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COPYRIGHT AND OPEN ACCESS FOR ACADEMIC WORKS

FRANK MÜLLER-LANGER AND RICHARD WATT

ABSTRACT. In a recent paper, Prof. Steven Shavell (see Shavell, 2009) has argued strongly in favor of eliminating copyright from academic works. Based upon solid economic arguments, Shavell analyses the pros and cons of removal of copyright and in its place to have a pure open access system, in which authors (or more likely their employers) would provide the funds that keep journals in business. In this paper we explore some of the arguments in Shavell's paper, above all the way in which the distribution of the sources of journal revenue would be altered, and the feasible effects upon the quality of journal content. We propose a slight modification to a pure open access system which may provide for the best of both the copyright and open access worlds.

1. INTRODUCTION

Very recently, Steven Shavell has proposed that it may be socially efficient to abolish copyright in scientific works (see Shavell 2009). The basic intuition behind Shavell's idea is not difficult to grasp. As a group, the scientific community provides both the supply and the demand for scientific research, and the professional publishers are an outside "third party" that simply filters the research in terms of quality and organises it into convenient packages, which it then sells back to the scientific community in the form of journals. The existence of copyright on scientific works allows journal publishers to earn significant profits, for what appears to be an activity that can just as well be done within the scientific community itself. Indeed, not only is the supply of the principal ingredient to journals, namely academic articles, provided for by the scientific community, but typically so is the task of filtering (i.e. refereeing) the articles for quality, editorship tasks, and even (for some cases) the typesetting task (see Hilty 2006).

The essence of Shavell's argument is that if copyright were to be abolished, then journal content would become perfectly competitively supplied, and so subscription prices would drop to marginal cost (which, in the case of online access, is basically 0). Thus, under a no-copyright regime we would expect to get maximal diffusion of scientific work, clearly a socially beneficial outcome. However, we must also ensure that removal of copyright does not interfere with the supply of scientific work, and here Shavell appeals to the fact that most, in fact nearly all, of academic writing is not carried out for direct financial gain, but rather for the indirect gains that accrue

to successful authors through scholarly esteem and professional advancement. Since authors of scientific works do not typically supply their efforts in response to a financial motivation based upon copyright, the removal of copyright should not in principle interfere with the supply of scientific research efforts. Of course, however, this depends critically on the continued existence of some organised form of journals, which still face the task of quality control of what is published, and the distribution of the articles in a convenient package. Since there are some costs involved in doing this, Shavell proposes that these costs might be better borne by the authors of the accepted papers, or perhaps more specifically by the employers of these authors, rather than by the money that is currently gathered by subscriptions.

The proposal put forward by Shavell is meritorious, and certainly warrants careful thought and analysis. The basic intuition of Shavell's paper depends upon certain critical assumptions made in an elegant but simple model of journal publishing. The main assumptions in the model, in order to generate the final result, are that

- (1) Authors are differentiated with respect to their preferences on how much readership they get for their articles. "Scholarly esteem" is assumed to be proxied by the amount of readership alone.¹
- (2) Journal publishers would earn zero profits in a world without copyright on the information that they publish, and
- (3) The quality and nature of scientific output does not depend upon whether journals are financed by subscription fees in a world with copyright or by author fees in a world without copyright.

Assumption 1 is important as a simplifying device in the model. Nevertheless, it is surely inaccurate as a reflection of reality, and here we shall attempt to look at other options that might be more appropriate as the relationship between "esteem" and readership. Assumption 2 is not really needed in the model, and again might well be debatable. But if it were true that in absence of copyright journals are restricted to 0 profits, then clear social benefits are available if a non-copyright based system can be devised in which journal output continues to be supplied. The extent to which the profits that journals can earn are dependent or not on copyright in the papers that they publish does not really condition the intuition that society might be better off under a regime of no copyright as compared to a regime of copyright.

However, it is probably worthwhile to point out that, as Shavell stresses, the organisation of the journal market under a regime of no copyright would be in

¹Actually, it would make no difference at all if esteem, which is what authors really care about, were to be a function of readership, so long as the function were strictly increasing for all values of readership.

terms of open access and authors paying for publication costs. Since this is a feasible business model even in a regime with copyright, but journal publishers are (in general) reluctant to use such a model, we can probably safely assume that the profits available to a journal publisher under an open access business model are certainly less than under a traditional subscriptions based business model. So long as the two options for production and distribution of journal content were to result in the same content² (as Shavell seems to assume), then clearly the open access model implies a transfer of social surplus to the scientific community and away from the publishing companies.

In this paper, we shall re-consider some of the modelling assumptions in the Shavell paper, above all to investigate whether or not the intuition favouring elimination of copyright might be affected by the use of alternative assumptions.

2. EFFECTS OF REMOVAL OF COPYRIGHTS

2.1. Creation of a New Market. Perhaps the most important of the assumptions made in the Shavell analysis is that, under a regime of no copyright, journals will earn no profit. As mentioned above, the assumption as such is not really necessary for the final conclusion to hold (i.e. removal of copyright might still be socially valuable even if journal publishers could retain profit in a no copyright regime), however it is certainly important for us to consider the relationship between the profits of journal publishers and the existence or not of copyright in the content they publish.

