

AN ANALYSIS OF RISK, INSURANCE, AND ACTUARIAL RESEARCH: CITATIONS FROM 1996 TO 2000

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ABSTRACT

This article evaluates the relative significance of research published in 16 risk, insurance, and actuarial journals by examining the frequency of citations in these risk, insurance, and actuarial journals and 16 of the leading finance journals during the years 1996 through 2000. First, the article provides the frequency with which each sample risk, insurance, and actuarial journal cites itself and the other sample journals so as to communicate the degree to which each journal's published research has had an influence on the other sample journals. Then the article divides the 16 journals into two groups: (1) the risk and insurance journal group, and (2) the actuarial journal group, and ranks them within their group based on their total number of citations, including and excluding self-citations. A ranking within each group is based on the journals' influence on a per article published basis. Finally, this study observes and reports on the most frequently cited articles from the sample risk, insurance, and actuarial journals.

INTRODUCTION

The importance of evaluating journal quality is noted in the finance literature (see Alexander and Mabry [1994], Zivney and Reichenstein [1994], McNulty and Boekeloo [1999], Borokhovich et al. [2000], and Chung et al. [2001]). In the risk, insurance, and actuarial literature, a number of studies have been conducted to provide information on the relative quality of journals and articles in this field, including Outreville and Malouin (1985, analysis of the opinions of American Risk and Insurance Association [ARIA] members), McNamara and Kolbe (1996, analysis of the opinions of business school deans), Baur et al. (1996, analysis of journal subscription practices of universities), and Hollman and Zietz (1998, citation analysis of *Journal of Insurance Issues* articles). In 1997, the *Journal of Risk and Insurance* published an article titled "Relative Significance of Insurance and Actuarial Journals and Articles: A Citation Analysis"

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(Colquitt [1997])—also subsequently referred to in this article as “the previous study”). The purpose of the study was to determine the impact that various insurance and actuarial journals and articles have had on research in that field by examining citations to 13 insurance and actuarial journals found in 29 of the leading insurance, actuarial, and finance journals between 1991 and 1995.¹ According to Colquitt (1997), reasons for assessing journal quality include its significance to (1) those conducting risk, insurance, and actuarial research; (2) faculty and administrators who are charged with evaluating the work of those conducting this research; (3) the editors of the journals being evaluated; and (4) the institutions that are making purchasing decisions that involve the journals being evaluated.

There are two main reasons why an update of the Colquitt (1997) study would yield interesting and meaningful results. First, as of the close of 2000, there will be five more recent years of articles to evaluate. As noted in Colquitt (1997, p. 509), an unavoidable time lag exists between the time period that is actually evaluated and the period of data collected. As a result (as shown in Table 1 of Colquitt [1997]), the citations found in journals from 1991 to 1995 give us information on the significance of research conducted in the late 1980s and early 1990s. A study using more recent data (citations from articles published between 1996 and 2000) would provide a more up-to-date evaluation of the journals being reviewed. Second, given that three new journals have been introduced in recent years (the *Journal of Actuarial Practice*, beginning in 1993, and the *North American Actuarial Journal* and *Risk Management and Insurance Review*, both beginning in 1997), a more recent study would allow us to see what initial impact these journals have had on risk, insurance, and actuarial research.²

RESEARCH METHODOLOGY AND DATA

The study is based on citations found in 32 sample journals (16 risk, insurance, and actuarial journals and 16 finance journals) *only to* articles published in the 16 risk, insurance, and actuarial journals (see the Appendix for a list of the sample journals). As a result, this study only assesses the significance of the research published in these 16 risk, insurance, and actuarial journals. The sample risk, insurance, and actuarial journals analyzed include the 13 journals found in Colquitt (1997) as well as the *Journal of Actuarial Practice*, the *North American Actuarial Journal*, and *Risk Management and Insurance Review*. The sample finance journals analyzed are also the same ones

¹ While citation studies are more common in other disciplines and thought to be the most comprehensive method of evaluating journal quality (see Alexander and Mabry [1994], Zivney and Reichenstein [1994], Borokhovich et al. [2000], and Chung et al. [2001]), presumably the reason why citation analysis was not used to evaluate journal quality in the insurance and actuarial literature up until Colquitt (1997) is that very few risk, insurance, and actuarial journals are tracked by the Social Sciences Citation Index (SSCI). Currently, only the *Geneva Papers on Risk and Insurance Issues and Practice*, *Geneva Papers on Risk and Insurance Theory*, *Insurance: Mathematics and Economics*, the *Journal of Risk and Insurance*, and the *Journal of Risk and Uncertainty* are included in the journals tracked by the SSCI. Collection of the data needed to conduct a citation analysis without the use of the SSCI is tedious and time consuming.

² While we can evaluate the initial impact of the newer journals, it will take some time before we are able to determine the lasting impact that these journals will have on risk, insurance, and actuarial research.

included in Colquitt (1997).³ The data include the total number of citations in the 32 sample journals during the years 1996 through 2000.

Given that the Social Sciences Citation Index (SSCI) does not include all of the risk, insurance, and actuarial journals relevant to this study, the citation data were gathered by reviewing the bibliographies of each of the sample journals for references to the risk, insurance, and actuarial journals included in the study. Unless an article was stated as being "forthcoming" in one of the sample risk, insurance, or actuarial journals, citations to working papers that were published in one of these journals subsequent to the citation were not recorded. Data gathered include the author, journal edition, and page numbers of the cited article as well as the journal edition and page numbers of the citing article. The data include only citations from feature articles, short articles, and notes and communications regarding research. Opinion pieces and regular columns such as those found in the *Journal of Financial Service Professionals* (formerly the *CLU Journal*) and the *CPCU Journal* were not reviewed for citations.

For the purposes of ranking the 16 risk, insurance, and actuarial journals, the journals were separated into two groups: the risk and insurance journal group and the actuarial journal group.⁴ The risk and insurance journal group includes *Benefits Quarterly* (BQ), the *CPCU Journal* (CPCU), the *Geneva Papers on Risk and Insurance Issues and Practice* (GPIP), the *Geneva Papers on Risk and Insurance Theory* (GPT), the *Journal of Financial Services Professionals* (JFSP), the *Journal of Insurance Issues* (JII), the *Journal of Insurance Regulation* (JIR), the *Journal of Risk and Insurance* (JRI), the *Journal of Risk and Uncertainty* (JRU), and *Risk Management and Insurance Review* (RMIR). The actuarial journal group includes the *Astin Bulletin* (AB), the *British Actuarial Journal* (BAJ), *Insurance: Mathematics and Economics* (IME), the *Journal of Actuarial Practice* (JAP), the *North American Actuarial Journal* (NAAJ), and the *Scandinavian Actuarial Journal* (SAJ).

The citation data collected were used to evaluate the citation patterns of the sample journals and the relative impact that each journal has on risk, insurance, and actuarial research in total and on a per article published basis. In addition, the data were used to provide information on which of the articles published in the sample journals have been the most influential in recent years.

DISCUSSION OF RESULTS

Table 1 provides the distribution of citations by the year in which the cited article was published. The unavoidable time lag that exists between the time period that is evaluated and the period of data collected that was described in the previous study is supported by the results found in Table 1. Almost 50 percent of the citations recorded were to articles published between 1992 and 1997. Significant improvements in a journal's quality or in the distribution and electronic availability of a journal's

³ The list of finance journals chosen by Colquitt (1997) is the same as the list analyzed by Zivney and Reichenstein (1994). In the previous study, the citations from the sample finance journals to the sample insurance and actuarial journals amounted to only 3.77 percent of all the citations found to these insurance and actuarial journals. As a result, it is unlikely that a significant change to the results of the study would occur in the event that a slight change in the sample of the finance journals analyzed was made.

