Great Expectatrics: Great Papers, Great Journals, Great Econometrics*

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Abstract

The paper discusses alternative Research Assessment Measures (RAM), with an emphasis on the Thomson Reuters ISI Web of Science database (hereafter ISI). Some analysis and comparisons are also made with data from the SciVerse Scopus database. The various RAM that are calculated annually or updated daily are defined and analysed, including the classic 2-year impact factor (2YIF), 2YIF without journal self citations (2YIF*), 5-year impact factor (5YIF), Immediacy (or zero-year impact factor (0YIF)), Impact Factor Inflation (IFI), Self-citation Threshold Approval Rating (STAR), Eigenfactor score, Article Influence, C3PO (Citation Performance Per Paper Online), h-index, Zinfluence, and PI-BETA (Papers Ignored - By Even The Authors). The RAM are analysed for 10 leading econometrics journals and 4 leading statistics journals. The application to econometrics can be used as a template for other areas in economics, for other scientific disciplines, and as a benchmark for newer journals in a range of disciplines. In addition to evaluating high quality research in leading econometrics journals, the paper also compares econometrics and statistics, alternative RAM, highlights the similarities and differences of the alternative RAM, finds that several RAM capture similar performance characteristics for the leading econometrics and statistics journals, while the new PI-BETA criterion is not highly correlated with any of the other RAM, and hence conveys additional information regarding RAM, highlights major research areas in leading journals in econometrics, and discusses some likely future uses of RAM, and shows that the harmonic mean of 13 RAM provides more robust journal rankings than relying solely on 2YIF.

Keywords: Research assessment measures, impact factors, Immediacy, Eigenfactor, Article influence, Cited article influence, h-index, C3PO, Zinfluence, PI-BETA, IFI, STAR.

JEL Classifications: C43, C10, Z0.

Great papers appear in great journals
All great journals publish great papers
Not all papers in great journals are great

In Memory of Clive Granger

1. Introduction

Defining and evaluating high quality research are fundamental to the scientific paradigm. Rankings exercises are here to stay, and are essential to evaluate the research performance of individuals, as well as to ascertain the quality of academic journals. The research performance of individuals can be crucial for hiring, firing, tenure and promotion decisions. In the absence of suitable information, the quality of a journal is frequently used as a proxy for the research quality of academic papers. Citations are widely used and accepted as a measure of the quality of a journal.

The perennial question as to which came first, the chicken or the egg, also applies to whether the quality of an academic paper is more important than the journal in which it was published, and whether the quality of a journal defines the quality of a paper.

Some Research Assessment Measures (RAM) are subscription based, while others can be downloaded free of charge from the Internet. A gold standard database for generating RAM is the Thomson Reuters ISI Web of Science database (hereafter ISI). An alternative database with broader journal coverage, but shorter historical coverage, is SciVerse Scopus. This paper examines the importance of ranking RAM, emphasizes the importance of RAM as viable rankings criteria, highlights the usefulness of existing RAM from Thomson Reuters ISI, and evaluates the usefulness of a new RAM criterion.

The empirical analysis of RAM presented in this paper concentrates on 10 leading econometrics journals, which are compared with 4 leading statistics journals. The application to econometrics can be used as a template for other areas in economics, for other scientific disciplines, and as a benchmark for newer journals in a range of disciplines. In addition to

evaluating high quality research in econometrics, the paper also compares alternative RAM, and highlights the similarities and differences of alternative RAM criteria.

The plan of the remainder of the paper is as follows. Section 2 discusses alternative RAM, with an emphasis on the Thomson Reuters ISI Web of Science database. Various RAM that are calculated annually or updated daily are defined and analysed, including the 2-year impact factor (2YIF), 2YIF without journal self citations (2YIF*), 5-year impact factor (5YIF), Immediacy (or zero-year impact factor (0YIF)), Impact Factor Inflation (IFI), Self-citation Threshold Approval Rating (STAR), Eigenfactor score, Article Influence, C3PO (Citation Performance Per Paper Online), h-index, Zinfluence, and PI-BETA (Papers Ignored - By Even The Authors). Section 3 discusses RAM for 10 leading econometrics journals and 4 leading statistics journals. Section 4 analyses the RAM data. Section 5 provides comparisons between ISI-based and Scopus-based citations data for the 10 econometrics journals considered in Section 3, while Section 6 summarizes the outcomes and discusses some future uses of RAM.

Some striking results emerge from the analysis. In terms of the recent and new RAM, the mean IFI for the leading 10 econometrics journals is 1.081, which indicates that the leading 10 econometrics journals tend to self cite 8.1%, with Econometric Theory having the highest journal self citation rate of 37.6% and Econometrics Journal, Econometric Reviews and Review of Economics and Statistics having the lowest journal self citation rates of close to zero. The mean PI-BETA is 0.341, which suggests that slightly more than one-third of papers in the leading 10 econometrics journals are never cited. Citations data for Econometric Reviews, Econometrics Journal and Journal of Financial Econometrics have been included in ISI for less than five years, which would be expected to lead to high PI-BETA scores for these 3 journals relative to the other 7 journals. Excluding these 3 journals yields a mean PI-BETA of 0.272, which suggests that slightly more than one-quarter of papers in the leading 7 econometrics journals are never cited. These figures suggest that the PI-BETA scores of Econometric Theory and Econometrica, namely 0.402 and 0.404, respectively, are comparatively high, whereas Journal of Econometrics and Review of Economics and Statistics, with PI-BETA scores of 0.139 and 0.159, respectively, are relatively low. Other interesting RAM results are discussed in Section 4.

2. Research Assessment Measures (RAM)

Several Research Assessment Measures (RAM) criteria are available for recording research performance. Some of these measures are subscription based, while others are downloadable free from the Internet. Alternative sources of RAM are discussed below.

2.1 Thomson Reuters ISI Web of Science

The Thomson Reuters ISI Web of Science database is available to subscribers. Although books and non-ISI journals are not included in the database, a wide range of leading journals is included in the ISI database for an extended period. According to ISI Web of Science (2010): "Authoritative, multidisciplinary content covers over 10,000 of the highest impact journals worldwide, including Open Access journals and over 110,000 conference proceedings." For the 2008 Journal Citations Report year, with the RAM being reported in 2009, there were 209 journals in the Economics category (this had increased considerably to 247 journals in 2009). The explanations given online are typically very helpful, and the broad range of performance criteria may readily be modified to measure research productivity and citations impact of academic researchers and ISI recognised journals. In short, ISI is credible and accessible.

A new commercial database is SciVerse Scopus, which was launched in November 2004. The providers claim that it provides the 'largest abstract and citation database containing peer-reviewed research literature…with over 18,000 titles from more than 5,000 publishers …with 42.5 million records.' (SciVerse Scopus, 2010). However, although the coverage of titles is extensive, its historical coverage is much shorter and, in most cases, terminates in 1996.

Alternative excellent databases include the Social Science Research Network (SSRN) database, which includes a very large number of working papers and publications in the social sciences (including economics, finance, accounting and business), the Research Papers in Economics (RePEc) database for economics, the Scopus subscription-based database, and free Internet databases, such as Google Scholar. Each of these databases has their strengths

and limitations, but ISI would seem to establish the 'gold standard' database for purposes of generating RAM for journals in a wide range of disciplines for an extended period.

2.2 Definitions of RAM

2.2.1 Annual RAM

With two exceptions (see Definitions 7 and 8 below), RAM are reported separately for the sciences and social sciences. RAM may be computed annually or are updated daily. RAM are reported for ISI journals, where an ISI journal is defined as:

Definition 1:
An ISI journal is a journal that is recognized by ISI, and for which RAM are reported.

Annual RAM, which are typically released in mid-year, are calculated for a Journal Citations Reports (JCR) calendar year, which is defined as:

Definition 2:
A JCR year is the calendar year BEFORE the annual RAM are released.

Thus, for the JCR year 2008, the annual RAM were released in mid-2009.

The RAM are given as follows:

(i) 2YIF (= Impact Factor) (calculated annually)

The classic 2-year impact factor (2YIF) of an ISI journal is typically referred to as "THE impact factor", and is used widely by journals and publishers in promoting journals. The choice of 2 years by ISI is arbitrary. It should be emphasized that impact factors evaluate journals, and hence are journal impact factors, and are not intended to evaluate papers published in journals, where other RAM criteria are available. The range of 2YIF is from zero upwards.

For a JCR year, the 2YIF of an ISI journal is defined as:

Definition 3:

2YIF = Total citations in the previous 2 years / Total papers in the previous 2 years.

Thus, for the JCR year 2008, total citations are for papers published in years 2006 and 2007, as are the total papers published in an ISI journal.

It is worth noting that there can be confusion regarding the definition and meaning of impact factors. For example, Bergstrom and West (2008, p. 1850), the developers of Eigenfactor™ metrics, state incorrectly that "Impact factor is essentially a measure of the average number of citations that a journal's articles receive over the two calendar years following publication."

(ii) 2YIF without self citations (2YIF*) (calculated annually)

ISI reports a "2-year impact factor without journal self citations", that is, excluding citations to a journal where a citing paper is published. As this impact factor is not widely used, we will refer to this RAM measure as 2YIF*. The range of 2YIF* is from zero upwards.

(iii) 5YIF (calculated annually)

The 5-year impact factor (5YIF) of an ISI journal is an alternative impact factor that is more suitable for those disciplines where a longer gestation period is required, such that 2 years is too short a time for published papers to become well cited. The choice of 5 years by ISI is arbitrary. For a JCR year, the 5YIF of an ISI journal is defined as:

Definition 4:

5YIF = Total citations in the previous 5 years / Total papers in the previous 5 years.

Thus, for the JCR year 2008, total citations are for papers published in years 2003, 2004, 2005, 2006 and 2007, as are the total papers published in an ISI journal. The range of 5YIF is from zero upwards.

(iv) IFI (= Impact Factor Inflation) (calculated annually)

Definition 5:

IFI = 2YIF/2YIF*.

The ratio IFI is intended to capture how journal self citations inflate the impact factor of a journal (see Chang et al. (2011)). The minimum value for IFI is 1, with any value above the minimum capturing the effect of journal self citations on the 2-year impact factor. Thus, the range of IFI is from one upwards.

(v) Immediacy (calculated annually)

Immediacy is intended for comparing journals that specialize in cutting-edge research, and is, in effect, a zero-year impact factor (0YIF) of an ISI journal. The choice of 0 years by ISI is arbitrary. For a JCR year, Immediacy of an ISI journal is defined as:

Definition 6:

Immediacy = Total citations / Total papers.

Thus, for the JCR year 2008, total citations are for papers published in year 2008, as are the total papers published in an ISI journal. The range of Immediacy (or 0YIF) is from zero upwards.

(vi) Eigenfactor Score (calculated annually)

Since 2007, ISI has reported two RAM, namely the Eigenfactor score and Article Influence score. The Eigenfactor score is a modified 5YIF, and the Article Influence score is a standardized Eigenfactor score. For a JCR year, the Eigenfactor score of an ISI journal is defined as:

Definition 7:

Eigenfactor score = a modified 5YIF, which aggregates citations to ISI journals in both the sciences and social sciences, eliminates journal self-citations, and "weights each reference according to a stochastic measure of the amount of time researchers spend reading the journal" (ISI, 2010).

