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João Ricardo Faria
Rajeev K. Goel

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Abstract

This paper incorporates publication uncertainty in a game between researchers and journal editors and examines its effects on quantity and quality of published research. A stylized differential Stackelberg game between journal editors and academic authors is considered, where authors seek to maximize satisfaction from publications, while journal editors try to enhance reputations of their journals. Publication probability depends on the number of academic journals. Results show that greater journal competition, generally leading to reduced publication uncertainty, would increase author payoffs by increasing citations and publications. However, it is not clear whether the quality of published research is enhanced. Thus, changes in competition in publishing markets have the potential to exacerbate the quantity-quantity trade offs in research markets.

JEL-Codes: A110, A140, C790, L190.

Keywords: publication uncertainty, journals, publications, citations, research quality, authors, editors.

João Ricardo Faria
MPA, IPED
University of Texas El Paso
USA – El Paso, Texas 79968-0703
rfaria2@utep.edu

*Rajeev K. Goel**
Department of Economics
Illinois State University
USA – Normal, IL 61790-4200
rkgoel@ilstu.edu

*corresponding author

1. Introduction

In recent years, a growing literature has focused on the process of research and its spread through academic journal publications (e.g., Coupé (2004), Fox and Milbourne (1999)).[1] Professional market issues such as differences between academic research and commercial research (Shugan (2004)), and differences between academic and for-profit journal publishers (Bergstrom and Bergstrom (2006), McCabe and Snyder (2005)) have received attention. In this paper, we add to this line of inquiry and examine how academic publishing, through creation of brand new professional journals, relates to the quality and quantity of science. Specifically, we analyze how the multiplication of academic journals impact publication uncertainty by studying journal editors and authors behavior.

Academic publishing process is uncertain as the authors are not certain about the publication of their submitted papers. While some of this uncertainty is related to perceptions of their research quality by journal editors (and reviewers), other aspects of this uncertainty might be exogenous, related, for example, to whether other researchers might be working on a similar topic. The acceptance rates vary across journals with different focus and quality (see Besancenot et al. (2012), Cherkashin et al. (2009), Starbuck (2005)). Journals routinely publish their acceptance rates, with many prestigious journals having acceptance rates in the single digits. In fact, there is some evidence of papers of reputed researchers also being rejected (see Gans and Shepherd (1994)). This decision making under uncertainty is more challenging in academic markets as

[1] Cramer (1965) and Skeels and Fairbanks (1968/1969) are examples of pioneering papers in this area.

publication rewards are associated with being the first - however, journal editors need to be convinced about this.[2]

Thus, there is an element of uncertainty associated with the publication process.

There is a noticeable trend that highly cited journals attract more and more submissions (Card and DellaVigna (2013)). Ellison (2002) documents a dramatic increase in the time necessary to publish a paper in a top economics journal. Hodgson and Rothman (1999) show that top journals are generally dominated by a small group of researchers related to top departments. All these factors contribute for the congestion of the editorial process and, as a consequence, the efficiency of the papers' selection may be dramatically challenged (Besancenot et al. (2014)). Academic publishers attuned to these issues see an opportunity to create brand new academic journals, increasing competition (Goel and Faria (2007)). Editors of existing journals and researchers react to these new developments, which raise many questions regarding the evolution of science. Will new journals reduce the cost and uncertainty of publishing for authors and, therefore, increase their productivity? Journal editors will find it easier to publish high quality research? Will citations of authors reflect growing competition in science?

This paper tackles these questions and contributes to the literature by incorporating publication uncertainty in a differential game between researchers and journal editors by examining its effects on quantity and quality of published research and its citations[3]. In our setup, authors' objective is to maximize satisfaction from publishing journal articles,

[2] While publishing can be a multi-shot game where rejected papers can be resubmitted to other journals, the time lost in rejections and the review process enables competitors to catch up with similar topics (not to mention the time costs associated for academics who have yet to obtain tenure). Plus, not all academic papers have an equal shelf life during the review period - empirical papers can relatively quickly become dated as the underlying data become "older".

