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Two Approaches to Measuring Journal Quality: Application to Finance Journals

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Abstract

We analyze the tendency of a journal to publish articles that eventually become classics in their specialized fields. A simple theoretical model is developed and applied to citation data for finance journals in 1991 and 1992. Of the top ten finance journals, only four are traditional finance journals, and six are economics journals, while none are accounting journals. This illustrates the close synergies between economic research and financial research. In contrast, the linkages between accounting research and financial research are much weaker. (*JEL* G000)

Introduction

The traditional approach to measuring journal quality, which we call Method One, is to count the number of citations to that journal in articles published in core journals.[1] This paper develops a second approach (Method Two) to the measurement of journal quality, which focuses on the tendency of a journal to publish articles which eventually become classics in their field. In this approach, quality is assumed to depend on a number of variables, rather than one. To develop Method Two, we construct a simple multivariate model of journal quality and apply two versions of that model to citations in 1991 and 1992 in three top general or "core" finance journals. We restrict the sample of citations to the three top journals, because of this interest in the frequency with which a journal publishes classic articles.[2] By definition, a "classic" article is one that is cited frequently in major journals long after it has been published. This is the first study we know of that discusses journal quality in terms of a theoretical model of journal quality. We also present comparative rankings based on several recent studies and compare these to the results of these two methods.

Is additional research in this area of value? First, litigation and other forms of controversy involving tenure and promotion decisions increase the need on the part of academic administrators and members of

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[1] The literature on this subject is extensive. For example, Alexander and Mabry (1994) cite 18 papers published in the period 1972-92.

[2] Our purpose is thus similar to, but *independent of*, Alexander and Mabry (1994). They use four journals (the three used here plus the *Review of Financial Studies*) because of an interest in "the relative impact of different journals on the *best* finance research" (Alexander and Mabry 1994, p. 700, emphasis added). We were not aware of this study when we developed our methodology. Alexander and Mabry (1994) do not look at any measure in addition to total citations (our Method One).

promotion and tenure committees for *objective* information on journal quality. In fact, some schools of business have constructed point systems, in which journals are placed in categories, points are assigned to each category, and both faculty teaching loads and faculty performance in research are determined by total points earned over a multi-year period. Such classification systems need statistical verification. Second, since journal reputations change, individuals who are just entering the finance profession and others also need a variety of sources of information on journal quality based on different methods.

Methodology

Theoretical Model

The conventional approach to evaluating journal quality is shown in Equation 1:

$$Q = f(N) \tag{1}$$

where Q is a measure of journal quality, and N is the number of times a journal has been cited in core journals over a certain period of time. We refer to this approach as Method One. The most recent examples of this approach are Alexander and Mabry (1994) and Zivney and Reichenstein (1994). As discussed in more detail below, rankings based on this approach are presented in Table 1.

A broader approach could be constructed as follows:

$$Q = f(X_1, X_2, \ldots X_n) \tag{2}$$

The X_i's represent variables that affect journal quality. Many of these variables are subjective and cannot be quantified and incorporated into a formal model. Examples of these objective and subjective variables would include the following:

1. The structure of the editorial board
2. The academic reputation of the editors
3. The reputation of the university where the journal is located[3]
4. The acceptance rate
5. The age of the journal
6. Where the journal is indexed[4]
7. The thoroughness of the review process
8. The number of times the journal is cited in other journals, especially core journals
9. The quality of citations to a journal, such as the tendency of a journal to publish articles that eventually become classics in their respective fields

While this list is not all-inclusive, it does illustrate that journal quality is a multidimensional concept. Many of these factors are subjective and cannot be measured. We suggest the following model—Method Two—which contains variables 8 and 9 above; these are variables that can be measured:

$$Q = f(N, A) \tag{3}$$

where A is the average age of citations to articles published in that journal in core journals. As noted, N is the number of times that journal is cited in core journals during a specific period of time.

