Evaluating Publications across Business Disciplines: Inferring Interdisciplinary "Exchange Rates" from Intradisciplinary Author Rankings[☆]

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October 12, 2017

Abstract

We propose a novel approach to comparing publications across business disciplines. Specifically, we aim to provide an objective method for evaluating the interdisciplinary value of publications based on intradisciplinary author rankings. Using publication data from the leading journals in accounting, economics, finance, management, and marketing, we first construct intradisciplinary author rankings and then utilize these rankings to estimate the marginal effect of an additional publication on the individual's ranking within her own discipline. Based on the implied effort required to improve an individual's intradisciplinary ranking, we infer interdisciplinary "exchange rates" to evaluate the value of top-tier publications across disciplines. Our estimates indicate that the value of a single single-authored publication in a top-ranked journal is highest in accounting and lowest in marketing. We confirm the validity of our "exchange rate" approach by constructing an interdisciplinary author ranking in which authors from different disciplines are uniformly distributed across the ranking list.

Keywords: Business research; discipline comparisons; journal publications; author rankings

[☆] We would like to thank Jason Berkowitz, Lorraine Eden, Aloke Ghosh, Richard Herron, Seppo Ikäheimo, Kim Ittonen, Henry Jarva, Emma-Riikka Myllymäki, Lasse Niemi, Jaakko Pehkonen, Seppo Pynnönen, Juhani Vaivio, and conference and seminar participants at the 2017 Annual Meeting of the American Accounting Association, the 20th Annual European Conference of the Financial Management Association, the 53rd Annual Meeting of the Eastern Finance Association, the 21st Annual Nordic Workshop on Bibliometrics and Research Policy, the 2016 Information Studies Symposium, Bank of Finland, Aalto University School of Business, Hanken School of Economics, the University of Gothenburg, the University of Jyväskylä, and the University of Vaasa for valuable comments and suggestions. J. Sihvonen gratefully acknowledges the financial support of the OP Group Research Foundation. Part of this paper was written while S. Vähämaa was visiting the Alliance Manchester Business School at the University of Manchester.

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1. Introduction

Assessments of the research performance of academic institutions and individual faculty members typically rely on publication records. While comparisons of publication records may provide accurate and useful information regarding research performance within a given discipline, the internal and external stakeholders of universities are often required to evaluate publication records across several different disciplines. Deans, promotion and recruiting committees, administrators, and funding agencies, for instance, are constantly faced with the challenge of evaluating and comparing the value of publications across disciplines. These comparisons, however, are far from straightforward because of potential discipline-specific differences in publishing patterns and barriers. As noted by Schubert and Braun (1996), interdisciplinary comparisons of publication records without an appropriate "transdisciplinary currency" induce a quotidian fallacy of comparing apples with oranges. In this paper, we present an objective method for evaluating the interdisciplinary value of top-tier publications and apply the proposed approach within a business school setting for constructing interdisciplinary "exchange rates" for publications across business disciplines and economics.

Publications in highly regarded peer-reviewed journals play a central role in hiring, promotion, and tenure decisions, and they also influence salaries and teaching loads at most business schools and universities (see e.g., Fishe, 1998; Swidler and Goldreyer, 1998; Swanson, 2004; Siemens, Burton, Jensen and Mendoza, 2005; Swanson, Wolfe and Zardkoohi, 2007; Beattie and Goodacre, 2012; Spiegel, 2012; Chan, Chan, Tong and Zhang, 2016). Therefore, it is important that faculty members from different disciplines are evaluated, treated, and incentivized in a fair and objective manner. Any perceived inequities across disciplines are

likely to lead to poor motivation among faculty members within the disciplines who feel mistreated. Moreover, publication records are often used by administrators, governments, and funding agencies as the primary criterion for allocating resources and funding between universities within countries, and between faculties, departments, and individual scholars within universities (e.g., Schubert and Braun, 1996; Kalaitzidakis, Mamuneas and Stengos, 1999; Chan, Tong and Zhang, 2013; Sihvonen and Vähämaa, 2015; Chan, Fung, Fung and Yau, 2016a; Xu, Chan and Chang, 2016). Given the pivotal role of interdisciplinary comparisons of publication records, it is surprising how little research attention the relative valuation of top-tier publications in business disciplines has received.

In this paper, we propose an objective method for comparing the value of publications across business disciplines. Specifically, using publication data from the leading peer-reviewed journals in accounting, economics, finance, management, and marketing, we construct intradisciplinary author rankings that we then employ to estimate the empirical association between the number of publications and author rankings in each discipline. Based on the estimated effort required for improving an individual's ranking within his or her own discipline, we can deduce the marginal value of a single-authored publication in each discipline. We convert these marginal values into "exchange rates" to compare the interdisciplinary value of publications. The underlying premise in the proposed approach is that the marginal value-added of a single single-authored article in terms of intradisciplinary author ranking reflects the significance and value of a top-tier publication in a competitive scholarly environment. While this paper empirically applies the interdisciplinary "exchange rates" for evaluating publications across business disciplines, the proposed methodology provides a generic approach for

comparative assessments of research performance across any scientific disciplines where the number of top-tier publications can be viewed as an indicator of scientific impact.

Whereas our approach of inferring interdisciplinary "exchange rates" from intradisciplinary author rankings is unique, our empirical analysis of publication values across business disciplines is related to studies by Buchheit, Collins and Reitenga (2002), Swanson (2004), Valacich, Fuller and Schneider (2006), and Swanson et al. (2007). Similar to us, these previous studies essentially aim to examine how level the playing field is within business studies in terms of publishing in the top-tier journals. On the whole, the empirical evidence reported in prior studies suggests that it is more difficult for accounting scholars to publish in the leading journals of their own field than for scholars in other business disciplines.

Buchheit et al. (2002) examine publication patterns in the top-three accounting, finance, management, and marketing journals over the period 1997–1999. They document that the top-three accounting journals publish fewer articles than the top-three journals of the other disciplines, and furthermore, that publishing in the top-three accounting journals is more concentrated among authors affiliated with the top-20 ranked business schools. Swanson (2004) compares the number of articles and the proportion of faculty members who are successful in publishing in the top-ranked accounting, finance, management, and marketing journals over the period 1990–2002. His findings indicate that significant disparities exist among the disciplines in the proportion of faculty publishing in the leading journals, with accounting journals publishing substantially fewer articles relative to the size of the faculty than the other disciplines.

Valacich et al. (2006) complement Swanson's (2004) analysis by examining publication patterns relative to faculty size in the leading accounting, finance, management, marketing, and information systems journals. Consistent with the findings of Swanson (2004), they document that accounting scholars are relatively the least successful and management scholars the most successful in publishing in the top-tier journals of their own disciplines. Finally, Swanson et al. (2007) investigate the concentration of articles among universities and individuals in the leading business journals. Their findings suggest that publishing is more concentrated among universities as well as individuals in the top accounting and finance journals than in management and marketing journals with a similar intradisciplinary status. In this study, we aim to contribute to the existing body of literature by evaluating publication values across business disciplines through objective interdisciplinary "exchange rates".

In our empirical analysis, we collect data on the authors of each article published over the period 2005–2015 in the journals classified as "Journals of Distinction" (category 4*) in the Chartered Association of Business Schools' Academic Journal Guide 2015 (hereafter ABS-AJG). The 24 top-ranked journals published altogether 15,610 articles by 18,154 individual authors during our sample period. Using these publication data, we estimate the marginal effect of an additional single-authored publication in a top journal on the individual's ranking within his or her own discipline. We document that the relationship between the number of publications and author rankings is linear-logarithmic in all disciplines. The estimation results demonstrate that substantial differences between the disciplines exist in the implied effort required to improve an individual's intradisciplinary author ranking. In particular, we find that the value of a single publication in a top-tier journal is highest in accounting and lowest in marketing. Our estimates of the interdisciplinary "exchange rates" suggest that a single-authored

article in a leading accounting journal corresponds to approximately two marketing articles and top-ranked economics, finance, and management articles. The relatively higher value of top-tier accounting publications is broadly consistent with the empirical evidence documented in Buchheit et al. (2002), Swanson (2004), Valacich et al. (2006), and Swanson et al. (2007).

We confirm the validity of our "exchange rate" approach by constructing an interdisciplinary author ranking in which authors from the different disciplines are uniformly distributed across the ranking list. Furthermore, we conduct a number of additional tests in order to ascertain that the interdisciplinary "exchange rates" are not sensitive to alternative journal sets and sample periods. We also perform a simulation exercise that suggests that the observed differences in publication values between the disciplines are largely induced by discipline-specific quality norms and publication hurdles and by differences in the level of scholarly competition across disciplines. Overall, the results of our empirical analysis indicate that the use of interdisciplinary "exchange rates" for converting publications into equivalent units may increase the objectivity of cross-disciplinary comparisons by eliminating the influence of discipline-specific publishing patterns and barriers.

The remainder of the paper is organized as follows. Section 2 describes the publication data and reports summary statistics regarding publication patterns in the different disciplines. Section 3 introduces the approach used for evaluating the value of publications across disciplines and presents the results of our empirical analysis. Finally, Section 4 provides concluding remarks. This paper is accompanied with an Internet Appendix which provides results of additional robustness checks.

2. Data and descriptive statistics

We construct interdisciplinary "exchange rates" to compare publications across disciplines based on publication data from the leading peer-reviewed journals in accounting, economics, finance, management, and marketing over the period 2005–2015.[1] Specifically, we collect data on the authors of each article published in the journals classified as "Journals of Distinction" (category 4*) in the Chartered Association of Business Schools' Academic Journal Guide 2015 (ABS-AJG). These journals are considered to publish research of the highest quality and are generally highly regarded among the academic community. According to ABS-AJG, the journals ranked in category 4* are recognized as exemplars of excellence and are commonly rated in the highest category in different journal quality lists.

