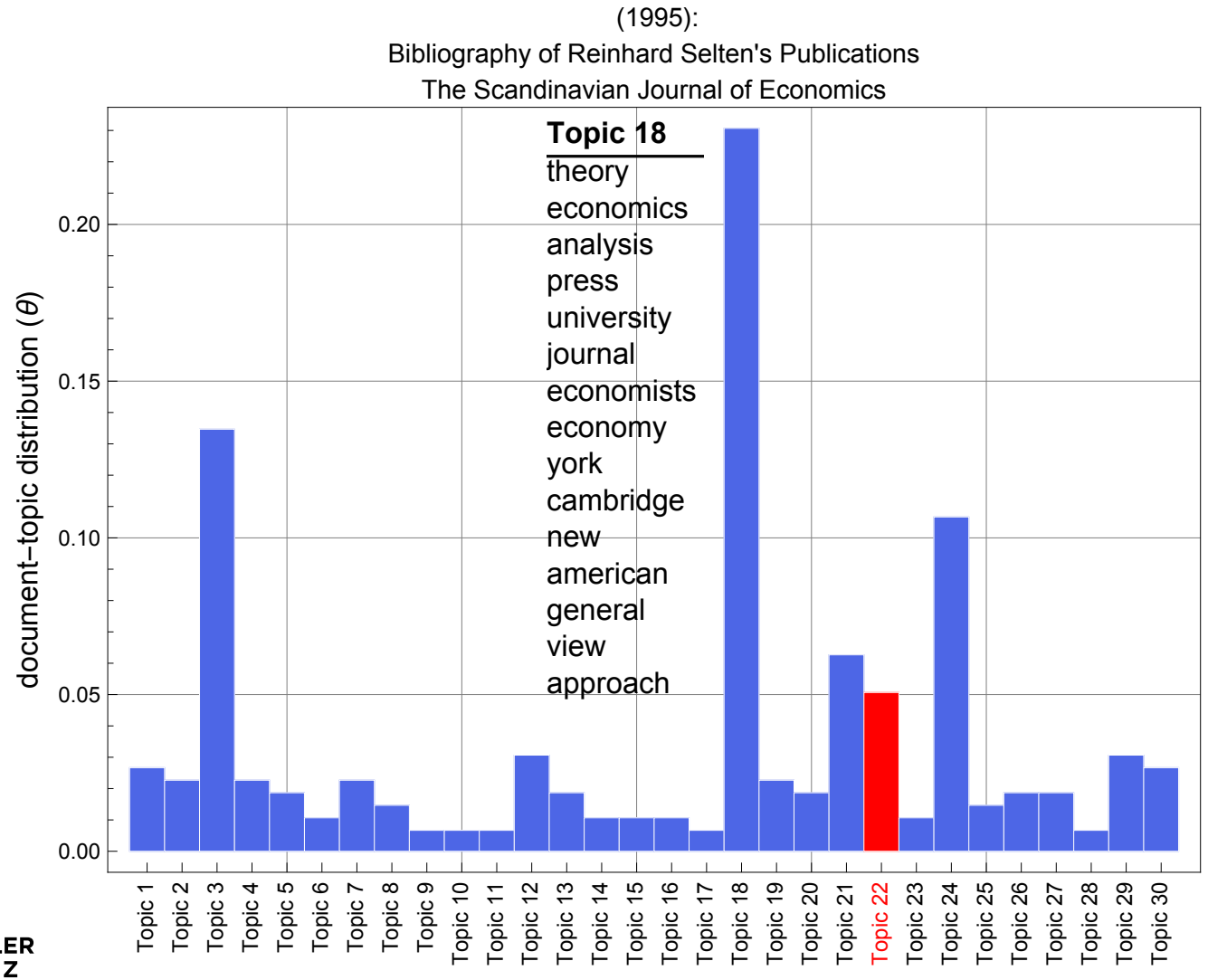

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    - Replication for other fields (e.g. Sociology, Political Science, Anthropology)

Many thanks for your attention