The Eigenfactor score (see Bergstrom (2007), Bergstrom, West and Wiseman (2008), and Bergstrom and West (2008)) is a modified 5YIF. For a given year, Eigenfactor ranks journals according to (i) the number of citations received, (ii) the importance of the citers, and (iii) the citation propensity of the citers. It is defined as the principal eigenvector of a normalized citation matrix or, alternatively, as the stationary distribution of a Markov chain corresponding to a random walk on the citation network (see www.eigenfactor.org/methods.htm and www.eigenfactor.org). Alternatively, Eigenfactor is a measure of citations and the length of time that researchers are logged on to a journal's website (see Ferscht (2009) and ISI (2010)). It may be interpreted as a journal website citation search, and can be said to measure the "prestige" of a journal (see Franceschet (2010)). Under this interpretation, the amount of time spent checking hard copies of journals is not included in the Eigenfactor score. The range of Eigenfactor is from zero upwards.

(vii) Article Influence (calculated annually)

The Article Influence score measures the relative importance of an ISI journal on a per-article basis, and is a standardized Eigenfactor score. Normalization ensures that the sum total of articles from all journals is 1, and the mean Article Influence score is also 1. For a given year, Article Influence of an ISI journal is defined as "Eigenfactor score divided by the fraction of all ISI articles published by the ISI journal." Article Influence is defined in terms of the relative time that researchers are logged on to a journal's website, and is said to measure influence (see Franceschet (2010)). The range of Article Influence is from zero upwards.

For a JCR year, Article Influence of an ISI journal in a JCR year is defined as:

Definition 8:
Article Influence = Eigenfactor score / fraction of all ISI articles.

2.2.2 Daily Updated RAM

Other RAM can be updated daily, and are reported for a given day in the current year rather than the JCR year.

(viii) C3PO (updated daily)

ISI reports the mean number of citations for an ISI journal, namely total citations up to a given day divided by the number of papers published in an ISI journal up to the same day, as the "average" number of citations. In order to distinguish the mean from the median and mode, the C3PO of an ISI journal on any given day is defined as:

Definition 9:
C3PO (Citation Performance Per Paper Online) = Total citations / Total papers.

Thus, C3PO for 28 April 2010 is based on total citations and total papers up to and including 28 April 2010. The range of C3PO is from zero upwards.

[Note: C3PO should not be confused with C-3PO, the Star Wars android.]

(ix) h-index (updated daily)

Although the h-index (Hirsch, 2005)) was originally intended to assess the scientific research productivity and citations impact of individual researchers, it can also be used to assess the impact of publications in ISI journals. The h-index of an ISI journal on any given day is based on cited and citing papers, including self citations of ISI journals, and is defined as:

Definition 10:
h-index = each of h papers in an ISI journal has been cited at least h times in ISI journals.

Thus, the h-index for 28 April 2010 is based on total citations and total papers up to and including 28 April 2010. The range of the h-index is from zero upwards.

2.3 Reasons for presenting a new RAM (updated daily)

Existing RAM as performance criteria focus on papers that are actually cited at least once, including self-citations by one or more authors, and on the frequency of such citations. To

date, there does not seem to be any RAM that measures the number of papers, articles or documents in a journal that have never been cited. The lack of citations of a published paper, especially over an extended period, must surely detract from the quality of a journal by exposing: (i) what might be considered as incorrect decisions by the editorial board of a journal; and (ii) the lost opportunities of papers that might have been cited had they not been rejected in favour of papers that are ignored by the profession.

(x) Zinfluence (updated daily)

For this reason, we define a paper for an ISI journal in a JCR year with Zinfluence as follows:

Definition 11:
Zinfluence = zero influence, based on zero citations.

Zinfluence can be measured by the **PI-BETA (= Papers Ignored (PI) - By Even The Authors (BETA))** ratio.

(xi) PI-BETA (updated daily)

For an ISI journal in a JCR year, PI-BETA is defined as:

Definition 12:
PI-BETA = Number of Zinfluence papers / Total papers.

As PI-BETA is given as a fraction, the range is [0, 1]. Thus, PI-BETA for 28 April 2010 is based on Zinfluence and total papers up to and including 28 April 2010.

(xii) CAI (updated daily)

Definition 13:
Cited Article Influence (CAI) = (1 - PI-BETA)(Article Influence).

The Article Influence score is intended to measure the average influence of an article across the sciences and social sciences. As an article that is not cited cannot have influence, a more accurate measure of the influence of cited articles is the Cited Article Influence (CAI) score.

The range of CAI is from zero upwards. If PI-BETA = 0, then CAI would be equivalent to the standard Article Influence score; if PI-BETA = 1, then CAI = 0. As Article Influence is calculated daily, whereas PI-BETA is updated daily, CAI would be updated daily. The CAI score for 4 June 2010 is based on the Article Influence score for a JCR year and on PI-BETA up to and including 4 June 2010. The range of CAI is from zero upwards.

(xiii) STAR (updated annually)

Definition 14:

STAR = Self-citation Threshold Approval Rating

ISI has implicitly recognized the inflation in journal self citations by calculating an impact factor that excludes self citations, and provides data on journal self citations, both historically and for the preceding two years in calculating 2YIF. Chang et al. (2011) suggest using a new RAM, namely the Self-citation Threshold Approval Rating (STAR) score, which is the difference between citations in other journals and journal self citations. The STAR score is based on journal self citations, both historically and for the preceding two years, up to a JCR year.

If HS = historical journal self citations (in per cent) and 2YS = journal self citations for the preceding two years (in per cent), the historical and 2-year STAR scores are defined, respectively, as:

Definition 15: H-STAR = [(100-HS) - S] = (100-2(HS))

Definition 16: 2Y-STAR = [(100-2YS) – 2YS] = (100-2(2YS)).

For example, if HS = 0 (outstanding), 25, 50 or 100 (unthinkable), for example, H-STAR = 100, 50, 0 and -100, respectively. The range of H-STAR and 2Y-STAR is [-100, 100].

2.5 Caveats regarding RAM

Although RAM can be very useful and informative, it is worth emphasizing that they are not free of measurement error. The following caveats should be carefully considered before using RAM (see Seglen (1997), among others, for a discussion of some caveats regarding ISI data). The inclusion of all articles in an ISI journal includes papers, abstracts and book reviews, and possibly even conference reviews, software reports, and letters to the editor. This may explain, at least in part, the noticeable changes over time in terms of fewer abstracts and book reviews in some ISI journals, at least in the Economics category.

It is also important to note that correct ISI citations can be affected by misspellings of the titles of journals and names of authors; incorrect use of author's initials; and incorrect year of publication, volume number, and/or the starting page number of the ISI journal article. Only those citations that are correct in every respect will be attributed correctly to the cited author. Otherwise, any error will lead to a different citation, such that the total citations of a publication for a particular author will be too low. We hasten to add that any such missing in action (MIA) citations is the responsibility of the citing author(s), and not of ISI.

Two examples that highlight MIA citations are as follows: (1) the specification test of J.A. Hausman (Econometrica, 1978, 46(6), 1251-1271), has citations variously recorded under J. Hausman and J.A. Hausman, and with numerous variations in the year, volume, and starting page number, leading to an additional 118 citations relative to 2,495 correct citations, with an error rate of almost 5%; and (2) the cointegration analysis paper of R.F. Engle and C.W.J. Granger (Econometrica, 1987, 55(2), 251-276), has citations variously recorded under R. Engle and R.F. Engle, and with numerous variations in the year, volume, and starting page number, leading to an additional 205 citations relative to 4,252 correct citations, with an error rate of almost 5%. We did not check for spelling variations on the names of any authors, otherwise the permutations would be neverending.

Further caveats relate to the date of downloading RAM, as daily updates will change the h-index, C3PO and PI-BETA scores. The time period for downloading RAM should also be noted as all RAM will change annually. Finally, the specific time of day (or night) at which the daily ISI updates takes place can change the data period, with 1988-2010 seemingly being the default option when the full database is not accessible. For journals such as Nature and

Science, which have a high frequency of publication and also publish a large number of articles, the default option for daily RAM updates would seem to be four years at most. Otherwise, the threshold of 10,000 articles for purposes of daily RAM updates will be exceeded.

3. RAM Data

The primary purpose of this section is to evaluate great papers and great journals in econometrics. The 10 leading econometrics journals chosen from the ISI Economics category for inclusion in the RAM analysis are as follows:

10 leading econometrics journals

(i) Econometrica
(ii) Review of Economics and Statistics (REStat)
(iii) Journal of Econometrics (J. Econometrics)
(iv) Econometric Theory (ET)
(v) Journal of Business & Economic Statistics (JBES)
(vi) Journal of Applied Econometrics (J. Applied Econometrics)
(vii) Econometric Reviews
(viii) Econometrics Journal
(ix) Oxford Bulletin of Economics and Statistics
(x) Journal of Financial Econometrics

For purposes of comparison with the 10 leading econometrics journals, the following 4 leading statistics journals chosen from the ISI Statistics & Probability category are also considered:

4 leading statistics journals

(i) Annals of Statistics (Annals)

(ii) Biometrika

(iii) Journal of the American Statistical Association (JASA)

(iv) Journal of the Royal Statistical Society, Series B (JRSSB)

Only articles from ISI Web of Science are included in the citation analysis. The RAM data for the econometrics and statistics journals presented in Tables 1 and 2 were downloaded from ISI as follows. Data for the 8 econometrics journals were downloaded from ISI on 28 April 2010 for all citations for 1988-2010, so that citations are counted from 1988 for all papers published in an ISI journal from its inception. Econometric Reviews and the Econometrics Journal have been included in ISI for less than five years, so that the RAM data for these two journals are reported only in Table 1 and not in Table 2. The data for the 10 econometrics journals in Table 3 were downloaded from ISI on 19 November 2010 for all citations for 1988-2010, so that citations are counted from 1988 for all papers published in an ISI journal from its inception. The data for the 10 econometrics journals in Table 17 were downloaded from SCOPUS on 21 November 2010 for all citations for 1996-2010.

The data for the 4 statistics journals were downloaded from ISI on 19 May 2010 for all citations for 1988-2010, so that citations are counted from 1988 for all papers published in an ISI journal from its inception, except for JASA. As ISI does not provide daily updates for more than 10,000 articles for purposes of calculating the h-index, C3PO and PI-BETA, the ISI data for JASA are for the period 1955-2010.

