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DO RANKINGS REFLECT RESEARCH QUALITY?

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Publication and citation rankings have become major indicators of the scientific worth of universities and determine to a large extent the career of individual scholars. Such rankings do not effectively measure research quality, which should be the essence of any evaluation. These quantity rankings are not objective; two citation rankings, based on different samples, produce entirely different results. For that reason, an alternative ranking is developed as a quality indicator, based on membership on academic editorial boards of professional journals. It turns out that the ranking of individual scholars based on that measure is far from objective. Furthermore, the results differ markedly, depending on whether research quantity or quality is considered. Thus, career decisions based on rankings are dominated by chance and do not reflect research quality. We suggest that evaluations should rely on multiple criteria. Public management should return to approved methods such as engaging independent experts who in turn provide measurements of research quality for their research communities.

JEL classification codes: H43, L15, O38

Key words: rankings, evaluations, universities, scholars, research quality

I. Introduction

The past decades have witnessed major advances in the methodology and practice of evaluation and policy research supported by the government as well as by private foundations (Metcalf 2008; Reingold 2008). Today, these evaluations mostly use quantitative techniques in order to test the effectiveness of ongoing programs. These techniques are also applied to the evaluation of scientific research. Citation and

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publication analysis—the analysis of data derived from scholarly publications and the references cited in scholarly publications—is a particularly popular method of examining and mapping the intellectual impact of scientists, projects, journals, disciplines, faculties, universities, and nations (Borgman 1990; Cronin and Meho 2008; Garfield 1979; Meho 2007; Moed 2005). This method has been used increasingly by academic, research, and public institutions worldwide for policymaking, to monitor scientific developments, and as a basis for promotions, tenure, hiring, salary, and grant decisions (Borgman and Furner 2002; Warner 2000; Weingart 2005). Several governments have been using or are considering using citation analysis and other bibliometric measures to make decisions regarding research quality assessment and the allocation of research funds in higher education (Adam 2002; Butler 2007; Moed 2008; Weingart 2005). The most popular rankings are those that use publications and citations as indicators of scientific worth (e.g. Groot and Garcia-Valderrama 2006; Moed et al. 1985; Nederhof and van Raan 1993; Tijssen and van Wijk 1999; Ventura and Mombru 2006).

Such rankings are quantitative; they indicate the position or rather the significance of a scholar, university, or country relative to others. On the other hand, quality should be considered the essence of scientific research (e.g. Johnes 1988): from the perspective of society, it should not matter how many publications have been authored or how many citations have been accumulated, but rather what new insights have been produced and how valuable these are; that is, whether the research is useful, satisfies stated or implied needs, is free of deficiencies, and meets more general social requirements (see, e.g., Nightingale and Scott 2007; Reedijk 1998). An effort has been made to include quality aspects in rankings. Most importantly, only those publications and citations are counted that appear in scientific journals of "acceptable" quality, and publications in books or for policy purposes are excluded even though they may well contain important scientific information (as an exception, e.g., Sivertsen 2006). A further step is to consider "impact" factors that take into account how highly ranked a journal is in which a publication or citation appears. Nevertheless, the resulting rankings take the quality aspects of research activity into account to a limited extent only. For simplicity, in the following discussion, a ranking based on publications and citations is considered a quantitative ranking. It is compared to what we call a qualitative ranking, which is based on membership on the scientific boards of academic journals that consider the reputation and recognition of scholars among their peers. Scholarly reputation depends on a great many factors, but the qualitative aspect is certainly central.[1]

[1] Quantitative and qualitative rankings are not strictly separable as both contain elements of the other. The distinction is solely made for reasons of simplicity.

This paper argues that the current bibliometric rankings, which are based on publications and citations, should be looked at more carefully than is the rule today. Publication and citation rankings have become a major, and sometimes even the only, indicator of the scientific worth of universities and countries and determine to a large extent the career of individual scholars.[2] Whether an individual gets a position as an assistant professor at a university, receives tenure and is promoted to full professor, or receives research funding depends to a large extent on that individual's publication and citation record, as published in the various rankings.[3] We show that the various rankings produce quite different results depending on what underlying data are used and, in particular, what proxy is used to capture aspects of scientific quality. For that reason, an alternative ranking method is developed as a quality indicator, which is based on membership on academic editorial boards of professional journals. This ranking method constitutes a good approximation of the appreciation, hence the quality, attributed by professional peers.

A significant result of our empirical study is that the ranking of individual scholars is far from consistent. The decisive factor is the kind of indicator used. The results differ markedly depending on whether publications, citations, or membership on scientific boards of professional journals are considered. Due to the high level of aggregation, the ranking of countries and institutions is less affected than the ranking of individual scholars. It follows that, if career decisions are made based on one particular ranking, the result is haphazard and does not correspond to the high standards of decision making desirable for determining academic careers. Our study adds to the existing literature as follows.

First, in line with previous research, our study shows how much the positions of individuals, universities, or countries depend on exactly how the rankings are executed (Coupé 2003; Meho and Rogers 2008). However, in contrast to prior research, we not only compare different bibliometric indicators, but we also compare standard bibliometric indicators to esteem indicators, in particular, membership on editorial boards. Esteem indicators of research quality are based on the standing of an individual within the academic community, not on the number of published research outputs or

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[2] Examples of prominent rankings are ISI Web of Knowledge Journal Citation Report (The Thomson Corporation 2008b); ISI Web of Knowledge Essential Science Indicators (The Thomson Corporation 2008a); IDEAS Ranking (IDEAS and RePEc 2008); Academic Ranking of World Universities (Shanghai Jiao Tong University 2007); or Handelsblatt Ranking (Handelsblatt 2007).

[3] A prominent and well-documented case is that of the Research Assessment Exercise in the United Kingdom, which uses the list of journals identified by Diamond (1989) (see Lee 2007).

the number of citations credited to this individual's work. While these types of indicators are assumed to be important for areas where bibliometric indicators are difficult to apply, for example, the social sciences, their properties have only rarely been tested (Donovan and Butler 2007) and contrasted with standard bibliometric indicators.

Second, prior research on the comparison of different rankings either uses correlation coefficients or the list of top performers in order to show the overlap between rankings. However, correlations are insufficient to successfully compare the message of rankings because they pay the most attention to the mean of performers and less attention to the highest and lowest performers. In contrast, lists of top performers pay little attention to average or low performers. Our ranking shows the entire overlap between different rankings by using simple scatter plots.

Third, in contrast to many papers on rankings, our paper is not a plea for more, new, or better rankings. We do not argue that the rankings based on editorial board membership are a new or better ranking method. Instead, we suggest that the promotion of social scientists should rely on different criteria that capture the various aspects of research quality. We do not think that one superior, objective ranking can possibly capture all the necessary criteria. We argue that public management, especially university management, should stop the mass euphoria of rankings and return to approved methods, such as engaging independent experts who in turn provide measurements of research quality that is applicable to their specific research community.

Section II gives an overview of the ranking method currently in use, which is based on publications and citations, and identifies its shortcomings. How and to what extent quality is captured by an alternative definition of scientific worth, namely membership on editorial boards, is discussed in Section III. Section IV presents rankings based on editorial board membership for a sample of 115 economics journals. We chose economics journals because rankings are heavily used within that research community; the results, however, should be applicable also to other social sciences. The corresponding rankings are compared to the current rankings in Section V, and it is shown that they deviate in important respects. The last section argues that, due to the substantial instability of scientific rankings, significantly more care should be taken when using rankings for decision making, in particular, with respect to the careers of individual scholars.

II. Current scientific rankings

Evaluating scientific quality is notoriously difficult. "One such difficulty is that the production of research typically involves multiple inputs and multiple outputs, which makes the use of standard parametric/regression techniques problematic. Another, more serious problem is that only minimal 'engineering' knowledge is usually available on the precise interrelationship between the research inputs that are used and the research outputs that are produced" (Cherchye and Abeele 2005: 496). Ideally, established experts in the field should scrutinize published scientific results. In practice, however, committees with general competence, rather than specialists, often evaluate primary research data. In the past, these committees used peer review and other expert-based judgments until claims were made that expert judgments could be biased and, therefore, inferior to seemingly objective measures, such as the number of publications and citations (Horrobin 1990; Moxham and Anderson 1992). The opinions of experts may indeed be influenced by subjective elements, narrow mindedness, and limited cognitive horizons. These shortcomings may result in conflicts of interest, unawareness of quality, or a negative bias against young scientists or newcomers to a particular field. Today, these committees tend to employ secondary criteria,[4] and it is hardly surprising that the dominant ranking principle for evaluating research focuses on quantity, which appears to be an objective indicator that is directly related to published science.[5] Such bibliometric indicators have a number of advantages. First, the data are easily available, for example, from publication lists or other data sources like the Web of Science. Second, bibliometric counts seem to be objective indicators. Third, the comparison between the large number of candidates or institutions is facilitated. When the number of publications and the number of citations are collected, an effort is also made to take the importance or the quality of what is published into account.[6]

The publication measures normally categorize according to the scientific publications in which papers have appeared. Thus, for example, most rankings ignore publications such as books, general public notices, handbooks, and other

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[4] Rigby and Edler (2005) analyzed to what degree the bibliometric information of 169 research groups in economics, econometrics, and business administration relates to the assessment results of three evaluation committees. More than half of the variance of the overall quality judgments of the committees can be predicted by using a handful of bibliometric variables, notably the number of publications in top class and international refereed journals, the number of international proceedings, and the number of Dutch journal articles.

