

What Are the Research Standards for Full Professor of Finance?

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ABSTRACT

Based on a sample of 126 recently promoted faculty, different standards for full professor are observed between top 20 finance departments and lower ranked departments. Full professors affiliated with a top 20 department place an average of 1 out of 3 articles in either *Journal of Finance*, *Review of Financial Studies*, or *Journal of Financial Economics* compared to 1 out of 6 articles for professors at lower-ranked schools. Total citations and cites per year are also significantly different between top- and lower-ranked departments, but total articles and articles per year are not significantly different between these two groupings.

FACULTY AND UNIVERSITY ADMINISTRATORS confront many decisions over time, but promotion and tenure decisions must rank as two of the most difficult and important. Thus, the resources expended as candidates proceed through the promotion and/or the tenure process are substantial. Typically, faculty committees, inside and outside reviewers, and various administrators review research papers, teaching evaluations, and additional material prior to voting or otherwise expressing an opinion on the merits of a candidate. At research-oriented institutions, a candidate's scholarship invariably becomes the central focus of these efforts. The question that is frequently asked is whether a candidate's research productivity and quality are sufficiently high to justify a positive decision. In other words, has the research had an impact on the profession, is it published in high-quality journals, is it of sufficient quantity, and does it compare well with the overall standards of the department, school, and university? The debate surrounding these questions is often contentious and colorful, particularly in institutions that are seeking to raise overall faculty quality.

To help reduce the uncertainty involved in such decisions, individuals involved often seek objective information about a candidate's research productivity. The *Social Sciences Citation Index* (SSCI) is one source that provides data on the impact of a candidate's research on other published research.¹

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¹ The 1995 SSCI covers 1,910 journals, of which approximately 22 journals are focused on finance, insurance, or real estate topics. Over time, the SSCI has expanded its coverage of business journals, but it is still largely a source of information about general social sciences.

Studies that report on the relative ranking of finance journals generally use citations from the SSCI as an important determinant of journal quality and impact. For example, Coe and Weinstock (1983), Liebowitz and Palmer (1984), Mabry and Sharplin (1985), and Zivney and Reichenstein (1994) use the SSCI to analyze the relative impact of various finance (and economics) journals; the *Journal of Finance* and the *Journal of Financial Economics* historically exhibit the greatest citation impact in the finance literature.

One problem with citations and journal rankings is that they do not address the question of how many citations or how many high-quality articles a candidate may be expected to have. To help fill this void, Zivney and Bertin (1992) developed comparative publication data for finance doctorates who received their degrees between 1963 and 1987. Their study provides cohort-specific information on quantity and frequency of publication for graduates from 67 Ph.D.-degree-granting institutions. Effectively, they document the quantity of research published by finance Ph.D.s at various intervals of time after graduation. This information may then be used to compare a candidate's record to others who have been working an equal number of post-Ph.D. years. As Zivney and Bertin point out, this information is particularly helpful for tenure decisions because they are usually made within a predetermined number of years after a tenure-track appointment.²

This paper furthers the development of comparative data on research productivity, focusing on the research standards expected of a faculty member promoted or appointed to the rank of full professor of finance. This rank is typically the highest offered by most universities. As such, the research standards necessary to achieve it may be thought of as including those required at lower ranks. In other words, an individual is not promoted to full professor unless he or she exceeds the current standards for a tenured associate professor. Thus, the standards for full professor are likely to be the most stringent set by a university.³ A better understanding of these standards will aid both sides of the promotion decision process: Full-professor candidates will understand more clearly what is expected and can direct their efforts accordingly, and faculty and administrators will have additional objective information to guide their decisions.

Either explicitly or implicitly, most faculty and administrators ask whether a tenure candidate is likely to progress to full professor. If the candidate's research record indicates that ultimate promotion to full professor is unlikely, then it is very unusual for such a candidate to receive tenure. A uni-

² One difficulty with Zivney and Bertin's study is that their data do not show who has a university appointment. Thus, their publication distributions may include finance Ph.D.s who work in government or industry. For example, the last five issues of *Financial Management*, beginning with the Winter 1994 issue, contained 31 articles written by 70 (co)authors. Of this total, 14 authors or 20 percent were from government or industry. If finance Ph.D.s in government or industry publish less than their academic counterparts, then repeating Zivney and Bertin's study using only academics will show higher rates of research productivity.

³ An endowed chair or a named professorship may distinguish between full professors, but these titles generally do not change a faculty member's rank or confer special voting privileges.

versity and its faculty have little to gain by accumulating tenured associate professors.⁴ Thus, the research standards for full professor are also important for tenure decisions.

This study's approach differs from that used by Zivney and Bertin (1992) in one important aspect. Rather than starting with a sample of "Business Finance and Investments" Ph.D.s and document their publication efforts over time, we work backwards from a sample of recently promoted full professors to describe their research productivity. The reason for this approach is simple. Those who have successfully reached the rank of full professor have met or exceeded the standards expected by various universities. Thus, they provide a clearer picture of full professor standards than can be inferred from Zivney and Bertin's analysis. However, the selection bias inherent in this approach is obvious: we exclude candidates who were denied promotion because this information is not available.⁵ The one-sided nature of our data requires a prudent caveat: We view our results as describing the set of *sufficient* research credentials for promotion to full professor, which may or may not correctly reflect all of the *necessary* credentials.

The remainder of this paper is organized as follows. Section I describes the sample and various data sources used. Section II examines the research productivity of the sample, focusing on statistical differences between publication outlets, measures of productivity, and higher- and lower-ranked departments. Section III presents the conclusions.

I. Data and Representative Sample

The starting point for this study is *The 1997/98 Prentice Hall Guide to Finance Faculty* compiled by Hasselback (1997), which is a directory of full-time finance faculty at more than 800 colleges and universities, including Canadian and other foreign schools. The 1997/98 *Prentice Hall Guide* is based on a survey sent to colleges and universities in 1996. If no response is received, a follow-up survey is sent. Responses must be received by July 31, 1996 to be included in the 1997/98 edition. Thus, the *Prentice Hall Guide* primarily reflects faculty status and affiliation in 1995-96. The *Guide* lists faculty by rank and area of specialty, and shows the highest degree earned, the year awarded, the school granting it, and the year of appointment at the present institution. In total, the *Prentice Hall Guide* provides data on 5,243 faculty, excluding deans, associate deans, retired and deceased faculty, and visiting executives.⁶

⁴ Some schools, such as the University of Chicago and Johns Hopkins University, avoid this problem by granting tenure only to full professors.

⁵ We also exclude former faculty who were successfully promoted to full professor, but have left academics for other pursuits. This bias is not expected to be significant because it is not obvious that the records of these individuals would be much different from our sample, except in area of specialization.

⁶ Department chairpersons or heads are included in the count of faculty and in the analysis below.

A. Institutional Sample

Because research standards are the focus of this study, we choose our sample of schools from colleges and universities that have highly ranked finance departments. Borokhovich et al. (1995, hereafter BBBS) provide a ranking of 330 finance departments by research output and impact. The BBBS study ranks departments by research output produced from 1989 to 1993 and by citations to measure research impact. Our sample includes the first 90 U.S. colleges and universities in the BBBS list when departments are ranked by total research impact.⁷ By focusing on U.S. schools, we exclude six top-ranked foreign universities and end up with a list of faculty from finance departments ranked 1 to 96 on the basis of total research impact.

This sample of 90 institutions reflects the largest and generally most prestigious colleges and universities in the United States. Twenty-four of the twenty-five schools in the 1996 *Business Week* ranking of top business schools are included.⁸ Forty-seven of the 52 leading business schools chosen by *U.S. News and World Report* in 1996 are included. The list also includes 54 of the 67 Ph.D.-degree-granting schools studied by Zivney and Bertin (1992). As noted below, the schools omitted are generally smaller institutions.

The list of schools and the number of faculty by rank at each school are shown in Table I. As this table indicates, the sample includes 509 full professors, 316 associate professors, and 322 assistant professors. These 90 schools, which are 11 percent of the total, represent 22 percent of the total faculty listed in the *Prentice Hall Guide*. The average finance department in our sample has approximately 13 faculty members, including the head or chairperson. In contrast, the average size of finance departments not included in the sample is 5.8 faculty members.

