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Competition and Scholarly Productivity in Management: Investigating Changes in Scholarship from 1988 to 2008

S. TREVIS CERTO
Arizona State University

DAVID G. SIRMON
RHETT A. BRYMER
Texas A&M University

We examine how competition has influenced scholarly productivity in the field of management from 1988 to 2008. Our study reveals three primary findings that may interest management scholars. First, we found that the number of scholars publishing papers each year in top-tier management outlets increased significantly over time. This increase was evident even when controlling for the fact that several journals have increased the number of articles published per year. Second, we found the majority of scholars required more than 5 (or 10) years to publish five (or ten) top-tier articles. In fact, results show the average time required to publish five (or ten) articles increased from 5.35 (6) years at the beginning of our sample to 9.72 (15.13) years at the end of our sample. Finally, our results indicate that increased competition to publish articles in top-tier journals has affected the scholarly productivity of both micro* (primarily focused on individuals or groups) and *macro* (primarily focused on organizations) researchers. However, the results suggest that this negative influence on productivity is more pronounced for macro scholars.

Industry membership represents a primary emphasis in management research, especially strategic management (Porter, 1980). Several studies, for example, reveal that industry membership explains a significant amount of variance in firm performance (e.g., Misangyi, Elms, Greckhamer, & Lepine, 2006). Complementing these investigations of firm performance is research that examines characteristics of the industries themselves, from broad attributes such as life cycles (Agarwal, Sarkar, & Echambadi, 2002) to more detailed characteristics such as munificence, dynamism, and concentration (Dess & Beard, 1984).

Drawing in part on this existing research, some scholars have studied the management discipline as an industry with its own characteristics and influences. Researchers, for instance, have studied an array of complementary topics regarding management scholarship such as article impact (Bergh, Perry, & Hanke, 2006); author impact (Podsakoff, MacKenzie, Bachrach, & Podsakoff, 2008); journal quality (Podsakoff, MacKenzie, Bachrach, & Podsakoff, 2005; Singh, Haddad, & Chow, 2007); editorial board memberships (Bedeian, Van Fleet, & Hyman, 2009); tenure decisions (Park & Gordon, 1998); faculty pay (Gomez-Mejia & Balkin, 1992); theoretical development (Smith & Hitt, 2005); and citation patterns (Nerur, Rasheed, & Natarajan, 2007).

We extend this stream of research by examining the evolution of scholarly productivity in the management discipline between 1988 and 2008. We focus on research productivity as evidenced by publications in prominent research outlets. Because

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scholarly research influences managerial practice and enables instructors to present new knowledge to students, an understanding of the evolution of research productivity in the management discipline represents a worthy endeavor. Moreover, such an understanding may help ensure the field's continued development (Bailey, 2006; Boyd, Finkelstein, & Gove, 2005) and legitimacy (Hambrick & Chen, 2008).

We hope to make two primary contributions through our research. First, we examine the management discipline as an industry and document significant changes in scholarly productivity over time. Using proxies we discuss in detail later, we find little change over time in the small number of individuals who achieve the standards required for promotion to the associate- or full-professor levels at typical research-oriented universities within a typical promotion and tenure "clock." At the same time, however, competition for space in prominent journals has risen dramatically over time, even when considering the simultaneous increase in journal page space. Thus, achieving the scholarly records required for such promotions is becoming relatively more difficult, on average, as a smaller percentage of active scholars achieves these standards each year. Our results suggest that for the vast majority of active research scholars, the time needed to achieve these outcomes has increased markedly from 1988 to 2008.

Second, we develop and implement a routine that allows us to examine potential differences in scholarly productivity between management's primary subdisciplines (which differ on their level of analyses: "Micro" primarily considers individuals or groups of individuals, while "macro" primarily considers organizations). Here again, we document that competition in each area has increased dramatically over the past 2 decades. Specifically, the number of unique micro (macro) scholars publishing in prominent journals grew from 1,085 (291) in 1988 to 1,885 (894) in 2008. We also find that more micro than macro scholars are achieving the standards needed for promotion; however, when the higher number of micro scholars publishing in prominent journals is taken into account, the rate of success in these two areas is approximately equivalent.

We believe that our study has important implications for several stakeholder groups. First, our findings may help to educate both junior and senior professors on the changing publication norms in the management field. These changes, due to increased competition in our field, may have important implications for senior faculty as they consider future tenure and promotion decisions regarding junior scholars. While professors with longevity in the management field may be tempted to use historical norms when making such decisions, our findings document that *the time necessary to earn high levels of scholarly productivity has increased, making prior norms less appropriate for current appraisals*. In effect, these results could help to normalize an individual's scholarly productivity. Likewise, our results may be of use to business school committee members and administrators by enabling such individuals to recognize the changing standards of scholarship within the management discipline and thus make better informed decisions when allocating scarce resources. Such information may also help administrators communicate more effectively with external stakeholders about the quality of their faculty. Finally, such knowledge may help PhD students (and aspiring PhD students)—the future of our discipline—to understand and engage the profession more successfully (e.g., Stewart, Williamson, & King, 2008).

COMPETITION IN THE MANAGEMENT DISCIPLINE

Competition for Top-Tier Journal Space in Management

Resource dependence theory highlights the importance of effectiveness, which refers to the "ability to create acceptable outcomes and actions" (Pfeffer & Salancik, 1978: 11). In the academic context, scholarly productivity is arguably the ultimate indicator of effectiveness. In the management discipline, where scholars do not pursue grants or patents as regularly as in other disciplines, journal publications serve as a primary indicator of scholarly productivity and the potential for knowledge creation. However, as several recent studies point out, not all productivity is the same. That is, not all publications are equal measures of effective scholarship. Instead, publications in the most selective and influential (i.e., "top-tier") journals are regarded as indicators of research excellence, and thus, are most recognized and rewarded within universities and the academy in general. Summarizing this view, Podsakoff and colleagues (2005: 487–488) recommend that "universities should give substantially greater weight to publications in top-tier journals than to publications in lower-tier journals when determining the research impact of an individual and/or department."

In addition, the growing prominence of business school rankings has established an implicit link between business school research and external

audiences. Two prominent rankings of business schools (*Financial Times* and *BusinessWeek*), for example, include criteria such as faculty "intellectual capital," which is assessed by examining top journal publications (Singh et al., 2007). Another ranking, produced by *U.S. News and World Report,* incorporates deans' ratings of other institutions, which are influenced by scholars' research productivity (Pfeffer & Fong, 2002). Together, these institutional changes to some extent explain sentiments that "there is an apparent increase in pressures for faculty members in management and other business disciplines to publish in the top journals in their field" (Singh et al., 2007: 327). Despite any shortcomings in utilizing top-tier publications as a criterion to judge scholarship (Adler & Harzing, 2009), these changes have undoubtedly increased the already significant rewards allocated to scholars publishing in top-tier outlets (Gomez-Mejia & Balkin, 1992).[1]

Complementing these changes, the publishing environment in management over time has become more munificent, which refers to environmental capacity or the extent to which an environment can support sustained growth (Dess & Beard, 1984). In the context of scholarly productivity with the goal of creating new knowledge, the available space in "top-tier" journals reflects the degree of munificence in a scholar's environment. Between 1988 and 2008, for example, the *Academy of Management Journal, Academy of Management Review, Strategic Management Journal,* and *Journal of Applied Psychology* have all increased both in terms of articles and pages published. This expansion increases publishing opportunities for scholars, although it does not necessarily reduce competition for that space when submissions increase disproportionately.

