LIBRARY AND INFORMATION CENTER OF
THE HUNGARIAN ACADEMY OF SCIENCES
DEPARTMENT OF SCIENCE POLICY AND SCIENTOMETRICS

Utilizing a national scientific bibliography in science policy

the Hungarian MTMT
and career research on Doctorate Holders

Anna Kiss

1.
A funded project for the study of career paths of Hungarian Doctorate Holders

Aims and objectives

- In recent years, increasing attention is being drawn to the analysis of scientific career paths using the indicators of academic career in career studies (Panaretos and Malesios, 2009).
- Bibliometric methods play an increasing role in scientific career path analysis and its evaluation (Persson, 2017).
- The aim of this study was to determine the patterns of academic career paths for Hungarian Doctorat holders
- using multivariate bibliometric analysis, that is, a rich system of structural indicators.
- Main aim: to develop a complex indicator system, that combines the aspects of academic career that can be captured via purely bibliometric methods

Persson, R. A. (2017). Bibliometric author evaluation through linear regression on the coauthor network. Journal of Informetrics, 11(1), 299-306.
Panaretos, J., & Malesios, C. (2009). Assessing scientific research performance and impact with single indices. Scientometrics, 81(3), 635.

Methods

- Our source database has been the Hungarian National Scientific Bibliography (MTMT)

- We have matched the publication records retreived from the MTMT database with (1) a national dabase on doctorate holders (2) Web of Science data, and used the WoS-indexed fraction to conduct the actual analysis.

- Based on these data, structural career indicators have been calculated for each author. We have applied a two-step method: first we determined the factor structure of variables. Using these main career components, the second step consisted of the clustering of authors, in order to arrive at a typology of career paths.

Indicators

Indicator	Method of calculation	Acronym
The average number of annual publications	$\frac{\text{Number of publications}}{\text{Number of years from first publication}}$	PPY
Evenness of distribution of publications	Evenness (normalised value of the Shannon entropy index) of publication activity throughout the career path	PDist
Diversity of academic publication channels	Distribution of publications among journals (Evenness of the distribution of ISSN numbers in the publication record)	SO.dist.
Diversity of subject areas	Distribution of publications among subject categories (Evenness of the distribution of WoS SCs in the publication record)	SC.dist
Change of publication quality	Change of journal rank throughout the publication record (via the difference in averege JIF percentile rank between the first and last years, using a 3-year moving average)	perc.change
Change of internationalisation	% point change in the share of internationally co-authored papers in the publication record (first, last years, 3-year moving average)	Int.share. change
Change in number of collaborators	% point change in the number of coauthors (first, last years, 3-year moving average)	au.level.change

Results

Indicators	Clusters				Significant differences at 5% of significance
	A	B	C	D	
PPY	2.0568	1.1285	1.1531	1.5759	A-B;C; D; B-D; C-D
P.dist	0.9289	0.9414	0.9469	0.9409	A-B;C;D; B-C; C-D
SO.dist	0.7914	0.9524	0.9552	0.9454	A-B;C; C-D
SC.dist	0.4981	0.8965	0.8895	0.8754	A-B;C; B-D
P.change	0.0132	-0.0450	0.0584	0.0204	A-B;C; B-C;D; C-D
perc.change	-0.0074	-0.0312	0.0371	0.0037	A-B;C; D; B-C;D; C-D
au.level.change	0.0217	-0.0389	0.0979	0.0281	A-B;C; D; B-C;D; C-D
int.share.change.	0.0596	-0.1571	0.2749	0.0380	A-B;C; B-C;D; C-D
Number of cluster members	573	989	900	1737	