[3] A number of journals change editors and move from one university to another, but many do not. When there are changes in location and editorship for well known, high-quality journals, the rotation is generally among universities with established reputations.

[4] For economics and finance citations, the two major indexes are the *Journal of Economic Literature* and Heck's *Finance Literature Index* (1994).

While we recognize that other functional forms also may be appropriate (and consider one alternative functional form below), we first apply the model in the following form:

$$Q = N \times A \tag{4}$$

Thus, as a first approximation, we utilize the product of the two variables as an estimate of the collective judgment of the profession concerning the quality of each journal.[5]

Age of citations

Age of a citation is defined as the difference between the year the article is cited and the year it was published. The average age of citations in a particular journal is a measure of the quality of these citations. The quality of a citation (A) is different from the quality of a journal (Q). For a journal, average age applies to citations in core journals to articles published in that journal. For example, if articles published in Journal X were cited a total of ten times in the *Journal of Finance* during the observation period, and five of these citations were to articles published 10 years ago and five were to articles published five years ago, the average age of citations for Journal X would be 7.5 years. The average age of citations to a particular journal measures the extent to which that journal publishes articles that eventually become classics in the sense that they are cited repeatedly in core journals. As noted below, articles that are classics are, *by definition*, cited repeatedly long after they have been published. *Ceteris paribus*, we consider a journal that publishes a large number of classic articles to be a higher-level journal than one which does not. Average age of citations has not been considered in the previous literature.[6]

We assume $\partial Q/\partial N > 0$ and $\partial Q/\partial A > 0$. The second assumption ($\partial Q/\partial A > 0$) may be controversial. An important part of our argument is that, for a particular journal, the average age of citations reflects the (*unobserved*) number of citations in the period previous to the period of the study. This follows from the observation that authors tend to cite articles which are cited by previous researchers on the subject. We would consider it unusual for an author to cite a 20-year-old article that had not been cited by any other researchers in the field.[7] Since all citation studies, of necessity, use data for a limited time period (often one or two years), average age is a very good proxy for unobserved previous citations. This is a reflection of the fact that a high average age would indicate that a journal publishes articles which eventually become classics in the field.[8]

Average age reflects the interaction of the supply and demand for journal space in "top tier" journals. To illustrate the demand side, consider a hypothetical academic researcher who has just completed what she believes is a high-quality, innovative, and potentially path-breaking academic paper. She considers two journals for submission purposes. Articles published in Journal A are typically cited several times, at best, and these citations dwindle a few years after publication. However, a number of articles published in Journal B are cited repeatedly over a long period of time, are eventually cited by virtually anyone doing research on the subject, and thus gradually become classics in the field. *Ceteris paribus*, most authors will attempt to place the article in Journal B.[9]

To illustrate the supply side, consider the observation that editors of "top tier" journals would tend to treat journal space as a scarce resource and supply space only to those articles which they and their review-

[5] An alternative functional form is discussed below. Equation 4 is not estimated using regression analysis, because the dependent variable, journal quality (Q), is unobservable. We multiply average age by the number of citations to estimate Q.

[6] Terry Zivney informs us that average age of a citation for selected journals is reported in the *Journal of Citation Reports*.

[7] One objection we received to the use of average age went as follows: "The weight on age severely biases ratings on journals in favor of older journals, especially those that aren't cited anymore. So a reference to one 1970 article on market efficiency in a practitioner's journal is equal to twenty 1990 *Journal of Finance* references reflecting new frontiers in finance. In fact, I would weight the old article less, as it probably had less influence on the research that cited that article than the newer articles."

In contrast, we are of the opinion that an *obscure* 1970 article most likely would *not be cited* at all. The older article most likely would be cited only if previous researchers had cited it and thereby called the author's attention to it.

[8] Nonetheless, readers who are unconvinced of the reasonableness of the positive partial derivative assumption can utilize the rankings based on Method One (number of citations) in Table 1.