4. Analysis of ISI RAM data

Table 1 gives the ISI RAM for 8 econometrics and 4 statistics journals. The 2YIF for the 12 journals are in line with what would be expected of leading journals in the two fields. The 5YIF figures, and hence also Article Influence, are not available for Econometric Reviews and Econometrics Journal as they have been ISI journals for less than five years. In all cases, 5YIF exceeds 2YIF, sometimes considerably, though for JBES the difference is small. For a journal that has been in ISI for less than 5 years, Econometric Reviews has a highly respectable 2YIF. The Immediacy (or 0YIF) is amazingly high for Econometric Reviews, followed distantly by Annals, JRSSB and REStat. The h-index for Econometrica is high at 201, followed closely by JASA and Biometrika, then by Annals, J. Econometrics, JRSSB and

REStat. C3PO is high for JRSSB, followed by Econometrica, Biometrika, JASA, Annals and J. Econometrics. Article Influence is highest for Econometrica, followed distantly by REStat, JRSSB, JASA and Annals.

The PI-BETA scores in Table 1 are revealing. The two newest econometrics entrants in ISI, Econometric Reviews and Econometrics Journal, have relatively high scores as they do not include papers older than two years for purposes of scoring citations. Econometrica has PI-BETA of 0.407, which indicates that 40.7% of all articles in the journal (that is, 2770 of 6798) have never been cited. Only slightly higher is ET, where the PI-BETA of 0.418 shows that 41.8% (or 556 of 1329) articles have never been cited. Not far behind is JASA, with PI-BETA of 0.327, which shows that 32.7% of articles in the journal have never been cited. At the other end of the spectrum, PI-BETA of Annals and Biometrika show that a relatively low 10.4% and 11.5%, respectively, of their published papers have never been cited. Thus, it is clear that not all papers in great journals are great. In particular, the modal citation for most of these ISI journals is zero, and the median citation is typically one.

The simple correlations for 7 ISI RAM for the 6 econometrics and 4 statistics journals are given in Table 2, with Econometric Reviews and Econometrics Journal excluded as their ISI RAM data do not cover a 5-year period. Although the correlations are based on data for only 10 journals, the correlations for the pairs (2YIF, 5YIF), (2YIF, Article Influence), and (5YIF, Article Influence) are very high at 0.967, 0.932 and 0.923, respectively. Thus, the 2-year and 5-year impact factors are highly correlated with each other, and each is also highly correlated with Article Influence. Overall, 2YIF, 5YIF and Article Influence seem to be capturing similar RAM characteristics for the leading econometrics and statistics journals combined, whereas Immediacy and the new PI-BETA are not highly correlated with any of the other five RAM.

Table 3 reports 13 (10) RAM for 10 econometrics journals; the 8 journals from Table 1 as well as Oxford Bulletin of Economics and Statistics and Journal of Financial Econometrics, using data downloaded on 19 November 2010. The additional 7 RAM compared with those reported in Table 1 include 2YIF*, IFI, Eigenfactor; Cited Article Index (CAI); H-STAR and 2Y-STAR. Some interesting results emerge from consideration of the additional RAM and the additional two journals.

In terms of the new RAM reported, it is noteworthy that the H-STAR and 2Y-STAR for Econometric Theory are idiosyncratically low at 70 and 46, respectively, when compared with the other 9 econometrics journals. Econometric Reviews has a credible pair of STAR values at 98 and 98, with only REStat and Econometrics Journal having comparable results.

The mean IFI score is 1.081, so that Econometric Theory has by far the highest IFI of 1.376, which shows that 37.6% of the impact factor is self-driven by the journal. The IFI scores for the other 9 journals are considerably lower, with IFI scores of 1.000, 1.010 and 1.013 for Econometrics Journal, Econometric Reviews and REStat, respectively, indicating that there are virtually no journal self citations for these three journals..

The relatively high Eigenfactor scores for Econometrica, Journal of Econometrics and REStat confirm the premium status of these leading 3 journals, followed at some distance by Journal of Applied Econometrics, JBES and Econometric Theory.

The 2YIF for the two additional journals is what would be expected, particularly for a new journal such as Journal of Financial Econometrics which, because of its comparatively young age, ISI does not yet report 5YIF or Article Influence. As in Table 1, 5YIF exceeds 2YIF for all 10 econometrics journals. Immediacy (0YIF) for the Oxford Bulletin of Economics and Statistics is quite high, and its h-index of 43 reflects, at least in part, the journal's age. The three newer journals, namely Econometric Reviews, Econometrics Journal and Journal of Financial Econometrics, have h-indexes of 10, 8 and 5, respectively, which might be expected given their recent inclusion in the ISI database.

The mean PI-BETA in Table 3 for the updated list of 10 econometrics journals is 0.341, but falls to 0.272 when the newest 3 econometrics journals in the ISI database, namely Econometric Reviews, Econometrics Journal and Journal of Financial Econometrics, are excluded. Table 3 shows that the two additional journals' scores are in line with expectations. The older Oxford Bulletin of Economics and Statistics has a lower PI-BETA (0.331) than the younger Journal of Financial Econometrics (0.567), which of all the 10 econometrics journals reported is by far the highest, with over one-half of the papers published never having been cited. A similar comment applies to the Econometrics Journal, though not to Econometric Reviews. Coupled with H-STAR of 92 and 2Y-STAR of 88, the proportion of self-cited

papers in Journal of Financial Econometrics is relatively low in comparison with the other 9 econometrics journals and 4 statistics journals.

An uncritical reliance on a journal's 2YIF, to the exclusion of other informative RAM, can lead to a distorted evaluation of journal performance, prestige and influence. In order to summarize the 13 RAM criteria, 9 of which, namely 2YIF, 2YIF*, 5YIF, Immediacy, IFI, C3PO, PI-BETA, Article Influence and CAI, are based on ratios, the rankings of the econometrics journals are recalculated using the harmonic mean.

Table 4 reports the rankings of the 10 econometrics journals for each of the 13 RAM (10 RAM in the case of Econometric Reviews, Econometrics Journal and Journal of Financial Econometrics), and harmonic mean of the 13 (10), respectively. Econometrica retains its top ranking, followed by REStat and Journal of Econometrics, which is identical to the rankings based on 2YIF. JBES and Econometric Theory have identical rankings (6 and 9, respectively) regardless of whether 2YIF or the harmonic mean is used. Thus, 5 of the 10 journals have no change in their respective rankings.

However, the harmonic mean rankings for the other 5 journals are different compared with the rankings based on 2YIF alone. In terms of the harmonic mean, the Econometrics Journal is ranked 4 (rather than 10 using 2YIF), Econometric Reviews is 5 (4 using 2YIF), Journal of Applied Econometrics is 7 (5 using 2YIF), Oxford Bulletin of Economics and Statistics is 8 (7 using 2YIF), and Journal of Financial Econometrics is 10 (8 using 2YIF). The difference in ranking for the Econometrics Journal is clearly substantial.

The 25 most highly cited econometrics and economics papers in Econometrica since its inception are given in Table 5. The table speaks for itself. The range in year of publication is 1950 to 1991. It is interesting that 17 of the 25 most highly cited and influential papers in Econometrica are in econometric theory, and that 9 of the 17 econometrics papers are related to time series analysis. There are 8 Nobel Laureates in the list of 25 most highly cited papers, including highly technical and novel papers on econometrics and economic theory.

Table 6 provides the 25 most highly cited econometrics and economics papers in REStat since its inception. This table also speaks volumes. The range in year of publication is 1954 to 1999. There is an eclectic mixture of theoretical and applied economics, econometrics and

statistics papers, with 8 Nobel Laureates in the list of 25 most highly cited papers, including four sole-authored economic theory papers by Paul Samuelson. The celebrated CES production function (paper 6) has two Nobel Laureates as co-authors.

The 25 most highly cited papers in Journal of Econometrics since its inception are given in Table 7. The range in year of publication is 1980 to 2003. More than one-half of the novel contributions are in time series, with virtually all of the influential time series papers related to unit roots and cointegration, with two papers on univariate conditional volatility models, namely papers 1 and 3. Clive Granger has four papers in this list, and Robert Engle has two.

Table 8 presents the 25 most highly cited econometrics papers in Econometric Theory since its inception. The range in year of publication is 1988 to 2005. The 15 papers on theoretical time series (namely, 9 on univariate and multivariate volatility, and 6 on cointegration), and other influential papers on asymptotic theory, panel data, model specification and estimation methods, are technically proficient, insightful and innovative contributions to econometric theory. Two authors have 3 papers each in this list.

The 25 most highly cited econometrics papers in JBES since its inception are given in Table 9. The range in year of publication is 1985 to 2002. The 15 papers on theoretical times series (namely 10 on unit roots and cointegration, and 5 on stochastic volatility and conditional volatility models), and other influential papers on predictive accuracy, inference, vector autoregressions, and structural change, are novel contributions to econometric theory.

Table 10 gives the 25 most highly cited theoretical and applied econometrics papers in Journal of Applied Econometrics since its inception. The range in year of publication is 1988 to 2006. Highly innovative papers on a variety of challenging topics is presented, including 4 papers on univariate and multivariate conditional volatility models, and novel papers on discrete choice, structural change, economic growth, convergence, and business cycles.

It is clear that these great Laureates, great authors and great papers make each of these six econometrics journals truly great.

Many significant papers in statistical theory have been widely cited in leading econometrics journals, and this is shown in Tables 11-14, where the 10 most highly cited papers in 4

leading statistics journals are given. The first paper in Annals of Statistics in Table 11 would be known to most empirical economists and econometrics as the originator of the Schwarz Bayesian information criterion (BIC). The second paper by Efron on the bootstrap and the jackknife is also widely known and cited.

Biometrika has produced many classic papers, including the Shapiro-Wilk test of normality (paper 2 in Table 12), and the renowned Phillips-Perron test of a unit root (paper 7). Although not reported here, the classic Durbin and Watson DW test papers in 1950 and 1951 have garnered 721 and 807 citations, respectively. This is all the more impressive when it is clear that the DW test is so familiar and so widely used that it is may no longer require any citation to the original contributions.

The 10 most highly cited papers in JASA in Table 13 reveal an incredible 34,010 citations to the Kaplan-Meier nonparametric estimator. Paper 4 by Dickey and Fuller in 1979 was a forerunner of the significant (Augmented) DF test in Econometrica in 1981, and has been even more frequently cited. Paper 9 by Zellner is the widely-used, influential and efficient seemingly unrelated regression equations (SURE) estimator. Both the DF test and SURE estimator are now so familiar to practitioners, especially in econometrics, that it is somewhat surprising to see that they are still being cited.

Table 14 presents the 10 most highly cited papers in JRSSB. Not surprisingly, three of the ten papers are by D.R. Cox, including papers 1 and 2, the first of which on life tables has an amazing 24,475 citations. Paper 2 is the delightfully-named Box-Cox transformation, which has been widely used in empirical economics and econometrics. The **RE**gression **S**pecification **E**rror **T**est (RESET) of Ramsey (paper 7) is now an essential diagnostic check of functional form in any econometrics computer software package. The classic Cox test of separate models (paper 9) is the origin of the non-nested testing literature in econometrics.

Each of these classic papers by great authors makes these 4 statistics journals truly great.