Thus, we suggest that heightened institutional pressures, increased incentives, and amplified munificence have led to an increased number of unique individuals publishing articles in top-tier journals each year. In total, we propose that these factors have attracted new scholars from around the globe (e.g., Kirkman & Law, 2005) and have encouraged existing scholars to compete actively for top-tier journal space each year.

Hypothesis 1: When controlling for the number of articles published each year, the number of individuals publishing a "top-tier" article each year has increased from 1988 to 2008.

Time Required to Achieve a Substantial Scholarly Research Record: Tenure and Full Professorship

As in other disciplines, there exist a number of career milestones for management scholars; perhaps the most significant of these are promotion to associate professor and promotion to full professor (Gist, 1996). Just as an organization establishes legitimacy through growth (Pfeffer & Salancik, 1978), a scholar establishes academic legitimacy through scholarly productivity, which contributes to the field's knowledge base. We expect changes in scholarly competition over the past 20 years to affect the timely accumulation of such a body of work. In particular, scholars across multiple disciplines have empirically demonstrated the detrimental effects of increased competition on performance (Porter, 1980). As new competitors enter an industry and as incumbents exert more effort to remain competitive, the ability of any single competitor to earn abnormal profits decreases (Pfeffer & Salancik, 1978).[2] As the number of competitors has increased, so has the intensity of competition. Increases in the sophistication of methodologies, data-gathering techniques, and specialized theory development (Fabian, 2000), along with a general rejection of replication-based studies, create greater competitive intensity among scholars.

Therefore, we propose that the increased number of competitors over the past 20 years has negatively influenced the productivity of individual management scholars. This competition slows the rate at which scholars can publish in top-tier journals, which limits the total contribution an individual will have on the field of management. We propose that the number of scholars achieving publication records sufficient to achieve tenure and promotion to full professor has decreased over time. Although promotion standards vary between departments, schools, and universities, for this study we examine the change in how many schol-

[1] Publishing in top-tier journals may provide scholars with a number of rewards. In addition to salary incentives (Gomez-Mejia & Balkin, 1992), productive scholars are also rewarded with resources such as decreased teaching loads, more capable PhD student support, and monetary resources for data acquisition and travel (e.g., MacDonald & Kam, 2007). Additionally, nonmonetary rewards for productivity, such as advancement in rank and endowed positions, offer great incentive because such advancements enhance scholarly reputation.

[2] The concept of competitive concentration includes both the number of competitors and their relative market shares. In the academic context, however, where only one individual has averaged two top-tier articles per year over a 10-year period (Glick, Miller, & Cardinal, 2007), market share is less salient.

ars publish five top-tier publications in 5 years (approximating tenure requirements) and ten top-tier publications in 10 years (approximating requirements for promotion to full professor).

Although the number of authors entering the field of management has increased during the 2 decades our study covers, it is also important to note that during this same time frame, a number of top management journals have expanded both the frequency of issues and number of pages published. This increase in page space suggests that the level of munificence (i.e., number of top-tier articles published per year) in management has increased over time. Nevertheless, we expect that the increasing competition outweighs this increased munificence. More formally, we hypothesize the following:

Hypothesis 2a: The number of scholars publishing five top-tier articles in 5 years has decreased from 1988 to 2008.

Hypothesis 2b: The number of scholars publishing ten top-tier articles in 10 years has decreased from 1988 to 2008.

In the preceding discussion, we suggest that the number of scholars publishing papers in top-tier outlets has increased over time. We also propose that this increase in competition has diminished the ability of individual scholars to achieve important career milestones. In the following sections, we shift our focus to examine factors that may explain differences between management's primary subdisciplines.

Contrasting Management's Subdisciplines: Macro and Micro

Research in strategic management indicates that industries contain strategic groups, which are subsets of firms that compete using similar strategies (Cool & Schendel, 1988; Hunt, 1972). Strategic management scholars examine the influence of strategic groups on performance, as firms compete more fiercely with other firms in their group than with those outside their group (Short, Ketchen, Palmer, & Hult, 2007). Because of the similarities among firms in a strategic group, managers use their group membership as a reference point in understanding their own performance (Fiegenbaum & Thomas, 1995). Mobility barriers make it difficult for firms to switch between strategic groups; although a firm may be attracted to the performance opportunities of another strategic group, switching to a different group requires different skills and capabilities.

Similarly, the field of management comprises several subdisciplines, with perhaps the most widely recognized distinction being that between "macro" and "micro" (Singh et al., 2007).[3] While both subdisciplines are important and are interested in management-related phenomena and theory, they differ in their unit of analysis. Whereas micro scholars concentrate primarily on individuals (or groups of individuals), macro scholars focus primarily on organizations (Hitt, Beamish, Jackson, & Mathieu, 2007). While some journals (e.g., *AMJ*) have retained a broad focus, other journals have specialized in a particular subdiscipline (House, Rousseau, & Thomas-Hunt, 1995; Singh et al., 2007).

Examining various organizational memberships of these scholars can help to approximate the populations of these two subdisciplines. As of August 2008, the Academy of Management (AOM) reported that the Business Policy and Strategy (BPS) and Organizational and Management Theory (OMT) divisions included 7,969 nonredundant members, and the Organizational Behavior (OB) and Human Resources (HR) divisions included 7,552 nonredundant members.[4] Thus, the ratio between divisions is approximately 1 to 1. Officials of the American Psychological Association's Society for Industrial and Organizational Psychology (SIOP) division state that 3,130 of their members have PhDs, which implies that these members may be interested, at some level, in publishing research. While many individuals are members of both AOM and SIOP, some are unique. Even when assuming these memberships represent unique individuals, the micro-to-macro ratio is approximately 5:4.

Despite the relatively equal sizes of the underlying populations of these two subdisciplines, research indicates that their publication rates may differ. Wiseman and Skilton (1999) found that macro scholars are generally less productive than their micro colleagues. At least two factors may contribute to this difference. First, strategy, a major component of the macro group,[5] is less developed than micro subspecialties in the management field (Boyd et al., 2005). Because there is less agreement among strategy scholars on accepted theories and methods, codification of such standards is less

[3] It is important to note that within organizational behavior there exist divisions between micro and macro (House, Rousseau, & Thomas-Hunt, 1995). However, we use these term differently indicating a broader range with respect to the levels of analyses common in management research.

[4] Because 1,467 members belonged to both the BPS and OMT divisions, and 1,978 members belonged to both the OB and HR divisions, we added the memberships of the two divisions and then subtracted the number of members in both divisions to avoid double counting.

[5] Other areas of focus that are often considered "macro" include international business, organization theory, and entrepreneurship.

well established. In contrast, the codification of such standards for psychology-related work, which comprises the basis for much of the micro subfield, is greater, prompting Rousseau's (2007: 851) suggestion that "it remains easier for us to publish in psychology than in management, because the former's consensus is greater."

