Table 1. Publications and citations of ACS journal cover page papers

Journal	Papers		Citations received (2008–13)		Average citation	
	All	Cover page	All	Cover page	All	Cover page
Accounts of Chemical Research	173	13	28,669	1,859	166.7	143
ACS Nano	344	38	21,718	2,469	63.1	65.0
Analytical Chemistry	1,334	38	42,200	1,189	31.6	31.3
Bioconjugate Chemistry	326	11	10,001	591	30.7	53.7
Crystal Growth and Design	751	12	19,823	375	26.4	31.3
Inorganic Chemistry	1,479	25	38,053	922	25.7	38.4
Journal of Chemical Information and Modeling	227	13	4,967	372	21.9	28.6
Journal of Chemical Theory and Computation	221	13	11,115	860	50.3	71.7
Journal of Organic Chemistry	1,513	23	35,518	852	23.5	37.0
Nano Letters	825	12	67,486	1,394	81.8	116.2

assessing their works[1]. Scientists and researchers usually highlight the cover page articles in their list of publications to convey the recognition that the paper has received.

Several factors that contribute to citations include foreign collaboration[2], publishing in high impact journals[3], articles that are discussed in media[4], article stirring up controversies[5], Matthew effect[6], downloads[7], social media and on-line attention[8], open access[9], articles having a long list of references[10], etc. However, it has not been analysed if articles appearing on cover pages receive more citations.

We considered the American Chemical Society (ACS) journals for the year 2008 and identified the articles that have appeared on the cover pages and noted the citations received by them during the period 2009–2014. For comparison, we also noted citations received by all the papers in the identified journals.

ACS published 37 journals in 2008 (as covered in the *Web of Science*) and we found from ten ACS journals (on-line versions) that had distinctive journal cover pages (Table 1).

It can be seen that except for *Accounts of Chemical Research* where average cover page paper citations was lower than the journal average, all the others had higher average cover page citations compared to the journal average. For *Analytical Chemistry*, the average cover page citations and journal average were almost equal.

So it does appear that cover page articles do tend to get more citations.

1. Balaram, P., *Curr. Sci.*, 2000, **78**, 1177.
2. Katz, J. S. and Hicks, D., *Scientometrics*, 1997, **40**, 541.
3. Didegah, E. and Thelwall, M., *J. Informet.*, 2013, **7**, 861.
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7. Sharma, H. R., *Curr. Sci.*, 2007, **92**, 873.
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MONIKA VERMA*
YATISH PANWAR
G. MAHESH

CSIR-National Institute of Science Communication and Information Resources,
14, Satsang Vihar Marg,
New Delhi 110 067, India
**e-mail: monikaverma@niscair.res.in*

Rise of Indian science – a bibliometric analysis

India is now recognized worldwide as a rising star in science and technology[1,2]. This is reflected by publicly accessible bibliometric data available at the SCImago website (http://www.scimagojr.com) in the Journal and Country Rank section. I have utilized these data to analyse the growth of Indian science in the last 15 years (1998–2013). This analysis suggests tremendous growth in the number of publications originating from India (Figure 1). The country was ranked 13th in the world in 1998, accounting for 1.8% of the total published work. By 2013, India climbed to the seventh rank, accounting for more than 4% of total published work worldwide (Figure 1). Although 4% represents a small fraction of the total publications and India should target a much higher share of publications, this growth rate clearly suggests that policies governing and regulating Indian science are leading to an increase in research output.

Interestingly, India's share of publications has persistently increased for the last several years and has not yet reached a plateau. The trend of the three-year moving average publication rate further suggests that the rate of Indian publications will further grow and India's rank in world science and its share of total publications will further increase in the coming years (Figure 2 *a*). Based on the current rate of publications, it is not overly optimistic to say that India could be among the top five nations in the next 5–7 years. The rate of growth of Indian publications was then compared with those from several developed countries. The analysis revealed that the rate of growth of publications from India is

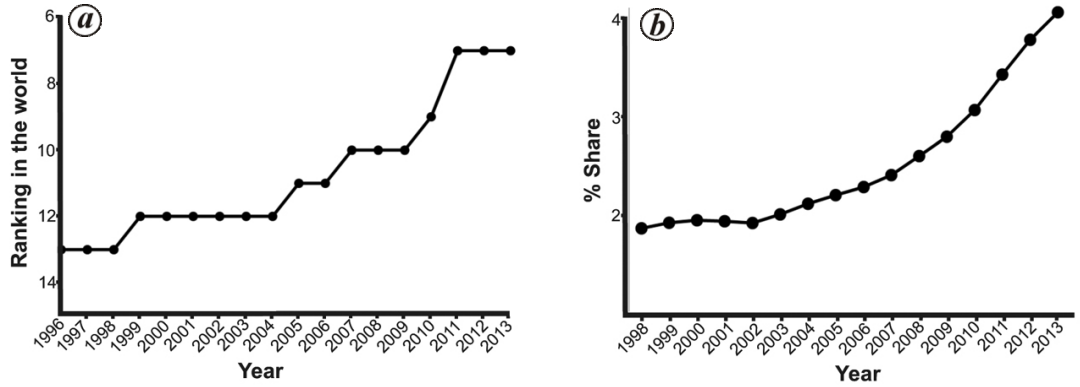

Figure 1. ***a***, Changing trends in the rank of India in the world based on number of publications each year. ***b***, Moving average of percentage global share of publications arising from India.