Despite these journal quality considerations, we acknowledge that the decision to use ABS-AJG to identify the "leading" peer-reviewed business journals unavoidably entails a subjective element to our study.[2] Nevertheless, as noted by Chan, Chan, Tong and Zhang

[1] Our analysis focuses on the large, core business disciplines and omits some smaller and/or more specialized disciplines which are separately categorized in the ABS-AJG. Most of the omitted disciplines do not have a single journal ranked in category 4* in the ABS-AJG. As noted by Swanson (2004) and Swanson et al. (2007), these smaller, more specialized disciplines are not included in business schools departments and curricula in a consistent manner, and furthermore, much less agreement exists about which journals are the most prestigious in these disciplines.

[2] The inherent problems with selecting the "leading" journals are comprehensively discussed in Chan, Fung, Fung and Yau (2016b). The main alternatives for ABS-AJG are the journal citation reports and impact factors published by Thomson Reuters, the Financial Times list of the top-50 business journals, and the Australian Business Dean's

(2016), bibliometric research assessments always require a predetermined set of journals for a specific period of time. Our decision to include only on the leading peer-reviewed journal in each discipline has the following three main benefits: (i) the authors publishing in these journals are research-focused and are able to conduct research of the highest quality, (ii) the leading journals arguably contain a quality-coherent set of articles, and (iii) focusing on a small set of top journals is consistent with the Bradford's Law.[3] However, the decision to include only a small set of leading journals entails that our results are not necessarily applicable to evaluating publications in non-premier journals. It is also worth noting that it may be more common in some disciplines to publish research results as books or in practitioner journals which are excluded from our publication data.

The publication data used in our analysis include all articles published between January 2005 and September 2015 as well as all forthcoming articles which were electronically available as of September 2015.[4] Following the prior literature on research output rankings (e.g., Chan et al., 2004; Chan et al., 2006; Xu et al., 2014), we include only peer-reviewed articles, research notes, and literature surveys, and exclude editorials, book reviews, replies, and errata from our

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Council's (ABDC) Journal Quality List. Nevertheless, as noted e.g. by Theuβl, Reutterer and Hornik (2014), the alternative journal rankings are fairly consistent in ranking the top-tier journals.

[3] Nevertheless, it should be noted that articles in the top journals are not necessarily top articles in terms of impact and quality (i.e., citations) and that high-impact articles are often published in the non-premier journals (see e.g., Smith, 2004; Chan et al., 2016; Chan, Fun, Fung and Yau, 2016a).

[4] The data includes forthcoming articles as of September 2015 mainly for the journals published by Elsevier, Wiley, and Springer.

analysis.[5] During our sample period, the leading business and economics journals published altogether 15,610 articles by 18,154 individual authors.[6]

Table 1 lists the ABS-AJG category 4* journals included in the analysis and reports the numbers of published articles, the average article lengths, and the source normalized impact factors (SNIP) for each journal and each discipline. As can be seen from Table 1, the sample covers articles published in 24 different journals. The number of journals classified as "Journals of Distinction" is highest in economics and management, both being represented by six journals, and lowest in finance, which has only three top-ranked journals. The number of individual articles published in the leading journals varies substantially across the disciplines, with economics having the highest proportion of the top-ranked articles of about 27 percent (4224 articles) and accounting having by far the lowest share of 11 percent (1765 articles). Interestingly, Table 1 indicates that the length of the articles also differs considerably across the disciplines. Economics and finance articles, on average, are 32 pages long, while the average length of the articles published in the leading marketing journals in only 12.8 pages.[7] Finally, it

[5] We follow the categorization used in Scopus to identify peer-reviewed articles, research notes, and literature surveys. Although we exclude editorials from the analysis, Scopus categorizes some editorials as survey/review articles, and we include these editorials in our sample because they tend to be frequently cited in subsequent peer-reviewed articles.

[6] Our empirical approach requires a predetermined set of journals for a specific period of time. It is worth noting that our analysis excludes many prolific scholars who have published the bulk of their research before 2005.

[7] We acknowledge that the number of pages per article may vary across journals due to different layouts, and thus, the number of pages should not be used as such as a measure of time and effort spent on the articles. Chan et al. (2004) point out that words-per-page standardized number of pages is a more appropriate measure of article length.

can be noted from Table 1 that the SNIP impact factors are highest in economics and finance, and lowest in marketing and accounting.

(insert Table 1 about here)

Table 2 presents the summary statistics related to authorship and the prevalence of co-authorship of articles for each discipline.[8] As can be seen from the table, the number of individual authors who have published at least one article in the leading journals over the period 2005–2015 is highest in economics (5000 authors) and lowest in accounting (2063 authors).[9] The adjusted number of authors in Table 2 controls for the authors who have published articles in multiple disciplines. Based on the number of authors relative to the adjusted number of authors, it can be inferred that cross-disciplinary authorship is most common in finance journals and least common in management and marketing journals. Table 2 further demonstrates that co-authorship of articles seems to be the norm regardless of the discipline, and most articles published in the top-ranked journals are written by two to three authors. The average number of authors per article is lowest in economics and highest in management and marketing. Dividing the average article length reported in Table 1 by the average number of authors per article

[8] We identify the authorship of articles based on Scopus' unique author identification numbers.

[9] It is should be noted that the population in our study is more likely to consist of "elite" scholars who have been able to publish at least one article in the ABS-AJG category 4* journals. This population can be contrasted with Swanson (2004) who focuses on the number of publishing scholars relative to the total number of doctoral faculty in each discipline as reported by the Association to Advance Collegiate Schools of Business (AACSB).

suggests that an average author contributes about 13–15 article pages in the top-ranked economics and finance journals and about five pages in marketing journals.

(insert Table 2 about here)

3. Empirical analysis

3.1. The empirical approach for inferring interdisciplinary "exchange rates"

We infer the interdisciplinary "exchange rates" for evaluating the value of publications across disciplines from intradisciplinary author rankings. Specifically, we construct intradisciplinary author output rankings and utilize these rankings to estimate the marginal effect of an additional publication in a top journal on the individual's ranking within his or her own discipline.[10] Based on the implied effort required to improve an individual's intradisciplinary ranking, we can then infer the interdisciplinary "exchange rates" for comparing the value of articles published in the top-ranked journals across disciplines.

[10] An alternative to utilizing the number of published articles to rank authors would be to use the number of citations. Nevertheless, as discussed in the prior literature (e.g., Swanson, 2004; Beattie and Goodacre, 2012; Spiegel, 2012), hiring, promotion, and tenure decisions are often conducted by simply counting the number of articles published by an individual. Moreover, given that the previous studies have documented that articles published in the top-tier journals tend to be the most cited, and that the numbers of articles and citations by a given scholar are highly positively correlated, the decision to focus on output instead of citations should not have a substantial impact on the main conclusions of this study.

Following the prior literature on output rankings of academic institutions and individual authors (see e.g., Kalaitzidakis et al., 1999; Heck and Cooley, 2005; Chan et al., 2006; Swanson et al., 2007; Xu et. al, 2014), we use the weighted number of articles to assess the research output of individual authors.[11] This output metric simply adjusts the number of published articles to account for the number of co-authors by distributing articles proportionally among all authors. Hence, the weighted number of articles for each author effectively measures the number of single-authored articles using fractional counting.[12]

Table 3 reports the top-10 most prolific authors and the weighted number of articles at the 1st, 5th, and 10th percentiles of the author rankings in each discipline. It can be noted from the table that there are substantial differences between the disciplines in the weighted number of articles that the top authors have published over the period 2005–2015. Marketing scholars, in general, seem to publish more articles in the top journals than scholars in accounting, economics, finance, and management. Interestingly, the most prolific accounting author Clive Lennox with his 6.17 weighted articles would not feature among the top-10 authors in any other discipline. Regarding the author ranking percentiles, Table 3 shows that the number of single-authored top-tier publications required for inclusion among the top-1 percent of authors varies from 3.92 articles in accounting to 6.41 articles in marketing. Regardless of the discipline, approximately two (0.5) single-authored articles are enough to place an author among the most prolific 10 percent (50 percent) of authors during the sample period 2005–2015.

[11] In Section 3.5.3., we show that our main inferences are not affected by the choice of the output metric.

[12] See e.g., Rousseau (1992) for a discussion of fractional counting of authorships.

(insert Table 3 about here)

After constructing the author rankings for each discipline based on the weighted number of articles published in the leading journals, we determine the functional form between the number of publications and author rankings for each discipline. We hypothesize a downward-sloping convex curve because the number of authors sharing the same ranking as well as the number of authors being able to produce an additional article are both likely to become increasingly less frequent as the number of articles published increases.

Based on the learning curve theory and simulations, we suggest that the number of single-authored articles per author decays exponentially as one moves further down the author ranking. We utilize the exponential decay function because it is most often used for a decreasing performance metric and has several intuitive properties. First, and perhaps most importantly, it posits diminishing returns to additional publications and, as such, conforms the basic economic concept of marginal utility. In other words, the number of publications required to improve an author's ranking depends on his or her current position in the ranking. For instance, a publication in a top-tier journal is substantially more valuable for a junior scholar without any previous publications than for an established scholar who has already published multiple articles in the top journals. Second, the exponential decay function tends toward zero but does not produce negative values. This property of the function is realistic because most authors are ranked outside the top-1000 authors, having published, for instance, only 0.33 or 0.20 weighted articles. Third, the exponential decay of scholarly output conforms to a lognormal distribution of talent, which is routinely used in labor economics to describe the distribution of skills within a population.

