

The Market of Academic Attention

Matteo Migheli, *Università di Torino*
Giovanni Battista Ramello, *Università del Piemonte Orientale*¹

Abstract: This paper attempts to broaden the perspective on an important although so far neglected issue of scholarly publishing, that of academic attention. In a world that is increasingly rich with information, a key economic problem is how to allocate the scarce attention and what kind of dynamics this situation can foster. By focusing on selected fields and by using standard tools of the industrial organization, the research draws a picture of the trend that has occurred over the last 14 years in the market for academic attention and attempts to provide an interpretation of it. The different indices used as a proxy for academic attention show that a trend of progressive concentration took place and that specific strategies adopted by players, such as bundling together large number of titles, besides providing the usual benefits determined by price discrimination in term of consumer surplus extraction, can also produce subsidies of attention from well-known journals to lesser-known journals that are part of the same bundle. This, of course, has an impact on the readers' and authors' choice of how to direct their attention, and it can affect their choices as they are no longer determined simply by the quality of the articles and the journals.

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1. Introduction

The long lasting debate on scholarly publishing has revolved around many topics such as the pricing of journals and its impact on libraries' budgets, the new publishing models, the role of peer reviews, and so on (see e.g. Cavaleri et al., 2009; Migheli & Ramello, 2013; Mueller-Langer & Scheufen, 2013; Odlyzko, 2014). No contribution so far has focused on academic attention and how it is managed, especially vis-à-vis the impressive number of available publications and how the current system of scholarly publishing affects academic attention. In the case under investigation, academic attention essentially relates to the choice of directing the mental technology, as readers, authors, reviewers, etc. to scholarly publications.² Since human attention is a scarce commodity and academia does not make exception, the described issue becomes relevant to economists. Moreover, an information overflow today characterizes the worldwide scientific community since every year, millions of peer-reviewed scientific articles are published. This makes the scholars' choice, as far as attention is concerned, increasingly hard and worthy of investigation.³

More precisely, the geometrical expansion of scholars' potential focal points clashes against a (mental) technology characterised by constant productivity, and this causes a trade-off that if not properly considered can produce unpredicted outcomes or unexpected behaviours affecting the market structure and, furthermore, the circulation of scientific knowledge. In particular, besides the familiar allocation of scarce resources, a key and almost neglected economic issue here involves the understanding of how scarce academic attention is then managed, and of what devices and strategic practices emerge in order to attract and direct it, potentially interfering with the researchers' free choice.

Traditionally scholarly journals have performed different tasks such as the validation of new knowledge through the peer review, the circulation of new scientific ideas, the enhancement of the

² Of course the simplification here is that the sole problem is to where direct the attention. Once focusing on the effort another and distinct trade off emerges concerning teaching versus research. See Ginsburg & Miles (2014).

³ The estimated number of papers published in 2006, based on Ulrich's database gathering detailed information on more than 300,000 periodicals of all types, is 1,350,000 on approximately 23,750 scholarly journals (Björk et al., 2009). The average annual growth rate between 1995 and 2007 was +2.5% (<http://www.nsf.gov/statistics/seind10/c5/c5h.htm>). According to Ulrich's, the number today is more than 2.5 million.

authors' reputations while at the same time certifying the quality of the work itself (Johns, 2000). Attention supply has always been taken as a given for the simple reason that, in a sense, for a long time it exceeded the demand and seemed to be perfectly elastic. Things, however, are now changing.

In this paper, we aimed at disentangling the dynamics of the allocation of the academic attention by focusing on a number of cases studies in for four fields, Economics, Management, Business and Business & Finance, and by using two different instruments: bibliometric indices and concentration indices. While the former are very useful for capturing instantaneous snapshots of where academic attention is directed, the latter permits us to build up a broader overview and to sketch out the changes across a number of years, corresponding to a 14 years timespan. We supply two main results from the study for this paper. First, our findings highlight a path of growing concentration of academic attention in the hands of the four main publishing houses. Second, we observe that the market share of academic publishers' attention has diminished over the period considered, while the market share of the commercial publishers' attention has increased. This might suggest that either the commercial publishers are simply producing journals of higher quality than the academic ones, or that the former are better than the latter at managing academic attention.

