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Benchmarks for evaluating the research productivity of accounting faculty

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Abstract

This study reports comprehensive data on both the quantity and quality of research productivity of 3878 accounting faculty who earned their accounting doctoral degrees from 1971 to 1993. Publications in 40 journals were used to measure faculty publication quantity. Journal ratings derived from a compilation of the rankings of five prior studies and co-authorship were used to measure publication quality. Choosing benchmarks for an individual faculty requires users of our data to determine four parameters: (1) what credit to give a faculty member for co-authored articles; (2) what level of journal quality is appropriate, e.g. presenting benchmarks for publications in the *Best 4, Best 12, Best 22* and *Best 40* journals; (3) choosing appropriate levels of performance, e.g. considering the publication record in the top 10%, top 20%, top 25%, top 33%, or top 50% of all faculty; and (4) deciding the emphasis to place on the number of years since the doctoral degree was earned. We believe that this is the first set of benchmarks that allows administrators to state, with some justification, a required number of articles for tenure or promotion. In addition, we discovered that the average number of authors per article is significantly correlated with time and growing at a pace of 0.017 authors per article per year.

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1. Introduction

Many parties have expressed interest in having information for measuring faculty research productivity. Faculty seek benchmarks for the amount and quality of research necessary to attain tenure and promotion. Administrators and faculty evaluation committees need benchmarks for hiring, tenure, promotion, performance evaluations, and program assessment decisions. Various internal and external promotion and tenure, merit and other committees want more objective information about faculty productivity.

Universities that have increased research requirements for faculty to receive merit raises, tenure, and promotions need benchmarks of research productivity to justify and implement these increased research standards. The American Assembly of Collegiate Schools of Business [AACSB] (1996, p. XX) requires member schools to adhere to their mission statements, which means that schools need appropriate benchmarks for research productivity.

Lucertini, Nicolo and Telmons (1995) urge schools to seek relevant benchmarks to "continuously search, measure, and compare" their processes to the "best practices" that their external competitors have developed. Previous studies have provided three types of benchmarks for research productivity: (a) qualitative rank-ordering of accounting and related journals, (b) quantitative measures of total and average research productivity of faculty, and (c) quantitative measures of total and average research productivity according to where faculty earned their doctoral degrees. A lack of comprehensive databases at the time these studies were conducted limited the number of faculty and journals that could be assessed. Moreover, benchmarks that were developed were either quantitative or qualitative in nature, but not both. No study has yet generated comprehensive benchmarks relating publication expectations to both quantity of articles and journal quality.

This paper reports the results of a study to develop benchmarks for accounting faculty research productivity. We combined the comprehensive faculty database developed by Hasselback (1995 & 1997) with the accounting publication databases developed by Heck, Derstine and Huefner (1992) and by Pacific Research Company (1995) to derive comprehensive publication records in these journals for each faculty member in our database.[1] We then adjusted individual faculty publication records for co-authorship and for the quality of the journals in which the publications appeared. Our findings are summarized in eight sets of benchmarks. How users of these benchmarks can select the most appropriate set to use is also discussed. In addition, we report an analysis of the trends in co-authorship and publication quality over time.

2. Literature review

The amount of research generated is often used to measure the quality of an individual faculty member or the quality of an accounting program. Hexer (1969)

[1] Although this study does not identify by name the individual scholars represented in the numbers, the names are available from the authors upon request.

argued that published research is the best available criterion for evaluating faculty, departmental, and institutional academic quality. Henry and Burch (1974) found that most academics use published research as the primary indicator of academic quality. Kida and Mannino (1980) noted that comprehensive benchmarks help schools assess their own expectations. Jacobs, Hartgraves and Beard (1986) argued that objective methods to rank doctoral graduates' research productivity would benefit potential faculty and students. Hull and Wright (1990) stated that accounting programs gain national recognition through publications of faculty.

From a faculty member's point of view, Ostrowsky (1986) found that the research reputation of an institution is the central factor in both the preliminary screenings and the final choices of faculty candidates seeking positions. Cargile and Bublitz (1986) found that faculty members perceive research to be the dominant factor in salary allocation decision; in fact, research is deemed to be twice as important as teaching and five times as important as service in promotion and tenure decisions.

2.1. Counting

Researchers have generally used three techniques to assess research productivity: counting, citation analysis, and surveys. "Counting" is merely a calculation of the number of publications generated by a faculty member or an accounting program. In one counting study, Zivney, Bertin and Gavin (1995) discovered that only 5% of doctoral-degree faculty published at least one article in the 48 accounting and finance journals included in their database. Chung, Pak and Cox (1992) determined that the number of authors publishing "n" papers is approximately $1/n^c$ of those publishing one paper (where c varies with the number of journals included in a study). They "counted" that nearly one-third of the most prolific scholars graduated from only seven doctoral programs. Dwyer (1994) used counting to show that, of the faculty who earned doctorates in 1981, females had written significantly fewer articles than their male counterparts. Streuly and Maranto (1994) report similar results for two- and five-year intervals.