We estimate the association between the number of publications and author rankings for each discipline using the following linear-log regression specification:

$$Articles = \alpha + \beta \ln(Ranking) + \varepsilon \quad (1)$$

where *Articles* is the weighted number of articles using fractional counting written by a given author and *Ranking* is the ranking of the author within his or her own discipline in terms of research output in the top-ranked journals. We scale *Ranking* to take values between zero and one with the most (least) productive author having a ranking very close to zero (one).

The regression coefficient β in Equation (1) has a pivotal role in our analysis since it provides an estimate of the number of articles required to improve an individual's standing relative to other scholars within a given discipline. A smaller absolute value of the β coefficient implies a higher value of a single single-authored publication in a competitive scholarly environment. Figures 1A and 1B illustrate β by depicting the empirical relationship between the weighted number of articles and the logarithm of author ranking in the fields of accounting and finance. The figures demonstrate that the association between the number of published articles and log-transformed author rankings is linear and negative, thereby corroborating the notion that author rank decreases exponentially as the number of publications increases. However, as can be seen from the figures, there is a noticeable difference in the slopes of the performance curves between accounting and finance. Figure 1A suggests that an accounting scholar wanting to move up through the author ranking from the top-10% of authors to the top-1% would need to publish approximately two additional single-authored articles in the leading accounting journals, while Figure 1B shows that a similar improvement in author ranking in finance would require

almost three single-authored articles in the top finance journals. This demonstrates that a single single-authored article in a top-ranked accounting journal is approximately 1.5 times more valuable than a single article in an equivalent finance journal.

(insert Figures 1A and 1B about here)

It is important to acknowledge two underlying assumptions implicit in our approach. First, we assume that each discipline is equally competitive in terms of publishing in the top-tier journals. The counterfactual alternative assumption is that in some disciplines only a limited number of scholars compete for the top spots of the discipline, others being less interested in top-tier publications and only occasionally publishing at the top level, while in other disciplines, the effort and desire to move up in the ranks is more equally spread. Second, we assume that a talent pool with an equal distribution pattern across disciplines seeks to be at the top of each discipline. Given these assumptions, the value of a publication can be interpreted to indicate the amount of effort required to produce a top-ranked article in each discipline. However, it should be noted that these assumptions are not critical to inferring interdisciplinary "exchange rates" in our approach. In a more general context, a central caveat in our approach is the relative focus on quantity over quality. Although the articles with the highest scientific impact tend to be published in the leading journals, it can be argued that the number of citations is a more direct measure of scientific relevance than research output measured by the number of published articles.

3.2. Estimation results

Table 4 reports the estimates of Equation (1) for the five different disciplines. As can be seen from Panel A, our estimates demonstrate that the relationship between the number of publications and log-transformed author rankings is essentially linear in each discpline, with the R^2s of the regressions ranging from 0.90 to 1.00. The estimated βs are statistically highly significant and vary from -1.80 in marketing to -0.87 in accounting. Thus, the regression results suggest that there are substantial differences between the disciplines in the implied effort required to improve an individual's intradisciplinary author ranking. The performance curve is steepest in the field of marketing, where a scholar needs more than twice as many publications to improve his or her author ranking as a scholar in accounting does (-1.80 / -0.87 = 2.07). The difference in the estimated βs between accounting and marketing is statistically highly significant. Moreover, the β in accounting is statistically significantly higher and the β in marketing lower than the βs in economics, finance, and management, while the differences between the estimated βs in economics, finance, and management are statistically insignificant. The magnitudes of the estimated βs indicate that a 50 percent improvement in the accounting author ranking from the top-10% of authors to the top-5% is associated with 0.44 additional single-authored articles in the top-ranked journals (-0.50 × -0.87) whereas a corresponding improvement in the marketing ranking requires 0.90 additional articles (-0.50 × -1.80).

(insert Table 4 about here)

Based on the estimated *βs*, we can infer the marginal value of a single single-authored publication in each discipline. These marginal publication values can be converted into interdisciplinary "exchange rates" for comparing the value of articles published in the top-ranked journals across disciplines. The rescaled *βs*, or the interdisciplinary "exchange rates", are reported in Panel B of Table 4. For representational simplicity, the relative interdisciplinary publication values have been rescaled vis-à-vis accounting in which one additional single-authored article has the highest impact on the author ranking. Panel B shows that a single single-authored article in a top-ranked accounting journal corresponds to approximately two marketing articles and 1⅓–1⅖ top-ranked economics, finance, and management articles in terms of a scholar's improvement in the intradisciplinary author ranking. The estimated relatively higher value of accounting publications is broadly consistent with the descriptive evidence previously documented in Buchheit et al. (2002), Swanson (2004), Valacich et al. (2006), and Swanson et al. (2007).

3.3. Constructing an interdisciplinary author ranking based on the "exchange rates"

Next, we utilize the estimated interdisciplinary "exchange rates" to construct an interdisciplinary ranking of the most prolific authors. We first illustrate the construction of the ranking by comparing two hypothetical authors, *A* and *B*. Suppose that *Author A* has published three articles in the leading marketing journals and one article in a top-ranked management journal. Assume further that *Author B* has two top-ranked accounting publications and one article in an economics journal of a comparable intradisciplinary status. *Author A* has published four articles and *Author B* three articles in the leading journals, but which of the authors has

performed better given the differences in publication standards between accounting, economics, management, and marketing? This type of question is often one faced by business school deans and administrators when making promotion and tenure decisions.

Without knowledge of the interdisciplinary differences in publication standards, the question regarding the ranking of the two authors would be (naïvely) answered by assuming unit values for each publication regardless of the discipline. With unit values, *Author A* would have performed better with four publications against *Author B*'s three. However, evaluating the number of publications across disciplines with unit values disregards the fact that an accounting scholar with a single article in a top-ranked accounting journal would perform better against his or her accounting peers than a marketing scholar with a single article in a marketing journal would perform against his or her peers.

In order to account for the peer performance aspect, the interdisciplinary "exchange rates" can be utilized to weight the value of each publication on a common scale, following which authors can be ranked across disciplines on the basis of an "exchange rate" adjusted total number of publications. In Table 5, we illustrate the proposed approach by focusing on the difference of between a naïve, unit value based and the interdisciplinary "exchange rate" based weighting schemes in ranking the aforementioned *Author A* and *Author B*. As already noted above, when unit values are used, *Author A* outperforms relative to *Author B* with four publications against three. However, *Author B* performs relatively better in comparison to his or her peers within the intradisciplinary accounting and economics rankings. When the interdisciplinary "exchange rates" reported in Table 4 are used to adjust the number of publications, we observe that Author B has performed better with 2.75 "exchange rate" adjusted publications against *Author A*'s 2.18 publications.

(insert Table 5 about here)

Having illustrated how interdisciplinary "exchange rates" can be used to convert publications across disciplines to a common scale, we now extend the evaluation approach from the two hypothetical authors to the actual universe of 18,154 individual authors who have published in the ABS-AJG category 4* journals over the period 2005–2015. The purpose of this exercise is to utilize the estimated interdisciplinary "exchange rates" to construct an objective interdisciplinary ranking of the most prolific scholars in business disciplines and economics.

Table 6 reports the top-50 most prolific scholars based on the unadjusted number of articles (i.e., assuming unit values for each single-authored publication) and the "exchange rate" adjusted number of articles. Not surprisingly, given the discipline-specific differences in publishing patterns documented in Table 3, the unadjusted ranking list is dominated by marketing scholars. As can be noted from the table, six of the top-10 and 24 of the top-50 most prolific business scholars in the world come from marketing, and not a single accounting scholar is ranked among the top-50 authors. This demonstrates that a comparison of scholarly output across disciplines is not justified unless we assume that marketing scholars are, on average, better and more productive researchers than accounting scholars.

(insert Table 6 about here)

The "exchange rate" adjusted number of articles provides a more objective means of evaluating publication records across disciplines. Unlike the unadjusted ranking, the top-50 ranking list based on the "exchange rate" adjusted output is not dominated by authors from any

single discipline, but quite the contrary, authors from the different disciplines appear almost uniformly distributed across the ranking list. Whereas the unadjusted top-50 author ranking does not include any accounting scholars, four of the top-20 and 10 of the top-50 most prolific authors represent accounting in our "exchange rate" adjusted ranking list. Hence, we conclude that it is important to acknowledge the interdisciplinary differences in publication values when evaluating scholarly output across disciplines. Nevertheless, it should be noted that estimation error in the interdisciplinary "exchange rates" induces uncertainty in the rankings of individual authors. Figure 2 illustrates this uncertainty by depicting the simulated 95 percent confidence intervals for the rankings of the top-50 authors.

(insert Figure 2 about here)

3.4. Verifying the validity of the interdisciplinary "exchange rates"

The domination of marketing scholars and the absence of accounting scholars in the unadjusted top-50 author ranking presented in Table 6 reflects our empirical observation that publishing in the leading marketing journals is apparently easier than publishing in accounting journals of a comparable intradisciplinary status. We propose that the use of interdisciplinary "exchange rates" for converting publications into equivalent units increases the objectivity of cross-disciplinary comparisons by eliminating the influence of discipline-specific publishing patterns and barriers. The advantage of applying the "exchange rates" is evident in Table 6; all disciplines seem to be almost equally represented in the interdisciplinary top-50 author ranking when the authors' outputs are adjusted accordingly.

