

How are New Citation-Based Journal Indicators Adding to the Bibliometric Toolbox

Loet Leydesdorff

Amsterdam School of Communications
Research, University of Amsterdam

<http://www.leydesdorff.net>

Journal Indicators

- Journal Impact Factor (Garfield)
- Immediacy Index (Price)
- Cited half-life
 - *time* involved (number of years)
- Number of issues, total cites in **each year**

“Surely it should be obvious that influence is a combination of impact and productivity”
(Garfield, 1986).

New Journal Indicators

1. *h*-index for journals (Braun *et al.*, 2006);
2. PageRank (← Pinski and Narin, 1976; Google)
3. *Scimago* Journal Rank (SJR)
(Falagas *et al.*, 2008);
4. Usage data (Bensman, 1996; Bollen *et al.*, 2009; *mesur project*);
5. A set of centrality measures from social network analysis (Freeman, 1978; e.g., Bergstrom & Rosvall's *eigenfactor project*);
6. Audience Factor (Zitt & Small, 2008).

Data (I)

- *Journal Citations Reports* for the *SCI* and the *SoSCI* combined
 - traditional journal indicators;

(since 2007: eigenfactor metrics added)

- Construction of the matrix of 7940 journals citing one another (SPSS)
- Network analysis with *Pajek* and *UCInet*



1: V1 486 Visible: 7940 of 79

	V1	V2	V3	V4	V5	V6
1	486	0	0	0	0	
2	0	25	4	0	0	
3	0	0	56	0	0	
4	0	0	0	44	0	
5	0	0	0	0	106	
6	0	0	0	0	0	
7	0	0	0	0	0	
8	0	0	0	0	0	
9	0	0	0	0	0	
10	0	0	0	0	17	
11	0	0	0	0	0	
12	0	0	0	0	0	
13	0	0	0	0	0	
14	0	0	0	0	0	
15	0	0	0	0	0	
16	0	0	0	0	0	
17	0	0	0	0	0	
18	0	0	0	0	0	
19	0	0	0	0	0	
20	2	0	0	0	0	
21	0	0	0	0	0	
22	0	0	0	0	0	
23	0	0	0	0	0	
24	0	0	0	0	0	

Home

> Journal Indicators

Journal Search

Country Indicators

Country Search

Compare

Map Generator

Help

About Us

? How to cite this website?

SJR is developed by:



Journal Indicators

Ranking Parameters

Subject Area:

Subject Category:

Country: Year:

Order By:

Display journals with at least:

Complete list (2007).

[Download data in MS Excel format \(3539 Kb\)](#)

1 - 50 of 16033 << First | < Previous | Next > | Last >>

	Title	SJR	H index	Total Docs. (2007)	Total Docs. (3years)	Total Refs.	Total Cites (3years)	Citable Docs. (3years)	Cites / Doc. (2years)	Ref. / Doc.	Country
1	Annual Review of Immunology	18,624	168	27	84	4.591	3.736	84	44,80	170,04	UNITED STATES
2	Annual Review of Biochemistry	13,292	156	33	91	4.755	3.080	91	31,71	144,09	UNITED STATES
3	Annual Review of Cell and Developmental Biology	11,903	116	25	89	3.720	2.330	86	23,93	148,80	UNITED STATES
4	Cell	10,732	408	555	1.422	19.486	29.047	1.337	20,51	35,11	UNITED STATES
5	Nature Immunology	9,621	167	236	695	7.942	9.982	522	18,82	33,65	UNITED STATES
6	Nature reviews. Molecular cell biology	9,427	157	194	418	9.409	7.979	372	18,99	48,50	UNITED KINGDOM

Data (III)

- Zitt, M., & Small, H. (2008). Modifying the journal Impact Factor by fractional citation weighting: The audience factor. *Journal of the American Society for Information Science and Technology*, 59(11), 1856-1860.
- Bensman, S. J. (1996). The structure of the library market for scientific journals: The case of chemistry. *Library Resources & Technical Services*, 40, 145-170.