In Section 2, we introduce the issues concerning the economics of attention with a special focus on the academia and the role of bibliometric indices. Section 3 includes an overview of the industrial organization of scholarly publishing. In Section 4, we describe the dataset and the empirical methodology, disentangling the workings and implications of concentration indices. In Section 5, we present the results and discussion, and in Section 6, we conclude.

2. The Attention Economy: The Case of Scholarly Publishing

Since the 1970s, the dramatic pace of technological change has introduced disruptive innovations in production and delivery of information, thus predicting the advent of the information society intended as a radical transformation of the way societies work (Beniger, 1986).

However, while the emphasis has always essentially been put on the promises of the abundance of information, a parallel issue was equally emerging. The dramatic increase in information quantity is not costless, since it raises a new problem, economic in nature: the allocation of attention.⁴

The intuition of the incoming trade-off between the amount of available information and the limited attention dates back over four decades, to when Herbert Simon (1971) first raised the issue:

“In an information-rich world, the wealth of information means a dearth of something else: a scarcity of whatever it is that information consumes. What information consumes is rather obvious: it consumes the attention of its recipients. Hence *a wealth of information creates a poverty of attention* and a need to allocate that attention efficiently among the overabundance of information sources that might consume it.” (pp. 40-41; emphasis added)

In recent decades, the problem has become more stringent because of the flourishing of new media and delivery options that have expanded the quantity of information available, even up to an overflow. Therefore, the realization of the information society has brought with itself the creation of the attention economy (Davenport & Beck, 2001). In the attention economy, the concern for economists is not only how to allocate attention but how to attract it and how it is directed. An attention scarcity fosters the emergence of new strategic behaviours effective on its attraction.

The issue is so widespread in our society that even in markets exchanging tangible goods, the symbolic part of the good is increasingly taking over the physical characteristics, while attention devices such as brands and their semantic spheres are becoming central to the exchange (Ramello & Silva, 2006).

⁴ Attention here is intended as a resource and roughly means the mental capacity, according to Kahneman (1973)

Rhetoric, which is the science of persuasion and thus how human attention can be regulated, speaks about “stylistic devices” that are functional in attracting human attention and consequently in determining the success of specific items (Lanham, 2006)⁵.

In the presence of an information abundance, the choice is no longer regulated by strict individual evaluation, but by a complex of mechanisms in which the stylistic devices act as gatekeepers for making things attractive to individuals. This is true in many cases, and it is also crucial for markets in which the standard paradigm of the price as a signal is increasingly becoming ineffective. Attention and its determinants are thus increasingly becoming a critical economic issue (Bordalo et al., 2013) and, therefore, the practice of attention manipulation becomes a full part of the economic machinery for attaining specific market equilibria (Persson, 2013).

What we have thus far asserted is increasingly true also in scholarly publishing in which a number of stylistic devices have the effect of creating focal points to the attention of the academic community. While in world with no attention scarcity, the relevance of an article should be the main attractor for the audience, in an information-rich world, readers are looking for signals to tell them *ex-ante* where to direct their scarce attention. In other words, since the ability to attract the attention is pivotal for determining the success of a paper within the scientific community, the competition for attention is also becoming a central issue for scholarly publishing. This is even truer as the number of articles increases over the years and the attention scarcity becomes more dramatic.⁶

In turn of course, the role of stylistic device becomes a substitute of the scholars’ capacity to select the relevant literature. Often the reputation of the journals or of the editorial board act as

⁵ Stylistic devices are essentially techniques used to give an auxiliary meaning to a written text or a speech, to a painting, etc. An example is the allegory, the metaphor, the symbol and many others. By saying something other than in an ordinary way, they attract the attention. They are heavily exploited in society. A simple and very accessible example is for instance given by the road signs used for attracting drivers' attention to issue relevant to the cars circulation (Lanham, 2006).

⁶ At the very beginning (i.e. in the early 18th century), there were only two scholarly journals, the *Philosophical Transactions* in Britain and the *Journal de Savants* in France and rather the problem was how to access them, to the point that at least in the French case, pirated copies were welcome in order to increase the circulation of the new scientific ideas (Ramello, 2010). Thorngate (1990) provides an illustrative example of the exponential dynamics characterizing the number of publications in psychology over almost a century, from 1894 to 1987.

stylistic devices able to attract the attention.⁷ Of course this implies a long-lasting activity for building the previous signals. This is also true for single scholars. In sociology, the “Matthew effect,” observed by Robert Merton (1968), shows how well-known scholars acquire comparatively higher credit than unknown colleagues. This phenomenon is essentially given by the existing inertia in attention that creates an advantage for directing subsequent attention.