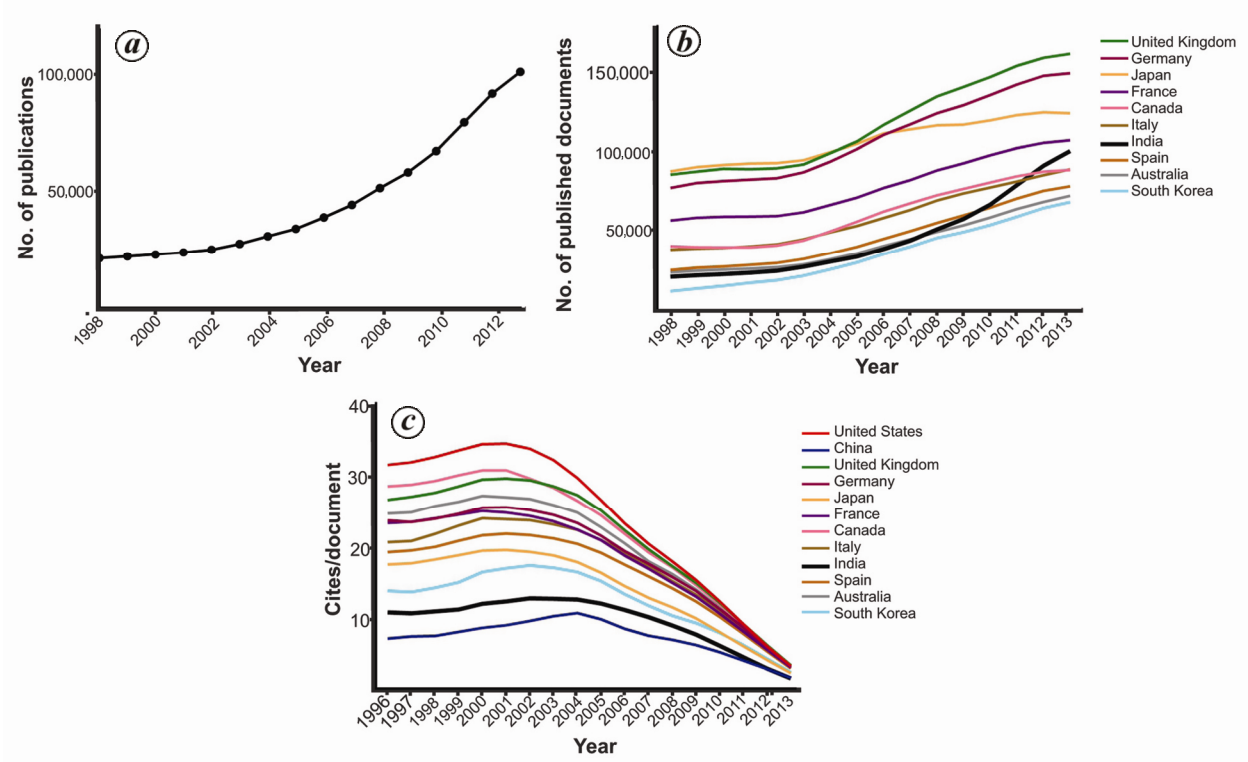

Figure 2. ***a***, Three-year moving average of yearly publications arising from India. ***b***, Three-year moving average of documents published from India and its comparison with the publication output from other top countries. For the sake of clarity, the data of publications arising from the US and China are not included in the analysis. ***c***, Three-year moving average of the citations for each published document arising from countries leading in science of the world.

significantly higher than those of the United Kingdom, Germany, France, Canada, Australia, Japan and South Korea (Figure 2 *b*). This further supports the belief that continuing on this path of increasing publications, India would rapidly ascend the list.

The next important question for Indian science is whether research in the country is answering fundamental scientific questions (vertical research) or filling gaps related to scientific problems that have been fairly well worked out (horizontal research). This question was addressed based on the citations arising for each publication, with the assumption that vertical research will attract greater attention from the scientific community and thus yield a greater number of citations. The citations/published documents for India were compared with those of other countries leading in science. This analysis suggests that the publications resulting from Indian research have significantly greater impact than those of other countries such as China and Russia. However, it must be noted that Indian publications yield fewer citations than those arising from countries such as UK, Germany, France, Canada, Australia, Japan and South Korea (Figure 2 *c*). Furthermore, the cumulative *H* index of publications arising from India is only 341,

significantly lower than other countries recognized as scientific leaders. These data suggest that Indian researchers are still largely engaged in horizontal research, and involvement in vertical research should be a future goal. If Indian policy makers take these aspects into consideration and promote research of high calibre through special funding programmes, it would take India further up in the ladder of excellence. Several such efforts are already guiding Indian research in this direction, including programmes such as DBT–Wellcome Trust grants and Swarnajayanti Fellowships that have provided significant impetus. It is needless to state that the efforts of the scientists are essential for further synergism.

In summary, the global stature of Indian science is persistently rising; we could further build upon this optimistic wave along with a focus on fundamental problems of science.

1. Stone, R., *Science*, 2012, **335**, 904–906, 909–910.

2. Bibliometric study of India's scientific publication output during 2001–2010, Department of Science and Technology, Government of India, 2012, pp. 1–24.

ASHWANI KUMAR

Council of Scientific and Industrial Research,
Institute of Microbial Technology,
Sector 39 A,
Chandigarh 160 036, India
e-mail: ashwanik@imtech.res.in