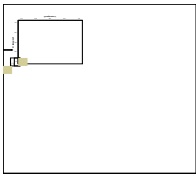
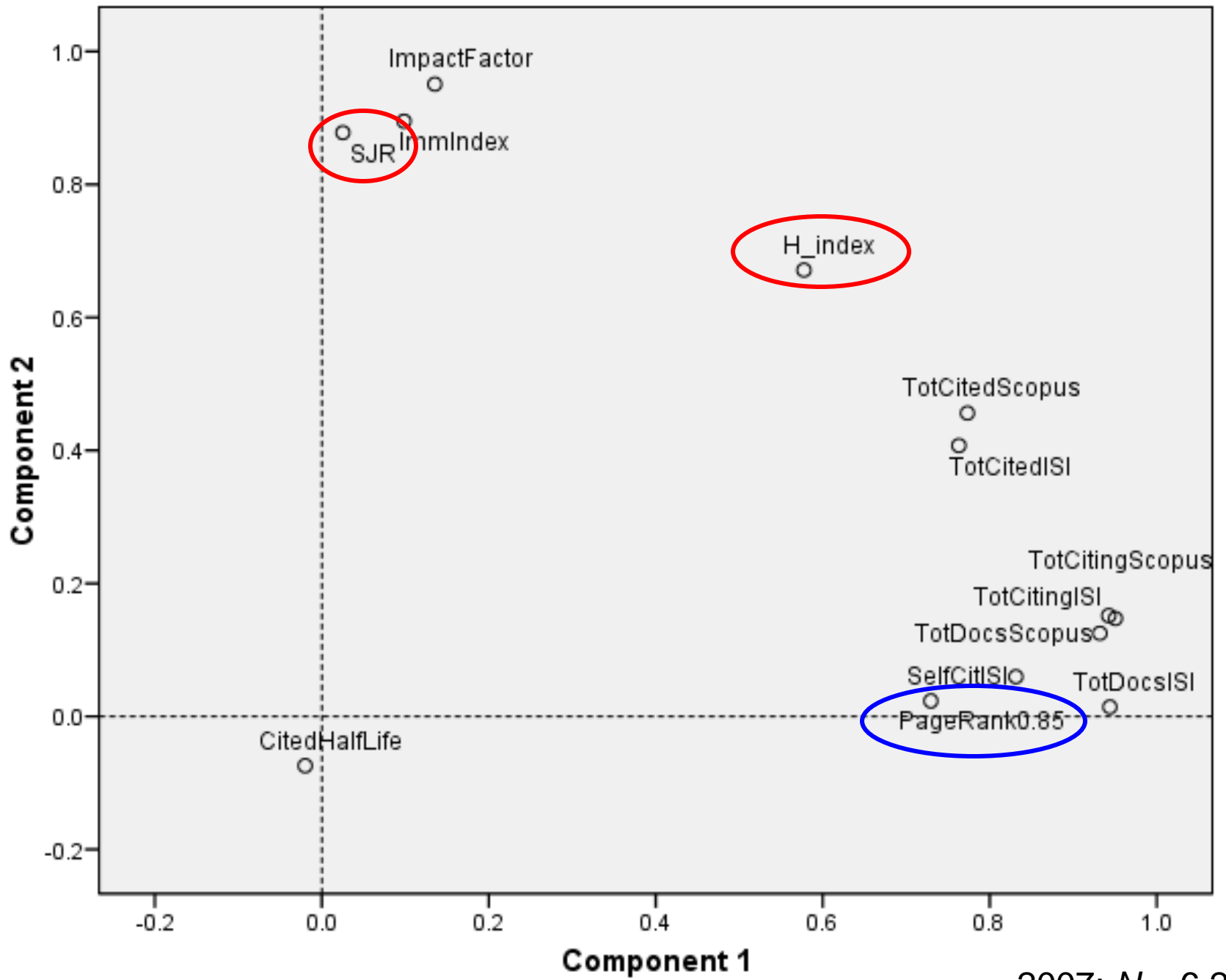