The outcome that authors from the different disciplines appear almost uniformly distributed across the ranking list implies the following general theorem. If the interdisciplinary "exchange rates" adjust the publication values correctly, there should be no discipline-specific effects driving the authors' relative standings in the interdisciplinary ranking after converting publications into equivalent units. Consequently, authors representing the different disciplines should be uniformly spread across the "exchange rate" adjusted ranking list. Hence, the validity of the proposed interdisciplinary "exchange rates" can be empirically verified by testing whether the rankings of authors from different disciplines are uniformly distributed across the interdisciplinary ranking. For this purpose, we apply the Kolmogorov-Smirnov goodness-of-fit test proposed by Kuiper (1960) to examine how well the empirically observed author ranks of different disciplines conform to the assumption of uniformly distributed random numbers. If the interdisciplinary "exchange rates" are invalid, the authors from overvalued disciplines would be ranked systematically higher than authors from undervalued disciplines, which, in turn, would lead to the rejection of the balanced-ranking hypothesis.

Given that the interdisciplinary ranking is jointly determined by the system of interdisciplinary "exchange rates", we follow the standard approach for a multivariate setup and determine the critical values for the goodness-of-fit test through a simulation. Specifically, we randomly draw artificial publication values at the sets of five, and then assess how well the different disciplines are balanced across the resulting "exchange rate" adjusted interdisciplinary ranking. We repeat this simulation exercise 10,000 times assuming normally distributed publication values with a unit mean and a standard deviation of 0.3.

(insert Table 7 about here)

Table 7 reports the test results for the unadjusted and "exchange rate" adjusted interdisciplinary rankings. As can be seen from the table, Kuiper's (1960) test provides support for the validity of our interdisciplinary "exchange rate" approach and rejects the uniformity of the unadjusted ranking. Consistent with the inference drawn above from the results shown in Table 6, the goodness-of-fit tests formally indicate that authors from the different disciplines are uniformly distributed across the "exchange rate" adjusted interdisciplinary author ranking, while the test statistic for the unadjusted ranking is well above the critical value of a balanced distribution of disciplines. This demonstrates the efficacy of the interdisciplinary "exchange rates" in increasing the objectivity of cross-disciplinary comparisons of publication values.

3.5. Assessing the stability of the "exchange rates"

3.5.1. "Exchange rates" based on alternative journal sets

The estimated interdisciplinary "exchange rates" are obviously dependent on the set of journals from which the intradisciplinary author rankings are constructed. We next examine the stability of our publication "exchange rates" by using two alternative sets of journals for inferring the intradisciplinary author rankings. First, as can be seen from Table 1, the number of journals ranked in ABS-AJG category 4* varies across the disciplines from three in finance to six in economics and management, and also the number of published articles varies considerably from 1,765 in accounting to 4,224 in economics. In order to balance the number of articles, we reduce the number of journals in economics, management, and marketing to four based on

journal impact factors, and we then re-construct the author rankings in these three disciplines to reflect the number of single-authored articles in the top-4 journals. The alternative list of top journals and the numbers of published articles for each journal and discipline are presented in the Internet Appendix (Table A1.1 in Appendix 1). The 19 journals included in our alternative journal set published 12,705 articles which are more equally balanced across the disciplines than articles in the complete set of ABS-AJG category 4* journals. Accounting still has the lowest share of articles of approximately 14 percent, but economics, finance, management, and marketing now each constitute about 21 percent of the top-tier articles.

Table A1.2 in Appendix 1 reports the estimates of the linear-log regressions of publications on author rankings for the five disciplines. Consistent with our main analysis, the regression results in Panel A indicate that the value of top-tier publications varies across disciplines, with accounting having the highest (-0.87) and marketing the lowest (-1.57) β coefficient. The estimated β in accounting is statistically significantly higher than the βs in finance, management, and marketing, while the β in marketing is statistically significantly lower than the βs in accounting, economics, and management. The rescaled βs in Panel B of Table A1.2 suggest that a single single-authored article in a top accounting journal corresponds to approximately 1.8 marketing articles. The most notable difference in the interdisciplinary "exchange rates" between Tables 4 and A1.2 is the value appreciation of economics publications so that a single-authored economics article is now equivalent to 1.11 accounting articles instead of 1.33 articles.

Second, given that our relative interdisciplinary publication values have been rescaled vis-à-vis accounting in which one additional single-authored article has the highest impact on the author ranking, we next examine the stability of the "exchange rates" by using an alternative set

of accounting journals. Specifically, we include *Contemporary Accounting Research* (*CAR*) instead of *Accounting, Organizations and Society* (*AOS*) among the leading accounting journals because many scholars especially in the U.S. and Canada consider this journal to be the fourth-ranked accounting journal. During our sample period, *CAR* published 486 articles as against 410 articles published in *AOS*.

The regression results based on an alternative set of accounting journals are presented in Table A1.3 in the Internet Appendix. The estimates are largely consistent with our main analysis, and indicate that articles published in the top accounting journals are almost twice as valuable as articles published in the top marketing journals. The difference in the estimated βs for accounting (-1.04) and marketing (-1.80) is statistically highly significant. Nevertheless, it can also be noted that the values of economics, finance, and management articles increase vis-à-vis accounting by approximately 15 percent after the replacement of *AOS* with *CAR*.

Taken as a whole, the estimates based on the alternative journal sets suggest that our main inferences are not materially affected by the choice of the journals utilized for intradisciplinary author rankings.

3.5.2. "Exchange rates" based on alternative sample periods

We further examine the stability of the interdisciplinary "exchange rates" by splitting the sample period into two subperiods; the years 2005–2010 and the years 2011–2015. By re-estimating the slopes of the performance curves based on the articles published during each of these subperiods, we are able to assess the stability of the "exchange rates" in different samples, and perhaps more interestingly, their stability over time. For this purpose, we first rank the

authors in each discipline and then estimate the linear-log relationship given by Equation (1) using the author rankings and the number of publications over each subperiod.

The regression results for the two subperiods are presented in the Internet Appendix (Table A2.1 in Appendix 2). Overall, these split sample regressions demonstrate that the interdisciplinary "exchange rates" are not particularly sensitive to different time periods. Specifically, the estimates in Panels A and B based on publications over the period 2005–2010 are very similar to our main analysis, and indicate that articles published in the top accounting journals are more than twice as valuable as articles published in the top marketing journals. The difference in the estimated βs for accounting (-0.67) and marketing (-1.35) is statistically highly significant. Moreover, it can be noted from Panels A and B that the "exchange rates" of economics and management vis-à-vis accounting are almost identical to the full sample estimates in Table 4. The value of finance publications, in contrast, is markedly affected by the sample split with a single article in a top finance journal now being equivalent to 1.20 accounting articles instead of 1.40 articles.

The estimates for the second subperiod reported in Panels C and D of Table A2.1 indicate that economics and marketing articles become somewhat more valuable and finance articles less valuable relative to articles in the top accounting journals over the years 2011–2015. Nevertheless, the β estimate in accounting is still statistically significantly higher than the βs in finance, management, and marketing, and the β in marketing is statistically significantly lower than the βs in accounting, economics, and management. Collectively, the regression results based on alternative sample periods are consistent with our main analysis, and thereby provide further evidence to suggest that the value of top-tier publications varies systematically across the business disciplines.

3.5.3. "Exchange rates" based on author rankings without co-authorship adjustments

In our main analysis, we use the co-authorship weighted number of articles to assess the research output of individual authors. Although it is generally acknowledged that this output metric based on fractional counts is the most appropriate approach for counting articles (e.g., Rousseau, 1992), we further examine the stability of the interdisciplinary "exchange rates" by using the total number of articles without co-authorship adjustments to construct the intradisciplinary author rankings.[13] Given that most articles in the top-tier business journals are written by two to three authors (see Table 2), the change of perspective from fractional counting in terms of single-authored articles to the total number of articles leads to about a two- to threefold increase in the number of publications allocated to individual authors. This increase in the number of publications, in turn, should result in steeper performance curves.

The estimation results based on author rankings without co-authorship adjustments are reported in the Internet Appendix (Table A3.1 in Appendix 3). Consistent with our main analysis, the regressions demonstrate that articles published in the top accounting journals are more valuable than top-tier publications in the other disciplines. The estimated β in accounting is statistically significantly higher than the βs in economics, finance, management, and marketing. The rescaled βs reported in Panel B of Table A3.1 indicate that a single article in a leading accounting journal is equivalent to 2.27 marketing articles and about 1.54–1.64 articles in the top-tier economics, finance, and management journals. Hence, our estimates suggest that

[13] The findings of Beattie and Goodacre (2012) suggest that single-authored articles do not reduce the overall number of publications required for promotion.

accounting publications become more valuable relative to top-tier publications in the other disciplines when the number of co-authors is ignored in the analysis.

3.5.4. "Exchange rates" based on the weighting of articles with journal impact factors

We further examine the stability of the interdisciplinary "exchange rates" by accounting for potential quality differences in articles as reflected by journal impact factors. As can be noted from Table 1, the impact factors of the ABS-AJG category 4* journals vary within and across the business disciplines. Although all the sample journals are considered to publish research of the highest quality and impact, we aim to address the residual differences in scientific impact by normalizing the impact of each publication within each discipline by the source normalized impact factor per publication (SNIP).[14] Specifically, we use the median SNIPs to scale the scientific impact of each publication within the disciplines, and then proceed to compute the intradisciplinary author rankings and the publication "exchange rates" as before. When the number of publications is weighted by their impact when constructing the intradisciplinary author rankings, it is possible to account for the systematic heterogeneity in publication quality across the population of scholars in each discipline.