Indeed status and tradition are a first, though powerful, device for attracting attention, and many attention attractors in science and in academia actually rely upon it. Currently the most effective stylistic device using the past as a reference for the attention is represented by the impact factor (IF). The IF is an index reflecting the average number of citations received per article published in a journal during the two to five preceding years. It is attributed to journals classified in the Thomson Reuters Journal Citation Report (JCR) and used as a proxy for the relative importance of the journal within its field (see <http://thomsonreuters.com/journal-citation-reports/>). Originally devised by Eugene Garfield for studying the journal citation patterns in science, it has become the main reference for assessing the importance of journals, and in turn, despite the criticisms of its inventor, the impact of scholars and research institutions (Garfield, 2006).

Over the years, the IF and the JCR have become central references for many systems of research evaluation worldwide, so that today scholars’ attention is strongly captured if not monopolised by it. Some claim that they have currently become the “gold standard” of the citation system⁸ (Ziman, 2001). Not only does the IF provide *ex-post* a proxy to assess the journal’s influence within the scientific community, but also it has become an instrument for attracting *ex-ante* the attention of scholars and readers. The simple equation passed through this system is that on average, an article is all the more important as it is published in a journal with a high IF.

⁷ e.g. the success of the newly introduced journals by the American Economic Association can be to a large explained by the scientific reliability of the association itself (Cavaleri et al., 2009).

⁸ Of course this does not implies that the impact factor represents, *per se*, the best system and there are many critical voices (see e.g. Ramdsen, 2009).

Interestingly, the same IF inventor, while advising about the limits of the metrics for individual evaluation, showed how much the IF in a world of scarce attention has become an instrument for orienting attention: “The use of journal impacts in evaluating individuals has its inherent dangers. In an ideal world, evaluators would read each article and make personal judgments.... Most individuals do not have the time to read all the relevant articles” (Garfield, 2006, pp. 92-93). Accordingly, the IF has become, at least partially, the instrument for substituting individual choice.

It is worth noting that the perception that IF is today a necessary condition for directing attention is widespread. In a recent discussion, a distinguished scholar and editor of an American journal told authors that journals that are not listed by JCR are either very new or very obscure and very little cited.⁹ In many European systems the phenomenon is even stronger, and scholars pay attention to journals and articles proportionally to the IF.

Hence the above on the whole shows a preliminary result that the IF is becoming a proxy for the strength of a journal to attract academic attention. The journals that represent the relevant market of academic attention in a given field compete against each other. In that market, the IF provides a measure of the strength of attracting attention and it can be roughly used to identify what we can call the “market for academic attention” for scholarly journals in which journals carve out a share of market/attention proportional to its IF. The basic idea is that if the IF approximates the strength of capturing scholars’ attention, as we will further explain in the Section 4, the overall market is given by all the journals in a specific field for which the IF is given, and the overall attention (i.e. the 100%) will be represented by the sum of the relatives IFs.

In order to provide an additional measure, we will use in the paper a different bibliometric index provided by the JCR, the immediacy index (II), which calculates the average number of times that an article published in a given year is cited during the same year. The II gauges the speed with

⁹ The citations pattern seems to follow this orientation. Migheli & Ramello (2014) performed a test on a sample of journals listed in economics in a different and wider database, Scimago, and showed that the average citations are higher for journals listed in the JCR and that this difference is statistically significant.

which citations to a specific article appear in literature, and it can be roughly intended as a measure of the attention ‘just in time’.

The overall rationale for using the previous metrics and the journals listed in the JCR is simply that the inclusion in the report is a sort of quality certification that makes these journals different. It makes them less substitutable with other non-JCR that are excluded, to some extent, from the researchers’ attention.¹⁰ However, as extensively discussed in scholarly writing, distinct fields in the JCR are not comparable as far as bibliometric indices are concerned because of the great variance in terms of citations and authorial norms within the single community, the size of the audience, etc. (Althouse et al., 2009). This criterion permits us to identify what must be considered the basic unit of analysis for the economics of academic attention, that is to say selected fields listed in the JCR.