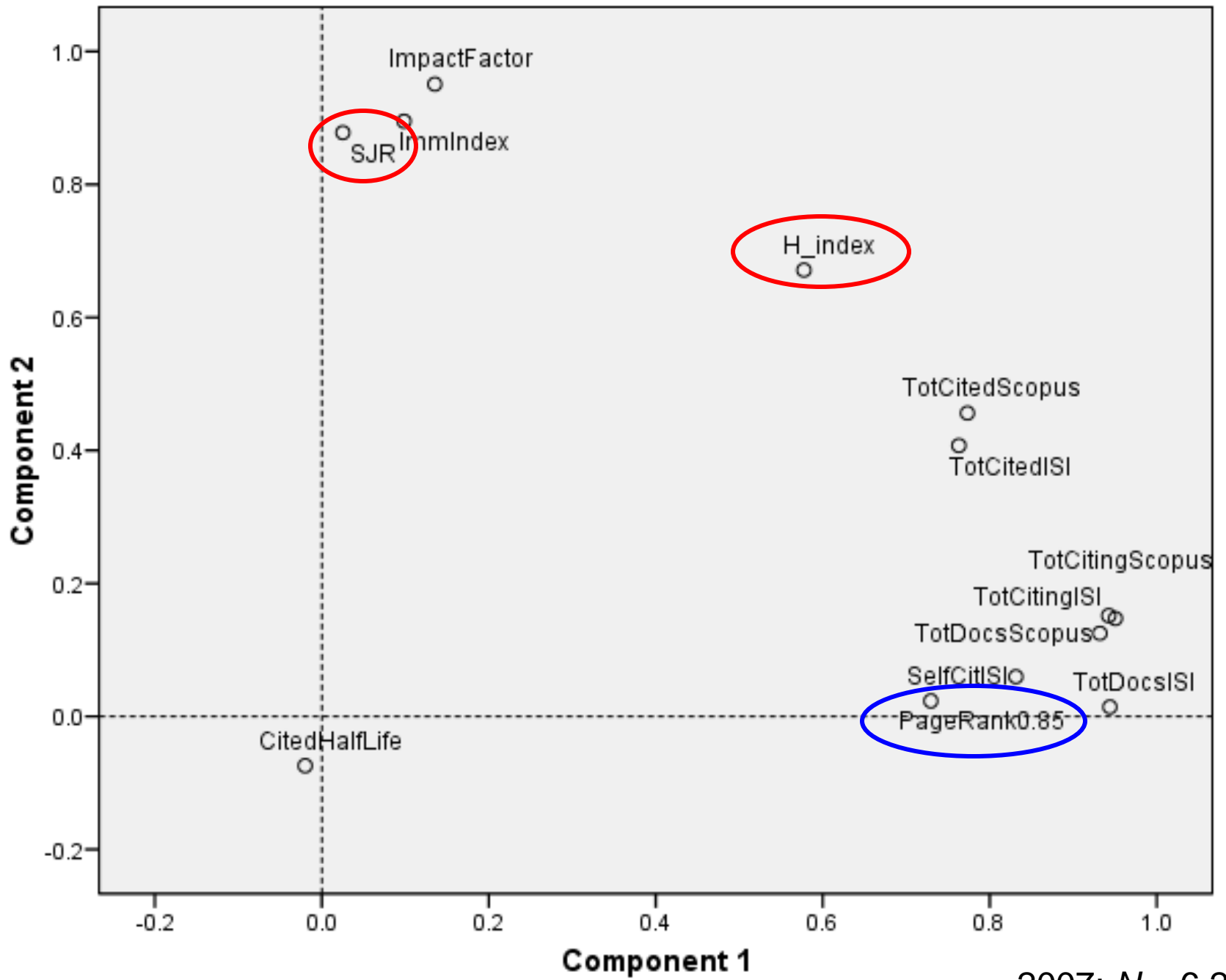
Figure 1: Component plot in rotated space (sources: JCR, 1993; Bensman, 1996; Bensman & Wilder, 1998).