2.
The contribution of a national “bibliography” outlined

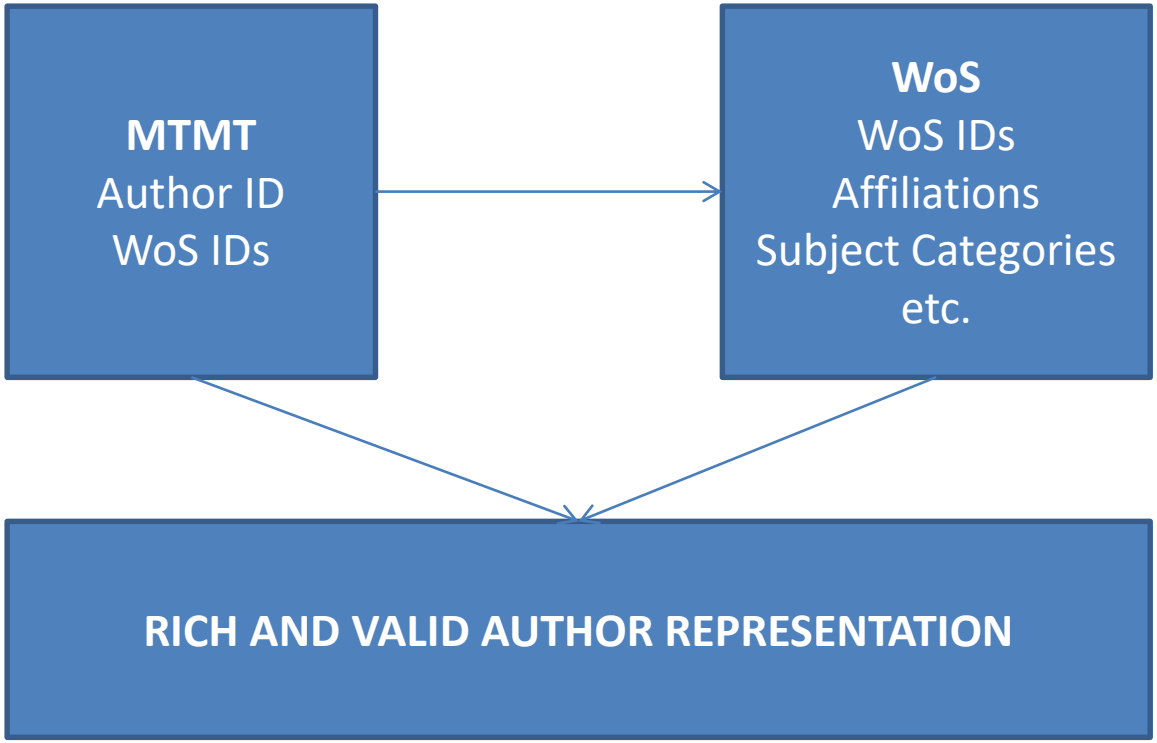
Hungarian National Bibliography (MTMT)

MTMT is

- an author- and organization-centered,
- National ciitation index (w.r.t source pubs),
- indexing national scholarly output,
- with rich metadata structure (author information, citing items, citation statistics, journal metrics etc.),