Second, the micro area may have higher levels of munificence compared with the macro area. Differences in munificence stem from two sources: the number of top-tier journals in each subdiscipline and the number of articles these journals publish. More "top-tier" journals are micro- than macro-focused, which effectively increases the page space available to micro researchers. Although departments' formal or informal "top-tier" lists vary, research suggests that top-tier journals focusing on micro research include the *Journal of Applied Psychology* (*JAP*), *Organizational Behavior and Human Decision Processes* (*OBHDP*), and *Personnel Psychology* (*PPsych*), while the *Strategic Management Journal* (*SMJ*) represents the only top-tier journal focusing primarily on macro research (Podsakoff et al., 2005). Moreover, Wiseman and Skilton (1999) provide evidence that the micro journals, in addition to being more numerous, also contain more articles per issue than other management journals.

In the context of organizations, environmental munificence influences both growth and survival (Park & Mezias, 2005). Extrapolating from this research to scholars who compete for journal space, we expect that paradigm development and environmental munificence will lead to greater numbers of productive micro scholars compared with productive macro scholars.

Hypothesis 3: There is a relationship between management subdisciplines and scholarly production such that the number of productive micro scholars will exceed the number of productive macro scholars.

METHODOLOGY

Sample

We created our initial sample by downloading from Web of Science all articles published in the *Academy of Management Journal (AMJ)*, *Academy of Management Review (AMR)*, *Administrative Science Quarterly (ASQ)*, *Journal of Applied Psychology (JAP)*, *Organizational Behavior and Human Decision Processes (OBHDP)*, *Organization Science (OS)*, *Personnel Psychology (PPsych)*, and *Strategic Management Journal (SMJ)* between 1961 and 2008. This selection includes the top quartile of management journals, which was noted as a "quite stable" ranking throughout the 1980s and 1990s, based on a combined score of a journal's total citations and average citations per article from 1981 to 1999 (Podsakoff et al., 2005: 486).[6] As we mentioned previously, Podsakoff and colleagues recommend that schools and universities should apply a greater weight to top-tier journals than to lower tier journals when making tenure and promotion decisions. For this reason, our sample includes a select list of high-impact, management-focused journals. While it is recognized that publication in "disciplinary" journals (e.g., psychology or economics journals) is valuable, we focus exclusively on management journals because these are more visible to scholars in the management discipline. We also included only peer-reviewed articles in the sample, discarding other articles types, such as book reviews and editorials.[7]

We downloaded each article at the "article level" (i.e., one observation per article), and we transposed the data by author, creating an "authoring event" database. This procedure accounted for co-authorship by creating an observation per author for each published article in the selected journals over the sample period. When three authors co-authored an article, for example, our database includes three separate authoring events. In some instances, our database included names that were quite similar but varied slightly (e.g., different by an initial). We checked each of these articles by hand and cross-checked them to ensure accurate coding.

Between 1980 and 2008, there were 11,050 articles published by 10,083 authors, resulting in 24,654 authoring events. Because Hypotheses 2a, 2b, and 3 examined the extent to which scholars accumulate publications, we eliminated all authors who published prior to 1980 from our sample. This stipulation ensured that the first publication for each author in our sample was actually that author's first publication; otherwise, our routine would have categorized senior scholars' 1980 publications as their

[6] Due to the request of an anonymous reviewer, we included *Organization Science* in our sample, although this journal did not appear in Podsakoff et al.'s (2005) top tier of journals. Our results were substantively similar when *Organization Science* was omitted.

[7] Although we deleted such articles from our database, some articles in our database may have been invited by journal editors. There is no code in Web of Science to identify such articles. Nonetheless, we believe the number of such articles represents a negligible proportion of our total database.

first publications.[8] The 1961 to 1979 data were used to identify these individuals. After we removed these authors, our final sample included 20,184 authoring events, representing 9,110 scholars. We began our sampling in 1980 to provide an appropriate lag for the 1988 data. This approach also allowed us to systematically calculate the number of years it took authors to accumulate their research records. Specifically, the start time was based on the year of each author's first publication. Although lead times for the initial publication were not counted, the procedure was the same for all authors. Thus while systematic, this approach likely understates the time needed to achieve critical levels of scholarly productivity.

Macro or Micro

We developed a procedure to classify articles and authors as either micro or macro. We began this procedure by classifying articles, with articles published in *SMJ* coded as macro, and articles published in *JAP*, *PPscyh*, and *OBHDP* coded as micro. Next, we summed these results per author, producing a micro and a macro score per author. With these results we employed a decision rule for classifying works published in *AMJ*, *AMR*, *OS,* and *ASQ* as micro or macro. We designed and implemented our decision rule in an effort to diminish the potential subjectivity that may accompany alternative processes used to distinguish between micro and macro articles (i.e., Kirkman & Law, 2005; Schminke & Mitchell, 2003).

The decision rule worked as follows: Any article in *AMJ, AMR, OS,* and *ASQ* was coded as micro if the authors had published only micro articles and no macro articles (i.e., published in *JAP, PPsych,* or *OBHDP,* but *not SMJ).* Likewise, any article in *AMJ, AMR, OS,* or *ASQ* was coded as macro if the authors had published only macro articles and no micro articles (i.e., published in *SMJ,* but *not JAP, PPsych,* or *OBHDP).* In cases where some of the authors of an article in *AMJ, AMR, OS,* or *ASQ* published in both macro and micro journals, we used a ratio to indicate the focal article's classification. Specifically, if the authors published at least twice as many micro articles, the article in question was coded as micro; if the authors published at least twice as many macro articles, the article in question was coded as macro.[9]

This procedure revealed that of our 9,110 authors, 5,886 were classified as micro, 2,013 were macro, and only 88 published a similar number of articles in both micro and macro outlets. Additionally, 1,123 authors could not be classified (because they did not publish in dedicated macro/micro journals). Of these undetermined authors, approximately 94% published one or two articles, rendering them unable to significantly aid our understanding of how reaching important milestones (i.e., five or ten top-tier publications) has changed over time, other than reflecting the growing competition hypothesized earlier. Thus, the data on these individuals were not used for the micro–macro hypothesis, but were included in our other tests.

To examine the effectiveness of the decision rule, we compared our results with the expert opinion-based results obtained by Hambrick and Chen (2008). These scholars examined the ratio of strategy articles to total articles in *AMJ, AMR,* and *ASQ* at five different 1-year increments between 1975 and 2001. For example, Hambrick and Chen (2008) found that during 2000–2001, 27% of *AMJ*, 19% of *AMR*, and 23% of *ASQ* articles focused on strategy. Our procedure, on the other hand, covers the entire population of articles in these journals over the past 20 years. We identified 29%of *AMJ,* 27% of *AMR*, 28% of *ASQ,* and 36% of *OS* articles as macro articles. Because we compare the expert opinion of a 1-year sample with the entire population based on our decision rule, and because we focus on "macro" instead of strategy work alone, we submit that the similarity in outcomes provides validity for our decision rule.

RESULTS

Primary Analysis

To test Hypothesis 1, we computed the number of unique individuals who published a top-tier article in our database per year. Figure 1 illustrates the relationship between time and the number of individuals publishing top-tier articles over the time frame of the study.