[3] See van Dalen and Klamer (2005) and Macdonald and Kam (2007) for a critical view of the use of citation and publication statistics.

while editors aim to maximize reputations of their journals. However, editors are more sophisticated than authors, because they take into account the authors' publishing behavior. This happens because editors, acting as gatekeepers of knowledge, are the ones who determine acceptable research quality (Faria et al. (2011)). Thus, publication is largely uncertain from the authors' perspective. In stylized game-theoretic framework, we shall determine the effects of changes in publishing uncertainty on the quantity and quality of publications and on citations generated.

Besides adding to the literature, this study has some import for research policy. Better understanding of the effects of publication uncertainty should improve resource allocation in research markets. For instance, the knowledge of how the probability of publication impacts one's research makes it easier for academic departments to draw incentives for tenure (Faria and Monteiro (2008), Faria and McAdam (2015)), allows researchers to respond effectively to them,[4] and in general it helps research agencies to be able to foster academic productivity.

2. The Model

The model we employ seeks to analyze the exchange between journal editors and authors with a view to discerning the effect of changes in publication uncertainty on the quantity and quality of publications.[5] In modeling the interaction between scholarly authors and academic journal editors, we consider a Stackelberg differential game where

[4] Besancenot and Vranceanu (2008) and Besancenot et al. (2009) study the unintended consequences of more powerful incentives for publication in major journals.

[5] Focusing on authors' paper submission strategies with a given number of journals, with no explicit consideration of the behavior of editors and the role of citations, Heintzelman and Nocette (2009) consider uncertainties associated with obtaining revision invitations in the review process and with publication acceptance.

journal editors are leaders and authors are followers. This design makes sense since editors set the parameters regarding journal focus, articles per issue and have ultimate decision regarding sanctioning papers that meet their quality threshold. The authors choose the number of publications in pursuit of rewards that include promotion, reputation and enhanced monetary compensation. The editors seek to enhance the reputations of the journals they oversee (see Faria, (2005)).

Turning to the probability of publication, let p denote the probability of publication. An author is generally unsure about the quality of his/her work and whether other researchers are concurrently working on the same problem. Consequently, the probability of publication is largely exogenous. We do, however, allow the publication probability to depend upon the (given) number of journals (N). This uncertainty can be viewed in the same vein as earlier models of innovation uncertainty, where the probability of success was a function only of (exogenous) time (see, for example, Kamien and Schwartz (1972)). The number of publication outlets affects the odds of a given paper being published. In recent years, there has been a marked rise in the number of publication outlets, due in large part to advances in publication and transmission technologies (see Goel and Faria (2007) for a related formal model).

While it is likely that more journals increase publication odds (i.e., $p'(N) > 0$), the probability could go down ($p'(N) < 0$), or remain unchanged ($p'(N) = 0$) given the structure of publication markets.[6] For instance, publication odds are likely to increase when the new journals are strategic substitutes to existing journals (for example, think *Economics Bulletin* versus *Economics Letters*), but these odds could remain unchanged or

[6] At the extremes, it seems plausible that publishing odds decrease with very few journals and increase with a very large pool of journals, i.e., $p(N) \to 0$ as $N \to 0$ and $p(N) \to 1$ as $N \to \infty$.

even go down if the new journals are strategic complements (think *Journal of Institutional and Theoretical Economics* versus *Journal of Applied Econometrics*).

Whereas the direct link between journal competition and publishing probability is perhaps most plausible, all these possibilities are illustrated in Figure 1 and will enable us to consider a richer set of scenarios regarding the nexus between publication uncertainty and research behavior. For instance, publication probability increases with journals in curve A in Figure 1, while it is constant (or independent of N) along curve C. However, the relation between p and N may very well be nonlinear such that publication probability could decrease within a certain range, such as between N_1* and N_2* along curve B. All these scenarios will have a crucial bearing on our results below[7]. The representative author's behavior is taken into account by the editor and that is considered first.