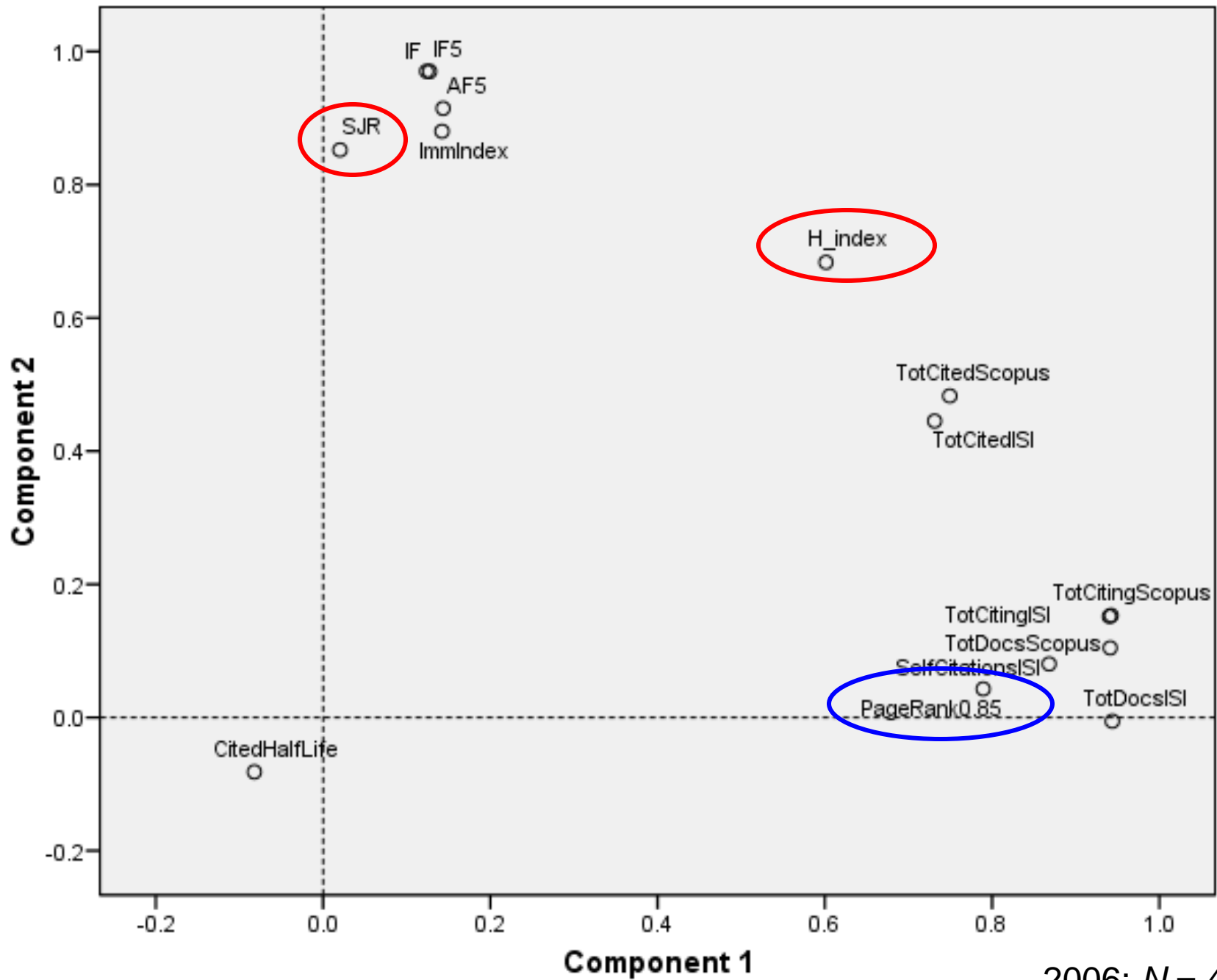
2007; N = 6,210

	<i>ISI databases</i>	<i>Scopus</i>	<i>Overlap</i>
<i>2006</i>	7,611	13,210	6,045
<i>2007</i>	7,940	13,686	6,210
overlap between all four:			5,861

