RANKING THE RANKINGS OF JOURNALS IN ECONOMICS BY QUANTIFYING JOURNAL DEMAND

Victor V. Claar, Henderson State University
Ruth Gonzalez,

ABSTRACT

This paper revisits Odagiri's (*REStat*, 1977) estimation of the demand for economics journals. While Odagiri employed 25 (or fewer) titles, the present paper explores the vast and growing universe of economics outlets. To this end the analysis employs circulation data for general and field journals published in *Ulrich's Periodicals Directory*. The manuscript also conducts a comparative evaluation of rankings of economics journals, employing alternative rankings as a proxy for journal quality—following Odagiri—in a demand equation. The authors know of no study that so broadly examines the degree to which a set of journal rankings can explain journal demand. **JEL Classifications:** A11, A14, D12

RESEARCH OBJECTIVES

In a short note published in the *Review of Economics and Statistics*, Odagiri (1977) became the first economist to empirically estimate a demand curve for economics journals. Using a cross section of data from a mere 25 journals, Odagiri estimated the following functional forms:

$$CI = \beta_0 + \beta_1 P + \beta_2 DS + \beta_3 Q \qquad (1)$$

$$\ln CI = \beta_0 + \beta_1 \ln P + \beta_2 DS + \beta_3 \ln Q \qquad (2)$$

In equations (1) and (2), CI represents a journal's circulation, P represents a measure of the journal's price, DS is a dichotomous dummy variable reflecting whether the journal is published by a specific society, and Q is an index of journal quality. Odagiri used pages-per-penny as the price variable, and substituted several existing indexes of journal quality as his proxy for Q. In most cases Odagiri estimated the demand functions using fewer than all 25 observations since not all of the journals in his data set were ranked by each index. In fact, in some cases Odagiri estimated the above models with as few as nine observations. Odagiri concluded that the demand for economics journals is determined largely by a given journal's price as well as its quality, noting that these factors also explain the demand for many other goods and services studied by economists (p. 498).

A survey of *JSTOR* and other academic databases reveals that Odagiri's 1977 note has been either ignored or forgotten in the years since its publication. In fact, Nevo, Rubinfeld, and McCabe (2005) may very well be the only subsequent attempt to connect journal demand with journal quality using journal rankings. But even Nevo, Rubinfeld, and McCabe fail to mention Odagiri's paper. This paper rectifies the unfortunate lack of attention to Odagiri's effort. The main aim of this paper is to revisit Odagiri's model and estimate it using both fresher data and a vastly larger sample size.

An additional goal of the present analysis is to evaluate alternative rankings of journal quality in economics. Aspiring economists are often on the lookout for low-cost information regarding the quality of potential publication outlets for their research, and published journal rankings provide one source. Though now somewhat dated, Laband and Piette (1994) is one of the best-known rankings, due largely to its being published in the well-known *Journal of Economic Literature*. The present analysis thus conducts a horserace of sorts among several published journal rankings by exploring which set of published rankings appears to best explain journal demand, *ceteris paribus*.

The remainder of the paper proceeds as follows. First, the section immediately below reviews the existing literature of journal rankings in economics. Second, the subsequent section discusses the data and methodology used in the present paper. Third, the empirical results are presented and discussed. Finally, the paper ends with a few concluding thoughts.

A PRIMER ON JOURNAL RANKINGS IN ECONOMICS

Most rankings of journals in economics employ either a citation method or a survey method. Citation methods rank journals by tracing the number of times that articles in each journal have been cited by others, while survey methods generally simply ask scholars about their impressions of journals relative to each other along one or more dimensions. Citation methods are thought to provide objective measures of journal impact, while survey-generated rankings provide a more subjective assessment of a journal's influence. Lăzăroiu (2009), using examples, gives a helpful overview of citation-based methods. Prominent examples of the citation method include Laband and Piette (1994), Kalaitzidakis, Mamuneas, and Stengos (2003), and Kodrzycki and Yu (2006).

Laband and Piette rank the economics journals that were indexed by the *Social Science Citation Index* in 1990, based upon articles published during 1985-89. Following the iterative process developed by Liebowitz and Palmer (1984), Laband and Piette generate a rank ordering of journals that is based upon the impact-adjusted citations per article that appeared in each journal.

Kalaitzidakis, Mamuneas, and Stengos (2003) restrict their rankings to those journals strictly classified as "economic" by the Thomson Reuters *Journal Citation Reports (JCR)* over the period 1994-98. Their method excludes any authors' self-citations of his or her own work, and adjusts for the age of a journal, the size of a journal, and also for the impact/influence of a given journal.

