

Original article

# Coercive journal self citations, impact factor, Journal Influence and Article Influence

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## Abstract

This paper examines the issue of coercive journal self citations and the practical usefulness of two recent journal performance metrics, namely the Eigenfactor score, which may be interpreted as measuring “Journal Influence”, and the Article Influence score, using the Thomson Reuters ISI Web of Science (hereafter ISI) data for 2009 for the 200 most highly cited journals in each of the Sciences and Social Sciences. The paper also compares the two new bibliometric measures with two existing ISI metrics, namely Total Citations and the 5-Year Impact Factor (5YIF) (including journal self citations) of a journal. It is shown that the Sciences and Social Sciences are different in terms of the strength of the relationship of journal performance metrics, although the actual relationships are very similar. Moreover, the Journal Influence and Article Influence journal performance metrics are shown to be closely related empirically to the two existing ISI metrics, and hence add little in practical usefulness to what is already known, except for eliminating the pressure arising from coercive journal self citations. These empirical results are compared with existing results in the bibliometrics literature.

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## 1. Introduction

Evaluating research quality is fundamental to the Sciences and Social Sciences. Research assessment rankings are essential to evaluate the research performance of individuals and the quality of academic journals. The perceived research performance of individual researchers is crucial for hiring, firing, tenure and promotion decisions. In the

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absence of clear signals regarding the inherent, and frequently latent, quality of published research, the perceived quality of a journal is frequently used as a proxy, albeit inappropriately, for the quality of a research paper. This situation arises especially in the Social Sciences, where citations to published papers do not seem to be as widely used as they are in the Sciences.

Most journal performance metrics are based on alternative transformations of citations and Journal Influence. The Thomson Reuters ISI Web of Science (hereafter ISI) database [16] is a leading high quality database for generating research assessment measures, especially citations, to evaluate the research performance of individual researchers and the quality of academic journals. Although there are caveats regarding the methodology and data collection methods underlying any database (see, for example, Seglen [18], Chang and McAleer [6,7], Chang et al. [8–11] for caveats regarding ISI), the ISI citations database is the oldest source of rankings criteria and the benchmark against which other databases are compared.

This paper examines the issue of coercive journal self citations, and the practical usefulness of two new journal performance metrics, namely the Eigenfactor score, which may be interpreted as measuring “Journal Influence”, and Article Influence score, using ISI data for 2009 for the 200 most highly cited journals in each of the Sciences and Social Sciences. The paper also compares the two new bibliometric measures with two existing ISI metrics, namely Total Citations and the 5-Year Impact Factor (5YIF) (including journal self citations) of a journal.

It is shown that the Sciences and Social Sciences are different in terms of the strength of the relationship of journal performance metrics, although the actual relationships are nevertheless very similar. Moreover, the Journal Influence and Article Influence metrics are shown to be closely related empirically to the two existing ISI metrics, so that they add little to what is already known about journal impact, except for eliminating the pressure arising from coercive journal self citations. These empirical results are compared with existing results in the literature.

The plan of the remainder of the paper is as follows. Section 2 presents three key research assessment measures (RAM), namely the 5-Year Impact Factor (5YIF) (including journal self citations) of a journal, Eigenfactor (or Journal Influence) score, and Article Influence score, and discusses the incidence of coercive journal self citations in several disciplines. Section 3 reports some empirical analyses of these key RAM, as well as Total Citations, and compares the results with those that are available in the literature. Section 4 gives some concluding remarks.

## 2. Key research assessment measures (RAM)

It is well known that coercive journal citations by journal editors and journal publishers can have a deleterious and misleading impact on journal self citations. Wilhite and Fong [19, p. 542] find, on the basis of “6672 responses from a survey sent to researchers in economics, sociology, psychology, and multiple business disciplines (marketing, management, finance, information systems, and accounting), as well as data from 832 journals in those same disciplines” that “coercion is uncomfortably common and appears to be practiced opportunistically”. In short, many journal editors in these disciplines would seem to be encouraging to increase journal self citations or risk rejection. Wilhite and Fong [19, p. 543] also find that “Coercive self-citation exists and is more common in the business disciplines than in economics, sociology, and psychology.”

The classic 2-year impact factor including journal self citations (2YIF) of a journal is typically referred to as “the impact factor”. An analysis of the 2-year impact factors reported for the ISI Economics category in Chang et al. [5] suggested that the inflated impact factors were rather high, with mean impact factor inflation of 1.442, and with 9 of 299 Economics journals having impact factors inflated by a factor of at least 3. This would seem to suggest that self citations in a large number of journals in the Economics category are consistent with coercion.

It is worth emphasizing that coercive journal self citation practices of editors and publishers seem to be concentrated on the 2-year impact factor than the 5-Year Impact Factor. The use of both two and five years for the analysis of journal impact is entirely arbitrary. Although it is not entirely clear why this might be the case, it is worth venturing that the 2-year impact factor is more widely used and known than its 5-year counterpart. Therefore, the 2-year impact factor is flawed in the sense that its calculation suffers from the well known coercive journal self citations, as discussed above. However, even if the most recent two years of the 5-Year Impact Factor are affected by coercive journal self citations, as is likely, the first three years of the 5-Year Impact Factor are unlikely to have been as distorted by coercive journal self citations. In this sense, the 5-Year Impact Factor is likely to be more accurate in capturing citations without being skewed by coercive journal self citations.

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