

Chapman University

Chapman University Digital Commons

Business Faculty Articles and Research

Business

4-2003

Impact: What Influences Finance Research?

Tom Arnold

Dickinson College

Alexander W. Butler

Rice University

Timothy Falcon Crack

University of Otago

Ayca Altintig

Chapman University

Follow this and additional works at: https://digitalcommons.chapman.edu/business_articles



Part of the [Finance and Financial Management Commons](#)

Recommended Citation

Arnold, Tom, Alexander W. Butler, Timothy Falcon Crack, and Ayca Altintig. "Impact: What Influences Finance Research?*" *The Journal of Business* 76.2 (2003): 343-361.

DOI: 10.1086/367753

This Article is brought to you for free and open access by the Business at Chapman University Digital Commons. It has been accepted for inclusion in Business Faculty Articles and Research by an authorized administrator of Chapman University Digital Commons. For more information, please contact laughtin@chapman.edu.

Impact: What Influences Finance Research?

Comments

This article was originally published in *Journal of Business*, volume 76, issue 2, in 2003. DOI: [10.1086/367753](https://doi.org/10.1086/367753)

Copyright

University of Chicago Press

Tom Arnold

University of Richmond

Alexander W. Butler

Rice University and University of South Florida

Timothy Falcon Crack

Barclays Global Investors

Ayca Altintig

Chapman University

Impact: What Influences Finance Research?*

I. Introduction

Finance journals have impact because they publish papers that have impact. A single paper, frequently cited, can make a researcher famous and put the journal that publishes that paper “on the map.” Citations are, however, endogenous. As with Keynes’s beauty pageant, we read and cite what other researchers read and cite. A list of the most cited papers is therefore very important. It tells us what to read, what to give our students to read, and what areas and which journals are influential (and which are not).

We rank journal articles by the number of times they are cited in *Financial Management (FM)*, *Journal of Business (JB)*, *Journal of Finance (JF)*, *Journal of*

* This article was completed while Tom Arnold, Alexander W. Butler, and Ayca Altintig were at Louisiana State University. We thank Cindy Arnold, Lee Ann Butler, Bill Lane, Sanjay Nawalkha, and seminar participants at Louisiana State University for helpful discussions. Any errors are our own. Views expressed in this article are not necessarily the views of Barclays Global Investors, Ltd. nor of its parent company Barclays, PLC.

(Journal of Business, 2003, vol. 76, no. 2)
© 2003 by The University of Chicago. All rights reserved.
0021-9398/2003/7602-0006\$10.00

Which journal articles have had the most impact on finance research? Which journals dominated finance research in the 1990s? We answer these and similar questions using a comprehensive sample of journals, an extensive time period, and a new ranking method that avoids problems inherent in the existing literature. Among our findings: six of the 10 articles most highly cited by finance journals were published in economics or economics journals; *Journal of Finance* has the most citations, but it accounts for only one of the top 10 articles; and *Journal of Financial Economics* has the highest impact per article.

TABLE 1 Citation Studies of Journal Rankings, 1983–2000

Year	Authors	Time Span of Study	Number of Source Journals	Citation Measures Used
1983	Coe and Weinstock	N.A.	N.A.	Survey*
1985	Mabry and Sharplin	1980–85	4	SE, AE, IE
1990	<i>Journal of Financial Economics (JFE)</i> editorial	1988	SSJ	SSCI Factors
1994	Zivney and Reichenstein	1990	18	SE, IF, AIF
1994	Alexander and Mabry†	1987–91	4	SE, AE, IE
1995	Borokhovich, Bricker, Zivney, and Sundaram	Varies (1972–94)	SSJ, 16 textbooks	SSCI Impact Factor, SE for textbooks, circulation figures
1999	Borokhovich, Bricker, and Simkins	1984–97	SSJ	SSCI Factors with additional factors‡
2000	Borokhovich, Bricker, and Simkins	1990–96	SSJ	SSCI Impact Factor
1997–2000	<i>JFE</i> editorial reports for 1996–99	Varies	SSJ	SSCI Impact Factor

NOTE.—SE = Simple Effectiveness = number of times cited. AE = Article Effectiveness = Simple Effectiveness divided by the average annual number of articles published. IE = Impact Efficiency = (Simple Effectiveness divided by the average number of words per year) times 10,000. SSJ = Social Sciences Journals (about 1,400). SSCI Factors: *Social Science Citation Index's* "Journal Citation Record" has two quality measures beyond simply the number of times an article/journal has been cited (SE): Impact Factor (number of citations that date from the 2 previous years over the number of articles published in the 2 previous years) and Cited Half-Life (the number of years in the past it takes to incorporate 50% of the citations in the current year). IF = Impact Factor = Simple Effectiveness divided by the number of articles published between 1980 and 1990. AIF = Adjusted Impact Factor = Same as Impact Factor but the number of citations (SE) excludes self-citations. N.A. = not applicable.

* Survey of 106 department chairpersons as to journal quality and perceived journal acceptance rates.

† This study also lists the 50 most-cited authors and the 50 most-cited articles.

‡ This uses two more SSCI factors: Immediacy Index (number of citations in a year divided by the number of articles published in the same year) and the (1993) Deurenberg Index (product of the SSCI Impact Factor multiplied by the SSCI Cited Half-Life).

Financial and Quantitative Analysis (JFQA), *Journal of Financial Economics (JFE)*, and *Review of Financial Studies (RFS)* during the period 1990–99. We use the rankings to identify the most-cited articles and to prepare suggested reading lists for five different topical areas.

Our rankings have additional uses. Finance faculties have been evaluated on the basis of their publication record, adjusted for quality (Borokhovich, Bricker, Brunarski, and Simkins 1995). Assessing the impact of authors (Schwert 1993) and of articles and subject matters (Schwert 1993; Borokhovich, Bricker, and Simkins 1994; Borokhovich et al. 1998) and evaluating the research impact of textbooks (Borokhovich, Bricker, Zivney, and Sundaram 1995) are all possible applications of the rankings and other information we provide in the current study.