Overall, the figure shows that the number of authors per year has increased from fewer than 600 authors in 1988 to more than 900 in 2008. To formally test whether this increase was statistically significant, we used OLS regression, with the number of authors as our dependent variable and year as the independent variable. We also included the total number of articles published per year to con-

[8] As we demonstrate later, alternative sampling procedures yield substantively similar results.

[9] "Twice as many articles" represents an arbitrary decision-making rule. Therefore, we explored alternative classifications (i.e., a greater-than ratio and a three-times ratio), with substantively similar results.

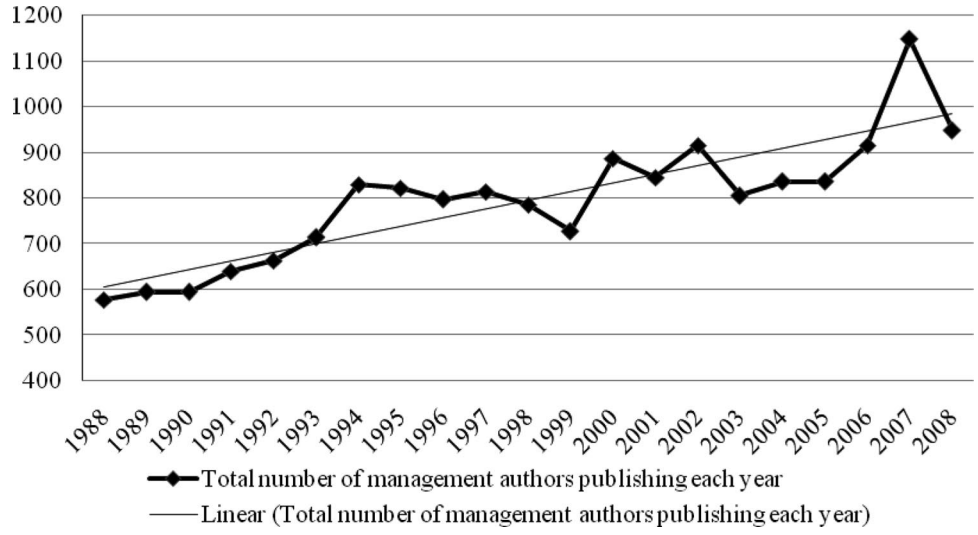

FIGURE 1
Total Number of Authors in Top-Tier Journals Per Year: 1988–2008

trol for munificence. The control variable was positive and statistically significant ($p < .001$). The year variable was also statistically significant ($p < .001$), which supports Hypothesis 1, which posits that the number of top-tier articles published each year has increased over time.[10] The coefficient of 10.70 suggests that the total number of scholars publishing an article increased by approximately 11 each year, even after controlling for munificence. The cumulative effect approximates our finding that about 300 more unique scholars published top-tier articles in 2008 than in 1988.

To test Hypotheses 2a and 2b, which examine the number of scholars publishing five (ten) articles in 5 (10) years, each year we calculated how many individuals published their fifth article in 5 years and tenth article in 10 years. As in the previous hypothesis test, we used OLS regression to formally test this relationship. The number of scholars publishing five articles in 5 years was the dependent variable, and year was the independent variable. A statistically insignificant coefficient provided no support for Hypothesis 2a. The same approach was used to test Hypothesis 2b and produced another statistically insignificant coefficient.

To test Hypothesis 3, which examines differences between the micro and macro subdisciplines, we constructed a matrix (Table 1) that groups scholars by the number of top-tier articles published and by subdiscipline over our sample period. To test whether differences existed between micro and macro subdisciplines, we used a chi-square test to examine differences between cells for columns one and two (macro and micro). The statistically significant ($p < .0001$) chi-square value supports Hypothesis 3.[11] This test supports the apparent disparity between the groups evidenced in Table 1, which shows almost three times more productive micro scholars than macro scholars.[12]

We also examined the extent to which micro and macro scholars differed in terms of publishing five (ten) top-tier articles within 5 (10) years. As seen in Tables 2a and 2b, in our sample, 197 micro scholars and 97 macro scholars published five articles in 5 years. A chi-square test statistic of 34.01 with 1 degree of freedom was statistically significant ($p < .0001$). In addition, 87 micro scholars and 36 macro scholars published ten articles in 10 years. A chi-square test statistic of 21.15 with 1 degree of freedom was statistically significant ($p < .0001$). These results support Hypothesis 3.

[10] In supplementary analyses, we also tested this hypothesis with Poisson and negative binomial regression. Both of these alternative procedures reported substantively similar results.

[11] We also examined this hypothesis with only *JAP* representing the top-tier micro journals. Significant differences remained. Specifically, the number of productive micro scholars was double the number of productive macro scholars.

[12] In supplementary analyses, we relaxed our restriction of individuals publishing prior to 1980. When we included these additional micro and macro scholars, the disparity increased from approximately 1:3 to 1:4. Thus, the results reported herein are not a function of our sampling procedure.

TABLE 1
Accumulation of Top-Tier Publications by Macro and Micro Authors With First Publication Occurring Between 1988 and 2008

Number of Articles	Macro Authors	Micro Authors
1	1096	3746
2	319	921
3	189	396
4	104	243
5	69	147
6–10	166	287
11–15	45	92
16–20	12	32
21–25	7	9
26–30	4	7
31+	2	6
Total	2013	5886

Supplementary Analysis

We ran supplementary analyses to better understand the extent to which individuals achieve the milestones we examine. Although we found no support for our hypotheses (H2a and H2b) that fewer individuals are achieving the milestones we examine, other data illustrate a more comprehensive view of this issue. For instance, Tables 2a and 2b illustrate the total number of scholars publishing their fifth or tenth article. As illustrated in these tables, the majority of scholars publish their fifth and tenth articles after the 5- and 10-year demarcations. We then calculated the average and median times required to publish five and ten top-tier publications. Based on our formula, these figures accurately demonstrate how many years it took to publish four (nine) more top-tier articles after the first top-tier article was published. Taken together, the average time required to accumulate these articles increased over time. In the first 5 years of our sample (1988–1992), for example, the average time required to publish five articles ranged from 5.24 to 6.93 years, while in the last 5 years of our sample (2004–2008), the average ranged from 8.04 to 9.72 years. In addition, the average time required to publish ten articles ranged from 6.00 to 8.78 years in the first 5 years of our sample but 12.76 to 15.63 years in the last 5 years of our sample.