The reason for focusing on the top-ranked finance departments and, correspondingly, the larger, more well-known schools is that they produce more research articles and thus rely more directly on research productivity to evaluate faculty for promotion. The BBBS study confirms the first part of this observation. BBBS investigated the institutional source of publications in 16 finance journals for the period 1989 to 1993. Of a sample of 661 colleges and universities, there were 330 institutions with faculty who published in these journals. The 90 institutions in our sample account for approximately 74 percent of all the articles published by faculty at the 330 academic institutions.

Derived demand and extensive anecdotal evidence support our assertion that institutions use research productivity to evaluate faculty. It would hardly

⁷ BBBS provide information on total articles published, articles per faculty, total impact as measured by citations, impact per article, and impact per faculty. They rank institutions by total articles published, whereas we use total impact of articles published. The total impact ranking is expected to reveal relative quality expectations across institutions better than a quantity ranking.

⁸ American Graduate School of International Management (Thunderbird) was ranked 25th by *Business Week*, but BBBS ranks its Finance Department 273 using total output and 314 using total impact of publications.

Table I
Number of Finance Faculty by Rank

The number of faculty by rank at 90 universities is obtained from the *Prentice Hall Guide to Finance Faculty* (1997 edition). This information applies with a one-year lag, so these data show faculty counts for 1995-96. These universities represent finance departments ranked 1 to 96 (excluding 6 foreign universities) by total research impact as reported in Borokhovich et al. (1995). These counts exclude emerti, clinical, and visiting professors.

School	Full	Assoc.	Asst.	School	Full	Assoc.	Asst.
American U.	4	4	1	Texas Tech. U.	7	3	0
Arizona State U.	5	9	1	Tulane U.	5	1	6
Auburn U.	5	7	1	U. Alabama	8	4	1
Bentley College	3	7	6	U. Arizona	2	2	5
Boston College	7	5	3	U. Chicago	11	1	5
Boston U.	2	6	5	U. Colorado-Boulder	6	2	6
Brigham Young U.	6	5	2	U. Connecticut	5	8	3
Carnegie Mellon U.	3	4	3	U. Delaware	2	3	4
Clark U.	0	1	1	U. Florida	11	5	3
Clemson U.	0	5	6	U. Georgia	6	4	2
Columbia U.	10	1	9	U. Houston	4	1	7
Cornell U.	5	1	2	U. Illinois-Champaign	9	6	4
CUNY-Baruch	6	5	6	U. Illinois-Chicago	2	3	2
Dartmouth College	3	1	3	U. Iowa	5	7	4
Drexel U.	3	1	2	U. Kansas	7	0	0
Duke U.	4	3	2	U. Maryland	4	4	5
Florida State U.	11	6	1	U. Massachusetts	2	2	1
Fordham U.	4	7	7	U. Memphis	9	2	3
Georgetown U.	4	4	2	U. Miami	3	6	5
Georgia State U.	11	2	7	U. Michigan	7	5	4
Harvard U.	14	1	7	U. Minnesota	7	4	1
Indiana U.	7	0	7	U. Missouri-Columbia	4	4	3
Iowa State U.	2	7	1	U. North Carolina	7	4	5
Louisiana State U.	6	2	2	U. Oklahoma	3	6	0
Loyola U.-Chicago	4	1	3	U. Oregon	2	3	5
Michigan State U.	3	6	4	U. Pennsylvania	18	3	13
MIT	6	1	1	U. Pittsburgh	4	1	3
North Carolina State U.	6	0	0	U. Rhode Island	3	3	1
New York U.	18	10	13	U. Rochester	8	0	2
Northwestern U.	6	5	9	U. South Carolina	7	6	1
Notre Dame U.	6	7	10	U. Tennessee	4	6	3
Ohio State U.	7	4	5	U. Texas-Austin	9	3	5
Oklahoma State U.	2	5	2	U. Utah	10	0	0
Penn State U.	4	3	4	U. Virginia	4	4	2
Purdue U.	3	3	3	U. Washington	9	3	4
Rutgers U.-Newark	8	2	4	U. Wisconsin-Madison	4	3	2
Santa Clara U.	2	0	5	UC-Berkeley	4	6	3
Southern Illinois U.	5	1	2	UC-Davis	1	4	1
Southern Methodist U.	7	2	6	UC-Irvine	5	1	1
Stanford U.	9	3	3	UC-Los Angeles	5	7	3
SUNY-Buffalo	4	3	2	USC	7	8	3
Syracuse U.	5	2	2	Vanderbilt U.	4	3	1
Temple U.	5	2	6	Virginia Tech	8	5	6
Texas A & M U.	9	1	4	Washington U.	3	1	6
Texas Christian U.	3	2	2	Yale U.	7	2	1
Totals					509	316	322

seem sensible to spend the time and effort required to produce research articles if the affiliated institution or the academic marketplace did not value and hence reward faculty for publication success. As the data show, most of the recently promoted full professors in our sample have impressive publication records, particularly those affiliated with a top 20 finance department.

B. Faculty Vintage

One piece of information missing from the *Prentice Hall Guide* is the year in which a faculty member reached his or her current rank. This datum is important because we wish to analyze current promotion standards in finance departments. To accomplish this goal, we decompose the sample of faculty by the year in which they received the Ph.D. degree. The idea is that the vintage of Ph.D. degrees is a reasonable proxy for the vintage of faculty, and hence full professors who received their Ph.D. degrees recently were also promoted recently.

Table II shows the distribution of Ph.D. degree vintage across faculty ranks. This table divides Ph.D. vintage into five groups: before 1975, 1975–79, 1980–84, 1985–89, and 1990–94. These data confirm that the vintage of Ph.D. degrees is a good proxy for the vintage of faculty by rank. Full professors are concentrated in the earliest periods, followed by associate professors in the middle periods (1975–89), and then by assistant professors in the most recent periods. Although a few universities allow assistant professors to remain at that rank (probably with tenure), nearly all schools adopt an “up or out” policy, which explains why the percentage of existing assistant professors receiving Ph.D. degrees before 1985 is very small. Correspondingly, the population of associate professors begins to increase when the assistant professor ranks start to thin out. A similar, but not so dramatic, change occurs between the associate and full professor ranks.

C. Reference Group

Even though faculty vintage is a good proxy for determining recently promoted faculty, we face a *stock* and *flow* trade-off in selecting our reference group. Faculty who have an accelerated *flow* of articles may be promoted early based on the quality of the flow. As a result, focusing on a sample of full professors with recent vintage Ph.D. degrees may produce a bias toward discovering higher acceptable *flow* criteria for promotion. However, reaching back too far into the vintage pool may overstate the acceptable *stock* criteria because we are likely to capture many faculty who were promoted in the more distant past. Because a combination of stock and flow criteria is involved in promotion decisions, a trade-off exists between accurately describing these criteria with our data because we don’t know the date of promotion.

To help minimize the problem posed by selecting data favoring either higher stock or flow criteria, we aim to identify a normal gestation period for a full professor. In Table II, there are 102 full professors who received their Ph.D.s

Table II
Distribution of Faculty by Rank and Date the Ph.D. Degree Is Received

The *Prentice Hall Guide to Finance Faculty* (1997) provides data on rank and the year in which the Ph.D. degree is received. The number of faculty and the percentage of faculty by rank are grouped by five time periods. Each period corresponds to an interval in which the Ph.D. degree was received. The table shows the distribution of faculty ranks across the five time intervals, separating out faculty without the Ph.D. degree and any data that are missing.

Rank	Total	Ph.D. Degree before 1975	Ph.D. Degree in 1975-79	Ph.D. Degree in 1980-84	Ph.D. Degree in 1985-89	Ph.D. Degree in 1990-95	No Ph.D. Degree	Data Missing
Full professor	509	265 52.1%	110 21.6%	102 20.0%	24 4.7%	1 0.2%	4 0.8%	3 0.6%
Associate professor	316	51 16.1%	43 13.6%	89 28.2%	112 35.4%	18 5.7%	4 1.3%	0 0.0%
Assistant professor	322	0 0.0%	1 0.3%	5 1.6%	48 14.9%	244 75.8%	21 6.5%	3 0.9%

in the 1980–84 period. This represents a significant increase from the 24 full professors who received their Ph.D.s in the 1985–89 period. This discrete change suggests that the 1980–84 group is the one most likely to represent a normal gestation period for promotion to full professor, a time path that takes approximately 11 or 12 years. If we reach back to the 1975–79 group, which contains 110 faculty, we may also capture some recent promotions, but this group is only marginally larger than the 1980–84 group, so there is less evidence that the 1975–79 period is important. Furthermore, if we do go back to the 1975–79 group, we run the risk of including a large number of faculty who may have been promoted under an earlier set of standards. Although we are not certain whether standards have changed, our results will certainly be contaminated if they have changed and we mix these two groups.