⁴ This is in contrast to Colquitt (1997), where no distinction is made between the risk and insurance journals and the actuarial journals.

TABLE 1

Distribution of Citations by Year of Article Cited

Year	Percentage	Cumulative Percentage
2000	1.01	1.01
1999	2.84	3.85
1998	4.85	8.70
1997	8.22	16.92
1996	7.78	24.70
1995	8.22	32.92
1994	8.22	41.14
1993	6.23	47.37
1992	7.80	55.17
1991	5.57	60.74
1990	4.61	65.35
1989	3.83	69.18
1988	4.13	73.31
1987	3.41	76.72
1986	2.56	79.28
pre-1986	20.72	100.00

research made during the most recent three years leading up to this study are not likely reflected in the results.

Journal Results

Table 2 provides the citation patterns for all of the sample journals. Table 3 provides the same citation pattern information on a normalized basis (per one thousand citations). Essentially, these tables allow one to view the frequency with which each sample journal cites the other risk, insurance, and actuarial journals. In addition, the frequency with which the 16 finance journals cite the sample risk, insurance, and actuarial journals can be observed. Finally, the tables provide the total source articles and the number of references to sources other than the sample journals.

The first column on the far left of Table 2 contains the journals that were reviewed for citations. By reading across each row, one can see the journals that were cited by the journal listed in the first column. For example, the first journal listed at the top of the first column is the *AB*. There were 92 articles during 1996–2000 from the *AB* that were reviewed for citations. These 92 articles cited the *AB* 177 times, the *BAJ* 21 times, the *CPCU* once, and so on. The *AB* cited sources other than the sample risk, insurance, and actuarial journals 951 times, for a total of 1,327 citations. The two bold numbers across each row denote the two most frequently cited journals by the journal reviewed. As can be seen in Table 2, the *AB* (177) and the *IME* (105) were the two journals most frequently cited by the *AB*.

One interesting change from the previous study is the total number of citations from the sample risk, insurance, and actuarial journals found during the five-year window

of 1996–2000 as compared to the five-year window of 1991–1995. During the period 1991–1995, the sample journals produced 21,625 total citations. The same set of journals (excluding the *JAP*, *RMIR*, and the *NAAJ* from the current study) produced 25,626 citations during the period 1996–2000, for an increase of 18.5 percent. In order to control for the difference in the number of articles published by the journals during the two sample periods, a per article citation count was conducted, revealing that the citations per article published increased 12 percent from 1991–1995 to 1996–2000. In addition, nine of the 13 original journals had an increase in citations per article. The increase in total citations and citations per article likely are the result of advances in technology and the resulting increase in the speed and breadth in which articles are now made available to those conducting research. Future citation studies likely will see increases as well.

When looking at the same journals for both sets of years (once again, excluding the *JAP*, *RMIR*, and the *NAAJ* from the current study), citations to the sample risk, insurance, and actuarial journals also increased by 39.31 percent (from 3,391 citations found during 1991–1995 to 4,724 citations found in 1996–2000). In addition, of the 12 risk, insurance, and actuarial journals in the previous study (the *GP* was counted as one journal when receiving citations in the previous study), all but *BQ* saw an increase in the total number of citations received. Interestingly, the rate at which the sample risk, insurance, and actuarial journals cited themselves and one another increased from 15.68 percent ($3,391/21,625$) to 18.43 percent ($4,724/25,626$).

Overall, the general citation patterns of most journals were not substantially different than what was reported five years ago. As was found during the previous study, the journal most frequently cited by the majority of the citing journals was the citing journal itself. This can be seen by observing that the cells starting from the top left corner of the grid and proceeding down to the right bottom corner are bold (indicating that the journal cited was either the first or second most frequently cited journal). The exception to this was the *GPT*, the *JAP*, the *JII*, the *NAAJ*, and *RMIR*. Among those, all but the *JAP* and the *NAAJ* cited the *JRI* with the most frequency. The most frequently cited journal by the *JAP* was the *BAJ*, and the most frequently cited journal by the *NAAJ* was *IME*. In addition, the actuarial journals and the risk and insurance journals tended to cite the journals within their same group with the most frequency, with the only meaningful overlap being the frequency with which the *JRI* is cited by *IME* and the *NAAJ*. Finally, the vast majority (158 out of 182) of citations found in the 16 sample finance journals were to journals in the risk and insurance group. This result is not surprising, given the overlap of risk and insurance and finance research topics, which does not likely exist to the same degree between the actuarial sciences and mainstream finance.

Tables 2 and 3 demonstrate why the *JRI* was included among the risk and insurance journal group and also show the influence of the *JRI* among those journals. The *JRI* was either the first or second most frequently cited journal of all ten of the risk and insurance journals. However, not one of the actuarial journals had the *JRI* as either its first or second most frequently cited journal. One finding that is consistent with that found in the previous study is that the *JRI* was the only journal to have been cited at least once by each of the other sample journals. In addition, the *JRI* was still the most frequently cited journal by the 16 sample finance journals, by an overwhelming margin. In addition to illustrating the continued influence of the *JRI*, Tables 2 and 3

TABLE 2
Journal Citation Patterns

Citations From (# of source articles)	Citations to the Sample Risk, Insurance, and Actuarial Journals																Total Outside the Sample Journals	Overall Total
	<i>AB</i>	<i>BAJ</i>	<i>BQ</i>	<i>CPCU</i>	<i>GPIP</i>	<i>GPT</i>	<i>IME</i>	<i>JAP</i>	<i>JFSP</i>	<i>JII</i>	<i>JIR</i>	<i>JRI</i>	<i>JRU</i>	<i>NAAJ</i>	<i>RMIR</i>	<i>SAJ</i>		
<i>AB</i> (92)	177	21	0	1	1	1	105	0	0	0	0	9	0	6	0	55	951	1327
<i>BAJ</i> (115)	11	229	1	0	3	0	15	0	0	0	0	1	1	5	0	11	1700	1977
<i>BQ</i> (166)	0	0	22	0	0	0	0	0	2	0	0	6	3	0	0	0	861	894
<i>CPCU</i> (81)	0	0	1	57	2	0	0	0	2	0	6	13	1	1	4	0	1097	1184
<i>GPIP</i> (186)	2	5	0	1	85	26	5	1	0	0	3	56	9	1	0	2	2921	3116
<i>GPT</i> (51)	7	1	0	0	5	19	10	0	0	0	2	35	20	0	0	12	936	1047
<i>IME</i> (202)	255	53	0	1	1	12	441	0	0	0	4	58	4	39	0	188	2398	3454
<i>JAP</i> (50)	18	44	0	0	0	0	32	15	1	0	1	17	3	14	0	23	716	884
<i>JFSP</i> (169)	0	0	3	0	0	0	0	0	68	3	5	15	0	0	0	0	870	964
<i>JII</i> (50)	0	1	1	11	7	0	3	0	2	25	38	192	5	3	3	0	757	1048
<i>JIR</i> (123)	0	1	1	13	8	0	1	1	6	11	99	168	4	3	2	0	1537	1854
<i>JRI</i> (141)	18	1	1	11	6	29	25	1	1	12	37	504	29	15	2	9	2973	3674
<i>JRU</i> (140)	0	0	0	0	0	9	1	0	0	1	3	30	313	0	1	2	3729	4089
<i>NAAJ</i> (126)	50	33	2	1	2	5	103	6	4	0	3	50	4	47	0	51	2805	3161
<i>RMIR</i> (59)	0	0	4	18	10	0	1	0	0	4	17	94	4	0	7	0	853	1012