Kodrzycki and Yu (2006) generate their own list of journals, though their list is basically a broadened version of the *JCR* list. Like Kalaitzidakis, Mamuneas, and Stengos (2003), Kodrzycki and Yu exclude self-citations and control for a journal's age in generating their rankings. Kodrzycki and Yu also focus on the number of citations per article as their impact measure—rather than the more commonly used number of citations per page. Ritzberger (2008) employs a similar method, drawing heavily upon Palacio-Huerta and Volij (2004).

Though relatively less objective, survey methods may nevertheless be valuable inasmuch as they attempt to capture our actual impressions of a journal's impact or influence, regardless of what its ability to generate future citations might quantitatively prove to be. Mason, Steagall, and Fabritius (1997) conduct a survey of economics department chairs during 1992 and 1993 in order to assess their perceptions of journal quality. The authors argue that, for purposes of promotion and tenure, what matters most is perceived journal quality—rather than any quantitative assessment. They further argue that for purposes of promotion and tenure, department chairs are the obvious candidates to consult for their impressions, given the significant role of chairs in the hiring, promotion, and tenure processes.

Axarloglou and Theoharkis (2003) create a ranking of journals in economics by conducting an online survey of members of the American Economic Association. Survey participants were invited to classify journals as "top tier" or "second tier" based upon their rigor, reputation, and economic significance.

Bräuninger and Haucap (2003) use a survey of German-speaking economists to assess which factors are the drivers of journal reputation or relevance. After asking the survey group to evaluate a list of journals based upon either the reputation of each or its relevance to their scholarly work, Bräuninger and Haucap use the survey results regarding reputation and relevance alternately as dependent variables in two-stage least-squares models that include a variety of possible explanatory variables.

Though citation-based methods of ranking journals have the benefit of using a clearly-defined set of rules, it is important to note that the every such method is guilty of its own subjectivity. As Engemann and Wall (2009) point out, each citation-based method contains explicit technical features designed to give the method the appearance of objectivity. Nevertheless, the choices made in arriving at a given method are at least somewhat subjective, and in ways that may have significant consequences. For example, Wall (2009) warns that citations-based rankings may be easily skewed by a few heavily cited articles from a given journal. Of course each method argues that its technique is the most sensible, yet what constitutes sensibility is not always clear cut. Indeed, that is precisely the reason that there exists more than one citation-based rankings method.

While citation methods and survey methods are the two main approaches to ranking economics journals, other methods exist. In one instance, Pujol (2008) explores the behavior of publishers by using a model of the matching process between high-quality authors and high-quality journals.

DATA AND METHODOLOGY

This paper's attempt to revisit Odagiri's (1977) estimation of journal demand involved first gathering together the best mix of journal rankings available at the outset of the effort. The resulting collection of rankings included three that utilize a citation method, and two that employ survey methods. The three citation-based rankings were Laband and Piette's (1994) landmark update of Liebowitz and

Palmer (1984), Kalaitzidakis, Mamuneas, and Stengos (2003), and Kodrzycki and Yu (2006). Mason, Steagall, and Fabritius (1997) and Axarloglou and Theoharkis (2003) constituted the two survey-based rankings. The initial rankings collection also included the rankings generated by Pujol's (2008) matching model. Pooling all journals ranked by any of the above six sets of rankings resulted in a total of 284 journals.

An initial data-gathering challenge lay in gaining access to reliable circulation data—the dependent variable in Odagiri's models above. An ideal circulation data set might have consisted of detailed circulation data for each of the 284 journals listed above, and at any subscription level. For example, it would have been interesting to possess both individual and institutional subscription data. An especially rich data set might have included the number of subscribers at various pricing options, such as at student prices. Extensive efforts to connect with journal offices to directly request subscription data yielded few useful results. Though not an especially rich data set, *Ulrich's Periodicals Directory* does regularly publishes reliable circulation data for a quite large number of titles. Because *Ulrich's* does not report subscription numbers for all periodicals, settling upon *Ulrich's* as a source for circulation data reduced the list of potential journal titles in the data set from 284 to 145.

Having settled upon *Ulrich's* as the sole source of circulation data in the present study, the present authors next needed to choose a measure of the price variable in the demand function. Alas, contemporary journal pricing is not entirely straightforward. First, owing largely to informational free-riding problems, journal publishers have historically charged higher prices to institutions (such as university libraries) than to individuals. Second, as a form of third-degree price discrimination, several publishers offer lower prices to students than to others. The American Economic Association even offers different prices to non-students based upon self-reported income levels. Finally, if a journal is published by an association, then the association may include the journal as part of the association's membership benefits.

