SHORTER ARTICLES

The Structure and Disciplinary Boundaries of Insurance: A Citational Analysis of *JRI* Articles

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Abstract

This paper provides a description of the nature, trends, and changing patterns of references cited in the *Journal of Risk and Insurance* (*JRI*) in three sample volumes: 1980, 1984, and 1988. Findings reveal that (1) over one-half of the references in the *JRI* are from noninsurance fields (primarily finance and economics), (2) journals are the most frequently cited communications media, and (3) authors of *JRI* articles cite it more than any other journal. An important conclusion is that insurance is a still emerging field without a strong identity or a strong bonding between the contributors to its literature.

Scholars in the field of insurance often discuss and debate the structure and boundaries of their discipline. To a large extent, these introspective contributions have been of the normative-polemic type based on subjective views and casual empiricism. Participants in these discourses have shown little interest in factual evaluation of insurance source literature to ascertain the structure of the discipline and the changes that have taken place therein.

In the matter of developing literature on the origins of its research, insurance is lagging behind other business disciplines. For example, the disciplines of accounting, marketing, economics, and finance have developed a research tradition based on analyses of research contributions of different authors, institutions, and forms of communication. Several citational analysis research articles have been reported in the top journals of each of these fields. This genre of articles has yielded valuable information about the structure and boundaries of the respective disciplines (see all references).

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The purpose of this article is to fill this information gap in the insurance literature by presenting the findings of an explorative study analyzing one important facet of the scientific activities of insurance scholars—the exchange of ideas and research through publishing. An analysis is made about the nature, trends, and changing patterns of references cited in the *Journal of Risk and Insurance* (*JRI*) in three sample volumes. The study should be beneficial in several respects. It should help to identify those sources of scholarly publications that influence the diffusion of knowledge and concepts in the field of insurance. It should also provide evaluative information about the areas and journals upon which *JRI* authors depend most heavily for references. Finally, it will reflect the degree to which the discipline of insurance has been able to establish its own identity.

This research relies heavily on theoretical concepts developed by Goldman (1979) and Brown and Gardner (1985) for other business and social science fields. It is based on the assumption that disciplines define themselves by their citational links to other disciplines, that is, through references to other scholarly works that support, provide precedent for, and illustrate their content. A study of citational links is useful in assessing the scientific activity in a discipline and in determining the structure, methods, and boundaries of that discipline for two reasons. First, they are an objective, quantitative measure of the influence or impact on a discipline of a journal, book, or other communications media. Second, they reflect authors' perceptions about which previous works anchor their work and have the greatest utility to them, and the authors to whom they owe an intellectual debt. As Hamelman and Mazze (1974) note:

> "Scientists and scholars are obliged to note the relationship between the work which engages their attention and related studies that have appeared on the same subject in the past. By so doing, authors acknowledge the link between the subject and the different points of view which have been brought to bear on it in the past. Thus, citation indexes rely on the most skilled experts of all the authors." (pp. 23-24).

Method

The study population consists of the 2,156 references cited by the authors of 111 articles in three volumes of the *JRI*: Volume XLVII, 1980; Volume LI, 1984; and Volume LV, 1988. Selection of the indicated volumes was guided by the fact that they were all published in the same decade and are spaced at four-year intervals. Thus, the selected volumes should reflect citational trends which took place during the decade, it being expected that patterns of citations will likely change from year to year.

The unit of analysis in the study is a reference to a book, journal, unpublished work, law, or other source. For computational purposes, a reference was counted as many times as it was cited in an article. The practice of excluding subsequent citations to the same source in the same article was not followed. Also, self-citations by authors to their own works were included.

Findings

As with most other disciplines, insurance draws upon a vast and diverse literature. The areas of references cited in the *JRI* were rank ordered by the relative frequency of usage for 1980, 1984, and 1988 combined, as well as by individual year. The areas were broken down by those that are closely related to insurance (insurance areas) and those that are less closely related (noninsurance areas).[1]

Degree of Concentration

There was a great diversity of areas of references. This diversity emphasizes the interdisciplinary nature of the insurance field and the information scatter therein. However, most of the areas are used very infrequently. A pattern emerges of very heavy referential concentration from the insurance area itself, and a major concentration from the finance area. The percentage of references dealing with insurance rose from 41.7 percent in 1980 to 53.3 percent in 1984, before falling slightly to 52.2 percent in 1988. The average for the three-year period was 49.5 percent. On the other hand, the proportion of references dealing with finance fell from 21.7 percent in 1980 to 12.5 percent in 1984 and then rose to 15.5 percent in 1988. The average for the relevant three years was 16.3 percent.

There was also a pronounced reliance on information bases in economics and statistics as components of the communication network. The percentage of references on economics topics rose from 8.4 percent in 1980 to 12.0 percent in 1984 to 12.7 percent in 1988. The average for the three-year period was 11.2 percent. With regard to statistics references, the proportion fell from 12.5 percent in 1980 to 10.2 percent in 1984 to 5.8 percent in 1988. The average for the three-year period was 9.2 percent. The heavy emphasis by *JRI* authors on economics and statistics articles was expected since many authors give citational credit for the methodology they use. The remaining noninsurance fields serve as a hinterland of insurance, neither comprising more than 3.3 percent of all citations. Most were rarely used.