[9] "Attempt" includes not only submitting the article, but also being very responsive to referees' comments. In contrast, a "revise and resubmit" from Journal A may be considered "not worth it."

ers expect will have a significant influence on future research. These are the potential future classic articles, as discussed above. Considered together with the behavior of potential authors, as described above, average age reflects the interaction of the supply and demand for journal space.

Nonetheless, we recognize that there are circumstances where the derivative ($\partial Q/\partial A$) could be zero or negative:

1. If a certain journal declines in quality over time, citations will be to older articles and average age will be high.[10]
2. A journal publishing "leading-edge" research may have a low average age because there are few studies on the subject except for those published recently.
3. An older cited article may have had less influence on a piece of research than one published recently.

While these limitations need to be considered, we feel the assumption that the derivative ($\partial Q/\partial A$) is positive is reasonable. Limitation 1 is not crucial in applying the model shown in equation (4) because, *ceteris paribus*, such journals will have a relatively low number of citations. Thus in the model $Q = N \times A$ (equation 4), a (hypothetical) high A will be offset a low N. Limitation 2 is diminished in importance by the fact that all research is influenced to some extent by research done many years previously. These older, often-cited articles are the classics in their field. The most important of these previous studies will continue to be cited in the current literature. More important, quality will be reflected in a high N (number of citations) for such "leading-edge" research, which will offset the influence of a low A (average age).[11] Limitation 3 is a definite possibility, but, in and of itself, it is unlikely to produce a negative relationship, partly for the same reasons that were mentioned in connection with Limitation 2. Finally, some of these objections can be dealt with by simply using alternative forms of the model, as discussed below.

Data

Studies by Alexander and Mabry (1994), Liebowitz and Palmer (1984), Mabry and Sharplin (1985), and Zivney and Reichenstein (1994) rate the top finance journals as the *Journal of Financial Economics* (*JFE*), *Journal of Finance* (*JF*), and *Journal of Financial and Quantitative Analysis* (*JFQA*). We treat these three journals as core journals, based on the results of these previous studies, and use citations in these journals to rank all journals. *Because we are interested in the tendency of a journal to publish articles that are cited frequently in top journals and eventually become classics, we consider only citations in the top journals.* Specifically, citations from *JFE*, *JF*, and *JFQA* for the years 1991 and 1992 are used.

We *manually* tabulated all citations for journal publications. Books, newspaper articles, dissertations, and working papers were not included. The citations were logged to three data fields: the journal, year of publication, and age of the citation. The age of the citation is calculated as the year in which the article was cited (1991 or 1992) less the year that the article cited was published. For example, an article originally published in *JF* in 1985 and cited in *JFQA* in 1991 is assigned an age of six years. Articles cited in the same year in which they are published and cites for forthcoming articles are included in total citations.

Empirical Results

Method Two

Table 1 presents the results for Method One and Method Two. Table 2 compares the results of both methods with those of other recent studies. We discuss the results of Method Two first because it is unique to this paper. The total points (Q) for each journal are calculated as the product of N (the number of citations) and the average age of citations (A). Consistent with previous research, the top journals in Method

[10] We thank Marilyn Wiley for this observation.

[11] See equation 4 below.