One direct consequence of ranking articles is that we are also able to rank journals. We do so using a new methodology that refines previous journal rankings. Journal rankings have typically been calculated as the average number of citations or total number of citations (see table 1), but such a method

may give a distorted impression of the quality of a typical publication in a given journal. For example, if a journal that typically publishes lower-impact papers publishes one high-impact article, then the journal may appear to be above average if judged by total number of citations alone. The number of important papers (i.e., papers cited frequently) published by a journal gives a more accurate view of journal quality by mitigating the effects of highly cited outliers. It also mitigates other problems arising from examining citations as a measure of quality or impact, such as negative citations (articles criticizing or disagreeing with earlier published work) and self-citations.¹

From our rankings of papers, we deduce a pecking order among top-level journals that is broadly consistent with recent papers that rank only journals. The top three journals are *JF*, *JFE*, and *RFS*. Other high-impact journals include *JB*, *JFQA*, and *Econometrica* (*EMCT*, which ranks third in terms of total citations). Top-level finance research is clearly interdisciplinary: more than half of our top 25 journals are not narrowly focused on finance. The remainder of this article is organized as follows: Section II reviews previous literature, Section III explains our data and our methods, Section IV discusses trends in finance research, and Section V offers our conclusion.

II. Prior Literature on Journal Impact

We focus on the impact of individual journal articles rather than the impact of the journals themselves. As such, this study differs from almost all the prior literature on the impact of finance research. One notable exception is Alexander and Mabry (1994); we compare our rankings to theirs in Section IV. A by-product of our ranking of individual articles is that we have information that enables us to rank journals in a new and improved fashion. It is for this reason that we now review briefly the literature on journal ranking methods and discuss our improvement upon those methods.

One commonly used criterion of journal quality for the social sciences journals (about 1,400 journals) is to measure the number of citations to a given journal by any other social science journal. Such measures are produced by the Social Sciences Citation Index (SSCI) and are reported annually in the *Journal Citation Record*. The measures most used are Cited Half-Life and Impact Factor. Cited Half-Life is the number of years back from the current year it takes to account for half of the citations in the current year, and it is a rough indication of the age of cited articles that were published in a journal (e.g., if in 1999 a journal was cited 500 times and 40 of those citations were to 1999 papers, 80 were citations to 1998 papers, and 130 were to 1997 papers—a total of 250 citations for the last 3 years—the journal would have a Cited Half-Life of 3 years). Impact Factor is the number of citations to a given journal that date from the previous 2 years divided by the number of

1. Brown and Gardner (1985) describe some limitations of using citations as a measure of impact.

articles published in the said journal during the previous 2 years (e.g., if in 1999 a journal was cited 500 times for 200 articles published in 1997 and 1998, it would have a 1999 2-year Impact Factor of 2.5). The SSCI measures are widely used (see table 1); however, these measures may be biased because the citation count includes citations made by nonfinance journals.²

To avoid the nonfinance bias in the SSCI measures, we follow the methodology used by Mabry and Sharplin (1985), Alexander and Mabry (1994), and Zivney and Reichenstein (1994). These authors used citations produced only by finance journals rather than SSCI measures that are generated from about 1,400 social science journals, many of which are unrelated to business disciplines. We update these studies using both a more comprehensive sample (10 years and six journals) and a new ranking method (number of important papers published).

III. Data and Empirical Methods

To determine which articles have most influenced the field of finance, we looked at all the citations made by papers published in six leading finance journals over a 10-year period. These data are much more comprehensive than those used in any prior study.³ We selected *JB*, *JF*, *JFQA*, *JFE*, *FM*, and *RFS* as our six source journals and the period 1990–99 as our time frame. We selected *JF*, *JFE*, *JFQA*, and *RFS* because these journals are used in Alexander and Mabry (1994) as source journals. We included *JB* because Alexander and Mabry (1994) identify it as a highly influential journal in finance. We included *FM* because Borokhovich et al. (1999) identify it as being a top finance journal. The extended time period we examine allows us to identify journals and articles that have stood the test of time. We use the citations listings from the Institute for Scientific Information's (ISI) citation data base, Web of Science (<http://www.isiknowledge.com>), as the source for our data.

We collected a list of all the works cited in every article published in our six source journals during the 10-year time frame. There are 67,944 citations in total. From this list of citations, we compiled the number of citations each paper received, generating a list of 32,131 unique sources cited. We constructed a list of articles and their citation counts that we sorted to generate the list of top articles and a compilation of the 2,000 papers cited most often.

2. A recent study by Borokhovich, Bricker, and Simkins (2000) asserts that the Impact Factor is unbiased in determining journal quality. However, that study uses SSCI citation information for only three journals (*JF*, *JFE*, and *RFS*). *JFE* uses the SSCI Impact Factor almost exclusively (*Journal of Financial Economics*, editorial reports, 1996–99 and editorial 1990; these reports appear on the *JFE* Web site at <http://www/jfe.rochester.edu>). Borokhovich et al. (1999) use both SSCI measures: Cited Half-Life and Impact Factor. Other studies rely almost solely on the SSCI Impact Factor.

3. We have 60 "journal-years" (six journals times 10 years). Alexander and Mabry (1994) have 19 journal-years (three journals for 5 years and one journal for 4 years). Zivney and Reichenstein (1994) have 18 journal-years (18 journals for 1 year).

The most-cited paper (see table 2) had 396 cites; the 2,000th paper had five cites. These top 2,000 papers are deemed “important papers” for purposes of this study. We present a list of the top 50 of these articles in table 2. We refer to papers published during or after 1990 as Recent Papers. A top-2,000 paper published during or after 1990 is thus a Recent Important Paper. For comparison, we also present the total number of citations made to each article by all journals included in the ISI’s Social Sciences Citation Index since the articles’ publication as well as the SSCI journals’ citations is limited to our sample period, 1990–99.

To assess the impact that journals have, we calculated the number of Important Papers (i.e., top 2,000) published in each journal (see table 3). By this measure, *JF* and *JFE* are dominant, with 517 and 406 Important Papers, respectively. Although *EMCT* is second highest in terms of total number of citations, when ranking by number of important papers, *EMCT*, with 65, falls below *RFS*, *JB*, and *JFQA*, which have 124, 90, and 87, respectively. The contrast between Total Citations and number of Important Papers is readily apparent in the case of the *Journal of Financial Research*, which has a large number of citations (407) but only one paper that is among the 2,000 most-cited papers over our sample period (Rozeff 1982). Conversely, *Journal of Accounting and Economics* makes it into the top 10 based on number of Important Papers, but it is thirteenth based on total number of cites.

