

PROLIFERATION OF ACADEMIC JOURNALS: EFFECTS ON RESEARCH QUANTITY AND QUALITY

Rajeev K. Goel and João Ricardo Faria*

Illinois State University and University of Texas Pan American

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ABSTRACT

There have been significant structural changes in research markets in recent years reflected in the increase in the number of academic journals. This paper uses a differential game model of authors and journal editors to examine the effects of an increase in competition among academic journals. Does an increase in the number of academic journals lead to an increase in scholarly articles published? Will an increase in publishing outlets adversely affect research quality? The results show greater competition does not affect research output and in fact enhances research quality. The number of journals and the relative discount rates of authors and editors are crucial determinants of the effects of competition.

1. INTRODUCTION

Understanding of the research process has important implications not only for the players involved (i.e. authors, editors, journals and sponsoring institutions), but also for the society in terms of the diffusion of knowledge and economic growth in the long run (Aghion and Howitt, 1998). There has been an increasing interest in the process of research in recent years. A number of studies have addressed both the input and output aspects of the production of research knowledge (e.g. Stephan, 1996; Coupè, 2004; Goel and Rich, 2005).¹ Formal investigations, both theoretical and empirical, are few due to

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¹ To get a sense of the orders of magnitude involved, there were 176,141 scientific and technical articles published in the USA in 1997 and between 1994 and 1997 there were 709,043 citations in the USA to other USA-produced articles (National Science Board, *Science and Engineering Indicators*, 2000).

the difficulties with adequately modeling multiple decision variables and due to a lack of appropriate data.

This paper uses a stylized dynamic model of authors and journal editors in academic research markets to examine the effects of a change in competition in academic journals. There have been significant structural changes in research markets in recent years and, in particular, in economics. Increased mergers in the publishing industry in the last two decades have increased the market power of publishers (Rosenbaum and Ye, 1997; Lipscomb, 2001; Townsend, 2003). Technological changes, especially the spread of the internet, have opened new avenues that have increased competition. Open access offered by the internet mitigates the power of traditional publishers, relaxes locational constraints and changes the scale of operations (Goel, 2003; Bergstrom and Bergstrom, 2004). In addition, word-processing and internet technologies decrease the evaluation costs of papers (Garner, 1979) and decrease the opportunity cost of a contributor who has acquired the minimal technical expertise demanded by a publishing outlet (Wallis and Dollery, 1993).²

Among other structural changes that helped increase the number of publishing outlets, one can identify the following. The increase in scientific specialization has increased the number of specialized journals, decreasing the relative importance of general journals.³ New academic journals are also created due to the congestion in existing journals. The congestion has two important consequences. First, it is reflected in the increasing difficulty in publishing in journals with high reputations, raising their rejection rates.⁴ Second, holding the article rejection rate constant, greater congestion among journals leads to an increase in the time delay between submission, acceptance and final publication of papers. Ellison (2002) argues that in economics this slowdown is due to an increasing tendency among journals to require

² As Colander (1991, p. 59) points out: 'knowing a technique that can be applied to various areas can lead to five or ten articles, knowing a specific area may lead to one or two articles'. In light of this, a proliferation of publishing outlets might lead to an increase in the trend towards duplicate or similar articles, without an overall increase in quality. We thank a referee for suggesting this.

³ In economics only the top three general journals *American Economic Review*, *Journal of Political Economy* and *Econometrica* have kept their leading position over the past three decades. Other leading general journals such as the *Review of Economics and Statistics*, *Economica* and *Economic Journal* have lost some ranking over time. See Laband and Piette (1994a), Burton and Phimister (1995) and Hodgson and Rothman (1999).

⁴ For instance, the data available for the number of manuscripts submitted and published in the *American Economic Review* show that the acceptance rates have been decreasing over time (Borts, 1980; Ashenfelter, 1999).

that papers be extensively revised prior to acceptance.^{5,6} Finally, new academic journals are created to fill the gap between general public interest and academic output. For instance, Laband *et al.* (1990) show that the number of economic articles devoted to the topics of inflation and employment are related directly to the actual inflation and unemployment rates in the economy.