The 100 most highly cited papers in econometrics are listed in Table 15 according to author, year, journal and number of citations. The table gives a veritable Who's Who of leading authors and classic papers in the profession. Econometrica has 64 papers in the 100 most highly cited papers in econometrics, with 9 of the top 10, 16 of 20, 24 of 30, 29 of 40, 35 of

50, 44 of 60, 51 of 70, 55 of 80, and 59 of 90. It goes without saying that Econometrica has been, and continues to be, monumentally significant to the development of econometrics.

Authors with two or more papers in the 100 most highly cited papers in econometrics are presented in Table 16 according to the number of papers and the number of sole-authored papers. This list also shows 6 Nobel Laureates, namely R.F. Engle, C.W.J. Granger, J.J. Heckman, J. Tobin, D. McFadden, and R.M. Solow. K.J. Arrow has one citation for the CES production function (with Solow as one of the three co-authors), but his significant lifetime contributions to economic theory would probably not be regarded as econometric in nature. The table also suggests that what many, if not most, Nobel Laureates say is true, namely that it helps to have great co-authors. Only Tobin has 3 sole-authored papers from 3 in the list, while Heckman has 3 papers of 4 in the list that are sole authored, and Solow has 1 of 2 papers in the list that is sole-authored.

5. Some comparisons of ISI and Scopus

The analysis presented above is based upon data downloaded from the Thomson Reuters ISI Web of Science database. In this section, consideration is given to an alternative database, SciVerse Scopus (2010), which provides an opportunity for comparisons with some of the ISI-based RAM discussed above. In particular, comparisons will be made with PI-BETA and what Scopus refers to as "Percentage Not Cited" (PNC), which refers solely to articles not cited. In both cases, comparisons will be based upon dynamic versions of the particular RAM. Dynamic PI-BETA refers to PI-BETA for each year of available ISI data, which varies according to journal. The data for Scopus 'Dynamic PI-BETA' have a common endpoint of no more than 1996.

Scopus definitions, descriptions and journal coverage, among others, differ from those of ISI discussed above, and consideration is now given to such differences. Scopus was launched in November 2004, and claims to provide the 'largest abstract and citation database containing peer-reviewed research literature … with over 18,000 titles from more than 5,000 publishers … with 42.5 million records.' (SciVerse Scopus 2010). Scopus 'documents' currently comprise 11 different types; namely articles (or 'papers', using ISI terminology), articles-in-press, conference papers, editorials, errata, letters, notes, reviews, short surveys, book

reviews and conference meeting abstracts. The top category is 'articles', with over 20 million entries, followed by 'reviews' with 1.4 million entries, 'letters' with 0.53 mill records, 'notes' with 0.41 million records, 'editorials' with 0.27 million entries, and 'short surveys' with 0.24 million records. Counts for the remaining categories decline rapidly. Unlike ISI, which typically has records from the inception of a journal, Scopus document entries are recorded from the mid-1960s.

In terms of the Scopus "Percentage Not Cited" (PNC), it is important to note that the definition refers specifically to "the percentage of ***articles*** published in a year that have never been cited to date. The percentage of ***articles*** not cited in a source is listed on the y-axis of the graph and the publication year is listed on the x-axis" (emphasis added). This measure clearly is more restrictive than that used to create the ISI-based PI-BETA that was defined and reported above, and which refers to all articles.

Table 17 presents the data on Scopus PI-BETA for 10 econometrics journals, and Figures 1 and 2 graph the dynamic PI-BETAs for ISI and Scopus, respectively. The Scopus PI-BETA are typically much smaller in value that their ISI counterparts, and are zero for several journals in different years. Econometrica has 6 years for which all papers have been cited, with corresponding zero PI-BETA, while REStat has five years in which all papers have been cited.

For the ISI Dynamic PI-BETA (for all articles) in Figure 1, a general pattern of an immediate sharp decline from 2010 can be observed in all cases, except for the *Econometrics Journal,* although the figures for this journal are based only on six annual observations. Given these general tendencies, however, some particular interesting cases emerge. For *Econometric Theory,* the initial general decline in PI-BETA is reversed within three years, thereafter stabilising at around 30. A similar, but much more protracted pattern, can be found for *Oxford Bulletin of Economics and Statistics, Journal of Business and Economic Statistics,* and *Review of Economic Statistics.*

In all cases, it likely that the particular definitions, types and potentially changing composition of 'articles' published in a journal has contributed to the pattern. The pattern for *Econometrica,* however, is the most extreme, with a significant change identified as having occurred in around 1972. For the previous two decades, numerous abstracts from various

Econometric Society World Congresses, as well as book reviews, had been published regularly in the journal. In the last few decades, the dynamic PI-BETA for Econometrica has been extremely small.

In comparison with dynamic PI-BETA, the data for dynamic PNC relate to a much shorter period and to a database of entries that extend no further than the mid-1960s. It should be emphasized that the definition of PNC is based upon only 'papers not cited' rather than 'all articles', with the latter, and much broader, definition being used in ISI. The 'all articles' definition includes uncited notes, reviews, errata, and abstracts, among others. In such circumstances, it is not surprising that the patterns observed from Scopus provide some obvious similarities as well as obvious differences.

The pattern of a rapid decline in PNC is observed for all the journals considered, with only *Econometric Reviews* showing any tendency for PNC to increase from the established declining trend in 2007. For the relatively new journals in the Scopus database, namely *Econometric Reviews, Econometrics Journal* and *Journal of Financial Econometrics*, there is a tendency for the dynamic PI-BETA and dynamic PNC to be of similar magnitudes. This is to be expected. However, differences do occur in comparing such magnitudes with the more established journals, as the 1996 truncation and different definition of article type, and changing journal composition, create a number of significant differences. Overall, the dynamic PNC in Figure 2 has a reasonably similar pattern to the dynamic PI-BETA in Figure 1 for the period covered by Scopus.

6. Conclusion

The paper discussed alternative Research Assessment Measures (RAM), with an emphasis on the Thomson Reuters ISI Web of Science (hereafter ISI) database. Some comparisons were also made with the SciVerse Scopus database, although it should be stressed that, although its coverage of journals is broader, the historical time span of data provided in this source is much shorter than for ISI.

Alternative RAM that are calculated annually or updated daily were defined and analysed, including the classic 2-year impact factor (2YIF), 2YIF without journal self citations

(2YIF*), 5-year impact factor (5YIF), Immediacy (or zero-year impact factor (0YIF)), Impact Factor Inflation (IFI), Self-citation Threshold Approval Rating (STAR), Eigenfactor score, Article Influence, h-index, C3PO (Citation Performance Per Paper Online), Zinfluence, and a new RAM in PI-BETA (Papers Ignored - By Even The Authors).

The RAM data were analysed for 10 leading econometrics journals and 4 leading statistics journals. The application to econometrics and statistics could be used as a template for other areas in the ISI Economics category, ISI Statistics & Probability category, for other scientific disciplines, and as a benchmark for newer journals in a range of disciplines.

In addition to evaluating high quality research in leading econometrics journals, the paper also compared econometrics and statistics, alternative RAM, highlighted the similarities and differences in alternative RAM criteria, found that several RAM captured similar performance characteristics for the leading econometrics and statistics journals, determined that the new PI-BETA criterion was not highly correlated with any of the other RAM, and hence conveyed additional bibliometric information, highlighted major research areas in leading journals in econometrics, and showed that the harmonic mean of 13 RAM provided more robust journal rankings than relying solely on 2YIF.

Likely future uses of RAM include using RAM criteria for research assessment exercises, and as input into academic appointments and promotions. Conundrums such as whether or not it is better to publish in a journal with: (i) high rather than low 2YIF; (ii) high rather than low 2YIF*; (iii) high rather than low 5YIF; (iv) high rather than low Immediacy (or 0YIF); (v) low rather than high IFI; (vi) high rather than low H-STAR; (vii) high rather than low 2Y-STAR; (viii) high rather than low h-index; (ix) high rather than low C3PO; (x) high rather than low Eigenfactor score; (xi) high rather than low Article Influence; (xii) high rather than low Cited Article Influence (CAI); and (xiii) low rather than high PI-BETA; as such choices may increase the probability of being cited in a great journal, on average.

On the basis of the frequent appearance of Nobel Laureates in a few great journals in econometrics, the RAM would also seem to be useful in predicting future Nobel Laureates in Economic Sciences, and the areas of research that might be considered for such a prestigious award.

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Table 1

Research Assessment Measures (RAM) for
8 Econometrics and 4 Statistics Journals

Journal	2YIF	5YIF	h-index	C3PO	PI-BETA (measures Zinfluence)	Immediacy (0YIF)	Article Influence
Econometric Reviews	1.220	-	9	2.71	0.444	1.880	-
Econometric Theory	0.768	1.349	48	7.75	0.418	0.185	1.311
Econometrics Journal	0.750	-	7	1.55	0.591	0.065	-
Econometrica	3.865	4.943	201	35.02	0.407	0.255	7.243
J. Applied Econometrics	1.274	1.971	48	11.30	0.259	0.125	1.595
JBES	1.848	2.033	71	16.13	0.235	0.346	1.966
REStat	2.233	3.630	103	16.65	0.203	0.492	3.887
J. Econometrics	1.790	2.625	110	22.79	0.132	0.211	2.284
Annals of Statistics	2.307	3.094	133	27.33	0.104	0.614	2.998
Biometrika	1.405	1.887	165	31.65	0.115	0.307	1.787
JASA	2.394	3.462	190	27.63	0.327	0.187	3.013
JRSSB	2.835	3.943	104	44.93	0.175	0.551	3.476

Note: Data for econometrics (statistics) journals downloaded from ISI on 28 April 2010 (19 May 2010) for all citations for 1988-2010. Econometric Reviews and Econometrics Journal have been included in ISI for less than a full five-year period that is required to calculate 5YIF and Article Influence.

Table 2

Correlation Matrix for 6 Econometrics and 4 Statistics Journals

RAM	2YIF	5YIF	h-index	C3PO	PI-BETA	Immediacy (0YIF)	Article Influence
2YIF	-						
5YIF	0.967	-					
h-index	0.675	0.646	-				
C3PO	0.717	0.676	0.674	-			
PI-BETA	0.118	0.116	0.017	-0.280	-		
Immediacy (0YIF)	0.360	0.367	0.069	0.447	-0.560	-	
Article Influence	0.932	0.923	0.642	0.534	0.308	0.211	-

Note: Data for econometrics (statistics) journals downloaded from ISI on 28 April 2010 (19 May 2010) for all citations for 1988-2010. Econometric Reviews and Econometrics Journal are not included as the data for these two journals do not cover a full five-year period that is required to calculate 5YIF and Article Influence.