Note that *JF* and *JFE* are very close in terms of Total Citations, with 11,392 and 11,051 citations from top finance journals, respectively. No other journal has more than 2,500 citations during the 10-year time period. The next group of journals includes *RFS*, *JB*, and *JFQA*, with 2,327, 1,986, and 1,807 Total Citations, respectively. *Econometrica* had more Total Citations than each of these three—2,457 total, but only 143 of these were citations to recent papers (i.e., 1990 or after).

To gain insight into recent trends among journals, table 3 shows which journals have recent Important Papers (i.e., top 2,000 papers published since 1990).⁴ Note that *JF* is again the clear leader with 229 Recent Important Papers, while *JFE* and *RFS* are substantially below that mark with 128 and 90 Important Recent Papers, respectively. Note, too, that *JB*, with 26 Recent Important Papers, falls below *JFQA* and *FM*, which have 35 and 29 Recent Important Papers, respectively.

Table 3 indicates that *JF* has had substantially more citations of recently published papers than has *JFE* (4,017 citations for *JF*; 2,240 for *JFE*). *RFS* has had 1,165 citations of recently published papers. *Journal of Political Economy*, *JFQA*, *FM*, *Journal of Econometrics*, and *JB* have also made substantial impact; they have 458, 284, 235, 223, and 222 citations of recent papers, respectively.

4. For example, a citation to Fama and French (1992) increases by one the count of Total Cites and Recent Cites for *JF*. A citation to DeBont and Thaler (1985) increases the count of Total Cites, but it does not affect the count of Recent Cites for *JF*.

TABLE 2 Top 50 Most-Cited Articles

Author(s)	Year	Title	Source	Number of Top Finance Journal Citations	Total Citations since Publication	Total Citations, 1990–99
1. White, Halbert	1980	A heteroskedasticity consistent covariance matrix estimator and a direct test for heteroskedasticity	<i>ECMT</i>	396	2,245	1,891
2. Jensen, Michael C.	1986	Agency costs of free cash flow, corporate finance, and takeovers	<i>AER</i>	268	585	376
3. Myers, Stewart C.	1977	Determinants of corporate borrowing	<i>JFE</i>	236	535	342
4. Myers, Stewart C., and Majluf, Nicholas S.	1984	Corporate financing and investment decisions when firms have information that investors do not have	<i>JFE</i>	221	592	354
5. Jensen, Michael C., and Meckling, William H.	1976	Theory of the firm: Managerial behavior, agency costs, and ownership structure	<i>JFE</i>	218	2,167	1,544
6. Hansen, Lars Peter	1982	Large sample properties of generalized method of moments estimators	<i>ECMT</i>	217	1,013	789
7. Kyle, Albert S.	1985	Continuous auctions and insider trading	<i>ECMT</i>	216	354	337
8. Cox, John C.; Ingersoll, Jonathan E., Jr.; and Ross, Stephen A.	1985	A theory of the term structure of interest rates	<i>ECMT</i>	213	444	373
9. *Fama, Eugene F., and French, Kenneth R.	1992	The cross-section of expected stock returns	<i>JF</i>	183	249	249
10. Black, Fischer, and Scholes, Myron S.	1973	The pricing of options and corporate liabilities	<i>JPE</i>	178	1,458	777
11. Stulz, Rene M.	1988	Managerial control of voting rights: Financing policies and the market for corporate control	<i>JFE</i>	162	164	162
12. Glosten, Lawrence R., and Milgrom, Paul R.	1985	Bid, ask, and transaction prices in a specialist market with heterogeneously informed traders	<i>JFE</i>	142	281	244
13. Asquith, Paul, and Mullins, David W., Jr.	1986	Equity issues and offering dilution	<i>JFE</i>	134	195	134
14. Miller, Merton H., and Rock, Kevin	1985	Dividend policy under asymmetric information	<i>JF</i>	134	227	167
15. Fama, Eugene F., and Macbeth, J.	1973	Risk, return, and equilibrium: Empirical tests	<i>JPE</i>	130	413	138
16. Morck, Randall; Shleifer, Andrei; and Vishny, Robert W.	1988	Management ownership and market valuation: An empirical analysis	<i>JFE</i>	129	227	214
17. *Fama, Eugene F., and French, Kenneth R.	1993	Common risk factors in the returns on stock and bonds	<i>JFE</i>	128	131	131
18. Newey, Whitney K., and West, Kenneth D.	1987	A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix	<i>ECMT</i>	121	762	516
19. Admati, Anat R., and Pfleiderer, Paul	1988	A theory of intraday patterns: Volume and price variability	<i>RFS</i>	118	233	228
20. Easley, David, and O'Hara, Maureen	1987	Price, trade size, and information in securities markets	<i>JFE</i>	117	118	117
21. Leland, Hayne E., and Pyle, David H.	1977	Informational asymmetries, financial structure, and financial intermediation	<i>JF</i>	117	419	260
22. Brown, Stephen J., and Warner, Jerold B.	1985	Using daily stock returns: The case of event studies	<i>JFE</i>	115	400	286
23. *Ritter, Jay R.	1991	The long-run performance of initial public offerings	<i>JF</i>	115	118	118
24. Kaplan, Steven	1989	The effects of management buyouts on operating performance and value	<i>JFE</i>	112	114	112