In light of these, somewhat unprecedented, structural changes it is not clear what the impact on research output, both qualitatively and quantitatively, would be. Does an increase in the number of academic journals lead to an increase in the number of scholarly articles published per author?⁷ Will an increase in the number of publishing outlets adversely affect research quality?⁸ We address these questions in this paper. If it turns out that entry of new academic journals lowers research quality, then some entry restrictions would be justified. However, it seems difficult to impose entry restrictions given the greater access possibilities unleashed by the internet and self-criticism and independence of the academic community.

The results of this paper show that greater competition among academic journals does not affect research output per author and in fact enhances research quality. From the authors' perspective, the number of citations increases with the number of journals. The number of journals and the relative discount rates of authors and editors are crucial determinants of the effects of competition. Given the positive aspects of competition, government subsidies of academic journals (through public universities) seem somewhat justified.

2. THE MODEL AND ANALYSIS

The basic model we use builds on Faria (2005) where there are two players in the publishing game: one representing scholars and the other representing

⁵ Part of the reason might be that a greater number of journals are sometimes competing for the same referees, resulting in some referees seeing the same paper more than once.

⁶ Azar (2006) proposes several ideas in order to improve the review process efficiency, such as higher submission fees, requiring authors to review papers in proportion to their submissions, using differential editorial delay based on paper quality and banning repeatedly rejected papers from being submitted (also see Goel, 2003).

⁷ Zivney and Bertin (1992) examine the supply productivity of scholars via their publications in finance journals.

⁸ Baser and Pema (2003) find that there are positive returns to authors from publications in high-quality journals. Also see Cole and Cole (1967), Hamermesh *et al.* (1982) and Sauer (1988).

journal editors. Given that journal editors cannot flourish (or even exist) without authors, the game may be viewed as a sequential move game, where in the backward solution the authors move first. Furthermore, as journal editors have the power to reject manuscripts that authors have written, they may be viewed as Stackelberg leaders who take into account the authors' behavior. We first model a representative author's behavior and then consider the behavior of a journal editor.

2.1 Author's objective

The representative author maximizes his/her utility (U) by choosing the number of publications (q). The author's utility is also dependent on the number of citations (c) of his/her work in the literature. The variation in the number of citations over time is dependent on the quantity of papers published (q), the quality of those papers (Q), reputation of the journals where the author's work has been published (R) and the number of journals (N). Other things being the same, citations increase with both the quantity and quality of the author's output as well as with the reputation of the journals. There are network externalities generated by an increase in the number of journals. Positive network externalities would exist when more quality outlets make it easier for an author to get published, diffusing the author's work more widely (Stigler *et al.*, 1995). Negative network externalities hold when increases in the number of low-quality outlets makes it difficult for an author to be noticed in the literature (as publishing in lesser known journals decreases the chances to be read and therefore cited). Moreover, other things being the same, even a high-quality article in a decent journal would have a harder time getting noticed (cited) with more journals vying for a reader's attention.

Formally, with r_1 denoting the author's discount rate and $\dot{c} \equiv dc/dt$ representing the evolution of citations over time, the author's maximization problem can be written as

$$\text{Max}_q \int_0^{\infty} U(q, c) e^{-r_1 t} dt$$

subject to $\dot{c} = h(Q, R, N, q, c)$.

Whereas an author can affect the number of citations (c) he/she receives by writing high-quality (Q) papers, how these citations evolve over time is largely exogenous to individual authors. Besides monetary benefits, authors might obtain some satisfaction from greater recognition when their work is widely cited.

To obtain tractable results, let us write \dot{c} in the following form:

$$\dot{c} = \alpha Q + \beta qRN - \mathfrak{K}qN^2 - \delta c \quad (1)$$

where α , β , δ and \mathfrak{K} are positive constants. The term βqRN captures the positive externalities of publishing papers in outlets with good reputations; while the quadratic term $-\mathfrak{K}qN^2$ captures the potential negative externalities associated with publication in journals with low reputations. The constant δ varies between zero and one, such that $0 < \delta \leq 1$. The author's utility function may be represented by $U(q, c) = a \log c - (b/2)q^2$. Here a is a positive constant and b can be viewed as the price of publications for the author in terms of leisure foregone in research production.