We also examined in more detail how competition has evolved over time. For each year in our sample, we assessed competition by calculating the number of unique authors publishing in the previous 5 years. In 1988, for example, we calculated how many unique authors published an ar-

TABLE 2A
Number of Management Authors Reaching Top-Tier Publication Milestones per Year: Authors Achieving Five Publications in 5 Years, Total Authors Achieving Five Publications

Year	Five Publications in 5 Years	Five Publications Achieved	Mean Years to Five Publications	Median Years to Five Publications
1988	8 (1, 7, 0)	17 (1, 15, 1)	5.35	6
1989	22 (6, 16, 0)	33 (9, 24, 0)	5.24	5
1990	10 (4, 6, 0)	23 (8, 13, 2)	5.56	6
1991	12 (6, 6, 0)	29 (10, 19, 0)	5.97	6
1992	9 (4, 5, 0)	30 (7, 23, 0)	6.93	6
1993	13 (3, 10, 0)	33 (7, 24, 2)	6.06	6
1994	17 (3, 14, 0)	46 (9, 37, 0)	6.96	6
1995	16 (4, 12, 0)	35 (10, 24, 1)	7.00	6
1996	16 (6, 10, 0)	42 (16, 26, 0)	7.36	6
1997	9 (4, 4, 1)	32 (11, 17, 4)	9.09	9
1998	19 (6, 11, 2)	49 (22, 24, 3)	7.39	8
1999	8 (2, 6, 0)	31 (11, 20, 0)	8.94	8
2000	16 (7, 9, 0)	53 (22, 30, 1)	8.34	8
2001	21 (8, 13, 0)	49 (18, 30, 1)	7.47	6
2002	18 (2, 15, 1)	43 (9, 33, 1)	7.98	7
2003	17 (7, 10, 0)	46 (18, 26, 2)	8.70	6
2004	10 (3, 7, 0)	42 (16, 22, 4)	8.05	7
2005	12 (6, 6, 0)	53 (18, 35, 0)	8.60	8
2006	16 (6, 10, 0)	58 (18, 36, 4)	9.33	7
2007	15 (4, 11, 0)	51 (14, 34, 3)	9.25	7
2008	15 (5, 9, 1)	58 (27, 29, 2)	9.72	8
Totals	***299 (97, 197, 5)***	***853 (281, 541, 31)***		

Note: Authors in parentheses are (Macro, Micro, and Unclassified).

TABLE 2B
Number of Management Authors Reaching Top-Tier Publication Milestones per Year: Authors Achieving Ten Publications in 10 Years, Total Authors Achieving Ten Publications

Year	Ten Publications in 10 Years	Ten Publications Achieved	Mean Years to Ten Publications	Median Years to Ten Publications
1988	7 (3, 4, 0)	7 (3, 4, 0)	6.00	6
1989	6 (2, 4, 0)	6 (2, 4, 0)	5.83	5.5
1990	8 (1, 7, 0)	8 (1, 7, 0)	8.63	9
1991	6 (2, 3, 1)	6 (2, 3, 1)	7.00	7.5
1992	7 (4, 3, 0)	9 (4, 5, 0)	8.78	9
1993	4 (0, 4, 0)	8 (3, 5, 0)	9.88	10.5
1994	6 (0, 6, 0)	9 (0, 9, 0)	8.78	8
1995	4 (2, 2, 0)	11 (4, 5, 2)	10.55	11
1996	5 (2, 3, 0)	8 (4, 4, 0)	9.75	9.5
1997	4 (1, 3, 0)	7 (2, 5, 0)	9.57	10
1998	9 (4, 5, 0)	19 (5, 14, 0)	10.68	11
1999	2 (1, 1, 0)	14 (5, 8, 1)	13.21	12.5
2000	7 (2, 5, 0)	17 (7, 10, 0)	10.71	11
2001	2 (1, 1, 0)	13 (5, 8, 0)	14.46	15
2002	10 (2, 8, 0)	21 (5, 16, 0)	11.86	12
2003	9 (4, 5, 0)	16 (5, 11, 0)	11.12	9.5
2004	4 (1, 3, 0)	11 (3, 8, 0)	13.73	12
2005	5 (2, 3, 0)	22 (12, 9, 1)	13.50	13
2006	9 (1, 8, 0)	21 (6, 14, 1)	12.76	12
2007	4 (0, 3, 1)	19 (5, 11, 3)	15.63	15
2008	7 (1, 6, 0)	31 (11, 20, 0)	15.13	14
Totals	***125 (36, 87, 2)***	***283 (94, 180, 9)***		

Note: Authors in parentheses are (Macro, Micro, and Unclassified).

ticle between 1984 and 1988. The results, illustrated in Figure 2, depict a dramatic increase in competition. In 1988, for example, 1,572 unique authors published articles in the preceding 5 years. In 2008, however, this number increased to 3,158 unique authors.

Understanding competition in this way is important. Even if the number of individuals achieving these milestones remains steady over time, this increased competition suggests that these milestones may be increasingly difficult to achieve. Despite this doubling of competition, in both the first (1988) and last (2008) year of our sample seven individuals published their tenth article within 10 years. On a percentage basis, then, a much lower proportion of individuals in 2008 achieves these

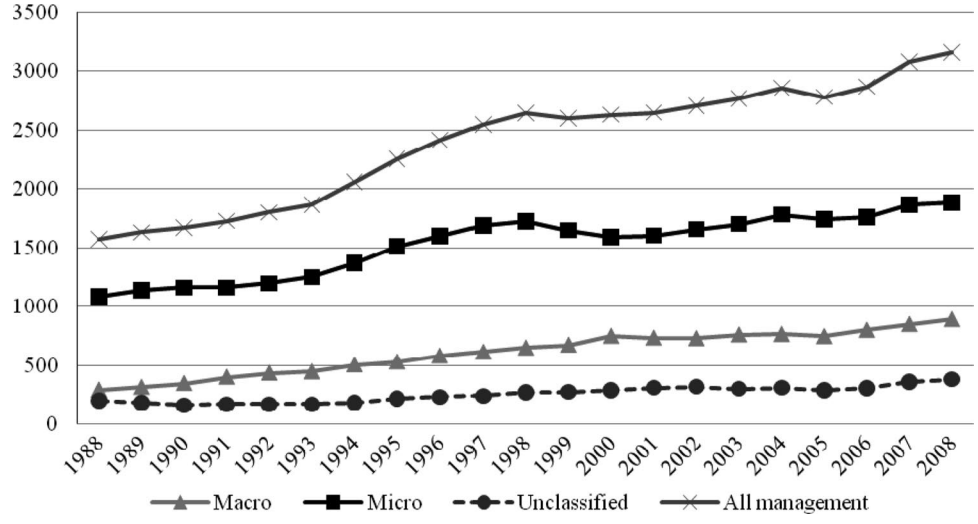

FIGURE 2
Competition: Number of Authors Publishing in Previous Five Years, 1988–2008

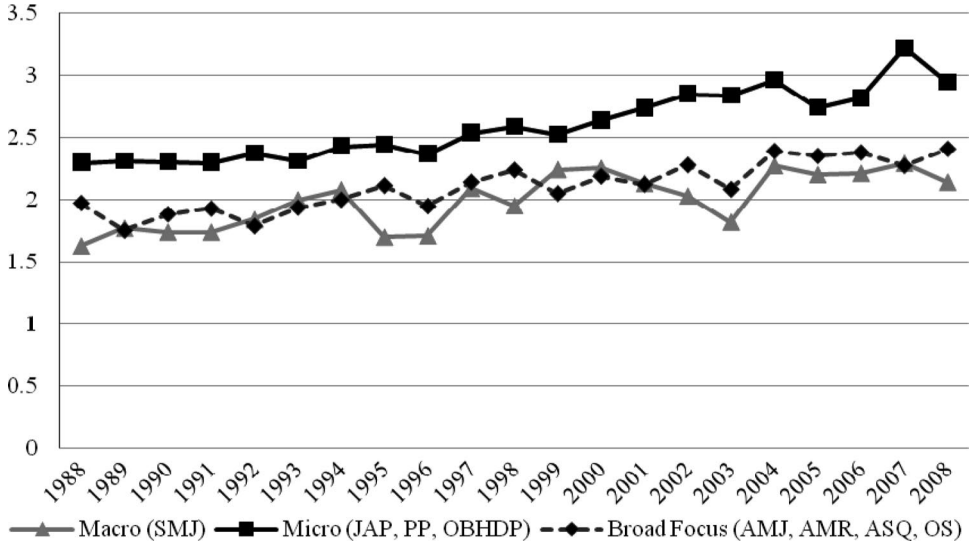

FIGURE 3
Average Number of Authors Per Article: 1988–2008

important milestones. Put differently, the page space in management's top-tier journals is being distributed among a far wider set of scholars than ever before, which leads to decreased scholarly productivity for most individuals over their careers.

