

GUEST EDITORIAL

**ACTUARIAL SCIENCE AS A SCIENTIFIC DISCIPLINE:
THE NEXT STEP**

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In consecutive guest editorials for the *British Actuarial Journal (BAJ)*, Jed Frees and Harry Panjer discussed the importance of scientific journals in actuarial science, and praised the recent emergence of new peer reviewed journals such as the *BAJ* (1995), the *North American Actuarial Journal (NAAJ)*, 1997), and now the *Annals of Actuarial Science*. These positive developments reflect the remarkable expansion of actuarial science as an academic discipline, leading to the submission of hundreds of articles annually. Long gone are the days when the creation of a new journal led editors to worry that “too many journals would be chasing too few papers”. In 1998, *Insurance: Mathematics and Economics (IME)* increased its annual number of issues from 4 to 6. Among top actuarial journals, the *ASTIN Bulletin (ASTIN)* stands out by its ability to quickly change its annual number of pages, due to its flexible agreement with its publisher. The recent evolution of its annual number of pages, shown in Figure 1, since Volume 11

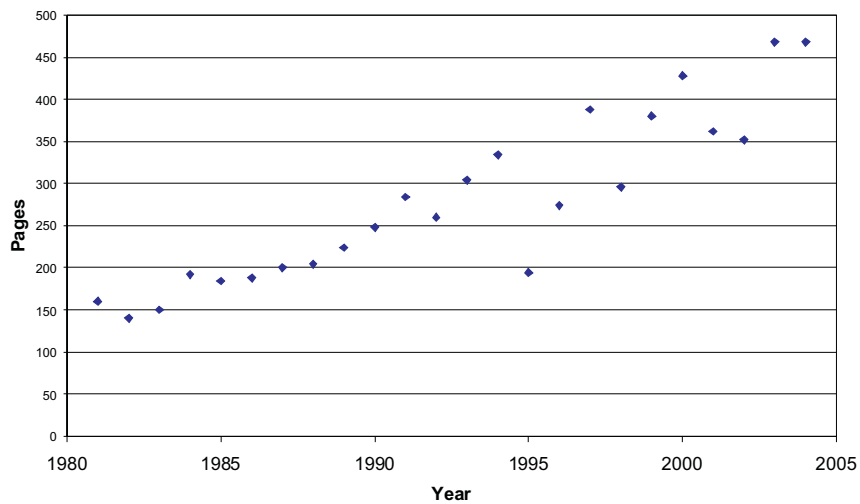


Figure 1. *ASTIN Bulletin* — annual number of pages

(1981), amply demonstrates the increasing trend in actuarial research. 2005 may prove to be another record year for *ASTIN*, with the May issue containing no less than 328 pages. Noteworthy is the emergence of a number of quality papers coming from new countries in the actuarial field, such as Greece, Mexico, China, Hungary and Kuwait.

This explosion of the number of peer reviewed scholarly articles, however, may mask the fact that actuarial science still struggles to be recognised as a discipline worthy of the interest of other scientists. The Social Sciences Citation Index (SSCI) provides access to past and current bibliographic information found in 1,800 leading social sciences journals from over 50 disciplines. The Science Citation Index reviews approximately 5,900 science and technical journals from over 150 disciplines. The only insurance-related journals reviewed by SSCI are the *Journal of Risk and Insurance (JRI)*, *IME*, and the two *Geneva Papers on Risk and Insurance*. No purely actuarial journal, whether published by a national or an international association, is reviewed by either index. These decisions by SSCI are at odds with citation-based rankings performed by insurance researchers (see Colquitt, 1997, 2003), which consistently place *ASTIN* on top of their lists and the *Geneva* journals around average.

This situation is beginning to hurt submissions to actuarial journals. In many countries where university funding essentially comes from the state, governments are trying to find objective ways to evaluate researchers, with inclusion by SSCI an oft-used criterion. A lone exception seems to be the Taiwanese Academy of Sciences which surveyed leading researchers of each field before ranking journals (and consequently gave an A to *ASTIN*), but other countries discourage actuarial faculties to submit their research to *ASTIN* or to *BAJ*.