The Hamiltonian for the author's problem is

$$A = a \log c - \frac{b}{2}q^2 + \mu(\alpha Q + \beta qRN - \mathfrak{K}qN^2 - \delta c) \quad (2)$$

The co-state variable μ in (2) denotes the shadow price of citations for the author. The first-order conditions for (2) are

$$A_q = 0 \Rightarrow q = \frac{\mu N (\beta R - \mathfrak{K} N)}{b} \quad (3)$$

$$\dot{\mu} - r_1 \mu = -A_c \Rightarrow \dot{\mu} = \mu(r_1 + \delta) - \frac{a}{c} \quad (4)$$

Equations (3) and (4) may be combined to show the author's reaction function

$$\dot{q} = q(r_1 + \delta) - \frac{aN(\beta R - \mathfrak{K}N)}{bc} \quad (5)$$

The growth of research output over time is positively related to the number of citations. Authors of widely cited papers might be encouraged to write more papers. Another possibility is that authors whose work is widely cited might have an easier time in getting their papers accepted for publication (Merton, 1973).

2.2 Journal editor's objective

The editor seeks to increase the reputation of the journal (R). Academic journals routinely publicize their circulation rates and 'impact factors' as

indicators of their reputation. The choice variable in the editor’s control is the (acceptance of) quality of papers (Q). The growth rate of the journal’s reputation is denoted by

$$\hat{R} \equiv \frac{\dot{R}}{R} = \frac{QR}{N} - \frac{z}{2}Q^2$$

where z is a positive parameter. A journal’s reputation increases with the quality of papers it publishes, but decreases with more competitors. Other things being the same, with more journals some of the good papers are likely to end up at other journals. These papers would have otherwise been submitted to the journal in question. Furthermore, a journal would have more difficulty getting noticed (gaining reputation) with more competitors. In other words, increased competition diminishes a journal’s monopoly power. With r as the editor’s discount rate, the editor chooses the quality of papers and takes account of the author’s behavior via the evolution of citations and the number of articles to maximize the journal’s reputation. The set-up in this paper allows for different discount rates of the author and the editor. These differences might be dictated by many factors including personal differences (e.g. age) and professional standing (e.g. tenure status, experience, etc.). Formally, the editor maximizes

$$\text{Max}_Q \int_0^\infty \left(\frac{QR}{N} - \frac{z}{2}Q^2 \right) e^{-rt} dt$$

subject to $\dot{c} = \alpha Q + \beta qRN - \kappa qN^2 - \delta c$ (1)

$$\dot{q} = q(r_1 + \delta) - \frac{aN(\beta R - \kappa N)}{bc}$$
 (5)

The corresponding Hamiltonian for the editor’s problem can be written as

$$E = \frac{QR}{N} - \frac{z}{2}Q^2 + \lambda(\alpha Q + \beta qNR - \kappa qN^2 - \delta c) + \psi \left[q(r_1 + \delta) - \frac{aN(\beta R - \kappa N)}{bc} \right]$$

where λ = co-state variable for author’s citations; and ψ = co-state variable for publications.

The first-order conditions for the editor’s problem are

$$E_Q = 0 \Rightarrow Q = z^{-1} \left(\frac{R}{N} + \lambda \alpha \right)$$
 (6)

$$\dot{\lambda} - r\lambda = -E_c \Rightarrow \dot{\lambda} = \lambda(r + \delta) - \psi \frac{aN(\beta R - \kappa N)}{bc^2} \quad (7)$$

$$\dot{\psi} - r\psi = -E_q \Rightarrow \dot{\psi} = \psi(r - r_1 - \delta) - \lambda N(\beta R - \kappa N) \quad (8)$$

In the steady state we set $\dot{c} = \dot{q} = \dot{\lambda} = \dot{\psi} = 0$ in equations (1), (5), (7) and (8) and solve the model (including equation (6)) for the equilibrium number of citations (c^*), number of papers (q^*) and the quality of papers published (Q^*):

$$c^* = \left[\frac{a}{b(r+1)(r-r_1-\delta)} \right]^{1/2} N(\beta R - \kappa N) \quad (9)$$

$$q^* = \left(\frac{a}{b} \right)^{1/2} \frac{[(\delta+r)(r-r_1-\delta)]^{1/2}}{(r_1+\delta)} \quad (10)$$

$$Q^* = \left(\frac{a}{b} \right)^{1/2} \frac{N(\beta R - \kappa N)}{\alpha} \frac{[\delta(\delta+r_1) - (\delta+r)(r-r_1-\delta)]}{(r_1+\delta)[(\delta+r)(r-r_1-\delta)]^{1/2}} \quad (11)$$

For positive solutions of c^* and Q^* a couple of conditions must be satisfied. We discuss them in turn. First, the following inequality must hold: $\beta R/\kappa > N$, i.e. the number of academic journals is limited from above by the relationship between journal's reputation, R , and the coefficient of negative externality of new journals, κ . There is a trade-off between the number of journals and the negative externality: the larger the negative externality the smaller the number of journals. As a consequence, if the negative externality of new journals is low the number of journals can be quite large. Later in the paper we consider a special case where the negative externalities are absent.