Although advantages of counting articles include objectivity and simplicity, counting the number of publications is neither as objective nor as simple as it appears. Two pervasive problems are identifying and justifying the journals to include in a study. The counting methodology also assesses the quantity of published material, but does not provide measures of the quality of faculty research. For example, some studies have included only articles appearing in the most prestigious journals. Such selectivity impairs the ability to generalize research findings and, thus, to provide useful benchmarks of faculty research productivity. While the recent development of databases has reduced the biases caused by using small samples, other biases may persist. For example, Heck, Jensen and Cooley's (1990; 1991) database includes articles only if the names of the authors were listed in a journal's table of contents and omits notes, letters to the editors, and other types of published works. Another confounding issue with the counting methodology is whether to give full or partial credit for co-authored articles. While most studies have selected one or the other option, Jacobs et al.(1986) and Hasselback and Reinstein (1995a; 1995b) provide both types of data.

Still another issue when using counting to assess the research productivity of an academic institution is whether to give publication credit to the faculty member's present institution or to the affiliation when the article was written. Bazley and Nikolai (1975) and Urbancic (1986) give credit to the institutions at which authors wrote the articles, while Campbell and Morgan (1987), Milne and Vent (1988, 1989), and Hagerman and Hagerman (1989) counted publications only at the institutions where the faculty received their promotions. When assessing the quality of doctoral programs, most researchers (e.g., Bublitz & Kee, 1984; Jacobs et al., 1986 give credit to the institutions where authors earned their degrees.

2.2. Citation analysis

Citation analysis measures the frequency in which articles, authors, or journals are referenced ("cited") in other articles. The justification for using citation analysis is the presumption that articles and journals of high quality are cited more often than those of low quality. The number of citations is merely counted, without regard to the article's quality or reason for making the citation.

Like the counting studies, citation studies (e.g. Beattie & Ryan, 1991; Bricker, 1988; Gamble & O'Doherty, 1985a,b, McRae 1974) were limited in scope by the difficulty of developing a database. For instance, McRae first used citation analysis of only 17 accounting publications to measure the frequency of citations. The availability of computerized databases has broadened the use of citation analysis to rank the productivity of accounting faculty (e.g. see Brown & Gardner, (1985a,b). Sriram and Gopalakrishnan (1994) used citation analysis to rank the top 34 doctoral programs and their most prolific graduates. Seetharaman and Islam (1995) performed a citation analysis of 32 accounting journals. They also compared their results from 1985 to 1989 and 1988 to 1989 to discern "movements" in these rankings over time.

Citation analysis is also presumed to be objective because an article is either cited or not cited. Yet citation analysis suffers from similar weaknesses as counting. For example, MacRoberts and MacRoberts (1989) note that citation analysis often fails to consider all but "first-named" authors in co-authored pieces and usually fails to differentiate between different types of journals. Moreover, citation analysis gives credit to articles that are criticized. Citation frequency can also be influenced by the reputation of the author, the sensitivity of the subject matter, and the journal's circulation and coverage.

2.3. Surveys

Researchers have used surveys to assess the quality of accounting journal and related publications. Faculty or administrators typically are asked to develop scales to rank journals relative to an "anchor." Average respondent ratings are used to rank-order journals on ordinal, interval, or ratio scales. For example, Howard and Nikolai (1983) used a main article in *The Journal of Accountancy* as a 100-point anchor for comparing other journals. Respondents then rated journals of lesser quality from 0–99, of equal quality at 100, and of greater quality at values above

100. Average ratings from respondents are used to rank-order journals on an ordinal, interval, or ratio scale. Smith (1994) used this technique to rank 93 major accounting and other business journals.

Hasselback and Reinstein (1995a) combined journal ratings from Hull and Wright's (1990) and Jolly, Schroeder and Spear's (1995) with Hasselback's (1995 and 1997) database to measure both the quantity and quality of publications in 40 journals by faculty affiliated with over 700 institutions. Hasselback and Reinstein (1995b) also used this method to measure the quantity and quality of articles of the 2708 doctoral graduates from 73 major US accounting programs, which thus developed program rankings. Both studies measured quantity in terms of full credit and partial credit for co-authored articles.

Surveys also have potential flaws. For example, Morris, Cudd and Crain (1990) found that faculty who publish frequently in top journals tend to exhibit significant bias in rating journals. Jolly, Schroeder and Spear (1995) found significant differences in quality ratings among the nearly 1000 respondents at AACSB-accredited institutions.