In Portugal, the Foundation for Science and Technology, which sponsors all research centres, is preparing some legislation which would make the money available per researcher depend only on the number of articles published in journals cited by SSCI.

In Spain — more exactly at the University of Barcelona — articles published in journals reviewed by SSCI are considered to be major research outputs, while papers in other journals are somewhat overlooked. Recently, the Catalan Government has defined a list of actuarial and risk insurance journals, and articles published in these journals are now recognised. However, the ranking of actuarial journals is quite poor, suffering from a comparison with major economics journals such as *Econometrica* or the *American Economic Review*. No single insurance journal received a grade of A. Only *IME* was awarded a B. *ASTIN*, *BAJ*, and both Geneva journals got a C. *NAAJ*, the *Scandinavian Actuarial Journal*, the *Journal of Actuarial Practice*, and *Risk Management and Insurance Review*, only made the list with a D.

In Hong Kong, the Research Assessment Exercise is mainly based on the

Science/Social Science Citation Indexes. Actuarial professors have requested several prominent overseas colleagues to write letters in support of actuarial journals. These letters were forwarded to the Research Grant Council, with a request that most actuarial journals should be taken into account in the Research Assessment Exercise. So far, the Research Grant Council has not entertained this suggestion.

University researchers from these countries face a difficult decision when they wish to submit their work for publication. Either they send their work to a journal in the SSCI list, and their ideas will not be read by the 13,000 actuaries who read the *BAJ* or the 3,000 members of ASTIN and AFIR; or they submit to an actuarial journal, and risk a grant being denied, a cut in their department's budget, possibly a reduction of their annual salary increase, and maybe even a negative tenure review.

The problem may get worse in the near future, as more and more actuarial programmes are being established in emerging countries. Authorities in these countries, where there is no long-standing tradition of actuarial research, may be all the more tempted to rely on 'automatic' criteria, like SSCI citation counts, as they have no local researchers to turn to for a ranking of journals.

Why are actuarial journals not reviewed by SSCI? According to Thompson Scientific, publisher of SSCI, its evaluation process includes numerous criteria, such as timeliness of publication, adherence to international editorial conventions, English language bibliographic information, international diversity of authors and editors. Most importantly, SSCI data are used to determine the journals' citation histories and the citation counts of authors and journal editors.

Top actuarial journals certainly cannot be faulted on the quality of their editors, the international diversity of their authors, or their timeliness of publication. Poor citation count is probably a factor that weights heavily against actuarial journals, which leads to the following personal comments:

- (1) Citation counts are biased against new journals, such as *BAJ* or *NAAJ*, which have had less time to be cited.
- (2) Actuarial journals may be considered 'niche journals', and consequently receive fewer citations than more broadly focused journals.
- (3) SSCI only credits the first author of a co-authored article, and a recent trend in actuarial research has been an increase in the number of authors per paper. For example, every single article in *ASTIN*, Volume 11.1, the first issue covered in Figure 1, is single authored. Out of the 15 articles published in the latest issue, 35.1, five are single authored, seven have two authors, and two have three. The remaining article has six authors.
- (4) Several members of the Institute, the Faculty, and ASTIN, have written very successful textbooks summarising the state of knowledge in one particular actuarial topic. Journal authors are naturally inclined to cite

the book rather than the *BAJ* and *ASTIN* articles which were used in the book.

- (5) This seems to be a classical example of a ‘chicken-and-egg’ problem. If SSCI does not review actuarial journals, no wonder citation counts of actuaries are not that great!