[5] An excellent overview of the problems and pitfalls of using citation statistics is given in Adler, Ewing, and Taylor (2008).

[6] Many journal rankings according to citations have been undertaken, (e.g., Cheng, Holsapple, and Lee 1995; Diamond 1989; Laband and Piette 1994; Liebowitz and Palmer 1984; Podsakoff et al. 2005).

collections of articles, as well as anything published in a non-refereed journal (Donovan and Butler 2007; Johnes 1988; Reedijk 1998). Publications in refereed journals are categorized according to the prominence of the journal, which is measured by impact factors (see, e.g., the extensive set of corresponding measures used by IDEAS in RePEc). However, these rankings do not reflect the research quality of an individual or an institution. For example, they neglect the fact that, even in journals with a high impact factor, many papers never get cited.[7] Seglen (1994) points out that only a weak correlation exists between the impact factor of a journal and the individual papers in that journal (mean r = 0.32; range 0.05–0.66). He shows that 15 percent of the articles account for 50 percent of the impact factor of a journal. Further, based on a sample of 56 research programs, Rinia et al. (1998) demonstrate that the impact of journals in which scholars of research program published does not correlate with the quality of these programs as perceived by peers. Thus, the impact of articles is not detectably influenced by the impact of the journal in which the articles are published because the citation rates of an article determine the impact factor of a journal, but not the reverse (Seglen 1997). The attempt to capture a qualitative aspect in the current rankings depends on citations. Citations in more prominent journals (where prominence is again measured in terms of citations) receive a higher weight in the rankings than those in lesser journals. Thus, the procedure is recursive. This whole process originally started with journal analyses, but nowadays has been extended to include countries, universities, institutes, and even individual researchers. In a sense, the academic world has gradually become obsessed with impact factors. Citation records are considered a proxy for the ability to do quality research, not only by authors, librarians, and journal publishers, but also by science policy makers (e.g., Nederhof and van Raan 1993). According to this view, citations represent evidence that the individual, the journal, the institute, or the country cited has carried out work that is viewed as relevant to the current research frontier and is useful to those attempting to extend the frontier (Diamond 1986). However, to the extent that citations inadequately account for scientific quality, the corresponding rankings distort the informative function they claim to provide.

There are six major shortcomings for using citations as indicators of scientific quality. First, they do not take into account whether a scholar's contribution is positive and furthers the course of scientific knowledge, it is neutral, or it hinders

[7] Although the distribution of papers' quality in a journal is skewed it is risky to assume an article quality as the journal average (Vieira 2004).

scientific progress.[8] The latter happens if it promotes an unproductive or even wrong approach, theory, method, or result, which either serves as a research basis for other scholars or is used by the public for policy purposes or guidance. If qualitative aspects were taken seriously, unproductive citations would be given a zero rating and counterproductive citations a negative weight. This is a very difficult pursuit, but nevertheless we should not allow it to divert us from the fundamental task of trying to measure the scientific activity of seeking "truth" (irrespective of how it is defined).

There is a second important reason why counting the number of citations may lead to distortions. Scholars are human beings subject to the same influences as other people. Following fashionable trends or herding behavior are examples of such influences (Banerjee 1992; Bikhchandani, Hirshleifer, and Welch 1992) where scholars quote papers simply because they have previously been cited by other researchers. Citing a particular paper does not necessarily reveal its relevance for the development of science, but may only say something about its academic popularity. Empirical research is consistent with this conclusion. Simkin and Roychowdhury (2005; 2006; 2007) show that the probability of a scholar being cited is affected by the number of citations he or she already has. This has been called the "Matthew Effect" in science (Merton 1968). Insiders are well aware of this tendency, especially in modern academia where academics are forced to publish or risk ending their careers. Receiving a high number of citations does not necessarily imply scientific genius, but is consistent with the result of a random process. This leads to the emergence of "star" papers and authors (Barabási and Albert 1999; Bonitz, Bruckner, and Scharnhorst 1999). These stars are like social celebrities whose only claim to fame is that they are famous, but few know or care about how they reached stardom. In the case of celebrities, this is of little relevance as their main objective is to entertain. However, in the case of science where a commitment to the search for truth is so important, such citations should be put into a different category; they should not count as positive contributions.

Third, the fact that a particular work has been cited does not mean that it has been read (Donovan 2006). While no scholar would be foolish enough to publicly admit that he or she cited articles without having read them, there is now empirical evidence that this does occur to a significant extent. One indicator of that practice is when identical misprints turn up repeatedly in citations, suggesting that the respective authors did not read the text cited, but simply copied someone else's

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[8] This is why bibliometricians use the term "impact."

work. Such misprints are most likely to occur when authors copy reference lists contained in other's papers. On the basis of a careful statistical analysis, Simkin and Roychowdhury (2005) conclude that about 70–90 percent of scientific citations are copied from the lists of references used in other papers; that is, 70–90 percent of the cited papers have not been read by those citing them.

Fourth, citation counts do not indicate quality that is independent of the contested knowledge (Beed and Beed 1996). In contested disciplines, such as economics, management, or other social sciences, differential citation counts indicate which author, article, or journal embraces the dominant theory most completely and which does not (Lee 2006). Articles embracing unfamiliar knowledge are assumed to have unimportant content and, therefore, are not cited. Thus, differences in citation rankings often reflect the subjective or ideological rejection of the theory employed rather than the research quality or the importance of the research to the discipline. Consequently, in departments or universities where tenure, promotions, salaries, and department funding are affected by citation rankings, contested findings, which are mostly published in less prestigious journals, are penalized (Bräuninger and Haucap 2003; Coats 1971; Lee 2006). Evaluations relying on citation counts therefore crowd out the crucially important innovative research in the social sciences.

Fifth, it is widely accepted as a best practice in the bibliometric community not to apply publication and citation measures to individuals, but to higher levels of aggregation, in particular, to universities or countries (van Raan 2003). Bibliometric scientists further argue that although these indicators may make sense in the natural and life sciences such indicators prove problematic in the social and behavioral sciences where journals play a lesser role as primary communication channels, many research fields are locally oriented, and older literature is more dominant (van Raan 2003). In fact, these restrictions are often disregarded. For example, Dutch economists have been ranked by means of bibliometric indicators (De Ruyter van Steveninck 1998). Similarly, Belgian economists (Bauwens 1998) and German economists have also been ranked (Bommer and Ursprung 1998) using bibliometric indicators. Coupé (2003) even provides a worldwide ranking of economists by means of bibliometric indicators.[9] The benefit of such proceedings is doubtful and may negatively affect the quality of the social sciences.

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[9] These rankings are not only made for reasons of prestige or for fun, but are also are used for promotion and funding decisions. For example, in Germany in 2006, a newspaper emerged as the key provider of academic rankings. Each year this newspaper ranks individual economists according to the number of their publications in peer-reviewed journals (Handelsblatt 2007). Only publications in scientific journals

Sixth, in the long run, counts of citations promote strategic behavior, as is the case for most ex-ante measurements (Butler 2003). Scholars thus are induced to focus predominantly on publishing articles in the most prominent journals that embrace the dominant theories because this strategy promises abundant citations (Holmström and Milgrom 1991). Academic activities that are not counted are ignored, such as research that uses unorthodox approaches as well as the supervision of students, teaching, or contacts with the public (Frey 2003; Frey and Osterloh 2006).