Another issue endemic to all methodologies is whether to evaluate journals on an ordinal, interval, or ratio basis. Merely ranking journals generates an ordinal scale. Studies like those cited above that use a 100-point anchor, generate an interval scale. Some studies (e.g. Howard & Nikolai 1983; Schroeder, Payne & Harris 1988; and Hull & Wright, 1990) have used the more inferential ratio scale. Other possible issues are the selection of an anchor journal, the identification of appropriate persons to evaluate journals, potential response biases due to the specialty interests of the respondents, and the use of cluster analysis (e.g. Morris et al., 1990) to group journals rather than rank-ordering them.

2.4. Implications of prior literature

After studying many articles assessing faculty research productivity, we conclude the following:

- The need for more diverse and better-developed benchmarks of research productivity has increased due to the increased demands for research and the growth of narrowly focused, quality journals.
- Whether faculty research productivity should be measured by granting full credit for co-authored publications or by adjusting downward publication credits for co-authorship depends on the institution's mission and the goals of faculty or administrators making the assessments.
- To produce representative results, general benchmarks of research productivity should use as broad a database of faculty as possible. Alternatively, measures of research productivity of top publishers or faculty teaching in doctoral-granting programs may help certain decision makers to determine the "best of the breed" or "world class" publishing standards.
- Since faculty research productivity is skewed toward zero publications, benchmarks based solely on faculty who have published may overstate overall faculty output.

3. Methodology of current study

This study first analyzed the research productivity of all 3289 faculty who graduated from accounting doctoral programs between 1971 and 1993, as listed in Hasselback's (1995) Accounting Faculty Directory. The sample was terminated in 1993 on the presumption that relatively recent graduates would have insufficient time to develop a representative publication record. Faculty in the sample were classified by name, year of graduation from doctoral program, name of doctoral accounting program, and present institutional affiliation.

Next we ranked over 100 journals by building a composite ranking from five journal ranking studies:Hall and Ross (1991); Hull and Wright (1990); Schroeder et al. (1988); Jolly et al. (1995); Smith (1994). We selected the 40 highest rated journals for the database used in this study, including 30 academic, 5 business, and 5 practitioner journals.

Our composite rankings are sensitive to major differences in perceptions of journal quality, but might not be sensitive to minor differences between individual journals. Therefore, we used the Morris et al. (1990) methodology to separate the 40 ranked journals into nine clusters and assigned each journal in a cluster the average quality ranking of that cluster. Exhibit 1 details the names and quality ratings of the 40 journals included in our study.

To "identify" the journal articles published by each faculty member, we used the databases of articles compiled from Pacific Research Company's (PRC) (1995) *Database of Accounting Research* and Heck, et al. (1995) *Accounting Literature Index*. All 40 journals are included in the *Database of Accounting Research* and all but three journals are included in the *Accounting Literature Index*. This consistency allowed us to cross-check and verify the accuracy of our data. We resolved problems such as author misspellings, use of initials rather than first names, and instances where more than one author shared the same name by checking the actual articles.

We sorted the number of articles written by individual faculty by the year that they earned their doctoral degrees. Exhibit 2A shows the number of faculty publishing articles in the 40 journals by year of doctoral graduation. These data indicate that 9% of faculty who received their doctoral degrees between 1971 and 1993 had published nine or more articles; however, 39% of the entire sample had not published any articles in the top 40 journals.

Some institutions do not give faculty full credit for co-authored articles. To derive benchmarks for co-authored publications, benchmarks for "full-credit" publications are reduced according to the number of co-authors. For example, a person who co-authored an article with one other person is given one-half credit for that article, while a person who co-authored an article with two other persons receives one-third credit, and so on. Results of this adjustment are shown in Exhibit 2B.

Finally, to incorporate a journal quality component into our database, we multiplied each article, on a co-authored basis, by the composite rating of journal quality shown in Exhibit 1. The results of this adjustment are shown in Exhibit 2C. Comparing these results with Exhibit 2B shows, for example, that adjusting for both co-authorship

and journal quality reduces the number of faculty members authoring one- or two-equivalent articles adjusted only for co-authorship, respectively, from 23 and 12% to 18 and 11%, but increasing the number of them writing six or more equivalent articles (e.g., eight-equivalent articles increases from 1 to 2%).