Table A4.1 in Appendix 4 of the Internet Appendix presents the interdisciplinary "exchange rates" after weighting the articles of individual scholars with the impact factors of their publications. The estimated impact-adjusted "exchange rates" are consistent with our main

[14] SNIP corrects for differences in citation practices between scientific fields, thereby facilitating comparisons of scientific impact across different disciplines.

analysis and once again indicate that the value of publications is highest in accounting and lowest in marketing. The regression results in Panel A of Table A4.1 show that the estimated β in accounting is statistically significantly higher than the βs in economics, finance, management, and marketing. The rescaled βs reported in Panel B of Table A4.1 indicate that a single article in a leading accounting journal is equivalent to 1.85 marketing articles and about 1.3–1.4 articles in the top-tier economics, finance, and management journals.

3.6. Why do publication values differ across disciplines? A simulation exercise

The estimates in Table 4 demonstrate that there are significant differences between the disciplines in the value of a single single-authored publication in a top-ranked journal. Given that an intradisciplinary author ranking by design controls for differences in discipline-specific publishing patterns, the differences in the estimated implied effort required to improve an individual's intradisciplinary ranking can provide an objective method for evaluating the interdisciplinary value of publications in commensurable units. As discussed above, our estimates suggest that a 50 percent improvement in the accounting author ranking is associated with 0.44 additional single-authored articles, while a corresponding improvement in the marketing ranking would require 0.90 additional single-authored articles. Thus, in terms of implied author effort, it can be argued that articles published in the leading accounting journals are more than twice as valuable as articles published in marketing journals with a similar intradisciplinary status.

The underlying premise in our "exchange rate" approach is that the marginal value-added of an article in terms of intradisciplinary author ranking reflects the significance and value of

top-tier publications in a competitive scholarly environment. Implicitly, the value of a publication can be interpreted to evince the amount of effort required to produce a single-authored article in a top-ranked journal in each discipline. However, an obvious question arises as to why the values of top publications are different across the different disciplines. The most logical explanation is related to discipline-specific publication barriers caused by the stringency of quality controls exercised by the editors and reviewers of the top-tier journals. Stricter quality controls, and hence elevated publication barriers, would naturally increase the value of a single publication in a top-ranked journal. Thus, we presume that the observed differences in publication values between the disciplines are largely induced by discipline-specific quality norms and publication barriers.[15]

We aim to rule out other plausible explanations with a combination of analytics and simulations. In addition to differences in discipline-specific publication barriers, the other major alternative explanations are, rather provocatively, that the competitive environment and/or the level of skills would differ systematically across disciplines, and consequently, higher per-publication improvements in author rankings would reflect a relative absence of scholarly

[15] In addition to publication barriers arising from more stringent quality controls, these barriers may also be related to journal ownership and/or sponsorship, and thereby to professional network effects. Swanson et al. (2007) document that a large portion of accounting research is published in privately sponsored journals affiliated with private research universities whereas marketing has no privately sponsored top-tier journals. Swanson et al. (2007) argue that private school accounting faculty are likely to benefit from the private sponsorship of the top accounting journals. We thank an anonymous referee for suggesting this potential explanation for the difference between accounting and marketing “exchange rates”.

competition (i.e., fewer scholars competing for publication slots in the top journals) or the skills of peers (i.e., less skilled scholars competing for publication "slots") within a discipline.

In order to investigate the alternative explanations, we create a simulated universe of authors competing for publications. By experimentally restraining competition, the distribution of skills, and publication barriers, we are able to examine how the interdisciplinary "exchange rates" are influenced by these different factors. A detailed description of the simulation setup and results are provided in the Internet Appendix (Appendix 5). In our simulations, the number of scholars, the rate of productivity, the number of co-authors, and journal acceptance rate are the environmental variables that dictate how often individual scholars publish articles. The simulations provide suggestive evidence that differences in discipline-specific publication barriers, as reflected in journal acceptance rates, and the level of scholarly competition are plausible explanations for the observed variation in the publication values between the disciplines. Specifically, we are able to reproduce the empirically observed performance curves by constraining and lowering the barrier of publishing and increasing intradisciplinary scholarly competition.

4. Conclusions

This paper presents an objective method for assessing the value of top-tier publications across disciplines. The proposed methodology utilizes intradisciplinary author rankings to infer "exchange rates" that can be used for interdisciplinary comparative assessments of research output. In our empirical analysis, we apply the interdisciplinary "exchange rate" approach within a business school setting. Specifically, using publication data from the top-ranked

business and economics journals, we construct intradisciplinary author rankings that we then employ to estimate the empirical association between the number of publications and author rankings in each business discipline. Based on the implied effort required to improve an individual's ranking within his or her own discipline, we deduce the marginal value of a top-tier publication in each discipline. The underlying premise of the proposed approach is that the marginal value-added of a single single-authored article in terms of intradisciplinary author ranking reflects the significance of top-tier publications in a competitive scholarly environment.

In our empirical analysis, we collect data on the authorship of each article published in the top-ranked journals in accounting, economics, finance, management, and marketing over the period 2005–2015. We estimate the marginal effect of an additional single-authored publication in a top journal on the author's ranking within his or her own discipline, and document that the relationship between the number of publications and author rankings is essentially linear-log in all disciplines. The estimation results demonstrate that the value of top-tier publications varies substantially across the business disciplines. The estimated interdisciplinary "exchange rates" suggest that publications in the leading accounting journals are relatively more valuable than top-tier publications in the other disciplines, with a single single-authored accounting article corresponding to approximately two marketing articles and $1\frac{1}{3}$–$1\frac{2}{5}$ articles in the top-ranked economics, finance, and management journals. Our empirical results corroborate the prior descriptive evidence that it may be relatively more difficult for accounting scholars to publish in the leading journals of their own field.

We utilize the estimated "exchange rates" to construct an interdisciplinary author ranking of the most prolific business scholars. Without publication "exchange rate" adjustments, the author ranking is dominated by marketing scholars and not a single accounting scholar is ranked

among the top-50 authors in the world. On the contrary, in our "exchange rate" adjusted ranking, the authors from the different disciplines are uniformly distributed across the interdisciplinary ranking list. This provides support for the validity of the "exchange rate" approach in making objective comparisons of publication records across disciplines. Furthermore, we conduct a number of additional tests in order to ascertain that the interdisciplinary "exchange rates" are not sensitive to alternative journal sets and sample periods. We also perform a simulation exercise in order to investigate how differences in intradisciplinary competition, the distribution of skills, and publication barriers may affect the "exchange rates". These simulations suggest that the empirically observed differences in publication values between the disciplines are likely to be induced by discipline-specific publication hurdles and differences in the level of scholarly competition. Overall, our results indicate that the use of interdisciplinary "exchange rates" for converting publications into equivalent units may eliminate the influence of discipline-specific publishing patterns and barriers in cross-disciplinary research assessments.

The empirical findings documented in this paper are perhaps most alarming for accounting as a discipline. While our results demonstrate that articles published in the top-tier accounting journals are more valuable than equivalent publications in the other disciplines, the inevitable flipside, of course, is that accounting scholars are less likely to produce the same quantity of articles as scholars in other business disciplines. Consequently, whenever interdisciplinary comparisons and performance assessments are conducted without controlling for the publication disparity, accounting departments and scholars will always find themselves at a competitive disadvantage relative to other business disciplines. In order to decrease this disadvantage and to increase publication rates in the top-tier accounting journals, it may be necessary for editors and

reviewers to consider streamlining the publication process in accounting, for instance, by reforming the peer-review process and adopting less stringent and more constructive reviewing policies.

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Table 1. ABS -AJG category 4* journals and descriptive statistics.

Discipline	No. of articles	Average no. of pages per article	SNIP impact factor
Accounting (4 journals)	1765	25.06	2.53
Accounting Review	596	27.66	2.31
Accounting, Organizations and Society	410	19.18	2.66
Journal of Accounting Research	371	33.23	2.28
Journal of Accounting and Economics	388	20.16	2.87
Economics (6 journals)	4224	32.09	4.42
American Economic Review	1237	23.20	3.45
Annals of Statistics	1062	28.19	2.92
Econometrica	625	32.38	4.72
Journal of Political Economy	346	36.97	4.89
Quarterly Journal of Economics	438	42.97	6.86
Review of Economic Studies	516	28.86	3.70
Finance (3 journals)	2867	31.69	4.13
Journal of Finance	792	35.35	4.83
Journal of Financial Economics	1182	23.12	3.92
Review of Financial Studies	893	36.59	3.65
Management (6 journals)	3555	21.86	3.44
Academy of Management Journal	728	19.06	3.79
Academy of Management Review	418	17.54	4.91
Administrative Science Quarterly	190	32.97	2.96
Journal of International Business Studies	664	17.10	2.45
Journal of Management	584	26.84	3.45
Strategic Management Journal	971	17.64	3.09
Marketing (5 journals)	3199	12.81	2.45
Journal of Consumer Psychology	553	9.22	1.32
Journal of Consumer Research	781	13.12	2.43
Journal of Marketing	529	15.41	4.17
Journal of Marketing Research	659	12.28	2.30
Marketing Science	677	13.99	2.02

Table 2. ABS-AJG category 4* journals and descriptive statistics.

	Accounting	Economics	Finance	Management	Marketing
Number of articles	1765	4224	2867	3555	3199
Number of authors	2063	5000	2990	4904	3197
Number of authors, adjusted	1862	4717	2623	4712	3076
Authors per article					
Mean	2.28	2.19	2.37	2.54	2.50
Median	2	2	2	2	2
Min	1	1	1	1	1
Max	5	10	5	49	14

Table 3. Author ranking by discipline.