Thus, we form the reference group using the 102 full professors with Ph.D. degrees received in 1980–84 and also include the 25 full professors with Ph.D. degrees in 1985 or later to test for any stock or flow differences in the data. As discussed below, we find almost no evidence of statistically significant differences between the 1980–84 sample and the 1985 or later sample, so we report most of our results using all 127 full professors.

II. Research Output

The research output of our reference group is available from two sources: The *Economics Literature Database* (ELDB), compiled by Heck (1996) and used to construct the *McGraw-Hill Finance Literature Index*, provides an index to articles published in more than 300 finance, economics, real estate, accounting, and insurance journals up to 1995, and the *ECONLIT* database, which covers more than 400 economics and finance journals.⁹ There is significant overlap between these two databases, providing a good way to cross-check their references. The ELDB, however, offers a more complete picture of an individual's research record in finance because it includes a large number of specialized finance journals that are not in *ECONLIT*.

A. Top Finance and Economics Journals

The quality of a faculty member's publications is one of the most important questions addressed in the promotion process. Both inside and outside reviewers are asked to comment on this question. Faculty and administrators who are less familiar with a candidate's specialty tend to use journal quality as a proxy for the quality of a candidate's research.

A number of researchers have developed relative rankings of both finance and economics journals that help assess research quality. Liebowitz and Palmer

⁹ Even though the ELDB and ECONLIT are comprehensive sources, the task of reconstructing research records for faculty is likely to omit some articles. Several relevant journals may be excluded from these sources and/or the historical contents of some journals may not be fully referenced. These omissions are unlikely to be systematic and thus not likely to affect our statistical tests. However, an apology is offered to any faculty affected in this respect.

Table III

Relative Impact of Journals on Financial Research

This table ranks journals by their citation impact. Impact factors reported are for 1993. A journal's impact equals the number of citations in the present year to articles published in the past two years divided by the number of articles published over the past two years. These impact factors are reported in Borokhovich et al. (1995).

Journal	1993 Impact Factor	1993 Rank	1989-93 Average Impact Factor	Average Rank
<i>Journal of Finance</i>	2.241	1	1.946	3
<i>Review of Financial Studies</i>	2.218	2	2.227	2
<i>Journal of Financial Economics</i>	2.000	3	2.694	1
<i>Journal of Business</i>	0.720	4	1.260	4
<i>Journal of Money, Credit and Banking</i>	0.714	5	0.877	5
<i>Journal of Futures Markets</i>	0.709	6	0.448	10
<i>Journal of International Money & Finance</i>	0.671	7	0.662	7
<i>Financial Management</i>	0.641	8	0.652	8
<i>Journal of Financial and Quanti- tative Analysis</i>	0.579	9	0.724	6
<i>Financial Analysts Journal</i>	0.547	10	0.547	9
<i>Journal of Financial Research</i>	0.490	11	0.248	11
<i>Financial Review</i>	0.329	12	0.328	12
<i>Journal of Banking and Finance</i>	0.236	13	0.271	13
<i>Journal of Portfolio Management</i>	0.200	14	0.377	11
<i>Journal of Business Finance and Accounting</i>	0.080	15	0.080	15

(1984), Mabry and Sharplin (1985), Diamond (1989), Zivney and Reichenstein (1994), and BBBS rate journals using citations to articles published. These studies report similar results. We will use the results reported in BBBS to identify the highly ranked journals in finance. They report rankings based on 1993 citation counts and based on a five-year average citation count. This study is useful because it includes the relative impact of newer journals, such as the *Review of Financial Studies*, although it is unlikely that any of our conclusions will be affected by the choice of which ranking study we use.

Journals are most often ranked according to an *impact factor*, defined as the ratio of citations in the current year to articles published in the past two years divided by the number of articles published in the journal in the previous two years. Table III shows the relative ranking of various journals in 1993 and the five-year average ranking as reported by BBBS.

Excluding self-citations, BBBS find that the *Journal of Finance* (*JF*), *Review of Financial Studies* (*RFS*), *Journal of Financial Economics* (*JFE*), and the *Journal of Business* (*JB*) are the four journals with the greatest current and past impact on financial research. That the *JF* and *JFE* are highly ranked is no surprise. The study by Zivney and Reichenstein (1994) shows

that these two journals account for 38.7 percent of the 8,751 citations to the top 60 journals covering finance topics in 1990. Including the *RFS* and *JB* increases this fraction to 43.9 percent, for an additional impact on total citations of about 5 percent.

Additionally, Zivney and Rechenstein find that three economics journals, *Journal of Political Economy* (*JPE*), *American Economic Review* (*AER*), and *Econometrica* are frequently cited by researchers publishing in finance journals. These three economics journals account for 13.9 percent of citations to the top 60 journals. Taken together, the four finance and three economics journals account for approximately 58 percent of all citations to articles published in these 60 journals, which indicates a disproportionately high research impact for these journals. Accordingly, we begin the analysis of our sample's research credentials using these seven journals to signal research quality.

B. Publications in Top Journals

Tables IV and V show the number of sole-authored and coauthored articles produced by our reference group and published in the top four finance or top three economics journals. Table IV shows recently promoted full professors affiliated with a finance department ranked in the top 20 using total research impact as reported by BBBS. Table V shows full professors affiliated with a department ranked 21 to 96. The top 20 versus all others distinction is statistically important for most of our results.¹⁰ Data are listed in ascending order of the affiliated department's rank.

These tables also show the university affiliation of each faculty member in 1995, the year the Ph.D. degree was received, and the institution granting the Ph.D. degree. Some faculty may have moved to another university since the survey for the *Prentice Hall Guide* was completed. If this has happened and faculty do not move to a lower rank when changing university affiliation, the research standards discussed below may be more general than the present sample reflects. By hiring any of these faculty, a university is accepting the individual's credentials as a full professor.

The Ph.D. degree granting institution data are informative. Treating all 127 faculty as a group, we find that the University of Chicago has trained 16 faculty, MIT has trained 9 faculty, Stanford has trained 7 faculty, and the University of Rochester has trained 6 faculty. Combined, these four universities have trained almost 30 percent of the faculty in our sample. If we focus

¹⁰ Although there are statistical differences between our department groupings, promotion standards at some lower-ranked departments are probably more like those at top 20 departments. The BBBS results are determined by productivity and impact over a particular period of time. A good department with relatively lower productivity over the BBBS period will be lower ranked. For example, it is highly unlikely that Yale University has relatively lower promotion standards. Yale is ranked 34th primarily because Professor Ken French was affiliated with the University of Chicago during most of the period covered by the BBBS ranking. Correcting the impact factors for this anomaly will raise Yale in the rankings.

on the top 20 departments alone, these universities have trained more than half of the recently promoted full professors in finance. This finding suggests, perhaps, that a Ph.D. degree from one of these schools or a few others (U. Illinois, U. North Carolina, and Yale U.) offers a slightly better chance of success in the academic marketplace for finance faculty.¹¹

The distribution of publications in the top journals is shown at the bottom of each table. For example, recently promoted full professors affiliated with a top 20 finance department placed 16.1 percent of all of the articles they published in the *JF*. In comparison, faculty at departments ranked 21 to 96 placed only 9.4 percent of all their articles in the *JF*. This difference is statistically significant at the 1 percent level ($z = 4.50$) as shown at the bottom of Table V. Similar statistically significant differences are also observed for the *JFE*, *RFS*, and the top three economics journals. However, the fraction of all articles published in the *JB* is not statistically different between faculty in top 20 departments versus departments ranked 21 to 96. Regrouping these data to compare faculty at top 20 departments to faculty at departments ranked 76 to 96 shows similar statistical results, except that now the fraction of articles published in the *JB* by top 20 faculty is statistically significant. Taking these two results together may indicate that the quality signal sent by the *JB* is not as clear as that sent by the other top journals.

