



Correspondence

Quality and quantity are not always positively correlated: A case study of Chinese economics journals



1. Introduction

Recently, [Huang \(2016\)](#) investigated the relationship between the quantity and quality of academic journals based on SCI (Science Citation Index) / SSCI (Social Sciences Citation Index) journals data. A positive correlation was found, which means a higher impact factor tends to coincide with a larger quantity of papers in an academic journal. [Rousseau \(2016\)](#) appraised that Huang introduced a new approach by investigating the correlation between the number of citations and the number of publications, and results in [Rousseau and van Hooydonk \(1996\)](#) were confirmed using this new approach.

However, this finding conflicts with the general perception of scholars who submit papers to Chinese academic journals, because Chinese academic journals which publish a large number of papers are generally considered to be of low quality. This letter attempts to repeat the analysis in the context of the Chinese publishing system and to determine how it differs from the SCI/SSCI system.

2. Results and analysis

Following the methodology in [Huang \(2016\)](#), we collected data from the 2016 Chinese Science and Technology Journal Citation Reports (extended edition), which was released by the Chinese Science and Technology Information Institute. More than 7000 Chinese science and technology journals are included in this database, which can be divided into more than 150 disciplines. To facilitate our comparison with the results of [Huang \(2016\)](#), we reclassified the journals according to the classification of SCI/SSCI disciplines and selected the Chinese academic journals related to economics, which are employed in our analysis hereinafter. The corresponding Chinese journal disciplines are listed in [Table 1](#).

The average value of the impact factors (IFs) and the number of articles published in these economics-related journals are listed in [Table 2](#) as IF and N. The standard deviation of IF and N are reported as Δ IF and Δ N. The number of journals in the Chinese economics discipline equals 202.

[Fig. 1](#) shows the relationship between the IF rank of a journal and the number of articles in the journal. The vertical axis is the average annual number of published articles in each journal, and the horizontal axis is the rank of IF for each journal.

To fully demonstrate the correlation between article numbers and IF ranks, the following Lorenz curve $y(x)$ is further employed as [Huang \(2016\)](#) did. In details,

$$y_i = \frac{\sum_{j=1}^i N_j}{\sum_{j=1}^M N_j} \text{ and } x_i = \frac{i}{M} \quad i = 1, 2, \dots, M, x_i \in (0, 1], y_i \in (0, 1] \quad (1)$$

Table 1

The SSCI Economics discipline and its corresponding Chinese journal disciplines.

SSCI discipline	Chinese journal disciplines
Economics	Business Economics
	National Economics, Management Economics, Quantitative Economics
	Economics, general
	Finance, Insurance Ecological Agriculture Economics

Table 2

The economics discipline with various parameters.

Discipline	IF	Δ IF	N	Δ N
Economics	0.93	0.77	305	464

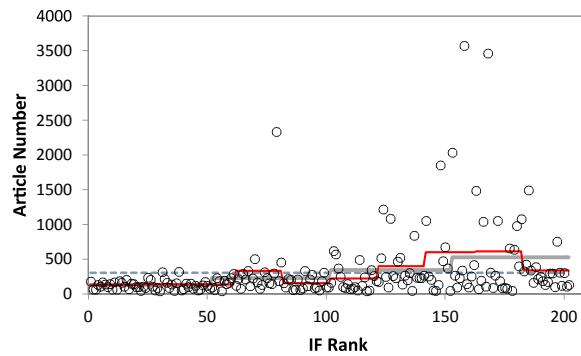


Fig. 1. Plot of the article number versus IF rank for economics journals (The dotted, bold–grey, and red solid lines show the average, quarterly average, and decile average, respectively.) (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article).

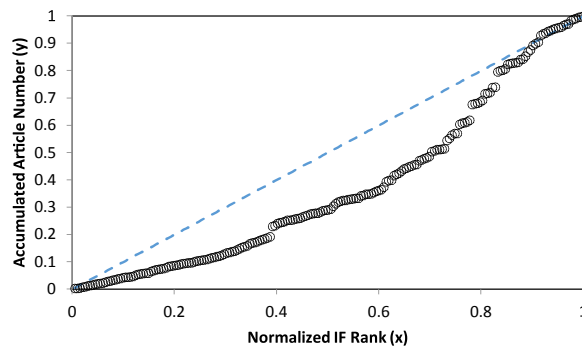


Fig. 2. Re-plot of Fig. 1 on transformed axes.

Table 3

Fitting parameters for the Chinese economics discipline.

Discipline	α	β	γ
Economics	-1.920	1.588	1.538

Table 4

Comparative results between this paper and Huang (2016) for the discipline of economics.

Discipline	IF	Δ IF	N	Δ N	α	β	γ
Economics	0.93	0.77	305	464	-1.920	1.588	1.538
Economics (Huang, 2016)	1.03	0.99	48	55	0.18	0.69	1.03

where M denotes the number of journals contained in a certain discipline. Therein, y_i , $i = 1, 2, \dots, M$ represents the cumulative number of articles published in each journal, and x_i , $i = 1, 2, \dots, M$ denotes the rank of the impact factor after normalization. Points (x_i, y_i) , $i = 1, 2, \dots, M$ start at $(0, 0)$ and end at $(1, 1)$, so that the curve $y(x)$ is monotonically increasing. Interested readers can refer to Huang (2016) for more details.

Fig. 1 is redrawn using Eq. (1) and displayed in Fig. 2. The dotted line $y = x$ serves as a demarcation line between positive and negative correlations. When data points are located above the dotted line, the quality and quantity of journals in a discipline are positively correlated, i.e., a convex area is formed by the x-axis, the vertical line $x = 1$, and the data points. On the contrary, a negative correlation develops when data points are located under the dotted line. Therefore, Fig. 2 shows the number of articles published in Chinese economics journals is negatively correlated with the IF rank, which is evidently different from the positive correlation in Huang (2016).

Following Huang (2016), the correlation between the quality and quantity for Chinese economics journals can also be assessed using

$$y = x + \alpha x^\beta (1 - x)^\gamma \quad (2)$$

where α , β , and γ are three fitting parameters, and a positive or negative value of the parameter α reflects a positive or negative correlation between the number of articles published and the IF rank of a journal. The estimated parameter values for the Chinese economics discipline are reported in Table 3. A clear negative correlation is revealed by the parameter α . A

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