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**Copyright & endogenous market structure:  
A glimpse from the journal-publishing market**

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# Copyright & Endogenous Market Structure: a Glimpse from the Journal-Publishing Market<sup>1</sup>

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**ABSTRACT:** This article explores the journal publishing industry in order to shed light on the overall economic consequences of copyright in markets. Since the rationale for copyright is among others to promise some market power to the holder of the successful copyrighted item, it also provides incentives to preserve and extend market power. A regular trait of copyright industries is high concentration and the creation of large catalogues of copyrights in the hands of incumbents. This outcome can be observed as the aggregation of rights and is one of the pivotal strategies for obtaining or extending market power, consistently with findings in other cases. Journal publishing is no different in this respect from other copyright industries, and in the last decade has experienced a similar trajectory, leading to a highly concentrated industry in which a handful of large firms increasingly control a substantial part of the market. It also provides a clear example of the effect of copyright dynamics on market structure, suggesting that a different attitude should be taken in lawmaking and law enforcement.

**Keywords:** copyright and market power, endogenous market structure, journal-publishing industry  
**JEL codes:** D40, O34, O33, L12, L69

## 1. Introduction

The economic research on copyright issues in recent times has been intense, boosted by copyrighted products' greater weight in the markets and by the higher chance of infringement brought about by ICT and digital technologies<sup>2</sup>. However, most of the contributions so far have treated the legal regime governing the “market for the expression of ideas” as a sort of exogenous factor that simply

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<sup>1</sup> The author is greatly indebted to Piero Cavaleri, Michael Keren, Francesco Silva and Vittorio Valli for drawing their attention to the scientific publishing market and raising some of the key questions, to participants to UC Berkeley Serci conference and to Matteo Migheli for research assistance. This work is part of the CRT-Alfieri study on the law and economics of scientific and academic publishing. The usual disclaimer applies.

<sup>2</sup> The birth in 2004 of this journal focusing exclusively on the economics of copyright is a clear example of the relevance of the topic in academic debate.

characterizes the property framework needed to make trade possible and provides some incentive to the owner for creating and circulating new bits of knowledge<sup>3</sup>.

Still, if one tries to observe the real economic life of copyright within markets, another interesting feature emerges: copyright plays a pivotal role in endogenously shaping the market structure as it provides a number of economic incentives far exceeding the simple reward for creative activities.

Very often, the outcome of these forces is a drift toward industry concentration and a lessening of competition with an impact on efficiency. Another feature is the industry's recurring split into two distinct segments: one in which incumbents with large market shares enjoy substantial market power by controlling large catalogues of copyrighted items, and one to which the other firms are relegated and left exposed to competitive pressure. Substantial entry barriers prevent movement from the latter to the former, thus preserving the persistence of market power.

From this viewpoint, the journal publishing industry investigated in this article can be seen as a descriptive example of the evolutionary trajectory of copyright industries. Over the centuries, and with a substantial acceleration in recent decades, the original goal of fostering creativity—shared equally by copyright and scientific journals—has been taken over by rent-seeking behaviors largely aimed at creating and preserving market power.

The likely consequence in this domain affects the circulation and accessibility of scientific knowledge and research. This concern, already experienced to some degree as various research libraries find themselves unable to afford the same variety of titles because of increased subscription rates, has raised the alarm of scholars and research institutions that seriously fear how the industry's current organization will affect their core activity. Some action has been taken accordingly, although the outcome is still uncertain.

Aside from the specific issue of science, these remarks suggest that we pay closer attention to the endogenous effects of copyright on market structure and the production of knowledge, which is by nature a cumulative process requiring broad access to previously created ideas. Proper consideration of these aspects might provide important policy guidelines to lawmakers.

This article is organized as follows: Section 2 presents an overview of the current trend in journal publishing, while Section 3 traces the main characteristics of copyright and scientific journals and emphasizes their common features. Section 4 describes the progressive transformation of the industry; Section 5 provides further insights into the endogenous role of copyright in shaping the market, including with reference to economics journals. Section 6 summarizes and comments on the main findings, and Section 7 concludes.

## 2. Background

The scientific debate on the economics of scholarly publishing recently gained momentum due to the remarkable increase in prices experienced in the last two decades. According to the Association of Research Libraries (ARL), a non-profit organization of 125 research libraries in North America including many academic libraries<sup>4</sup>, between 1986 and 2004 the expenditure for serials rose by more than 273% and the average price of a serial by more than 188%, compared with a 73% increase in the consumer price index (CPI; see Figure 1). These statistics are merely averages; the figures become even more dramatic—in excess of +600%<sup>5</sup>—for selected fields of research.

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<sup>3</sup> Most of the debate has been focused on the creation incentive provided by copyright and on whether copyright infringement reduces profits and social welfare. For a broad survey on the economics of copyright law see Towse, Handke & Stepan (2008).