Exhibit 1
Weighted quality ranking of 40 journals included in the study

Journal of Accounting Research	2.25
The Accounting Review	2.25
Journal of Accounting and Economics	2.00
Journal of Finance	2.00[a]
Accounting, Organizations and Society	1.60
Contemporary Accounting Research	1.60
Journal of Accounting, Auditing and Finance	1.60
Journal of the American Taxation Association	1.60
Journal of Business	1.60[a]
Journal of Finance and Quantitative Analysis	1.60[a]
Journal of Financial Economics	1.60[a]
Management Science	1.60[a]
Auditing: A Journal of Practice and Theory	1.35
Journal of Accounting and Public Policy	1.35
Journal of Business, Finance and Accounting	1.35
Journal of Management Accounting Research	1.35
Journal of Taxation	1.35[b]
National Tax Journal	1.35
Abacus	1.15
Accounting and Business Research	1.15
Behavioral Research in Accounting	1.15
Journal of Accounting Literature	1.15
Accounting, Auditing and Accountability	1.00
Accounting Horizons	1.00
Financial Analysts Journal	1.00[b]
Issues in Accounting Education	1.00
Journal of Accountancy	1.00[b]
Advances in Accounting	0.95
International Journal of Accounting Education and Research	0.95
Journal of Accounting Education	0.95
Advances in International Accounting	0.90
Advances in Taxation	0.90
Critical Perspectives on Accounting	0.90
The Journal of Information Systems	0.90
Research in Accounting Regulation	0.90
Research in Governmental and Nonprofit Accounting	0.90
Accounting Educators' Journal	0.85
Accounting and Finance	0.85
The CPA Journal	0.85[b]
Management Accounting	0.85[b]

[a] Business journals.
[b] Practitioner journals.

Meaningful comparisons among faculty members should also consider their time "in grade" since, for example, a 1991 doctoral graduate would have less time to establish a research record than a 1971 graduate. Exhibit 3 standardizes the findings of Exhibits 2A, 2B, and 2C by dividing their results by the number of years faculty members had held their degrees as of 1996. For example, we divided 1971 balances by 25, 1972 by 24 and 1993 by 3. As shown in the last column of Exhibit 3, the average faculty member has published between 0.10 and 0.25 articles per year, when adjusted for co-authorship and journal quality.

While we had the computer facilities to adjust for journal quality, it would be difficult to use the composite benchmarks for comparative purposes. At a minimum, administrators, faculty members, or other assessor/users would need to adjust each publication for its journal quality. To derive an easier approach to combine publication quantity with journal quality, we recognize that some institutions expect their accounting faculty to publish primarily in premier journals. Thus, we developed

Exhibit 2a
Distribution of faculty according to number of articles published in top 40 journals and year of doctoral degree

			Number of faculty by number of articles published									
Year of doctoral graduation	Number of graduates	Total articles	0	1	2	3	4	5	6	7	8	9+
1971	140	410	55	18	13	14	8	7	7	0	2	16
1972	144	497	62	17	15	11	4	8	5	3	3	16
1973	149	463	64	20	15	8	8	4	4	3	4	19
1974	168	585	72	20	11	10	10	7	5	8	5	20
1975	152	554	53	25	12	10	9	6	1	6	4	26
1976	134	467	45	21	9	11	5	11	6	7	6	13
1977	133	595	41	15	14	10	9	8	1	5	4	26
1978	180	796	58	29	12	14	11	11	9	3	7	26
1979	130	442	47	22	11	11	2	6	9	6	1	15
1980	138	534	43	22	8	14	9	7	5	2	4	24
1981	173	606	63	20	15	11	15	8	12	6	5	18
1982	178	658	59	18	21	16	16	5	8	4	3	28
1983	160	547	50	25	19	12	7	7	7	6	5	22
1984	161	456	56	33	17	9	5	7	10	3	4	17
1985	171	464	59	29	18	14	9	10	11	9	2	10
1986	188	477	70	37	18	12	7	10	9	8	7	10
1987	201	465	67	39	25	16	16	17	2	8	2	9
1988	205	406	80	37	28	22	11	4	6	6	3	8
1989	210	405	74	49	25	22	19	7	2	3	4	5
1990	174	319	66	41	23	10	11	8	2	5	3	5
1991	192	243	93	35	25	18	11	5	2	2	0	1
1992	199	201	102	45	29	9	8	3	2	0	0	1
1993	198	108	137	40	11	5	1	1	1	0	2	0
Totals	3878	10,698	1516	657	394	289	211	167	126	103	80	335
Percentages	100%		39%	17%	10%	7%	5%	4%	3%	3%	2%	9%

Exhibit 2b
Distribution of faculty according to number of articles in top 40 journals adjusted for coauthorship and year of doctoral degree

			Number of faculty by number of articles published									
Year of doctoral graduation	Number of graduates	Total articles	0	1	2	3	4	5	6	7	8	9+
1971	140	410	55	22	22	13	8	1	5	3	5	6
1972	144	497	62	21	16	20	7	0	3	1	2	12
1973	149	463	64	28	15	9	10	5	5	2	5	6
1974	168	585	72	22	19	20	8	6	3	3	4	11
1975	152	554	53	31	19	11	8	5	9	6	3	7
1976	134	467	45	26	15	10	16	6	4	2	3	7
1977	133	595	41	21	18	14	9	6	5	4	5	10
1978	180	796	58	36	22	16	14	8	7	2	4	13
1979	130	442	47	28	14	12	9	4	7	0	1	8
1980	138	534	43	28	20	10	12	7	4	6	35	
1981	173	606	63	33	21	21	11	7	5	5	0	7
1982	178	658	59	28	27	22	12	10	4	4	3	9
1983	160	547	50	38	18	16	12	7	6	9	2	2
1984	161	456	56	45	17	14	7	8	7	3	2	2
1985	171	464	59	40	26	17	11	8	3	5	0	2
1986	188	477	70	51	17	18	17	8	2	2	1	2
1987	201	465	67	55	30	24	14	5	0	4	1	1
1988	205	406	80	57	31	15	8	8	4	1	0	1
1989	210	405	74	68	29	22	9	3	1	1	1	2
1990	174	319	66	61	16	15	8	5	3	0	0	0
1991	192	243	93	50	31	13	4	0	0	1	0	0
1992	199	201	102	65	22	5	4	0	1	0	0	0
1993	198	108	137	46	10	3	2	0	0	0	0	0
Totals	3878	10,698	1516	900	475	340	220	117	88	64	45	113
Percentages	100%		39%	23%	12%	9%	6%	3%	2%	2%	1%	3