Author	Institution	Weighted no. of articles
Accounting:		
Lennox C.	University of Southern California	6.17
Beatty A.	Ohio State University	6.00
Weber J.	Massachusetts Institute of Technology	5.67
DeFond M.	University of Southern California	5.42
Leuz C.	University of Chicago	5.33
Skinner D.	University of Chicago	5.33
Bushman R.	University of North Carolina at Chapel Hill	5.00
Shivakumar L.	London Business School	4.83
Tan H.	Nanyang Technological University	4.75
McVay S.	University of Washington	4.75
Top-1 %		3.92
Top-5 %		2.58
Top-10 %		2.00
Top-50 %		0.55
Economics:		
Hall P.	Princeton University	14.58
Acemoglu D.	Massachusetts Institute of Technology	13.15
Tirole J.	Toulouse School of Economics	10.00
Jackson M.	Stanford University	7.68
Chetty R.	Stanford University	7.28
Repullo R.	CEMFI	7.00
Cai T.	University of Pennsylvania	6.92
List J.	University of Chicago	6.77
Chernozhukov V.	Massachusetts Institute of Technology	6.75
Rossi-Hansberg E.	Princeton University	6.50
Lahiri S.	North Carolina State University	6.50
Top-1 %		4.17
Top-5 %		2.50
Top-10 %		1.83
Top-50 %		0.52

Table 3. *Continued.*

Author	Institution	Weighted no. of articles
Finance:		
Stulz R.	Ohio State University	11.78
Acharya V.	New York University	9.83
Greenwood R.	Harvard University	8.58
Massa M.	INSEAD	8.08
Thakor A.	Washington University in St. Louis	6.92
Titman S.	University of Texas at Austin	6.58
Harford J.	University of Washington	6.58
Edmans A.	London Business School	6.58
Whited T.	University of Michigan	6.50
He Z.	University of Chicago	6.25
Strahan P.	Boston College	6.25
Top-1 %		4.96
Top-5 %		3.00
Top-10 %		2.17
Top-50 %		0.53
Management:		
Hambrick D.	Pennsylvania State University	12.83
Luo Y.	University of Miami	10.62
Westphal J.	University of Michigan	8.67
Eden L.	Texas A&M University	8.58
Hitt M.	Texas A&M University	8.20
Greve H.	INSEAD	7.87
Rynes S.	University of Iowa	7.79
Shaver J.	University of Minnesota	7.50
George G.	Singapore Management University	7.45
Colquitt J.	University of Georgia	7.25
Top-1 %		4.04
Top-5 %		2.25
Top-10 %		1.50
Top-50%		0.51

Table 3. *Continued.*

Author	Institution	Weighted no. of articles
Marketing:		
Shugan S.	University of Florida	22.00
Chernev A.	Northwestern University	13.33
Wyer R.	Chinese University of Hong Kong	12.58
Krishna A.	University of Michigan	11.95
Dahl D.	University of British Columbia	11.87
Dhar R.	Yale University	11.12
Schwarz N.	University of Southern California	10.75
Simonson I.	Stanford University	9.58
Chintagunta P.	University of Chicago	9.58
Berger J.	University of Pennsylvania	9.50
Top-1 %		6.41
Top-5 %		3.37
Top-10 %		2.35
Top-50 %		0.52

Table 4. Estimation results and interdisciplinary “exchange rates”.

Panel A: Regression coefficients

	Accounting	Economics	Finance	Management	Marketing
β	-0.87	-1.16	-1.22	-1.18	-1.80
s.e.*	(0.05)	(0.09)	(0.08)	(0.07)	(0.13)
R^2	0.99	0.90	0.97	0.94	0.91

Panel B: Interdisciplinary "exchange rates" vis-a-vis accounting

	Accounting	Economics	Finance	Management	Marketing
β (rescaled)	1.00	1.33	1.40	1.36	2.07

* The standard errors are obtained by bootstrapping the original publication data 10,000 times per discipline.

Table 5. Comparing authors by the number of interdisciplinary publications.

	Accounting	Economics	Finance	Management	Marketing	Total no. of articles (unit values)	"Exchange rate" adjusted no. of articles
Author A	0	0	0	1	3	4	2.18
Author B	2	1	0	0	0	3	2.75
Weights*	1	0.75	0.71	0.74	0.48		

* The weights are the inverse values of the interdisciplinary “exchange rates” reported in Panel B of Table 4.

Table 6. The top-ranked authors based on the interdisciplinary "exchange rates".

Rank	Author	Weighted no. of articles	Discipline	Rank	Author	"Exchange rate" adjusted no. of articles	Discipline
1	Shugan S.	22.00	Marketing	1	Hall P.	10.90	Economics
2	Hall P.	14.58	Economics	2	Shugan S.	10.62	Marketing
3	Acemoglu D.	13.49	Economics	3	Acemoglu D.	10.07	Economics
4	Chernev A.	13.33	Marketing	4	Stulz R.	9.74	Finance
5	Stulz R.	13.12	Finance	5	Hambrick D.	9.46	Management
6	Hambrick D.	12.83	Management	6	Luo Y.	8.15	Management
7	Wyer R.	12.58	Marketing	7	Tirole J.	7.47	Economics
8	Krishna A.	11.95	Marketing	8	Acharya V.	7.27	Finance
9	Dahl D.	11.87	Marketing	9	Leuz C.	6.52	Accounting
10	Dhar R.	11.12	Marketing	10	Greenwood R.	6.50	Finance
11	Luo Y.	10.95	Management	11	Chernev A.	6.44	Marketing
12	Schwarz N.	10.75	Marketing	12	Westphal J.	6.39	Management
13	Acharya V.	10.17	Finance	13	Eden L.	6.32	Management
14	Simonson I.	10.08	Marketing	14	Lennox C.	6.17	Accounting
15	Homburg C.	10.00	Marketing	15	Wyer R.	6.08	Marketing
16	Tirole J.	10.00	Economics	16	Shleifer A.	6.08	Economics
17	Luo X.	9.58	Marketing	17	Hitt M.	6.04	Management
18	Chintagunta P.	9.58	Marketing	18	Skinner D.	6.04	Accounting
19	Berger J.	9.50	Marketing	19	Beatty A.	6.00	Accounting
20	Janiszewski C.	9.42	Marketing	20	Repullo R.	5.94	Economics
21	Greenwood R.	9.08	Finance	21	Sufi A.	5.80	Finance
22	Kumar V.	9.00	Marketing	22	Greve H.	5.80	Management
23	Tellis G.	8.83	Marketing	23	Massa M.	5.77	Finance
24	Pieters R.	8.67	Marketing	24	Krishna A.	5.77	Marketing
25	Westphal J.	8.67	Management	25	Jackson M.	5.74	Economics
26	Bradlow E.	8.62	Marketing	26	Rynes S.	5.74	Management
27	Eden L.	8.58	Management	27	Dahl D.	5.73	Marketing
28	Shleifer A.	8.33	Finance	28	Weber J.	5.67	Accounting
29	Hitt M.	8.20	Management	29	Stein J.	5.67	Finance
30	Massa M.	8.08	Finance	30	List J.	5.65	Economics
31	Sufi A.	8.00	Finance	31	Shaver J.	5.53	Management
32	Repullo R.	8.00	Economics	32	George G.	5.49	Management
33	Greve H.	7.87	Management	33	Bushman R.	5.48	Accounting
34	Rynes S.	7.79	Management	34	Larcker D.	5.47	Accounting
35	Stein J.	7.78	Finance	35	Chetty R.	5.44	Economics
36	Steenkamp J.	7.74	Marketing	36	DeFond M.	5.42	Accounting
37	Jackson M.	7.68	Economics	37	Dhar R.	5.37	Marketing
38	List J.	7.60	Economics	38	Colquitt J.	5.34	Management
39	Shaver J.	7.50	Management	39	Graham J.	5.28	Finance
40	Fitzsimons G.	7.48	Marketing	40	Rajgopal S.	5.25	Accounting

Table 6. *Continued.*

Rank	Author	Weighted no. of articles	Discipline	Rank	Author	"Exchange rate" adjusted no. of articles	Discipline
41	George G.	7.45	Management	41	He Z.	5.21	Finance
42	Argo J.	7.33	Marketing	42	Schwarz N.	5.19	Marketing
43	Grewal R.	7.33	Marketing	43	Shivakumar L.	5.19	Accounting
44	Chetty R.	7.28	Economics	44	Cai T.	5.17	Economics
45	Colquitt J.	7.25	Management	45	Grant A.	5.16	Management
46	He Z.	7.25	Finance	46	Whited T.	5.14	Finance
47	Rucker D.	7.20	Marketing	47	Homburg C.	5.13	Marketing
48	Shiv B.	7.17	Marketing	48	Chernozhukov V	5.04	Economics
49	Whited T.	7.17	Finance	49	Aït-Sahalia Y.	5.04	Economics
50	Fishbach A.	7.00	Marketing	50	Fama E.	5.03	Finance

Discipline	No. of authors
Accounting	0
Economics	7
Finance	9
Management	10
Marketing	24
Total	50

Discipline	No. of authors
Accounting	10
Economics	11
Finance	10
Management	11
Marketing	8
Total	50