In the current regime, journal publishers demand copyright from the authors of the papers that they publish, and this then allows them to hold a monopoly on the publication and distribution of the papers that they accept to publish. In turn, this allows the journal publishers to charge an access fee for the content of their journals, normally in the form of a subscription fee for the receipt of all content of a given journal for a specified length of time. The point to note here is that, since a positive fee, over and above marginal access cost, is charged for access to the content, standard economics then says that this content is accessed to a socially inefficient level. The basic economics of copyright is willing to put up with this inefficiency in return for an incentive to provide the content in the first place. However, the authors themselves are not (normally) remunerated directly from the subscription fees, and so might still supply the content in some form or another without copyright. The ability to earn a profit is only needed for the distributor – the journal publisher – to participate, not for the content to be produced. So, the principal question to address is whether or not a different business model can be proposed such that (a) the content is still produced by authors, (b) the content is

²On this point, see McCabe and Snyder (2005).

still made available in a convenient package, and (c) the content is distributed to the same or greater extent than under the current copyright regime. The argument of Shavell is that, since there would be no copyright to assign to a journal, then assuming the journal content is still produced, packaged and made available, it will be much more widely accessed than under a copyright regime. So criterion (c) is very likely to be satisfied. Second, since authors are not remunerated anyway, and so their incentives do not appear to be related directly to copyright, criterion (a) is also likely to be satisfied under a regime of no copyright. The critical point then is criterion (b).

The open access model proposes that journal content will still be made available in convenient packages (i.e. journal issues) so long as the costs of doing so can be recovered. Thus, if those costs are recovered from authors, or their employers, then there is no reason to suppose that the content will not be continued to be offered in the same, or at least very similar, packages. However, the point that we would like to stress here is that, even in the absence of copyright, journal publishers may still retain some degree of market power, and this may well influence the content that is made available.

Shavell's assumption that authors are interested in "readership" is convenient, and to a certain degree realistic. But it does not capture the real essence of what authors are interested in, or indeed the true relationship between specific journals and readership. If the pure count of the number of readers were in reality the only thing that authors were interested in, one might expect that they might favour simply uploading their papers to their own websites and allowing free access to them. Reliable counts could be kept of the number of downloads. Indeed, this actually does take place on websites such as SSRN, to which authors can upload content which becomes freely available should this be the author's preference. Why then would authors submit to journals? The reason is the following. Acceptance at a given journal gives the paper a stamp of quality that cannot be easily replicated by download counts of a voluntarily uploaded paper. The implied quality endorsement offered by journal publishing is likely far and away more important than a simple readership count as an incentive for scientific authorship. To illustrate, say an author had a given paper, and he could either have it published by journal A which has a known low subscriber base (perhaps it has a very high subscription price) but a very high academic esteem (perhaps because the acceptance standard is so high), or journal B with a lower perceived academic esteem but higher subscriber base. Almost without doubt, the author would choose the more esteemed journal to the greater read one, since this will be a more impressive CV inclusion, and would thus be a more important determinant for job promotions, wage increases, etc.

The point here is that not only is “readership” important, but so is some form of quality adjusted readership. Those few readers of a very highly esteemed journal are much more valuable than are the many readers of a journal with lower academic esteem. And if this is true, then authors will have a greater willingness to pay to get their papers published in high esteem journals than in low esteem journals.

Given that, the question then becomes whether or not journal esteem itself depends in some way upon copyright. For if it does not, then even in absence of copyright, high esteem journals can demand submission and publication fees from authors that are greater than the administrative and production costs implied. That is, high esteem journals might still be able to make a profit, and perhaps a good profit, in absence of copyright.

In reality, a switch from using subscribers to using authors as a base for generating revenue requires comparing the demand curve for content of potential subscribers with the demand curve for journal space of potential authors. Again, while it is not clear which might be the more lucrative demand curve to work with, it is certainly relevant that in the current copyright regime, many journals (indeed, most journals, and certainly almost all top-tier journals) clearly consider that the subscriber based model is the more lucrative. However, it is also relevant that journals that currently work on the basis of subscribers for revenue generation do not also normally tap into the demand of authors for journal space, by charging a positive publication fee as well as the subscription fee. There appears to be no reason why both sources of revenue could not be used. Since authors are not charged for publication, we should perhaps understand that the quality (and perhaps the quantity) of papers that are offered to a given journal would be altered by the imposition of a publication fee. After all, journals do compete for papers, just as they compete for subscribers. The current business model works by making submission and, in the contingency of acceptance, publication largely free of charge, thereby allowing a journal the greatest possible set of papers to choose from. Charging publication fees does not work in a copyright regime as it has the potential to seriously hamper the supply of the essential factor for journals to survive in the subscription market.

But this would all change if the subscription market were to disappear with the elimination of copyright in scientific work. If all journals had to charge for publication, then the only bases upon which they would compete is the price charged for publishing and the perceived esteem gained from publishing in each particular journal. In such a world, it would still be expected that there would be differential esteem perceptions over journals, and thus differential publication fee schedules, and therefore, a clear ability for profit in some journals.

McCabe and Snyder (2005) provide an interesting analysis of the possible relationship between open access and academic journal quality. The main thrust of

the argument is that, if journals do charge for publication, then they might accept papers for publication that they otherwise would not, simply in order to get the publication fee. In as far as doing so reduces the perceived quality of the journal, and if the publication fee is in fact an increasing function of the quality of the journal, then the optimal strategy would equate at the margin the benefit of publishing a paper (the fee thereby earned) with the costs of doing so (the reduction in the fee that can be charged to all accepted papers). McCabe and Snyder show that an appropriate division of author fees between submission and acceptance mitigates the problem of the possible quality degradation of open access journals.³

In short, it is important to fully consider how the journal production and distribution model affects the actual content that they provide. If both forms of business model (subscriber based and open access) were to provide the same content, then elimination of copyright might well be the more favourable option. But if the content of journals would suffer from a universal movement to open access, then the recommendation for elimination of copyright on scientific works becomes much weaker.

2.1.1. *Hard-print versus online.* Another possible problem facing the argument of elimination of copyright is the question of how journal content would be provided – will hard print survive, or will the only form of distribution be online? The arguments in Shavell, and indeed in most of the literature on open access journals, tends to suggest that under the open access business model the only form of production would be online. That is, hard-print of journals would disappear in a purely open access world. Indeed, the very essence of the social gains that are available under an open access model of journal distribution lie in online distribution, with the corresponding marginal access cost of zero. Thus, as we can see in the current world, open access journals are (almost always) purely online, with hard-print journals only in the subscriber market. However, what would happen if all journals were made to be open access by an elimination of copyright in the material they publish?