Evolving current technology posed an intriguing further challenge regarding the price variable. When Odagiri first published his model in 1977, journals were entirely a hard-copy medium. At present, however, publishers sell subscriptions that grant access across a variety of media, including—but not limited to—print, CD-ROM, and Internet. Using the lowest price that provided a given subscriber complete access to each journal—regardless of delivery method—provided an obvious and parsimonious solution to this potential obstacle. For example, if a journal charged an individual a lower price for electronic access than for print access, the price point of the electronic access was used. This may not be a perfect measure of price, but given the technologically transitional period during which this study was conducted, this measure seems quite sensible.

A final price-variable challenge lay in the fact that not all journals provide the same quantity of information in each volume. Some journals, such as *Applied Economics*, publish literally thousands of pages in each volume. This problem is elegantly solved by using the number of pages-per-penny that a subscriber receives—the same measure used by Odagiri—rather than the price alone.

Following Odagiri, the analysis estimates the following functional forms of the demand for economics journals:

$$CI = \beta_0 + \beta_1 Ppp + \beta_2 DS + \beta_3 Q \tag{3}$$

$$\ln CI = \beta_0 + \beta_1 \ln Ppp + \beta_2 DS + \beta_3 Q \tag{4}$$

In the preceding expressions *CI* represents a journal's circulation as reported by *Ulrich's*, and *Ppp* is the journal's pages-per-penny. *DS* is a shift dummy that takes the value of one if the journal is published by a society, and is equal to zero otherwise. *Q* represents a journal's quality, as suggested by its relative position in the six rankings measures listed at the beginning of this section. Economic theory suggests that all estimated coefficients should bear a positive sign.

Both models were estimated using all journals that are ranked by at least three of the six indexes listed. In most cases each ranking provides a value, ranging from 0 to 100, for journal quality; higher values represent better quality. Mason, et.al. (1997), proved to be the exception; those values ranged between 1 and 4, which required transforming those quality values to a 0-100 range. Next, prior to estimating each model, each 0-100 quality measure—including the transformation of the Mason values—was logistically transformed according to

$$\ln\left[\frac{Q/100}{1-(Q/100)}\right] \tag{5}$$

An interesting question concerns whether it is appropriate to substitute various rankings constructed at different past moments in time in order to estimate current journal demand. As mentioned already, the aforementioned six sets of rankings were published over the course of a 15-year time span: 1994-2008. Further, for all such rankings the time lag between initial data gathering and eventual publication was not short. For present purposes, however, using previously published journal rankings makes a good deal of sense. First, a major goal of the effort here is to see which among these six past rankings provides the greatest empirical explanatory power regarding current journal demand—regardless of when a given ranking happened to be published. This reasoning follows Friedman (1966), since one goal of the present effort is to assess the practical usefulness of each set of journal rankings as a predictor of journal demand. Second, it seems self-evident that today's demand for a given journal should be impacted by its past rankings, since today's demand for anything is based upon currently held impressions about the nature of the good, including information about its quality. And today's impressions about the quality, prestige, and reputation of anything are largely drawn from information from prior periods.

RESULTS AND REFLECTIONS

Least-squares estimates of the above demand functions are given in Tables 1 and 2. Though initially each model was estimated using a variety of price measures to construct the pages-per-penny variable, the results using the minimum price offered to institutions in order to gain full access to each journal were similar to the estimates using alternative measures of price. This seems reasonable since all of a given journal's prices vary positively with its other prices, whether for different segments or different delivery media. Thus the results using only the institutional price are reported here. The full data set is available upon request.

The first three columns of each table give coefficient estimates of the demand functions using the three citation-based rankings: Laband & Piette (1994), Kodrzycki & Yu (2006), and Kalaitzidakis, et.al. (2003). The last two columns give results using the two survey-based rankings: Axarloglou & Theoharkis (2003) and Mason, et. al. (1997). Due to degrees-of-freedom limitations, the models could not be estimated using the very short list of journals ranked by Pujol (2008).

In all cases the coefficient estimates bear the expected signs, regardless of which ranking is used as the proxy for journal quality. The results indicate that both the estimated quality of a journal and its pages-per-penny positively influence its circulation, and that demand is greater for society journals than for other journals, *ceteris paribus*. All coefficient estimates are significant; the pages-per-penny and quality variables appear significant even at very small alpha levels.