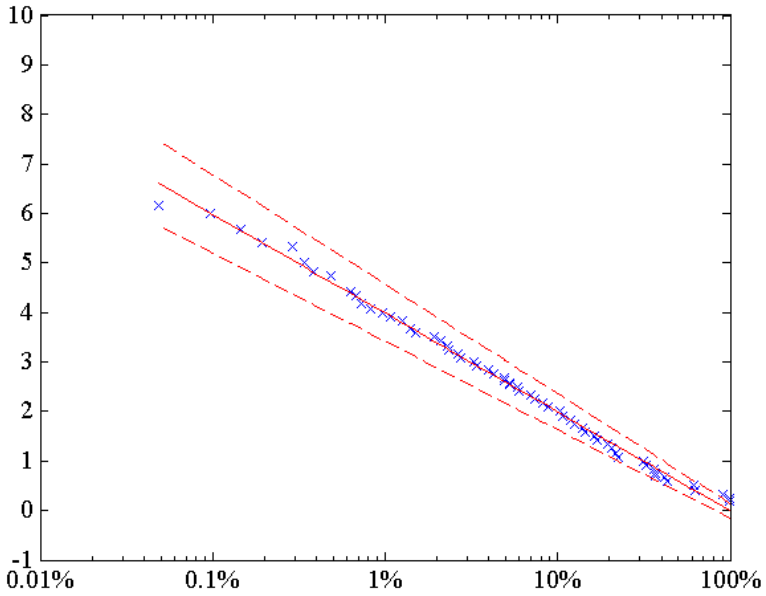
The total number of publications is the weighted sum of an author's fractionally counted publications. The weights are based on the inverted values of the interdisciplinary "exchange rates" reported in Panel B in Table 6, and they are used to convert the publications across disciplines into accounting-equivalent units. The weights are estimates with standard errors, and therefore, the ranking varies with the uncertainty in the publication weights. The results reported here are based on the median outcome of bootstrapping the publication weights 10,000 times with the simulation method suggested by Goldstein and Spiegelhalter (1996).

Table 7. Tests for the balanced distribution of disciplines in the interdisciplinary ranking.

Test	Test statistic	Critical value	*p*-value
Kuiper (1960)			
Naïve ranking	0.25	0.20	0.30
"Exchange rate" adjusted ranking	0.18	0.20	0.02

Figure 1. The relationship between the number of articles and author ranking in accounting and finance.

1A. Accounting



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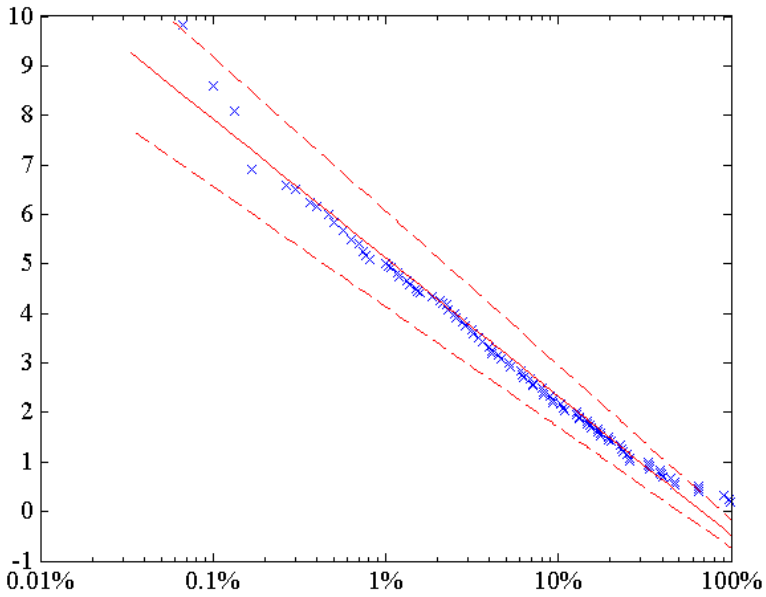
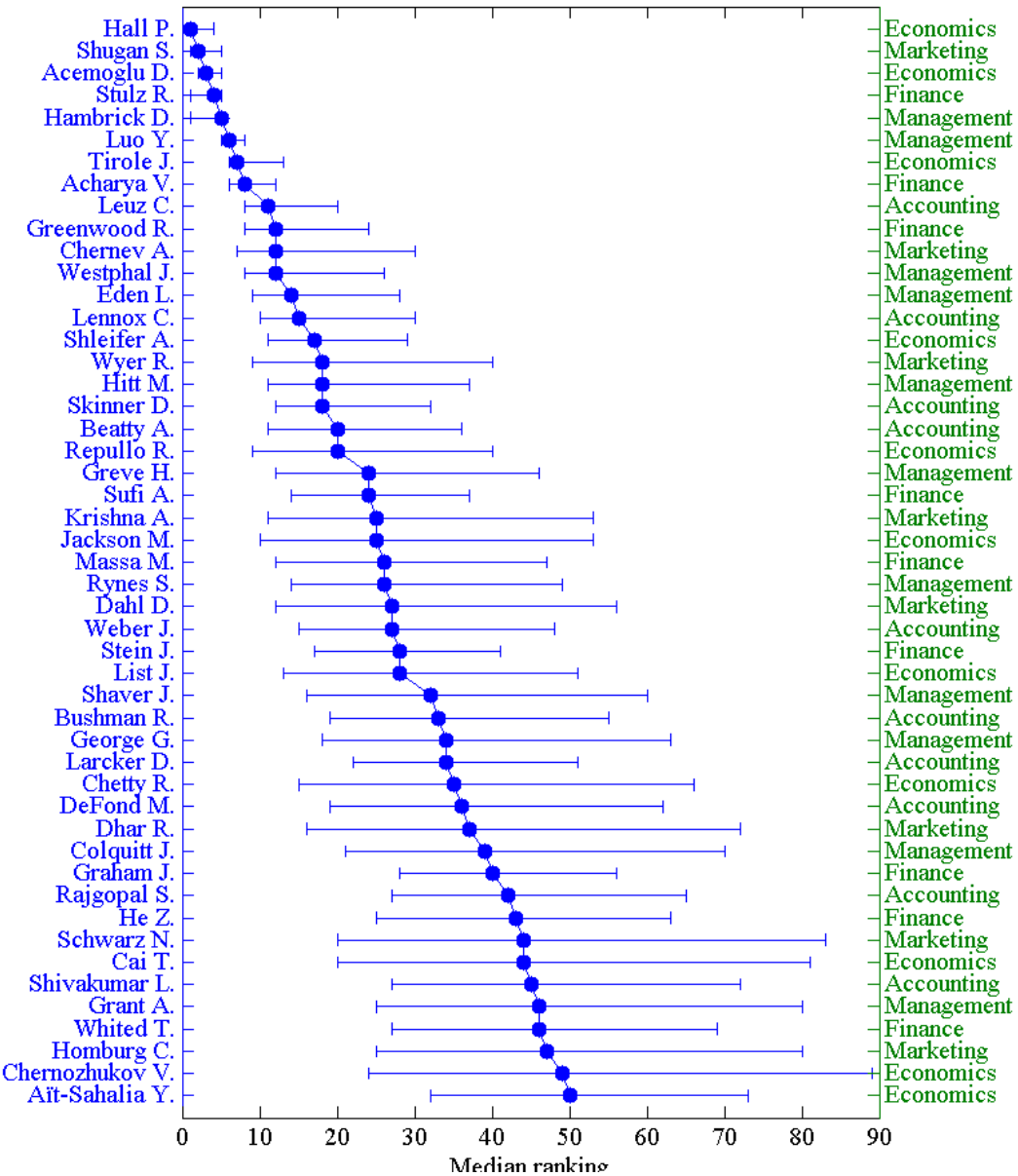
1B. Finance



The figure plots the empirical relationship between the weighted number of articles (*y*-axis) and the logarithm of author ranking (*x*-axis) in accounting and finance. The dashed lines represent bootstrapped 95% confidence intervals.

Figure 2. The top-ranked authors based on the interdisciplinary "exchange rates".



The 95 percent confidence intervals for the author rankings are obtained with the simulation method suggested by Goldstein and Spiegelhalter (1996).

Internet Appendix

Appendix 1. Interdisciplinary "exchange rates" based on alternative journal sets.

Table A1.1. Top-ranked journals and descriptive statistics.

Discipline	No. of articles	Average no. of pages per article	SNIP impact factor
Accounting (4 journals)	1765	25.06	2.53
Accounting Review	596	27.66	2.31
Accounting, Organizations and Society	410	19.18	2.66
Journal of Accounting Research	371	33.23	2.28
Journal of Accounting and Economics	388	20.16	2.87
Economics (4 journals)	2646	33.88	4.98
American Economic Review	1237	23.20	3.45
Econometrica	625	32.38	4.72
Journal of Political Economy	346	36.97	4.89
Quarterly Journal of Economics	438	42.97	6.86
Finance (3 journals)	2867	31.69	4.13
Journal of Finance	792	35.35	4.83
Journal of Financial Economics	1182	23.12	3.92
Review of Financial Studies	893	36.59	3.65
Management (4 journals)	2781	17.83	3.56
Academy of Management Journal	728	19.06	3.79
Academy of Management Review	418	17.54	4.91
Journal of International Business Studies	664	17.10	2.45
Strategic Management Journal	971	17.64	3.09
Marketing (4 journals)	2646	13.70	2.73
Journal of Consumer Research	781	13.12	2.43
Journal of Marketing	529	15.41	4.17
Journal of Marketing Research	659	12.28	2.30
Marketing Science	677	13.99	2.02

Table A1.2. Estimation results and interdisciplinary “exchange rates” (alternative journal set 1).