Perhaps more important than a direct comparison of these publication outlet distributions is the implication they have for faculty seeking promotion or appointment to full professor. Specifically, recently promoted full professors at a top 20 finance department place slightly more than an average of 1 out of 3 of their articles in either *JF*, *RFS*, or *JFE*, and an impressive 1 out of 2 of their articles in the top four finance journals or the top three economics journals. In contrast, faculty at departments ranked 21 to 96 place slightly more than an average of 1 out of 6 articles in *JF*, *RFS*, or *JFE*, and 1 out of 5 articles in the top four finance journals or the top three economics journals.

To add perspective to these placement rates, we compare them to Zivney and Bertin's (1992) publication findings for a large sample of finance doctorates. They report that 45.8 percent of the 1,137 individuals who received finance doctorates from 1963 to 1987 published an article in one of nineteen well-known finance journals. They also find that 9.7 percent of finance doctorates publish three or more articles in *JF*, *JFE*, or the *Journal of Financial and Quantitative Analysis* (*JFQA*) over their careers.¹² This fraction falls to 3.3 percent for six or more articles in *JF*, *JFE*, or the *JFQA*. Using the information in Tables IV and V and a count of publications in the *JFQA* (not

¹¹ The data are not adjusted for Ph.D. degree output at these schools. The University of Chicago, for example, may have graduated relatively more finance (or economics) Ph.D.s during the 1980–95 period and so it may be overrepresented in the sample.

¹² The *RFS* was not included as a top finance journal because of it was not published during the period covered in Zivney and Bertin's study.

7	Stulz, René M.	Ohio State U.	1980	3	2	4	7	1	1	2
7	Walking, Ralph A.	Ohio State U.	1980	2	2		6			
8	Korajczyk, Robert A.	Northwestern U.	1983	1	1	3	2	2	1	
8	McDonald, Robert L.	Northwestern U.	1982	3	3	1				
8	Lucas, Deborah	Northwestern U.	1988	1	1	1				1
9	Barclay, Michael J.	U. Rochester	1986		3	1	5			
9	Shanken, Jay	U. Rochester	1983	6	1	1	3	3	1	1
10	Harvey, Campbell	Duke U.	1986	1	3	2	2			
11	Calomiris, Charles W.	Columbia U.	1985	1	3	1				1
11	Huberman, Gur	Columbia U.	1980	1	2			1	2	3
11	Sundaresan, Suresh	Columbia U.	1980	1	2			1	2	3
12	Lo, Andrew W.	MIT	1984	2	1	3	2	1	1	1
12	Scharfstein, David S.	MIT	1986	1	3	1	1			3
12	Stein, Jeremy C.	MIT	1986	1	3	1	1	1	3	2
12	Asquith, Paul	MIT	1980	1	3	1	3	1	1	2
14	Admati, Anat	Stanford U.	1983	2	2	3	4	2	1	4
14	Pfleiderer, Paul	Stanford U.	1982	2	2	4				5
14	Duffie, Darrell	Stanford U.	1984	3	1	2	1	1	1	
15	Harris, Lawrence E.	U. Southern California	1982	1	1		4			
15	DeAngelo, Linda E.	U. Southern California	1980	1	1		1			2
15	Murphy, Kevin J.	U. Southern California	1984	2	3	2	1	3	1	1
17	Marcus, Alan	Boston College	1981	2	7					
17	Titman, Sheridan D.	Boston College	1981	2	3	1	3	1	1	
18	Fisher, Jeffrey D.	Indiana U.	1980	2	3	1	4	1	1	
19	Ferson, Wayne E.	U. Washington	1982	1	3	1	4	1	1	
19	Karpoff, Jonathan M.	U. Washington	1982	2	3	1	4	1	1	
20	Green, Richard C.	Carnegie Mellon U.	1982	2	2	1				3
20	Srivastava, Sanjay	Carnegie Mellon U.	1982	2	2	1				
<i>Total</i>										
<i>Average Number of Articles by Journal</i>				40	112	11	46	38	6	27
<i>Percent of Total Publications by Journal</i>				2.98	1.12	2.35	0.65	0.65	2.35	1.57
				16.1%	6.1%	12.8%	3.5%	3.5%	8.5%	8.5%
<i>Associate Professors</i>										
<i>Total</i>				16	49	7	16	4	3	2
<i>Average Number of Articles by Journal</i>				1.86	0.66	0.77	0.49	0.49	0.77	0.54
<i>Percent of Total Publications by Journal</i>				18.8%	6.7%	7.8%	4.9%	4.9%	7.8%	5.5%

Table V
Publications by Full Professors Affiliated with Finance Departments Ranked 21-96

This table shows the number of sole-authored and coauthored publications in the top finance and economics journals for full professors affiliated with a finance department ranked 21 to 96 using the total impact measure reported by Borokhovich et al. (1995). These professors received their Ph.D. degree in the 1980-91 period. Publication data are collected from the McGraw-Hill *Finance Literature Index* (1996, 5th ed.) and the *Economic Literature Database* (1996 ed.). The designation of a top finance or economics journal is determined by citations to published articles. Finance journals are ranked by Borokhovich et al. (1995) and both economics and finance journals are ranked by Zivney and Reichenstein (1994).

Dept. Rank	Name of Full Professor	University Affiliation in 1995-96	Year of Ph.D. Degree	University Granting Ph.D. Degree	Journal of Finance		Review of Financial Studies		Journal of Financial Economics		Journal of Business		AER, JPE, and Econometrica	
					Sole	Co	Sole	Co	Sole	Co	Sole	Co	Sole	Co
21	Coles, Jeffrey L.	Arizona State U.	1984	Stanford U.					3				1	
22	Kahn, Charles M.	U. Illinois	1981	Harvard U.								2		3
22	D'Arcy, Stephen P.	U. Illinois	1982	U. Illinois							1			
23	Poulsen, Annette B.	U. Georgia	1983	Ohio State U.		2								1
24	Ronn, Ehud I.	U. Texas-Austin	1983	Stanford U.		4		1					1	
24	Starks, Laura T.	U. Texas-Austin	1981	U. Texas-Austin		3			1		1			
25	Thibodeau, Thomas G.	Southern Methodist U.	1980	SUNY-Stony Brook										
27	Ling, David C.	U. Florida	1984	Ohio State U.										
27	Ritter, Jay R.	U. Florida	1981	U. Chicago	3	2			1	2	1			
28	Chance, Don	Virginia Tech. U.	1980	LSU	1	1					1			
29	Huang, Roger D.	Vanderbilt U.	1980	U. Pennsylvania	3	2		2						
31	Back, Kerry E.	Washington U.	1983	U. Kentucky			2	1						1
34	French, Kenneth R.	Yale U.	1983	U. Rochester		4			2	6	1	2		3
34	Romano, Roberta	Yale U.	1980	Yale U.										
36	Allen, Linda	CUNY-Baruch	1984	New York U.								1		
36	Wolf, Avner	CUNY-Baruch	1983	Columbia U.										
37	Conrad, Jennifer S.	U. North Carolina	1986	U. Chicago	1	3		2	1		1			
37	Hartzell, David J.	U. North Carolina	1985	U. North Carolina										3
37	Ravenscraft, David J.	U. North Carolina	1980	Northwestern U.		1								
39	Jorion, Philippe	UC-Irvine	1983	U. Chicago	1	5		1	1		2	1		
39	Talmor, Eli	UC-Irvine	1981	U. North Carolina		2					1	2		1
40	Hansen, Robert G.	Dartmouth College	1984	UC-Los Angeles									2	
41	Kolari, James W.	Texas A&M U.	1980	Arizona State U.		1								
41	Mahajan, Arvind	Texas A&M U.	1980	Georgia State U.										
41	Dubofsky, David A.	Texas A&M U.	1981	U. Washington	1									
42	Jagannathan, Ravi	U. Minnesota	1983	Carnegie Mellon U.	1	4			1	1	1	1		1