The Author

The representative author's instantaneous utility (U) is taken to be a function of the number of citations (c) to his/her work(s) and the number of publications (q), (see Baser and Pema (2003) and Laband and Sophocleus (1985)). The author experiences some disutility when papers are rejected in the form of time taken for revisions or in scrapping the line of inquiry altogether (not to mention the psychic costs of a loss of confidence in some cases). The quantity and quality of an author's research over time translates into monetary and non-monetary rewards.

Formally,

[7] One could alternately view a scenario where the publication probability would depend upon an author's publications (q) and authors with more publications would have easier time getting their papers published ($p'(q) > 0$). One functional form that would capture such behavior is $p = q^{\omega}$, where $0 < \omega < 1$. Unfortunately, consideration of this option sufficiently complicated the analysis in our framework, resulting in intractable results.

$$U(q, c) = a\log c + \xi pq - (k(1 - p)/2)q^2.$$

Here a and ξ are positive constants, p is the probability of publication. Papers not accepted for publication have quadratic costs for the time and effort exerted without any reward, where $(1 - p)$ is the probability of rejection and k can be taken as the cost of rejections for the author. Rejection costs may be interpreted as the costs associated with revising and repositioning the paper for submission to another outlet. These costs could be quite high if the review process reveals that the subject of paper has already been researched. In such cases, the author would have to shelve the project.

The utility function implies the marginal utility of citations (U_c) to be a/c; and ξ can be interpreted as the marginal utility of expected publications (U_{pq}). Interestingly, while the marginal utility of expected publications is constant, the marginal utility of citation is not and $U_{cc} < 0$.

We assume that the citations to an author's works over time ($\dot{c} \equiv dc/dt$) increase with the number of papers published (q), with research quality of the author's papers (Q), as well as with the reputation of the journals where the author's research has been published (R), and with the number of publication outlets (N). Therefore,

$$\dot{c} = w(Q, R, N, p, q, c) = \left[\alpha Q + \beta pqRN\right] - \delta c\,.$$

The representative author uses the number of publications (q) as a control variable to maximize the present discounted value (with r_1 denoting the author's discount rate) of the flow of utility subject to the rate of change of citations.[8] Formally, the author's maximization problem is

[8] As the number of publications is an increasing function of paper submissions, one can think of the authors using submissions as the actual control variable. In this regard, Azar (2005) examines potential editors' strategies to deal with excess submissions.

$$\underset{q}{Max}\int_0^{\infty}\left[a\log c+\xi pq-(k(1-p)/2)q^2\right]e^{-r_1 t}\,dt$$

$$\text{s.t. } \dot{c}=\left[\alpha Q+\beta pqRN\right]-\delta c \qquad (1)$$

The constant δ is such that $0 < \delta \leq 1$; and α and β are parameters.

The Hamiltonian for the author's problem is

$$A=a\,\log c+\xi pq-(k(1-p)/2)q^2+\mu[(\alpha Q+\beta pqRN)-\delta c] \qquad (2)$$

In (2) μ is a co-state variable signifying the shadow price of citations for the author. The first-order conditions for maximizing the author's problem are

$$A_q=0\Rightarrow q=\frac{p(\xi+\mu N\beta R)}{k(1-p)} \qquad (3)$$

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

Solving equations (3) and (4) yields the following author's reaction function

$$\dot{q}=\left[q-\frac{\xi p}{k(1-p)}\right](r_1+\delta)-\frac{aN\beta pR}{ck(1-p)} \qquad (5)$$

The evolution of publications over time is positively related to the number of citations, which suggests that authors whose research is widely cited might find it easier to get their papers published (see Merton (1973)).