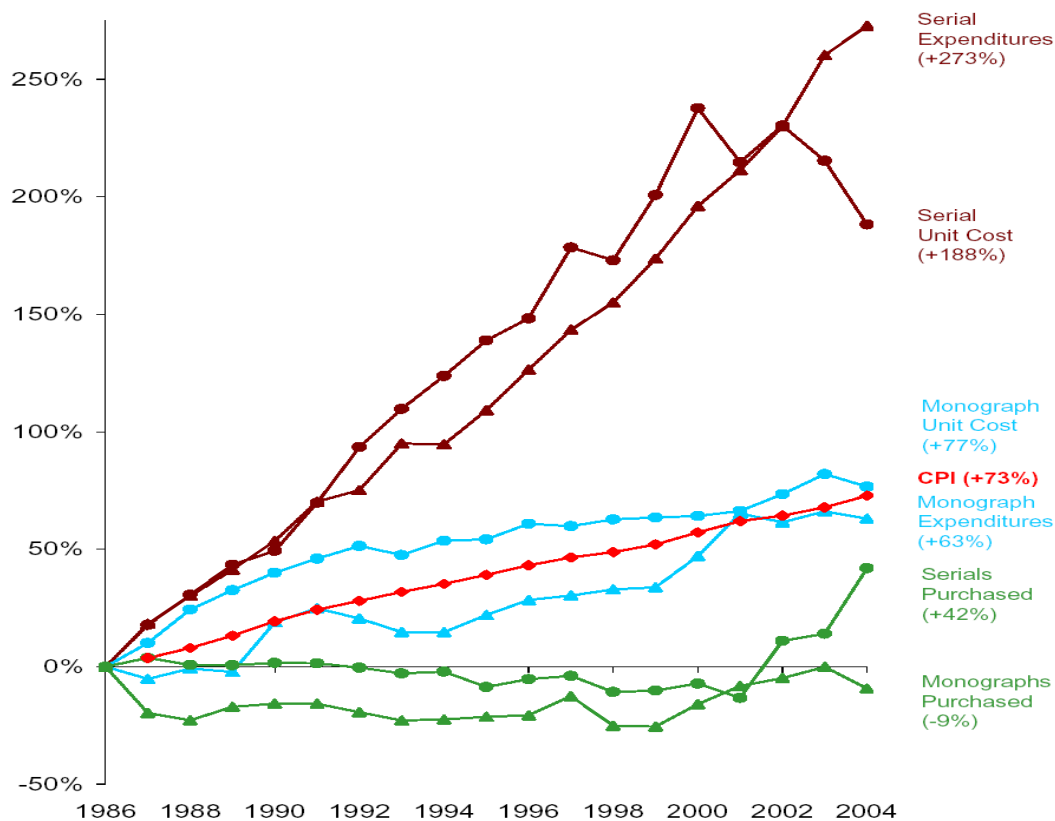
<sup>4</sup> Ref. <http://www.arl.org/>

<sup>5</sup> Edlin & Rubinfeld (2004) report that between 1984 and 2001, the price of physics and chemistry journal subscriptions rose by 615%.

Technological changes cannot be the main reason for the dramatic increase, as they equally concerned the publication of books, whose average price rose by just 63% (less than the CPI, thus implying some reduction from technological change, as expected); while total expenditure rose by just 77% (pratically mirroring the CPI trend).

While the data above concern the US market, a similar trend took place throughout the world (Dewatripoint et al., 2006) to the bane of libraries, whose budgets were crushed by the effort to maintain the same assortment of journals essentially at the expense of books and other items (Parks, 2001; McCabe, 2002). Since then, the situation has become even more dramatic as budget cuts at academic institutions in many countries have made it difficult to maintain expenditure.

**Figure 1: Book and Serial Expenditures in ARL Libraries, 1986-2004**



Source: *ARL Statistics 2003-04*, Association of Research Libraries, Washington, D.C.

On the other side of the market, the buyers—mainly scholars and research institutions by means of libraries, who are also the main providers of input for scholarly publications—have reacted severely and sometimes tried to fight back. A number of scientific associations and their members have simply distanced themselves from publishers in order to stop legitimizing their commercial conduct; in some cases they have launched competing publications.

In December 2006 the editors of the *Journal of Topology*, an international journal of mathematics founded in the late 1950s, resigned from their positions in reaction to the new publisher’s pricing policies, claiming that these would “[have] a significant and damaging effect on *Topology’s* reputation in the mathematical research community”<sup>6</sup>.

A comparable position has been endorsed by the European Economic Association, which in 2002 decided to found a completely new organ, the *Journal of the European Economic Association*, after having invested 23 years in building up the *European Economic Review (EER)* that was

<sup>6</sup> Letter by the editors of *Topology*, August 10, 2006.

published commercially. However, it is interesting to note that despite this divorce (which is also scientific as the board and editors resigned), the *EER*, through inertia, still enjoys a significant reputation that is keeping it safely near the top of the ISI ranking<sup>7</sup>.

In other cases, well known research institutions have taken a clear position against this state of affairs: the Senate of Stanford University, for instance, expressly lamented that many journals were becoming “disproportionately expensive compared to their educational and research value” and suggested that researchers “not ... contribute articles or editorial or review efforts to publishers and journals that engage in exploitive or exorbitant pricing”<sup>8</sup>. Similar positions have been taken by other major US educational institutions, sometime fostering the countervailing publication of new journals. That has been the aim of Berkeley Electronic (BE) Press, founded in 1999 by Berkeley professors and intended, as stated on its website<sup>9</sup>, to publish high quality peer-reviewed journals “at sustainable prices” (very often free after registration to individual readers) and provide technologies “to help the academic community produce, archive and disseminate scholarly work.”

A similar aspiration drives the Public Library of Science (PLOS), a project run by a non-profit organization of scientists and physicians “committed to making the world's scientific and medical literature a freely available public resource” that has so far published seven Open Access (OA) (i.e. not for payment) journals<sup>10</sup>. In other fields such as economics, a number of selective journals have been launched with the cooperation of scientific associations. Two examples are the *European Journal of Comparative Economics*, published on behalf of the European Association for Comparative Economics Studies, and this journal, which is managed by the Society for Economics Research on Copyright Issues<sup>11</sup>.

The Open Access philosophy has also been fully endorsed by one of the most distinguished research institutions in the US: the National Institutes of Health (NIH). Since December 2007, according to the “NIH mandate” signed by President Bush, that institution has “require[d] that all investigators funded by the NIH submit or have submitted for them to the National Library of Medicine's PubMed Central an electronic version of their final, peer-reviewed manuscripts upon acceptance for publication, to be made publicly available no later than 12 months after the official date of publication: Provided, That the NIH shall implement the public access policy in a manner consistent with copyright law”<sup>12</sup>.

However, these feeble attempts at countermeasures have so far failed to change the overall state of affairs, whose inefficiencies are clear. First, research institutes in general and universities in particular are spending significant resources to buy the intellectual output of their own uncompensated researchers. By leading to a wasteful duplication of costs, this increases the cost of research.