TABLE 1. RANKINGS OF FINANCE AND FINANCE-RELATED JOURNALS

JOURNAL		METHOD TWO *N* x *A* TOTAL POINTS (RANK)		METHOD ONE TOTAL CITATIONS (RANK)		AVERAGE AGE OF CITATIONS
Journal of Finance	T	5,008	(1)	665	(1)	7.53
Journal of Financial Economics	T	4,871	(2)	641	(2)	7.60
Journal of Business	T	1,282	(3)	90	(6)	14.24
Journal of Financial and Quantitative Analysis	T	1,269	(4)	171	(3)	7.42
Journal of Political Economy		1,176	(5)	111	(5)	10.59
Econometrica		1,069	(6)	113	(4)	9.46
American Economic Review		1,069	(7)	85	(7)	12.58
Journal of Economic Theory		631	(8)	48	(9)	13.15
Bell Journal of Economics		523	(9)	35	(15)	14.94
Review of Economic Studies		482	(10)	35	(15)	13.77
Journal of the American Statistical Association		424	(11)	25	(20)	16.96
Quarterly Journal of Economics		418	(12)	44	(10)	9.50
Financial Analysts Journal	T	295	(13)	36	(13)	8.19
Journal of Accounting Research	T	294	(14)	43	(11)	6.84
Financial Management	T	202	(15)	39	(12)	5.18
Journal of Accounting and Economics		201	(16)	36	(13)	5.58
Journal of Law and Economics		196	(17)	21	(24)	9.33
Journal of Monetary Economics		186	(18)	30	(17)	6.20
Review of Financial Studies	T	176	(19)	74	(8)	2.38
Journal of Banking and Finance	T	171	(20)	26	(19)	6.58
Journal of Portfolio Management	T	163	(21)	28	(18)	5.82
Journal of Econometrics		125	(22)	15	(27)	8.33
Journal of Financial Research	T	120	(23)	23	(22)	5.22
Journal of Money, Credit and Banking	T	117	(24)	14	(28)	8.36
Accounting Review		110	(25)	16	(26)	6.88
Brookings Papers on Economic Activity		102	(26)	17	(25)	6.00
Federal Reserve System (total)		97	(27)	23	(22)	4.22
Journal of Economic Perspectives		73	(28)	24	(21)	3.04
Journal of Business and Economic Statistics		43	(29)	11	(29)	3.91

Notes: Total points are the average age of a citation times number of citations. The table contains the top 95 percent of all citations. "T" denotes a traditional finance journal, based on inclusion in Heck's (1994) *Finance Literature Index*.

TABLE 2. COMPARATIVE RANKINGS OF FINANCE AND FINANCE-RELATED JOURNALS

JOURNAL		METHOD TWO N x A	METHOD ONE (N= NUMBER OF CITATIONS)	ALEXANDER AND MABRY (1994)[1]	ZIVNEY AND REICHENSTEIN (1994)
Journal of Finance	T	1	1	2	1
Journal of Financial Economics	T	2	2	1	2
Journal of Business	T	3	6	4	6
Journal of Financial and Quantitative Analysis	T	4	3	6	5
Journal of Political Economy		5	5	5	3
Econometrica		6	4	3	7
American Economic Review		7	7	7	4
Journal of Economic Theory		8	9	9	28
Bell Journal of Economics		9	15	8	14
Review of Economic Studies		10	15	17	27
Journal of the American Statistical Association		11	20	18	25
Quarterly Journal of Economics		12	10	10	19
Financial Analysts Journal	T	13	13	12	8
Journal of Accounting Research	T	14	11	14	15
Financial Management	T	15	12	20	11
Journal of Accounting and Economics		16	13	16	18
Journal of Law and Economics		17	24	13	24
Journal of Monetary Economics		18	17	11	10
Review of Financial Studies	T	19	8	15	22
Journal of Banking and Finance	T	20	19	19	16
Journal of Portfolio Management	T	21	18	21	12
Journal of Econometrics		22	27	24	23
Journal of Financial Research	T	23	22	26	26
Journal of Money, Credit and Banking	T	24	28	25	13
Accounting Review		25	26	31	32
Brookings Papers on Economic Activity		26	25	28	30
Federal Reserve System (total)		27	22	—	—
Journal of Economic Perspectives		28	21	30	39
Journal of Business and Economic Statistics		29	29	32	50

Note: "T" denotes a traditional finance journal, based on inclusion in Heck's (1994) *Finance Literature Index.*

Two are *JF* and *JFE*, with 5,008 and 4,871 points, respectively. These two journals account for 46.4 percent of all citations. The average age of citations for these journals is somewhat lower than that of other journals, but this is more than offset by the large number of citations.