The Editor

Competition among publishing outlets and their own quest for professional advancement induce journal editors to increase the reputation of their journals by publishing scholarly works of highest quality (see Laband and Piette (1994) for some related evidence on the behavior of journal editors). To this effect, the representative

editor seeks to increase the growth rate of the journal's reputation ($\hat{R}$) by choosing among the papers submitted the ones with the highest quality (Q).[9]

In our stylized setup, the growth rate of the journal's reputation is denoted by $\hat{R} \equiv \frac{\dot{R}}{R} = \frac{RQ}{N} - \frac{m}{2}Q^2$, where m is a positive constant that captures the costs of selecting papers of high quality, which takes editors' time (Azar (2004)). The positive coefficient m A journal's reputation increases with the quality of papers (Q) it publishes, but decreases with more competitors (N). Other things being the same, with more journals some of the good papers are likely to end up at other journals. Thus, the number of journals has two effects – it affects the probability of publication for an author and it affects the journal's reputation. Examining the maximum journal reputation growth yields the following equilibrium quality: $Q_{\max} = (R/Nm) > 0$. This result for maximum quality is intuitive, with quality directly related to journal reputation, but undermined by journal competition and by section costs (m).

The editor's rate of discount is given by r_2. The choice variable for the journal editor is the quality of papers while taking into account the author's behavior to maximize the journal's reputation.

$$\underset{Q}{Max} \int_0^{\infty} [\frac{RQ}{N} - \frac{m}{2}Q^2] e^{-r_2 t}\, dt$$

s.t. $\dot{c} = [\alpha Q + \beta pqRN] - \delta c$ (see (1))

[9] See Laband and Piette (1994) for an empirical study of the behavior of journal editors, and for a theoretical treatment see Besancenot et al. (2012). McCabe and Snyder (2005) discuss the effects of open access publications on journal quality. Harzing and van der Wal (2009) propose a new index, the google scholar h-index for journals as a better indicator of journal quality than ISI journal impact factor.

$$\dot{q} = \left[q - \frac{\xi p}{k(1-p)} \right](r_1 + \delta) - \frac{aN\beta pR}{ck(1-p)} \qquad \text{(see (5))}$$

The corresponding Hamiltonian for the editor is

$$E = \frac{RQ}{N} - \frac{m}{2}Q^2 + \lambda[(\alpha Q + \beta pqNR) - \delta c] + \psi\left\{\left[q - \frac{\xi p}{k(1-p)} \right](r_1 + \delta) - \frac{aN\beta pR}{ck(1-p)}\right\} \tag{6}$$

Here λ is the co-state variable for author's citations and ψ is the co-state variable for public cations. The first-order conditions for the editor's problem are

$$E_Q = 0 \Rightarrow Q = (1/m)\ [\frac{R}{N} + \lambda\alpha] \tag{7}$$

$$\dot{\lambda} - r_2\lambda = -E_c \Rightarrow \dot{\lambda} = \lambda(r_2 + \delta) - \psi\frac{aNp\beta R}{k(1-p)c^2} \tag{8}$$

$$\dot{\psi} - r_2\psi = -E_q \Rightarrow \dot{\psi} = \psi(r_2 - r_1 - \delta) - \lambda Np\beta R \tag{9}$$

Given this overall setup, we can address the main focus of this paper - the effect of publication uncertainty. In the steady state we set $\dot{c} = \dot{q} = \dot{\lambda} = \dot{\psi} = 0$ in equations (1), (5), (8) and (9) and solve the model for the equilibrium citation (*c**), publications (*q**) and the quality of papers published (*Q**):

$$c^* = Np\beta R\left[\frac{a}{k(1-p)(r_2+\delta)(r_2 - r_1 - \delta)}\right]^{1/2} \tag{10}$$

$$q^* = \left[\frac{a}{k(1-p)}\right]^{1/2}\frac{[(r_2+\delta)(r_2 - r_1 - \delta)]^{1/2}}{(r_1+\delta)} + \frac{\xi p}{k(1-p)} \tag{11}$$

$$Q^* = Np\beta R\left[\frac{a}{k(1-p)}\right]^{1/2}\left\{\frac{[\delta(r_1+\delta) - (r_2+\delta)(r_2 - r_1 - \delta)]}{\alpha(r_1+\delta)[(r_2+\delta)(r_2 - r_1 - \delta)]^{1/2}}\right\} - \frac{\beta\xi NR}{\alpha k(1-p)}p^2 \tag{12}$$

Thus, c^*, q^* and Q^* solve recursively in terms of the relative discount rates of authors and editors (r_1 and r_2, respectively), journal reputation (R), publication probability (p) and the number of journals (N). [10] Note that while both aspects of quality, i.e., equilibrium citations and publication quality, are directly and indirectly affected by the number of journals (via N directly and indirectly via publication uncertainty ($p(N)$), the equilibrium quantity of publications is only affected indirectly.