The present authors also augmented Odagiri's model to include a shift variable indicating whether or not a given journal had a specific field of emphasis. The variable *F* equals zero if the journal is of general interest to the profession; the variable equals one if the journal is devoted to a particular field of specialization. For example, the *American Economic Review* is classified as a "general" journal, while the *Journal of Public Economics* is designated as a "field" journal. Tables 3 and 4 contain the estimated regression coefficients. When the present authors added this dummy variable they held no prior expectation regarding the sign of its coefficient. As the results indicate, the addition of the field dummy adds little to the explanatory power of the model. The variable never appears significant, and the sign of the estimated coefficient varies across each of the regression results.

It is especially interesting to assess whether any of the individual rankings methods seemed to be especially useful in explaining journal demand. Along similar lines, one might be curious to know whether either the citation-based rankings or the survey-based rankings appeared to deliver greater explanatory power in general. As the results in Tables 1 through 4 suggest, all five of the rankings methods performed reasonably well as the proxy for quality in each of the estimated equations.

Somewhat surprisingly, the two sets of rankings that appeared to narrowly perform better than the others did not use the same general approach. The quality measures used in the equations with the overall best fits were those of Kalaitzidakis, Mamuneas, and Stengos (2003) and those given by Axarloglou and Theoharakis (2003). Recall that the rankings given by Kalaitzidakis, Mamuneas, and Stengos considered only journals classified as "economic" by the *Journal Citation Report*, and were generated using a citation-based approach that adjusted for factors such as self-citation and also for the number of citations-per-page (rather than citations per article). In contrast, Axarloglou and Theoharakis invited members of the American Economic Association to complete an online survey in which respondents classified journals as either "top tier" or "second tier" based on their perceived rigor, reputation, and economic significance. It is indeed interesting that rankings based on such different methods appear so similar in their usefulness as drivers of journal demand.

CONCLUDING THOUGHTS

Like it or not, journal rankings matter, and they matter for a few reasons. First, the quality of a journal is often used in the assessment of a scholar's oeuvre for purposes of hiring, promotion, and tenure. And journal rankings are a frequently-used and convenient proxy for journal quality. In fact, the *German Economic Review* has gone so far as to publish its German Economic Association (GEA) "Journal-Ranking for the Economics Profession." The GEA ranking, written by Schneider and Ursprung (2008), gives each journal that is ranked by Ritzberger (2008) a specific letter grade, ranging from "A+" to "C+". Cosme Costa Vieira (2008) similarly classifies journals using explicit letter grades for each.

Because journal quality matters for purposes of hiring, promotion, and tenure, journal quality is of tremendous interest to the aspiring economist as well. Hence economists facing eventual evaluation of their body of work might want to examine a few of the published rankings mentioned here in deciding where to submit their research. In fact, Engemann and Wall (2009) go so far as to generate a "Journal Ranking for the Ambitious Economist," ranking the 36 journals that they assess to be useful in establishing one's academic reputation beyond one's own particular subfield of economics.

One possible way of gauging the usefulness of one ranking over another—whether for budding scholars or their superiors—is to evaluate the relative ability of each to drive journal demand. Using Odagiri's (1977) model of journal demand, the present authors find that all rankings of journal quality provide significant explanatory power of journal demand, though no single ranking scheme explains journal demand significantly better than another. One obvious way in which to evaluate the ongoing robustness of this conclusion is to repeat this method using future rankings. For example, since Cosme Costa Vieira (2008) is the only extensive new ranking published since the present authors began collecting their data, a future test of the findings here should incorporate that ranking as well, and also update both pricing and circulation details.

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TABLE 1. *OLS REGRESSION RESULTS USING ODAGIRI'S (1977) LINEAR MODEL*					
	Citation Methods			*Survey Methods*	
	Laband & Piette	Kodrzycki & Yu	Kalaitzidakis, et.al.	Axarloglou & Theoharkis	Mason, et. al.
β_0	-0.86 (0.00)	-43.54 (-0.07)	-247.93 (-0.41)	-395.87 (-0.56)	-5466.25 **(-3.19)***
DS	1776.09 **(2.16)****	1994.06 **(2.12)****	1479.37 **(1.77)***	1674.80 **(1.75)***	1696.99 **(1.98)***
Ppp	514.27 **(3.91)*****	502.16 **(3.21)*****	529.06 **(3.82)*****	430.06 **(2.96)*****	469.01 **(3.58)*****
Q	95.41 **(3.92)*****	86.49 **(3.50)*****	99.51 (5.61)***	116.08 **(5.77)*****	97.19 **(3.60)*****
$\bar{R}^2$	0.48	0.49	0.61	0.61	0.46
Prob > *F*	0.00	0.00	0.00	0.00	0.00
No. of observations	60	54	51	46	60
t-statistics given in parentheses. *, **, and *** indicate significance at the α = 0.1, 0.05, and 0.01 levels.					