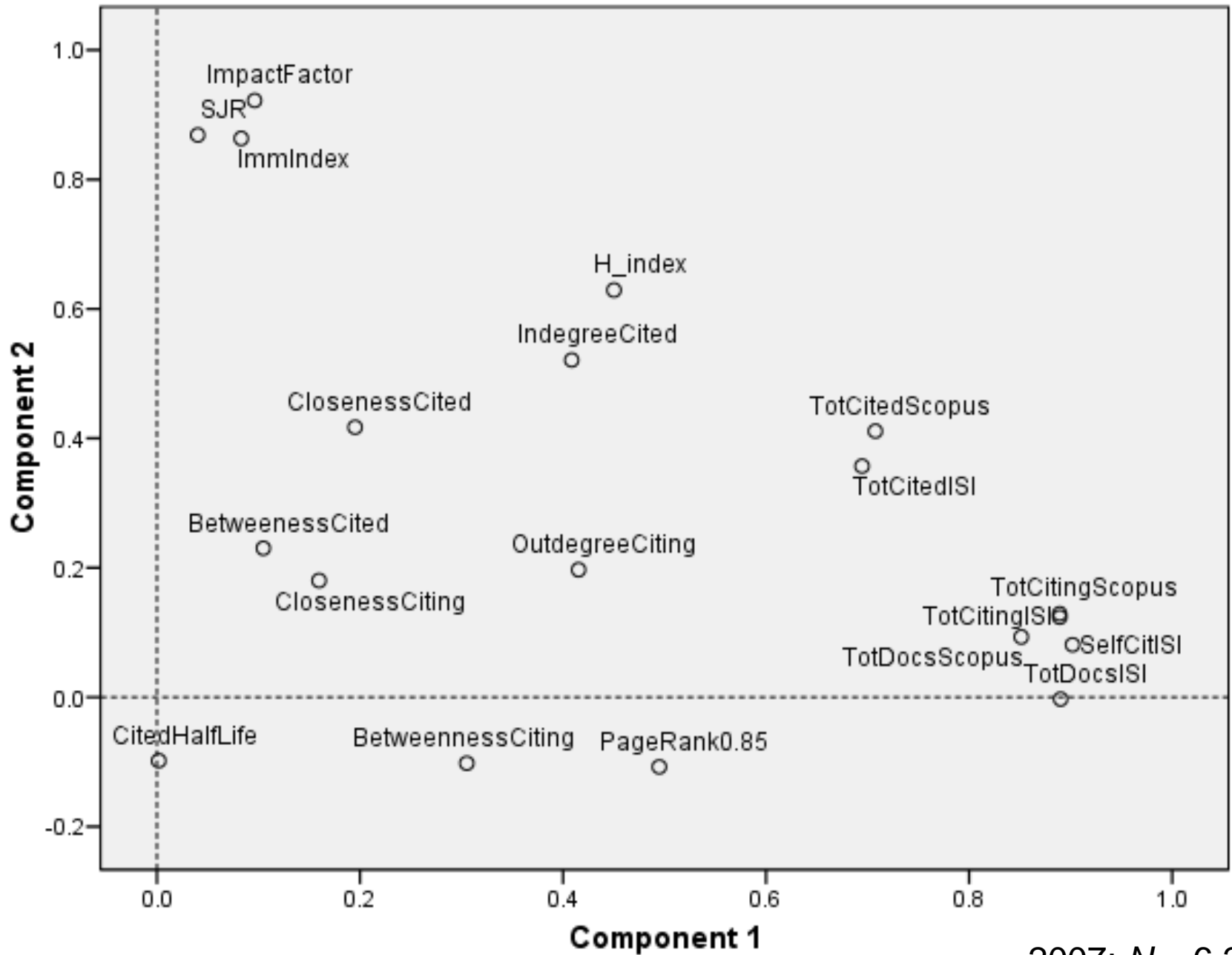
Table 1: number of journals in the ISI-databases combined, Scopus, and the overlap in 2007.