SAJ (63)	70	6	0	0	0	2	93	0	0	0	0	1	2	3	0	96	725	998
FIN	1	17	0	4	7	10	5	0	0	3	10	103	21	0	0	1	69693*	69875*
TOTAL	609	412	36	118	137	113	840	24	86	59	228	1352	423	137	19	450		
Self-citation rate	0.1334	0.1158	0.0246	0.0481	0.0273	0.0181	0.1277	0.0170	0.0705	0.0239	0.0534	0.1372	0.0765	0.0149	0.0069	0.0962		

Notes: *Estimates based on the findings of Zivney and Reichenstein (1994). AB = *Astin Bulletin*; BAJ = *British Actuarial Journal*; BQ = *Benefits Quarterly*; CPCU = *CPCU Journal*; FIN = sample finance journals; GPIIP = *Geneva Papers on Risk and Insurance Issues and Practice*; GPT = *Geneva Papers on Risk and Insurance Theory*; IME = *Insurance: Mathematics and Economics*; JAP = *Journal of Actuarial Practice*; JFSP = *Journal of Financial Services Professionals*; JII = *Journal of Insurance Issues*; JIR = *Journal of Insurance Regulation*; JRI = *Journal of Risk and Insurance*; JRU = *Journal of Risk and Uncertainty*; NAAJ = *North American Actuarial Journal*; RMIR = *Risk Management and Insurance Review*; SAJ = *Scandinavian Actuarial Journal*; Total Outside the Sample Journals = the number of citations in the journal to articles not published in one of the 16 sample risk, insurance, or actuarial journals; Self-citation rate = the percentage of a journal's citations attributable to its own articles. Citations to the *Geneva Papers* prior to 1990 (the year that the *Geneva Papers* were split into two journals, the GPIIP and the GPT) are attributed to the GPIIP and the GPT in the proportion that the GPIIP and the GPT received their own citations from that journal during 1990 and beyond.

TABLE 3
Normalized Journal Citations

Citations From	Normalized Citations (per Thousand) to the Sample Risk, Insurance, and Actuarial Journals																Total Outside the Sample Journals	Overall Total
	<i>AB</i>	<i>BAJ</i>	<i>BQ</i>	<i>CPCU</i>	<i>GPIP</i>	<i>GPT</i>	<i>IME</i>	<i>JAP</i>	<i>JFSP</i>	<i>JII</i>	<i>JIR</i>	<i>JRI</i>	<i>JRU</i>	<i>NAAJ</i>	<i>RMIR</i>	<i>SAJ</i>		
<i>AB</i>	133	16	0	1	1	1	79	0	0	0	0	7	0	5	0	41	717	1,000
<i>BAJ</i>	6	116	1	0	2	0	8	0	0	0	0	1	1	3	0	6	860	1,000
<i>BQ</i>	0	0	25	0	0	0	0	0	2	0	0	7	3	0	0	0	963	1,000
<i>CPCU</i>	0	0	1	48	2	0	0	0	2	0	5	11	1	1	3	0	927	1,000
<i>GPIP</i>	1	2	0	0	27	8	2	0	0	0	1	18	3	0	0	1	937	1,000
<i>GPT</i>	7	1	0	0	5	18	10	0	0	0	2	35	19	0	0	11	894	1,000
<i>IME</i>	74	15	0	0	0	3	128	0	0	0	1	17	1	11	0	54	694	1,000
<i>JAP</i>	20	50	0	0	0	0	36	17	1	0	1	19	3	16	0	26	810	1,000
<i>JFSP</i>	0	0	3	0	0	0	0	0	71	3	5	16	0	0	0	0	902	1,000
<i>JII</i>	0	1	1	10	7	0	3	0	2	24	36	183	5	3	3	0	722	1,000
<i>JIR</i>	0	1	1	7	4	0	1	1	3	6	53	91	2	2	1	0	829	1,000
<i>JRI</i>	5	0	0	3	2	8	7	0	1	3	10	137	8	4	1	2	809	1,000
<i>JRU</i>	0	0	0	0	0	2	0	0	0	0	1	7	77	0	0	0	912	1,000
<i>NAAJ</i>	16	10	1	0	1	2	33	2	1	0	1	16	1	15	0	16	888	1,000
<i>RMIR</i>	0	0	4	18	10	0	1	0	0	4	17	94	4	0	7	0	843	1,000

SAJ	70	6	0	0	0	2	93	0	0	0	0	1	2	3	0	96	726	1,000
Avg. over journals	20.75	13.63	2.31	5.44	3.81	2.75	25.06	1.25	5.19	2.50	8.31	41.25	8.13	3.94	0.94	15.81		
Avg. with no self-citations	13.27	6.80	0.80	2.60	2.27	1.73	18.20	0.20	0.80	1.07	5.33	34.87	3.53	3.20	0.53	10.47		
Self-citation index	1.01	1.70	3.08	1.85	1.20	1.05	0.70	8.50	8.81	2.23	1.00	0.39	2.17	0.47	1.30	0.92		

Notes: AB = Astin Bulletin; BAJ = British Actuarial Journal; BQ = Benefits Quarterly; CPCU = CPCU Journal; FIN = sample finance journals; GPIP = Geneva Papers on Risk and Insurance Issues and Practice; GPT = Geneva Papers on Risk and Insurance Theory; IME = Insurance: Mathematics and Economics; JAP = Journal of Actuarial Practice; JFSP = Journal of Financial Services Professionals; JII = Journal of Insurance Issues; JIR = Journal of Insurance Regulation; JRI = Journal of Risk and Insurance; JRU = Journal of Risk and Uncertainty; NAAJ = North American Actuarial Journal; RMIR = Risk Management and Insurance Review; SAJ = Scandinavian Actuarial Journal; Total Outside the Sample Journals = the number of citations in the journal to articles not published in one of the 16 sample risk, insurance, or actuarial journals; Self-citation index = the self-citation rate $\times$ 100/normalized average citation rate excluding self-citations (per thousand citations). Totals may not add due to rounding.

also show the increasing influence of *IME*, which was either the first or second most frequently cited journal of all six actuarial journals.

There are a few important differences between the findings in this study and those of the previous one. First, the *GP* has been two separate journals (the *GPT* and the *GPIP*) long enough to warrant its separation in this table. The previous study kept the two journals together because of the frequency with which the *GP* was cited prior to 1990, the year of its separation into the two journals. As can now be seen, the *GPIP* was more frequently cited than the *GPT*, but that is due in large part to the number of articles published by the *GPIP* as compared to the *GPT*. The actual "research impact" on a per article basis will be seen in a table to follow. As for the other journals' citations to both the *GPT* and the *GPIP*, *IME*, the *JRI*, and the *JRU* cited the *GPT* with greater frequency, and the *JII*, the *JIR*, and *RMIR* cited the *GPIP* with greater frequency. The differences in these citation patterns clearly point to the contrast in the focus of the two journals.