25. Merton, Robert C.	1973	Theory of rational option pricing	<i>RAND</i>	111	771	396
26. Jensen, Michael C., and Ruback, Richard S.	1983	The market for corporate control: The scientific evidence	<i>JFE</i>	108	548	318
27. Mikkelsen, Wayne H., and Partch, M. Megan	1986	Valuation effects of security offerings and the issuance process	<i>JFE</i>	108	179	140
28. *Smith, Clifford W., Jr., and Watts, Ross L.	1992	The investment opportunity set and corporate financing, dividend, and compensation policies	<i>JFE</i>	107	114	114
29. Banz, Rolf W.	1981	The relationship between return and market value of common stocks	<i>JFE</i>	104	307	163
30. De Bondt, Werner F. M., and Thaler, Richard	1985	Does the stock market overreact?	<i>JF</i>	103	230	188
31. Masulis, Ronald W., and Korwar, Ashok N.	1986	Seasoned equity offerings: An empirical investigation	<i>JFE</i>	103	140	105
32. Ross, Stephen A.	1976	The arbitrage theory of capital asset pricing	<i>JET</i>	101	439	234
33. Merton, Robert C.	1973	An intertemporal capital asset pricing model	<i>ECMT</i>	97	575	263
34. *Gilson, Stuart C.; John, Kose; and Lang, Larry H. P.	1990	Troubled debt restructurings: An empirical study of private reorganization of firms in default	<i>JFE</i>	96	100	100
35. Shleifer, Andrei, and Vishny, Robert W.	1986	Large shareholders and corporate control	<i>JPE</i>	95	208	180
36. Weisbach, Michael S.	1988	Outside directors and CEO turnover	<i>JFE</i>	95	198	189
37. Bradley, Michael; Desai, Anand; and Kim, E. Han	1988	Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms	<i>JFE</i>	93	113	106
38. Poterba, James M., and Summers, Lawrence H.	1988	Mean reversion in stock prices	<i>JFE</i>	93	230	219
39. Smith, Clifford W., Jr., and Warner, Jerold B.	1979	On financial contracting: An analysis of bond covenants	<i>JFE</i>	93	452	272
40. Amihud, Yakov, and Mendelson, Haim	1986	Asset pricing and the bid ask spread	<i>JFE</i>	92	143	122
41. Scholes, Myron, and Williams, Joseph T.	1977	Estimating betas from nonsynchronous data	<i>JFE</i>	91	467	226
42. Rock, Kevin	1986	Why new issues are underpriced	<i>JFE</i>	89	152	119
43. Chen, Nai Fu; Roll, Richard; and Ross, Stephen A.	1986	Economic forces and the stock market	<i>JB</i>	86	226	197
44. Vasicek, Oldrich	1977	An equilibrium characterization of the term structure	<i>JFE</i>	85	259	209
45. Demsetz, Harold	1968	The cost of transacting	<i>QJE</i>	82	270	114
46. Fama, Eugene F., and Jensen, Michael C.	1983	Separation of ownership and control	<i>JLE</i>	81	874	634
47. Smith, Clifford W., Jr.	1986	Investment banking and the capital acquisition process	<i>JFE</i>	81	196	140
48. Campbell, John Y.	1987	Stock returns and the term structure	<i>JFE</i>	80	154	138
49. Fama, Eugene F., and French, Kenneth R.	1988	Permanent and temporary components of stock prices	<i>JPE</i>	79	278	252
50. Lo, Andrew W., and MacKinlay, A. Craig	1988	Stock market prices do not follow random walks: Evidence from a simple specification test	<i>RFS</i>	77	195	189

NOTE.—This table lists the 50 articles that have been most often cited by top finance journals (*JB*, *JF*, *JFE*, *JFQA*, *RFS*, *FM*) during the period 1990–99. The number of citations from all social science journals since each article's publication and the number of citations during the same 1990–99 time period and in total are reported. Journal abbreviations are as follows: *ECMT* = *Econometrica*, *AER* = *American Economic Review*, *JFE* = *Journal of Financial Economics*, *JF* = *Journal of Finance*, *JPE* = *Journal of Political Economy*, *RFS* = *Review of Financial Studies*, *RAND* = *RAND/Bell Journal of Economics*, *JET* = *Journal of Economic Theory*, *QJE* = *Quarterly Journal of Economics*, *JB* = *Journal of Business*, *JLE* = *Journal of Law and Economics*. An asterisk (*) denotes a paper published in the 1990s.

TABLE 3 Journal Rankings

Rank	Journal	Important Papers	Total Citations	Recent Important Papers	Citations to Recent Papers	Impact Factor	Impact Factor Rank
1	<i>Journal of Finance</i>	517	11,392	229	4,017	8.57	3
2	<i>Journal of Financial Economics</i>	406	11,051	128	2,240	24.72	1
3	<i>Review of Financial Studies</i>	124	2,327	90	1,165	6.95	4
4	<i>Journal of Business</i>	90	1,986	26	222	8.92	2
5	<i>Journal of Financial and Quantitative Analysis</i>	87	1,807	35	284	5.74	5
6	<i>Econometrica</i>	65	2,457	9	143	4.12	6
7	<i>Journal of Political Economy</i>	62	1,804	22	458	3.16	7
8	<i>American Economic Review</i>	53	1,713	16	190	1.09	16
9	<i>Financial Management</i>	46	1,262	29	235	2.85	9
10	<i>Journal of Accounting and Economics</i>	35	669	11	129	2.71	10
11	<i>RAND/Bell Journal of Economics</i>	31	1,245	14	29	3.08	8
12	<i>Quarterly Journal of Economics</i>	25	846	10	171	1.87	11
13	<i>Journal of Economic Theory</i>	17	729	0	0	.81	19
14	<i>Journal of Monetary Economics</i>	17	544	3	19	1.07	17
15	<i>Journal of Accounting Research</i>	16	486	3	70	1.54	13
16	<i>Journal of Law and Economics</i>	16	461	2	23	1.71	12
17	<i>Financial Analysts Journal</i>	15	563	2	27	.96	18
18	<i>Review of Economic Studies</i>	15	474	9	94	1.18	14
19	<i>Journal of Econometrics</i>	13	454	10	223	.51	22
20	<i>Journal of Banking and Finance</i>	7	490	0	0	.58	21
21	<i>Review of Economics and Statistics</i>	7	352	1	7	.42	23
22	<i>Journal of Portfolio Management</i>	3	309	0	0	.59	20
23	<i>Journal of Financial Research</i>	1	407	0	16	1.14	15
24	Unpublished manuscripts	N.A.	1,598	N.A.	N.A.	N.A.	N.A.
25	Ph.D. theses	N.A.	375	N.A.	N.A.	N.A.	N.A.

NOTE.—Total Citations is calculated as the number of citations made to journals by papers published in *Journal of Finance*, *Journal of Financial Economics*, *Review of Financial Studies*, *Journal of Business*, *Journal of Financial and Quantitative Analysis*, and *Financial Management* during the period 1990–99. We constructed a list of the 2,000 most highly cited papers; these top 2,000 are deemed Important Papers. Citations to Recent Papers are citations to papers published in the period 1990–99; Recent Important Papers are papers in the top 2,000 list that were published between 1990 and 1999. Impact Factor is obtained by dividing the Total Citations by the total number of articles published in the journal in the period 1990–99. The Impact Factor Rank represents the reranking of these journals according to their Impact Factors. N.A. = not applicable.