The list of shortcomings could easily be extended further to include the different citation habits of authors in different fields and subfields, the selectivity of citations by authors (e.g., easily available papers are cited more often), unintended spelling errors by authors in citation lists, mistakes in counting and classifying citations and accrediting them to journals and authors, and the inclusion of self citations (especially by determining the journal impact factor).[10] Due to these shortcomings in using citations as reliable indicators of scientific quality,[11] there is good reason to think about alternative approaches. The next section discusses the possibility of taking quality into account by considering the reputation of scholars among their peers, which is approximated by counting membership on scientific editorial boards.

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of "acceptable" quality are counted and weighted according to their impact. The journalists of that newspaper composed the list and decided which journals were included. This ranking has now been extended to other social sciences, for example, to management studies. The Handelsblatt ranking has served to distinguish "excellent" from "incompetent" researchers; it also serves as an aid when making decisions regarding the promotion of scholars in universities and research institutions and when determining how to distribute government funds for research and teaching.

[10] Some editors freely admit that they induce authors to cite as many publications in their journal as possible in order to raise their impact factor (Garfield 1997).

[11] Moed et al. (1985) argue that citation counts indicate "impact" rather than quality. Impact is defined as actual influence on surrounding research activities. Even though publications must have a certain basic quality in order to generate impact, other factors determine impact as well, like the state-of-the-art of the scientific field concerned, the visibility of journals, or the extent to which researchers carry out public relations tasks. Further, Moed et al. (1985) make a distinction between short- and long-term impacts. A short-term impact refers to the impact of researchers at the research front up to a few years after publication of their research results. A long-term impact refers to the "durability" of research and can only be determined after a (very) long time. However, this period is often too long for science policy, which is concerned with evaluation of recent research.

III. Ranking based on membership on editorial boards

A. Qualitative rankings

Scientific knowledge is not some immutable objective stock that grows quantitatively; rather, it is fallible, historically contingent, contestable, and changes unpredictably and qualitatively. This is especially true for the social sciences. What constitutes scientific knowledge depends on the approval by the scientific community (Lee 2006). A defining characteristic of any science is that its participants consider themselves members of a community of scholars. When producing scientific knowledge, they depend to some degree on each other. Scientists who do not fit into this structure of dependency or do not produce the "right" kind of knowledge are not permitted to be part of the community. For this reason, embeddedness in a research community is a quality indicator of research. It ensures that the scientists and their research meet community-based acceptable research standards, for example, utilizing acceptable research techniques.

Professional scientific journals are the publication outlets of different research communities. The editorial boards of these journals play a considerable role, both in the dissemination of information and in its evaluation by colleagues. "It appears reasonable that these positions are held by people who have the confidence and trust of their colleagues in the journal's areas of coverage for the journal to be successful in attracting quality submissions." (Kaufman 1984: 1190). In this respect, the editorial board constitutes the true experts in the research community, and being appointed an editorial board member is not only a great honor, but can also be seen as one indicator of scientific quality.

The board fulfils two different functions: (1) it assists the editors in choosing the most suitable articles for the respective scientific field, and (2) membership on the board is purely honorific and reflects one's standing in the profession as evaluated by one's peers. Honorary members are often chosen to signal the orientation of the review (e.g., the specific discipline or whether its emphasis is on theoretical or empirical work). More importantly, journals want to profit from the reputation of honorary board members (Kaufman 1984). The more distinguished these members are within their discipline and community, the higher the journal's reputation because renowned scholars do not join the boards of poor quality journals (and were they to do so, their own reputation and the journal's reputation would decline). Both when board members contribute to editorial decisions and when they are mainly, or only, honorary members, the choice of members is based on quality. A (chief) editor wants to have scholars at hand who help him or her make the best possible decisions, and disreputable persons or persons lacking expert knowledge are useless. At the same time, those scholars represented on boards have a high professional reputation; therefore, membership on boards can be taken to be a reasonable approximation of the quality of a scholar as judged by his or her peers.[12] Gibbons and Fish (1991: 364) take it as a matter of course: "Certainly, the more editorial boards an economist is on, the more prestigious the economist."

It should be noted that using the number of editorial board positions as a quality indicator also has some disadvantages. First, the use of editorial boards clearly favors established scholars. However, using the number of publications and citations has the same disadvantage. This limitation should therefore not bias our results when comparing quantitative and qualitative rankings. Second, board membership is also influenced by the need for appropriate representation. This holds true in particular for "home" journals, which are closely related to a specific department or university (such as the *Oxford Economic Papers* to Oxford University or the *Journal of Political Economy* to the University of Chicago) and for journals owned by professional associations, which have to ensure that they reflect, at least to some extent, their members' diversity with respect to gender, fields of interest, schools of thinking, and regions and nationalities. Proponents of quantitative rankings might argue that the need for appropriate representation is not solely guided by considerations of quality, and this fact could explain the small overlap between quantitative and qualitative rankings. For that reason, home and association journals are not considered in what follows.[13] Third, one could argue that only a small fraction of all scholars are members of editorial boards. This fact distorts the results because it includes only the best scientists. However, economists in many countries have their own journals. Within these journals, the countrywide experts within a field are members of editorial boards. While our research mainly relies on worldwide recognized scholars, research evaluation could also include country journals.

B. Sample

In order to analyze the extent of instability among the various rankings of scholars, institutions, and countries, we selected a sample of journals, which are considered

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[12] This procedure has been put forward in the past and undertaken for small and distinct sets of journals by Kaufman (1984) for finance faculties, Kurtz and Boone (1988) for marketing faculties, and Gibbons (1990) for statistics faculties.

[13] We define a home journal as a journal whose editorial board is affiliated with the same institution.

to have an excellent reputation within the field of economics. This sample is representative of dominant theories within economics. In order to show that quantitative rankings do not reflect research quality, these sample restrictions are less important. We expect similar effects in other sciences as well as in lower-ranked journals. However, it should be noted that our sample does not provide a comprehensive overview of all research communities within economics. In particular, heterodox research communities embracing contested knowledge are excluded (Lee 2008). We used the lists of two well-known journal rankings, the ISI Web of Knowledge Journal Citation Report (The Thomson Corporation 2008b) and the Handelsblatt Ranking (Handelsblatt 2007). The ISI Journal Citation Report is often considered to be an objective ranking because it is based on citations. From 175 journals listed in the subject category economics, we selected all journals with an impact factor ≥ 0.9, that is, 67 journals (excluding 10 home and association journals). The Handelsblatt Ranking, a very popular ranking in German speaking countries that is often influential in career decisions, can be viewed as more subjective because it is not only based on citations, but also on general impressions of scientists doing economic research. The Handelsblatt Rankings does not have a German language bias; it exclusively ranks international journals. From the 220 economics journals, we selected all journals ranked as AA+, A+, A, B+, and B, that is, 95 journals (excluding 17 home and association journals). As both rankings overlap to a large extent, our final sample covers 115 journals, excluding 19 home and association journals (the sample is listed in Appendix A).[14] Our sample largely overlaps with the other rankings of prominent economic journals. For this reason, we did not include a third or fourth ranking.

We consulted the homepage of each journal and collected the names of 4,855 persons who serve as editors, coeditors, or board members.[15] In order to identify multiple board memberships, the data were checked by consulting each person's personal website. Any misspellings of the names, institutions, or countries were corrected, and first names and current institutions of employment were added. The

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[14] Other studies use a much smaller number of journals. For instance, Stigler, Stigler, and Friedland (1995) examine nine leading core journals in economics. In a recent study, Hodgson and Rothman (1999: 165 f.) take "the 30 most visible and well-known economics journals" into consideration. In the subject category Economics, the ISI Web of Knowledge considers about the same number of journals as we do, that is, 191 journals in 2008. Other sources list a larger number. For instance, the Judge Institute of Management Studies (1994) compiled a list of 1,431 management and social science journals, of which 231 have words based on "econ" (such as economy, economics, or econometrics) in their title.

[15] This compares to 757 persons in Hodgson and Rothman (1999).

final sample covers 3,783 different persons; 546 persons (14 percent) serve as board members or editors of more than one journal.[16] As with previous editorial rankings, 55 percent of these people are affiliated with U.S.-based academic institutions (Hodgson and Rothman 1999).

Following Gibbons and Fish (1991), the absolute number of memberships on editorial boards was calculated (∑ Board Membership). As the board size varies from three to 232 members (e.g., *Management Science*), we also report a relative measure of membership by counting weighted board positions. Smaller boards might reflect smaller research communities. Community size is a quantitative, but not necessarily a qualitative measurement. The weight of a position within a particular journal is calculated by dividing the position by the absolute number of similar positions offered within the same journal (∑ Significance).