The second condition deals with the relative discount rates of authors and editors. Specifically, for positive c^* , Q^* and q^* , we need: (1) $r - r_1 - \delta > 0$; and finally for a positive Q^* we need the previous inequalities plus: (2) $\delta(r_1 + \delta) - (r + \delta)(r - r_1 - \delta) > 0$.⁹ Conditions (1) and (2) may be combined to place a lower bound on the editor's impatience as (ii*):

⁹ To shed some more light on the inequalities, let us consider a special case. For instance, when $\delta(r_1 + \delta) = (r + \delta)(r - r_1 - \delta)$, c^* , $q^* > 0$ and $Q^* = 0$ (see equations (9)–(11)). In other words, in a range of values of the relative discount rates of authors and editors, both the equilibrium citations and the number of papers would be positive, while the quality would be zero. This might be the case of authors writing a number of very similar papers with many self-citations.

$r > (r_1 + \delta) > (r + \delta)(r - r_1 - \delta)$.^{10,11} In other words, the editor needs to be relatively more impatient than the author for positive citations, papers published and quality in equilibrium.¹² Table 1 shows a range of values where condition (ii*) holds.

As a practical matter, this condition (ii*) seems more plausible when authors are rather well established (tenured) whereas the editors are relatively new, at least in their editorial roles. One can also envision editors being more impatient than authors when one thinks about the respective opportunity costs. The opportunity cost of the editor of a journal whose quality is decreasing is to possibly lose the editorship (which is considered a prestigious and 'powerful' position among academics (see Laband and Piette, 1994b)). Given that such actions are widely known to other academics, 'disgraced' editors would find it very difficult to obtain alternate editorships, or at least editorships of journals of comparable quality. Authors, in contrast, can switch to other journals if their work is rejected by a journal. Given the confidentiality of the review process, the resubmitted papers can very well end up at a journal of comparable quality, or in some cases at better journals. As authors in their probationary periods face time constraints, other things being the same, they are likely to be more impatient than tenured authors. It is less clear, however, that a tenure-track author would necessarily be more impatient than a newly appointed rookie editor.¹³ Thus condition (ii*) seems plausible in many situations.

2.3 Comparative static effects of a change in journal competition

We examine the effects of changes in journal competition on the number of citations, research quantity and the quality of research.¹⁴ Significant

¹⁰ Using $(r_1 + \delta) = \delta(r_1 + \delta)$, given $0 < \delta \leq 1$.

¹¹ Another way to think about condition (ii*) is that relatively laid-back (patient) editors could hurt journal quality (i.e. Q^* could be non-positive for a low r). Further, impatient editors of new journals can be seen as inviting established (famous) authors to contribute. See figure 1.

¹² Intuitively, one might think about negative quality as instances where journal publications bring disgrace to authors (e.g. when results are based on error of commission or omission).

¹³ An alternative, not necessarily opposed, explanation is that there are some authors who prefer to publish in high-quality journals rather than have a high number of papers published in lower-reputation journals. So authors that care more about quality rather than quantity would have low discount rates (see Faria, 2003). Further, authors with alternative career prospects are likely to be more patient than others, *ceteris paribus* (e.g. an economist who is also trained as a lawyer).

¹⁴ Increased competition among journals might also involve qualitative changes such as a change in focus (see Perlman, 1991).