TABLE 2. *OLS REGRESSION RESULTS USING ODAGIRI'S (1977) LOGARITHMIC VARIANT*					
	Citation Methods			*Survey Methods*	
	Laband & Piette	Kodrzycki & Yu	Kalaitzidakis, et.al.	Axarloglou & Theoharkis	Mason, et. al.
β_0	7.18 **(67.23)*****	7.17 **(65.16)*****	7.09 **(62.97)*****	7.14 **(55.82)*****	6.12 **(22.13)*****
DS	0.51 **(4.01)*****	0.59 **(4.26)*****	0.46 **(3.44)*****	0.46 **(3.16)*****	0.49 **(3.61)*****
ln*Ppp*	0.29 **(3.23)*****	0.23 **(2.34)****	0.36 **(3.54)*****	0.30 **(2.88)*****	0.34 **(3.38)*****
Q	0.02 **(4.78)*****	0.02 **(5.03)*****	0.01 **(5.13)*****	0.02 **(5.72)*****	0.02 **(3.96)*****
$\bar{R}^2$	0.57	0.61	0.63	0.66	0.55
Prob > *F*	0.00	0.00	0.00	0.00	0.00
No. of observations	60	54	51	46	60
t-statistics given in parentheses. *, **, and *** indicate significance at the α = 0.1, 0.05, and 0.01 levels.					

TABLE 3. *OLS REGRESSION RESULTS IN LINEAR MODEL WITH "FIELD" DUMMY VARIABLE*					
	Citation Methods			*Survey Methods*	
	Laband & Piette	Kodrzycki & Yu	Kalaitzidakis, et.al.	Axarloglou & Theoharkis	Mason, et. al.
β_0	1643.03 (1.18)	3574.45 **(2.98)*****	-518.61 (-0.61)	4874.49 **(4.07)*****	-507.70 (-0.57)
DS	1803.58 **(1.86)***	1850.49 **(1.93)***	1532.74 **(1.80)***	1819.58 **(1.73)***	1605.95 **(1.97)***
F	-770.18 (-0.85)	-410.48 (0.46)	375.04 (0.45)	488.92 (0.47)	-59.41 (-0.07)
Ppp	809.40 **(4.32)*****	562.99 **(3.70)*****	524.66 **(3.74)*****	392.79 **(2.41)*****	458.06 **(3.45)*****
Q	326.80 (1.54)	792.14 **(3.41)*****	102.40 **(5.39)*****	1518.46 **(4.63)*****	2161.07 **(4.42)*****
$\bar{R}^2$	0.52	0.48	0.60	0.55	0.52
Prob > *F*	0.00	0.00	0.00	0.00	0.00
No. of observations	50	54	51	46	60
t-statistics given in parentheses. *, **, and *** indicate significance at the α = 0.1, 0.05, and 0.01 levels.					

TABLE 4. *OLS REGRESSION RESULTS IN LOG MODEL WITH "FIELD" DUMMY VARIABLE*					
	Citation Methods			*Survey Methods*	
	Laband & Piette	Kodrzycki & Yu	Kalaitzidakis, et.al.	Axarloglou & Theoharkis	Mason, et. al.
β_0	7.81 **(31.46)*****	7.99 **(39.86)*****	7.11 **(46.09)*****	8.06 **(40.55)*****	7.09 **(46.15)*****
DS	0.53 **(3.52)*****	0.59 **(4.21)*****	0.46 **(3.37)*****	0.49 **(3.29)*****	0.47 **(3.58)*****
F	-0.08 (-0.59)	-0.07 (-0.52)	-0.03 (-0.24)	0.04 (0.29)	-0.08 (-0.61)
ln*Ppp*	0.32 **(2.56)****	0.26 **(2.67)****	0.36 **(3.50)*****	0.23 **(2.13)****	0.33 **(3.42)*****
Q	0.11 **(3.12)*****	0.18 **(5.14)*****	0.01 **(4.75)*****	0.25 **(5.29)*****	0.35 **(4.38)*****
$\bar{R}^2$	0.55	0.62	0.62	0.65	0.59
Prob > *F*	0.00	0.00	0.00	0.00	0.00
No. of observations	50	54	51	46	60
t-statistics given in parentheses. *, **, and *** indicate significance at the α = 0.1, 0.05, and 0.01 levels.					