Effects of Publication Uncertainty

Since the publication uncertainty depends upon the number of journals, we examine the effects of a change in the number of journals on the equilibrium citations, publications and research quality. How does a change in the nature of journal competition, via its impact on publication probability and journal reputation, affect the quantity and quality of research? As discussed above, a change in the structure of journals can potentially have different effects on the odds of publication. From (10)-(12), the respective comparative-statics are

[10] Note that c^* and $q^* > 0$ require the following conditions on the relative discount rates: (a) $(r_2 - r_1 - \delta) > 0$; and (b) $[\,\delta(r_1 + \delta) - (r_2 + \delta)(r_2 - r_1 - \delta)\,] > 0$. These conditions imply that the editor's discount rate be sufficiently high (i.e., $(r_2 > (r_1 + \delta) > (r_2 + \delta)(r_2 - r_1 - \delta)/\delta$). Goel (2006) provides some simulations related to the relative discount rates of journal editors and authors.
One could envision situations where, given the competition among journals and with publication deadlines, journal editors might be quite impatient to get issues out (relative to authors, who, being followers in the Stackelberg publishing game, are relatively more resigned).
However, an additional condition is required for publication quality (Q^*) to be positive: we need the second (negative) term in (12) to be smaller in magnitude than the first term. Given the many variables involved, it is somewhat challenging to intuitively interpret this additional condition. One interpretation might be that it puts some parameters on the marginal utility from expected publications (ξ) relative to the discount rates of the authors and editors.

$$(\partial c^*/\partial N) = \beta R[p + Np']\left[\frac{a}{k(1-p)(r_2+\delta)(r_2-r_1-\delta)}\right]^{1/2} + \frac{\beta RNp}{2}p'\left[\frac{a}{k(r_2+\delta)(r_2-r_1-\delta)}\right]^{1/2}(1-p)^{-3/2} \quad (13)$$

$$(\partial q^*/\partial N) = \frac{\xi p'}{k(1-p)} + \frac{\xi pp'}{k(1-p)^2} + \frac{p'(1-p)^{-3/2}}{2}\left[\frac{a}{k}\right]^{1/2}\frac{[(r_2+\delta)(r_2-r_1-\delta)]^{1/2}}{(r_1+\delta)} \quad (14)$$

$$(\partial Q^*/\partial N) = \frac{\delta}{\alpha}\frac{\partial c^*}{\partial N} - \frac{\beta R}{\alpha}\left(pq^* + p'q^*N + pN\frac{\partial q^*}{\partial N}\right) \quad (15)$$

The signs of (13)-(14) depend upon the nature of the effect of number of journals on the probability of success – i.e., the sign of $p'(N)$, (see Figure 1). This condition can alternately be written in terms of an elasticity of publication probability (i.e., $\varepsilon_p = (\partial p/\partial N)(N/p) \gtreqless 0$). The effect of publication uncertainty on publication quality, $(\partial Q^*/\partial N)$, in (15) is somewhat more complicated and we address that below.

Intuitively, one would expect that the most likely scenario to be an increase in journal competition increases publication probability (and reduces related uncertainty). However, we also consider the other two possibilities as illustrated in Figure 1 to round out the analysis. We consider the three possibilities below:

(i) $p'(N) > 0$ – publication probability increases with number of journals *("every paper has a home")*: $(\partial c^*/\partial N)$, $(\partial q^*/\partial N) > 0$. In this case more journals lead to more publications and citations. This result can be seen in the context of more journals via enhanced publication probability facilitating the diffusion of knowledge via greater publications and citations. This scenario is consistent with curve A and portions of curve B (specifically, $N < N_1^*$ or $N > N_2^*$).