We extended this analysis to understand how this increase in competition may differ by subdiscipline. In 1988, 291 unique macro scholars published an article, but this increased to 894 in 2008 (an increase of more than 200%). Regarding micro scholars, 1,085 published in 1988, while 1,885 published in 2008 (an increase of almost 75%). Figure 2 also illustrates these different rates of change over time.

We also examined the evolution of co-authorship to better understand how scholars cope with this increase in competition. As shown in Figure 3, the average number of co-authors per journal article has generally increased over time. Figure 3 also illustrates how co-authoring trends vary by subdiscipline.[13]

DISCUSSION

Summary and Implications

Our analysis of the management discipline revealed several changes in scholarly productivity. First, our results indicate that the number of individuals publishing in top-tier management journals steadily increased from fewer than 600 in 1988 to more than 900 in 2008, an increase of nearly 56%. We suggest that this increase is a direct result of the pressures and rewards associated with publishing in top-tier outlets, as these journal publications have become increasingly important to multiple stakeholders in more universities (both domestic and international). This outcome is supported even when controlling for changes in munificence.

Our second finding involves the increasing time required for individuals to reach certain publication milestones. While we hypothesized competing influences (competition and munificence) on the number of individuals publishing five top-tier publications in 5 years and ten top-tier publications in 10 years, neither explanation was supported. Instead, we found that the small number of scholars able to achieve these milestones within the commensurate time frame remained fairly consistent over our sample period. However, we found that most scholars do not meet these deadlines and that the average time required to reach these milestones increased markedly over our sample.

As seen in Tables 2a and 2b, we calculated how many individuals published their fifth (tenth) article in 5 (10) years and the average time needed to achieve these milestones. The time required increased significantly over our sample period. Scholars publishing their fifth (tenth) article in 2008, for example, needed 4½ (10) more years than scholars publishing their fifth (tenth) article in 1988.

We believe these findings warrant further elaboration. Part of this increase is due to the fact that some of the individuals appearing in the first years of our database publish their fifth (or tenth) article

[13] We are grateful to an anonymous reviewer for this suggestion.

many years later, which raises some of the averages. Nonetheless, the sustained activity of these scholars poses another issue for junior scholars. In supplementary analysis we found that the number of unique scholars publishing in each preceding 5-year period doubled from 1988 to 2008. This increase is due to the persistent efforts of the aforementioned senior scholars combined with the entry of new researchers, which increases the challenges for junior scholars to place their work in top-tier journals. Finally, it is important to note due to the operationalization of time in this study, these results are likely understated. Because each author's "clock" starts with the first publication, our method does not account for the lead times—which are often years—that represent the work necessary to achieve the publication.

Taken together, these findings have important implications for the field of management. In our view, the management field has reached a high level of legitimacy in the eyes of most stakeholders. Going forward, however, we suggest that this legitimacy depends on individual scholars who champion the field in individual colleges and universities. The field's continued legitimacy, then, depends largely on the continued productivity of highly successful management scholars who can replace today's champions and successfully compete for resources with scholars from other functional areas. For example, consider deans who reward promise and merit by distributing resources to junior faculty and PhD students competitively. The championing of these individuals by accomplished senior scholars is very important. If management scholars do not attain sufficient records, no champions will exist, and resources may be distributed to junior faculty and PhD students in other departments who have such supporters.[14] This process, if replicated globally, could undermine the legitimacy of the management field. This is especially likely as senior scholars with outstanding records retire, and their replacements compete in a different era, with largely incommensurate records.

To manage this potentially negative outcome, several alternatives are conceivable. Administrators could consider increasing tenure clocks or adjusting publishing requirements downward to accommodate the increased level of competition that management scholars confront. Moreover, the requirements for world-class scholarly productivity in the current era must be communicated effectively to all stakeholders, particularly those who might still rely on the norms of prior years.

Our results highlight the difficulties that newly minted PhDs face when trying to obtain tenure at the institutions where they are first hired. To cope with these difficulties, administrators might focus either on recruiting post-docs or experienced assistant professors rather than new PhDs. While tempting, such a strategy will likely increase the costs for all participants. For example, the resources administrators and performance review committees spend to review, advise, and mentor junior faculty members will be squandered if these junior faculty members leave to earn tenure at another institution several years later. These same administrators will incur further transaction costs as they hire replacements for these departing faculty members. At the individual level, junior scholars will incur the well-known costs associated with job searches and subsequent moves. However, because of increasing demand, individuals with high scholarly productivity may enjoy increasing levels of remuneration.

Additionally, the field of management could suffer if such a selection approach grows more common. An unfortunate two-tiered system, much like that of professional baseball, might emerge. In such a system, a select set of schools would play the role of "major league teams" and hire the best young scholars from schools playing the role of "farm teams." While the direct costs of such a model are easily detected, the less obvious indirect costs of turnover, loss of external support, and sagging demand borne by the "minor league" schools could be devastating. As Pfeffer and Salancik (1978: 284) note, "If there is a scarcity of some resource, the fact that one organization stabilizes its acquisition of the resource through some form of social coordination does not alter the fact of the scarcity. It solves one organization's problem by transferring the problem to others." Specifically, one school's acquisition of a productive faculty member from another school only transfers the need to the institution losing that faculty member.

Instead, we favor expanding page space within top-tier journals, either through the introduction of new journals that rise to the level of top-tier or the expansion of existing journals (i.e., increasing the number of articles published each year). The later approach is most promising because while a few promising journals may one day elevate to "top-tier" status (*Strategic Entrepreneurship Journal,* for example), a significant amount of time and resources are required for this to occur. Increasing page space in the existing top-tier journals can be

[14] Of course, it may be that the evolution of the management discipline corresponds closely to the evolution of other business school disciplines. If so, scholars in other disciplines face similar issues.