We also calculated an Impact Factor for the top journals by dividing the total number of citations by the total number of articles published in each of the journals over the 1990–99 10-year sample period. Rankings based on Impact Factors are presented in the last column of table 3. These rankings are largely consistent with rankings based on Total Citations, except for the top journals. By this measure, *JF* is no longer at the top—*JFE* has the highest Impact Factor by a wide margin. Papers published in *JFE* in the 1990s garnered an average of over 24 Citations from Top Finance Journals. The *Journal of Business* ranks second by this criterion, with an average of 8.92 citations per paper. Despite having the most Total Citations and the greatest number of Important Papers, *JF* ranks third by this criterion because of the large number of papers published therein (1,329 papers published in the 1990s vs. 447 for *JFE* and 223 for *JB*).

Based on citation count and an admittedly subjective assessment of subject areas of various papers, we developed lists of “must-read” papers for several topical areas of finance research.⁵ These lists could be useful in the construction of reading lists for graduate courses in finance. In tables 4–8, we present these lists of highly cited papers on asset pricing and investments, banking and financial intermediation, corporate finance, empirical finance, and market microstructure. Table 9 presents other highly cited finance, economics, and methodological papers that could also be included in a graduate course in financial economics.

IV. Observations and Trends

There are many different ways for a paper to be successful. For example, several econometrics papers are cited very frequently. For the most part, however, these are “service papers” whose methodology or results are being used by others, but which are rarely changed or improved upon (e.g., White 1980; Hansen 1982; Newey and West 1987). This differs substantially from a high ranking generated by a paper like Black and Scholes (1973) that many researchers are actively trying to extend and improve.

Alexander and Mabry (1994) is the only other paper we are aware of that ranks individual papers. Their rankings are based on data from the period 1987–91 and thus overlap our 1990–99 rankings by 2 years. Alexander and Mabry’s list of the top 50 papers (their table 4) contains 27 papers also in our list of the top 50 (table 2). The 23 new papers on our top 50 list and the changes in the rankings of the old papers that were also in Alexander and Mabry’s top 50 provide important information about changes in top-level finance research. The most striking change in the top 50 papers is a heavy swing toward microstructure with Kyle (1985), Admati and Pfleiderer (1988), Easley and O’Hara (1987), Amihud and Mendelson (1986), and Demsetz (1968) all new to the top

5. For brevity, we list only 10 top papers in each topical area; longer, more detailed lists are available from the authors.

TABLE 4 Asset Pricing and Investment Papers

Author(s)	Year	Title	Journal	Number of Top Finance Journal Citations	Total Citations since Publication	Total Citations, 1990–99
Cox, John C.; Ingersoll, Jonathan E., Jr.; and Ross, Stephen A.	1985	A theory of the term structure of interest rates	<i>ECMT</i>	213	444	373
*Fama, Eugene F., and French, Kenneth R.	1992	The cross-section of expected stock returns	<i>JF</i>	183	249	249
Black, Fischer, and Scholes, Myron S.	1973	The pricing of options and corporate liabilities	<i>JPE</i>	178	1,458	777
Fama, Eugene F.	1973	Risk, return, and equilibrium: Empirical tests	<i>JPE</i>	130	413	138
*Fama, Eugene F., and French, Kenneth R.	1993	Common risk factors in the returns on stock and bonds	<i>JFE</i>	128	131	131
Merton, Robert C.	1973	Theory of rational option pricing	<i>RAND</i>	111	771	396
Banz, Rolf W.	1981	The relationship between return and market value of common stocks	<i>JFE</i>	104	307	163
De Bondt, Werner F. M., and Thaler, Richard	1985	Does the stock market overreact?	<i>JF</i>	103	230	188
Ross, Stephen A.	1976	The arbitrage theory of capital asset pricing	<i>JET</i>	101	439	234
Merton, Robert C.	1973	An intertemporal capital asset pricing model	<i>ECMT</i>	97	575	263

NOTE.—This table identifies asset pricing and investment papers that have been highly cited by top finance journals (*JB*, *JF*, *JFE*, *JFQA*, *RFS*, *FM*) during the period 1990–99. The number of citations from all social science journals since each article's publication and the number of citations during the same 1990–99 time period are reported. Journal abbreviations are: *JF* = *Journal of Finance*, *JFE* = *Journal of Financial Economics*, *ECMT* = *Econometrica*, *JPE* = *Journal of Political Economy*, *JET* = *Journal of Economic Theory*, *RAND* = *Rand/Bell Journal of Economics*. An asterisk (*) denotes a paper published in the 1990s.

TABLE 5 Banking and Financial Intermediation Papers

Author(s)	Year	Title	Journal	Number of Top Finance Journal Citations	Total Citations since Publication	Total Citations, 1990–99
Leland, Hayne E., and Pyle, David H.	1977	Informational asymmetries, financial structure, and financial intermediation	<i>JF</i>	117	419	260
Smith, Clifford W., Jr.	1986	Investment banking and the capital acquisition process	<i>JFE</i>	81	196	140
Beatty, Randolph P., and Ritter, Jay R.	1986	Investment banking, reputation, and the underpricing of initial public offerings	<i>JFE</i>	71	140	111
James, Christopher	1987	Some evidence on the uniqueness of bank loans	<i>JFE</i>	63	131	124
Diamond, Douglas W.	1984	Financial intermediation and delegated monitoring	<i>RESTUD</i>	60	368	325
*Rajan, Raghuram G.	1992	Insiders and outsiders: The choice between informed and arm's length debt	<i>JF</i>	45	91	91
Fama, Eugene F.	1985	What's different about banks?	<i>JME</i>	43	131	114
*Diamond, Douglas W.	1991	Monitoring and reputation: The choice between bank loans and directly placed debt	<i>JPE</i>	38	74	74
*Hoshi, Takeo; Kashyap, Anil; and Scharfstein, David	1990	The role of banks in reducing the costs of financial distress in Japan	<i>JFE</i>	37	92	92
Lummer, Scott L., and McConnell, John J.	1989	Further evidence on the bank lending process and the capital market response to bank loan agreements	<i>JFE</i>	33	68	68

NOTE.—This table identifies banking and financial intermediation papers that have been highly cited by top finance journals (*JB*, *JF*, *JFE*, *JFQA*, *RFS*, *FM*) during the period 1990–99. The number of citations from all social science journals since each article's publication and the number of citations during the same 1990–99 time period are reported. Journal abbreviations are: *JF* = *Journal of Finance*, *JFE* = *Journal of Financial Economics*, *JPE* = *Journal of Political Economy*, *RESTUD* = *Review of Economic Studies*, *JME* = *Journal of Monetary Economics*. An asterisk (*) denotes a paper published in the 1990s.