If there were no copyright, then clearly it is true that any competing supplier can simply take the articles published by a first publisher, and re-package and re-supply them. In a purely online world, the cost of taking the papers for re-publication is zero, and indeed the costs of re-packaging and re-supplying is also virtually zero. Thus, by making the initial content available as online digital files, the first publisher necessarily makes life cheap for any possible competitor. Might it not be the case then that if there were no copyright in journal material the initial publishers might avoid online publication outright, in favour of hard-print only? In

³In a related paper, McCabe and Snyder (2006) show that both open access and subscriber based business models can emerge as equilibrium configurations. Thus, it is not true that one is always necessarily better than the other in any well defined sense.

a hard-print world, it becomes costly to copy and re-package, and yet the output can be made available to readers at a price only equal to marginal cost, since there is no copyright. Any fixed costs of publication faced by competing publishers could not be recovered. Thus, if the initial publisher were to move offline, charging the costs of publication to authors, then it is not at all clear that the journal market would indeed become perfectly competitive. Indeed, so long as the initial publisher were to sell the hard-print journals at a price that is equal to the marginal cost of reproduction, then there is no reason why a subscriber base should not exist, as copying would be ruinous.⁴ Then, the only costs that would need to be recovered from authors are the fixed costs of publication, although of course, higher quality journals might be able to demand an even higher publication fee.

Such a scenario would be rather disastrous in terms of social welfare. The principal benefit lies in online access of journal content, not in moving back to hard-print only. In order that the elimination of copyright be socially beneficial, we require that online access not be hampered. Thus it is necessary to ensure that, should copyright be eliminated, the publishers will not revert back to hard-print only in order to secure a market advantage. To the extent that publication costs for hard-print are higher than for online, if publishers were to revert back to hard-print in order to attempt to retain their market position, then the elimination of copyright would in fact be a social drain.

2.2. Effects on Universities.

2.2.1. *Impact of Open Access on Highly-ranked Economics Departments.* In this section we shall address the following proposition.

Proposition 1. *Universal open access may be detrimental to highly-ranked Economics departments.*

The intuition behind this proposition is the following. On the one hand, within a copyright regime with subscription fees for academic journals, economics departments are likely to subscribe for the same standard set of highly-ranked economic journals, such as the *American Economic Review*, *Econometrica*, or the *Quarterly Journal of Economics*. Furthermore, the subscription fees for these journals will typically not depend on the number of publications made by authors affiliated with a certain department. Hence, the costs of access to academic information are likely to be the same for each department for a given set of journals. On the other hand, within an open access regime the costs of access to academic information would be lower as compared to the copyright regime. For instance, assume access costs to

⁴It is also true that in a hard-print only world the initial publisher enjoys a first mover advantage, since copying from hard-print is not only financially costly, but it is also time-costly.

academic information to be zero as subscription fees drop to zero.⁵ However, total costs of publication for a given department i increase if the number of publications by authors affiliated with department i increases.⁶ This suggests that economics departments that are highly-ranked with respect to the number of publications by authors affiliated with the department benefit less from an open access regime than lower-ranked departments.⁷ In fact, depending on the publication price p and the number of publications a_i an open access regime may even be detrimental to a highly-ranked department i . However, there may also be a sufficiently low publication price p_i^* for which *ceteris paribus* economics department i will be indifferent between the open access and the copyright regime. Note that for $p_i^* + \varepsilon$ department i will prefer the copyright regime over the open access regime.

Consider a world with D economics departments i . Furthermore, consider a given set of top academic economics journals, concretely *American Economic Review*, *Econometrica*, *Quarterly Journal of Economics*, *Journal of Political Economy*, *Review of Economic Studies*, *International Economic Review*, *Journal of Economic Theory*, and *Review of Economics and Statistics*. Let s denote the average institutional annual print subscription plus an electronic site license per journal under a copyright regime. Furthermore, let S_P denote the total institutional annual print subscription plus an electronic site license and S_E the total institutional annual electronic site license without a print subscription. We assume that each economics department i has subscribed to each of the n journals. \hat{a}_i denotes the total number of publications by authors affiliated with department i . Furthermore, let a_i denote the number of publications by authors affiliated with department i adjusted for co-authorship.

Figure 1 illustrates and compares the copyright scenario with the open access scenario for the case of 5 hypothetical economics departments. We assume revenue neutrality, that is total revenue R generated by the publishers under copyright equals total revenue under open access. For a given average subscription fee \bar{s} each economics department has total subscription costs of $n\bar{s}$ (as given by the dotted horizontal line in Figure 1) in a world with copyright. In contrast, under open access, total publication costs of department i depend on the number of adjusted publications, a_i , and the publication fee p . More specifically, for a given publication fee \bar{p} department i has total publication costs of $\bar{p}a_i$ as shown in Figure 1.

To illustrate, Department 1 which is assumed to have the highest number of publications by affiliated authors adjusted for co-authorship will have the highest

⁵We assume that submission fees for authors are the same under both scenarios.

⁶We assume that co-authors equally share the publication fee if a joint paper is published.

⁷So far, we have not considered the positive reputation effects on a department that typically increase if the number of publications by authors affiliated with the department increases.