benchmarks of faculty publications for the *Best Four* journals that comprise the two highest rated clusters shown in Exhibit 1, i.e. *The Accounting Review, The Journal of Accounting Research*, *The Journal of Accounting and Economics* and *The Journal of Finance*.

The Best Four premier journals are oriented primarily toward financial reporting, whereas the profession also includes disciplines such as auditing, managerial accounting, and taxation. Thus, some institutions expect their faculty to publish in journals dedicated to their special interests, rather than in the Best Four journals. We therefore developed a database of faculty publications for the "*Best 12*" journals shown in Exhibit 1 (highest three clusters). Five of these twelve journals are "business" journals rather than "academic" journals.

To expand the description of "better" journals even more, we developed a database of faculty publications for the "*Best 22*" journals, which incorporates roughly half of the journals shown in Exhibit 1. These journals are still quite selective and

Exhibit 2c
Distribution of faculty according to number of articles in top 40 journals adjusted for coauthorship, journal quality published, and year of doctoral degree

			Number of faculty by number of articles published									
Total articles	Year of doctoral graduation	Number of graduates	0	1	2	3	4	5	6	7	8	9+
1971	140	410	55	18	12	16	9	3	6	2	2	17
1972	144	497	62	14	13	13	14	7	1	5	0	15
1973	149	463	64	18	17	7	10	4	7	4	4	14
1974	168	585	72	17	12	20	14	4	5	5	3	16
1975	152	554	53	28	16	8	6	5	5	9	5	17
1976	134	467	45	20	10	17	12	4	3	5	5	13
1977	133	595	41	14	16	12	6	7	4	6	5	22
1978	180	796	58	31	18	13	14	7	6	5	3	25
1979	130	442	47	24	12	15	4	4	5	3	3	13
1980	138	534	43	20	22	8	9	8	5	3	3	17
1981	173	606	63	27	19	17	11	5	11	3	3	14
1982	178	658	59	21	25	15	14	7	7	4	8	18
1983	160	547	50	31	19	15	6	5	7	5	5	17
1984	161	456	56	37	16	12	6	7	8	8	3	8
1985	171	464	59	37	20	14	8	10	7	6	3	7
1986	188	477	70	44	16	15	10	13	7	5	2	6
1987	201	465	67	43	29	25	11	10	0	7	4	5
1988	205	406	80	44	26	15	10	8	9	5	2	6
1989	210	405	74	51	36	14	18	3	3	2	1	8
1990	174	319	66	40	27	13	6	6	4	4	3	5
1991	192	243	93	34	32	13	14	4	0	0	0	2
1992	199	201	102	54	21	10	4	4	2	0	1	1
1993	198	108	137	38	11	6	4	0	2	0	0	0
Totals	3878	10,698	1516	705	445	313	220	135	114	96	68	266
Percentages	100%		39%	18%	11%	8%	6%	3%	3%	2%	2%	7%

well respected. These benchmarks would tend to be most useful for teaching institutions and those interested in the quantity of faculty research. In particular, they include several journals, such as *Journal of Accounting Education* and *Issues in Accounting Education* that are widely read by those interested in pedagogical issues.

We also recognize that our database of publications in 40 journals does not contain *all* accounting faculty publications, but it does represent the best 40 of over 100 considered journals. So, in itself, the *Best 40* benchmarks offer a level of quality in the upper half of all journals to form the most generalized of our benchmarks, which include five "business" and five "practitioner" journals. With these four levels of journal quality, it is not necessary to adjust individual publications for journal quality. We believe it is much easier for a decision-maker to "count" articles published in certain journals than to make quality adjustments for each article written.