TABLE 6 Corporate Finance Papers

Author(s)	Year	Title	Journal	Number of Top Finance Journal Citations	Total Citations since Publication	Total Citations, 1990–99
Jensen, Michael C.	1986	Agency costs of free cash flow, corporate finance, and takeovers	<i>AER</i>	268	585	376
Myers, Stewart C.	1977	Determinants of corporate borrowing	<i>JFE</i>	236	535	342
Myers, Stewart C., and Majluf, Nicholas S.	1984	Corporate financing and investment decisions when firms have information that investors do not have	<i>JFE</i>	221	592	354
Jensen, Michael C., and Meckling, William H.	1976	Theory of the firm: Managerial behavior, agency costs, and ownership structure	<i>JFE</i>	218	2,167	1,544
Stulz, Rene M.	1988	Managerial control of voting rights: Financing policies and the market for corporate control	<i>JFE</i>	162	164	162
Asquith, Paul, and Mullins, David W.	1986	Equity issues and offering dilution	<i>JFE</i>	134	195	134
Miller, Merton H., and Rock, Kevin	1985	Dividend policy under asymmetric information	<i>JF</i>	134	227	167
Morck, Randall; Shleifer, Andrei; Vishny, Robert W.	1988	Management ownership and market valuation: An empirical analysis	<i>JFE</i>	129	227	214
Kaplan, Steven	1989	The effects of management buyouts on operating performance and value	<i>JFE</i>	112	114	112
Jensen, Michael C., and Ruback, Richard S.	1983	The market for corporate control: The scientific evidence	<i>JFE</i>	108	548	318

NOTE.—This table identifies corporate finance papers that have been highly cited by top finance journals (*JB*, *JF*, *JFE*, *JFQA*, *RFS*, *FM*) during the period 1990–99. The number of citations from all social science journals since each article's publication and the number of citations during the same 1990–99 time period are reported. Journal abbreviations are: *JF* = *Journal of Finance*, *JFE* = *Journal of Financial Economics*, *AER* = *American Economic Review*.

TABLE 7 Empirical Finance Papers

Author(s)	Year	Title	Journal	Number of Top Finance Journal Citations	Total Citations since Publication	Total Citations, 1990–99
Brown, Stephen J., and Warner, Jerold	1985	Using daily stock returns: The case of event studies	<i>JFE</i>	115	400	286
*Ritter, Jay R.	1991	The long-run performance of initial public offerings	<i>JF</i>	115	118	115
Mikkelson, Wayne H., and Partch, M. Megan	1986	Valuation effects of security offerings and the issuance process	<i>JFE</i>	108	179	140
Poterba, James M., and Summers, Lawrence H.	1988	Mean reversion in stock prices	<i>JFE</i>	93	230	219
Scholes, Myron, and Williams, Joseph	1977	Estimating betas from nonsynchronous data	<i>JFE</i>	91	467	226
Chen, Nai Fu; Roll, Richard; and Ross, Stephen A.	1986	Economic forces and the stock market	<i>JB</i>	86	226	197
Campbell, John Y.	1987	Stock returns and the term structure	<i>JFE</i>	80	154	138
Fama, Eugene F., and French, Kenneth	1988	Permanent and temporary components of stock prices	<i>JPE</i>	79	278	252
Lo, Andrew W., and MacKinlay, A. Craig	1988	Stock market prices do not follow random walks: Evidence from a simple specification test	<i>RFS</i>	77	195	189
Blume, Marshall E., and Stambaugh, Robert F.	1983	Biases in computed returns: An application to the size effect	<i>JFE</i>	75	125	80

NOTE.—This table identifies empirical finance papers that have been highly cited by top finance journals (*JB*, *JF*, *JFE*, *JFQA*, *RFS*, *FM*) during the period 1990–99. The number of citations from all social science journals since each article's publication and the number of citations during the same 1990–99 time period are reported. Journal abbreviations are: *JF* = *Journal of Finance*, *JFE* = *Journal of Financial Economics*, *JPE* = *Journal of Political Economy*, *JB* = *Journal of Business*, *RFS* = *Review of Financial Studies*. An asterisk (*) denotes a paper published in the 1990s.

TABLE 8 Microstructure Papers

Author(s)	Year	Title	Journal	Number of Top Finance Journal Citations	Total Citations since Publication	Total Citations, 1990–99
Kyle, Albert S.	1985	Continuous auctions and insider trading	<i>ECMT</i>	216	354	337
Glosten, Lawrence R., and Milgrom, Paul R.	1985	Bid, ask, and transaction prices in a specialist market with heterogeneously informed traders	<i>JFE</i>	142	281	244
Admati, Anat R., and Pfleiderer, Paul	1988	A theory of intraday patterns: Volume and price variability	<i>RFS</i>	118	233	228
Easley, David, and O'Hara, Maureen	1987	Price, trade size, and information in securities markets	<i>JFE</i>	117	118	117
Amihud, Yakov, and Mendelson, Haim	1986	Asset pricing and the bid ask spread	<i>JFE</i>	92	143	122
Demsetz, Harold	1968	The cost of transacting	<i>QJE</i>	82	270	114
Roll, Richard, and Ross, Stephen A.	1984	A simple implicit measure of the effective bid ask spread in an efficient market	<i>JF</i>	71	157	123
Keim, Donald B.	1989	Trading patterns, bid ask spreads, and estimated security returns: The case of common stocks at calendar turning points	<i>JFE</i>	67	72	70
*Lee, Charles M. C., and Ready, Mark J.	1991	Inferring trade direction from intraday data	<i>JF</i>	67	71	71
Stoll, Hans R.	1978	The pricing of security dealer services: An empirical study of NASDAQ stocks	<i>JF</i>	66	167	104

NOTE.—This table identifies market microstructure papers that have been highly cited by top finance journals (*JB*, *JF*, *JFE*, *JFQA*, *RFS*, *FM*) during the period 1990–99. The number of citations from all social science journals since each article's publication and the number of citations during the same 1990–99 time period are reported. Journal abbreviations are: *JF* = *Journal of Finance*, *JFE* = *Journal of Financial Economics*, *ECMT* = *Econometrica*, *QJE* = *Quarterly Journal of Economics*, *RFS* = *Review of Financial Studies*. An asterisk (*) denotes a paper published in the 1990s.