Table 1. Relative discount rates of authors and editors

r	r_1	$r_1 + \delta$	$(r + \delta)(r - r_1 - \delta)$
$\delta = 1$			
1.6	0.55	1.55	0.13
1.6	0.2	1.2	1.04
1.5	0.2	1.2	0.75
1.5	0.15	1.15	0.875
1.5	0.1	1.1	1
1.45	0.07	1.07	0.931
1.4	0.05	1.05	0.84
1.3	0.1	1.1	0.46
1.2	0.1	1.1	0.22
1.1	0.09	1.09	0.021
$\delta = 0.5$			
0.9	0.3	0.8	0.14
0.9	0.25	0.75	0.21
0.9	0.2	0.7	0.28
0.9	0.1	0.6	0.42
0.8	0.25	0.75	0.065
0.8	0.2	0.7	0.13
0.8	0.1	0.6	0.26
0.7	0.19	0.69	0.012
0.7	0.15	0.65	0.06
0.7	0.1	0.6	0.12
$\delta = 0.1$			
0.9	0.77	0.87	0.03
0.9	0.7	0.8	0.1
0.8	0.65	0.75	0.045
0.8	0.6	0.7	0.09
0.7	0.55	0.65	0.04
0.7	0.5	0.6	0.08
0.6	0.45	0.55	0.035
0.6	0.4	0.5	0.07
0.5	0.35	0.45	0.03
0.5	0.3	0.4	0.06

Notes: r = editor's impatience; r_1 = author's impatience.

Condition (ii*): $r > (r_1 + \delta) > (r + \delta)(r - r_1 - \delta)$.

structural changes have been taking place in the publishing industry in recent years. The effects of these changes on the quantity and quality of research are unclear. An understanding of these influences has implications for technology policy and for the long-run diffusion of knowledge.

The effects of journal entry on the equilibrium citations, publications and research quality (follows from (9)–(11)) are

$$\begin{aligned} \frac{dc^*}{dN} > 0 &\Leftrightarrow \frac{\beta R}{2\kappa} > N \text{ and } r > r_1 + \delta \\ \frac{dq^*}{dN} &= 0 \\ \frac{dQ^*}{dN} > 0 &\Leftrightarrow \frac{\beta R}{2\kappa} > N \text{ and } r > r_1 + \delta; \text{ and } r_1 + \delta > (r + \delta)(r - r_1 - \delta) \end{aligned} \tag{12}$$

Given a sufficiently impatient editor, both the number of citations of a representative author and the quality of research go up with greater competition among journals (figure 1 shows the relation between the number of journals and the quality of publications). The positive impact of journal entry on citations and research quality holds when the negative externality of new journals is rather small and journal editors are relatively more impatient than authors. The positive impact of new academic journals on the number of citations of a representative author may counteract the trend identified by Laband and Tollison (2003) in which the rate of uncitedness of economics papers remained constant between 1974 and 1996, even when there was a substantial increase in the emphasis on academic research. This increased

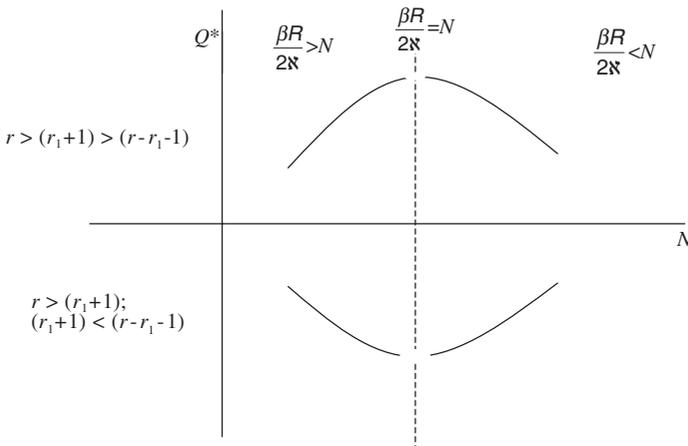


Figure 1. Research quality (Q) and journal competition (N) (using $\delta = 1$).

emphasis is reflected in a variety of increased incentives for faculty to produce research, including higher salaries, reduced teaching loads, increased money for travel, and so on.¹⁵

Interestingly, however, the number of articles of a representative author is unaffected by the increase in the number of publishing outlets. This result suggests another source for the creation of new academic journals: holding constant the equilibrium number of publications per researcher, the increase in the number of researchers must increase the number of academic journals. Alternately, the same number of articles produced might be spread over more journals.

The intuitive explanation for our results is as follows: the journal editor's objective is to build a good reputation for his journal by attracting and publishing the best papers. However, in the presence of higher competition from other journals he/she has to set the quality level of his/her journal such as to signal to prospective authors that his/her journal has a good reputation so as to be worth publishing in it. The authors then choose among the journals (with the same probability of acceptance) the one with the highest quality and reputation in order to maximize future citations to their work. Therefore, more competition among journals raises the quality of research as well as citations per author.