C. Definition of board membership

Various definitions of "member of a scientific editorial board" are possible: (1) the broadest possible definition includes all positions, that is, editors, coeditors, and board members;[17] (2) the broad definition includes only coeditors and board member positions; (3) the narrow definition includes only board member positions. We take two considerations into account with regard to the measurement of research quality that we favor, as discussed above, and use the broad definition in what follows.[18] First, the broadest definition has the disadvantage that editor titles have different meanings in different journals. For example, with some journals, the editor is largely

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[16] The sample, including home and association journals, covers 3,983 different individuals, 600 individuals (15 percent) serve as board members or editors of more than one journal.

[17] Among journals, the terms editors, coeditors, and board members can be understood in many ways. The lack of uniformity in the terms makes the identification of similar positions problematic. In order to distinguish between different types, we used the following terminology: (1) we defined the following as editors: Editor, Managing Editor, Book Review Editor, Contributing Editors, Foreign Editor, Chairman, Founding Editor, Production Editor, Review Editor, Conference Editor, Patron, Coordinating Editor, Debates and Controversies Editor, European Editor, Guest Editor, Publishing Editor, Replication Section Editor, Software Editor and Software Review Editor. Individuals who are not a part of the scientific community, that is, without publications, were excluded (e.g., managing editors from the publisher); (2) we defined the following as coeditors: Coeditor, Co-Chairman and Vice President; and (3) we defined the following as board members: Board Member, Advisory Editor, Executive Council, Panel Member, Scientific Committee, Honorary Editor, and Honorary Advisory Editor.

[18] The ranking of the broadest editor definition and of the narrow definition have a high correlation with the broad definition.

concerned with the practical management of the journal and less with its academic content. This meaning does not measure research quality. Second, the narrow definition may exclude too many individuals who play an active academic role in shaping the journal. Among the journals, there is a smooth transition between the descriptive categories coeditor and board member. For example, in some journals, the whole board consists of coeditors or advisory editors.

As different definitions result in different rankings, we checked for the sensitivity of the results to different definitions of board membership (Appendix B, Table A2). It turns out that different definitions do not affect the rankings of scientists, institutions, or countries.

IV. Ranking results for board membership

A. Ranking of scholars

Table 1 presents the results of the scholar ranking according to the number of boards on which they serve. The table shows all scholars who hold four or more board positions. We document the number of positions per scholar (∑ Board Membership) and the resulting quality ranking according to this number (Quality Ranking 1 with a maximum rank of 7), as well as the significance of these board positions per scholar (∑ Significance) and the resulting quality ranking according to the significance (Quality Ranking 2 with a maximum rank of 382). The two measures are then combined in order to reach a more definite ranking. The combined quality rankings per scholar (Combined Quality Ranking with a maximum rank of 389) is derived by using the absolute number of board positions as a first sorting criterion (∑ Board Membership) and then the weighted significance of these positions as a second sorting criterion (∑ Significance). Scholars with equal scores in both criteria, that is, ∑ Board Membership and ∑ Significance, receive the same ranking.

The ranking of scholars in Table 1 shows three Nobel Prize winners among the first eleven scholars –Kenneth Arrow, Reinhard Selten, and Vernon Smith– but also some lesser-known individuals. The representation of Nobel Prize winners can be taken as an indication that board membership does indeed reflect quality aspects of research. On the other hand, the large number of lesser-known scholars gives a first hint that rankings based on the number of board positions are not necessarily related to quality. A ranking according to the absolute number of editorial board positions (Ranking 1) draws different quality conclusions than a ranking according to the sum of the relative weights of these positions (Ranking 2).

Table 1. Editorial boards according to individual scholars

Name	∑ Board Membership	Quality Ranking 1 (range: 1-7)	∑ Significance	Quality Ranking 2 (range: 1-382)	Combined Quality Ranking (range: 1-389)
Jonathan Temple	7	1	0.731	2	1
Kenneth Arrow	7	1	0.138	28	2
John List	6	2	0.133	31	3
Reinhard Selten	6	2	0.114	42	4
David Sappington	5	3	0.167	12	5
Edward Glaeser	5	3	0.154	18	6
Jacques-François Thisse	5	3	0.146	23	7
Debraj Ray	5	3	0.136	30	8
Han Bleichrodt	5	3	0.125	34	9
Jacob Goeree	5	3	0.092	87	10
Vernon L. Smith	5	3	0.090	98	11
William Easterly	4	4	0.190	8	12
Christopher Taber	4	4	0.162	14	13
Mark Gertler	4	4	0.158	15	14
Daron Acemoglu	4	4	0.157	16	15
Francesco Caselli	4	4	0.153	19	16
Janet Currie	4	4	0.148	21	17
Dora Costa	4	4	0.146	22	18
Henry Overman	4	4	0.140	26	19
Hanming Fang	4	4	0.131	32	20
Marc Rysman	4	4	0.125	36	21
Frank Schorfheide	4	4	0.119	39	22
Peter Robinson	4	4	0.118	41	23
Andrew Atkeson	4	4	0.111	46	24
Graham Elliott	4	4	0.108	48	25
Daniel McMillen	4	4	0.108	49	26
David Martimort	4	4	0.102	60	27
Raghuram Rajan	4	4	0.099	66	28
Burton Hollifield	4	4	0.098	68	29
Aviv Nevo	4	4	0.097	72	30
Jason Shogren	4	4	0.095	78	31
Andrew Metrick	4	4	0.092	90	32
Steven Kou	4	4	0.090	100	33
Mark Machina	4	4	0.089	105	34
Hervé Moulin	4	4	0.077	136	35
Steffen Huck	4	4	0.077	141	36
William Thomson	4	4	0.070	164	37
Teck-Hua Ho	4	4	0.069	168	38
Rachel Croson	4	4	0.069	169	39
Rakesh Vohra	4	4	0.064	193	40
Scott Stern	4	4	0.055	234	41
Ashish Arora	4	4	0.028	351	43

Note: The table includes all persons with four or more board memberships (according to the broad definition).

Figure 1. Comparison of Quality Rankings 1 (∑ Board Membership) and 2 (∑ Significance)

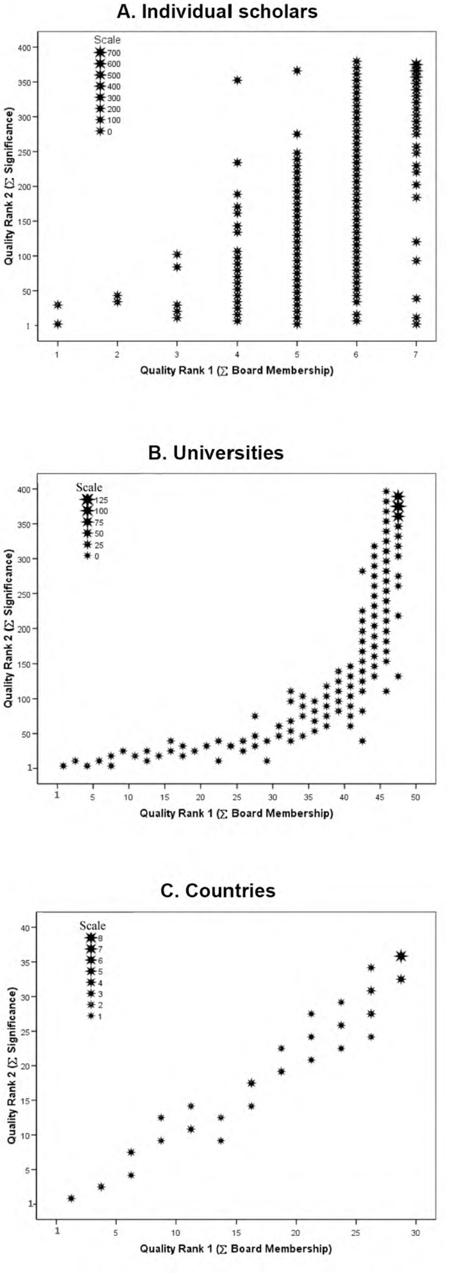


Figure 1.A gives a graphical overview of how the two quality rankings are related, contrasting the ranking of a scholar according to the absolute number of memberships on editorial boards (Quality Ranking 1) with the ranking of a scholar according to the significance of these positions (Quality Ranking 2). The graph reveals that a high number of board positions does not necessarily imply that these positions are of high significance. For example, the several scholars who ranked third according to the number of board positions (Quality Ranking 1) may be ranked very well (with a rank around 12) to quite poorly (with a rank around 98) according to the significance of these positions (Quality Ranking 2). Similarly, the several scholars who ranked sixth according to the number of board positions (Quality Ranking 1) may be ranked high (with a rank around 4) to quite low (with a rank around 379) according to the significance of these positions (Quality Ranking 2). Figure 1.A confirms that the ranking of individual scholars is highly dependent on the type of ranking used.