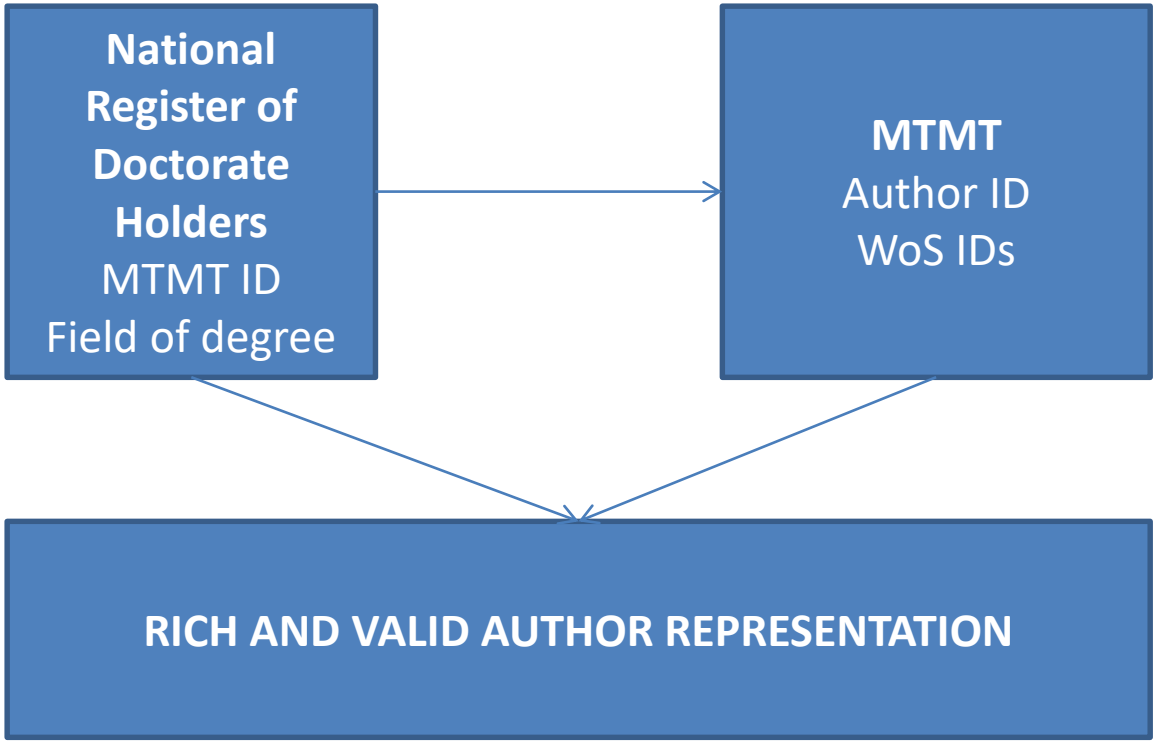
Metadata

- The utility of integrating MTMT with international citation databases (WoS): valid author-level statistics