Table 3

Research Assessment Measures (RAM) for 10 Econometrics Journals

Journal	2YIF	2YIF*	5YIF	IFI	Immediacy	h-index	C3PO	PI-BETA	Eigenfactor	CAI	AI	H-STAR	2Y-STAR
Econometric Reviews	1.745	1.727	-	1.010	0.200	10	3.02	0.427	0.00541	-	-	98	98
Econometric Theory	0.743	0.540	1.536	1.376	0.375	50	8.18	0.402	0.00866	0.946	1.582	70	46
Econometrics Journal	0.733	0.733	-	1.000	0.125	8	1.98	0.511	0.00367	-	-	96	100
Econometrica	4.000	3.724	5.321	1.074	0.246	205	36.40	0.404	0.04303	4.598	7.715	98	88
J. Applied Econometrics	1.635	1.594	2.185	1.026	0.229	52	12.11	0.248	0.00959	1.392	1.851	94	96
JBES	1.562	1.479	2.565	1.056	0.351	73	16.98	0.222	0.00939	1.983	2.549	96	90
J. Econometrics	1.902	1.739	2.683	1.094	0.232	113	23.41	0.139	0.03451	2.288	2.657	92	84
J. Financial Econometrics	0.897	0.795	-	1.128	0.105	5	1.26	0.567	0.00598	-	-	92	88
Oxford Bulletin E&S	1.092	1.053	1.541	1.037	0.237	43	9.67	0.331	0.00470	0.771	1.153	98	94
REStat	2.555	2.521	4.044	1.013	0.508	101	18.53	0.159	0.02877	3.657	4.348	100	98

Note: Data downloaded from ISI on 19 November 2010.

Table 4

Research Assessment Measures (RAM) for 10 Econometrics Journals

Journal	2YIF	2YIF*	5YIF	IFI	Immediacy	h-index	C3PO	PI-BETA	Eigenfactor	CAI	AI	H-STAR	2Y-STAR	Harmonic Mean
Econometric Reviews	4	4	-	2	8	8	8	8	8	-	-	2	2	5
Econometric Theory	9	10	7	10	2	6	7	6	6	6	6	10	10	9
Econometrics Journal	10	9	-	1	9	9	9	9	10	-	-	5	1	4
Econometrica	1	1	1	7	4	1	1	7	1	1	1	2	7	1
J. Applied Econometrics	5	5	5	4	7	5	5	4	4	5	5	7	4	7
JBES	6	6	4	6	3	4	4	3	5	4	4	5	6	6
J. Econometrics	3	3	3	8	6	2	2	1	2	3	3	8	9	3
J. Financial Econometrics	8	8	-	9	10	10	10	10	7	-	-	8	7	10
Oxford Bulletin E&S	7	7	6	5	5	7	6	5	9	7	7	2	5	8
REStat	2	2	2	3	1	3	3	2	3	2	2	1	2	2

Note: Data downloaded from ISI on 19 November 2010.

Table 5

25 Most Highly Cited Papers in Econometrica

Rank	Author(s)	Title	Year	Citations
1	D. Kahneman, A. Tversky	Prospect Theory - Analysis of Decision Under Risk	1979	5,844
2	H. White	A Heteroskedasticity-Consistent Covariance-Matrix Estimator and a Direct Test for Heteroskedasticity	1980	5,416
3	R.F. Engle, C.W.J. Granger	Cointegration and Error Correction - Representation, Estimation, and Testing	1987	4,252
4	J.J. Heckman	Sample Selection Bias as a Specification Error	1979	3,966
5	R.F. Engle	Autoregressive Conditional Heteroscedasticity with Estimates of the Variance of United Kingdom Inflation	1982	3,035
6	J.A. Hausman	Specification Tests in Econometrics	1978	2,495
7	W.K. Newey, K.D. West	A Simple, Positive Semidefinite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix	1987	2,295
8	L.P. Hansen	Large Sample Properties of Generalized-Method of Moments Estimators	1982	2,095
9	D.A. Dickey, W.A. Fuller	Likelihood Ratio Statistics for Autoregressive Time-Series with a Unit-Root	1981	1,887
10	J.W. Pratt	Risk-Aversion in the Small and In the Large	1964	1,680
11	G.C. Chow	Tests of Equality Between Sets of Coefficients in 2 Linear Regressions	1960	1,575
12	J.F. Nash	The Bargaining Problem	1950	1,517
13	C.A. Sims	Macroeconomics and Reality	1980	1,514
14	S. Johansen	Estimation and Hypothesis-Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models	1991	1,433
15	P. Perron	The Great Crash, The Oil Price Shock, and the Unit-Root Hypothesis	1989	1,326
16	H. White	Maximum-Likelihood Estimation of Mis-	1982	1,304

		Specified Models		
17	J.C. Cox, J.E. Ingersoll, S.A. Ross	A Theory of the Term Structure of Interest-Rates	1985	1,219
18	J.F. Muth	Rational-Expectations and the Theory of Price Movements	1961	1,184
19	A. Rubinstein	Perfect Equilibrium in a Bargaining Model	1982	1,154
20	J.D. Hamilton	A New Approach to the Economic-Analysis of Nonstationary Time-Series and the Business-Cycle	1989	1,139
21	J. Tobin	Estimation of Relationships for Limited Dependent-Variables	1958	1,121
22	R. Koenker, G. Bassett	Regression Quantiles	1978	1,022
23	A.S. Kyle	Continuous Auctions and Insider Trading	1985	1,015
24	F.E. Kydland, E.C. Prescott	Time To Build and Aggregate Fluctuations	1982	987
25	D.B. Nelson	Conditional Heteroskedasticity in Asset Returns - A New Approach	1991	973

Note: Data downloaded from ISI on 28 April 2010.

Table 6

25 Most Highly Cited Papers in Review of Economics and Statistics

Rank	Author(s)	Title	Year	Citations
1	J. Lintner	The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets	1965	1,319
2	R.M. Solow	Technical Change and the Aggregate Production Function	1957	1,298
3	P.A. Samuelson	The Pure Theory of Public Expenditure	1954	1,129
4	L.R. Christenson, D.W. Jorgenson, L.J. Lau	Transcendental Logarithmic Production Frontiers	1973	654
5	R.C. Merton	Lifetime Portfolio Selection under Uncertainty - Continuous-Time Case	1969	591
6	K.J. Arrow, H.B. Chenery, B.S. Minhas, R.M. Solow	Capital-Labor Substitution and Economic-Efficiency	1961	589
7	E.R. Berndt, D.O. Wood	Technology, Prices, and Derived Demand for Energy	1975	438
8	T. Bollerslev	A Conditionally Heteroskedastic Time-Series Model for Speculative Prices and Rates of Return	1987	413
9	J.F. McDonald, R.A. Moffitt	The Uses of Tobit Analysis	1980	411
10	B.R. Moulton	An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units	1990	373
11	J. Tobin	The Interest-Elasticity of Transactions Demand for Cash	1956	370
12	T. Bollerslev	Modeling the Coherence in Short-Run Nominal Exchange-Rates - A Multivariate Generalized ARCH Model	1990	357
13	P.A. Samuelson	Lifetime Portfolio Selection by Dynamic Stochastic Programming	1969	351

14	M. Olson, R. Zeckhauser	Economic Theory of Alliances	1966	329
15=	I. Krinsky, A.L. Robb	On Approximating the Statistical Properties of Elasticities	1986	313
15=	D.E. Farrar, R.R. Glauber	Multicollinearity in Regression Analysis - Problem Revisited	1967	313
17	H.S. Houthakker, S.P. Magee	Income And Price Elasticities in World Trade	1969	277
18	P.A. Samuelson	Theoretical Notes on Trade Problems	1964	274
19	W. Leontief	Environmental Repercussions and Economic Structure - Input-Output Approach	1970	272
20=	J.H. Bergstrand	The Gravity Equation in International-Trade - Some Microeconomic Foundations and Empirical-Evidence	1985	271
20=	P.A. Samuelson	Diagrammatic Exposition Of A Theory Of Public Expenditure	1955	271
22	R.C. Fair	Effect of Economic Events on Votes for President	1978	242
23	M. Baxter, R.G. King	Measuring Business Cycles: Approximate Band-Pass Filters for Economic Time Series	1999	240
24	W.S. Comanor, T.A. Wilson	Advertising Market Structure and Performance	1967	236
25	M.E. Porter	Structure within Industries and Companies Performance	1979	232

Note: Data downloaded from ISI on 28 April 2010.

Table 7

25 Most Highly Cited Papers in Journal of Econometrics

Rank	Author(s)	Title	Year	Citations
1	T. Bollerslev	Generalized Autoregressive Conditional Heteroskedasticity	1986	2,370
2	D. Kwiatkowski, P.C.B. Phillips, P. Schmidt, Y.C. Shin	Testing The Null Hypothesis of Stationarity Against The Alternative of a Unit-Root - How Sure are we that Economic Time-Series have a Unit-Root	1992	1,211
3	T. Bollerslev, R.Y. Chou, K.F. Kroner	ARCH Modeling in Finance - A Review of the Theory and Empirical-Evidence	1992	859
4	R. Blundell, S. Bonds	Initial Conditions and Moment Restrictions in Dynamic Panel Data Models	1998	666
5	R.F. Engle, B.S. Yoo	Forecasting and Testing in Co-Integrated Systems	1987	641
6	K.S. Im, M.H. Pesaran, Y. Shin	Testing for Unit Roots in Heterogeneous Panels	2003	528
7	J. Jondrow, C.A.K. Lovell, I.S. Materov, P. Schmidt	On the Estimation of Technical Inefficiency in the Stochastic Frontier Production Function Model	1982	519
8	M. Arellano, O. Bover	Another Look at the Instrumental Variable Estimation of Error-Components Models	1995	514
9	W.L. Goffe, G.D. Ferrier, J. Rogers	Global Optimization of Statistical Functions with Simulated Annealing	1994	499
10	S. Hylleberg, R.F. Engle, C.W.J. Granger, B.S. Yoo	Seasonal Integration and Cointegration	1990	424
11	A. Levin, C.F. Lin, C.S.J. Chu	Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties	2002	387
12	C.W.J. Granger	Some Properties of Time-Series Data and their use in Econometric-Model Specification	1981	386
13	P.C.B. Phillips	Understanding Spurious Regressions in	1986	372

		Econometrics		
14=	S. Johansen, K. Juselius	Testing Structural Hypotheses In a Multivariate Cointegration Analysis of the PPP and the UIP for UK	1992	358
14=	C.W.J. Granger	Some Recent Developments in a Concept of Causality	1988	358
16	L.M. Seiford, R.M. Thrall	Recent Developments in DEA - the Mathematical-Programming Approach to Frontier Analysis	1990	348
17	B.R. Moulton	Random Group Effects and the Precision of Regression Estimates	1986	326
18	A. Charnes, W.W. Cooper, B. Golany, L. Seiford, J. Stitz	Foundations of Data Envelopment Analysis for Pareto-Koopmans Efficient Empirical Production-Functions	1985	308
19	C.W.J. Granger	Long Memory Relationships and the Aggregation of Dynamic-Models	1980	301
20	T. Amemiya	Tobit Models - A Survey	1984	286
21	R.T. Baillie	Long memory processes and Fractional Integration in Econometrics	1986	283
22	J.L. Powell	Least Absolute Deviations Estimation for the Censored Regression-Model	1984	275
23	Z. Griliches, J.A. Hausman	Errors in Variables in Panel Data	1986	268
24	M.H. Pesaran, R. Smith	Estimating Long-Run Relationships from Dynamic Heterogeneous Panels	1995	266
25	F.R. Forsund, C.A.K. Lovell, P. Schmidt	A Survey of Frontier Production-Functions and of their Relationship to Efficiency Measurement	1980	263

Note: Data downloaded from ISI on 28 April 2010.