Competition thus turns out to be beneficial in academic markets. This (positive) impact is shown in terms of greater research quality.¹⁶ However, there is a possibility that the negative externalities associated with more publishing outlets may be large enough so that research quality might go down in the face of greater journal competition (see table 1 and figure 1). One policy implication is that government subsidy of research by promoting new journals seems justified in that it has a positive impact on research quality. However, these subsidies might have to be revisited over time as academia becomes more tenure heavy (i.e. as authors become relatively more patient).

As a special case, one might consider the scenario where negative externalities from publishing in low reputation journals are absent (i.e. $\kappa = 0$). Then from (12), the comparative-static results of journal entry are

¹⁵ Laband *et al.* (2002) found that the citation of economic research has been declining in the top economics journals such as *American Economic Review*, *Journal of Political Economy* and *Quarterly Journal of Economics*.

¹⁶ There is some anecdotal evidence to this effect. The year 1892 was a 'bumper' year in terms of appearance of new economics journals in America and this seemed to have resulted in 'amazingly few dull or bad articles' (Perlman, 1991, p. 161).

$$\begin{aligned}
 \frac{dc^*}{dN} &> 0 \Leftrightarrow r > r_1 + \delta \\
 \frac{dq^*}{dN} &= 0 \\
 \frac{dQ^*}{dN} &> 0 \Leftrightarrow r > r_1 + \delta; \text{ and } r_1 + \delta > (r + \delta)(r - r_1 - \delta)
 \end{aligned}
 \tag{12A}$$

In other words, when negative externalities from low-reputation journals are absent (or publication is more of a numbers game), greater competition among journals increases citations and the quality of papers, irrespective of the existing number of journals. Thus, while our analysis is based on a stylized model, this case provides some additional perspective regarding the parameters at work. We turn next to the concluding section.

3. CONCLUSIONS

Understanding of the research process has important implications not only for researchers and research institutions involved, but also for the society in the long run in terms of diffusion of knowledge and economic growth. There have been significant structural changes in research markets in recent years leading to an increase in the number of academic journals. This paper uses a stylized differential game model between authors and journal editors to examine the effects of a change in competition among academic journals.

The results show that greater competition does not affect research output per author and, in fact, enhances research quality. From the authors' perspective, the number of citations increases with the number of journals. The relation between a journal's reputation and negative externalities associated with the creation of new journals and the relative impatience (discount rates) of authors and editors turn out to be the crucial determinants of the effects of increased journal competition. For instance, there is a possibility that the negative externalities associated with more publishing outlets may be large enough so that research quality might go down in the face of greater journal competition (figure 1). Given the positive aspects of competition, government subsidies of academic journals seem justified to the extent they promote new journals. However, these subsidies might have to be revisited over time as academia becomes more tenure heavy (i.e. as authors become relatively more patient). Further, the proliferation of publication outlets due to the spread of the internet does not seem to be a cause for concern in terms of their (potentially negative) impact on research quality.

One should bear in mind that these findings are based on a stylized differential game model. More sophisticated models may be employed and empirical tests conducted to test the robustness of our findings. Nonetheless, we can claim to have somewhat furthered the formal research on competition in markets for knowledge production.