B. University ranking

Table 2 presents the results of the university ranking. The table shows the top ranked 20 universities according to the number of board positions. We document the number of positions per university (∑ Board Membership) and the resulting quality ranking (Quality Ranking 1 with a maximum rank of 48), the weighted significance of these positions per university (∑ Significance), and the resulting quality ranking (Quality Ranking 2 with a maximum rank of 398). The combined quality ranking (Combined Quality Ranking with a maximum rank of 403) is specified by taking the number of positions held as a first sorting criterion (∑ Board Membership) and the significance of these positions as a second sorting criterion (∑ Significance). Table 2 further documents the number of board positions per faculty member (∑ Faculty Member) and the resulting quality ranking (Quality Ranking 3). Department size was measured as the number of economists within a faculty (Roessler 2004).

It comes as no great surprise that Harvard University and Stanford University are at the top of the list when looking at the results according to the number of board positions (Quality Ranking 1), which is similar to previous rankings based on editorial boards (Gibbons and Fish 1991) or rankings based on quantity measures like publications or citations. A ranking according to the significance of board positions (Ranking 2) would change the former results to some degree with MIT and Harvard University at the top. Even more changes occur if the ranking is according to the number of board positions per faculty member. This ranking would

Table 2. Editorial boards according to universities

Name	∑ Board Membership	Quality Ranking 1 (range: 1-48)	∑ Significance	Quality Ranking 2 (range: 1-398)	Combined Quality Ranking (range: 1-403)	∑ per Faculty Member	Quality Ranking 3
Harvard University	100	1	2.57	2	1	0.83	28
Stanford University	98	2	2.30	4	2	1.07	10
University of Pennsylvania	79	3	1.85	9	3	1.01	12
Northwestern University	77	4	2.09	6	4	1.13	9
London School of Econ. & Pol. Sci.	76	5	2.81	5	6	1.04	11
MIT	76	5	2.16	1	5	1.17	8
New York University	76	5	2.01	7	7	0.93	18
University of Chicago	72	6	0.77	8	8	0.77	34
University of California Berkeley	69	7	1.69	10	9	0.74	37
Duke University	64	8	2.43	3	10	1.45	3
Columbia University	64	8	1.50	12	11	0.75	35
Carnegie Mellon University	56	9	1.02	21	12	1.37	4
University of California LA	50	10	1.34	13	13	0.71	39
Yale University	50	10	1.34	15	14	0.83	27
Princeton University	49	11	1.53	11	15	0.94	17
University of Michigan	49	11	1.11	20	16	0.74	36
University of Wisconsin	47	12	1.34	14	17	0.89	23
University of Washington	46	13	1.21	18	18	1.70	2
Cornell University	44	14	1.17	19	19	0.67	48
University of Texas	39	15	0.74	33	20	0.91	20

Note: The table shows the first 20 universities according to the number of board positions (according to the broad definition).

result in the Federal Reserve Bank (not included in Table 2) and the University of Washington being at the top.

Figure 1.B gives a graphical overview of the consistency of the ranking of a university according to the number of board positions (Quality Ranking 1) with the ranking of a university according to significance of these positions (Quality Ranking 2). The results in Figure 1.B indicate that a university ranking seems to be more reliable than the ranking of individual scholars. In most cases, a high number of board positions reflects the high significance of these positions. For example, the university that is ranked first according to the number of board positions (Quality Ranking 1) is ranked second according to the significance of these positions (Quality Ranking 2). Similarly, the several universities with rank 26 according to the number of board positions (Quality Ranking 1) are ranked from 26 to 41 according to the significance of these positions (Quality Ranking 2). Thus, the results suggest that a university ranking is less dependent on the ranking type used than are the rankings of individual scholars.

C. Country ranking

Table 3 presents the results of the country ranking. The table documents the first 20 countries according to the number of board positions held by scholars active in the various countries. It shows the number of positions per country (∑ Board Membership) and the resulting quality ranking (Quality Ranking 1 with a maximum rank of 29), as well as the weighted significance of these positions per country (∑ Significance) and the resulting quality ranking (Quality Ranking 2 with a maximum rank of 37). The Combined Quality Ranking (with a maximum rank of 50) is constructed by using the absolute number of positions as a first sorting criterion (∑ Board Membership) and the significance of positions as a second sorting criterion (∑ Significance). Table 3 also shows the number of board positions per one million inhabitants (∑ per one million inhabitants) and the resulting quality ranking (Quality Ranking 3).

The results of the country ranking using the various measures are quite similar. A ranking according to the number of positions (Quality Ranking 1) as well as a ranking according to significance of board positions (Quality Ranking 2) results in the U.S., the UK, and Canada being on top. A ranking based on the number of positions per one million inhabitants hardly changes the former results. The U.S. is still at the top, and the UK comes second. However, Israel and not Canada comes third.

Table 3. Editorial boards according to countries

Name	∑ Board Membership	Quality Ranking 1 (range: 1-29)	∑ Significance	Quality Ranking 2 (range: 1-37)	Combined Quality Ranking (range: 1-50)	∑ per 1 million inhabitants	Quality Ranking 3 (range: 1-50)
USA	2421	1	61.75	1.00	1	8.04	1
UK	480	2	16.62	2.00	2	7.90	2
Canada	159	3	4.35	3.00	3	4.76	7
France	145	4	3.80	4.00	4	2.28	18
Germany	118	5	3.32	5.00	5	1.43	21
Netherlands	94	6	2.42	7.00	7	5.67	5
Australia	86	7	2.78	6.00	6	4.21	13
Japan	55	8	1.55	8.00	8	0.43	29
Italy	49	9	1.18	11.00	11	0.84	25
Israel	44	10	1.13	12.00	12	7.00	3
Spain	45	11	1.12	10.00	10	1.04	22
Belgium	42	12	1.26	13.00	13	4.23	12
Sweden	40	13	1.39	9.00	9	4.43	9
Switzerland	33	14	0.98	14.00	14	4.37	11
Austria	27	15	0.69	18.00	18	3.29	16
Finland	23	16	0.78	17.00	17	4.39	10
Denmark	23	16	0.79	16.00	16	4.21	14
Norway	22	17	0.89	15.00	15	4.75	8
China	21	18	0.57	19.00	19	0.02	47
India	21	18	0.45	20.00	20	0.02	48

Note: The table documents the first 20 countries according to the number of board positions (according to the broad definition).

Figure 1.C contrasts the ranking of a country according to the number of board positions (Quality Ranking 1) with the ranking of a country according to the significance of board positions (Quality Ranking 2). Both rankings are highly correlated. A high number of board positions per country reflects the high significance of these positions. Thus, a ranking of countries is quite independent of which of the two measures is used.

V. Comparison with rankings based on publications and citations

This section compares the results of the board ranking with the results of previous rankings based on publications (IDEAS and RePEc 2008), citations (The Thomson Corporation 2008a), or on weighted quantity aspects (Shanghai Jiao Tong University 2007). For this comparison, we rely only on the Combined Quality Ranking, which uses the number of board positions as a first sorting criterion and, only if necessary, the significance of these positions, that is, the relative weight of a position to correct for community size, as a second sorting criterion. An underlying assumption is that the existence of a board position indicates the existence of a true expert in the field and research community. In the following, we therefore rely on absolute figures as proxies for scientific quality. Another possibility would be to rely on normalized figures to take care of additional aspects. However, the use of normalized figures often results in an indefinite number of rankings (see, e.g., the extensive set of normalized rankings used by IDEAS in RePEc). For this reason, we mainly rely on absolute figures, that is, the number of board positions as a first sorting criterion.

A. Rankings of individual scholars

At the scholar level, Figure 2.A contrasts the ranking of a scholar according to membership on editorial boards (Combined Quality Ranking) with the ranking of a scholar according to the ISI Citation Ranking (with a maximum rank of 200), which includes the Top-200 economists according to the number of Web of Science citations (The Thomson Corporation 2008a). The Web of Science database considers all citations from articles published in refereed scholarly journals indexed in the Science Citation Index (SCI), the Social Science Citation Index (SSCI), and the Arts and Humanities Citation Index (A&HCI) in addition to the citations made among these papers. However, the database only takes into account those journals that have been elected as a member of the Web of Science database. According to the results in Figure 2.A, ranking consistency is definitely not observed. First, no scholar is listed in the Top 10 of both types of rankings. Second, the majority of scholars identified through board memberships—even those scholars with higher rankings—are not mentioned in the ISI citation ranking. Third, it seems to be the general rule that scholars listed in the ISI ranking in the foremost rankings are listed last in a quality ranking or are not even listed in a quality ranking.