Table 8

25 Most Highly Cited Papers in Econometric Theory

Rank	Author(s)	Title	Year	Citations
1	R.F. Engle, K.F. Kroner	Multivariate Simultaneous Generalized ARCH	1995	351
2	D.B. Nelson	Stationarity and Persistence in the GARCH(1,1) Model	1990	208
3	A.R. Gallant, G. Tauchen	Which Moments to Match?	1996	203
4=	P. Saikkonen	Asymptotically Efficient Estimation of Cointegration Regressions	1991	198
4=	J.Y. Park, P.C.B. Phillips	Statistical-Inference in Regressions with Integrated Processes .1.	1988	198
6	J.Y. Park, P.C.B. Phillips	Statistical-Inference in Regressions with Integrated Processes .2.	1989	142
7	S.W. Lee, B.E. Hansen	Asymptotic Theory for the GARCH(1,1) Quasi-Maximum Likelihood Estimator	1994	131
8	P. Pedroni	Panel Cointegration: Asymptotic and Finite Sample Properties of Pooled Time Series Tests with an Application to the PPP Hypothesis	2004	122
9	D. Pollard	Asymptotics for Least Absolute Deviation Regression-Estimators	1991	116
10	S. Chib, E. Greenberg	Markov Chain Monte Carlo Simulation Methods in Econometrics	1996	103
11	Y.C. Shin	A Residual-Based Test of the Null of Cointegration against the Alternative of no Cointegration	1994	101
12	P.C.B. Phillips	Partially Identified Econometric-Models	1989	100
13	E. Masry, D. Tjostheim	Nonparametric-Estimation and Identification Of Nonlinear ARCH Time-Series - Strong-Convergence and Asymptotic Normality	1995	99
14	J.M. Wooldridge	A Unified Approach to Robust, Regression-Based Specification Tests	1990	90
15	S.Q. Ling,	Asymptotic Theory for a Vector ARMA-	2003	87

	M. McAleer	GARCH Model		
16=	S.Q. Ling, M. McAleer	Necessary and Sufficient Moment Conditions for the GARCH(r,s) and Asymmetric Power GARCH(r,s) Models	2002	82
16=	M. Carrasco, X.H. Chen	Mixing and Moment Properties of Various GARCH and Stochastic Volatility Models	2002	82
16=	W.K. Newey	Kernel Estimation of Partial Means and a General Variance Estimator	1994	82
16=	A.W. Lo	Maximum-Likelihood Estimation of Generalized Ito Processes with Discretely Sampled Data	1988	82
20=	B.H. Baltagi, P.X. Wu	Unequally Spaced Panel Data Regressions with AR(1) Disturbances	1999	81
20=	B.E. Hansen	Convergence to Stochastic Integrals for Dependent Heterogeneous Processes	1992	81
22	M. McAleer	Automated Inference and Learning in Modeling Financial Volatility	2005	74
23	T. Jeantheau	Strong Consistency of Estimators for Multivariate ARCH Models	1998	72
24	S. Johansen	A Representation of Vector Autoregressive Processes Integrated of Order-2	1992	71
25	B.M. Potscher	Effects of Model Selection on Inference	1991	70

Note: Data downloaded from ISI on 28 April 2010.

Table 9

25 Most Highly Cited Papers in Journal of Business & Economic Statistics

Rank	Author(s)	Title	Year	Citations
1	E. Zivot, D.W.K. Andrews	Further Evidence on the Great Crash, the Oil-Price Shock, and the Unit-Root Hypothesis	1992	636
2	F.X. Diebold, R.S. Mariano	Comparing Predictive Accuracy	1995	634
3	G.W. Schwert	Tests for Unit Roots - A Monte-Carlo Investigation	1989	360
4	A.Banerjee, R.L. Lumsdaine, J.H. Stock	Recursive and Sequential-Tests of the Unit-Root and Trend-Break Hypotheses - Theory and International Evidence	1992	329
5	K.M. Murphy, R.H. Topel	Estimation and Inference in 2-Step Econometric-Models	1985	319
6	E. Jacquier, N.G. Polson, P.E. Rossi	Bayesian-Analysis of Stochastic Volatility Models	1994	261
7	P. Perron	Testing for a Unit-Root in a Time-Series with a Changing Mean	1990	252
8	B.E. Hansen	Tests for Parameter Instability in Regressions with I(1) Processes	1992	241
9	R.T. Baillie, T. Bollerslev	The Message In Daily Exchange-Rates - A Conditional-Variance Tale	1989	231
10	L.C. Alwan, H.V. Roberts	Time-Series Modeling for Statistical Process-Control	1988	225
11	P. Perron, T.J. Vogelsang	Nonstationarity and Level Shifts with An Application to Purchasing Power Parity	1992	217
12	J.H. Stock, J.H. Wright, M. Yogo	A Survey of Weak Instruments and Weak Identification in Generalized Method of Moments	2002	214
13	R. Engle	Dynamic Conditional Correlation: A Simple Class of Multivariate	2002	206

		Generalized Autoregressive Conditional Heteroskedasticity Models		
14	R.B. Litterman	Forecasting with Bayesian Vector Autoregressions - 5 Years of Experience	1986	200
15=	B.D. Meyer	Natural and Quasi-Experiments in Economics	1995	199
15=	D.A. Dickey, S.G. Pantula	Determining the Order of Differencing in Autoregressive Processes	1987	199
17	D.E. Runkle	Vector Autoregressions and Reality	1987	191
18	J.H. Stock, M.W. Watson	Macroeconomic Forecasting using Diffusion Indexes	2002	177
19	W. Enders, C.W.J. Granger	Unit-Root Tests and Asymmetric Adjustment with an Example Using the Term Structure of Interest Rates	1998	176
20	L.J. Christiano	Searching for a Break In GNP	1992	170
21	A. Hall	Testing for a Unit-Root in Time-Series with Pretest Data-Based Model Selection	1994	168
22	S.G. Pantula, G. Gonzalezfarias, W.A. Fuller	A Comparison of Unit-Root Test Criteria	1994	167
23	A.C. Harvey	Trends and Cycles in Macroeconomic Time-Series	1985	185
24	D.A. Hsieh	Modeling Heteroscedasticity in Daily Foreign-Exchange Rates	1989	157
25	C.G. Lamoureux, W.D. Lastrapes	Persistence in Variance, Structural-Change, and the GARCH Model	1990	155

Note: Data downloaded from ISI on 28 April 2010.

Table 10

25 Most Highly Cited Papers in Journal of Applied Econometrics

Rank	Author(s)	Title	Year	Citations
1	D. McFadden, K. Train	Mixed MNL Models for Discrete Response	2000	333
2	M.H. Pesaran, Y.C. Shin, R.J. Smith	Bounds Testing Approaches to the Analysis of Level Relationships	2001	287
3	J. Bai, P. Perron	Computation and Analysis of Multiple Structural Change Models	2003	223
4	S.N. Durlauf, P.A. Johnson	Multiple Regimes and Cross-Country Growth-Behavior	1995	215
5	A,C. Harvey, A. Jaeger	Detrending, Stylized Facts and the Business-Cycle	1993	192
6	A.B. Bernard, S.N. Durlauf	Convergence In International Output	1995	187
7	A. Han, J.A. Hausman	Flexible Parametric-Estimation of Duration and Competing Risk Models	1990	168
8	J.G. Mackinnon	Numerical Distribution Functions for Unit Root and Cointegration Tests	1996	161
9	W.K. Newey	Semiparametric Efficiency Bounds	1990	149
10	F.X. Diebold, M. Nerlove	The Dynamics of Exchange-Rate Volatility - A Multivariate Latent Factor ARCH Model	1989	146
11	S.M. Potter	A Nonlinear Approach to US GNP	1995	145
12	L.E. Papke, J.M. Wooldridge	Econometric Methods for Fractional Response Variables with an Application to 401(K) Plan Participation Rates	1996	138
13	R.T. Baillie, R.J. Myers	Bivariate GARCH Estimation of the Optimal Commodity Futures Hedge	1991	134
14	R.T. Baillie, C.F. Chung, M.A. Tieslau	Analysing Inflation by the Fractionally Integrated ARFIMA-GARCH Model	1996	132
15	J.G. Mackinnon, A.A. Haug, L. Michelis	Numerical Distribution Functions of Likelihood Ratio Tests for Cointegration	1999	123

16	K. Lee, M.H. Pesaran, R. Smith	Growth and Convergence in a Multi-Country Empirical Stochastic Solow Model	1997	113
17	A. Pagan, F. Vella	Diagnostic-Tests for Models Based on Individual Data - A Survey	1989	107
18=	F. Vahid, R.F. Engle	Common Trends and Common Cycles	1993	101
18=	A. Pagan, A. Ullah	The Econometric-Analysis of Models with Risk Terms	1988	101
20	P.C.B. Phillips	To Criticize the Critics - An Objective Bayesian-Analysis of Stochastic Trends	1991	97
21	T. Terasvirta, H.M. Anderson	Characterizing Nonlinearities In Business Cycles Using Smooth Transition Autoregressive Models	1992	96
22	L. Bauwens, S. Laurent, J.V.K. Rombouts	Multivariate GARCH Models: A Survey	2006	85
23	A.M. Jones	A Double-Hurdle Model of Cigarette Consumption	1989	84
24	C.M. Kuan, T. Liu	Forecasting Exchange-Rates Using Feedforward and Recurrent Neural Networks	1995	79
25	B.E. Hansen	The Likelihood Ratio Test under Nonstandard Conditions: Testing The Markov Switching Model of GNP	1996	77

Note: Data downloaded from ISI on 28 April 2010.

Table 11

10 Most Highly Cited Papers in Annals of Statistics

Rank	Author(s)	Title	Year	Citations
1	G. Schwarz	Estimating Dimension of a Model	1978	6,098
2	B. Efron	1977 Rietz Lecture - Bootstrap Methods - Another Look at the Jackknife	1979	3,248
3	J.H. Friedman	Multivariate Adaptive Regression Splines	1991	1,192
4	P.K. Andersen, R.D. Gill	Cox Regression-Model for Counting-Processes - A Large Sample Study	1982	1,021
5	L. Tierney	Markov-Chains for Exploring Posterior Distributions	1994	1,020
6	T.S. Ferguson	Bayesian Analysis of Some Nonparametric Problems	1973	789
7	R.J. Gray	A Class of K-Sample Tests for Comparing the Cumulative Incidence of a Competing Risk	1988	784
8	C.F.J. Wu	On the Convergence Properties of the EM Algorithm	1983	729
9	J. Friedman, T. Hastie, R. Tibshirani	Additive Logistic Regression: A Statistical View of Boosting	2000	694
10	Y. Benjamini, D. Yekutieli	The Control of the False Discovery Rate in Multiple Testing under Dependency	2001	689

Note: Data downloaded from ISI on 19 May 2010.