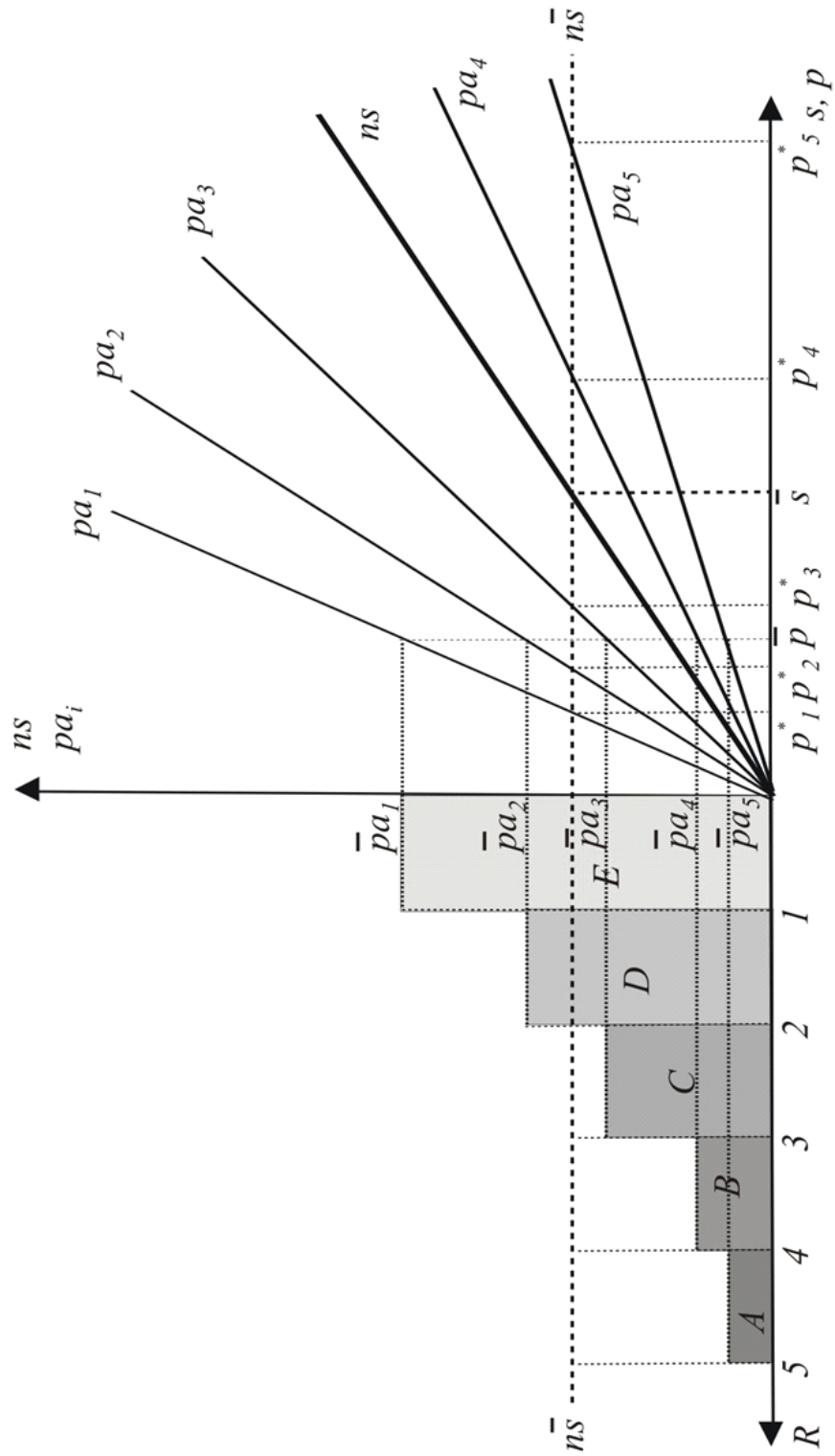


FIGURE 1. Comparison of Copyright with Subscription Fees and Open Access with Publication Fees for 5 Economics Departments under Revenue Neutrality of Publishers

total publication costs under an open access regime as given by $\bar{p}a_1$ on the vertical axis.

Under copyright, the publishers' total revenue equals $5n\bar{s}$ in this example. Under open access, total revenue is given by $\sum_{i=1}^5 \bar{p}a_i$ for a given publication fee \bar{p} . Graphically, total revenue under open access is given by the sum of the grey-shaded areas A , B , C , D , and E in Figure 1. Furthermore, p_i^* on the horizontal axis denotes the cut-off price for which *ceteris paribus* economics department i is indifferent between the open access and the copyright regime, that is $p_i^*a_i = n\bar{s}$. For instance, the highest-ranked department in terms of adjusted number of publications, Department 1, is indifferent between the two regimes at a relatively low price, p_1^* , whereas the lowest-ranked department, that is Department 5, is indifferent between the two regimes at a relatively high price, p_5^* .

2.2.2. *Empirical Evidence.* Table 1 provides information with respect to the institutional annual subscription fees of eight top-ranked economics journals.⁸

Table 1: Institutional Annual Subscription Fees, 2009, in US \$

	print plus site license	site license only
American Economic Review ⁹	120	95
Econometrica	550	500
International Economic Review	525	478
Journal of Economic Theory	8,528	5,405
Journal of Political Economy	1,050	934
Quarterly Journal of Economics	508	457
Review of Economics and Statistics	445	400
Review of Economic Studies	460	418
Total	12, 186	8, 687

Table 2 provides data with respect to the number of publications in eight top-ranked economics journals by authors affiliated with the economics department of a selection¹⁰ of the leading 186 institutions based on Heck et al. (2009),¹¹ who gathered data from the eight top-ranked economics journals – as shown in Table 1 – with respect to authorship of articles published from 1991 to 2005. Furthermore,

⁸We obtained the information from the journals' websites.

⁹An American Economic Association (AEA) membership includes subscriptions to 7 journals including the *American Economic Review*. The total annual subscription fee for the seven AEA journals is \$420 (only print subscription), \$840 (print subscription plus an electronic site license), and \$665 (electronic site license without a print subscription), respectively.