Next, because ICT allows the cheaper production and delivery of research results, the price increase is based on market power. Since a substantial part of the costs per subscriber is fixed, the concurrent increase in potential demand would have permitted a reduction in prices had the market been competitive. As we have understood since Arrow (1962), the increase in the cost of access to knowledge has a serious negative effect on downstream creative activities (Ramello, 2005a). Furthermore, while in the past the market power enjoyed by the publisher was significantly attenuated by provisos such as the “fair dealing” exceptions of copyright law, which essentially provided a spill-over space of knowledge for non-paying users (Royal Society, 2003), these are no

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<sup>7</sup> This explanation is available at <http://www.eeassoc.org/index.php?page=14>

<sup>8</sup> Available at [http://facultysenate.stanford.edu/2003\\_2004/reports/SenD5540\\_serials\\_crisis.pdf](http://facultysenate.stanford.edu/2003_2004/reports/SenD5540_serials_crisis.pdf)

<sup>9</sup> <http://www.bepress.com/>

<sup>10</sup> <http://www.plos.org/> The PLoS mission of building a public library of science includes “not only providing unrestricted access to scientific research ideas and discoveries, but developing tools and materials to engage the interest and imagination of the public and helping non-scientists to understand and enjoy scientific discoveries and the scientific process.”

<sup>11</sup> The former is available at <http://eaces.liuc.it> and the latter at <http://www.serci.org>.

<sup>12</sup> Ref. <http://www.nih.gov/>

longer effective in the digital domain. And advances in ICT, which are reducing the cost of disseminating information, seem paradoxically to be strengthening the hands of the oligopolists and leading to price increases.

### 3. Copyright and the journal-publishing market

Scientific journals and copyright have something in common: both are aimed at fostering the production and circulation of new knowledge. Journals provide authors with a powerful means of diffusing a newly created expression of ideas, which potentially extends their reputation as scholars. Indeed, publication allows the scientific work to be circulated much more widely than it could be in person, while enhancing the author's reputation by certifying the quality of the work through the process of publication itself, which is very often dependent on peer review (Boyer, 1947; Johns, 2000). On the whole, it supplies an indirect economic incentive as far as reputation can be converted into career advances, research grants and other concrete pecuniary benefits<sup>13</sup>.

Copyright, according to a standard justification, should do the same by giving authors the chance to reap the benefits of newly created copyrightable works. At the same time, it solves the puzzle of providing private incentive to invest in creative activities and of serving the public interest by promoting advances in knowledge (Ramello, 2005a; Rothen & Powel, 2007; Towse, Handke & Stepan, 2008).

Copyright and scientific journals appeared at nearly the same time, the late 17<sup>th</sup> and early 18<sup>th</sup> century, when European society was entering an intense period of transformation: the Enlightenment, which increasingly recognized the importance of authorial and inventive activity. At first, however, they bore little relation to one another, and the first two scholarly journals had a somewhat problematic relationship with copyright and its ancestors.

In France, the first scholarly publication was the *Journal des Sçavans* (later renamed *Journal de Savants*), which appeared in Paris on January 5, 1665 thanks to the considerable effort of the politician and learned man Denis De Sallo; it would soon become the focal point of national scientific and literary society (Boyer, 1947). It is also familiar to modern economists as it is there that Joseph Louis François Bertrand published his famous critique of the Cournot oligopoly in 1883.

It is worth noting that the popularity of this journal owed much to the flourishing number of pirated copies that were widely distributed in France, openly infringing the printing *privilegii* granted by the state which were the ancestors of *droit d'auteur*.

In England, the publication of the *Philosophical Transactions* by the Royal Society of London in 1665 was crucial to disseminating the work of many scholars, including Newton, Boyle, Leibniz, Cassini and Halley. In this case too, the venture was possible thanks to a royal exemption from the charter granted in 1557 by Philip and Mary Tudor to the Stationers Company, which for nearly 150 years gave it a heavily criticized monopoly on printing and publishing in England (Johns, 2000; Nicita & Ramello, 2007).

For a long time thereafter, the relationship between copyright and scientific journals was merely occasional; because many of the earliest journal publishers were learned societies and then academic institutions, copyright was licensed explicitly or implicitly to them, though it did not have a central role in the business. Nonetheless, this was the foundation of the model on which academic journals were later organized: the publisher acquires copyright over published papers, and in exchange invests the crucial resources in manuscript revision and formatting and in the printing and delivery of physical issues (Page, Campbell & Meadows, 1996).

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<sup>13</sup> As we will discuss later on, reputation is a pivotal element of scientific publication for journals as well.

#### 4. The transformation of the journal-publishing industry: key elements

As mentioned above, in the beginning these publishers were often scientific associations or universities. But this has been changing: commercial publishers have increasingly been entering the market by introducing new journals, at times on behalf of scientific associations or individual scholars, at times by acquiring existing titles. Over the years these dynamics have led to a significant concentration in the academic publishing industry, in line with what has happened in other copyright industries (Silva & Ramello, 2000; McCabe, 2002; Edlin & Rubinfeld, 2004; Nicita & Ramello, 2007; Ramello & Silva, 2008). As we have seen, the result of increasing concentration has been price growth far exceeding the rate of inflation and a substantial rise in costs.

To make matters worse, several commercial players have now adopted strategies of multi-part tariff pricing and bundling of the titles they own in all disciplines in an attempt to extract much of the buyers' surplus (OFT, 2002; Edlin & Rubinfeld, 2004). In general the fixed part, that plays the role of an admission fee, equals the cost of the printed items bought in previous years, while the variable part consists of the subscription to an online database, which is the preferred resource for many researchers. If an institution decides to unsubscribe from a number of printed journals, thus reducing the admission fee, a balancing mechanism has been set up that increases the variable part, thus preserving the total cost (Dewatripont et al., 2006). As an example, consider the case of an Italian middle sized university facing a large European publisher that has announced an increase in subscription rates for the three years 2009-2012 by about 20% for the “admission fee” (just over 6% annually) and by nearly 66% for the variable part, i.e., by over 17%, or one sixth per annum. This strategy is hard to counter, as the variable part of the tariff is less constrained and introduces a higher degree of uncertainty about the total future fee. Additionally, while bundling essentially provides a means of discriminating that raises producer profits and sometimes the social welfare, in the specific case of journal publishing—where some titles are subject to market power, as we shall see below—it offers incumbents a device for foreclosing the market to small players and newcomers.