Six of the top ten journals, according to Method Two, are economics journals; none are accounting journals. This illustrates once again the close synergies between economic research and financial research. In contrast, the linkages between accounting research and financial research are much weaker. It should be noted that, because of the relatively young age of financial research versus economic research (e.g., virtually no finance journals except the *Journal of Finance* existed 35 years ago), the average age of finance citations in Table 1 will be somewhat lower than that of economics citations, other things being equal.[12]

The third- and fourth-rated journals according to Method Two are the *Journal of Business* (*JOB*), with 1,282 points, and *JFQA*, with 1,269 points. However, these journals achieve their rankings in different ways. *JOB* has a high average life, and *JFQA* has a large number of citations. *JOB*'s impact on the profession appears to be the publication of a number of articles which eventually become classics in their field and thus continue to be cited for a very long period of time. *JFQA*, on the other hand, has an average life very similar to *JF* and *JFE*.

As shown in Table 2, these results differ from those of the Zivney and Reichenstein (1994) study, which is based on total citations for 1990. Zivney and Reichenstein (1994) rank *JPE* as third and *AER* fourth.[13] Other contrasts are as follows: The *Journal of the American Statistical Association* (*JASA*) and the *Bell Journal of Economics* (*BJE*) are both among the top twelve in total points in our study, in part because of the impact of average age. In contrast, Zivney and Reichenstein (1994) rank these two journals 25th and 14th, respectively. Other economics journals which have a particularly significant impact on financial research are the *Journal of Economic Theory* (*JET*), which ranks eighth, and the *Review of Economic Studies* (*RES*), which ranks tenth. Malouin and Outreville's (1987) study of economics journals (not shown in Table Two) ranks these journals eighth and sixth, respectively, while Zivney and Reichenstein (1994) rank them 27th and 28th. This indicates that they are cited relatively more frequently in the top finance journals than in all finance journals. It is also noteworthy that *JET* achieves its position in part through a very high average age of 13.15 years. This illustrates its tendency to publish articles which are cited frequently long after they are published.

Of the 16 core finance journals identified by Borokhovich, Bricker, Brunarski, and Simkins (1995) five did not make the list of the top 29 journals, according to Method Two. Method Two identifies journals that publish articles that eventually tend to become classics. These five are *Financial Review*, *Journal of International Money and Finance*, *Journal of Futures Markets*, *Journal of Financial Services Research*, and the *Journal of Business Finance and Accounting*. The top 29 included 95 percent of all citations in the top three journals. It is significant that only 12 of the 29 journals identified as top journals according to Method Two are traditional finance journals. These are defined as those journals listed in Heck's *Finance Literature Index* (1994). Furthermore, we suggest that there are significant limitations in Heck's index, such as the omission of the *Journal of Monetary Economics*, which ranks higher than the *Journal of Money, Credit and Banking* (which is a traditional [Heck's index] journal) in our study.[14] While the *Finance Literature Index* has made a major contribution to the finance profession, its limitations—particularly the omission of important economics journals, which are an integral part of financial research—must be kept in mind. Members of the profession who are just beginning their careers and the academic administrators who evaluate their

[12] Based on total citations for 1990, Zivney and Reichenstein (1994) find that four of the top ten finance journals are economics journals. The fact that we find six is attributable to the effect of average age. Based on total citations alone, we find four economics journals in the top ten (see Table 1), the same number as Zivney and Reichtenstein. They also find no accounting journals in the top ten.

[13] Both of these journals contain specific articles that are repeatedly cited. Black and Scholes's (1973) article in *Journal of Political Economy* (*JPE*) and Miller and Modigliani's (1958) article in *American Economic Review* (*AER*) indicate that certain articles have become classics in their field and are cited in any article relating to the topic.

[14] We do not suggest that these are significant limitations, only that they be documented. Other, less significant, limitations are the omission of "mid-level" journals such as the *Journal of Economics and Business* and the *Quarterly Review of Economics and Finance*, both of which specialize to some extent in the financial institutions area as well as publishing a significant number of articles in corporate finance. These limitations *do* affect publication patterns; for example, researchers who are interested in maximizing their number of citations in the *Finance Literature Index* may choose not to submit to these journals.

work both need to be aware of these limitations.