¹⁰The full list of 186 institutions is available from the authors by request.

¹¹See Rupp and McKinney (2002). See also Kalaitzidakis, Stengos and Mamuneas (2003) for a worldwide ranking of economics journals and institutions. See also Coupé (2003).

Heck et al. (2009) provide a ranking that adjusts for co-authorship originating from different institutions.¹²

Table 2: Publications of Academic Institutions in 8 Top Economics Journals (1991 to 2005), total of 517 institutions.

Rank	Institution	Adjusted appearances a_i	Cut-off publication fee p_i^*
1	Harvard	168.70	72.23
2	Chicago	151.08	80.66
3	MIT	132.62	91.89
4	Northwestern	123.17	98.94
5	Penn	121.82	100.03
6	Princeton	106.83	114.07
7	UC Berkeley	103.62	117.60
8	Stanford	95.25	127.94
9	NYU	89.50	136.16
10	Yale	77.95	156.33
11	Michigan	61.25	198.96
12	Wisconsin	60.95	199.93
13	UCLA	60.42	201.69
14	Columbia	56.92	214.09
15	Minnesota	50.87	239.55
16	LSE	49.50	246.18
17	UC San Diego	47.37	257.25
18	Cornell	46.12	264.22
19	Boston U.	46.03	264.74
20	Brown	45.92	265.37
50	UC Davis	22.50	541.60
75	Tokyo	12.83	949.81
100	VPI	8.92	1,366.68
150	South Carolina	4.83	2,522.98
186	Clark	2.20	5,539.09
331 institutions with less than 6 publications (2.20 adjusted appearances)			

Source: Heck, Zaleski and Dressler (2009), Table 1, p. 2192ff, and own data and calculations

Figure 2 shows the cut-off publication fees for a selection of 186 universities whose affiliated academics published at least 6 articles (unadjusted count) in the

¹²In contrast to Heck et al. (2009), we rank institutions according to the adjusted number of appearances. Furthermore, we added the cut-off publication fees for adjusted and unadjusted count.

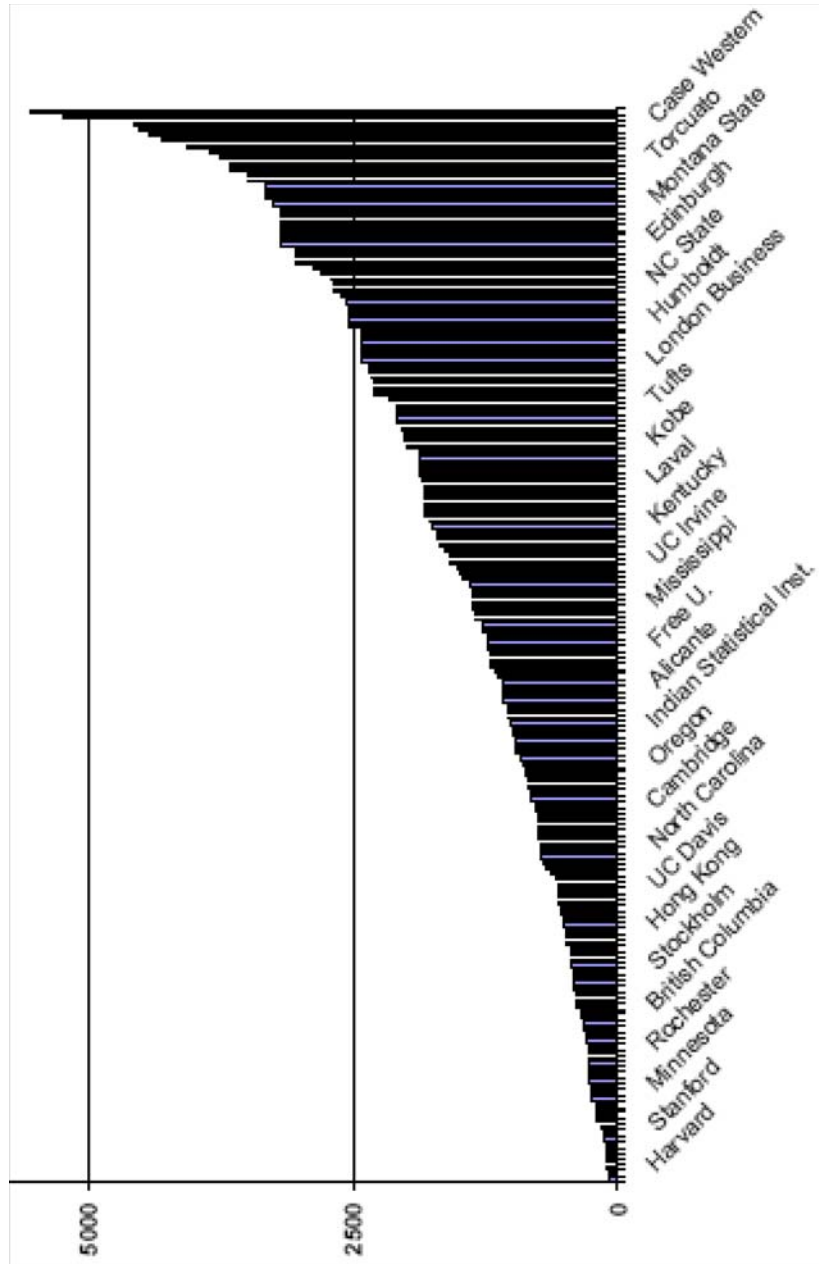


FIGURE 2. Cut-off Publication Fees for 186 Universities

top eight economics journals from 1991 to 2005. We obtain the cut-off publication fee for institution i in the case of print subscription plus an electronic site license and adjusted count as:

$$p_i^* = \frac{S_P}{a_i}$$

where $S_P = 12,186$ is the institutional annual print subscription plus an electronic site license in US\$ as given by Table 1. Let p denote the actual publication fee charged by open access journals.¹³ If $p = p_i^*$, department i will *ceteris paribus* be indifferent between an open access regime and the current copyright regime with subscription fees. If, however, $p > p_i^*$ ($p < p_i^*$), department i will prefer the copyright regime (open access regime) over the open access regime (copyright regime). Nevertheless, note that Table 2 shows the cut-off publication fees only for institutions whose affiliated academics published at least 6 articles in the top-tier journals. For the other 331 universities with less than 6 publications the cut-off publication fee will be even higher than \$5,539.09.