TABLE 9 Other Useful Papers

Author(s)	Year	Title	Journal	Number of Top Finance Journal Citations	Total Citations since Publication	Total Citations, 1990–99
White, Halbert	1980	A heteroskedasticity consistent covariance matrix estimator and a direct test for heteroskedasticity	<i>ECMT</i>	396	2,245	1,891
Hansen, Lars Peter	1982	Large sample properties of generalized method of moments estimators	<i>ECMT</i>	217	1,013	789
Engle, Robert F.	1982	Autoregressive conditional heteroscedasticity with estimates of the variance of United Kingdom inflation	<i>ECMT</i>	75	1,040	862
Bollerslev, Tim	1986	Generalized autoregressive conditional heteroskedasticity	<i>JECMT</i>	52	547	485
Cox, John C.; Ross, Stephen A.; and Rubinstein, Mark	1979	Option pricing: A simplified approach	<i>JFE</i>	49	280	196
Kreps, David M., and Wilson, Robert	1982	Sequential equilibria	<i>ECMT</i>	36	546	334
Milgrom, Paul, and Roberts, John	1982	Predation, reputation, and entry deterrence	<i>JET</i>	31	355	136
Cho, In Koo, and Kreps, David M.	1987	Signaling games and stable equilibria	<i>QJE</i>	30	341	297
Holmstrom, Bengt	1979	Moral hazard and observability	<i>RAND</i>	28	699	433
Akerlof, George A.	1970	The market for “lemons”: Quality uncertainty and the market mechanism	<i>QJE</i>	25	1,046	611

NOTE.—This table identifies articles on methodology, econometrics, and game theory that have been highly cited by top finance journals (*JB*, *JF*, *JFE*, *JFQA*, *RFS*, *FM*) during the period 1990–99. The number of citations from all social science journals since each article’s publication and the number of citations during the same 1990–99 time period are reported. Abbreviations are: *JFE* = *Journal of Financial Economics*, *QJE* = *Quarterly Journal of Economics*, *RAND* = *Rand/Bell Journal of Economics*, *JET* = *Journal of Economic Theory*, *JECMT* = *Journal of Econometrics*, and *ECMT* = *Econometrica*.

50. Kyle (1985) comes in seventh, a placement that suggests that many recent papers are related to his model. Cox, Ingersoll, and Ross (1985) moved from twenty-second to eighth place, and Vasicek (1977), now forty-fourth, did not make Alexander and Mabry's list. This reflects the rising importance of term structure models. Two recent Fama-French papers (1992 and 1993) postdate Alexander and Mabry's top 50, but make it into our top 20. They represent a resurgence of interest in the validity of the traditional capital asset pricing model (CAPM). Two initial public offering (IPO) papers (Ritter 1991; Rock 1986) are new on the top 50 list. Casual empiricism suggests that the markets experienced an initial public offering (IPO) craze during the 1990s, and thus increased research on that topic is not unexpected. Newey-West (1987) extends White (1980) and did not appear on Alexander and Mabry's top 50 list. Moreover, White (1980) jumps from fourth to first. Both observations suggest that top-level finance research is becoming more econometrically sophisticated.

However, an examination of citations from all SSCI journals made to papers in our list indicates that other social sciences are also econometrically sophisticated—highly cited econometric method papers include White (1980), Engle (1982), Hansen (1982), Bollerslev (1986), Engle and Granger (1987), and Newey and West (1987). These papers had an average of 147 citations (97 if White [1980] is excluded) from top finance journals in the 1990s; this is close to the average of 131 cites (126 if White [1980] is excluded) for papers in our top 50 list. However, the top 50 papers in our list had an average of 304 citations (271 if White [1980] is excluded) from all SSCI journals during the 1990s; in stark contrast, the above-mentioned econometric papers had an average of 1,088 citations (927 if White [1980] is excluded) in all SSCI journals during the same time period.

Similarly, seminal finance papers receive a significant number of citations from social science journals (see table 2). For example, the Jensen and Meckling (1976) paper on agency costs and the Black and Scholes (1973) option pricing paper receive 218 and 178 top finance journal citations as compared with 1,544 and 777 from all SSCI journals, respectively, during our sample period. This might hint at the wide applicability and acceptance of some papers in other business-related disciplines.

Other interesting comparisons of Alexander and Mabry's top 50 list and ours include the following: Black and Scholes (1973) fell from second to tenth, Merton's 1973 option pricing paper fell from sixth to twenty-fifth, and Sharpe (1964) fell off the list completely (Alexander and Mabry ranked Sharpe at twenty-ninth). We theorize that this is because the Black-Scholes and the Merton and Sharpe papers are so widely known that authors simply refer to "Black-Scholes" or "CAPM" without actually citing the relevant paper in full. Oscar Wilde said that "the only thing worse than being talked about is not being talked about," and the curse of fame here is that Black, Scholes, Merton, and Sharpe are talked about so much that often they are no longer cited in full.

Event study methods have migrated away from traditional event studies toward long-run performance studies (e.g., Brown and Warner [1985] fell from third to twenty-second, and Scholes and Williams [1977] fell from ninth to forty-first). Ritter (1991), with 115 citations, was the first long-run performance study. Barber and Lyon's (1997) methodological improvement over Ritter (1991) is also highly cited.

Some authors appear in the top 50 (see table 2) more than once: Fama (five papers; 601 cites), Jensen (four papers; 675 cites), French (three papers; 390 cites), Ross (three papers; 294 cites), Smith (three papers; 281 cites), Merton (two papers; 208 cites), Myers (two papers; 457 cites), Rock (two papers; 223 cites), Scholes (two papers; 269 cites), Shleifer (two papers; 224 cites), and Warner (two papers; 208 cites). Fama's papers in the top 50 are dated 1993, 1992, 1988, 1983, and 1973—a chronology that suggests a consistent ability to do work that will be important and highly cited.

V. Conclusion

We determine which journal articles influenced the field of finance most during the 1990s. By looking at the works cited by articles published in top finance journals, we are also able to assess journal quality both by the number of citations the journal receives and by the number of important papers each journal has published. This tells researchers where to publish, what to read, and which papers to include in course material.