In addition to the limitations of Method Two discussed earlier, one can also argue that average age is biased against relatively new journals. For example, by our measure, the *Review of Financial Studies* (frequently considered a core journal) has the lowest average age of a citation of all the journals shown in Table 1. However, this is because the journal was only four years old in 1992, the end of the period under consideration. Its ranking did increase considerably in 1991-92 relative to 1990, as would be expected.[15] Another example is the *Journal of Financial Services Research* (*JFSR*). Zivney and Reichenstein (1994), for example, found that by one measure (the average impact of an article), the *JFSR* ranks above the *Journal of Banking and Finance*. However, this simply illustrates again the multidimensional nature of journal quality. The ability of a relatively new journal to rise to prominence is certainly a dimension that deserves attention. Clearly the results in Tables 1 and 2 have to be utilized in connection with independent knowledge of the journals and their contribution to the profession.

An additional limitation to Method Two is the functional form, which gives equal weight to average age and number of citations. Therefore, we also consider a ranking system (not shown in the tables) based on the following equation, to give more weight to number of citations:

$$Q^* = N^2 \times A \tag{5}$$

The rank correlation coefficient between the two sets of rankings is 0.965. One journal, the *Review of Financial Studies*, rose seven points, and three other journals experienced a four-point change (up or down) in the rankings. The others were substantially unchanged, which suggests that the rankings shown in Method Two are reasonable and not highly sensitive to the weights.

Method One

The results of Method One are more consistent with Zivney and Reichenstein (1994), but there are exceptions. Zivney and Reichenstein (1994) looked at citations in 18 journals for 1990; we look only at citations in the top three journals, but for two years, 1991 and 1992. The most notable exception is the *Journal of Economic Theory*, which ranks ninth according to Method One, but is 28th in Zivney and Reichenstein (1994). Clearly, this journal is cited relatively more frequently in the very top journals than in the larger group of 18 journals. A similar situation exists for the *Review of Economic Studies*, which ranks 15th according to Method One but 28th according to Zivney and Reichenstein (1994), and to a lesser extent for the *Quarterly Journal of Economics* (10th vs. 19th).

Alexander and Mabry (1994) looked at total citations for the period January 1987 to March 1991 in four journals (the three used here plus the *Review of Financial Studies*). The most notable differences between our Method One rankings and theirs is *Financial Management* (12th according to our method, but 20th according to Alexander and Mabry). This probably reflects a continuing improvement in the reputation of this journal in the early 1990s. Conversely, the *Journal of Law and Economics* ranks higher according to their study than to ours.

Conclusions

This study presents two approaches for ranking academic journals. The first method is based on the traditional measure of journal quality, the number of citations. The second utilizes the average age of a citation to attempt to measure the tendency of a journal to publish articles that eventually become classics in their specialized fields. To develop Method Two, we construct a simple theoretical model of journal quality. The model is based on two variables—the traditional measure, number of citations in core journals, and the average age of a citation. Average age is a measure of the quality of a citation. We consider average age to be important, because it is an indicator of the interaction of the supply and demand for journal space, and

[15] This journal ranks eighth in Method One for 1991-92 but 22nd according to Zivney and Reichenstein's (1994) rankings for 1990.

because it is an excellent proxy for the number of citations outside the sample period. The models are applied to citation data for finance journals in 1991 and 1992. Of the top ten finance journals based on Method Two, only four are traditional finance journals, and six are economics journals, while none are accounting journals. This illustrates once again the close synergies between economic research and financial research. In contrast, the linkages between accounting research and financial research are much weaker.

We also find that, according to Method Two, only 12 of the top 29 journals are traditional finance journals. Finally, we suggest that this methodology can be successfully applied in many other academic disciplines to identify journals that tend to publish articles that eventually become classics.

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