Figure 2 shows the cut-off publication fees for 186 universities whose affiliated academics have at least authored six papers in one or more of the top-tier economics journals, i.e. at least 2.20 adjusted counts. To illustrate, the top university in terms of adjusted counts is indifferent between copyright and open access at a publication fee of \$72.23 per publication. Nevertheless, note that for 331 universities – alongside the 186 universities shown in Figure 2 – the unadjusted number of appearances is less than six publications. However, if these universities were also taken into consideration, the general intuition would be the same but the cut-off publication fee for the least-productive university in terms of publications will be significantly higher. For instance, assume that the adjusted number of appearances for the least-productive university were to be 1.0. Then the cut-off publication fee would be \$12,186. Notably, an open access regime is likely to be beneficial for all other institutions that consume information from academic journals but are likely not to publish at all in those journals, such as industrial organizations, or some governmental as well as non-governmental agencies.

However, according to King and Alvarado-Albertorio (2008), Table 7, p. 264, publication fees for authors charged by major open access journals range from \$1,250 to \$3,000 per article.¹⁴ For instance, assume that the constant publication price is $p_1 = 1,250$. In this case, the top 95 universities – as given by Table 2 and ranked by adjusted number of appearances – would be worse off within an open access regime whereas 422 universities would prefer an open access regime over the current copyright regime with subscription fees. Furthermore, for $p_2 = 2,000$ ($p_3 = 3,000$), an open access regime would be detrimental to the top 128 (159) universities and beneficial to the 389 (358) other universities.

However, let us now analyze the distribution of publication output in more detail. Figure 3 suggests that the share of the top institution on overall publication

¹³Here, we assume that open access journals charge the same publication fee. As an idea for further research we suggest to analyze the case of heterogeneous open access journals in terms of publication fees.

¹⁴See also Shavell (2009) on p. 23.

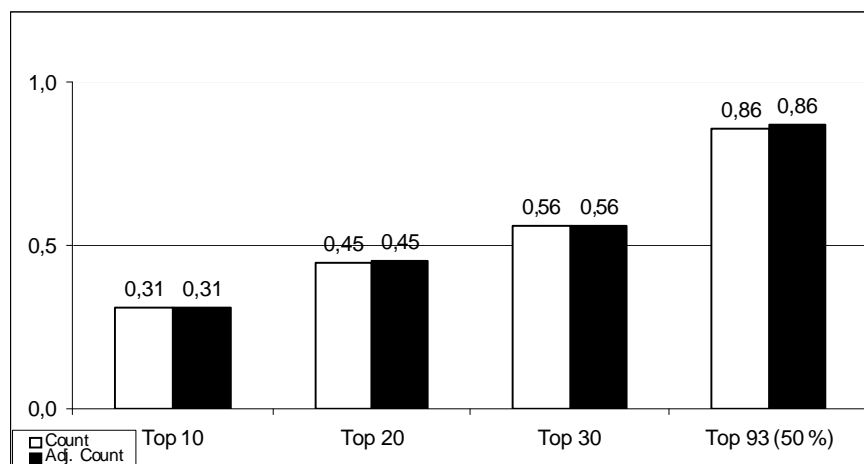


FIGURE 3. Share of Top Institutions on Overall Publication Output of 186 Institutions

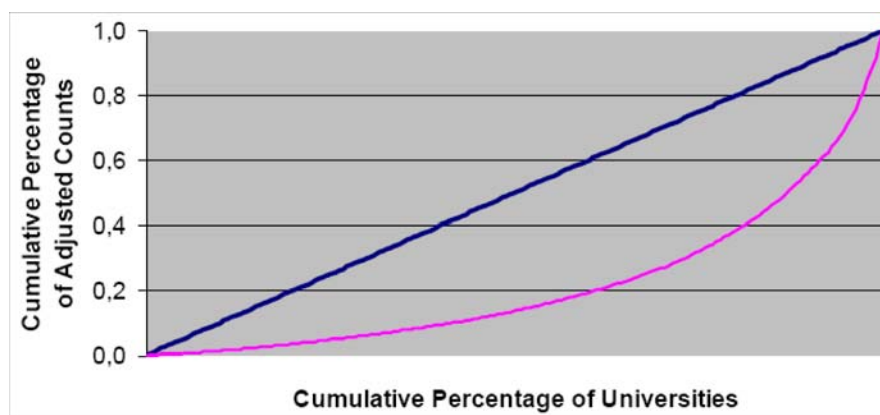


FIGURE 4. Lorenz Curve for Publication Output (186 Universities, adjusted counts)

output – as measured by both adjusted counts as well as unadjusted counts – is approximately the same. Figure 3 also suggests a relatively unequal distribution of publication output. By analyzing the Lorenz curve¹⁵ and by calculating the Gini coefficient¹⁶ we can address this issue.

In particular, Figure 4 shows the Lorenz curve for publication output – as measured by adjusted number of appearances – of 186 universities in 1991–2005. Let

¹⁵See Lorenz (1905).

¹⁶See Gini (1921). See also Gastwirth (1972).