The second significant difference between the findings in Table 2 and the findings of the comparable table in the previous study is the inclusion of the *JAP*, *RMIR*, and the *NAAJ*. The inaugural issue of the *JAP* states that "the aim of this international journal is to publish articles pertaining to the 'art' or 'science' involved in contemporary actuarial practice. In addition, the *Journal of Actuarial Practice* provides a forum for the presentation and discussion of issues pertaining to the education of actuaries and the future of the actuarial profession." The stated objective of the *JAP* explains the frequency with which its articles cite the other sample actuarial journals. The only sample risk and insurance journal cited with any frequency by the *JAP* was the *JRI*, with 17 citations. To date, the *JAP* is the least cited of the sample actuarial journals. Reasons for this likely include its relative newness, the pedagogical nature of some of its articles, and its relatively low subscription rate.⁵

RMIR's stated objective is consistent with the citations that are found in *RMIR*. A stated goal of ARIA, the Southern Risk and Insurance Association (SRIA), and the Western Risk and Insurance Association (WRIA) in starting *RMIR* was to "provide a new forum for the scholarly discussion of practical, public policy and pedagogical issues affecting risk and insurance" (see Palmer, 1997). They state further that "[*RMIR*] provides an excellent medium for the presentation, discussion and evaluation of ideas and concepts that can be applied in the business community, in the regulatory arena, and in the classroom" (Palmer, 1997, p. ii). Finally, they state that it is their hope that "[*RMIR*] will play an integral role in bridging the gap between risk management and insurance practitioners and the academic community" (Palmer, 1997, p. ii). These statements help explain the relative frequency with which we find *RMIR* citing both the *CPCU* and the *JIR*, given that these journals have a practitioner and regulatory leaning, respectively. Interestingly, although the *JFSP* has a practitioner leaning as well, there were no citations to the *JFSP* by *RMIR*. This suggests that the focus of *RMIR*'s articles has been more on property-liability issues rather than financial services issues. Finally, given that *RMIR* is the sister journal of the *JRI* and that the *JRI* has been found to be the core journal among all risk and insurance journals (see Colquitt,

⁵ Baur et al. (1997) report that (at the time of their study) only 2 percent (5 out of 265) of all Association to Advance Collegiate Schools of Business (AACSB) schools and only 3 percent (1 out of 30) of schools with a major in actuarial sciences subscribed to the *JAP*.

1997), the frequency with which the *JRI* was cited by *RMIR* is not surprising. While the number of citations to *RMIR* is not substantial at this point, note that a significant number of citations to a journal as new as *RMIR* are not expected. As was seen in Table 1, only 16.92 percent of all citations found in the sample journals were to articles that were as recent as 1997 (the year of *RMIR*'s inception).

A stated objective of the *NAAJ*, as found in its initial issue, is to "scientifically address the domestic and international problems, interests and concerns of actuaries, their customers and public policy decision-makers" (see Cox, 1997). Clearly, the citation patterns of the *NAAJ* and the journals citing the *NAAJ* articles reflect this objective. The journals that cited the *NAAJ* with the most frequency were the *AB*, the *BAJ*, *IME*, the *JAP*, the *JRI*, and the *NAAJ*. Incidentally, the journals cited with the most frequency by the *NAAJ* were the *AB*, the *BAJ*, *IME*, the *JRI*, the *NAAJ*, and the *SAJ*. One very impressive finding in this table, and more clearly seen in a following table, is the relative frequency with which the *NAAJ* was cited by the sample journals, in spite of its relative newness.

Table 2 also provides each journal's self-citation rate, and Table 3 provides each journal's self-citation index.⁶ The higher the self-citation index, the higher a journal's frequency of self-citations relative to the frequency with which it was cited by the other sample journals. The lower the self-citation index, the more influential the journal is presumed to be. While a high self-citation index could suggest that a journal is guilty of self-promotion, it also could be that a journal with a high self-citation index publishes research on topics that are of a specialized nature and, as a result, is most frequently referenced by other articles within that same journal (see Colquitt, 1997).

Among the risk and insurance journals, the *JRI* clearly had the lowest self-citation index (0.39). In addition, it was just below the level found in the previous study (0.40). The two risk and insurance journals with the next lowest self-citation indices were the *JIR* (1.00) and the *GPT* (1.05). Among the actuarial journals, the *NAAJ* (0.47) had the lowest self-citation index, with *IME* (0.70), the *SAJ* (0.92), and the *AB* (1.01) following close behind.

Table 4 provides a ranking of the sample journals based on total citations, including and excluding self-citations. Among the risk and insurance journals, the *JRI* was easily the most frequently cited journal with (1,352) or without (848) self-citations. This is consistent with the previous study, when the number of citations to the *JRI* was greater than citations to any other journal by a margin of almost 2.5 to 1. When including all citations, the risk and insurance journals following the *JRI* were the *JRU* (420) and the *JIR* (228). When excluding self-citations, the ranking of the *JRU* (107) fell below that of the *JIR* (129). The *JIR*'s increase of 70.1 percent in total citations (from 134 in the previous study to 228) was the greatest among the risk and insurance journals. Perhaps those responsible for the promotion of the *JIR* are taking a more aggressive

⁶ The calculation of both the self-citation rate and the self-citation index follows that of Borokhovich et al. (1994) and Colquitt (1997). The self-citation rate is the number of self-citations from a journal divided by the total number of citations found in that journal. The self-citation index is the self-citation rate $\times$ 100/normalized average citation rate excluding self-citations (per thousand citations).

TABLE 4

Journals Ranked by Total Number of Citations by the Sample Journals During 1996 Through 2000

Rank	Risk and Insurance Journals	Total Citations	Self-Citations	Non-Self-Citations	Adj. Rank*
1	<i>Journal of Risk and Insurance</i>	1352	504	848	1
2	<i>Journal of Risk and Uncertainty</i>	420	313	107	3
3	<i>Journal of Insurance Regulation</i>	228	99	129	2
4	<i>Geneva Papers on Risk and Insurance Issues and Practice</i>	137	85	52	6
5	<i>CPCU Journal</i>	118	57	61	5
6	<i>Geneva Papers on Risk and Insurance Theory</i>	113	19	94	4
7	<i>Journal of Financial Services Professionals</i>	86	68	18	8
8	<i>Journal of Insurance Issues</i>	59	25	34	7
9	<i>Benefits Quarterly</i>	36	22	14	9
10	<i>Risk Management and Insurance Review</i>	19	7	12	10

Rank	Actuarial Journals	Total Citations	Self-Citations	Non-Self-Citations	Adj. Rank*
1	<i>Insurance: Mathematics and Economics</i>	840	441	399	2
2	<i>Astin Bulletin</i>	609	177	432	1
3	<i>Scandinavian Actuarial Journal</i>	450	96	354	3
4	<i>British Actuarial Journal</i>	412	229	183	4
5	<i>North American Actuarial Journal</i>	137	47	90	5
6	<i>Journal of Actuarial Practice</i>	24	15	9	6

Note: *Ranking based upon total number of non-self-citations.

approach toward the distribution and electronic availability of the research published in that journal.

RMIR ranked last among the risk and insurance journals (19), but it is important to acknowledge, once again, that the newness of *RMIR* is likely contributing greatly to this result. Another factor that could contribute to a low ranking for *RMIR* in future studies is that a portion of *RMIR* is dedicated to pedagogical issues, which are not addressed by other journals on a regular basis. This likely will result in fewer opportunities for citations to the pedagogical articles published in *RMIR*.