Moreover, the slight though steady shift from the purchase of printed journals to admittance to databases is also transforming the accessibility of the resources in an intertemporal perspective. While printed journals, once acquired, become an asset that can be used in the future, access to a database is given only for the duration of the contract and hence introduces a higher uncertainty for the future, giving more power to the seller who has control over a broader catalogue of input.

The current state of affairs is leading to serious problems of access to research input by the scientific community, increasing concern for the future while already posing obstacles to the less affluent parts of the scientific community, particularly in low-income countries but also in the developed world (Nevo, Rubinfeld & McCabe, 2005). The publishers' strategies are presenting universities and research institutions with a difficult choice as to how to allocate their funds, at the very time when budgets are getting tighter (Parks, 2001). Last but not least, since publishers depend on the availability and exclusive control of copyright, they are somewhat contradicting the aim of fostering the production and diffusion of new knowledge.

Another feature that strengthens the market power of incumbents is the journal's reputation, which is a central element for attracting both authors and readers.

Journals are often ranked, and their ranking is roughly determined by the numbers of readers and citations. To attract good submissions a journal needs to build a reputation, a readership that will, at the least, browse its contents and read the relevant articles. Yet readers will spend time perusing a journal only if they are assured that they may find in it material that is worth their time. This is a chicken-egg problem: good papers raise the interest of readers, but they will not be submitted to a publication that fails to attract readers' interest (Spier, 2002; Cavaleri et al., 2009)<sup>14</sup>.

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<sup>14</sup> Reputation here is the pivotal element of differentiation and hence market power. However, “this reputation is much more complex in its formation than the reputation of most branded products, such as a Mercedes automobile, and it is

The audience of an academic journal, the set of its potential readers, is only indirectly affected by its price, which is usually borne by the library. These readers' time is a highly constrained resource and the time and attention they can allocate to scientific literature is limited. Most researchers read only the top journals in their wider field, plus a selected range of the journals in their area of specialization. Consequently, the top journals and a few specialized ones get most citations. This contributes to the stickiness of journal rankings, be they based on the ISI Thomson impact factor or an alternative database<sup>15</sup>. Along with the concentration of publishers described above, this feedback increases the market power of the main publishing houses.

Thus the opportunity cost of reading a given journal, and indirectly that of submitting to it, is primarily composed of the costs of time and only partly of the pecuniary expense usually borne by the institutions. When it comes to submission, the “publish or perish” rule leads researchers to send their work to the most visible and high-reputation journals (Spier, 2002). This raises the importance of quality as the almost exclusive consideration for reading a journal, and if the quality of a journal is not perceived as comparable to the best, only those who are unable to access the paying ones will choose to read (and indirectly—to submit to) it<sup>16</sup>. A journal may in this manner be turned into an Akerlof (1970) “lemon.”

Technological advancement could partially solve this puzzle in the form of electronic publishing, which essentially provides ease of entry for newcomers and broad distribution, especially when following the Open Access (OA) model (Rothen & Powell, 2007). However, the conundrum of reputation it is not easy to solve because a new journal, even if free on the web (zero price), is not assured of a readership and most assuredly not of worthwhile submissions due to the lack of information about quality. That’s why many of the new OA (or quasi OA) journals have tried to provide additional devices, for instance by heavily exploiting the link with complementary reputation signals such as being published by a well-known institution—as in the case of Berkeley Electronic Press—or a scientific society as in the case of *PloS*, the *European Journal of Comparative Economics* (linked with the European Society for Comparative Economics Studies) and RERCI (the organ of the Society for Economic Research on Copyright Issues) (Cavaleri et al., 2009).

Another way to try to draw more attention is to become part of a bundle, so that some economies of scale in attracting readers’ and submitters’ interest can be generated by the existence of a critical mass of journals<sup>17</sup>. Even better, the new journal can “borrow” the reputation of other publications that are part of the bundle, mimicking what the marketing industry terms “brand extension” and “brand stretching”<sup>18</sup>.

In all, while the convenience of being available on the web may be to a journal’s advantage, it cannot in itself ensure the journal’s success. The technical feasibility of starting an e-journal, although much easier than a traditional print journal, does not translate into a positive outcome in terms of attracting authors and readers.

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hard to reproduce [...and w]hat makes a journal valuable is the simultaneous consensus of authors, reviewers, editors, libraries, readers, tenure committees and indexing services [...]" (Edlin & Rubinfeld, 2004).

<sup>15</sup> While ISI impact factor is still a well recognized reference, other systems are contending for the role (<http://www.isiwebknowledge.com/>). For instance, in economics REPEC provides a different kind of impact factor calculated on its own databases ([www.repec.org](http://www.repec.org)), the ranking of US law journals provided by the School of Law of Washington and Lee University (available at <http://lawlib.wlu.edu/LJ/index.aspx>), and the H index (ref. <http://www.harzing.com/pop.htm>) has recently been devised to rank scholars and journals. National research evaluation agencies have also released their own rankings; e.g. in France the Agence pour l’Evaluation de la Recherche et de l’Enseignement Supérieur (AERES; <http://www.aeres-evaluation.fr/>) provides a national ranking of journals to researchers.

<sup>16</sup> Parks (2001) provides a compelling analysis of the motives of the various actors in this market.

<sup>17</sup> This strategy has been followed by BE Press and PloS but also by the American Economic Association, which has launched a number of new journals together.

<sup>18</sup> Both techniques are intended to shift the incremental utility (goodwill) produced by a brand from the original market to a different one.