REFERENCES

- Aghion, P., Howitt, P. (1998): *Endogenous Growth Theory*, MIT Press, Cambridge.
- Ashenfelter, O. (1999): 'Report of the editor American economic review', *American Economic Review Papers and Proceedings*, 89, pp. 467–75.
- Azar, O. H. (2006): 'The academic review process: how can we make it more efficient?', *American Economist*, 50, pp. 37–50.
- Baser, O., Pema, E. (2003): 'The return of publications for economics faculty', *Economics Bulletin*, 1, pp. 1–13.
- Bergstrom, T. C., Bergstrom, C. T. (2004): 'Will open access compete away monopoly profits in journal publishing?', Available at: <http://octavia.zoology.washington.edu>
- Borts, G. H. (1980): 'Report of the managing editor American Economic Review', *American Economic Review Papers and Proceedings*, 70, pp. 455–60.
- Burton, M. P., Phimister, E. (1995): 'Core journals: a reappraisal of the diamond list', *Economic Journal*, 105, pp. 361–73.
- Colander, D. C. (1991): *Why Aren't Economists as Important as Garbage Men? And Other Essays on the State of Economics*, M. E. Sharpe, New York.
- Cole, S., Cole, J. R. (1967): 'Scientific output and recognition: a study in the operation of the reward system in science', *American Sociological Review*, 32, pp. 377–90.
- Coupé, T. (2004): 'What do we know about ourselves? On the economics of economics', *Kyklos*, 57, pp. 197–216.
- Ellison, G. (2002): 'The slowdown of the economics publishing process', *Journal of Political Economy*, 110, pp. 947–93.
- Faria, J. R. (2003): 'What type of economist are you: r-Strategist or K-Strategist?', *Journal of Economic Studies*, 30, pp. 144–54.
- Faria, J. R. (2005): 'The game academics play: editors versus authors', *Bulletin of Economic Research*, 57, pp. 1–12.
- Garner, C. A. (1979): 'Academic publication, market signaling and scientific research decisions', *Economic Inquiry*, 17, pp. 575–84.
- Goel, R. K. (2003): 'A market mechanism for scientific communication: a comment', *Kyklos*, 56, pp. 395–400.
- Goel, R. K., Rich, D. P. (2005): 'Organization of markets for science and technology', *Journal of Institutional and Theoretical Economics*, 161, pp. 1–17.
- Hamermesh, D., Johnson, G. E., Weisbrod, B. A. (1982): 'Scholarship, citations, and salaries: economic rewards in economics', *Southern Economic Journal*, 49, pp. 472–81.
- Hodgson, G. M., Rothman, H. (1999): 'The editors and authors of economics journals: a case of institutional oligopoly?', *Economic Journal*, 109, pp. F165–86.
- Laband, D. N., Piette, M. J. (1994a): 'The relative impacts of economic journals: 1970–1990', *Journal of Economic Literature*, 32, pp. 640–66.
- Laband, D. N., Piette, M. J. (1994b): 'Favoritism versus search for good papers: empirical evidence regarding the behavior of journal editors', *Journal of Political Economy*, 102, pp. 194–203.
- Laband, D. N., Tollison, R. (2003): 'Dry holes in economic research', *Kyklos*, 56, pp. 161–73.
- Laband, D. N., Shughart, W. F., Tollison, R. (1990): 'Economists and the economy', *Review of Economics and Statistics*, 72, pp. 707–11.

- Laband, D. N., Tollison, R., Karahan, G. R. (2002): 'Quality control in economics', *Kyklos*, 55, pp. 315–34.
- Lipscomb, C. E. (2001): 'Mergers in the publishing industry', *Bulletin of Medical Library Association*, 89, pp. 307–8.
- Merton, R. K. (1973): *The Sociology of Science*, University of Chicago Press, Chicago, IL.
- Perlman, M. (1991): 'On the editing of American economics journals: some comments on the earliest journals and the lessons suggested', *Economic Notes*, 20, pp. 159–72.
- Rosenbaum, D. I., Ye, M. H. (1997): 'Price discrimination and economics journals', *Applied Economics*, 29, pp. 1611–18.
- Sauer, R. D. (1988): 'Estimates of the returns to quality and coauthorship in economic academia', *Journal of Political Economy*, 96, pp. 855–66.
- Stephan, P. E. (1996): 'The economics of science', *Journal of Economic Literature*, 34, pp. 1199–235.
- Stigler, G. J., Stigler, S. M., Friedland, C. (1995): 'The journals of economics', *Journal of Political Economy*, 103, pp. 331–59.
- Townsend, R. B. (2003): *History and the Future of Scholarly Publishing*, American Historical Association, Available at: <http://www.historians.org/Perspectives/Issues/2003/0310/0310vie3.htm>
- Wallis, J. L., Dollery, B. E. (1993): 'The economics of economics: a model of research discourse', *Australian Economic Papers*, 32, pp. 175–83.
- Zivney, T. L., Bertin, W. J. (1992): 'Publish or perish: what the competition is really doing', *Journal of Finance*, 47, pp. 295–329.

Rajeev K. Goel
Department of Economics
Illinois State University
Campus Box 4200
Normal
IL 61790-4200
USA
E-mail: rkguel@ilstu.edu

João Ricardo Faria
Department of Economics and Finance
University of Texas Pan American
College of Business Administration
1201 West University Drive
Edinburg
TX 78541-2999
USA
E-mail: jfaria@panam.edu