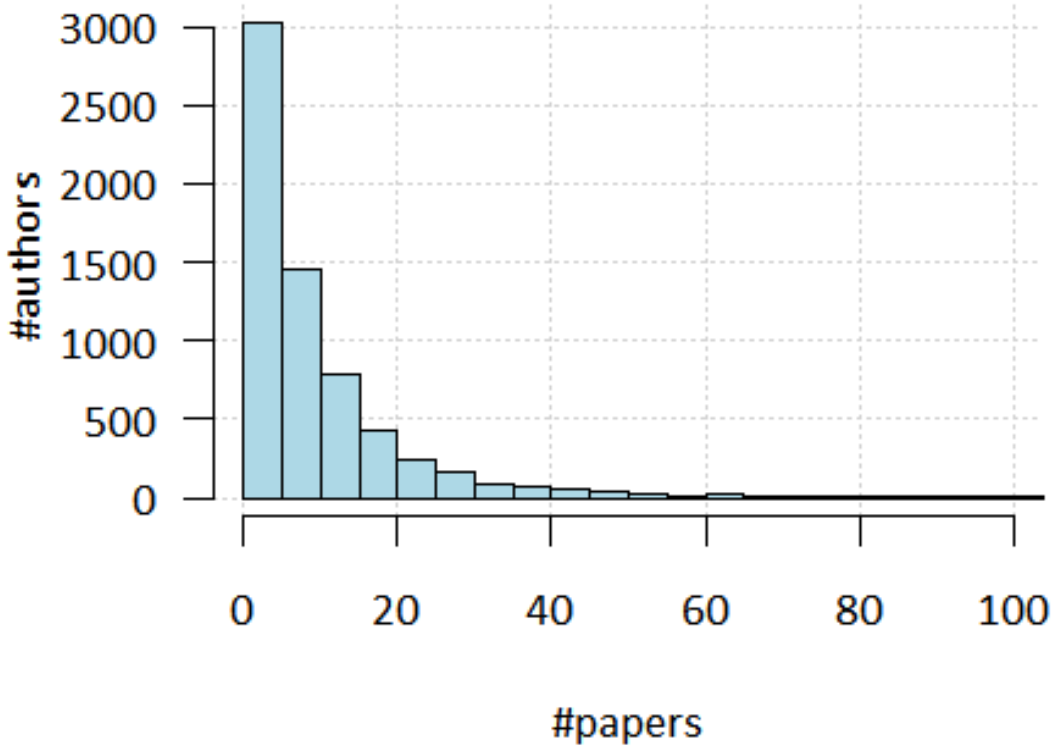
Metadata

- MTMT can be easily integrated with other national databases on authors (researchers)



Sample size

- The utility of full author records: sufficient number of pubs/author for career analysis (compared to WoS-harvested record)



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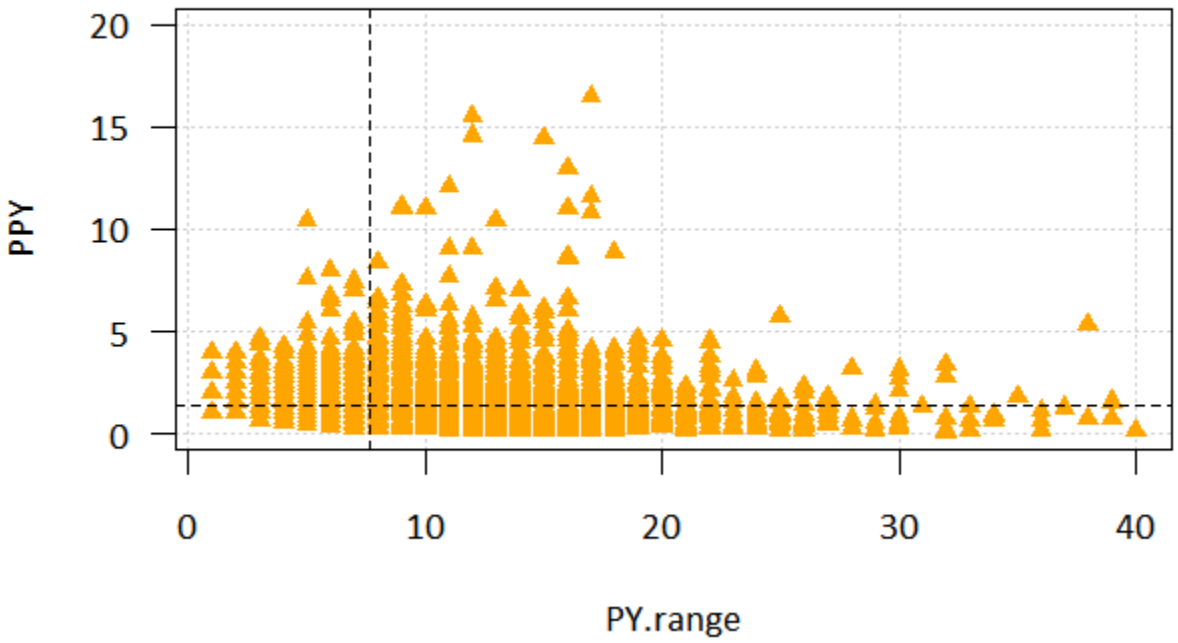

To conclude

- National bibliographies (citation indexes etc.) allow for utilization beyond research administration and evaluation
- An excellent example is the study of the patterns within the national scholarly community (sociology of science)
- National bibliographies have a great added value to the use of commercial databases:
- Combining with commercial citation indexes: valid data AND rich metadata structure
- Combining with national databases: „seamless” connections and integration for valid (author) data, even richer metadata structure
- „Big enough samples” for statistical analysis

- **BUT: not enough on its own. Goal: to improve metadata richness in national bibliographies. NOT ONLY COVERAGE THAT MATTERS!**