For total citations for the actuarial journals, *IME* was the most frequently cited journal, with 840, followed by the *AB* (609), *SAJ* (450), and the *BAJ* (412). When excluding self-citations, the only change in the order was a switch in the first and second positions between *IME* (399) and the *AB* (432). While most journals experienced an increase in total citations from the amount registered in the previous study using 1991–1995 journals, the increase to 840 is a considerable jump for *IME*. The 840 citations for *IME* resulted in an increase of more than 133 percent from the 360 it registered in the previous study. As was speculated for the *JIR*, an explanation for this jump might be an increase in both *IME*'s subscription rates and the electronic availability of its articles

TABLE 5

Relative Impact of Risk, Insurance, and Actuarial Journals (Insurance Impact Factor—Period from 1991 to 2000)

Risk and Insurance Journals	All Citations		No Self-Citations	
	Insurance Impact Factor	Citations Rank	Adj. Insurance Impact Factor	Adj. Rank
<i>Journal of Risk and Insurance</i>	2.3549	1	1.3344	1
<i>Journal of Risk and Uncertainty</i>	1.2266	2	0.3238	4
<i>Geneva Papers on Risk and Insurance Theory</i>	0.9490	3	0.7755	2
<i>Journal of Insurance Regulation</i>	0.8238	4	0.4625	3
<i>Journal of Insurance Issues</i>	0.4078	5	0.2427	5
<i>CPCU Journal</i>	0.4035	6	0.1930	7
<i>Risk Management and Insurance Review</i>	0.3220	7	0.2034	6
<i>Geneva Papers on Risk and Insurance Issues and Practice</i>	0.2896	8	0.1093	8
<i>Journal of Financial Services Professionals</i>	0.2149	9	0.0401	9
<i>Benefits Quarterly</i>	0.0880	10	0.0320	10
Actuarial Journals	All Citations		No Self-Citations	
	Insurance Impact Factor	Citations Rank	Adj. Insurance Impact Factor	Adj. Rank
<i>Astin Bulletin</i>	1.8714	1	1.3100	1
<i>Insurance: Mathematics and Economics</i>	1.6005	2	0.7135	4
<i>Scandinavian Actuarial Journal</i>	1.5410	3	1.1230	2
<i>British Actuarial Journal</i>	1.3784	4	0.4054	5
<i>North American Actuarial Journal</i>	1.0873	5	0.7143	3
<i>Journal of Actuarial Practice</i>	0.2366	6	0.0753	6

Notes: Impact Factor = citations to a journal's articles published in a certain period divided by the number of citable articles published during the same period. Adj. Insurance Impact Factor = the insurance impact factor calculated using only the non-self-citations. The period used for all of the journals except the *JAP*, the *NAAJ*, and *RMIR* was 1991–2000. The *JAP* was established in 1993, and the period used for this journal was 1993–2000. The *NAAJ* and *RMIR* were established in 1997, and the period used for these journals was 1997–2000.

in recent years. The actuarial journals with the fewest total citations were the *NAAJ*, with 137 citations and the *JAP*, with 24 citations.

While the total number of citations for the sample journals provides a measure of the total impact that each journal has on risk, insurance, and actuarial research, the total number of citations was greatly affected by the number of citable articles published by the sample journals. Table 5 provides the Insurance Impact Factor (IIF) for both the

risk and insurance journals and the actuarial journals. The IIF follows Colquitt (1997) and captures the relative research impact of a journal on a per article basis.⁷

For the research impact of a journal on a per article basis, the *JRI* was ranked first among all journals, with an IIF of 2.3549. This essentially means that the *JRI* articles published between 1991 and 2000 were cited an average of 2.3549 times per article by the sample risk, insurance, actuarial, and finance journals analyzed. This IIF of 2.3549 for the *JRI* surpasses its IIF of 1.7162 from the previous study. In the risk and insurance group, the *JRU* (1.2266), the *GPT* (0.9490), and the *JIR* (0.8238) follow. When looking at the Adjusted Insurance Impact Factor⁸ (AIIF) for the risk and insurance group, the only change observed in the top four was the move of the *JRU* from second to fourth position.

Although the *JRI* and the *JRU* finished as numbers one and two among all risk and insurance journals for both total citation count and IIF, a number of differences exist between the two rankings. The three journals that increased considerably in rank when looking at the IIF were the *GPT* (from sixth on total citations to third when using the IIF), the *JII* (from eighth to fifth), and *RMIR* (from tenth to seventh). The journals losing the most ground when going from total citations to the IIF included the *GPIP* (from fourth to eighth) and the *JFSP* (from seventh to ninth).

While not shown here, the IIFs of the risk and insurance journals were also calculated using the period 1997 through 2000. This was done to compare the initial impact of *RMIR* with the other sample journals over a time horizon that was fair to *RMIR*, given that 1997 was the first year of publication for *RMIR*. Interestingly, among the risk and insurance journals, the IIF of *RMIR* placed it in fourth position (out of ten), behind the *JRI*, the *JIR*, and the *JRU*. *RMIR*'s AIIF placed it in third, moving it ahead of the *JRU*. In addition to highlighting *RMIR*'s fairly impressive start, these results also suggest that the *JIR*'s recent research (1997 through 2000) is having a more significant impact than did its research over the first six years of the sample period (1991 through 1996). Future citation studies are likely to find the *RMIR* and the *JIR* making a more significant impact.

The actuarial journals' IIFs indicated a much tighter margin between the first and fifth journals, with the *JAP* considerably lower than the others. The *AB* (1.8714) led all actuarial journals, followed by the *IME* (1.6005), the *SAJ* (1.5410), the *BAJ* (1.3784), the *NAAJ* (1.0873), and the *JAP* (0.2366). When ranking the journals based on their AIIF, the *AB* (1.3100) continued to lead, but the order of the others changed somewhat. Second on the AIIF list of actuarial journals was the *SAJ* (1.1230), followed by the *NAAJ* (0.7143), *IME* (0.7135), the *BAJ* (0.4054), and the *JAP* (0.0753).

As was done with the risk and insurance journals, the IIFs of the actuarial journals were also calculated using the period 1997 through 2000. As was mentioned earlier, 1993 was the first year that the *JAP* was published, and 1997 was the first year that the

⁷ The IIF equals citations to a journal's articles published in a certain period divided by the number of citable articles during the same period. The period used for all of the journals except the *JAP*, the *NAAJ*, and *RMIR* was 1991 through 2000. The *JAP* was established in 1993, and the period used for the *JAP* was 1993 through 2000. Both the *NAAJ* and *RMIR* were established in 1997, and the period used for these two journals was 1997 through 2000.

⁸ The AIIF is the IIF calculated excluding self-citations.

NAAJ was published. When evaluating the IIFs during this period, the *NAAJ* moved to third (out of six) among the actuarial journals. In addition, when evaluating the AIIF for this same period, the *NAAJ* moved to second among the actuarial journals. In the event that future *NAAJ* articles are as influential as the first four years' articles have been, the *NAAJ* soon will likely be viewed as among the more influential of the actuarial journals.

Article Results

In addition to knowing the relative impact of the risk, insurance, and actuarial journals, it is also helpful for many to know which of the articles published in the past have been the most influential in recent years. Reasons provided by Colquitt (1997) include the importance of this knowledge to (1) researchers who can use this information to determine the subjects, methodology, style, etc., that have been a part of the most influential research; (2) editors who use this information to form opinions on the value of future research submitted for publication; and (3) those responsible for developing reading lists for graduate-level seminar courses in the areas of risk, insurance, and actuarial science.