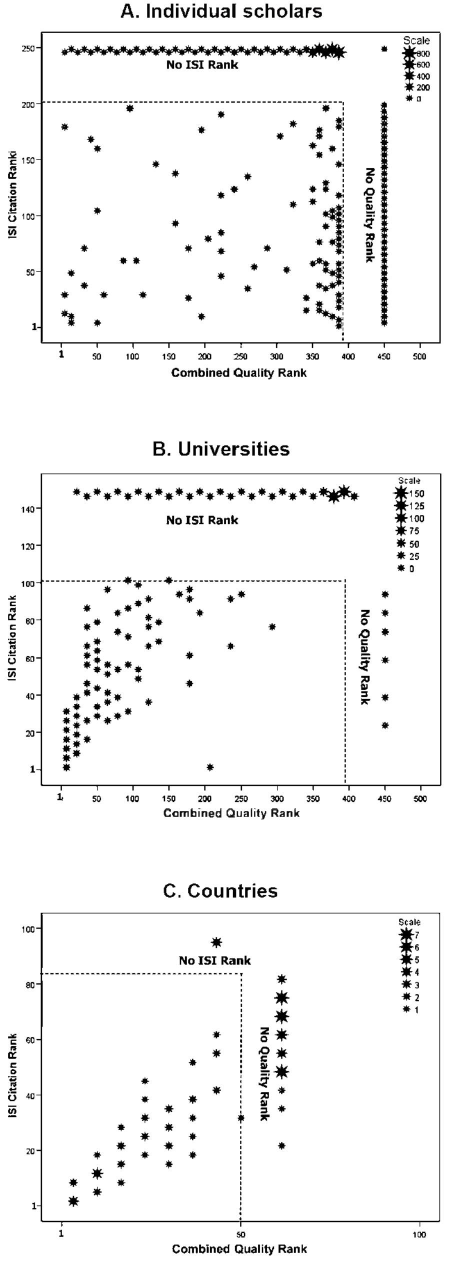
The ranking of a scholar according to membership on editorial boards (Combined Quality Ranking) can also be compared with the ranking according to the IDEAS Paper Ranking (with a maximum rank of 1000), which includes the Top-1,000 economists according to the number of journal articles, books, and published working papers (IDEAS and RePEc 2008). The IDEAS database considers 344,000 journal articles from leading economics journals, 2,700 economics books, and 237,000 economics working papers. The database only takes journals, books, and working papers of members into account. Membership is voluntary, but has to be registered. According to our results (available upon request), ranking consistency is again not observed. No scholar is listed in the Top 30 of both types of rankings. According to our data and analysis, it appears to be a general rule that individual scholars listed at the top of the IDEAS paper ranking are listed last in our quality ranking. This is consistent with the fact that most scholars are identified in one, but not in both rankings.

The ranking of a scholar according to membership on editorial boards (Combined Quality Ranking) can be compared with the ranking according to the IDEAS Citation Ranking (with a maximum rank of 1000), which includes the Top-1,000 economists according to the number of citations (IDEAS and RePEc 2008). The IDEAS database considers all citations from refereed journal articles, books, and working papers electronically published in the IDEAS database. As before, ranking consistency is definitely not observed for individual scholars.

Appendix C looks at the relationship between the rankings of individual scholars based on quantitative measures, that is, the number of citations or publications counted, dependent on the database. As in previous cases, much of the ranking of individual scholars depends on exactly what measure is used.

To summarize, our analysis suggests that board membership yields very different rankings of individual scholars than does a ranking based on the number of publications and citations. Basing the promotion of scholars and funding decisions for their work only on a quantitative measure in the form of the number of publications or citations therefore may not be warranted because it does not capture the multiple aspects involved. Membership on the editorial board of academic journals conveys some different information content, but much also depends on what specific measure is used (in our case Quality Ranking 1 or Quality Ranking 2).

Figure 2. Consistency of the Board Ranking with the ISI Citation Ranking



B. University rankings

At the university level, Figure 2.B compares the ranking of a university according to membership on editorial boards (Combined Quality Ranking) with the ranking of a university according to the ISI Citation Ranking (with a maximum rank of 100), which includes the Top-100 economics and business universities according to the number of Web of Science citations (The Thomson Corporation 2008a). As with individual scholars, the Web of Science database considers all citations from articles published in refereed scholarly journals in the areas of science, social science, arts and humanities, and chemistry, however, only from selected journals. Figure 2.B shows that the results between quantity and quality rankings are more consistent for universities than for individual scholars. For example, a more detailed analysis shows that eight of the Top-10 universities listed in the board ranking are listed in the Top 10 of the ISI ranking (no figure or table). However, as one can see in Figure 2.B, many universities listed favorably in the board ranking are not even mentioned in the ISI ranking. The overlap for the two types of rankings is small, especially for the middle rankings (compare Figure 2.B Combined Quality Rank 50–150 with the corresponding ISI Citation Rank).

The university ranking according to membership on editorial boards (Combined Quality Ranking) can be compared with the Shanghai Reputation Ranking (with a maximum rank of 100), which includes the Top-100 universities according to weighted quantity aspects like publications, citations, Nobel Prize winners, and so on (Shanghai Jiao Tong University 2007).[19] There is little consistency between the two rankings. Many universities listed high according to the board ranking are not mentioned in the Shanghai Ranking. In material available upon request we look at the relationship between the quantity-based rankings of ISI and Shanghai. Again they hardly overlap because more than half of all institutions are only considered in one but not in both rankings.

For universities, rankings on the basis of different measures come to quite different conclusions with respect to the specific research performance of a university. However, compared with the almost nonexistent overlap of the rankings for individual scholars, the rankings at the university level are considerably more consistent. This

[19] Of course, one can doubt whether this comparison is meaningful because the Shanghai index is not specifically about economics and includes several dimensions that may have little to do with quality. However, the index is used for research evaluation and funding decisions. Therefore a comparison with different rankings is of interest.

finding is in line with the results of Rinia et al. (1998). The authors show that different measures of research performance, that is, bibliometric measures and peer-review measures, generally show the strongest correlation on aggregate levels like on the team level.

C. Rankings of countries

Figure 2.C compares the ranking of a country according to membership on editorial boards (Combined Quality Ranking) with its ranking according to the ISI Citation Ranking (with a maximum rank of 81), which includes all countries according to the number of Web of Science citations (The Thomson Corporation 2008a). According to Figure 2.C, the results for quantity and quality rankings are quite consistent. Those countries included in both rankings are evaluated in a similar way.

The ranking of a country according to membership on editorial boards (Combined Quality Ranking) can be compared with the ranking of a country according to the ISI Paper Ranking (with a maximum rank of 81), which includes all countries according to the number of published Web of Science publications. The results are close to those in Figure 2.C.

Finally, the overlap of the two quantity rankings is nearly perfect. Thus, at the country level, different rankings come to quite similar conclusions with respect to the specific research performance of a country.

VI. Conclusions

We have argued that both citation and publication measures capture only some aspects of scientific quality. The empirical results indicate that the ranking of scholars based on membership on editorial boards does not correlate well with a ranking based on publications and citations. Especially for individual scholars, our study suggests that rankings based on quantity are incompatible with rankings based on membership on editorial boards, which suggests that both indices do not measure the same thing. Membership on editorial boards captures something else, something that is valuable to academic evaluation and that should not be disregarded. Editorial board membership should be taken as one additional and important aspect of research quality. Research needs both scholars who are productive in terms of publishing and scholars who are productive in terms of running journals. For that reason, research evaluation should consider multiple measurements rather than citation or publication counts only.

This conclusion is in line with prior research. Henrekson and Waldenstrom (2007) rank all full professors in economics in Sweden using seven established measures of research performance. Their examination shows that the rank order can vary greatly across measures and that depending on the measure used the distribution of total research output is valued very differently. This finding is also validated by other authors (Coupé 2003; Donovan and Butler 2007; Lo, Wong, and Mixon 2008) suggesting that research quality can only be captured by multiple indicators. This result is in line with bibliometric research that warns against using publications and citations as the only measurement to capture the research effort of individuals, especially individuals in the social sciences (van Raan 2003).