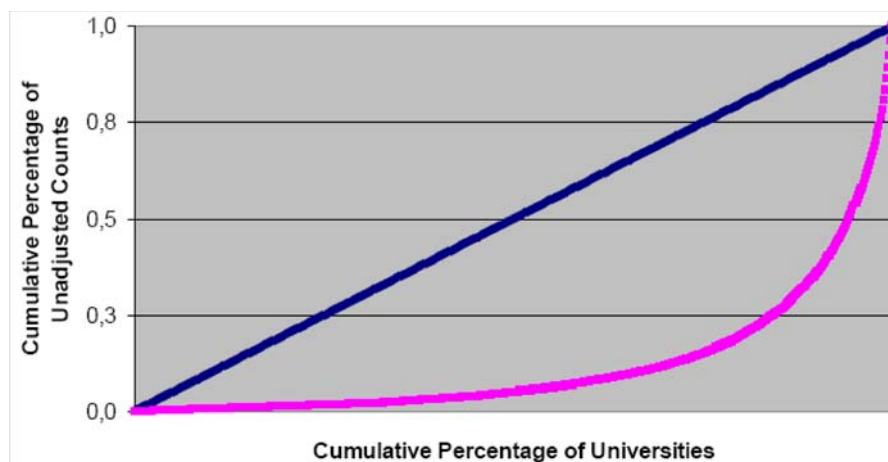


FIGURE 5. Lorenz Curve for Publication Output (517 Universities, Unadjusted Counts)

us now measure the distribution of publication output by calculating the Gini coefficient. Recall that the Gini coefficient can range from 0 to 1. In our case, a Gini coefficient of 0 would correspond to perfect equality in terms of publication output as measured by adjusted number of appearances on the one hand. In particular, a Gini coefficient of 0 would indicate that the percentage of the total publication output would be the same for each economics department. On the other hand, a Gini coefficient of 1 would correspond to perfect inequality in terms of publication output as measured by adjusted number of appearances. In other words, the percentage of the total publication output for one department would be 100 percent whereas 185 other departments would not contribute at all to overall publications. However, we obtain a Gini coefficient of $G_{186} = 0.56$ in this case. This result suggests a relatively high inequality in terms of publication output as measured by adjusted number of appearances. As we will see in the following, this inequality is even stronger if we analyze the publication output of 517 universities in 1991–2005 which is depicted in Figure 5.

More specifically, Figure 5 shows the Lorenz curve for publication output – as measured by unadjusted number of appearances¹⁷ – of 517 universities in 1991–2005. The corresponding Gini coefficient is given by $G_{517} = 0.75$ in this case. This result suggests a very high inequality in terms of publication output as measured by unadjusted number of appearances.

¹⁷We acknowledge that the adjusted number of appearances is a more suitable measure for publication output than the unadjusted number of appearances as co-authorship is taken into consideration. Nevertheless, Figure 3 suggests that the unadjusted number of publications is a good proxy for the adjusted number of publications when we analyze the share of universities on overall publication output.

2.2.3. *Implications.* The simple model and the preliminary empirical evidence that we analyzed in the previous sections have some interesting implications:

Open access publishing with publication fees for authors – as compared to a copyright regime with subscription fees – is likely to lead to differential effects over economics departments. More specifically, the lowest-ranked economics departments as measured by adjusted publication counts are likely to benefit from open access publishing with publication fees as the institutional annual subscription fees they save under open access exceed total publication fees. In contrast, an open access regime may be detrimental to highly-ranked economics departments as total publication fees are higher than the saved total subscription fees. The high inequality in terms of publication output – as measured by unadjusted number of appearances and expressed by a relatively high Gini coefficient – is decisive in this respect. Stated differently, publication fees under an open access regime would “punish” research active institutions which – under the assumption that new academic information in economic journals is socially beneficial – would clearly not be a desirable outcome. This result suggests that one may think about alternative pricing schemes for open access publishing alongside publication fees.

One option might be the following, based on the economics of insurance.¹⁸ Instead of understanding the current subscription fee as a price for readership access to information, we can use it as a price that allows authors access to journal space. Imagine that all journals joined together in a combined set, and the content from those journals were offered free of charge to readers. But departments are charged to be members of an “author’s union” or “mutual”, where membership of the mutual allows free access to publication space in the set of journals, subject of course to the quality control of the journals themselves. In that case, we can consider that the fee payment is a premium that is paid *ex ante* to a mutual organization for full insurance against the “risk” of members of that department publishing in the combined set of journals. The intuition behind this concept is the following. Under this new pricing system, publishers would charge all academic institutions an *ex ante* premium that insures them against the risk of paying publication fees when papers of affiliated authors are published in one of their journals. Stated differently, if an institution i pays this premium *ex ante* it will not have to pay any publication fees *ex post* no matter how many papers of authors affiliated with institution i are published, since the “risk” of having a paper accepted has been fully insured. As compared to open access publishing with publication fees this mechanism is likely to be beneficial for productive universities with high research output. More specifically, assuming that all universities were charged the same *ex*

¹⁸For instance, see Watt (2007) who addresses the question of how the economics of insurance could be applied to the analysis of intellectual property protection mechanisms.

ante premium, it would lead to a cross-subsidization of productive universities by less productive universities.

Nevertheless, the question arises as to whether both productive as well as less productive universities would have an incentive to pay the premium and become a member of the mutual. At a constant premium, productive universities are benefited as compared to a traditional open access system in which they are charged the full publication costs for each paper published. Un-productive universities on the other hand are made less well off by a constant membership premium. Thus, we might envisage that unproductive universities prefer not to become members of the mutual, and prefer to suffer the risks of publication fees. If this were to happen, then the membership fee would have to increase, leading to the withdrawal of further less productive universities, and so on.