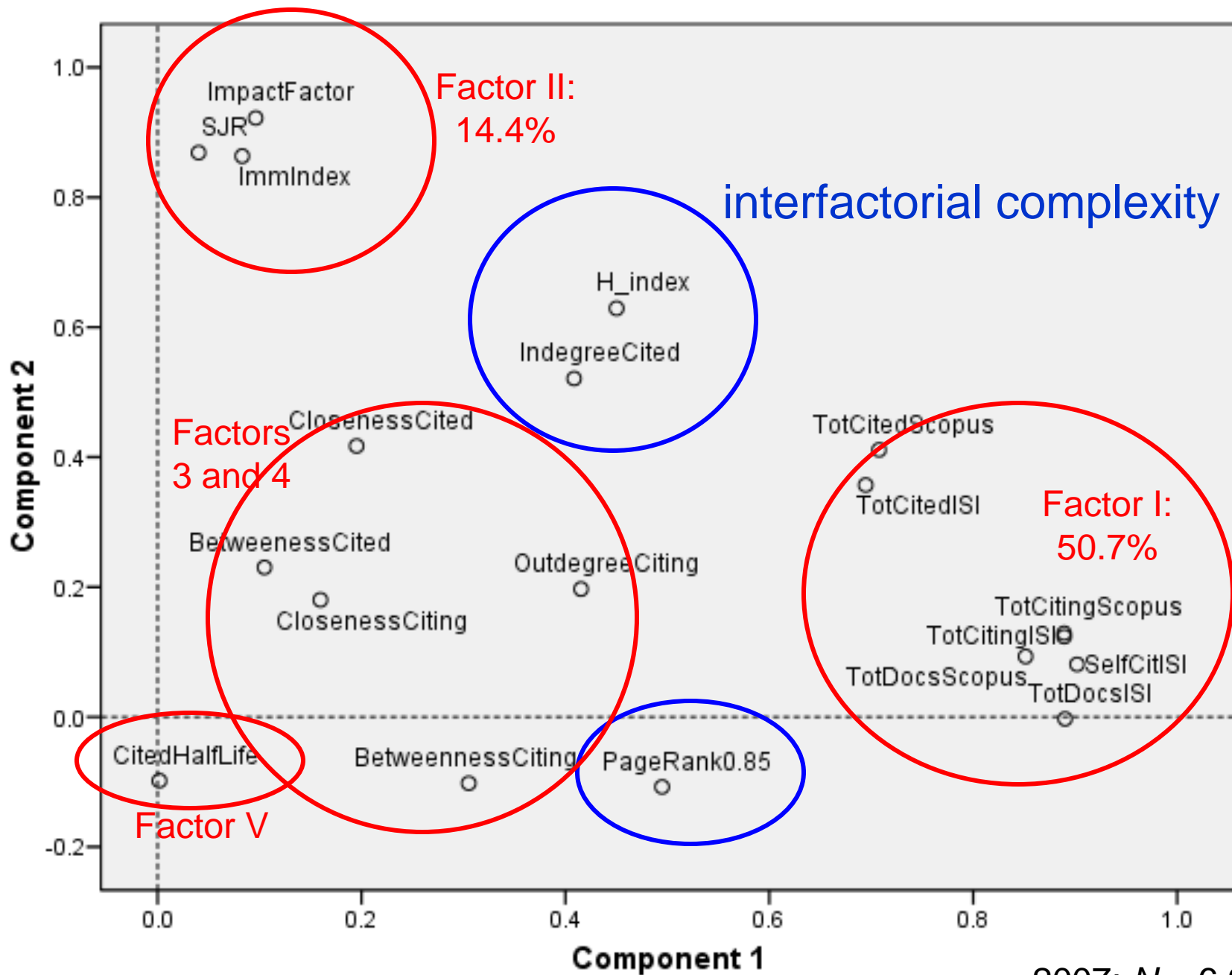
2007; N = 6,210



2006; N = 4,277



2007; N = 6,210



	<i>Pearson's r</i>	<i>Spearman's ρ</i>
<i>ISI-Journal Indicators</i>		
Impact Factor	0.976	0.942
Immediacy Index	0.890	0.792
Cited Half-life	0.900	0.929
<i>New Indicators</i>		
h-index (Scopus)	0.995	0.984
SJR	0.990	0.947
PageRank ($d = 0.85$)	0.828	0.841
PageRank ($d = 0.15$)	0.886	0.870
<i>Size Indicators</i>		
Total Cited ISI	0.999	0.989
Total Cited Scopus	0.989	0.969
Total Citing ISI	0.824	0.914
Total Citing Scopus	0.970	0.903
Self-citations ISI	0.989	0.926
Total Docs. ISI	0.967	0.937
Total Docs. Scopus	0.964	0.922
<i>Network indicators</i>		
Indegree (cited)	0.998	0.988
Outdegree (citing)	0.963	0.941
Betweenness (cited)	0.999	0.960
Betweenness (citing)	0.905	0.830
Closeness (cited)	0.794	0.941
Closeness (citing)	0.611	0.866

Conclusions

1. **Size** versus/ plus **Impact**; → influence?
2. The ***h-index*** is a complex / compounded indicator;
3. ***PageRank*** is a volume-indicator;
4. ***SJR*** an impact indicator
5. Network indicators such as **centrality** measures are of a different kind than journal indicators; (indegree as the exception);
6. Some of the new indicators (***SJR*** and ***h-index***) are more stable than the old ones.

JASIST, 60(7) (2009) 1327-1336
(July-issue)

Preprint version at:

http://www.leydesdorff.net/journal_indicators/