The effect on quality, however, is less clear and would increase when the marginal increase in citations is sufficiently large (i.e., $(\partial c^*/\partial N) > (\partial N p^* q^*/\partial N)$).

(ii) $p'(N) = 0$ – publication probability independent of number of journals *("publishing is a shot in the dark")*: $(\partial c^*/\partial N) > 0$; $(\partial q^*/\partial N) = 0$. In this case, while citations increase with more journals, the number of publications remains unchanged (see curve C in Figure 1). In this case, the greater competition among journals is increasing citations, with the overall quantity of research remaining unchanged. The effect on research quality, $(\partial Q^*/\partial N)$, on the other hand, is ambiguous.

(iii) $p'(N) < 0$ – publication probability decreases with number of journals *(" all journals are not created alike")*: The sign of $(\partial c^*/\partial N)$ depends on $[\, p + Np' \,]$ and p' . If $[\, p + Np' \,] > 0$, an increase in the number of journals lead to more citations. Note, however, that as $p' < 0$, in order for $(\partial c^*/\partial N) > 0$, it is necessary that the publication probability is inelastic, i.e., $\varepsilon_p = (\partial p/\partial N)(N/p) < 1$. The impact on quantity is, however, unambiguously negative, $(\partial q^*/\partial N) < 0$. When N falls between N_1^* and N_2^*, more journals reduce research output, while the effect on research quality and citations is ambiguous. It is likely the case that the reduced publication probability dissuades some authors, leading to a fall in the research quantity. Again the effect of research quality is less clear.

To summarize, results show that, expectedly, the quantity of publications moves with publication probability - greater probability increases publications and vice versa. Citations also largely follow a similar pattern. In fact, citations can increase even when publication probability remains unchanged in the face of heightened journal competition. The effect on publication quality, on the other hand, is less clear. This ambiguity is understandably given the nature of research quality. There could be instances where a change in uncertainty highlights the quantity-quality tradeoffs in research. The concluding section follows.

3. Concluding Remarks

Using a stylized Stackelberg game setting between journal editors and academic authors, this paper studies the probabilistic nature of peer review published academic research and its impact on quantity and quality of publications and on citations. Whereas research on the process of research has gained momentum in recent years (see Goel and Rich (2005)), the uncertain aspect of publications has not been formally considered in the literature.

Our basic model examines a differential game between authors and journal editors, with the editors being relatively more sophisticated than authors. The probability of publication success depends upon the number of publication outlets. The findings of this paper depend on the impact of the number of academic journals on the probability of publication.

Three scenarios associated with increased journal competition are considered: (i) If an increase in the number of academic journals leads to an increase in publication

probability, then more journals lead to more publications and citations; (ii) If publication probability is independent of number of journals, then citations increase with more journals, the number of publications remains unchanged; and (iii) If publication probability decreases with number of journals, then more journals reduce research output, while the effect on citations is ambiguous.

Results thus show that the quantity of publications moves with publication probability and citations also largely follow a similar pattern. The effect on publication quality, on the other hand, is less clear. Changes in publication uncertainty have the potential to exacerbate the quantity-quantity trade-offs in research markets. The results also highlight the importance of relative discount rates of journal editors versus authors.

In all scenarios the impact of greater journal competition on research quality is ambiguous. Which suggests that science may become a numbers game in which authors add to their CVs publications and reap rewards associated to them; and journal editors' increase their journals' reputation because they get more citations, but in the end of the day science progresses very little, since the quality of the papers does not increase as much as publications and citations.

One implication of the findings is that caution should be exercised in comparisons of the productivity and stature of scholars over time. With the recent increases in publication outlets and the general increase in overall publication probabilities (not necessarily at high quality outlets), casual observations (http://repec.org/; https://ideas.repec.org/) and our results suggest that citations and publication numbers go up.