## 5. Copyright and the endogenous market structure: a view from economics journals

The two pivotal features of modern copyright industries are the poor substitutability of the copyrighted item, and the excludability enforced by copyright, which enables the holder to demand a price for access.

Poor substitutability relates to the uniqueness of the information good—the lower the substitutability, the higher the potential value to the consumer—and accordingly makes sense of having copyright<sup>19</sup>.

It is important to note that this aspect figures more prominently in the articles of scientific journals than in other information goods. Since research is an incremental activity based on previously created knowledge, follow-on researchers rely heavily and unavoidably on earlier contributions, to the point that their own advances must necessarily start from the “prior art” and in the absence of it any serious further “advance,” as the term itself suggests, will be prevented<sup>20</sup>. In this respect, access to previous research is crucial, especially when this work has been published in a well known journal that makes it an essential reference to scholars. In general, we can say that researchers’ demand for articles and journals is somewhat inelastic and allows the publisher to enjoy a strong monopoly.

This rigidity is somewhat attenuated for the real buyers—i.e. the libraries—that act upstream from researchers, and should therefore maximize the utility of a number of researchers subject to budget constraints (McCabe, 2002; Parks 2001).

The legal excludability provided by copyright aims to give the first owner the possibility to exact a price for accessing the newly created work (Ramello & Silva, 2008). Of course, the outcome of this is to ration demand and accordingly to reduce access to essential inputs for follow-on creators, thus producing an adverse effect on the incremental development of knowledge. Because the consequences are more severe as the price increases, the actual amount of the price is really the crucial matter. If the price approaches the average cost, the exclusion will be kept as low as possible and in turn the negative consequences on incremental knowledge will be minimal (Ramello, 2005a & 2008).

This will be a maximizing strategy from the social perspective, while the individual incentive of the right holder diverges because the more rewarding choice will be the proper exploitation of the price-cost differential, possibly as a monopoly. This is affordable when the license to the right is exclusive, which explains why nowadays exclusivity has been extensively interpreted as a value per se and has been widely enforced in the resale to downstream markets, such for instance in publishing. The exclusivity clause potentially gives the licensee the chance to be a monopolist; in turn, the right owner in most cases bids for the license according to an exclusivity regime for extracting the reservation price. In many areas of copyright, these dynamics have transformed competition “in the market” into competition “for the market,” with some negative consequences for efficiency (Ramello & Silva, 2008).

This arrangement has essentially converted the legal monopoly given via copyright—which is an exclusive right over a given resource—into an economic monopoly, i.e., an exclusive right over a market. In an economic monopoly, whoever gets exclusive control of the right gains market power over a specific demand. In general, market power intended as the ability to raise the price above cost is inversely correlated with the perceived uniqueness of the good, which in the case of

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<sup>19</sup> If copyrighted works were homogenous we would not need copyright, as it would make more economic sense to reward just one creator and leave the output available to society. It is variety that justifies the existence of copyright.

<sup>20</sup> By nature, creative activity is a process recombining previous knowledge which is simultaneously an output, an input and a technology; hence, any severe restriction on the use of existing knowledge will hamper the incremental process of knowledge development, as argued in Ramello (2008).

copyrighted items, despite being somewhat exogenous, can then be endogenously enhanced (Silva & Ramello, 2000; Motta, 2004).

In the case of scientific publishing, uniqueness is enhanced by the certification of quality given by the journal's reputation and the indicators provided by ranking, such as the impact factor.

In many circumstances, incumbents can exploit uniqueness and leverage market power by clustering—i.e., bundling—together several copyrighted items. This reinforces the incumbent's position vis-à-vis newcomers<sup>21</sup>.

This rationale seems to have characterized the journal-publishing industry, where a handful of incumbents now control large catalogues (the so-called Big Deal) and a substantial share of the markets across distinct fields (e.g. economics, medical sciences, chemistry, etc.), while the residual segment of every field is made up of minor players—publishers of a single journal or a few titles—that operate in just that segment or at most in a limited number of fields (Edlin & Rubinfeld, 2004; Dewatripont et al., 2006).

This pattern of “major-minor” firms replicates what is happening in many copyright industries, starting with the seminal case of the recording business. There is regular entry and exit in the minor segment (independent labels, in the music business) and substantial stability in the major segment (Silva & Ramello, 2000). This difference points to a discrepancy in competition that can only be explained by the fact that the two segments are different markets to a certain extent, and there are barriers to moving from the minor to the major segment.

### 5.1 The industry of economics journals: a case study

The industrial trajectory described above highlights the role of copyright control in endogenously defining the market structure, which is consequently not the cause but the outcome of the precise strategies adopted by right holders in order to gain or extend market power.

In order to properly qualify this assertion for the journal-publishing sector, the rest of this section will discuss the field of economics during the period 1999-2007. To better focus on the competitive process, the analytical lens is provided by industrial economics and antitrust practice, which are naturally suited to describing the extended competitive process.

The first step is to define the boundaries of the “relevant market,” i.e. the set of products and geographical areas that can create competitive constraints on each other (see Motta, 2004). As argued above, while to some extent every journal or even article is a poorly substitutable product to the scholar, an investigation of competition must focus on the true demand, which in our case is essentially comprised of libraries albeit acting as agents for scholars<sup>22</sup>.

From the library's standpoint, demand is less rigid than for the individual scholar, so what matters is the availability of a number of journals and collections (bundles) rather than single titles<sup>23</sup>. We can then use two criteria to identify the relevant market in accordance with antitrust practice. The first, relating to geographical area, relies on language<sup>24</sup>; although partitioned into national groups, the economics community is global, so the real division is between English and non-English language journals. The latter are country specific and at most complement rather than substitute for the former.

The second criterion concerns product quality and substitutability. Demand from the library considers many aspects relating to the final demand from readers, mainly scholars and students. Although many criteria can be endorsed, the rough goal is to select the best possible quality, and the

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<sup>21</sup> For an in depth discussion also referring to some antitrust cases and a formal treatment see Nicita & Ramello (2007).