The easiest way to avoid that problem is simply to include a policy that no papers from authors who do not belong to a member institution can be submitted to any member journal. Under such a system, institutions that do not become members would never be able to attract researchers anyway, and so it would be logical that all institutions would become members. This is logical since currently, all institutions do pay the subscription fee for readership access to journal content, and the only reason why they would do that is to favor the research outputs of their researchers (since access to published articles is clearly a strong input to research activity). Thus there is no reason to suppose that they would not continue to pay the same fee, albeit now an access to publishing fee rather than an access to readership fee, for what is essentially the same outcome.

If that is so, then the membership premium could remain at the level of the current subscription fee, leaving no member institution either better or worse off in the publication phase. The combined set of journals would also be indifferent, as it would receive the same revenue (although there might be some differences in opinion between them as to how this revenue should be distributed among them). Of course, the fee could also be set somewhat lower, depending on how the journal mutual is set up, but clearly any reduction in the overall revenue received by the journals is simply a transfer from them to the set of institutions that offer authors and that read journal content. In short, a publishing access fee that is less than the current readership subscription fee would imply a direct reduction in journal profit, and a direct benefit in the same amount to the institutions paying the fee.

Even if membership of the mutual were not taken as being a necessary condition for submission of a paper to a journal, and so some universities might prefer to save on the insurance premium and run with the individual risk of publication, the fee set for publication in such an instance can always be set such that the mutual members are not adversely affected by the publication of the paper in question.

It is also true that the free-rider problem that could emerge in such a scenario is mitigated to a certain extent by the fact that even low productivity universities benefit from reading high quality journal content. If they were to free ride, by not becoming a member of the publication mutual and yet continuing to read the journals free of charge, they should understand that the quality and quantity of papers that they have access to might be diminished. Stated differently, less productive universities would have an incentive to pay the premium and to cross-subsidize the more productive universities as they benefit from their research efforts and thus have an incentive to avoid the breakdown of the market for journals.

To sum up, under the assumption that publishers charge universities an average premium under open access publishing that equals the average subscription fee under a copyright regime, publishers are likely to make the same profit under both scenarios if the free riding problem mentioned above can be successfully mitigated.

Finally, in contrast to open access publishing with *ex post* publication fees, the insurance mutual system would not reduce the incentives of productive universities to produce new academic information. It would rather increase their incentives to publish at the margin, as it reduces the marginal publication cost to zero.

3. CONCLUSION AND IDEAS FOR FURTHER RESEARCH

We re-consider some of the modelling assumptions in the Shavell paper in order to analyze the question as to whether or not the intuition favouring elimination of copyright might be affected by the use of alternative assumptions.

First, Shavell's assumption that "scholarly esteem" is proxied by the amount of readership alone might well be debatable. More specifically, exposure and not the amount of readership alone appears to be a good proxy for scholarly esteem. To illustrate, an author who may publish a paper either in an esteemed journal with relatively few readers or in a less esteemed journal but with a greater read would tend to choose the more esteemed journal to the greater read one. This will be a more impressive CV inclusion, and would thus be a more important determinant for job promotions, wage increases, etc. We therefore suggest extending Shavell's model in this respect by analyzing the impact of quality-adjusted readership on scholarly esteem.

Second, we propose to address the question as to whether journal esteem depends in some way upon copyright. For instance, assume that the elimination of copyright has a negative impact on journal esteem as McCabe and Snyder (2005) suggest. In this case, we would have to consider this negative effect on publishers, scholars, and academic institutions when analyzing the question as to whether the abolishment of copyright would be socially optimal.

Both aspects the impact of quality-adjusted readership on scholarly esteem as well as the impact of copyright on journal esteem may have important welfare implications. To give an example, Shavell suggests that the abolishment of copyright – under the assumption that academics do not have to bear publication fees but the institutions they are affiliated with – should augment incentives to publish articles because “readership of articles would grow in the absence of copyright, and thus the esteem that authors would derive from publication would tend to increase” (See Shavell, 2009, p. 3). However, this result might not necessarily be true for the following reason. For instance, consider the (allegedly) extreme case that readership of an article grows whereas quality-adjusted readership decreases in the absence of copyright. Furthermore, suppose that journal esteem decreases in the absence of copyright. In contrast to Shavell’s result mentioned above, the esteem that scholars would derive from publication would rather tend to decrease in this case. Thus, the elimination of copyright may reduce the incentives to publish in this extreme scenario.

Another possible problem facing the argument of elimination of copyright is the question of whether – as most of the literature on open access suggests¹⁹ – under the open access business model the only form of production would be online. Stated differently, would hard-print of journals disappear in a purely open access world? More specifically, initial journal publishers may have an incentive to move offline in a copyright-free world in order to secure a market advantage by increasing reproduction cost of competing suppliers of scientific content. As such a scenario would be rather disastrous in terms of social welfare we require that online access not be hampered in a copyright-free world.

Furthermore, our analysis suggests that universal open access – at least in economics – may be detrimental to research institutions that have a relatively high publication output as total publication fees are likely to be higher than the saved total subscription fees. A high inequality in terms of publication output is decisive in this respect. As publication fees under an open access regime would “punish” research active institutions we suggest analyzing alternative pricing schemes for open access publishing alongside publication fees. More specifically, we propose a new pricing system based on the economics of insurance. Under this pricing scheme publishers would charge all academic institutions an *ex ante* premium that insures them against the risk of paying publication fees when papers of affiliated authors are published in one of their journals.

Finally, our empirical analysis is so far limited to a set of eight top-tier journals and one academic discipline (economics). We, therefore, suggest extending the

¹⁹Shavell, for instance, implicitly assumes an “unfettered access to academic works” in a copyright-free world (Shavell 2009, p. 4).

empirical analysis in two ways: First, one may empirically analyze publication output and authorship patterns in a larger set of economics journals. Second, one may also take into consideration a larger set of academic disciplines.

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