For the career decisions of individual scholars, bibliometric rankings should be used with utmost care. "Crude rankings … cannot be helpful to the policy maker" (Johnes 1988: 177). Funding agencies and other decision makers desiring to evaluate the research efforts of individual researchers or of the whole university sector should go beyond applying standard quantitative measures of research performance to the social sciences (Council for the Humanities Arts and Social Sciences 2005; Katz 1999; Luwel et al. 1999). Research quality is diverse, uncertain, and multidimensional. It is highly questionable that there exists one, true indicator of research quality, which captures the efforts of scientists within all research communities to the same extent. In some communities, for example, only empirical research constitutes good research, while in other communities a novel research question or a original theory is much more important. For this reason, indicators capturing research quality are not only multidimensional, but also highly dependent on the specific research community.

Public management should return to approved methods, such as engaging independent experts who in turn provide measurements of research quality for their research communities. Experts have the insights that are needed to assess primary research data within their communities. This knowledge helps them to develop indicators, which measure the past and prospective future performance of individual scholars or of a group of scholars.With the help of these experts, evaluators can construct indicators measuring the research quality within a community. In order to compare the research quality of scientists or groups of different communities, evaluators can normalize "quality scores."

Relying on independent community experts also has some disadvantages. First, it may isolate the different research communities within a field. Second, the main characteristics of research—academic freedom and uncertainty (Dasgupta and David 1994; Merton 1973; Osterloh and Frey 2009; Polanyi 1962)—are only captured to a small extent. Therefore, it is important to keep in mind that no research evaluation is perfect and that every research evaluation has significant consequences for the scientific community. For both reasons, we recommend that evaluations be undertaken only for restricted tasks, for instance, for promotion decisions or as part of an external monitoring of universities and research institutions. External monitoring should not take place as often as every year. An interval of five or ten years seems sufficient because the research quality of an entire institution does not change quickly. Further, because science depends on history, new evaluations should not rely on former classifications of research communities or former measurements of research quality. Instead, evaluations have to start by identifying research communities and by elaborating indicators measuring research quality in cooperation with experts of the respective research communities.

Appendix

A. Journal impact calculated in different rankings

Table A1. Journal impact calculated in different rankings

Journal title	Impact Factor 2006	Handels-blatt 2007	Combes/ Linnemer 2003	Tinbergen Institute 2007	IfW07	VIS 2008
Accounting R.	>2.0	0.40	0.33	A	-	-
American Economic R.	>1.5	1.00	1.00	AA	AA	AA
American J. of Agricultural Economics	>1.0	0.40	0.50	B	C	C
Annals of Statistics	-	0.67	-	-	-	-
Applied Economics	>0.5	0.30	0.33	B	C	C
Australien J. of Agricultural and Resource Economics	>0.5	-	-	-	-	-
BE "Advances" J.s	-	0.30	-	-	B	B
BE "Frontiers" J.	-	0.50	-	-	A	A
Bell J. of Economics	>1.0	0.67	-	A	(A)	(A)
Brookings Papers on Economic Activity	>1.5	0.40	0.33	-	A	A
Bulletin of Indonesian Economic Studie	>1.0	-	-	-	-	-
Cambridge J. of Economics	>0.5	0.30	0.33	B	-	-
Canadian J. of Economics	-	0.40	0.50	B	B	B
Computational Statistics and Data Analysis	-	0.30	-	-	-	-
Ecological Economics	>1.0	0.20	0.17	B	C	C
Econometric Theory	>0.5	0.67	0.67	A	B	B
Econometrica	>2.0	1.00	1.00	AA	AA	AA
Economic Development and Cultural Change	>0.5	0.20	0.17	B	C	C
Economic Geography	>1.5	0.30	0.33	B	C	C
Economic History R.	>0.5	0.30	0.33	B	-	-
Economic Inquiry	>0.0	0.30	0.33	B	B	B
Economic J.	>1.5	0.50	0.50	A	A	A
Economic Policy	>1.0	0.30	0.33	B	B	B
Economic Theory	>0.5	0.40	0.50	B	B	B
Economica	>0.0	0.30	0.33	B	C	C
Economics and Philosophy	>0.0	0.30	0.33	B	-	-
Economics Letters	>0.0	0.40	0.50	B	C	C
Economics of Transition	>1.0	0.30	0.33	-	B	B

Table A1 (continued). Journal impact calculated in different rankings

Journal title	Impact Factor 2006	Handels-blatt 2007	Combes/ Linnemer 2003	Tinbergen Institute 2007	IfW07	VIS 2008
Economy and Society	>1.5	-	-	-	-	-
Energy Economics	>1.0	0.30	0.33	B	C	C
Energy J.	>1.0	0.20	0.17	-	B	B
Environment and Planning A	>1.5	0.30	0.33	B	-	-
Eurasian Geography and Economics	>1.5	-	-	-	-	-
European Economic R.	>1.0	0.67	0.67	A	A	A
Experimental Economics	>1.0	0.20	0.33	-	-	-
Explorations in Economic History	>0.5	0.40	0.50	B	-	-
Finance and Stochastics	>1.5	0.30	-	-	-	-
Food Policy	>0.5	-	-	-	-	-
Games and Economic Behavior	>0.5	0.67	0.67	A	-	-
Health Economics	>2.0	0.20	0.17	B	C	C
History of Political Economy	-	0.30	0.33	B	-	-
Industrial and Corporate Change	>1.0	-	-	-	-	-
Industrial and Labour Relations R.	-	0.40	0.50	B	B	B
International Economic R.	>1.0	0.67	0.67	A	A	A
International J. of Forecasting	>1.0	0.20	0.17	B	-	-
International J. of Game Theory	>0.0	0.40	0.50	B	-	-
International J. of Industrial Organization	>0.5	0.40	0.50	B	B	B
International Statistical R.	-	0.30	-	-	-	-
J of the Royal Statistical Society - Series A	-	0.50	0.33	-	-	-
J of the Royal Statistical Society - Series B	-	0.67	-	-	-	-
J. of Accounting and Economics	>3.0	0.30	0.17	A	-	-
J. of Applied Econometrics	>0.5	0.40	0.50	B	B	B

Table A1 (continued). Journal impact calculated in different rankings

Journal title	Impact Factor 2006	Handels-blatt 2007	Combes/ Linnemer 2003	Tinbergen Institute 2007	IfW07	VIS 2008
J. of Banking and Finance	>0.5	0.30	0.33	B	C	C
J. of Business	>0.5	0.30	0.50	-	-	-
J. of Business and Economic Statistics	>1.0	0.67	0.67	A	A	A
J. of Comparative Economics	>0.5	0.40	0.50	B	B	B
J. of Computational and Graphical Statistics	-	0.30	-	-	-	-
J. of Development Economics	>1.0	0.40	0.50	B	B	B
J. of Development Studies	>0.5	0.30	0.33	-	B	B
J. of Econometrics	>1.5	0.67	0.67	A	A	A
J. of Economic Behavior and Organization	>0.5	0.40	0.50	B	C	C
J. of Economic Dynamics and Control	>0.5	0.40	0.50	B	B	B
J. of Economic Geography	>2.5	0.10	-	-	C	C
J. of Economic Growth	>3.0	0.40	0.33	B	A	A
J. of Economic History	>0.0	0.40	0.50	B	-	-
J. of Economic Literature	>4.5	0.50	0.50	A	A	A
J. of Economic Perspectives	>2.5	0.50	0.50	A	A	A
J. of Economic Theory	>1.0	0.67	0.67	A	B	B
J. of Economics and Management	>1.0	-	-	-	-	-
J. of Economics and Management Strategy	>1.0	0.40	0.50	B	-	-
J. of Environ. Economics and Management	>1.0	0.50	0.50	A	B	B
J. of Finance	>3.0	0.67	0.67	AA	A	A
J. of Financial and Quantitative Analysis	>1.0	0.40	0.50	B	-	-
J. of Financial Economics	>2.0	0.50	0.50	A	A	A
J. of Financial Intermediation	>1.0	0.40	0.33	A	-	-
J. of Health Economics	>2.0	0.50	0.50	A	B	B
J. of Human Resources	>1.0	0.50	0.50	A	A	A
J. of Industrial Economics	>1.0	0.40	0.50	B	B	B