<sup>22</sup> On the role of libraries as buyers, see Parks (2001) and McCabe (2002).

<sup>23</sup> For the library the idea is to maximize the number of readers within the given institution, which happens even though a number of readers are not satisfied.

<sup>24</sup> This criterion is heavily used in many media sectors, including television. See for instance the cases mentioned in Nicita & Ramello (2007).

most widely adopted measure for ensuring a minimal level of quality is the journal's inclusion on the ISI-Thomson impact factor list (Garfield, 2005).

The top journals are included on this list and at high levels the signal is clear, while it becomes less precise for low-ranking journals, whose quality is perfectly comparable to non-ISI publications. Hence, inclusion on the ISI list is a somewhat restrictive and imperfect selection criterion, as many good and very good journals are not listed. Still, it seems reasonable to assert that because of their “proximity” to highly ranked journals, low ISI ranked journals have a comparative advantage over non-ISI journals and this makes them somewhat less substitutable<sup>25</sup>. On the whole the criterion appears plausible, as emphasized elsewhere (Garfield, 2005; Dewatripoint et al., 2006), and can be roughly used to identify what we can call the “market for academic attention” for scholarly journals.

**Table 1: Journals listed in ISI - “economics,” 1999-2007**

Year	no. of journals	NFP +	NFP -	FP+	FP-
1999	165	/	/	/	/
2002	166	3	5	11	8
2004	172	2	5	8	2
2007	191	6	5	21	4

Source: elaboration on ISI-Thomson figures

Table 1 illustrates the cohort for the period observed. The overall increase during the period of 15.75% (second column) confirms the relevance of being ISI listed, which is underestimated as entry is rationed by Thomson and only a small fraction of applicants are accepted by ISI every year.

In the field of economics, a rising number of top ranked journals are now in the hands of a few publishing houses. Even though a number of journals are still owned and run by scientific societies—in economics, leading universities such as Harvard and the University of Chicago and scientific associations such as the AEA publish the leading journals in the field—commercial publishers own an extensive number of titles and a considerable share of the market.

Consequently, journals can be easily divided by mission into “not for profit” (NFP) publishers, those rooted in the history of scholarly journals and essentially comprising scientific associations and university presses, and “for profit” (FP) publishers, i.e. undertakings that make a profitable business of publishing, in strict accordance with profit maximization rules<sup>26</sup>.

The journal figures disaggregated by mission show that net entry is greatly in favor of FP journals although, as argued below, the average quality is higher in NFP journals. Actually, in the period observed the net increase in NFP journals was +28 items, while for FP this value was negative (-4 items), signalling a sharp share increase trend in the FP segment—which of course translates into markets shares as reported in Table 2.

**TABLE 2: Publishers' market shares by impact factor (per cent of the market), 1999-2007**

Year	Blackwel I	Routledge T&F	Springer	Elsevier	Sharpe	Other commercial	Academic	CR4*
1999	17.690	3.918	6.383	22.706	0.465	7.398	41.440	50.697
2002	19.968	4.201	7.278	24.796	0.424	5.696	37.637	56.243

<sup>25</sup> A low ranked ISI journal can more easily become a high ranked ISI journal than a non-ISI journal. The perceived probability of being a good journal is therefore enhanced by the simple fact of being on the list. It is worth noting that many research assessment systems the around the world use the ISI/non-ISI label as a basic litmus test.

<sup>26</sup> This division seems to be reasonable and descriptive even though different groupings are possible, e.g. by considering the university presses as an intermediate case.

2004	19.988	4.274	8.275	24.453	0.326	6.480	36.204	56.990
2007	18.618	5.606	8.127	25.997	0.648	5.413	35.590	58.348

Source: elaboration on ISI-Thomson data

The industrial framework, as discussed, is an oligopoly in which a handful of commercial players compete against societies or university presses and minor commercial players. The figures in Table 2 are disaggregated for the top five commercial publishers, while the rest of them, which occupy a very low share, have been grouped into “other commercial” for the sake of readability. The same has been done with university presses and scientific associations.

It is fairly evident that within the FP publishers, the top four serve appreciable shares of demand, while from the fifth on each journal serves less than the 1% of the market. The same sharp division applies to impact factor, as on average (Table 3) the big players show stronger values that increase with the years.

The percentage of market share held by the top four firms (CR4) is the most widely used concentration ratio, and in our case demonstrates a highly concentrated market that is increasingly so over time. Now it is well known in industrial economics that the link between concentration and market power cannot be taken for granted because of the available data or the high elasticity of demand (Donsimoni, Geroski & Jacquemin, 1984), and there are cases in which the opposite is true (Salop & Stiglitz, 1977).

However, in journal-publishing, substitutability (although somewhat higher for libraries) is significantly constrained by readers who when needing an article see one journal as a very poor substitute for others and moreover they require access to a substantial catalogue of journals that necessarily includes the highly ranked. Hence price elasticity is not high, and as demonstrated in the literature, we can easily assess that in such a case the calculated concentration rate rather understates the true quantum of market power (Scherer, 1980).

Moreover, there is a clear-cut argument that the dramatic increase in prices would not be sustainable in a competitive environment. It is therefore plausible to assume that market power is responsible for the high and increasing concentration.

Along with the shift of the market in the hands of FP publishers, which has moved from a CR4 of 50% to almost 60% in less than 10 years despite a lower perceived quality (as shown by average impact factor in Table 3, especially at the beginning of the observation period), the above remark signals that there is a drift in the market’s attention that cannot be easily explained on the grounds of standard competition. Rather, it shows that endogenous features are working to redirect what would be the free choice of demand in a competitive market in which readers choose and buy the journals of higher quality.