We close by noting that a stylized model like the one used in the present research is admittedly unable to capture numerous subtle nuances of publishing process. For

instance, a more involved setup could examine the fate of rejected papers, that of resubmitted articles versus initial submissions, and treat probationary and tenured authors differently. Further, the recent developments involving online and open access journals has likely qualitatively changed the publishing markets (see, for example, McCabe and Snyder (2005)), so that perhaps separate analyses should be conducted for traditional and online journals. Nevertheless, it is our hope that we have added some formal structure to the discussion on an issue that promises to engage scholars for some time to come.

References

Azar. O. 2004. Rejections and the Importance of First Response Times. *International Journal of Social Economics* 31: 259-274

Azar. O. 2005. The Review Process in Economics: Is it Too Fast? *Southern Economic Journal* 72: 482-491.

Baser, O. and E. Pema. 2003. The Returns of Publication for Economics Faculty. *Economics Bulletin* 1: 1-13.

Bergstrom, C.T. and T.C. Bergstrom. 2006. The Economics of Ecology Journals. *Frontiers in Ecology and the Environment* 4: 488-495.

Besancenot, D., J.R. Faria and R. Vranceanu. 2009. Why Business Schools do so Much Research: A Signaling Explanation. *Research Policy* 38: 1093-1101.

Besancenot, D., J.R. Faria and K.V. Huynh. 2014. Congestion of Academic Journals Under Papers' Imperfect Selection. *The B.E. Journal of Economic Analysis & Policy* 14: 1145-1167.

Besancenot, D., K.V. Huynh and J.R. Faria. 2012. Search and Research: The Influence of Editorial Boards on Journals' Quality. *Theory and Decision* 73: 687-702.

Besancenot, D. and R. Vranceanu. 2008. Can Incentives for Research Harm Research? A Business School's Tale. *Journal of Socio-Economics* 37: 1248-1265.

Card, D. and S. DellaVigna. 2013. Nine Facts about Top Journals in Economics. *Journal of Economic Literature* 51:144-161.

Cherkashin, I., S. Demidova, S. Imai and K. Krishna. 2009. The Inside Scoop:

Acceptance and Rejection at the Journal of International Economics. *Journal of International Economics* 77: 120-132.

Coupé, T. 2004. What do we Know about Ourselves? On the Economics of Economics. *Kyklos* 57: 197-216.

Ellison, G. 2002. The Slowdown of the Economics Publishing Process. *Journal of Political Economy* 110: 947-993.

Faria, J.R. 2005. The Game Academics Play. *Bulletin of Economic Research* 57: 1-12.

Faria, J.R., D. Besancenot and A. Novak. 2011. Paradigm Depletion, Knowledge Production and Research Effort: Considering Thomas Kuhn's Ideas. *Metroeconomica* 62: 587-604.

Faria, J.R. and P. McAdam. 2015. Academic Productivity Before and After Tenure: The Case of the 'Specialist'. *Oxford Economic Papers* 67: 291-309.

Faria, J.R. and G. Monteiro. 2008. The Tenure Game: Building up Academic Habits. *Japanese Economic Review* 59: 370-380.

Fox, K.J. and R. Milbourne. 1999. What Determines Research Output of Academic Economists? *Economic Record* 75: 256-267.

Gans, J.S. and G.B. Shepherd. 1994. How Are the Mighty Fallen: Rejected Classic Articles by Leading Economists. *Journal of Economic Perspectives* 8: 165-179.

Goel, R.K. 2006. The Game Academics Play: Comment. *Bulletin of Economic Research* 58: 19-23.

Goel, R.K. and J.R. Faria. 2007. Proliferation of Academic Journals: Effects on Research Quantity and Quality. *Metroeconomica* 58: 536-549.

Goel, R.K. and D.P. Rich. 2005. Organization of Markets for Science and Technology.

Journal of Institutional and Theoretical Economics 161: 1-17.

Harzing, A. and R. van der Wal. 2009. A Google Scholar h-Index for Journals: An Alternative Metric to Measure Journal Impact in Economics and Business. *Journal of the American Society for Information Science and Technology* 60: 41-46.

Heintzelman, M. and D. Nocette. 2009. Where Should we Submit our Manuscript? An Analysis of Journal Submission Strategies. *The B.E. Journal of Economic Analysis & Policy* 9, 1-28.