To find an appropriate benchmark, the user must select the publication measure ("full-credit" or "co-author adjusted") and the level of journal quality (*Best 4, Best*

Exhibit 3
Measures of faculty research productivity in top 40 journals (number of articles, articles adjusted for co-authorship, and articles adjusted for co-authorship and quality) by year of doctoral degree

		Total articles			Articles/faculty			Articles/faculty/years		
Year of doctoral degree	Number of graduates	Number articles	Co-author	Composite co-author and quality	Articles	Co-author	Quality	Articles	Co-author	Quality
1971	140	410	266	360	2.93	1.90	2.57	0.12	0.08	0.10
1972	144	497	323	471	3.45	2.25	3.27	0.14	0.09	0.14
1973	149	463	279	415	3.11	1.87	2.79	0.14	0.08	0.12
1974	168	585	356	513	3.48	2.12	3.05	0.16	0.10	0.14
1975	152	554	321	446	3.64	2.11	2.94	0.17	0.10	0.14
1976	134	467	283	369	3.49	2.11	2.76	0.17	0.11	0.14
1977	133	595	343	514	4.47	2.58	3.86	0.24	0.14	0.20
1978	180	796	455	626	4.42	2.53	3.48	0.25	0.14	0.19
1979	130	442	255	353	3.40	1.96	2.71	0.20	0.12	0.16
1980	138	534	288	421	3.87	2.08	3.05	0.24	0.13	0.19
1981	173	606	327	439	3.50	1.89	2.54	0.23	0.13	0.17
1982	178	658	370	512	3.70	2.08	2.88	0.26	0.15	0.21
1983	160	547	291	409	3.42	1.82	2.56	0.26	0.14	0.20
1984	161	456	244	350	2.83	1.52	2.17	0.24	0.13	0.18
1985	171	464	254	345	2.71	1.48	2.01	0.25	0.13	0.18
1986	188	477	251	336	2.54	1.34	1.78	0.25	0.13	0.18
1987	201	465	262	345	2.31	1.30	1.72	0.26	0.14	0.19
1988	205	406	228	321	1.98	1.11	1.57	0.25	0.14	0.20
1989	210	405	235	318	1.93	1.12	1.51	0.28	0.16	0.22
1990	174	319	172	260	1.83	0.99	1.49	0.31	0.16	0.25
1991	192	243	138	182	1.27	0.72	0.95	0.25	0.14	0.19
1992	199	201	106	148	1.01	0.53	0.74	0.25	0.13	0.19
1993	198	108	59	78	0.55	0.30	0.39	0.18	0.10	0.13
Totals	3878	10,698	6106	8528						

12, Best 22, or *Best 40)*. In addition, the user must select a desired level of performance for faculty members within the above parameters. That is, should the faculty member perform within the top 10% or the top 50% of the appropriate category? To satisfy as many users as possible, we report benchmarks — the number of publications needed — to be included in the *Top 10%, Top 20%, Top 25%, Top 33%,* and *Top 50%* of each category of publication measure and journal quality.

These benchmarks are shown in Exhibit 4, (*Best 12* journals), Exhibit 6 (*Best 22* journals), and Exhibit 7 (*Best 40* journals). Each exhibit contains detailed data that gives full credit for single-authored publications and partial credit for co-authored articles.

4. Analysis and discussion

Analysis of Exhibit 5, benchmarks for the *Best 4* journals, shows that very few faculty have published in the premier journals. One published article in these top

Exhibit 4
Benchmarks for top 4 journals

	Level of performance									
	Top 10%		Top 20%		Top 25%		Top 33%		Top 50%	
Years since degree	Number articles	Co-author	Number articles	Co-author	Number articles	Co-author	Number articles	Co-author	Number articles	Co-author
25	2	2	1	1	1	1	1	0	0	0
24	1	2	1	1	1	1	1	1	0	0
23	3	2	1	1	1	1	0	0	0	0
22	3	2	1	1	1	1	0	0	0	0
21	3	2	2	1	1	1	0	0	0	0
20	2	2	1	1	1	1	0	0	0	0
19	5	4	2	2	1	1	1	1	0	0
18	3	2	1	1	1	1	0	0	0	0
17	2	2	1	1	0	1	0	0	0	0
16	3	2	1	1	1	1	0	0	0	0
15	3	2	1	1	0	0	0	0	0	0
14	3	2	1	1	1	1	1	1	0	0
13	3	2	1	1	1	1	0	0	0	0
12	2	2	1	1	0	0	0	0	0	0
11	2	2	1	1	0	0	0	0	0	0
10	2	1	0	0	0	0	0	0	0	0
9	1	1	0	0	0	0	0	0	0	0
8	2	1	0	0	0	0	0	0	0	0
7	1	1	0	0	0	0	0	0	0	0
6	2	1	1	0	0	0	0	0	0	0
5	1	1	0	1	0	0	0	0	0	0
4	1	1	0	0	0	0	0	0	0	0
3	0	1	0	0	0	0	0	0	0	0