43	McDonald, Bill D.	Notre Dame U.	1980	Arizona State U.	1	2	
44	Kulatilaka, Nalin	Boston U.	1982	MIT	1		1
47	Kemp, Robert S.	U. Virginia	1981	Florida State U.			
48	Kracaw, William A.	Penn State U.	1980	U. Utah		5	
48	Miles, James A.	Penn State U.	1980	Penn. State U.	1	2	1
49	Cornett, Marcia M.	Southern Illinois U.	1983	Indiana U.		2	2
49	Davidson, Wallace N. III	Southern Illinois U.	1982	Ohio State U.		1	
50	Sears, Stephen R.	Texas Tech. U.	1980	U. North Carolina		1	
50	Goebel, Paul R.	Texas Tech. U.	1980	U. Georgia			
50	Rao, Ramesh P.	Texas Tech. U.	1985	Texas Tech. U.		1	
51	Moore, William T.	U. South Carolina	1982	Virginia Tech U.		2	
52	Wansley, James W.	U. Tennessee	1980	U. South Carolina		1	1
53	Koch, Paul D.	U. Kansas	1980	Michigan State U.		1	
53	Butler, Henry	U. Kansas	1982	Virginia Tech			
54	Gay, Gerald D.	Georgia State U.	1980	U. Florida		1	1
54	Owers, James E.	Georgia State U.	1982	Ohio State U.		2	
54	Smith, Stephen D.	Georgia State U.	1980	U. Florida		5	1
54	Kale, Jayant R.	Georgia State U.	1987	U. Texas-Austin		1	1
55	Mauer, David C.	U. Miami	1986	Purdue U.		3	
56	Sa-Aadu, Janjisu	U. Iowa	1980	U. Wisconsin			
56	Weller, Paul	U. Iowa	1981	Essex U.			2
56	Foster, F. Douglas	U. Iowa	1987	Cornell U.	1	1	
57	Bhagat, Sanjai	U. Colorado	1982	U. Washington		2	
58	Ferris, Stephen P.	U. Missouri	1984	U. Pittsburgh		1	1
58	Bodurtha, James N.	Georgetown U.	1983	New York U.		3	
63	Schallheim, James S.	U. Utah	1980	U. Wisconsin		1	1
64	Glascok, John L.	U. Connecticut	1984	North Texas U.		2	
66	Urrutia, Jorge L.	Loyola U.-Chicago	1985	U. Texas-Austin			
67	Agrawal, Anup	N. C. State U.	1986	U. Pittsburgh		4	1
69	Mitchell, Karlyn	N. C. State U.	1982	U. Michigan			
71	Schlesinger, Harris	U. Alabama	1980	U. Illinois		1	
78	Jahera, John L.	Auburn U.	1981	U. Georgia			1
82	Dann, Larry Y.	U. Oregon	1980	UC-Los Angeles		1	
82	Mikkelsen, Wayne H.	U. Oregon	1980	U. Rochester		1	4
83	Choi, Jongmoo Jay	Temple U.	1980	New York U.		6	1
84	Lehn, Kenneth	U. Pittsburgh	1981	Washington U.		1	1
84	Shastri, Kuldeep	U. Pittsburgh	1982	U. Wisconsin		3	
84	Nachtmann, Robert	U. Pittsburgh	1981	Indiana U.			
87	Wu, Chunchi	Syracuse U.	1982	U. Illinois			1
89	Chiang, Thomas C.	Drexel U.	1981	Penn. State U.			
90	Tsetsekos, George P.	Drexel U.	1986	U. Tennessee			1
90	Heaton, Hal	Brigham Young U.	1983	Stanford U.		1	

Table V—Continued

Dept. Rank	Name of Full Professor	University Affiliation in 1995–96	Year of Ph.D. Degree	University Granting Ph.D. Degree	Journal of Finance		Review of Financial Studies		Journal of Financial Economics		Journal of Business		AER, JPE, and Econometrica	
					Sole	Co	Sole	Co	Sole	Co	Sole	Co	Sole	Co
92	Chung, Kee H.	U. Memphis	1986	U. Cincinnati	1									
92	Pruitt, Stephen W.	U. Memphis	1987	Florida State U.	2									1
92	Chu, Quentin C.	U. Memphis	1984	U. Illinois										
93	Trzeinka, Charles	SUNY-Buffalo	1980	Purdue U.	2	3								
94	Peterson, David R.	Florida State U.	1981	U. North Carolina		6				1				
94	Peterson, Pamela P.	Florida State U.	1981	U. North Carolina		3				1				
95	Lockwood, Larry J.	Texas Christian U.	1982	Purdue U.		1								
96	Polonchek, John A.	Oklahoma State U.	1983	Georgia Tech U.		2				1				
Average Number of Publications by Journal					16	100	3	11	7	53	6	20	5	22
Percent of Total Publications by Journal						1.53				0.79		0.34		0.36
						9.4%				4.9%		2.1%		2.2%
Top 20 v. Rank 21–96 T-test of Difference between Means						3.82**		4.84**		3.78**		1.85		4.49**
z-test of Difference between Proportions						4.50**		5.90**		6.32**		1.93		6.31**
Top 20 v. Rank 76–96 T-test of Difference between Means						3.07**		6.18**		2.56*		3.33**		5.13**
z-test of Difference between Proportions						3.63**		7.79**		4.13**		3.74**		6.99**
Associate Professors														
Total					32	100	7	24	14	71	7	19	3	11
Average Number of Publications by Journal						0.80		0.19		0.52		0.16		0.09
Percent of Total Publications by Journal						8.9%		2.1%		5.7%		1.7%		0.9%
Top 20 v. Rank 21–96 T-test of Difference between Means						3.15**		3.07**		1.17		2.41*		3.25**
z-test of Difference between Proportions						4.47**		3.29**		1.35		2.62**		3.64**
Top 20 v. Rank 76–96 T-test of Difference between Means						3.51**		3.57**		1.74		2.73*		3.60**
z-test of Difference between Proportions						4.50**		3.67**		2.10*		2.80**		3.98**

**, * Significant at the 1 and 5 percent levels, respectively.

shown), we compute that the average number of publications in these three journals is 5.98 articles for full professors affiliated with a top 20 department and 3.03 articles for full professors affiliated with departments ranked 21 to 96, which places their average productivity in the top 3.3 percent and top 9.7 percent of finance doctorates, respectively. In other words, faculty in Tables IV and V are representative of the top 10 percent of finance doctorates as measured by research productivity.

Another point about Tables IV and V is that both averages and extremes are informative. Specifically, it is relatively rare for faculty affiliated with a top 20 department to have no publications in any of these journals, either top finance or top economics journals. We find that only 3 out of 51 faculty in Table IV have no publications in any of these journals. In contrast, there are 19 out of 76 faculty in Table V who have no publications in these top journals. Thus, lower-ranked departments appear to have different *minimum* research expectations for their full professors.

C. Publications by Associate Professors

Tables IV and V also provide a comparison of the research output of 201 associate professors who received a Ph.D. degree in the 1980–89 period. These individuals are of the same vintage as our reference group, but presumably have not yet met the standards necessary for promotion to full professor. As such, they provide a check on our results—the associates are expected to have fewer research articles—and give us some insight into research records that, presumably, are not yet sufficient for promotion to full professor.

Not surprisingly, the distribution of publications by journal for associates is not significantly different from the distribution observed for full professors. Associate professors at top 20 departments placed 18.8 percent of their articles in the *JF* (versus 16.0 percent for full professors) and a total of 43.7 percent of their articles in the top four journals and top three economics journals (versus 46.9 percent for full professors). Associate professors at departments ranked 21 to 96 placed 8.9 percent of their articles in the *JF* (versus 9.4 percent for full professors) and a total of 19.3 percent of their articles in the top four journals and top three economics journals (versus 19.7 percent for full professors).