When highlighting the most frequently cited articles published in the sample risk, insurance, and actuarial journals, it is important to remind readers of a significant point. Many risk, insurance, and actuarial articles have been published in journals whose focus is not solely risk, insurance, or actuarial in nature, and they are therefore not included in the sample. For example, although many find Mayers and Smith's 1982 article "On the Corporate Demand for Insurance" to be a very influential article on a risk and insurance topic, it was published in the *Journal of Business*. As a result of the *Journal of Business* not being a part of the sample risk, insurance, and actuarial journals, this article (and perhaps others), while very influential, is not included in the results of this study.

Table 6 shows the most frequently cited *JRI* articles published in each year, 1985 through 1998.⁹ The most frequently cited *JRI* articles published in each year, 1980 through 1993, were listed in the previous study. Although there is an overlap of nine years between the current and previous studies, only three articles were the most frequently cited articles for their year in both studies. Those found to be the most frequently cited for their year in both studies included Grabowski et al. (1989), Ambrose and Seward (1988), and Harrington and Nelson (1986). The fact that no more than three out of nine articles were found in both studies suggests that the risk and insurance literature's focus with regard to subject matter has changed considerably over a fairly short period of time. Interestingly, Harrington (1998, with Grace and Klein, and 1986, with Nelson), Klein (1998, with Grace and Harrington, and 1995) and BarNiv (1997, with Hathorn, and 1990 with Hershbarger) are the only authors credited with two of the most frequently cited articles for a particular year.

Table 7 lists the *JRI* articles that were the most frequently cited by the sample journals regardless of the year in which they were published. Of the 15 articles on the list, ten of them were published between 1992 and 1996. This is consistent with the Table 1

⁹ No articles published in the *JRI* during 1999 and 2000 were cited by the sample journals more than twice.

TABLE 6

Journal of Risk and Insurance Articles Published During Each Year, 1985 Through 1998, That Were the Most Frequently Cited by the Sample Journals During 1996 Through 2000*

Year	Author(s)	Pages	Title	Citations
1998	Grace, Harrington and Klein	213-243	<i>Risk-Based Capital and Solvency Screening in Property-Liability Insurance: Hypotheses and Empirical Tests</i>	5
1997	BarNiv and Hathorn	89-113	<i>The Merger or Insolvency Alternative in the Insurance Industry</i>	9
1996	Sommer	501-514	<i>The Impact of Firm Risk on Property-Liability Insurance Prices</i>	12
1995	Carson and Hoyt	764-775	<i>Life Insurer Financial Distress: Classification Models and Empirical Evidence</i>	14
	Klein	363-404	<i>Insurance Regulation in Transition</i>	14
1994	Ambrose and Carroll	317-327	<i>Using Best's Ratings in Life Insurer Insolvency Prediction</i>	15
1993	Browne and Kim	616-634	<i>An International Analysis of Life Insurance Demand</i>	10
1992	D'Arcy and France	575-601	<i>Catastrophe Futures: A Better Hedge for Insurers</i>	16
1991	Butler and Worrall	191-204	<i>Claims Reporting and Risk Bearing Moral Hazard in Workers Compensation</i>	11
1990	BarNiv and Hershbarger	110-136	<i>Classifying Financial Distress in the Life Insurance Industry</i>	12
1989	Grabowski, Viscusi, and Evans**	275-299	<i>Price and Availability Tradeoffs of Automobile Insurance Regulation</i>	11
1988	Ambrose and Seward**	229-244	<i>Best's Ratings, Financial Ratios and Prior Probabilities in Insolvency Prediction</i>	13
1987	Mayers and Smith	45-54	<i>Corporate Insurance and the Underinvestment Problem</i>	14
1986	Harrington and Nelson**	583-605	<i>A Regression-Based Methodology for Solvency Surveillance in the Property-Liability Insurance Industry</i>	12
1985	Weiss	199-221	<i>A Multivariate Analysis of Loss Reserving Estimates in Property-Liability Insurers</i>	8

*No article published in the *JRI* during 1999 or 2000 was cited more than twice.

**These articles were also among the most cited in the previous study conducted using citations from the sample journals during 1991-1995.

results showing that nearly 40 percent of all citations found in the sample journals were to articles published during these five years. In addition, of the 15 articles listed in Table 7, only five were also found to be among the most frequently cited *JRI* articles in the previous study.

TABLE 7

Journal of Risk and Insurance Articles Most Frequently Cited by the Sample Journals During 1996 Through 2000, Regardless of the Year Published

Rank	Author(s)	Year/ Volume	Pages	Title	Citations
1	D'Arcy and France	1992/59	575-601	<i>Catastrophe Futures: A Better Hedge for Insurers</i>	16
2	Ambrose and Carroll	1994/61	317-327	<i>Using Best's Ratings in Life Insurer Insolvency Prediction</i>	15
T3	Carson and Hoyt	1995/62	764-775	<i>Life Insurer Financial Distress: Classification Models and Empirical Evidence</i>	14
T3	Klein	1995/62	363-404	<i>Insurance Regulation in Transition</i>	14
T3	BarNiv and McDonald	1992/59	543-574	<i>Identifying Financial Distress in the Insurance Industry: A Synthesis of Methodological and Empirical Issues</i>	14
T3	Barrese and Nelson	1992/59	375-397	<i>Independent and Exclusive Agency Insurers: A Reexamination of the Cost Differential</i>	14
T3	Mayers and Smith*	1987/54	45-54	<i>Corporate Insurance and the Underinvestment Problem</i>	14
T8	Wells, Cox, and Gaver	1995/62	50-66	<i>Free Cash Flow in the Life Insurance Industry</i>	13
T8	Ambrose and Seward*	1988/55	229-244	<i>Best's Ratings, Financial Ratios and Prior Probabilities in Insolvency Prediction</i>	13
T10	Sommer	1996/63	501-514	<i>The Impact of Firm Risk on Property-Liability Insurance Prices</i>	12
T10	Mayers and Smith	1994/61	638-655	<i>Managerial Discretion, Regulation and Stock Insurer Ownership Structure</i>	12
T10	Brockett, Cooper, Golden, and Pitak-tong	1994/61	402-424	<i>A Neural Network Method for Obtaining Early Warning of Insurer Insolvency</i>	12
T10	BarNiv and Hershbarger*	1990/57	110-136	<i>Classifying Financial Distress in the Life Insurance Industry</i>	12
T10	Cummins and Outreville*	1987/54	246-262	<i>An International Analysis of Underwriting Cycles in Property-Liability Insurance</i>	12
T10	Harrington and Nelson*	1986/53	583-605	<i>A Regression-Based Methodology for Solvency Surveillance in the Property-Liability Insurance Industry</i>	12

*These articles were also among the most cited in the previous study conducted using citations from the sample journals during 1991-1995.

The most recently published article on the list is Sommer (1996), and the oldest article on the list is Harrington and Nelson (1986). In addition, only four of the 15 articles on the list were published during the 1980s. Finally, almost half (seven out of 15) of the articles deal with predicting and identifying insolvency or financial distress. Clearly, this subject has been a dominant theme among the most influential articles published in risk and insurance journals in recent years and is one that should receive close attention from graduate programs in risk and insurance. Of course, as the popularity of a research topic increases, the number of citations to articles related to the topic increase accordingly.