Panel A: Regression coefficients

	Accounting	Economics	Finance	Management	Marketing
β	-0.87	-0.96	-1.22	-1.11	-1.57
s.e.*	0.05	0.07	0.08	0.07	0.14
R^2	0.99	0.93	0.97	0.93	0.87

Panel B: Interdisciplinary "exchange rates" vis-a-vis accounting

	Accounting	Economics	Finance	Management	Marketing
β (rescaled)	1.00	1.11	1.40	1.28	1.81

* The standard errors are obtained by bootstrapping the original publication data 10,000 times per discipline.

Table A1.3. Estimation results and interdisciplinary "exchange rates" (alternative journal set 2).

Panel A: Regression coefficients

	Accounting	Economics	Finance	Management	Marketing
β	-1.04	-1.16	-1.22	-1.18	-1.80
s.e.*	0.07	0.09	0.08	0.07	0.13
R^2	0.99	0.90	0.97	0.94	0.91

Panel B: Interdisciplinary "exchange rates" vis-a-vis accounting

	Accounting	Economics	Finance	Management	Marketing
β (rescaled)	1.00	1.11	1.17	1.13	1.73

* The standard errors are obtained by bootstrapping the original publication data 10,000 times per discipline.

Appendix 2. Interdisciplinary "exchange rates" based on alternative sample periods.

Table A2.1. Estimation results and interdisciplinary "exchange rates".

Panel A: Regression coefficients, years 2005-2010

	Accounting	Economics	Finance	Management	Marketing
β	-0.67	-0.87	-0.80	-0.92	-1.35
s.e.*	0.05	0.08	0.06	0.08	0.17
R^2	0.99	0.87	0.96	0.88	0.78

Panel B: Interdisciplinary "exchange rates" vis-a-vis accounting, years 2005-2010

	Accounting	Economics	Finance	Management	Marketing
β (rescaled)	1.00	1.30	1.20	1.37	2.02

Panel C: Regression coefficients, years 2011-2015

	Accounting	Economics	Finance	Management	Marketing
β	-0.47	-0.57	-0.71	-0.65	-0.85
s.e.*	0.03	0.05	0.06	0.04	0.06
R^2	0.99	0.94	0.96	0.95	0.97

Panel D: Interdisciplinary "exchange rates" vis-a-vis accounting, years 2011-2015

	Accounting	Economics	Finance	Management	Marketing
β (rescaled)	1.00	1.21	1.51	1.39	1.81

* The standard errors are obtained by bootstrapping the original publication data 10,000 times per discipline.

Appendix 3. Interdisciplinary “exchange rates” based on author rankings without co-authorship adjustments.

Table A3.1. Estimation results and interdisciplinary “exchange rates”.

Panel A: Regression coefficients

	Accounting	Economics	Finance	Management	Marketing
β	-1.92	-3.10	-3.14	-2.95	-4.36
s.e.*	0.11	0.45	0.37	0.27	0.29
R^2	0.99	0.81	0.92	0.94	0.97

Panel B: Interdisciplinary "exchange rates" vis-a-vis accounting

	Accounting	Economics	Finance	Management	Marketing
β (rescaled)	1.00	1.62	1.64	1.54	2.27

* The standard errors are obtained by bootstrapping the original publication data 10,000 times per discipline.

Appendix 4. Interdisciplinary "exchange rates" based on the weighting of articles with journal impact factors

Table A4.1. Estimation results and interdisciplinary "exchange rates".

Panel A: Regression coefficients

	Accounting	Economics	Finance	Management	Marketing
β	-0.98	-1.40	-1.27	-1.29	-1.83
s.e.*	0.05	0.09	0.08	0.07	0.13
R^2	0.99	0.90	0.97	0.94	0.91

Panel B: Interdisciplinary "exchange rates" vis-a-vis accounting

	Accounting	Economics	Finance	Management	Marketing
β (rescaled)	1.00	1.42	1.29	1.31	1.85

* The standard errors are obtained by bootstrapping the original publication data 10,000 times per discipline.

Appendix 5. The simulation exercise.

In this Appendix, we first describe the algorithm used to simulate the scientific publishing process and then report the comparative statistics of alternative publishing environments. The purpose of the simulation exercise is to examine how different publishing environments affect the relationship between the number of publications and author rankings.

In brief, we create a universe of individual scholars, each endowed with a random rate of productivity. The scholars can write articles alone or they can co-operate, which increases production potential. All produced articles are submitted to a journal, which publishes relatively few of them. The number of scholars, the rate of productivity, the number of co-authors, and the journal acceptance rate constitute a publishing environment. These four environmental variables together dictate how often individual scholars publish articles. Consequently, by changing each variable at a time and re-running the simulation, we are able to infer how a given variable affects the resulting author ranking, and thereby the marginal value of a single publication.

A5.1. The baseline publishing environment

The baseline publishing environment comprises 5000 individual scholars. The publication records of these scholars are followed for 20 periods, each period corresponding to six months. The potential level of productivity of individual scholars is drawn from a heavily right-tailed lognormal distribution with a μ of 0.1 and σ of 0.9. It follows from this assumption that most scholars produce articles at a low rate, but few scholars produce them at a very high rate. For each individual scholar and time period, the number of co-authors is drawn from a Poisson distribution. The expected number of co-authors is set to one, but other positive integers up to

five are possible but with decreasing probability. Sole authorship of articles is burdened by fixed costs, while multi-authorship increases the production potential of individual scholars, but at a decreasing rate. For these reasons, the optimal number of authors per article adjusts to two or three.

We assume in the simulations that all potential publications are submitted to a journal, which then randomly publishes 300 articles per period. A Poisson process governs whether or not the journal accepts a given submitted article for publication. The publication intensity is an interaction of the journal's acceptance rate and the number of submitted publications per period. Because the journal is assumed to publish 300 articles per period, increasing the amount of potential publications submitted to the journal decreases the journal's acceptance rate.

Once the simulation is run, we collect the publication records of individual scholars and count the number of publications, the number of individuals publishing, and the number of publications per individual. Finally, we rank the authors based on the fractional count of publications and estimate the slope of the performance curve given by Equation (1).

A5.2. Simulation results

Table A5.1 presents the estimation results and comparative statistics for the baseline publishing environment and four alternative environments. Both the estimation results and the numbers of authors and articles in the baseline publishing environment appear fairly similar to the empirical results for finance. Specifically, the simulated baseline values deviate less than five percent from the corresponding empirical values reported in Tables 2 and 4.

To examine how the potential level of productivity affects the "exchange rates", we constrict the lognormal distribution from which the scholars' rate of productivity is drawn by a factor of 1.5. A narrower distribution of possible productivity rates generates a publishing environment in which individual scholars are more likely to produce equally many publications. In such an environment, a single additional publication would lead to a significant improvement in the scholar's ranking position. The results of the simulation for a less heterogeneous universe of scholars are presented in the second numerical column of Table A5.1. It can be noted from the table that the β coefficient estimated from a ranking of a more homogenous group of scholars is far smaller in absolute value terms than the estimated β in the baseline publishing environment. In particular, the ratio of the estimated performance curves (-1.19/-0.71 = 1.68) suggests that the value of a single single-authored publication in a publishing environment with lower author heterogeneity corresponds to about $1^2/_3$ articles in a more heterogeneous author environment.

We next investigate the effects of co-authorship by artificially increasing the median number of authors per article from two to three. An extra co-author tends to increase the potential productivity of an individual scholar, but it also introduces more competition because, on average, one publication now affects the ranking position of three authors instead of two. The simulation results in this publishing environment are reported in the third numerical column of Table A5.1. As expected, the estimates indicate that increasing the number of co-authors tightens competition among the scholars, with a single single-authored article corresponding to about 1⅓ articles in our baseline publishing environment.

We further examine how scholarly competition influences the "exchange rates" by inducing a 50 percent increase in the number of individual scholars from 5,000 to 7,500.

Similarly to the results relating to additional co-authors, an increased population of potential scholars increases competition among scholars, albeit through different channels. The fourth numerical column of Table A5.1 contains the results for a simulated publishing environment with a larger scholar population. The estimated β coefficient in an environment with more competition is smaller in absolute value terms than the β in the baseline publishing environment, thereby indicating that publications are more valuable in a more competitive environment. Specifically, the ratio of the estimated performance curves indicates that a single publication in an environment with more scholars is equal to 1.31 publications in the baseline publishing environment.

Finally, in order to ascertain the effects of the journal's acceptance rate, we reduce the acceptance rate by a factor of 1.5 from 300 publications per period to 200. The simulation results for the environment with a low publication acceptance rate are presented in the fifth numerical column of Table A5.1. A lower number of accepted articles obviously produces an environment with more valuable publications, similar to the previous simulated environments, but with an important exception. In the other three alternative publishing environments, a change in a given environmental variable influences either the number of published articles or the number or authors, but not both. However, as can be noted from Table A5.1, a lower acceptance rate decreases both the number of published articles and the number of authors who are able to publish. Interestingly, the simulation results for the publishing environment with a low acceptance rate are fairly similar to the empirical values for accounting reported in Tables 2 and 4.

Table A5.1. Estimation results in different publishing environments.

	Baseline environment	Lower heterogeneity	More co-authors	More competition	Lower acceptance
β	-1.19	-0.71	-0.88	-0.91	-0.89
s.e.*	(0.10)	(0.04)	(0.07)	(0.13)	(0.09)
No. of authors	2733	3104	2738	3299	2199
No. of articles	2769	2767	2080	2768	1845
β (rescaled)	1.00	1.68	1.35	1.31	1.34

* The standard errors are based on 10,000 simulations.