There was an increase in the concentration of articles in the most frequently cited areas of reference. As noted above, the proportion of references from insurance sources increased markedly from 1980 to 1984 and then dipped slightly in 1988. Also, the concentration in the two top disciplines (insurance and finance) grew from 63.4 percent in 1980 to 65.8 percent in 1984 and then to 67.7 percent in 1988. The same is true for the concentration in the top three disciplines (insurance, finance, and economics), which increased from 75.9 percent in 1980 to 77.8 percent in 1984 to 80.4 percent in 1988. Thus, the evidence suggests that there is an increasingly greater concentration of references found in *JRI* articles among a few disciplines.

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[1] The noninsurance areas were finance, economics, statistics, management, accounting, legal, marketing, texts, annual publications, social sciences, and transportation.

Communications Media Cited

The media of communication was also examined for references in *JRI* articles. Fifteen communications media were analyzed.[2] The data revealed that *JRI* authors have consistently cited more articles in journals than in any other source. Almost 61 percent of all communications media cited were journal articles. Furthermore, the proportion of references constituted by journal articles rose over the nine year period, jumping from 57.4 percent in 1980 to 66.8 percent in 1988. The trend toward heavier use of journal articles has been observed in other disciplines (e.g., see Goldman, 1979).

The increase in the proportion of references from journals came at the expense of references coming from books, which fell from 24.5 percent in 1980 to 18.0 percent in 1988. The proportion of references from proceedings, statutes and laws, and other sources also dropped significantly. Altogether, nine of the 15 forms sources which were analyzed declined from 1980 to 1988, five rose slightly, and only one (journals) rose significantly. Clearly, *JRI* authors are relying more and more heavily for their references on formal methods of communication, particularly journals, as the insurance discipline expands and becomes more defined.

Structure of the Discipline

As noted above, over 60 percent of the references in the indicated years are from journals. The number, different types, and distribution of journals used as reference sources by a discipline are used by those who study citation patterns to help determine the discipline's orientation and to assess its various structural aspects (see Goldman, 1979; Brown and Gardner, 1985; Heck and Cooley, 1988; and Liebowitz and Palmer, 1984). In this study, the journal citation pattern will help to show the approximate influences of other disciplines on the content of the *JRI* and hence on the evolution of insurance thinking over time.

A discipline is thought to have a strong identity if a large proportion of the references are concentrated in journals in that discipline. Cross-referencing between journals in the same discipline suggests that authors in that discipline are acknowledging the importance of the discipline's journals and are building on each other's works. On the other hand, if many references come from sources outside the discipline, then the discipline is considered to be susceptible to external influences. Researchers approach the field with a wide assortment of assumptions and methodological tools. The degree of internal structure and self-identity is considered to be weak, since there are no strong internal bonds to give the discipline structure and identity (see Goldman, 1979; and Kent and Rush, 1977).

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[2]The 15 media forms are journals, books, statutes and laws, proceedings, company reports, trade journals, committee reports, working papers, unpublished works, university bureau publications, newspapers, dissertations or theses, magazines, colloquiums, and FASB statements.

Authors in the three relevant *JRI* volumes drew from a wide range of established professional and scholarly journals. Citations are scattered across 215 leading journals from fields as diverse as accounting, law, and psychology. This is eloquent testimony to the divergent information bases in insurance and to the lack of a unified insurance literature. However, most of the journals were used very infrequently and some only one or two times each. Only 35 journals, most among the best in their field, were cited five or more times in either of the three indicated years.

As in most fields, insurance researchers contributing to a particular journal have a tendency to cite precedent articles in the same journal. In this study, by far and away the largest proportion of journal references was from the *JRI*. The journal's overall self-citation rate was 23.0 percent of all journal references, slightly more than the proportion for the next six journals combined. However, the proportion declined from over 25 percent in both 1980 and 1984 to under 20 percent in 1988, indicating some increase in the propensity of *JRI* authors to rely on other literatures. *The Journal of Finance* (6.6 percent), the *American Economic Review* (4.6 percent), the *Journal of Political Economy* (3.2 percent), the *Bell Journal of Economics*[3] (3.2 percent), and *Econometrica* (2.5 percent) came in at places two through six, respectively.[4] Despite the slippage from 1984 to 1988, the inescapable conclusion emerges that *JRI* authors acknowledge the *JRI* to be the most important transmitter of scientific information in insurance.