**TABLE 3: Publishers’ average impact factor, 1999-2007**

Year	Blackwell	Routledge T&F	Springer	Elsevier	Sharpe	Other FP	Academic
1999	0.451	0.274	0.341	0.592	0.174	0.377	0.829
2002	0.559	0.323	0.427	0.710	0.174	0.319	0.827
2004	0.609	0.358	0.529	0.763	0.146	0.395	0.867
2007	0.604	0.500	0.552	0.863	0.308	0.351	0.907

Source: elaboration on ISI-Thomson data

Although all the impact factors (FP and NFP) are increasing (Table 3), it is fairly evident that in general, academic journals perform better. Just one commercial publisher ranks closely, while the others publish less highly ranked journals. Now, in a static framework one would expect the more highly ranked journals (NFP) to prevail. Yet the previous figures showed that NFP journals are more rapidly exiting the market, even though a greater rate of failure should be expected for their

less “attractive” FP counterparts. Consequently, there has to be something else affecting the competitive process and altering the expected outcome.

Here is where bundling comes in. Many articles have discussed how the endogenous strategy introduced by commercial publishers with extended catalogues favors the endorsement of commercial policies of bundling rather than competition among titles (McCabe, 2002; Edlin & Rubinfeld, 2004; Dewatripont et al., 2006; Cavaleri et al., 2009). The rationale is that the rigidity of the buyer towards at least a number of items included in the catalogue can be leveraged in order to sell the entire bundle at the cost of individually published journals. The publisher exploits the extra willingness to pay for highly ranked journals and can sell the bundled items at a lower price than the competitive product, so that demand subject to budget constraints shifts towards the better priced bundle.

Essentially, the strategy of selling bundles while enjoying market power in one market can be leveraged in order to control a secondary bundled market, inasmuch as the seller of two bundled items can price them lower than the sum of buying them separately from different producers. Assuming for instance a highly ranked journal A, and two lower ranked journals B and C (which are more substitutable for one another), if one seller is the publisher of A and B and sells the bundle at a price  $P_{A+B} < P_A + P_C$  (where the right side describes the price of buying two journals A and C separately from two publishers), then the strategy will likely favor the publisher of many journals and will essentially foreclose the market to the single journal publisher.

This effect will be amplified if we assume that there are demand network externalities affecting the evaluation of the journals (which seems to be the case, as the importance of a journal and an article increases the more researchers use it and make it an essential input for a given stream of research) and that buyers are also constrained by the opportunity costs of buying journals, since they must buy books as well (Edlin & Rubinfeld, 2004).

If in the short run the bundling strategy could produce some gains in term of consumer welfare<sup>27</sup>, in the long run it favors the persistence of incumbents, which can be problematic for the competitiveness of the scholarly publication market and the variety of publishers.

**TABLE 4: Quality distribution: percent of journals with an IF greater than 1, 2007**

	Blackwell	Routledge T&F	Springer	Elsevier	Sharpe	Other FP	Academic
% of journals with IF>1	18.182	12.500	23.810	37.209	n.s.	18.182	39.286

Source: calculation on ISI-Thomson data

Table 4 depicts the share of highly ranked economics journals in the year 2007, where “highly” is defined as an impact factor of greater than 1<sup>28</sup>.

Clearly only a fraction of the commercial publishers’ catalogue is highly ranked, and this serves as a lever to sell other publications. Since researchers must have the high IF journal in order to achieve their own advances, this is tantamount to opening the library door to the entire catalogue<sup>29</sup>.

<sup>27</sup> If the publisher prices journal A above the monopoly price when sold alone, buyers will chose the bundle A+B and there will be no gains, while the market will be foreclosed for publisher C.

<sup>28</sup> While a journal with IF>1 is in general a well esteemed publication, one could object that this is too low a threshold. However, this will actually strengthen the discussion here as the outcome in terms of share would be restrained and would show how controlling a few “good” journals permits the bundling of inferior ones.

<sup>29</sup> The correlation of 0.89 between this value and market share in the same year, although imperfect (as we are grouping other commercial and academic publishers), suggests that market share is closely connected to the control of some highly ranked journals.

However, the picture given here is under-representative, as many of the publishers with high market shares in economics are also active in many other fields, so their ability to exploit the sale of catalogues is very much enhanced.

The current FP incumbents with large market shares in economics are involved in many of the other fields, which number 22 in all. As of this writing Elsevier is involved in all 22 fields, while Wiley-Blackwell, Routledge/Francis & Taylor and Springer-Kluwer are active in 21. The only exception is Lippincott, which did not show up in this picture as it is incumbent in only four fields and is a major player in two of them.

## **6. Copyright, competition and exclusion in the market for academic attention: discussion**

The rationale for copyright is that it promotes Schumpeterian innovation race: as argued above, in the case of a successful copyrighted work, the right holder can reap the associated economic benefit. The underlying economic model is that of a competitive process in which new products compete with older ones all the time and the successful ones earn a reward. Hence, the incumbents are only temporary and their success in the market should be challenged in every subsequent race by other competitors.

The observation of copyright industries in general and of scholarly journals in particular shows that this picture is very far from reality. In fact, it is more the exception than the rule.

The standard situation is that of a concentrated industry in which the incumbents progressively increase their market shares and jointly dominate a large segment of the market, which to a great extent can be considered a distinct market with no substantial entry and exit. The rest of the market is then populated by other subjects that live in a more competitive environment. This partitioned structure characterizes many copyright markets, including sound recording, the movie industry and operating systems<sup>30</sup>. It is also the representative structure in journal publishing, either per field or in general.

Many issues require further discussion. First, the model justifying copyright no longer seems to apply. While concentration per se does not translate into lack of competition, the dramatic increase in the market price of scientific journals (with non increasing possibly decreasing costs) suggests that substantial market power exists. This stems from the idiosyncratic nature of journals and articles, which are poorly substitutable, especially when the difference in perceived quality produces a sharp differentiation.

Therefore, while there are no substantial entry barriers to the overall market for new journals, demand inertia makes it very difficult to attract attention from the scientific community. This has much to do with reputation and the value that scholars attribute to a journal. Hence there are structural entry barriers to the “market for academic attention,” which is really the relevant market. The conclusion is consistent with the findings of other studies<sup>31</sup>.