Table A1 (continued). Journal impact calculated in different rankings

Journal title	Impact Factor 2006	Handels-blatt 2007	Combes/ Linnemer 2003	Tinbergen Institute 2007	IfW07	VIS 2008
J. of Institutional and Theoretical Economics	-	0.30	0.33	B	C	C
J. of International Economics	>1.5	0.67	0.67	A	A	A
J. of International Money and Finance	>0.5	0.30	0.33	B	B	B
J. of Labor Economics	>1.5	0.67	0.67	A	A	A
J. of Law and Economics	>1.0	0.40	0.50	B	B	B
J. of Law, Economics and Organization	>1.5	0.50	0.50	A	C	C
J. of Macroeconomics	>0.0	0.40	0.50	B	C	C
J. of Marketing Research	>2.0	0.50	-	A	-	-
J. of Mathematical Economics	>0.5	0.40	0.50	B	C	C
J. of Monetary Economics	>1.0	0.67	0.67	A	A	A
J. of Money, Credit and Banking	>1.0	0.67	0.67	A	A	A
J. of Multivariate Analysis	-	0.30	-	-	-	-
J. of Political Economy	>3.0	1.00	1.00	AA	AA	AA
J. of Population Economics	>0.5	0.40	0.50	B	C	C
J. of Public Economics	>1.0	0.67	0.67	A	B	B
J. of Regional Science	>1.0	0.30	0.33	B	C	C
J. of Regulatory Economics	>0.5	0.30	0.33	-	B	B
J. of Risk and Uncertainty	>0.5	0.50	0.50	A	-	-
J. of the American Statistical Association	-	0.67	0.67	-	-	-
J. of the European Economic Association	-	0.67	-	A	A	A
J. of Time Series Analysis	-	0.30	-	-	-	-
J. of Transport Economics and Policy	>1.0	0.20	-	B	C	C
J. of Urban Economics	>1.0	0.50	0.50	A	B	B
Kyklos	>0.5	0.30	0.33	B	C	C
Labour Economics	>0.5	0.30	0.33	B	B	B
Land Economics	>0.5	0.40	0.50	B	B	B
Management Science	>1.5	0.50	-	A	-	-

Table A1 (continued). Journal impact calculated in different rankings

Journal title	Impact Factor 2006	Handels-blatt 2007	Combes/ Linnemer 2003	Tinbergen Institute 2007	IfW07	VIS 2008
Marketing Science	>3.5	0.40	0.33	A	-	-
Mathematical Finance	>1.0	0.20	0.17	B	-	-
Mathematics of Operations Research	-	0.50	-	A	-	-
National Tax J.	>0.5	0.30	0.33	B	-	-
Operations Research	-	0.50	-	A	-	-
Oxford Bulletin of Economics and Statistics	>0.5	0.30	0.33	B	B	B
Oxford Economic Papers	>1.0	0.30	0.33	B	B	B
Public Choice	>0.0	0.40	0.50	B	C	C
Quantitative Finance	>0.5	-	-	-	-	-
Quarterly J. of Economics	>3.5	1.00	1.00	AA	AA	AA
R. of Economic Studies	>2.0	1.00	1.00	AA	AA	AA
R. of Economics and Statistics	>1.5	0.67	0.67	A	A	A
R. of Financial Studies	>1.5	0.50	0.50	A	-	-
R. of International Political Economy	>0.5	-	-	-	-	-
Regional Science and Urban Economics	>0.5	0.40	0.50	B	B	B
Resource and Energy Economics	>1.0	0.20	0.17	B	C	C
Scandinavian J. of Economics	>0.5	0.40	0.50	B	B	B
Scandinavian J. of Statistics	-	0.30	-	-	-	-
Social Choice and Welfare	>0.0	0.40	0.50	B	-	-
Southern Economic J.	>0.0	0.30	0.33	B	B	B
Statistical Science	-	0.50	-	-	-	-
Statistics and Computing	-	0.50	-	-	-	-
Theory and Decision	>0.0	0.40	0.50	B	-	-
Work Employment and Society	>0.5	-	-	-	-	-
World Bank Economic R.	>1.0	0.40	0.33	A	B	B
World Bank Research Observer	>2.5	0.20	0.17	-	B	B
World Development	>1.0	0.30	0.33	B	B	B
World Economy	>0.5	0.30	0.33	B	C	C

Note: legend J. = Journal, R. = Review.

B. Comparisons of different definitions of board membership

Table A2 compares the rankings of scholars, institutions, and countries according to the definitions of board membership. We document (a) the Pearson correlation for the absolute number of memberships on editorial boards calculated with different definitions (∑ Board Membership) and (b) the Spearman-Rho correlation for the rankings calculated with different definitions (Combined Quality Ranking).

The results in Table A2 show that rankings calculated with different definitions of board membership are highly correlated with rankings calculated with the broad definition of board membership. The smallest Spearman-Rho correlation amounts to 0.87** and the highest is 0.99**. The number of board positions calculated with different definitions has a high correlation with the number of positions calculated with the broad definition. The smallest Pearson correlation amounts to 0.87** and the highest is 1.00**. Thus, the definition of board membership does not bias the rankings of scholars, universities, or countries. For simplicity, we only consider the broad definition of board membership.

Table A2. Sensitivity analysis of different definitions of board membership

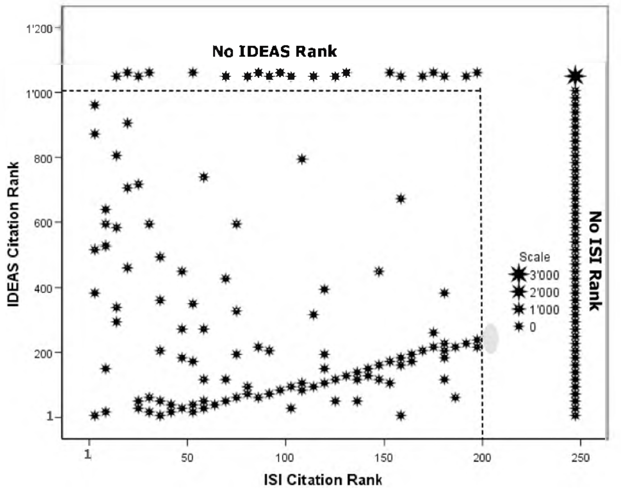
Broad definition	Editor definition	Narrow definition	Broad definition with home and affiliation journals
(N=4209 positions)	(N=4568 positions)	(N=3836 positions)	(N=4447 positions)
Scientist Rankings			
(N=3515 individuals)	(N=3783 individuals)	(N=3276 individuals)	(N=3691 individuals)
∑ Board Membership[1]	.87**	.97**	.95**
Combined Quality Ranking [2]	.89**	.97**	.87**
University Rankings			
(N=754 institutions)	(N=754 institutions)	(N=754 institutions)	(N=754 institutions)
∑ Board Membership[1]	.99**	.99**	.99**
Combined Quality Ranking [2]	.94**	.92**	.96**
Country Rankings			
(N=50 countries)	(N=50 countries)	(N=50 countries)	(N=50 countries)
∑ Board Membership[1]	1.00**	1.00**	1.00**
Combined Quality Ranking [2]	.98**	.99**	.95**

Notes: [1] Pearson Correlation; [2] Spearman-Rho Correlation; ** sig. 0.01%. The broad definition includes coeditor and board member positions; the editor definition includes editors, coeditors, and board members; the narrow definition includes only board member positions; the broad definition with home and association journals also includes home and association journals. Ranks were specified using the absolute number of membership on editorial boards as a first sorting criterion (∑ Board Membership) and the significance of board positions as a second sorting criterion (∑ Significance). "Significance" is the sum of board positions, whereas each board position is divided by the number of similar positions offered by a journal.

C. Rankings of individual scholars based on different quantitative measures

Figure A1 compares the ranking of a scholar in the ISI citation ranking with his or her ranking in the IDEAS citation ranking. The figure shows that the overlap between the two citation rankings is small. Most scholars are listed in one but not in both rankings. Many scholars listed in the ISI ranking at the top are listed in the IDEAS ranking at the bottom.

Figure A1. Individual scholars: consistency of the ISI and IDEAS Citation Rankings



Comparing the ranking of a scholar in the ISI citation ranking with his or her ranking in the IDEAS paper ranking, the same general picture emerges. Again, scholars listed in the ISI citation ranking at the top are listed in the IDEAS paper ranking at the bottom.

When one compares the ranking of a scholar in the IDEAS citation ranking with his or her ranking in the IDEAS paper ranking, the ranking of individual scholars depends to a large extent on the ranking method used, and is far from an objective evaluation.

As to the ranking of a university according to ISI citations with the ranking of a university in the Shanghai study, the overlap between the two quantity rankings is not larger than the overlap between the quality and quantity rankings: More than half of all institutions are only considered in one ranking but not in both rankings.

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