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Brief Communication

Applied Bibliometrics: Using Citation Analysis in the Journal Submission Process

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Scholars in all fields who are engaged in the publication process must submit their work to appropriate journals. Selecting the appropriate journal can be a challenging task. This article argues that citation analysis may be an effective tool of journal selection. Citation patterns can be used to determine the extent of bibliographic coupling between an author's unpublished article and journals in the author's field. The article could then be submitted to a journal with a similar pattern of citations. Evidence from published articles in economics indicates that this technique is able to determine the journal in which an article is published.

Introduction

Assistant professors in all fields continually play the role of bibliometrican. Every time an article is submitted to a journal for publication, the author has knowingly or unknowingly organized the literature and placed the article into a particular journal in a particular segment of the field. These choices and categorizations are quite important. Submitting to the "wrong" journal will be as detrimental to the chances of publication as an inadequate analysis. In economics for instance, there are over 250 journals. Picking the journal most likely to publish an article could be difficult.

A great deal of library science research has attempted to organize and describe bodies of literature in systematic fashion. One important facet of this research is citation analysis (Smith, 1985; Plum, 1987). It is my contention that this research can be brought to bear on the article submission problem.

Applied Citation Analysis

Relationships among journals or articles can be studied by observing their citation patterns. For example,

bibliographic coupling occurs when two articles contain citations to the same articles or journals.* Articles connected in this way share source documents and draw from the same body of literature. A group of journals will be coupled, that is they will have similar reference patterns, if they are related to one another.

Citation cluster analysis is one technique that uses bibliographic coupling in order to group journals. Carpenter and Narin (1973) successfully performed this type of analysis for scientific journals, while Arms and Arms (1978) examined social science journals. Carpenter and Narin define the "distance" between journals as

$$\text{Distance}_{ab} = \sum_{i=1}^{N} (C_{ai} - C_{bi})^2 \qquad (1)$$

Where C_{ai} is the percent of journal A's citations to journal i and C_{bi} is the percent of journal B's citations to journal i, where there are N possible journals to cite. If journal A and B have identical distributions of citations the distance between them is zero and a high degree of bibliographic coupling exists. Given this distance measure, a clustering technique could be used that would group journals to minimize within cluster distance and maximize the distance between clusters.

This approach provides a means to analyze the structure of the literature and to determine where an article might fit within the matrix of journals. An author could use a bibliographic study published in the appropriate subject matter to identify fields and their corresponding journals (in Economics see: Eagly, 1975; Fletcher, 1972; or Robinson, 1988). This approach would be helpful in distinguishing fields but not between journals within fields. Alternatively, the author could use equation (1) above to calculate the citation distance between his or her article and all the relevant journals. The journals could then be ranked by citation distance from the article and the author could submit

*Other techniques include cocitation analysis (McCain, 1986) and citation counts.

the article to one of the closest journals (close in the citation distance sense). That is, submit the article to a journal with which it has a high degree of bibliographic coupling. Other criteria could be used to distinguish between the closest journals: prestige (as measured by citations (Laband and Sophocleus; 1985), turn around time, or acceptance rate.

Evidence from Economics

One way to test this approach would be to use citation distance to predict where one or more unpublished articles will be most likely published. These articles could then be submitted to a variety of journals to see if they are in fact accepted by the predicted journals. This approach has obvious ethical problems and therefore cannot be used.[†] An alternative approach would be to take previously published articles, compute the citation distance between them and all the journals in the field and see if the journals in which they were published can be identified by citation distance. A study of this type was conducted for economic journals. Thirty-three articles from three economics journals published in 1986 and 1987 were used for the analysis. The citations from each article were used to compute a citation distance between the article and 136 economics journals using equation (1). Journals were selected for the data set that were listed in the *Journal of Economic Literature* and had their citations listed in the *SSCI Journal Citation Reports* (1986). The journals were then ranked by citation distance from the articles, with the journal having the smallest citation distance assigned a rank of 1.

Table 1 provides an example of the approach. The article examined was written by Rebitzer (1986) and was published in *Industrial Relations*. The article had the following citations: *American Economic Review* (2), *Industrial and Labor Relations Review* (2), *Monthly Labor Review* (1), *Industrial Relations* (6), *Journal of Labor Research* (1), *Quarterly Journal of Economics* (2), *Journal of Labor Economics* (1), *Review of Economics and Statistics* (2), and *Journal of Human Resources* (1). The citation distance measure was computed using equation (1). In this case *Industrial Relations* was the journal closest to the article. The table also reports the journal rank by total number of citations, turn around time, and acceptance rate. These may also be relevant in journal selection.[‡]

Table 2 reports of the average and distribution of rankings for the journals in which the articles were published. These results indicate that of the 33 articles almost 40% were correctly placed by the citation distance approach. Considering there were 136 economics jour-

TABLE 2. Results of citation analysis distribution of ranks and average ranks for the journals in which the articles were published.[a]

Ranked first	39.4%
Ranked in the top 5	69.7%
Ranked in the top 10	75.8%
Average rank	9.96

[a]Source: Computed by the author.

[†]Social worker William Epstein represents a case in point. Epstein was accused of violating the ethics code of the National Association of Social Workers after submitting fictitious articles to over 100 journals to test whether journals were biased against negative results (*Washington Post,* Oct. 22, 1988, P. A11).

[‡]Copies of the data set and an SPSSX program to compute the citation distances are available from the author.

TABLE 1. Citation distance between Rebitzer (1986) and economic journals: Closest 10 journals.[a]

Journal and Distance Rank	Distance	Rank by Citations	Acceptance Rate	Turn Around Time (Months)
1. Industrial Relations	0.17	5	6–10%	2–3
2. Journal of Labor Research	0.29	8	11–20	2–3
3. Journal of Economic Literature	0.34	2	<5	2–3
4. Industrial and Labor Relations Review	0.35	3	11–20	2–3
5. Applied Economics	0.42	7	NA	NA
6. Review of Economics and Statistics	0.43	1	15–20	2–3
7. Review of Black Political Economy	0.43	10	30–50	3–4
8. Journal of Human Resources	0.45	4	6–10	4–6
9. Quarterly Review of Economics and Business	0.45	9	NA	2–3
10. Economic Inquiry	0.45	6	6–10	4–6

[a]Source: Computed by the author. Rank by citations is based on 1986 citations to all previous years of the journal, from the *Social Science Citation Index,* 1986. Acceptance rate and turn around time were obtained from Cabell (1988).

nals in the data set and that many of these journals are quite similar this result is fairly impressive. In addition over 75% of the articles had the correct journal ranked in the top 10. These results indicate that a citation-distance approach can correctly place published articles with journals in which they appeared. Had these authors used a citation-based submission approach, they would have submitted to the "right" journals.

Conclusions

In this article a citations based article submission guide has been presented and some evidence from economics has been produced to show it might be effective. One submission strategy would be to first submit an article to the closest journal as measured by citation distance. In order to test this suggestion, 33 published articles were examined from three journals to determine if the methodology would suggest they be submitted to the journals in which they were actually published. The results seem to indicate that there is some merit in the suggestion. More research would determine whether these results held for disciplines aside from economics.

Acknowledgment

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