ISSI2009 To What Extent does BRICK Highly Visible Literature Rely on International Collaboration?

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Introduction

The scientific dimension of current emergence of BRICK countries (Brazil, Russia, India, China, Korea) as key international actors has been studied in quite a few bibliometric studies (Glänzel, Igami). Since it it well known that there is a positive relation between copublications, especially international, and international visibility as measured by their citations, one can ask if a high level of international collaboration sustains the growing visibility of the BRICK countries ? This comparative study of the role of collaboration in the highly visible literature of different countries addresses the hypothesis from two vantage points: over-collaboration in excellence classes for each country and specific targets for scientific partnerships in the excellence class.

General behavior of collaboration

The average international collaboration rate of country i, ICR(i) is defined by the ratio of the number of articles in international collaboration of i and the total number of articles of i. To measure the level of international collaboration in the different class of visibility, we used the international collaboration activity index, IOC. For the articles of country i in citation class j, IOC(i,j) is given by ICR(i,j)/ICR(i). Fig.1 gives the evolution IOC(i,j) versus j of for a few selected countries

As expected, collaboration rate in the classes of excellence (1%, 2%-5%) is higher than average international collaboration rate for each observed countries. The gap is rather low for mainstream western countries but increases for Japan and BRICK countries. Activity profiles clearly show the contrast between the US and the European mainstream countries on the one hand (IOC(i,1%) ranging from 1,2 to 1,6) and the international over-collaboration of highly visible BRICKs or Japan articles (IOC(i,1%) ranging from 1,8 to 3,2) on the other hand.

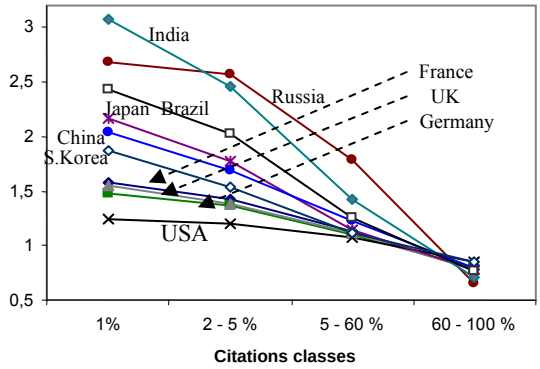

Figure 1. Activity index of international copublications of different countries along decreasing visibility classes (1999-2006).

Preferential orientation of collaborative flows

The collaborative profiles of the BRIC nations with their first 15 collaboration partners were investigated for their most visible articles (1%), using the probabilistic affinity: $Aff_{1\%}(ij)=copub_{1\%}(ij)/[copub_{1\%}(j).copub_{1\%}(i)/copub_{1\%}(w)]$ (Zitt et al.).

The partners countries were sort out by decreasing $Aff_{1\%}$ (ij) and $R_{100\%,}$ the rank of j in $Aff_{100\%}$ (ij) ranking and $R_{1\%,}$ the rank of j in $Aff_{1\%}$ (ij) were compared. The results are shown in Fig.2.

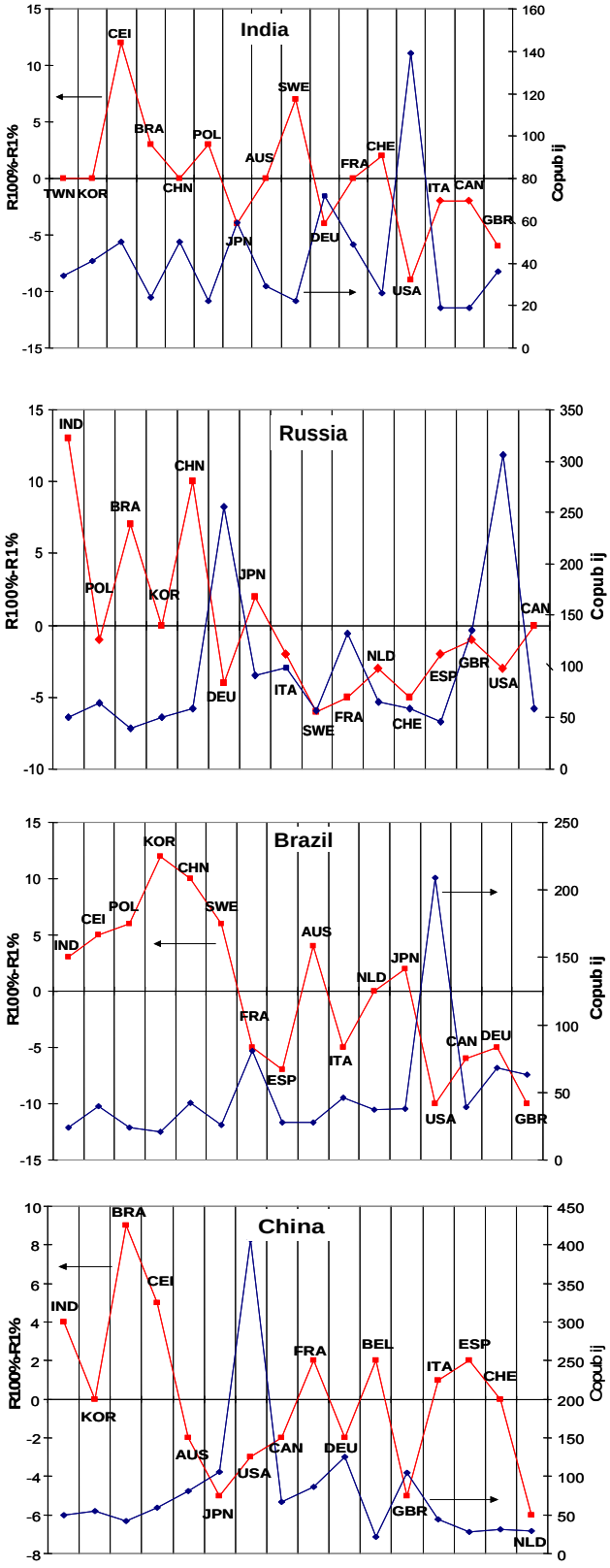

Figure 2. Profiles of partnership of BRIC in the most visible articles as compared with all BRIC copublications as expressed by the difference of rank for each of the first 16 collaboration partners in all articles and in the first 1 % most visible (1999-2004).

An unexpected finding concerns the high affinities amongst BRIC, which is interestingly reinforced in their highly visible literature (positive $R_{100\%} - R_{1\%}$) where their affinities with mainstream countries often decreased. Strong affinities are also observed between BRIC and Poland or South Korea. Since this measure is corrected for size, this observation does not mean this it can be detrimental to centre-periphery linkages, but it does suggest that BRIC may be more than a virtual club in the economy of the planet, but may either represent an emerging network of collaboration, especially in the literature of excellence or that they could be networked through pivotal mainstream countries.

References

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