Furthermore, a discussion with one of the evaluators of *ASTIN*, held in the offices of SSCI headquarters in Philadelphia, has led me to believe that actuarial journals are facing other hurdles:

- (6) As candidly acknowledged by the evaluator, Thompson Scientific is a for-profit organisation. Incorporating smaller disciplines like actuarial science in the expensive review process is not a money making activity for Thompson.
- (7) A common characteristic of the insurance journals reviewed by SSCI is that they are all published by major companies, such as Springer, Elsevier, and Blackwell. Actuarial associations typically do not use major international publishers, but rather small local printers. This presents many advantages: low cost, flexibility concerning the number of pages, reduced time between delivery of articles to printer and publication, personalised contacts between editors and printer’s representatives; but a major disadvantage seems to be an extra difficulty in being reviewed by SSCI.

No doubt journal editors are feeling very frustrated about the current state of affairs. What can they do to improve their chances of having their journals reviewed by SSCI? As first steps, three very modest proposals are presented here:

- (1) Besides peer-reviewed articles, actuarial journals have numerous other sections, such as reports on past meetings, obituaries, university actuarial vacancies, book reviews, table of contents of other actuarial journals, and call for papers for future meetings (more often than not appearing when the submission deadline has passed). These sections allow the vast majority of members — who cannot attend annual meetings — to participate in the life of the association, and bring a sense of togetherness to members. However, these sections have a ‘Newsletter’ feeling, which may convey to evaluators the sense that they are reading a professional journal, not a scientific publication. The Institute, the Faculty, the Society of Actuaries, and *ASTIN*, are all financially sound associations which have permanent secretariats. It would not be difficult for these associations to organise an electronic transmission of some — not all — of these sections. Calls for papers would be distributed in a timely manner, college positions would be forwarded to the academic subset of the membership, and abstracts of other actuarial journals may get more attention if sent in a separate message.

- (2) Actuarial associations can boast very impressive circulation figures for their journals. However, very few universities, libraries, and individual non-members subscribe to these journals, spreading the message of a 'niche' discipline publishing exclusive professional journals, and ensuring that the citation counts of actuarial authors remains low. Associations contribute to the problem by imposing hefty subscription prices for non-members. They are not exploiting the unique advantage that the use of a local printer confers on them, namely the fact that the marginal price of printing and sending an extra issue of a journal is extremely low. They could offer subscriptions to universities at a reduced cost, maybe equivalent to the cost paid by a member. University libraries are extremely sensitive to the high cost of journals these days, and they would very much appreciate being able to subscribe to a major journal at a cost which is well inferior to the price charged by major international publishers. *ASTIN*, the Institute and the Faculty already distribute their journals, free of charge, to a long list of universities and actuarial associations in actuarially developing countries. It would not hurt the bottom line of these associations to offer subscriptions of their journals to all universities at a modest cost. The resulting increased circulation would enhance the status of actuarial science as a scientific discipline, and hopefully improve the chances of *BAJ* and *ASTIN* being selected as top journals when government authorities in more countries decide to rank actuarial journals.
- (3) Major publishers get near-automatic subscriptions of new journals by many universities. They can promote a new journal in their numerous other journals. The small publishers used by actuarial associations usually maintain the short list of external subscribers as a service to the association, without real promotion or an attempt to increase circulation. Large actuarial associations could take over the promotion process. For instance, the IAA could do a better job at promoting *ASTIN* externally than the small publisher selected by the section.

The problem faced by the different actuarial journals seems similar to the kind of situations analysed by cooperative game theory, where the interests of the players in the game are partially conflicting and partially complementary. Sure, *BAJ*, *ASTIN*, *IME* and *JRI* are competitors; they all try to publish the best actuarial research; but, in the area of recognition, these journals should cooperate. It is, indeed, in everyone's interest to have the maximum number of actuarial journals reviewed by SSCI. Should *ASTIN* and the *BAJ* in the future be reviewed by SSCI, citation counts of *JRI* and *IME* articles would skyrocket overnight. The 'impact factor' of *JRI* and *IME* would then considerably improve.

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