Exhibit 5
Benchmarks for top 12 journals

Level of performance										
	Top 10%		Top 20%		Top 25%		Top 33%		Top 50%	
Years since degree	Number articles	Co-author	Number articles	Co-author	Number articles	Co-author	Number articles	Co-author	Number articles	Co-author
25	3	2	2	1	1	1	1	1	0	0
24	4	2	2	2	2	1	1	1	0	0
23	5	3	2	1	1	1	1	1	0	0
22	4	3	2	1	1	1	0	1	0	0
21	5	3	3	2	2	1	1	1	0	0
20	5	3	2	1	1	1	1	1	0	0
19	7	5	3	2	3	2	1	1	0	0
18	6	4	2	2	2	1	1	1	0	0
17	4	3	2	1	1	1	1	1	0	0
16	6	4	2	2	2	2	1	1	0	0
15	4	3	1	1	1	1	1	1	0	0
14	5	3	3	2	2	2	1	1	0	0
13	6	4	2	2	2	1	1	1	0	0
12	5	3	1	1	1	1	0	0	0	0
11	3	2	1	1	1	1	1	1	0	0
10	4	2	1	1	1	1	1	0	0	0
9	2	2	1	1	1	1	0	0	0	0
8	3	2	1	1	1	1	0	0	0	0
7	2	2	1	1	1	1	0	0	0	0
6	3	2	2	1	1	1	1	1	0	0
5	2	1	1	1	0	0	0	0	0	0
4	1	1	1	1	0	0	0	0	0	0
3	1	1	0	0	0	0	0	0	0	0

Exhibit 6
Benchmarks for faculty publishing in top 22 journals

Level of performance										
	Top 10%		Top 20%		Top 25%		Top 33%		Top 50%	
Years since degree	Number articles	Co-author	Number articles	Co-author	Number articles	Co-author	Number articles	Co-author	Number articles	Co-author
25	4	3	2	2	2	1	1	1	0	0
24	6	4	2	2	2	2	1	1	0	0
23	6	4	3	2	2	1	2	1	0	0
22	6	4	3	2	2	2	1	1	0	0
21	7	4	4	3	2	2	1	1	0	0
20	6	4	3	2	2	2	1	1	0	0
19	9+	7	5	4	4	3	2	2	1	1
18	8	5	4	3	3	2	2	1	0	0
17	6	4	3	2	2	1	1	1	0	0
16	8	5	4	3	3	2	2	1	1	1
15	6	4	3	2	2	2	1	1	0	0
14	7	4	4	3	3	2	2	1	0	0
13	8	4	5	3	3	2	1	1	0	0
12	6	4	3	2	2	1	2	1	0	0
11	5	3	3	2	2	2	1	1	0	0
10	5	3	2	1	2	1	1	1	0	0
9	4	3	2	2	2	1	1	1	0	0
8	5	3	2	2	2	1	1	1	0	0
7	3	2	2	1	1	1	1	1	0	0
6	4	3	2	1	2	1	1	1	0	0
5	2	2	1	1	1	1	1	1	0	0
4	2	1	1	1	1	1	0	0	0	0
3	1	1	0	0	0	0	0	0	0	0

Exhibit 7
Benchmarks for faculty publishing in top 40 journals

Level of performance										
	Top 10%		Top 20%		Top 25%		Top 33%		Top 50%	
Years since degree	Number articles	Co-author	Number articles	Co-author	Number articles	Co-author	Number articles	Co-author	Number articles	Co-author
25	9+	7	5	4	4	3	3	2	1	1
24	9+	8	5	3	4	2	3	2	1	1
23	9+	6	6	4	4	3	3	2	1	1
22	9+	7	6	4	5	3	3	2	1	1
21	9+	7	8	5	5	4	4	2	1	1
20	9+	6	6	4	5	4	4	3	2	1
19	9+	8	8	5	7	4	5	3	2	2
18	9+	7	8	4	7	4	6	3	2	1
17	9+	6	6	4	5	3	3	2	1	1
16	9+	7	8	4	6	4	4	2	2	1
15	9+	6	6	3	5	3	4	2	2	1
14	9+	6	7	4	6	3	4	3	1	2
13	9+	6	7	4	6	3	4	3	2	1
12	9+	5	6	3	5	3	3	2	1	1
11	7	5	5	3	4	3	3	2	1	1
10	7	4	5	3	4	3	3	2	1	1
9	6	4	4	3	4	2	3	2	1	1
8	6	4	3	2	3	2	2	1	1	1
7	5	3	3	3	3	2	2	1	1	1
6	5	3	3	2	3	2	2	1	1	1
5	4	2	3	2	2	2	2	1	1	1
4	3	2	2	1	2	1	1	1	0	0
3	2	1	1	1	1	1	0	0	0	0

four journals is likely to put its author in the top 20%, or even top 10%, of all faculty. These benchmarks are likely to be useful primarily for the highest rated institutions, such Chicago or Stanford, which are likely to expect the publication records of their faculty to be in the top 10%.