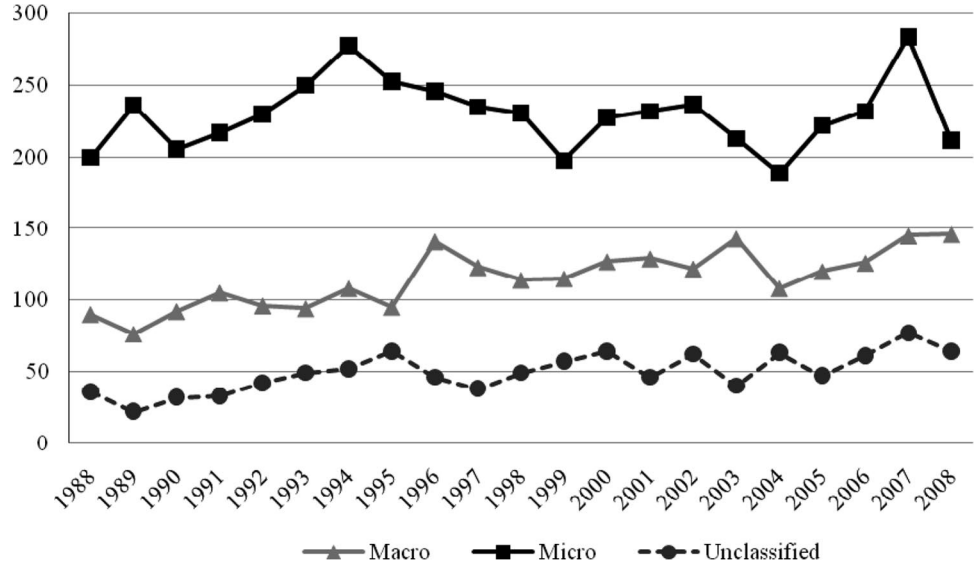

FIGURE 4A
Authoring Events in Top-Tier Journals: 1988–2008

quickly accomplished. If top-tier journals elect not to significantly increase page space, as maintaining page space in the face of increased numbers of submissions leads to impressively small acceptance rates, the high-quality work that is rejected and published in competing journals will over time be cited, in turn helping elevate those competing journals to top-tier status. According to our data, this issue seems particularly important for macro scholars. In addition, we suggest that departments and schools periodically reevaluate the requirements for scholarly productivity and utilize the latest information to judge tenure and promotion cases. Such reevaluations may involve revising the list of "top-tier" journals as well as the number of such articles that must be published.

Next we review the results and implication of our micro–macro analyses. These results suggest that the plight of increasing competition for management scholars is felt by both micro and macro scholars. The publishing environment does, however, seem to be more munificent for micro than for macro scholarship. Importantly, these results were still supported when *JAP* was the only top-tier micro journal. Figures 4a and 4b, for example, demonstrate discrepancies in the number of both articles and authoring events when comparing the micro and macro distinction based on our decision

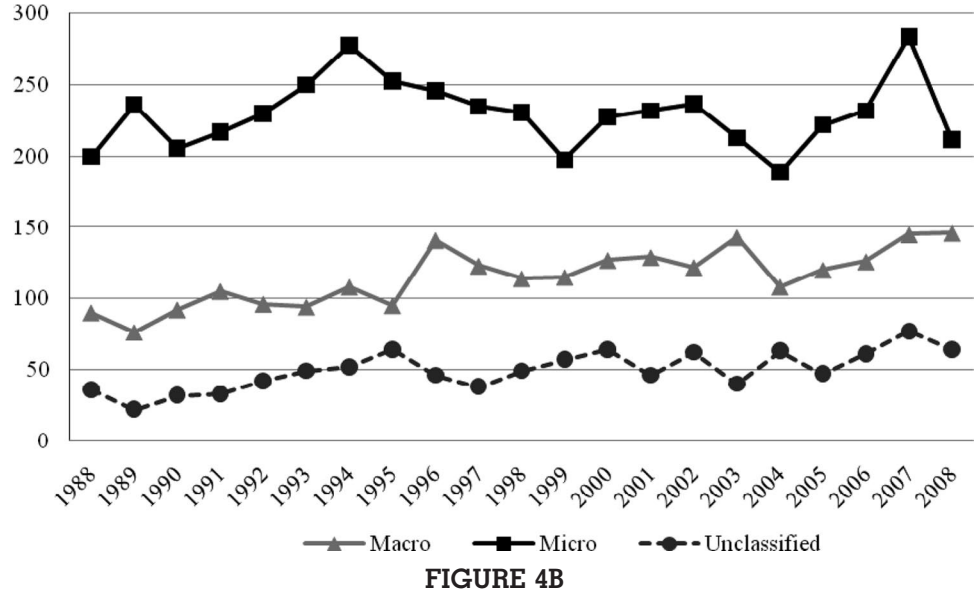

FIGURE 4B
Total Articles in Top-Tier Journals: 1988–2008

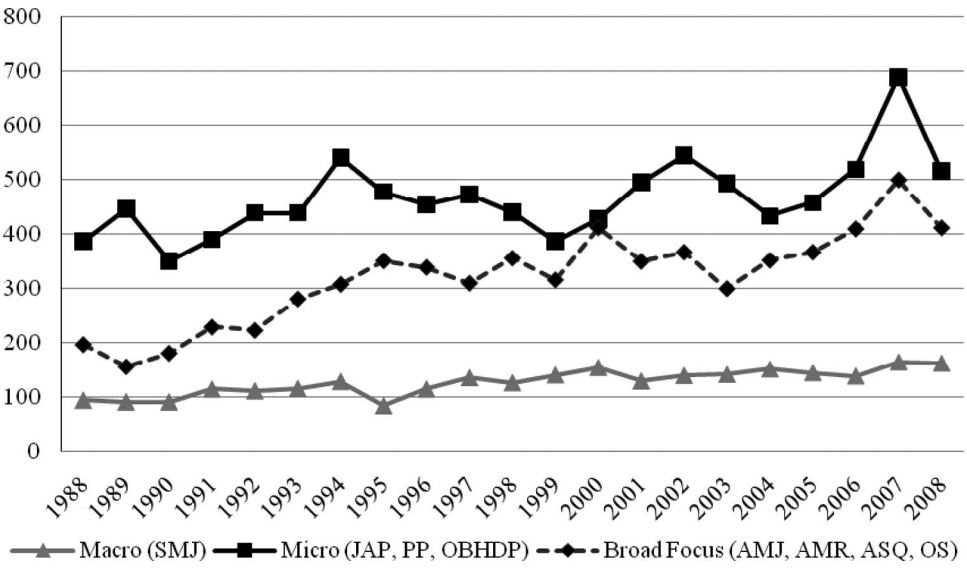

FIGURE 5A
Authoring Events Per Journal Category: 1988–2008

rule. To confirm that this difference is not a result of our decision rule, Figures 5a and 5b illustrate a similar environment when relying on journal focus to classify articles and authoring events (micro: *JAP, PPsych, OBHDP*; macro: *SMJ*; and broad focus: *AMJ, AMR, ASQ,* and *OS*).[15]

Some might argue that it is unfair to compare journals from the two subdisciplines, because I/O psychologists also publish in the micro journals. We reviewed both *SMJ* and *JAP* in 2007 to examine this possibility. In 2007, approximately 74% of authors publishing the 72 articles (and 165 authoring events) in *SMJ* were affiliated with management departments, while approximately 55% of authors publishing the 136 articles (and 443 authoring events) in *JAP* were affiliated with management departments. In other words, individuals associated with management departments accounted for 122 authoring events in *SMJ* and 244 authoring events in *JAP*. Even when this competition from other fields is taken into account, then, the micro publishing environment remains more munificent than the macro publishing environment. This discrepancy helps in understanding why accomplished macro scholars are relatively scarce compared with their micro colleagues.