Table 12

10 Most Highly Cited Papers in Biometrika

Rank	Author(s)	Title	Year	Citations
1	K.Y. Liang, S.L. Zeger	Longitudinal Data-Analysis using Generalized Linear-Models	1986	5,902
2	S.S. Shapiro, M.B. Wilk	An Analysis of Variance Test for Normality (Complete Samples)	1965	3,354
3	E.A. Gehan	A Generalized Wilcoxon Test for Comparing Arbitrarily Singly-Censored Samples	1965	2,841
4	P.R. Rosenbaum, D.B. Rubin	The Central Role of the Propensity Score in Observational Studies for Causal Effects	1983	2,188
5	D.L. Donoho, I.M. Johnstone	Ideal Spatial Adaptation by Wavelet Shrinkage	1994	2,022
6	W.K. Hastings	Monte-Carlo Sampling Methods Using Markov Chains and their Applications	1970	1,997
7	P.C.B. Phillips, P. Perron	Testing For a Unit-Root in Time-Series Regression	1988	1,711
8	H. Scheffe	A Method for Judging all Contrasts in the Analysis of Variance	1953	1,567
9	H.D. Patterson, R. Thompson	Recovery of Inter-Block Information when Block Sizes are Unequal	1971	1,524
10	D.B. Rubin	Inference and Missing Data	1976	1,482

Note: Data downloaded from ISI on 19 May 2010.

Table 13

10 Most Highly Cited Papers in JASA

Rank	Author(s)	Title	Year	Citations
1	E.L. Kaplan, P. Meier	Nonparametric-Estimation from Incomplete Observations	1958	34,010
2	C.W. Dunnett	A Multiple Comparison Procedure for Comparing Several Treatments with a Control	1955	4,089
3	J.H. Ward	Hierarchical Grouping to Optimize an Objective Function	1963	3,299
4	D.A. Dickey, W.A. Fuller	Distribution of The Estimators for Autoregressive Time-Series with a Unit Root	1979	2,828
5	W.S. Cleveland	Robust Locally Weighted Regression and Smoothing Scatterplots	1979	2,751
6	N. Mantel	Chi-Square Tests with 1 Degree of Freedom - Extensions of Mantel-Haenszel Procedure	1963	2,740
7	A.E. Gelfand, A.F.M. Smith	Sampling-Based Approaches to Calculating Marginal Densities	1990	2,121
8	R.E. Kass, A.E. Raftery	Bayes Factors	1995	1,960
9	A. Zellner	An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests for Aggregation Bias	1962	1,727
10	W. Hoeffding	Probability-Inequalities for Sums of Bounded Random-Variables	1963	1,355

Note: Data downloaded from ISI on 19 May 2010.

Table 14

10 Most Highly Cited Papers in JRSSB

Rank	Author(s)	Title	Year	Citations
1	D.R. Cox	Regression Models and Life-Tables	1972	24,475
2	G.E.P. Box, D.R. Cox	An Analysis of Transformations	1964	3,642
3	M. Stone	Cross-Validatory Choice and Assessment of Statistical Predictions	1974	1,743
4	D.J. Spiegelhalter, N.G. Best, B.R. Carlin, A. van der Linde	Bayesian Measures of Model Complexity and Fit	2002	1,150
5	J.D. Storey	A Direct Approach to False Discovery Rates	2002	841
6	D.Y. Lindley, A.F.M. Smith	Bayes Estimates for Linear Model	1972	797
7	J.B. Ramsey	Tests for Specification Errors in Classical Linear Least-Squares Regression Analysis	1969	625
8	A.P. Dempster, H. Weisberg	A Generalization of Bayesian Inference	1968	491
9	D.R. Cox	Further Results on Tests of Separate Families of Hypotheses	1962	455
10	H. Scheffe	Experiments with Mixtures	1958	405

Note: Data downloaded from ISI on 19 May 2010.

Table 15

100 Most Highly Cited Econometrics Papers in Leading Econometrics Journals

Rank	Author	Year	Journal	Citations
1	H. White	1980	Econometrica	5416
2	R.F. Engle and C.W.J. Granger	1987	Econometrica	4252
3	J.J. Heckman	1979	Econometrica	3966
4	R.F. Engle	1982	Econometrica	3035
5	J.A. Hausman	1978	Econometrica	2495
6	T. Bollerslev	1986	J. Econometrics	2370
7	W.K. Newey and K.D. West	1987	Econometrica	2295
8	L.P. Hansen	1982	Econometrica	2095
9	D.A. Dickey and W.A. Fuller	1981	Econometrica	1887
10	G.C. Chow	1960	Econometrica	1575
11	C.A. Sims	1980	Econometrica	1514
12	S. Johansen	1991	Econometrica	1433
13	P. Perron	1989	Econometrica	1326
14	J. Lintner	1965	REStat	1319
15	H. White	1982	Econometrica	1304
16	R.M. Solow	1957	REStat	1298
17	D. Kwiatkowski, P.C.B. Phillips, P. Schimdt and Y. Shin	1992	J. Econometrics	1211
18	J.D. Hamilton	1989	Econometrica	1139
19	J. Tobin	1958	Econometrica	1121
20	R. Koenker and G. Bassett	1978	Econometrica	1022
21	D.B. Nelson	1991	Econometrica	973
22	P.C.B. Phillips	1987	Econometrica	876
23	T. Bollerslev, R.Y. Chou and K.F. Kroner	1992	J. Econometrics	859
24	D.W.K. Andrews	1991	Econometrica	793
25	Z. Griliches	1957	Econometrica	727

26	D. Staiger and J.H. Stock	1997	Econometrica	725
27	J. Heckman and B. Singer	1984	Econometrica	722
28	J. Hausman, B.H. Hall and Z. Griliches	1984	Econometrica	721
29	R. Davidson and J.G. Mackinnon	1981	Econometrica	667
30	R. Blundell and S. Bond	1998	J. Econometrics	666
31	L.R. Chistenson, D.W. Jorgenson and L.J. Lau	1973	REStat	654
32	L.P. Hansen and K.J. Singleton	1982	Econometrica	650
33	T.S. Breusch and A.R. Pagan	1979	Econometrica	642
34	R.F. Engle and B.S. Yoo	1987	J. Econometrics	641
35	E. Zivot and D.W.K. Andrews	1992	JBES	636
36	F.X. Diebold and R.S. Mariano	1995	JBES	634
37	G. Elliott, T.J. Rothenberg and J.H. Stock	1996	Econometrica	630
38	K.J. Arrow, H.B. Chenery, B.S. Minhas and R.M. Solow	1961	REStat	589
39	D.W.K. Andrews	1993	Econometrica	579
40	J. Durbin	1970	Econometrica	552
41	Q.H. Vuong	1989	Econometrica	548
42	K.S. Im, M.H. Pesaran and Y. Shin	2003	J. Econometrics	528
43	J. Jondrow, C.A.K. Lovell, I.S. Materov and P. Schmidt	1982	J. Econometrics	519
44	M. Arellano and O. Bover	1995	J. Econometrics	514
45	R.F. Engle, D.F. Hendry and J.F. Richard	1983	Econometrica	512
46	J. Heckman	1974	Econometrica	505
47	F. Hayashi	1982	Econometrica	500
48	W.L. Goffe, G.D. Ferrier and J. Rogers	1994	J. Econometrics	499
49	J.J. Heckman	1982	Econometrica	496
50	J.H. Stock and M.W. Watson	1993	Econometrica	495
51	P.K. Clark	1973	Econometrica	494
52	S. Nickell	1981	Econometrica	492
53	J.A. Hausman and W.E. Taylor	1981	Econometrica	475
54	D. Heath, R. Jarrow and A. Morton	1992	Econometrica	468
55	J. Neyman and E.L. Scott	1948	Econometrica	467
56	H.B. Mann	1945	Econometrica	459

57	Y. Mundlak	1978	Econometrica	447
58	P.M. Robinson	1988	Econometrica	445
59	E.R. Berndt and D.O. Wood	1975	REStat	438
60	R.F. Engle, D.M. Lilien and R.P. Robins	1987	Econometrica	435
61	J.S. Bai and P. Perron	1998	Econometrica	426
62=	J.S. Stock	1987	Econometrica	425
62=	J. Tobin	1965	Econometrica	425
64	S. Hylleberg, R.F. Engle, C.W.J. Granger and B.S. Yoo	1990	J. Econometrics	424
65	T. Bollerslev	1987	REStat	413
66=	P.C.B. Phillips and S. Ouliarris	1990	Econometrica	411
66=	J.F. McDonald and R.A. Moffitt	1980	REStat	411
68	C.A. Sims, J.H. Stock and M.W. Watson	1990	Econometrica	404
69	S. Almon	1965	Econometrica	401
70	J. Hausman and D. McFadden	1984	Econometrica	392
71	A. Levin, C.F. Lin and C.S.J. Chu	2002	J. Econometrics	387
72	C.W.J. Granger	1981	J. Econometrics	386
73	Z. Griliches	1967	Econometrica	378
74	J. Geweke	1989	Econometrica	375
75	B.R. Moulton	1990	REStat	373
76	P.C.B. Phillips	1986	J. Econometrics	372
77	J. Tobin	1956	REStat	370
78	L.-F. Lee	1983	Econometrica	363
79	T. Lancaster	1979	Econometrica	362
80	G.W. Schwert	1989	JBES	360
81=	S. Johansen and K. Juselius	1992	J. Econometrics	358
81=	C.W.J. Granger	1988	J. Econometrics	358
83	T. Bollerslev	1990	REStat	357
84	A.W. Lo, AW	1983	Econometrica	354
85	R.F. Engle and K.F. Kroner	1995	ET	351
86	L.M. Seiford and R.M. Thrall	1990	J. Econometrics	348
87	D.W.K. Andrews and W. Ploberger	1994	Econometrica	347

88	G.W. Imbens and J.D. Angrist	1994	Econometrica	334
89=	D. McFadden and K. Train	2000	J. Applied Econometrics	333
89=	J.G. Cragg	1971	Econometrica	333
91	W.E. Diewert and T.J. Wales	1987	Econometrica	330
92	A.Banerjee, R.L. Lumsdaine and J.H. Stock	1992	JBES	329
93=	D. McFadden	1989	Econometrica	326
93=	B.R. Moulton	1986	J. Econometrics	326
95=	S. Ng and P. Perron	2001	Econometrica	320
95=	P.C.B. Phillips	1991	Econometrica	320
95=	T. Amemiya	1973	Econometrica	320
98	K.M. Murphy and R.H. Topel	1985	JBES	319
99=	I. Krinsky and A.L. Robb	1986	REStat	313
99=	D.E. Farrar and R.R. Glauber	1967	REStat	313

Notes: Data downloaded from ISI on 28 April 2010. There are 7 Nobel Laureates in the 100 Most Highly Cited Papers in major econometrics journals. [K.J. Arrow (NL) has one citation (CES production function), though his significant contributions to economics would not generally be regarded as econometric in nature.]