Hodgson, G.M. and H. Rothman. 1999. The Editors and Authors of Economics Journals: A Case of Institutional Oligopoly? *Economic Journal* 109: 165-186.

Kamien, M.I. and N.L. Schwartz. 1972. Timing of Innovations under Rivalry. *Econometrica*, 40: 43-60.

Laband, D.N. and M.J. Piette. 1994. Favoritism versus Search for Good Papers: Empirical Evidence Regarding the Behavior of Journal Editors. *Journal of Political Economy* 102: 194-203.

Laband, D.N. and J.P. Sophocleus. 1985. Revealed Preference for Economics Journals: Citations as Dollar Votes. *Public Choice* 46: 317-324.

McCabe, M.J. and C.M. Snyder. 2005. Open Access and Academic Journal Quality. *American Economic Review* 95: 453-459.

Macdonald, S. and J. Kam. 2007. Ring a Ring o' Roses: Quality Journals and Gamesmanship in Management Studies. *Journal of Management Studies* 44: 640-655.

Merton, R.K. 1973. *The Sociology of Science,* Chicago: University of Chicago Press.

Shugan, S.M. 2004. Editorial: Consulting, Research, and Consulting Research. *Marketing Science* 23: 173-179.

Skeels, J.W. and R.P. Fairbanks. 1968/1969. Publish or Perish: An Analysis of the Mobility of Publishing and Nonpublishing Economists. Southern Economic Journal 35: 17-25.

Starbuck, W.H. 2005. How Much Better Are the Most-Prestigious Journals? The Statistics of Academic Publication. *Organization Science* 16: 180-200.

van Dalen, H.P. and A. Klamer. 2005. Is Science a Case of Wasteful Competition? *Kyklos* 58: 395-414.

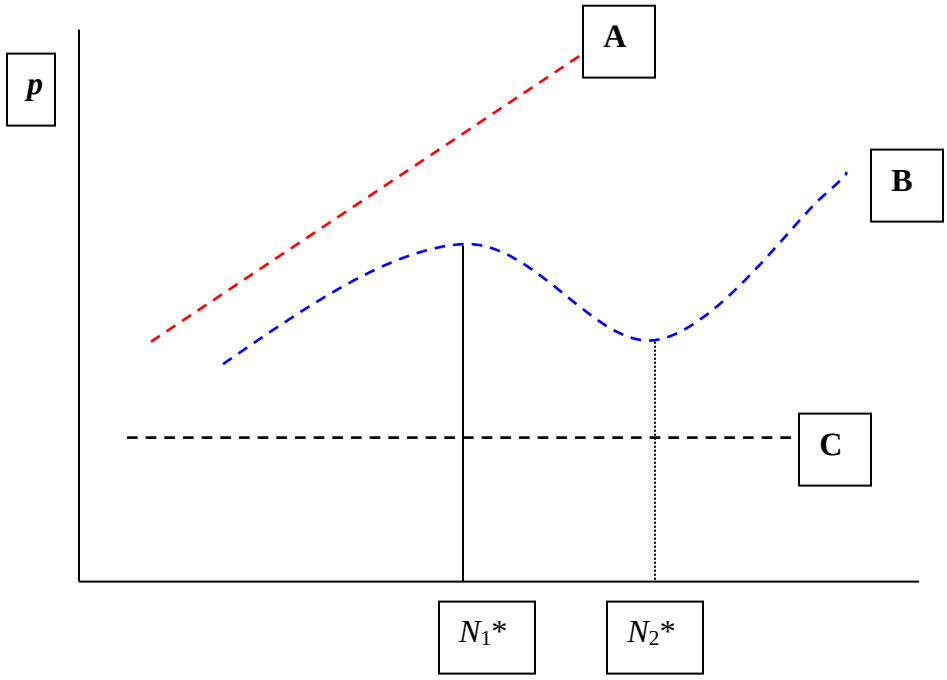

Figure 1: Number of journals (*N*) and publication probability (*p*)