Exhibit 6 paints a broader picture of the better journals. As stated above, the inclusion of the best 12 journals provides a broader coverage, with 5 of the 12 journals being "business" journals. A big difference between the productivity of the top 10% of all authors and the next 10% is apparent from the data presented in Exhibit 6. After holding a doctorate for 10 years, it takes roughly four to six articles in these 12 journals to reach the top 10%, but only about two to reach the top 20%.

Exhibit 7 has still broader coverage — the top 22 journals, whose benchmarks are perhaps most appropriate for institutions that place equal emphasis on teaching and research. For the critical periods of tenure and promotion, perhaps 6–10 years, an institution desiring to place in the top third of all institutions could set a benchmark of two or three articles in the best 40 journals.

The exhibits show that benchmarks vary erratically at times. For example, Exhibit 7 indicates that one who has held the doctorate for 14 years must publish seven articles in the best 40 journals to place in the top 20%. Faculty who have held the doctorate for 15 years need only six articles to placed in the top 20%. The cause of this inconsistency is the variation of publication records from one class of doctorates to the next. A simple solution when one meets this type of inconsistency in the data is to use a three-year moving average to determine a "normal" benchmark.

Having data on co-authorship and journal quality (Exhibits 2A, 2B, and 2C), we wondered whether the tendency to co-author articles and the average quality of article published had changed over time. To find the answer, we determined the average number of authors per article for each year by dividing the number of articles in that year by the number of articles adjusted for co-authorship. The average quality of a journal article for each year was found by dividing the composite measure of co-authorship and quality by the number of articles adjusted for co-authorship. A summary of the results is shown in Exhibit 8.

These data were regressed against time to determine their correlations and trend lines. We found that average number of authors per article is significantly correlated with time ($r^2 = 0.67$) and is growing at a rate of 0.017 co-authors per article per year. The trend line predicts a growth in the average number of authors per article from 2.28 in 1993 to 2.38 in 1999. We found the correlation between the quality and time to be negative, but insignificant ($r^2 = 0.13$). The trend lines predict a decrease in average quality of an article from 1.34 in 1993 to 1.33 in 1999.

5. Limitations and extensions

Like all prior studies measuring faculty research productivity or ranking doctoral programs, this study has limitations. First, we compiled data from 40 journals, but omitted data from over 60 other accounting journals and numerous other journals

Exhibit 8
Average number of authors per article in top 40 journals and average quality of articles by year of doctoral graduation

Year of doctoral degree	Average authors per article	Average quality
1971	1.86	1.35
1972	1.83	1.45
1973	1.97	1.47
1974	1.97	1.44
1975	2.05	1.38
1976	1.97	1.30
1977	2.03	1.47
1978	2.04	1.37
1979	2.06	1.36
1980	2.18	1.44
1981	2.17	1.32
1982	2.10	1.37
1983	2.21	1.41
1984	2.19	1.41
1985	2.20	1.36
1986	2.23	1.34
1987	2.13	1.31
1988	2.12	1.39
1989	2.07	1.34
1990	2.20	1.48
1991	2.07	1.33
1992	2.33	1.38
1993	2.30	1.27
Averages	2.08	1.39
Trend line	($r^2 = 0.67$)	($r^2 = 0.13$)
1994	2.29	1.34
1995	2.31	1.34
1996	2.33	1.34
1997	2.35	1.33
1998	2.36	1.33
1999	2.38	1.33

in which accountants might publish. We also omitted notes and commentaries appearing in the 40 journals, as well as monographs.

Secondly, we developed a means to determine a composite measure of the quantity and quality of research productivity that is sensitive to the accurate perceptions of those who rate the quality of journals. While not addressing the issue of individual article quality, we used the perceived quality of journals as a surrogate for the quality of specific articles. However, journals of lower perceived quality often publish seminal articles, and not all articles in premier journals are of high quality. Moreover, users of such benchmarks should note that various types of schools have distinct research missions and resources, making comparisons among non-doctoral and doctoral-granting programs, and among research institutions and teaching institutions, difficult.

6. Summary and conclusions

We developed and used an extraordinarily large and comprehensive database to analyze publication records in the 40 highest-rated journals for 3878 individual accounting faculty members. Journal ratings were derived by compiling the findings of five prior studies that rated accounting journals. Administrators can use up to four parameters to select appropriate benchmarks for specific individuals, including whether to give the faculty member full credit for co-authored articles; the appropriate level of journal quality (e.g. the *Best 4, Best 12, Best 22,* and *Best 40* journals); the appropriate level of performance (e.g. should the faculty member's publication record be in the top 10%, top 25%, or top 50%); and the number of years that a faculty member has been "in grade" i.e., held a doctoral degree.

Although the average number of authors per article correlates significantly with time and grew at a rate of 0.017 authors per article per year, the quality of journal articles has remained steady over time. Future research can improve these benchmarks, but this initial set of benchmarks provides administrators with justification for specifying a required number of articles for tenure and promotion.

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