Table 8 contains the most frequently cited article from each of the 16 sample risk, insurance, and actuarial journals.¹⁰ Only three journals, the *AB*, the *JII*, and the *JRU*, had the same article as the most frequently cited by the sample journals in both the current and previous study. Two of these articles, Panjer's "Recursive Evaluation of a Family of Compound Distributions" (Panjer, 1981, from the *AB*) and Hershbarger and Miller's "The NAIC Information System and the Use of Economic Indicators in Predicting Insolvencies" (Hershbarger and Miller, 1986, from the *JII*) were the only ones on the list from the 1980s. Interestingly, Panjer's *AB* article (with 29 citations) had exactly the same number of citations as it did in the previous study.

Table 9 contains the most frequently cited articles in any of the actuarial journals.¹¹ All actuarial journals except the *JAP* and the *NAAJ* are represented on this list. The *AB* and *IME* led the list with five articles each, the *BAJ* (including the *Journal of the Institute of Actuaries* article from 1992) had two on the list, and the *SAJ* had one on the list. However, it is Wilkie's *BAJ* article, "More on a Stochastic Asset Model for Actuarial Use," that led all actuarial articles, with 33 citations (Wilkie, 1995). Panjer's 1981 article from the *AB* (listed above), and the Gerber et al. 1987 *AB* article, "On the Probability and Severity of Ruin," (Gerber et al., 1987) were the only articles to appear among the most frequently cited articles in both the current and previous studies.

The only authors with multiple articles on the list were Panjer (with two) and Wang and Goovaerts (both with three). In addition, the longevity of the actuarial articles with regard to influence appeared to be a bit greater than that of the *JRI* articles. While the list of the most frequently cited *JRI* articles includes only four out of 15 (26.67 percent) articles ten years or older, the list of the most frequently cited actuarial articles includes six out of 13 (46.15 percent) articles that are ten years or older, with

¹⁰ The most frequently cited articles from the *JFSP* and the *CPCU* are not included because of the incomplete nature of many of the citations found in these journals. In addition, the most frequently cited *RMIR* article is not listed because five *RMIR* articles were tied with two citations each.

¹¹ A table of the most frequently cited articles published in any of the risk and insurance journals is not provided because of the dominance of the *JRI* among the risk and insurance journals. The only difference between a table listing the most frequently cited articles in any risk and insurance journal and Table 7 (the most frequently cited *JRI* articles) would be the inclusion of three *JRU* articles: (1) Tversky and Kahneman's 1992 article, "Advances in Prospect Theory: Cumulative Representation of Uncertainty," with 27 citations; (2) Luce and Fishburn's 1991 article, "Rank- and Sign-Dependent Linear Utility Models for Finite First-Order Gambles," with 12 citations; and (3) Viscusi's 1989 article, "Prospective Reference Theory: Toward an Explanation of the Paradoxes," with 12 citations.

TABLE 8

The Article From Each Risk and Insurance and Actuarial Journal That Was the Most Frequently Cited by the Sample Journals During 1996 Through 2000

Journal	Author(s)	Year/Pages	Title	Citations
<i>Astin Bulletin*</i>	Panjer	1981/22-26	<i>Recursive Evaluation of a Family of Compound Distributions</i>	29
<i>Benefits Quarterly</i>	Myers	1992/41-55	<i>Chile's Social Security Reform (After Ten Years)</i>	3
<i>British Actuarial Journal</i>	Wilkie	1995/777-964	<i>More on a Stochastic Asset Model for Actuarial Use</i>	33
<i>Geneva Papers on Risk and Insurance Issues and Practice</i>	Kielholz and Durrer	1997/3-16	<i>Insurance Derivatives and Securitization: New Hedging Perspectives for the U.S. Cat Insurance Market</i>	6
	Cummins and Weiss	1991/20-38	<i>The Effects of No Fault on Automobile Insurance Loss Costs</i>	6
<i>Geneva Papers on Risk and Insurance Theory</i>	Konrad and Skaperdas	1993/131-146	<i>Self-Insurance and Self-Protection: A Non-Expected Utility Analysis</i>	5
	Hogarth and Kunreuther	1992/35-60	<i>Pricing Insurance and Warranties: Ambiguity and Correlated Risks</i>	5
<i>Insurance: Mathematics and Economics</i>	Wang, Young, and Panjer	1997/173-183	<i>Axiomatic Characterization of Insurance Prices</i>	15
<i>Journal of Actuarial Practice</i>	Knox	1993/49-68	<i>A Critique of Defined Contribution Plans Using a Simulation Approach</i>	4
<i>Journal of Insurance Issues*</i>	Hershbarger and Miller	1986/21-43	<i>The NAIC Information System and the Use of Economic Indicators in Predicting Insolvencies</i>	6
<i>Journal of Insurance Regulation</i>	Klein and Barth	1995/256-301	<i>Solvency Monitoring in the Twenty-first Century</i>	8
<i>Journal of Risk and Insurance</i>	D'Arcy and France	1992/575-601	<i>Catastrophe Futures: A Better Hedge for Insurers</i>	16
<i>Journal of Risk and Uncertainty**</i>	Tversky and Kahneman	1992/297-323	<i>Advances in Prospect Theory: Cumulative Representation of Uncertainty</i>	27
<i>North American Actuarial Journal</i>	Gerber and Shiu	1998/48-72	<i>On the Time Value of Ruin</i>	9
<i>Scandinavian Actuarial Journal</i>	Dufresne	1990/39-79	<i>The Distribution of a Perpetuity, with Applications to Risk Theory and Pension Funding</i>	14

*These articles were also among the most cited in the previous study conducted using citations from the sample journals during 1991–1995.

**The most frequently cited articles published by the *JFSP* and the *CPCU* are not provided due to the incomplete nature of many of the citations found in these journals. In addition, the most frequently cited article from the *RMIR* is not listed because five articles were tied with two citations each.

Buhlman's 1967 *AB* article, "Experience Rating and Credibility," more than 30 years old. Finally, two themes were common among several of the 13 most influential articles published in the actuarial literature in recent years: both pricing and financial distress were the subject of almost a third of the articles published.

TABLE 9

The Most Frequently Cited Articles Published in Any of the Actuarial Journals

Rank	Author(s)	Journal/Year	Pages	Title	Citations
1	Wilkie	<i>BAJ</i> /95	777-964	<i>More on a Stochastic Asset Model for Actuarial Use</i>	33
2	Panjer*	<i>AB</i> /81	22-26	<i>Recursive Evaluation of a Family of Compound Distributions</i>	29
3	Wang	<i>AB</i> /96	71-92	<i>Premium Calculation by Transforming the Layer Premium Density</i>	21
4	Buhlman	<i>AB</i> /67	199-207	<i>Experience Rating and Credibility</i>	19
5	Dhaene and Goovaerts	<i>AB</i> /96	201-212	<i>Dependency of Risks and Stop-Loss Order</i>	17
6	Wang, Young, and Panjer	<i>IME</i> /97	173-183	<i>Axiomatic Characterization of Insurance Prices</i>	15
T7	Wang	<i>IME</i> /95	43-54	<i>Insurance Pricing and Increased Limits Rate-Making by Proportional Hazards Transformed</i>	14
T7	Dufresne	<i>SAJ</i> /90	39-79	<i>The Distribution of a Perpetuity, with Applications to Risk Theory and Pension Funding</i>	14
T7	DeVylder and Goovaerts	<i>IME</i> /88	1-8	<i>Recursive Calculation of Finite-Time Ruin Probabilities</i>	14
T10	Geoghegan, Clarkson, Feldman, Green, Kitts, Lavecky, Ross, Smith, and Toutounchi	<i>JIA</i> /92	173-228	<i>Report on the Wilkie Stochastic Investment Model</i>	13
T10	Dickson	<i>IME</i> /92	191-207	<i>On the Distribution of the Surplus Prior to Ruin</i>	13
T10	Gerber, Goovaerts, and Kaas*	<i>AB</i> /87	151-163	<i>On the Probability and Severity of Ruin</i>	13
T10	Embrechts and Veraverbeke	<i>IME</i> /82	55-72	<i>Estimates for the Probability of Ruin with Special Emphasis on the Possibility of Large Claims</i>	13

Notes: *AB* = *Astin Bulletin*; *BAJ* = *British Actuarial Journal*; *IME* = *Insurance: Mathematics and Economics*; *JIA* = *Journal of the Institute of Actuaries* (now the *BAJ*); *SAJ* = *Scandinavian Actuarial Journal*.