As expected, the associate and full professors differ significantly in the total number of articles produced, which causes differences in the average number of publications by journal for selected journals. As shown in Tables VI and VII, associate professors at top 20 departments published a significantly lower average of 9.9 articles through 1995 compared to 18.5 articles for full professors ($t = -4.21$). Similar results are observed at departments ranked 21 to 96: 9.1 versus 16.2 articles for full professors ($t = -7.01$). Tables VI and VII also show data on publications per year since receiving the Ph.D. degree, which support these findings. Associate professors have produced a significantly lower flow of articles compared to full professors. These results suggest that associate professors are at their rank—

Table VI
Research Productivity and Publication Impact of Full Professors at Top 20 Finance Departments

The table shows cumulative citations per year since receiving the Ph.D. degree, cumulative citations, the percentage of publications in both finance and economics journals (separated by rank groupings for finance journals ranked 1 to 15), publications per year since receipt of the Ph.D. degree, and total articles through 1995. Professors are rank ordered by cumulative citations per year since receipt of the Ph.D. degree. The number of publications as of 1995 for each full professor is derived from the same sources used in Tables IV and V. Cumulative citations are culled from the Social Sciences Citation Index.

Name of Full Professor	Cumulative Cites per Year Since Ph.D. Degree	Cumulative Citations	Percentage of Publications in				Publications per Year Since Ph.D. Degree	Total Articles
			Finance Journals Ranked 1 to 4	Finance Journals Ranked 5 to 15	Other Finance and Accounting Journals	Economics and Law Journals		
Vishny, Robert W.	98.6	986	25.9	—	3.7	70.4	2.70	27
Stulz, René M.	69.5	1043	44.7	23.7	13.2	18.4	2.53	38
Keim, Donald B.	68.5	822	45.5	36.4	18.2	—	1.83	22
Diamond, Douglas W.	67.7	1016	53.8	—	—	46.2	0.87	13
Murphy, Kevin J.	67.7	745	9.5	—	33.3	57.1	1.91	21
Cochrane, John H.	63.9	575	20.0	—	—	80.0	1.11	10
Froot, Ken	63.6	572	17.4	17.4	21.7	43.5	2.56	23
Stambaugh, Robert	61.1	856	83.3	5.6	—	11.1	1.29	18
Stein, Jeremy C.	55.0	495	34.8	—	13.0	52.2	2.56	23
Ruback, Richard	54.3	814	73.3	—	6.7	20.0	1.00	15
Duffie, Darrell	53.9	593	10.7	—	10.7	78.6	2.55	28
Scharfstein, David S.	53.3	480	29.4	—	11.8	58.8	1.89	17
Asquith, Paul	53.2	798	75.0	8.3	8.3	8.3	0.80	12
Gibbons, Michael R.	50.3	755	63.6	—	—	36.4	0.73	11
Harris, Lawrence E.	49.8	647	57.1	42.9	—	—	1.08	14
Admati, Anat	49.4	593	43.8	—	—	56.3	1.33	16
Kaplan, Steven N.	46.7	327	76.9	—	15.4	7.7	1.86	13
Titman, Sheridan D.	45.5	637	62.1	17.2	13.8	6.9	2.07	29
Thakor, Anjan	44.6	669	26.9	38.5	7.7	26.9	3.47	52
Lo, Andrew W.	42.7	470	61.5	—	—	38.5	1.18	13
MacKinlay, A. Craig	42.2	422	90.0	—	—	10.0	1.00	10
Harvey, Campbell	41.9	377	33.3	21.2	33.3	9.1	3.67	33
Leftwich, Richard W.	39.7	595	30.0	—	70.0	—	1.33	20
Calomiris, Charles W.	37.3	373	5.0	15.0	10.0	70.0	2.00	20
Shanken, Jay	36.8	441	73.7	—	21.1	5.3	1.58	19
Allen, Franklin	33.1	496	25.0	—	10.0	65.0	1.33	20
Ferson, Wayne E.	32.5	423	57.9	15.8	15.8	10.5	1.46	19
Saunders, Anthony	30.6	429	15.9	46.0	12.7	25.4	4.50	63

DeAngelo, Linda E.	28.4	426	31.3	6.3	56.3	6.3	1.07	16
Pfleiderer, Paul	27.8	361	40.0	6.7	—	53.3	1.15	15
Gorton, Gary	27.8	333	21.1	10.5	10.5	57.9	1.58	19
Walking, Ralph A.	26.7	400	50.0	43.8	—	6.3	1.07	16
Rajan, Raghuram G.	26.3	105	66.7	—	—	33.3	1.50	6
Karpoff, Jonathan M.	24.0	312	33.3	26.7	—	40.0	1.15	15
Barclay, Michael J.	23.9	215	71.4	—	21.4	7.1	1.56	14
Srivastava, Sanjay	23.6	307	15.8	10.5	—	73.7	1.46	19
Marcus, Allen	23.2	325	22.2	40.7	11.1	25.9	1.93	27
McDonald, Robert L.	22.5	293	30.8	46.2	—	23.1	1.00	13
Hirshleifer, David	22.5	225	33.3	13.3	13.3	40.0	1.50	15
Sundaresan, Suresh	21.0	315	57.1	21.4	21.4	—	0.93	14
Hasbrouck, Joel	20.8	291	50.0	16.7	16.7	16.7	1.29	18
Korajczyk, Robert A.	20.6	247	66.7	8.3	8.3	16.7	1.00	12
Huberman, Gur	18.8	282	40.0	—	—	60.0	1.00	15
Lucas, Deborah	18.1	127	22.2	33.3	—	44.4	1.29	9
Kaul, Gautam	17.3	173	91.7	8.3	—	—	1.20	12
Lewis, Karen K.	14.6	146	25.0	12.5	—	62.5	1.60	16
Seyhun, H. Nejat	12.9	142	72.7	9.1	—	18.2	1.00	11
Green, Richard C.	11.2	145	66.7	8.3	—	25.0	0.92	12
Kester, W. Carl	11.1	155	—	11.1	88.9	—	0.64	9
Fisher, Jeffrey D.	4.1	61	—	6.3	93.8	—	1.07	16
Mamer, John W.	1.9	25	—	—	—	100.0	0.31	4
Average	37.3	448.2	42.1	12.3	13.7	31.8	1.55	18.5
Standard Deviation	20.1	255.6	24.8	14.5	21.2	26.6	0.80	10.3
Associate Professors	—	—	40.9	15.0	14.9	29.2	1.06	9.9
Average	—	—	30.2	17.1	20.5	32.1	0.52	5.2
Standard Deviation	—	—	—	—	—	—	—	—

Table VII

Research Productivity and Publication Impact of Full Professors at Finance Departments Ranked 21-96

The table shows research productivity and citation data for professors affiliated with finance departments ranked 21 to 96 according to total impact of research published as reported by Borokhovich et al. (1995). Professors are rank ordered by cumulative citations per year since receipt of the Ph.D. degree. The number of publications as of 1995 for each full professor is derived from the same sources used in Tables IV and V. Cumulative citations are collected from the Social Sciences Citation Index.

Name of Full Professor	Cumulative Cites per Year Since Ph.D. Degree	Percentage of Publications in					Publications per Year Since Ph.D. Degree	Total Articles
		Cumulative Citations	Finance Journals Ranked 1 to 4	Finance Journals Ranked 5 to 15	Other Finance and Accounting Journals	Economics and Law Journals		
French, Kenneth R.	124.8	1498	68.2	9.1	4.5	18.2	1.83	22
Mikkelsen, Wayne H.	40.7	610	57.1	14.3	14.3	14.3	0.93	14
Ritter, Jay R.	35.0	490	69.2	—	23.1	7.7	0.93	13
Revenscraft, David J.	34.4	516	11.1	—	—	88.9	0.60	9
Dann, Larry Y.	32.6	489	75.0	—	25.0	—	0.53	8
Romano, Roberta	31.3	470	—	—	4.3	95.7	1.53	23
Jorion, Philippe	31.2	374	37.9	44.8	13.8	3.4	2.42	29
Lehn, Kenneth	28.4	397	22.2	—	11.1	66.7	0.64	9
Kahn, Charles M.	28.1	394	—	5.9	6.7	82.4	1.21	17
Jagannathan, Ravi	28.0	336	60.0	—	—	33.3	1.25	15
Poulsen, Annette B.	27.2	326	50.0	28.6	—	21.4	1.17	14
Bhagat, Sanjai	25.7	334	53.3	13.3	26.7	6.7	1.15	15
Butler, Henry	16.7	217	—	—	—	100.0	1.23	16
Foster, F. Douglas	16.4	131	66.7	16.7	—	16.7	0.75	6
Shastri, Kuldeep	13.8	179	11.1	66.7	14.8	7.4	2.08	27
Conrad, Jennifer S.	13.7	123	88.9	11.1	—	—	1.00	9
Gay, Gerald D.	13.2	198	17.6	52.9	23.5	5.9	2.27	34
Pruitt, Stephen W.	11.9	95	8.3	50.0	4.2	37.5	3.00	24
Owers, James E.	11.2	145	15.4	30.8	38.5	15.4	1.00	13
Agrawal, Anup	10.4	94	50.0	30.0	—	20.0	1.11	10
Ronn, Ehud I.	10.3	124	31.3	37.5	25.0	6.3	1.33	16
Starks, Laura T.	10.2	143	38.5	38.5	15.4	7.7	0.93	13
Davidson, Wallace N. III	10.0	130	3.1	46.9	37.5	12.5	2.46	32
Wansley, James W.	9.9	148	—	85.0	10.0	5.0	1.33	20
Ling, David C.	9.5	104	—	5.3	84.2	10.5	1.73	19
Hartzell, David J.	9.4	94	—	7.1	92.9	—	1.40	14
Bodurtha, James N.	9.3	111	62.5	12.5	25.0	—	0.67	8
Schlesinger, Harris	8.7	131	6.7	3.3	56.7	33.3	2.00	30