This scarcity has important implications, some of which are similar to those discussed about the field as a whole. For instance, suppose an administrator must hire both a senior macro and a senior micro scholar. According to our figures, the pool of suitable candidates for the micro position is significantly larger than the pool for the macro position. Such discrepancies may result in salary disparities as departments compete for faculty members whose scarcity varies with their subdiscipline. However, administrators may employ alternative strategies to cope with such scarcity (Pfeffer & Salancik, 1978). In a strikingly similar context, Sherer and Lee (2002) document how law firms responded to resource scarcity. Historically, junior attorneys unable to pass the "up or out" process to partner were forced to seek employment elsewhere. When faced with inadequate numbers of partners, though, law firms created new "permanent" positions that allowed these attorneys to remain on staff without drawing on firm profits as partners do. An analogous strategy in academia would involve filling such positions with clinical professors or executives. However, such a strategy needs to be carefully balanced to avoid damaging the discipline's overall scholarly productivity and potential for knowledge creation.

Finally, stakeholders concerned with the legitimacy of management as a whole should be concerned with supporting the legitimacy of both subdisciplines. Perhaps a primary concern rests on the relative scarcity of macro scholars compared with micro scholars. If relatively fewer macro scholars achieve the prestigious publication records necessary to replace the looming retirements of baby boomers, schools around the world may lack the authoritative individuals needed to champion the merits of the macro areas of management when

[15] The increase in 2007 (and subsequent drop) results from the unusually large number of articles published in both *JAP* and *AMJ* in 2007.

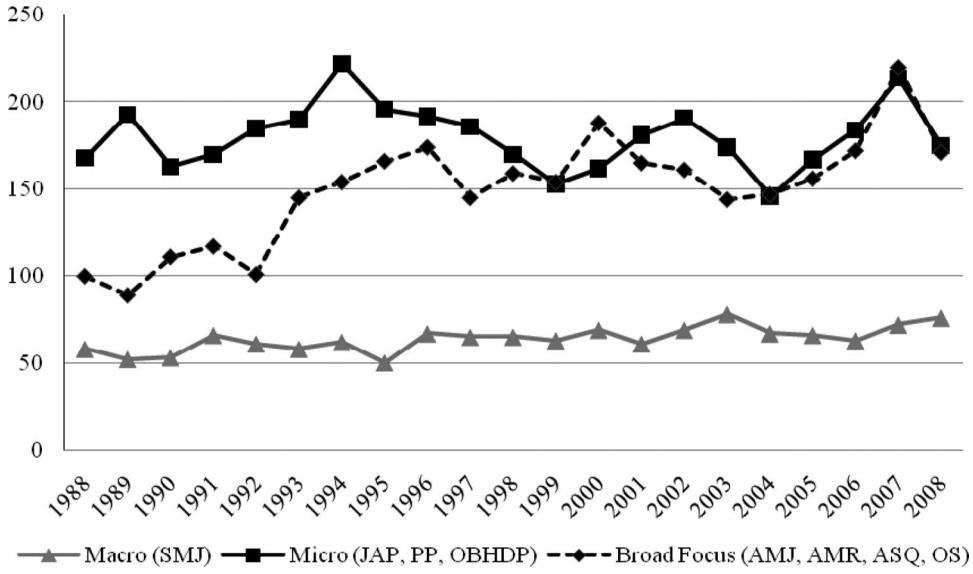

FIGURE 5B
Total Articles Per Journal Category: 1988–2008

making decisions regarding hiring or curriculum changes. In a worst-case scenario, MBA and undergraduate strategy courses could disappear from some universities, which would erode the legitimacy strategic management has achieved over the past 30 years (Hambrick & Chen, 2008).

Of course, senior management scholars with a micro focus can also champion the macro side of management (and vice versa). In fact, we suggest that it is only through the mutually supportive work of senior scholars within both research foci that management will continue to prosper as a field of study. Based on our experiences, the most productive management departments have just this sort of collegial interaction among management scholars from both areas of research. The desire of these scholars to promote and understand the entire field of management leads them to champion all active researchers, regardless of research focus.

Limitations

Our work has multiple limitations that we should note. First, we include only articles published in prominent journals in our measure of scholarly productivity. At the same time, however, we fully recognize that there exist other avenues for scholarly productivity. Scholars may also, for example, publish articles in journals not included on our list. Likewise, scholars may also write textbooks, scholarly books, and popular press books. In addition, we also realize that teaching and service activities play an important role in tenure and promotion decisions. Despite the importance of these other activities, our study focuses exclusively on articles published in top-tier journals.

Another limitation of our study is our calculation of tenure clocks. For our purposes, the year of an author's first publication marks the beginning of the tenure clock. This technique overestimates the tenure clock for authors who published their first article after starting their first tenure-track job; conversely, it underestimates the tenure clock for those who published their first articles as PhD students. However, it is our estimation, based on anecdotal evidence, that the vast majority of scholars do not leave their PhD programs with a top-tier publication already in print. Thus, we suggest that our approach is more likely to understate the time needed to achieve critical levels of scholarly productivity. An interesting question for future research would be to determine if any systematic difference exists between the field's micro and macro students with respect to their accumulation of top-tier publication before leaving the PhD program.

A final limitation of our study involves our distinction between the micro and macro subdisciplines of management. In our study, we treat these as two distinct subgroups, but the management discipline is perhaps best described as a continuum with micro and macro as the anchors. While the routine we developed to distinguish between these two groups is imperfect, we believe our method does help to better understand broad differences between these two subgroups. At the same time, however, recent calls for integrating

micro and macro research may help to further confound this distinction (e.g., Hitt et al., 2007).

CONCLUSION

In this study, we examined the evolution of the management discipline from 1988 to 2008. Our analyses revealed several changes that may have important implications for the future of the field of management. Competition has increased dramatically over this period, and this increase has important implications for the productivity of management scholars. A lower percentage of scholars reached the career milestones we examined in 2008 than in 1988. We also examined potential differences between the micro and macro subdisciplines. Despite the dramatic increase in competition in both subdisciplines, our results suggest that the effects were more pronounced for macro scholars. We hope that the results provided herein will help administrators, faculty members, and PhD students to make more informed decisions about their careers and the careers of others.

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S. Trevis Certo is an associate professor and a Dean's Council of 100 Scholar in the W.P. Carey School of Business at Arizona State University. He holds a PhD in strategic management from the Kelley School of Business at Indiana University. His research focuses on corporate governance and research methodology.

David G. Sirmon is an assistant professor and the Pamela and Barent Cater '77 Faculty Research Fellow in the Mays School of Business at Texas A&M University. He earned a PhD from the W.P. Carey School of Business at Arizona State. Resource orchestration and corporate governance are current research interests.

Rhett A. Brymer is a PhD student in strategic management at the Mays School of Business at Texas A&M University. His research focuses on human capital, acquisitions, and entrepreneurship.