*These articles were also among the most cited in the previous study conducted using citations from the sample journals during 1991–1995.

CONCLUSION

The bibliographies of articles from 16 risk, insurance, and actuarial journals and 16 of the leading finance journals during 1996 through 2000 were reviewed and recorded. After observing the citation patterns of the sample journals, the journals were put into two separate groups: (1) the risk and insurance journal group, and (2) the actuarial journal group. The journals within each group were then ranked based upon their total number of citations and their research impact on a per article basis. One impor-

tant difference between this study and Colquitt (1997) is the addition of the *JAP*, the *NAAJ*, and *RMIR* to the sample risk, insurance, and actuarial journals. Their inclusion helps evaluate their focus and to determine the initial impact that they have on other risk, insurance, and actuarial research.

The top risk and insurance journals based on the number of citations from the sample journals, including and excluding self-citations, were the *JRI*, the *JRU*, and the *JIR*. When looking at the rankings based on the journal's research impact on a per article basis, the *JRI* was still the top risk and insurance journal, and the *GPT* joined the *JRU* and the *JIR* as the next three highest-ranked journals in the group. While *RMIR* is currently the lowest-ranked risk and insurance journal based on total citations (which was expected because the newness of the journal), its ranking increased to seventh out of ten when considering its impact on a per article basis. When adjusting for the fact that it has only been in existence since 1997, its ranking based on impact per article increased to fourth out of ten journals.

The *JRI* easily maintains its position as the core journal among the risk and insurance journals (see Colquitt, 1997). The total number of citations (1,352) for the *JRI* was more than three times that of the next highest journal (the *JRU*, with 420). In addition, it was either the first or second most frequently cited journal by each of the other risk and insurance journals. And the *JRI* was the only journal to have been cited at least once by all of the other sample risk, insurance, and actuarial journals. Finally, it was the most frequently cited risk, insurance, or actuarial journal by the sample finance journals, by an overwhelming margin.

The top actuarial journal, based on the total number of citations from the sample journals including self-citations, was *IME*, while the *AB* had the second most citations. These journals remained the top two when excluding self-citations, but their positions were reversed. Using the per article impact measure to rank the actuarial journals, the *AB* was the highest ranked journal, with *IME* and the *SAJ* ranking second when including and excluding self-citations, respectively. Considering the relative newness of the *NAAJ*, it does very well regardless of measurement. In addition, when adjusting for the fact that the *NAAJ* has only been in existence since 1997, its ranking based on per article impact was third out of six when including self-citations and second out of six when excluding self-citations. In every measure, the *JAP* was the lowest-ranked actuarial journal.

The most frequently cited articles were also reported. The most frequently cited risk and insurance article was Tversky and Kahneman's 1992 *JRU* article, "Advances in Prospect Theory: Cumulative Representation of Uncertainty" (not found in a table—see footnote 9), with 27 citations. The *JRI* article most frequently cited was D'Arcy and France's 1992 article, "Catastrophe Futures: A Better Hedge for Insurers," with 16 citations, and the most frequently cited actuarial article was Wilkie's 1995 *BAJ* article, "More on a Stochastic Asset Model for Actuarial Use," with 33 citations. While the list of the most frequently cited risk and insurance articles is dominated by the *JRI* and the *JRU*, the list of the most frequently cited actuarial articles is represented by all of the actuarial journals except the *JAP* and the *NAAJ*. The list of the most frequently cited actuarial articles includes five articles from *IME*, five from the *AB*, two from the *BAJ*, and one from the *SAJ*.

Finally, at least two possibilities exist for future research. First, one might evaluate if a “country effect” exists among risk, insurance, and actuarial journals.¹² This country effect was shown by Malouin and Outreville (1987) to exist with economics journals in the 1980s. However, it is impossible to use the data analyzed in this study to fully test the same hypothesis. While a country effect resulting from language barriers might still exist in academia, any country effect that was the result of the lack of availability of journals in different parts of the world has likely lessened significantly due to the widespread availability of many of the sample journals through the Internet. The fact that so many more citations were found in the sample journals during this study (presumably as a result of the Internet) as compared to Colquitt (1997) is some evidence that journal availability has been much greater in the most recent years than it was just five or ten years ago.

Second, a survey questionnaire methodology would be helpful in developing an understanding of other journal quality issues that cannot be understood through the analysis of citation data alone. Perhaps it would be interesting to see how correlated the subjective views of researchers, educators, and other readers of risk, insurance, and actuarial science research are with the more objective measures of journal quality.

APPENDIX

Journals Included in the Study

Risk and Insurance Journals	
<i>Benefits Quarterly (BQ)</i>	<i>CPCU Journal (CPCU)</i>
<i>Geneva Papers on Risk and Insurance Issues and Practice (GPIP)</i>	<i>Geneva Papers on Risk and Insurance Theory (GPT)</i>
<i>Journal of Financial Services Professionals (JFSP)</i>	<i>Journal of Insurance Issues (JII)</i>
<i>Journal of Insurance Regulation (JIR)</i>	<i>Journal of Risk and Insurance (JRI)</i>
<i>Journal of Risk and Uncertainty (JRU)</i>	<i>Risk Management and Insurance Review (RMIR)</i>
Actuarial Journals	
<i>Astin Bulletin (AB)</i>	<i>British Actuarial Journal (BAJ)</i>
<i>Insurance: Mathematics and Economics (IME)</i>	<i>Journal of Actuarial Practice (JAP)</i>
<i>North American Actuarial Journal (NAAJ)</i>	<i>Scandinavian Actuarial Journal (SAJ)</i>
Finance Journals	
<i>Financial Analysts Journal</i>	<i>Financial Management</i>
<i>Financial Review</i>	<i>Journal of Banking and Finance</i>
<i>Journal of Business</i>	<i>Journal of Business Finance and Accounting</i>
<i>Journal of Finance</i>	<i>Journal of Financial and Quantitative Analysis</i>
<i>Journal of Financial Economics</i>	<i>Journal of Financial Research</i>
<i>Journal of Financial Services Research</i>	<i>Journal of Futures Markets</i>
<i>Journal of International Money and Finance</i>	<i>Journal of Money, Credit and Banking</i>
<i>Journal of Portfolio Management</i>	<i>Review of Financial Studies</i>

¹² In Malouin and Outreville (1987), a “country effect” occurs when there is a bias toward journals published in either one’s country of origin or in one’s native language.

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