Trzcinka, Charles	8.7	130	38.5	23.1	0.87	13
Chance, Don	8.4	126	59.0	28.2	2.60	39
Moore, William T.	8.4	109	13.8	13.8	2.23	29
Peterson, David R.	8.0	112	17.9	5.1	2.79	39
Thibodeau, Thomas G.	7.9	118	—	50.0	0.67	10
Huang, Roger D.	7.7	116	28.0	36.0	1.67	25
Kracaw, William A.	7.6	114	46.2	24.0	1.67	25
Hansen, Robert G.	7.5	82	—	7.7	0.87	13
Koch, Paul D.	7.4	111	40.0	—	0.73	8
McDonald, Bill D.	7.2	108	56.5	6.7	1.00	15
Kulatilaka, Nalin	6.8	89	11.1	17.4	1.53	23
Rao, Ramesh P.	6.7	67	60.9	33.3	0.69	9
Peterson, Pamela P.	6.6	93	18.2	44.4	2.30	23
Talmor, Eli	6.4	90	68.2	21.7	1.57	22
Back, Kerry E.	6.3	76	33.3	9.1	1.29	18
Cornett, Marcia M.	6.3	76	—	16.7	0.75	9
Miles, James A.	6.1	92	30.8	—	1.08	13
Coles, Jeffrey L.	5.9	65	47.6	7.7	1.40	21
Chung, Kee H.	5.9	53	7.7	23.8	1.40	13
Schallheim, James S.	5.8	87	45.0	46.2	1.18	20
Kale, Jayant R.	5.4	43	45.5	35.0	2.22	11
Glascok, John L.	5.4	43	35.7	—	0.73	14
D'Arcy, Stephen P.	5.0	55	35.7	21.4	1.75	14
Choi, Jongmoo Jay	4.9	64	34.5	24.1	2.64	29
Wolf, Avner	4.7	70	—	10.0	0.77	10
Sears, Stephen R.	4.3	51	33.3	6.7	1.00	15
Urrutia, Jorge L.	4.1	62	53.8	60.0	1.08	13
Ferris, Stephen P.	4.1	41	66.7	15.4	1.40	21
Weller, Paul	4.1	45	35.7	9.5	1.40	14
Kolari, James W.	4.0	56	36.4	—	2.00	22
Mahajan, Arvind	3.9	59	—	18.2	0.64	9
Mauer, David C.	3.8	57	45.0	100.0	1.33	20
Wu, Chunchi	3.8	34	61.5	35.0	0.87	13
Allen, Linda	3.3	43	72.7	7.7	1.22	11
Lockwood, Larry J.	3.1	34	21.9	—	2.46	32
Polonchek, John A.	3.1	40	70.0	18.8	0.91	10
Jahera, John L.	3.0	36	45.5	—	0.85	11
Chiang, Thomas C.	2.8	39	42.9	27.3	0.58	7
Smith, Stephen D.	2.8	39	52.6	42.1	1.36	19
Sa-Aadu, Janjisu	2.7	40	41.7	50.0	0.86	12
Tsetsekos, George P.	2.6	39	20.0	8.3	1.33	20
Dubofsky, David A.	2.4	22	60.0	45.0	1.00	15
	2.0	28	20.0	20.0	1.56	14
			42.9	28.6	1.00	14
			71.4	7.1		

Table VII—Continued

Name of Full Professor	Cumulative Cites per Year Since Ph.D. Degree	Cumulative Citations	Percentage of Publications in				Publications per Year Since Ph.D. Degree	Total Articles
			Finance Journals Ranked 1 to 4	Finance Journals Ranked 5 to 15	Other Finance and Accounting Journals	Economics and Law Journals		
Heaton, Hal	1.5	18	11.1	66.7	22.2	—	0.75	9
Mitchell, Karlyn	1.3	17	—	57.1	—	42.9	0.54	7
Kemp, Robert S.	0.9	13	—	20.0	60.0	20.0	0.36	5
Goebel, Paul R.	0.6	9	—	—	100.0	—	0.47	7
Nachtmann, Robert	0.3	4	—	—	33.3	66.7	0.21	3
Chu, Quentin C.	0.1	1	—	50.0	50.0	—	0.18	2
Average	11.6	149.7	19.6	32.4	23.3	24.8	1.27	16.2
Standard Deviation	16.3	207.1	22.2	24.0	23.1	26.3	0.64	8.1
<i>t</i> -test: Top 20 v. Rank 21–96	7.51**	6.83**	5.23**	-5.87**	-2.40**	1.47	2.06	1.33
<i>t</i> -test: Top 20 v. Rank 76–96	8.81**	7.64**	5.86**	-8.19**	-2.25*	2.31*	1.89	1.47
<i>Associate Professors</i>								
Average	—	—	20.7	37.5	26.1	15.6	0.92	9.1
Standard Deviation	—	—	22.9	27.0	26.6	19.8	0.52	4.8
<i>t</i> -test: Top 20 v. Rank 21–96	—	—	3.73**	-6.27**	-2.79**	2.41*	1.43	0.83
<i>t</i> -test: Top 20 v. Rank 76–96	—	—	4.60**	-3.60**	-2.18*	0.99	1.35	1.31

**, * Significant at the 1 and 5 percent levels, respectively.

probably with tenure—because they have the correct quality mix of articles, but they have not yet produced the *stock* or *flow* of articles required to be a full professor.

Tests of significance between associate professors at top-ranked and lower-ranked departments follow the results observed for full professors. Associate professors at top-ranked departments place a higher fraction of their articles in the top finance journals. The only difference is that the fraction of articles published in the *JFE* does not seem to be significantly different between these two groups.

D. All Journals and Production Substitutes

Not all the articles of our reference group appear in the top economics and finance journals. Table III lists an additional eleven journals that have notable impact on research in finance and the ELDB covers 300 finance, insurance, accounting, and real estate journals that are outlets for finance faculty. Because some universities may accept substitutes in the production of research credentials, the standards indicated by the number of publications in top finance or economics journals may not show a complete picture of the research requirements for promotion. Tables VI and VII provide information on publications in other journals to help examine this issue.

The information on publications is arranged by the percentage of total articles appearing in a journal grouping. The four groupings used are: top 4 finance journals, finance journals ranked 5 to 15 in Table III, all other finance and accounting journals covered by the ELDB, and economics and law journals. Tables VI and VII also show cumulative citations per year since receiving the Ph.D. degree and cumulative citations which are computed for each professor using 1995 as the ending year. Information on citations is collected from the SSCI using the on-line service, DIALOG, to search for citations by first author on an article.¹³ Cumulative citations equals all citations to sole-authored and coauthored work up to and including articles published in 1995. Citation counts are not adjusted for the number of authors on a publication. Faculty are also ranked from highest to lowest in both tables by cumulative citations per year since the Ph.D. degree, which provides a ranking of research impact that helps to adjust for the various vintages across professors.