Furthermore, the particular features of this market for attention permit the creation of strategic entry barriers that progressively reinforce the dominance of incumbents at the cost of other publishers. The pivotal element of this strategy is bundling, which favors the success of new journals that are part of a bundle, even though the overall quality is not always the best. The mere existence of a few good journals in the bundle can be leveraged to attract attention to lower ranked journals, at the expense of potential competitors who are unable to exploit bundling. In the long run, this trend self-enforces attention toward the entire bundle and the ranking of all the incumbent journals.

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<sup>30</sup> For references see Silva & Ramello (2000) and Cavaleri et al. (2009), among others.

<sup>31</sup> Edlin & Rubinfeld (2004, p.138) discuss the topic in depth and conclude that “the likelihood of success [of a new journal] is small unless the journal has some particularly valuable and distinctive innovation.”

The dynamics described above illustrate once again that copyright is much more than a neutral feature of the market: it is a tool that endogenously shapes the market structure, with consequences that in most cases foster rent-seeking behaviors and a gradual shift away from competition.

This outcome has at least two unwelcome consequences in the world of scientific research. First, it raises the cost of research, which is by nature a cumulative process where (copyrighted) knowledge is at the same time (publishing) output and input for further advances (Ramello, 2008). Hence the endogenous shift of market structure toward market power makes this process more costly and difficult, with some additional paradoxical effects as for journal publishing the inputs of publication are freely provided by scholars.

Second, in the case of scientific publishing, journals are acting as gatekeepers of the ideas disseminated among the scientific community. The preferred outcome that would preserve full accessibility to any potentially interesting idea requires the existence of a neutral environment, so that the “Republic of Science” that ought to characterize the scholarly community can freely work<sup>32</sup>. The drift from a republic toward an oligarchy raises concerns about the safeguarding of this process that real competition would be better able to preserve.

Further, many journal articles are the outcome of previously funded research. Consequently, publication is just a way to certify quality and make the articles available to the community. In itself this is not expensive, and even research societies and universities can afford it, especially in the Internet era. Journals, while increasingly squeezing the budgets of research institutions, do not provide any remuneration for the upstream inputs that make them valuable, and their price is to a great extent not justified.

What is intriguing, however, in the current state of affairs is that copyright once more shows inertia toward aggregating rights. Contrary to many situations in which property rights experience inertia towards increasing fragmentation, in a pattern suggesting the existence of entropy (Parisi, 2007), for copyright—and intellectual property rights in general—the motion is reversed in a path of continuous concentration.

While the aggregation of rights could be beneficial to the social welfare when it lowers transaction costs (and examples of this do exist<sup>33</sup>), there are serious concerns as it is essentially re-creating the market structure that in 1710 forced the birth of the first copyright law, the Statute of Anne. This act was the outcome of intense civil protest by many members of society, including property rights champion John Locke, against the monopoly on book publishing and distribution enjoyed in England for nearly 150 years by the Stationers’ Company, which had seriously hampered the quality and the quantity of books sold (Nicita & Ramello, 2007). The simple yet powerful solution brought about by Queen Anne was to break up property rights over an entire catalogue (constituting a monopoly situation) into small units—copyrights over individual books—in order to make the market more competitive.

Today, in many cases including journal publishing, catalogues have been reconstructed and seem to be a strategic lever used in most copyright industries.

Once again, competition seems to be the key issue for safeguarding the broader social welfare. Nevertheless, investigations so far have been rare and inconclusive. The problem may be due to the lack of tools for properly investigating dynamic efficiency. In any case, the conclusions thus far available are ambiguous.

The British market for scientific, technical and medical (STM) journals was brought to light through an investigation by the UK Office of Fair Trading. This antitrust authority has not yet found it appropriate to intervene, but somewhat ambiguously asserts that the “position will be kept under review” as “there is evidence to suggest that the market for STM journals may not be working well” and “many commercial journal prices appear high, at the expense of education and research institutions” (OFT, 2002, p. 4). John Vickers, the Director General of Fair Trading, stressed that “[j]ournals are the principal means by which scientific knowledge is disseminated. The market,

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<sup>32</sup> See Ramello, 2005b.

<sup>33</sup> Patent pools, for instance, are designed to solve this kind of problem.

which operates worldwide, has a number of features that suggest that competition may not be working effectively. However, market forces harnessing new technology may change this without the need for intervention”<sup>34</sup>.

This attitude is puzzling, as it more or less relies on the device heavily exploited in Greek tragedies: the *deus ex-machina*, i.e. an exogenous technological shock that independently solves the problem. The persistence of monopoly, the breadth of interconnected dominance and the random path of technological change suggest that a different attitude, giving due consideration to the endogenous effect of laws on market structure and the behavior of economic agents, would better inform policy in copyright industries.

## 7. Conclusions

This article explores the journal publishing industry in order to shed light on the overall economic consequences of copyright in markets. Until now, the economic debate on copyright has mainly treated the right as given, trying at most to determine whether it encourages creative activity. We argue here that this is just one of the incentives provided by copyright.

Since the rationale for copyright is essentially to promise some market power to the holder of the successful copyrighted item, it also provides incentives to preserve and extend market power. A regular trait of copyright industries is high concentration and the creation of large catalogues of copyrights in the hands of incumbents. This outcome can be observed as the aggregation of rights and is one of the pivotal strategies for obtaining or extending market power, consistently with findings in other cases. Journal publishing is no different in this respect from other copyright industries, and in the last decade has experienced a similar trajectory, leading to a highly concentrated industry in which a handful of large firms increasingly control a substantial part of the market.

This situation raises concerns about the governance and efficiency of scientific activity, as it affects access to previously created ideas and puts a small number of gatekeepers in charge of selecting scientific ideas.

It also provides a clear example of the effect of copyright dynamics on market structure, suggesting that a different attitude should be taken in lawmaking and law enforcement.

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<sup>34</sup> September 9, 2002, available at [http://www.oft.gov.uk/news/press/2002/pn\\_55-02](http://www.oft.gov.uk/news/press/2002/pn_55-02)



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