The *Journal of Finance* and *JFE* have unambiguously had the most impact on finance research in the 1990s, but *RFS*, *JB*, and *JFQA* are also among the strongest influences on finance research. Other than *JB*, nonfinance journals that rate highly by our ranking criteria include *Quarterly Journal of Economics*, *American Economic Review*, *Journal of Political Economy*, and *Econometrica* (which had a particularly strong showing). The interdisciplinary nature of the finance field is made evident by the fact that a large proportion of our top journals are nonfinance journals.

One conclusion we can safely draw is that there are several top journals, and the relative ranking of them changes over time and is dependent on the ranking method. This variability underscores the importance of looking at several quality metrics when evaluating journal quality.

References

- Admati, A. R., and Pfleiderer, P. 1988. A theory of intraday patterns: Volume and price variability. *Review of Financial Studies* 1:3–31.
- Alexander, J. C., Jr., and Mabry, R. H. 1994. Relative significance of journals, authors, and articles cited in financial research. *Journal of Finance* 49 (June): 697–712.
- Amihud, Y., and Mendelson, H. 1986. Asset pricing and the bid-ask spread. *Journal of Financial Economics* 17 (December): 223–49.
- Barber, B. M., and Lyon, J. D. 1997. Detecting long-run abnormal stock returns: The empirical power and specification of test statistics. *Journal of Financial Economics* 43 (March): 341–72.

- Black, F., and Scholes, M. S. 1973. The pricing of options and corporate liabilities. *Journal of Political Economy* 81:637–54.
- Bollerslev, T. 1986. Generalized autoregressive conditional heteroskedasticity. *Journal of Econometrics* 31:307–27.
- Borokhovich, K. A.; Bricker, R. J.; Brunarski, K. R.; and Simkins, B. J. 1995. Finance research productivity and influence. *Journal of Finance* 50 (December): 1691–1717.
- Borokhovich, K. A.; Bricker, R. J.; Brunarski, K. R.; and Simkins, B. J. 1998. Finance research productivity and influence by topic area. *Journal of Financial Education* 24:8–20.
- Borokhovich, K. A.; Bricker, R. J.; and Simkins, B. J. 1994. The streams of financial research and their interrelationships: Evidence from the *Social Science Citation Index*. *Financial Practice and Education* 4:110–23.
- Borokhovich, K. A.; Bricker, R. J.; and Simkins, B. J. 1999. *Financial Management's* success as an academic journal. *Financial Management* 28 (Autumn): 76–82.
- Borokhovich, K. A.; Bricker, R. J.; and Simkins, B. J. 2000. An analysis of finance journal impact factors. *Journal of Finance* 55:1457–69.
- Borokhovich, K. A.; Bricker, R. J.; Zivney, Terry L.; and Sundaram, S. 1995. *Financial Management 1972–1994: A retrospective*. *Financial Management* 24:42–53.
- Brown, L. D., and Gardner, J.C. 1985. Using citation analysis to assess the impact of journals and articles on contemporary accounting research. *Journal of Accounting Research* 23 (Spring): 84–109.
- Brown, S. J., and Warner, J. B. 1985. Using daily stock returns: The case of event studies. *Journal of Financial Economics* 14, no. 1:3–31.
- Coe, R. K., and Weinstock, I. 1983. Evaluating the finance journals: The department chairperson's perspective. *Journal of Financial Research* 6 (Winter): 345–49.
- Cox, J. C.; Ingersoll, J. E., Jr.; and Ross, S. A. 1985. A theory of the term structure of interest rates. *Econometrica* 53, no. 2:385–407.
- DeBondt, W. F. M., and Thaler, R. 1985. Does the stock market overreact? *Journal of Finance* 40 (July): 793–805.
- Demsetz, H. 1968. The cost of transacting. *Quarterly Journal of Economics* 82 (February): 33–53.
- Easley, D., and O'Hara, M. 1987. Price, trade size, and information in securities markets. *Journal of Financial Economics* 19, no. 1:69–90.
- Engle, R. F. 1982. Autoregressive conditional heteroskedasticity with estimates of the variance of United Kingdom inflation. *Econometrica* 50:987–1008.
- Engle, R. F., and Granger, C. W. G. 1987. Co-integration and error correction: Representation, estimation, and testing. *Econometrica* 55 (March): 251–76.
- Fama, E. F., and French, K. R. 1992. The cross-section of expected stock returns. *Journal of Finance* 47 (June): 427–65.
- Fama, E. F., and French, K. R. 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics* 33:3–56.
- Hansen, L. 1982. Large sample properties of generalized method of moments estimators. *Econometrica* 50 (July): 1029–54.
- Jensen, M. C., and Meckling, W. H. 1976. Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics* 3:305–60.
- Kyle, A. S. 1985. Continuous auctions and insider trading. *Econometrica* 53, no. 6:1315–35.
- Mabry, R. H., and Sharplin, A. D. 1985. The relative importance of journals used in finance research. *Journal of Financial Research* 8 (Winter): 287–96.
- Merton, R. C. 1973. Theory of rational option pricing. *Bell Journal of Economics* 4:141–83.
- Newey, W., and West, K. 1987. A simple positive semi-definite heteroscedasticity and autocorrelation consistent covariance matrix. *Econometrica* 55 (May): 703–8.
- Ritter, Jay R. 1991. The long-run performance of initial public offerings. *Journal of Finance* 46 (March): 3–27.
- Rock, K. 1986. Why new issues are underpriced. *Journal of Financial Economics* 15, nos. 1–2: 187–212.
- Rozeff, M. S. 1982. Growth, beta, and agency costs as determinants of dividend payout ratios. *Journal of Financial Research* 5:249–59.
- Scholes, M. S., and Williams, J. T. 1977. Estimating betas from nonsynchronous data. *Journal of Financial Economics* 5 (December): 309–27.
- Schwert, G. W. 1993. *The Journal of Financial Economics: A retrospective evaluation, 1974–1991*. *Journal of Financial Economics* 33 (June): 369–424.

- Sharpe, W. F. 1964. Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance* 19:425–42.
- Vasicek, O. 1977. An equilibrium characterization of the term structure. *Journal of Financial Economics* 5:177–88.
- White, H. 1980. A heteroskedasticity consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 48 (May): 817–38.
- Zivney, T. L., and Reichenstein, W. 1994. The pecking order in finance journals. *Financial Practice and Education* 4 (Fall–Winter): 77–87.