In Tables VI and VII, the columns reporting percentage of publications by journal grouping strongly support the view that universities allow substitutes in the production of research credentials for full professor. Reiterating the re-

¹³ The SSCI reports citations by first author as listed in an article. This creates a citation count bias for professors whose last name starts with a letter near the end of the alphabet and who publish with coauthors. We searched for citations by first author of every article attributed to our sample of 127 professors in order to avoid this bias. However, citation searches are almost never exact because the original sources make many mistakes in formulating their reference list. In counting cites, we applied the same search procedures to every professor, so any omissions are unlikely to change relative faculty rankings or the relative magnitudes observed between top and lower-ranked departments.

sults in Tables IV and V, we find that faculty affiliated with a top 20 finance department publish a higher fraction of their articles in the top four finance journals compared to faculty affiliated with lower-ranked departments ($t = 5.23$ and $t = 5.86$). Correspondingly, faculty affiliated with lower-ranked departments publish a higher fraction of their articles in finance journals ranked 5 to 15 than faculty affiliated with top 20 departments ($t = -5.87$ and $t = -8.19$).

Specifically, faculty affiliated with lower-ranked departments publish an average of 19.6 percent of their articles in the top 4 finance journals and 32.4 percent of their articles in journals ranked 5 to 15. In contrast, faculty at top 20 departments publish an average of 42.1 percent of their articles in the top 4 finance journals and only 12.3 percent of their articles in journals ranked 5 to 15. The differences observed for other finance and accounting journals are less significant. These comparisons suggest that there are production substitutes among finance journals for faculty seeking promotion to full professor at lower-ranked schools. Faculty at lower-ranked schools can have fewer publications in the top four finance journals if they have a significant number of publications (1 out of 3 articles) in the next tier of finance journals.

Production substitution may not readily extend to publications in economics and law journals as documented in column six in Tables VI and VII. On average, 31.8 percent of the articles published by professors at top 20 schools are placed in economics journals compared to 24.8 percent at lower-ranked schools, which is an insignificant difference. However, nearly one-third of the economics and law articles by top 20 faculty are placed in the *AER*, *Econometrica*, or *JPE*, whereas less than one-twelfth of the economics and law articles by faculty at lower-ranked departments are placed in these journals. It appears that the top tier economics journals may be production substitutes for faculty seeking promotion at a top 20 school, but this is less obvious for faculty at lower-ranked schools.

Similar results are found for our sample of associate professors as shown at the bottom of Tables VI and VII. Associate professors at top-ranked departments publish a statistically greater fraction of their articles in the top journals than associates at lower-ranked departments. Associate professors at lower-ranked departments publish a statistically greater fraction of articles in second-tier journals than associates at top-ranked departments. Thus, production substitution across finance journals extends to the associate level at lower-ranked departments.

In total, these results show that recently promoted full professors at top 20 finance departments publish the majority of their articles—an average of 74 percent—in the top 4 finance journals or in economics and law journals. Recently promoted full professors affiliated with lower-ranked schools publish one-half of their articles—an average of 52 percent—in the top 15 finance journals and distribute the remaining publications nearly equally in economics, law, and other finance and accounting journals. Thus, in terms of research produced and its outlets, there appear to be different standards for promotion to full professor between top 20 schools and lower-ranked schools.

E. Citations and Research Productivity Rates

Citations and research output rates are also important variables in the promotion process at most universities. Citations to articles published are an indicator of how a candidate's research affects other research in the discipline. Citations indicate both research impact and reputation; the more citations, the more people are aware of the work. Generally, the more publications produced, the more likely that some of them will be cited. Total research output and productivity rates are also indicators of an ongoing research program. Faculty and administrators who are less familiar with journal rankings may use these variables to signal information about a faculty member's research activity.

Interestingly, as shown in Tables VI and VII, the average number of publications and publications per year do not vary significantly between top 20 and lower-ranked schools. Full professors affiliated with a top 20 department published an average of 18.4 articles through 1995 or 1.55 articles per year since receiving the Ph.D. degree. Full professors at schools ranked 21 to 96 published an average of 16.2 articles through 1995 or 1.27 articles per year, which is less than professors at a top 20 department in both cases, but not statistically different in either case as shown by the *t*-tests in Table VII.

Citations appear to provide a clearer signal about research quality than total articles or productivity rates. Professors affiliated with a top 20 department received an average of 448.2 cumulative cites or 37 cumulative cites per year since receiving the Ph.D. degree. Professors affiliated with lower-ranked departments received an average of 149.7 cumulative cites or 11.5 cumulative cites per year since receiving the Ph.D. degree, both of which are statistically less than professors at top 20 departments.¹⁴ If research impact is measured by citations per year, then research by professors at top 20 departments has 3.2 times (37 divided by 11.5) the impact of research by professors at lower-ranked departments. In short, standards for total articles and the rate of output may not differ between our two groups of universities, but impact standards—as measured by cumulative citations and citations per year—are higher at a top 20 department.

F. Exceptions to the Average

Although the various measures of research productivity discussed above are useful for making comparisons and setting guidelines, they may not fully describe the research standards used by all universities. Each university may have a slightly different procedure for promotion or appointment to full professor. After all, the research credentials of many faculty in our sample are below our reported averages, but all of these faculty are full professors.

¹⁴ As noted earlier, Professor French is an anomaly at the lower-ranked departments with 1,498 cumulative citations. Removing him from the sample lowers the average number of cumulative cites to 128.2 or 9.7 cumulative cites per year since receiving the Ph.D. degree and increases the statistical significance observed between top 20 and lower-ranked schools.

Thus, our averages are conditional, and cannot be unconditioned without data on faculty who were not successfully promoted to full professor.¹⁵ Additionally, these data provide almost no information on a given university's promotion practices over time, so we cannot distinguish any university-specific practices. However, it is reasonable to believe there are exceptions to the averages that we have discussed.

A candidate's field of specialization may provide one reason why universities may deviate from the average. Insurance and real estate journals, for example, are not represented in Table III. Candidates specializing in these areas may be held to more flexible standards. Teaching skills are also important to universities, perhaps now more than in the past. A candidate's research may be below some established standard, but his or her teaching skills may be award winning. Rather than discourage such candidates, some of whom may never achieve the university's research standard, the university may promote to reward teaching excellence.

Universities may also promote to full professor on the basis of reputation and name recognition apart from the traditional academic research model in which specific journals play a premier role. For example, Professors Froot, Kester, and Ruback are all full professors at Harvard University, but have different research records: Froot's and Ruback's records are more traditional and like the averages reported for a top 20 department, whereas Kester's record shows no articles in the top four finance or top economics journals. Kester publications, however, received more cumulative citations than all but fourteen faculty affiliated with the lower-ranked departments grouping. Compared to most faculty at lower-ranked departments, Kester's research has had an influence. To Harvard University, then, recognition by others and influence may be as important as journal placement and output rates.

G. Stocks and Flows

We use Ph.D. vintage to determine who was a recently promoted full professor. As noted above, we may bias our results toward higher flow and lower stock criteria with this approach. To examine this question, we separate the post-1985 faculty from the 1980–84 group without regard to department rank and compare their research output. On average, the post-1985 group tends to have higher flows and lower stocks than the 1980–84 group: 1.8 articles per year compared to 1.3, 27.5 cumulative cites per year compared to 20.4, 15.7 total articles compared to 17.5, and 246 cumulative citations compared to 275. However, none of these results are statistically different from each other except for articles per year. Redoing the results in Tables IV to

¹⁵ The information in the sample of associate professors gives us some data on credentials that, on average, are not yet acceptable for full professor, but this is not the same as credentials that have been rejected for promotion. Rejected credentials are likely to be better than those reported for associate professors, but not as good as those reported for full professors.

VII excluding the post-1985 group causes only small changes in the reported averages and no changes in statistical significance. Thus, it does not appear that the stock and flow issue is important enough to affect our basic results.

III. Conclusion

This study seeks to identify the research standards required for promotion to full professor of finance. By focusing on a sample of recently promoted full professors, it relies on the academic marketplace to define the applicable standards. There are significant differences between research credentials at top-ranked and lower-ranked departments and these differences produce a number of benchmarks that aspiring faculty may target. However, the basic message to be drawn from this analysis is that faculty should write "good" papers. These are the ones that affect thinking in finance and lead to citations, recognition, and enhanced reputation. Promotion to full professor will follow from this effort.

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