The frequency of *JRI* self-citations might be attributed to two causes. First, the *JRI* is an internationally prestigious journal specializing in first reports of significant research in insurance, while journals in related fields such as economics and finance are more diversified and deal primarily with topics not appropriate for an insurance journal. Thus, the *JRI* serves as a natural publication outlet for insurance-specific research. Second, many articles in the *JRI* are premised on hypotheses and findings of previous articles in the journal. Articles on a particular topic tend to stimulate more interest and more in-depth research on the same topic (see Goldman, 1979; Michman and Gross, 1986; and Brown and Gardner, 1985).

The large number of references credited to *The Journal of Finance* (87 for the relevant three years), and the fact that the number grew significantly over the indicated period (from 24 in 1980 to 54 in 1988), leads one to surmise that there is a strong linkage between the insurance and finance disciplines.

[3] The *Bell Journal of Economics* was known as the *Bell Journal of Economics and Management Science* prior to 1978 and as the *Rand Journal of Economics* after 1985.

[4] Outreville and Malouin (1985) determined the perceived quality of journals which ARIA members read. Among other measures, they derived an "impact" ranking for each journal, which was based on the mean scores of all respondents for that journal times the number of respondents. The "impact" ranking thus "—gives equal weight to perceived quality of prestige and presumed readership in establishing the 'impact' of an article published in a given journal" (p.729). The "impact" rank was highest for these three journals, in descending order: *JRI*, *The Journal of Finance* and the *American Economic Review*. These also were the three most frequently cited journals in this study for the three indicated years combined, and in the same order.

However, it is interesting to note that some finance journals commonly held in high regard were cited infrequently. In fact, only two other finance journals (the *Journal of Financial Economics* and the *Journal of Financial and Quantitative Analysis*) were referenced as many as ten times in either 1980, 1984, or 1988, and combined, they accounted for only 4.5 percent of all references. Thus, *JRI* authors have not acknowledged these journals as important sources in their articles. The *Journal of Financial Economics* did not emerge as an important reference until 1988, but made a significant contribution (3.5 percent of all references) to insurance studies in that year. The dominance of *The Journal of Finance* citations indicates either that the content of its articles is of more value to *JRI* authors or that it is more oriented to insurance than are other finance journals.

The close affinity of insurance to its parent discipline, economics, is reflected in the fact that five economics journals (*American Economic Review*, *Journal of Political Economy*, *Bell Journal of Economics*, *Econometrica*, and *The Quarterly Journal of Economics*) combined comprised 15.4 percent of all references. Further, the impact of economics journals tended to rise over the indicated period. Economics journals seem to be an increasingly significant influence in insurance thinking.

The most important trend gleaned from these data is the declining impact of the *JRI* from 1984 to 1988, and the increasing impact of finance and economic journals. Obviously, an hegemonic relationship has been created between insurance vis-a-vis economics and finance. Authors increasingly inject and incorporate relevant aspects of the finance and economics disciplines into professional insurance literature. This fact argues against the contention that the insurance discipline is becoming a tighter and more compact discipline with a strong bonding between its researchers. It, in fact, bears testimony to the tremendous breadth of insurance scholarship across related disciplines and may suggest that self- identity is not developing as rapidly in the insurance discipline as it is in other business disciplines.

There is, of course, a flip side to this argument. There may be merit in forgetting about whether insurance is a self-contained discipline, and in focusing instead on expanding the scope of the discipline to include an even broader range of literature. The true scope and boundaries of insurance should, perhaps, not be confined largely to the *JRI* and a few economics and finance journal articles which are adapted to the *JRI* mold. Maybe the discipline should encompass and bring in the best new ideas from medicine, architecture, chemistry, psychology, and other fields with insurance associations, and describe the implications of this literature. Whether it is best for insurance to become more self-contained, or to embrace and be a part of a larger variety of disciplines, is a normative question for which there is no ready answer.

Conclusion

This study used citation counts to analyze the references in the *JRI* in 1980, 1984, and 1988. The purpose of the study was to systematically inquire about the nature, structure, and disciplinary boundaries of insurance.

Findings show that almost 50 percent of all references during the three relevant years are from insurance-related sources. However, insurance is a broad-based field which borrows extensively from related disciplines. Finance and economics serve as the main noninsurance areas for references. Journals are the primary communications media from which citations are taken, with books a distant second. Authors of *JRI* articles tend to cite it more than any other journal. Self-citation accounted for 23 percent of the references in the *JRI* for the three indicated years.

Insurance is a mathematically-based discipline concerned with social problems and human behavior. This helps to explain why insurance researchers cite frequently from the literature in other fields, including the social sciences (such as economics), the natural sciences (such as statistics and mathematics), and the business disciplines (such as finance, management, and accounting). This situation is salubrious in that many insights and much relevant information from other areas of knowledge, as well as numerous methodological tools and approaches, are brought to bear on the study of problems in insurance. However, because insurance researchers are heavily dependent on journals in noninsurance disciplines, insurance articles build on one another less than do articles in other fields. Whatever the merit of borrowing from other disciplines, the inevitable conclusion from this reasoning is that insurance is not yet a "self-contained" discipline. It is a still-emerging field without a strong identity or a strong bonding between the contributors to its literature.

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