(1) Econometrica: 64 (9/10, 16/20, 24/30, 29/40, 35/50, 44/60, 51/70, 55/80, 59/90)
(2) Journal of Econometrics (J. Econometrics): 17
(3) Review of Economics and Statistics (REStat): 12
(4) Journal of Business and Economic Statistics (JBES): 5
(5) Econometric Theory (ET): 1
(6) Journal of Applied Econometrics (J. Applied Econometrics): 1

Table 16

Authors with Two or More in 100 Most Highly Cited Econometrics Papers

	Author	Nobel Laureate	Number of papers	Sole authored
1	R.F. Engle	*	7	1
2	J.H. Stock		6	1
3	P.C.B. Phillips		5	2
4	C.W.J. Granger	*	4	1
5	J.J. Heckman	*	4	3
6	J.A. Hausman		4	1
7	D.W.K. Andrews		4	2
8	T. Bollerslev		4	3
9	J. Tobin	*	3	3
10	D. McFadden	*	3	-
11	Z. Griliches		3	2
12	P. Perron		3	1
13	R.M. Solow	*	2	1
14	H. White		2	2
15	S. Johansen		2	1
16	C. Sims		2	1
17	L.P. Hansen		2	1
18	P. Schmidt		2	-
19	M.W. Watson		2	-
20	Y. Shin		2	1
21	B.S. Yoo		2	-

Notes: Data downloaded from ISI on 28 April 2010. There are 7 Nobel Laureates in the 100 Most Highly Cited Papers in Econometrics, who contributed 9 distinct papers and 24 papers in total.

Table 17

SCOPUS PI-BETA for Ten Econometrics Journals: 1996-2010

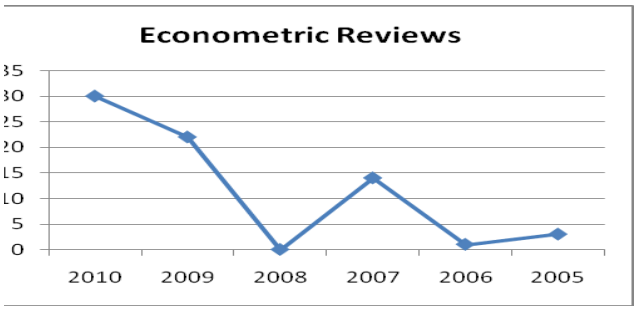
Journal	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Econometric Reviews								36.00	21.05	5.56	4.76	28.13	0.00	53.85	96.30
Econometric Theory	8.82	3.33	0.00	12.12	7.50	7.69	8.20	19.05	18.00	14.55	13.46	19.61	35.29	57.50	85.71
Econometrics Journal											26.09	24.14	43.75	68.75	94.44
Econometrica	0.00	2.04	0.00	1.89	0.00	0.00	0.00	3.03	0.00	3.51	8.33	9.09	17.65	30.88	61.70
J. Applied Econometrics	2.94	6.25	0.00	0.00	0.00	2.94	3.13	10.00	12.00	8.33	7.46	14.75	30.23	55.36	83.33
JBES	7.14	2.27	2.22	2.13	0.00	6.67	22.45	20.75	4.88	21.74	11.90	16.22	36.17	46.67	88.33
J. Econometrics	2.04	1.06	2.56	0.00	2.41	0.00	5.10	7.37	6.74	2.44	11.54	8.56	20.83	57.03	90.24
J. Financial Econometrics										14.81	20.83	15.79	25.00	63.33	94.44
Oxford Bulletin E&S	8.82	2.94	11.54	3.33	9.30	0.00	9.09	4.88	7.50	0.00	15.22	15.79	26.83	52.63	90.32
REStat	1.67	0.00	0.00	0.00	0.00	0.00	1.75	1.08	6.41	5.88	3.45	1.72	11.48	30.00	81.13

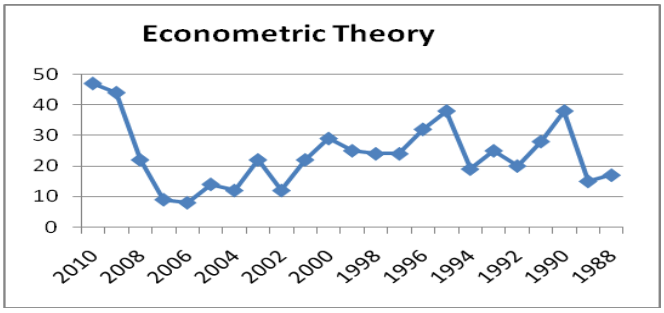
Note: The data were downloaded from Scopus on 21 November 2010.

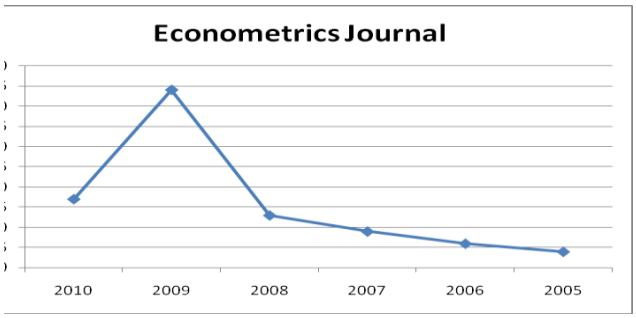
From the Scopus www site - 'about calculations'

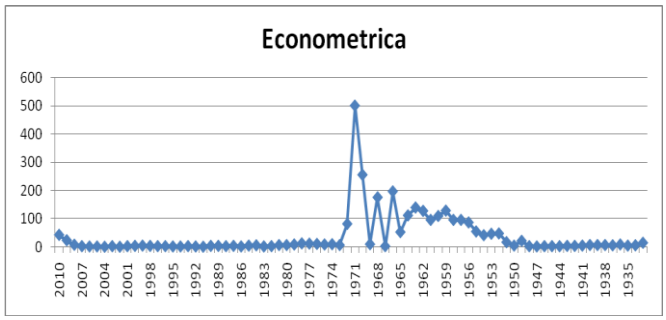
Citations	Total number of citations received by a journal in the year, considering all documents.
Documents	Total number of documents published in the journal in the year.
% Not Cited	Percentage of documents published in that year that have never been cited to date.

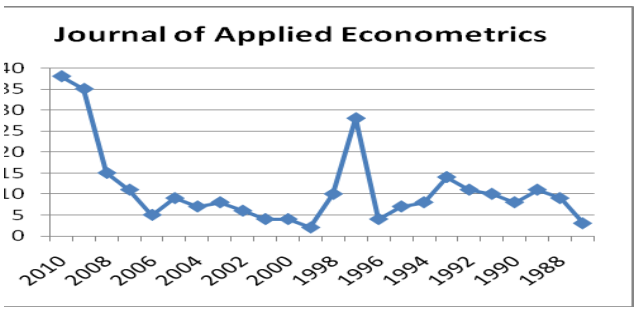
Figure 1
ISI Dynamic PI-BETA for All Articles

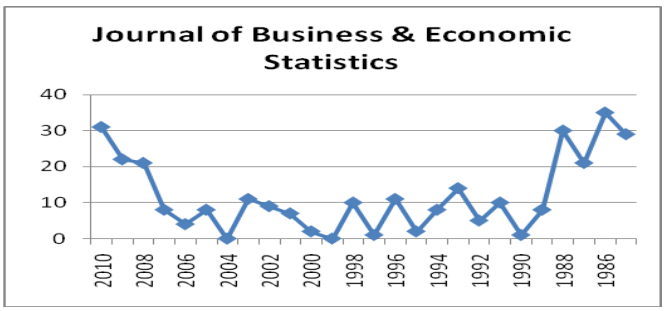


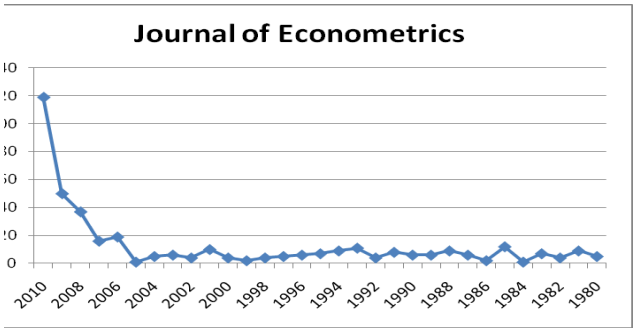


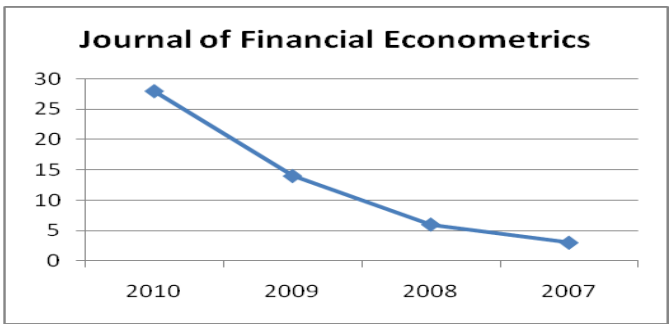


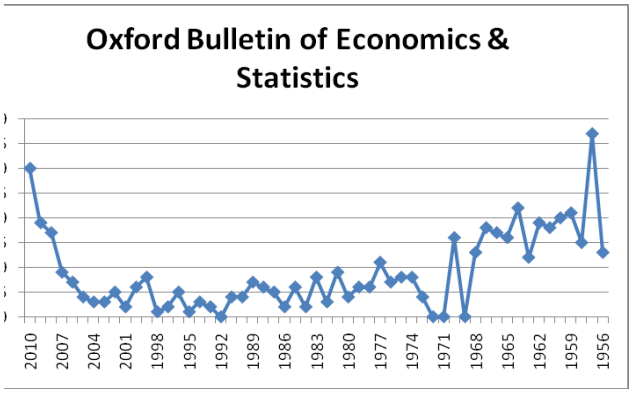












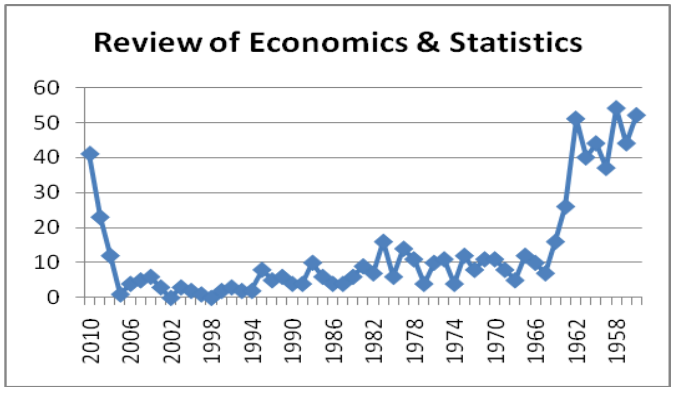


Figure 2
Scopus Dynamic PI-BETA for Papers