On the whole, the features of being listed in JCR and the margins of specific fields draw the boundaries of what can be termed, borrowing the antitrust jargon, a “relevant market,” i.e. the set of product areas that can create competitive constraints on each other, here specifically in terms of academic attention (Motta, 2004). This will represent the focus in our study of the selected markets of academic attention.

3. The Academic Publishing Industry in a Nutshell

Before the analysis moving forward, we need to explain a few words about the industrial organization of scholarly publishing, presenting important features that will assist in the interpretation of the results of the empirical investigation. Scientific journals appeared in the late 17th and early 18th centuries when European society, entering the Enlightenment, was increasingly recognizing the importance of authorial and inventive activities. The idea of having journals was essential to provide focal points to the scientific community—hence, in a sense, attention was

¹⁰ In other words, although, the assertion is questionable that journals not listed in the JCR are inferior in terms of quality to those listed (see e.g. Migheli & Ramello, 2014 for economics), it is true that according to the existing system, being listed in the JCR ensures the journal has a minimal endowment of quality.

already an important issue—to broadly disseminate scholarly work (Boyer, 1947; Johns, 2000). In the beginning, publishers were often scientific societies or universities. Moreover, the number of journals was limited so that it did not consistently need any attention economization.¹¹

Subsequently, this changed: new journals were launched, and commercial publishers have increasingly been entering the market by introducing new journals and by acquiring existing titles. Over the last few decades, these dynamics have led to the emergence of major players in the academic publishing industry, in line with what has happened in many similar industries (Edlin & Rubinfeld, 2004; Nicita & Ramello, 2007). The described trend has been accompanied by a price growth far exceeding the rate of inflation and a substantial rise in costs.¹²

Today, even though a number of journals are still owned and run by scientific societies, commercial publishers own or control an extensive number of titles, and pricing policies are increasingly raising a serious concern for the accessibility even by many well-known institutions.¹³

The modern industry can be fairly divided into two main segments: academic publishers (ACAs)—rooted in the history of scholarly journals and essentially comprising scientific associations and university presses, and commercial publishers (COMs)—companies that make a profitable business of publishing, in strict accordance with profit maximization rules. In other words, despite the thousands of titles, the industrial framework is an oligopoly in which a handful of commercial players compete against societies or university presses and minor commercial players. Although the picture is more nuanced considering distinct fields, and there can be some variability across different disciplines, it is worth noting that the variability applies most to the

¹¹ The issue was rather to have access to the few available journals. In order to meet the excess of demands the French *Journal des Sçavans* (later renamed *Journal de Savants*) led to the flourishing of the pirate publications (Ramello, 2010).

¹² For example, according to the Association of Research Libraries, a non-profit organization of 125 research libraries in North America including many academic libraries, 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 (Ramello, 2010).

¹³ We can cite, in chronological order, the *Faculty Advisory Council Memorandum on Journal Pricing* of Harvard University, eloquently subtitled “Major Periodical Subscriptions Cannot Be Sustained” (see: <http://isites.harvard.edu/icb/icb.do?keyword=k77982&tabgroupid=icb.tabgroup143448>)

ACA segment as most of the commercial publishers (and a handful of ACA publishers) operate in many fields (Dewatripont et al., 2006).

On the whole, the final industrial framework is close to being defined as a multimarket oligopoly. This fact has a number of consequences. It permits multimarket players to sell bundles—in selected cases, hundreds or thousands of titles—to a single buyer, in general a university library system, which thus faces a quite rigid demand since a bulk of the bundle's components are required by distinct faculties. Tying in several titles, known as Big Deals (Odlyzko, 2014), also provides a comparative advantage to multimarket players compared to those who operate on a few or just one market. In effect, renouncing a title or a few titles likely raises less disappointment than renouncing a pool of journals. This observation requires further discussion. The Big Deal is nothing but a form of discrimination, providing the opportunity of extracting consumer surplus. From this respect, it simply responds to profit maximization. However, once academic attention is considered, the picture becomes more sophisticated. In this respect, pooling together many titles—some of which are very attractive—creates what can be termed a “subsidy of attention” from the well-known journals to the lesser known journals in the same bundle. This happens in two distinct ways. First, the journals that are highly ranked in terms of IF make more “visible” (and thus more valuable) the lesser-known titles of the same bundle. In other words, the “good company” creates a comparative advantage, a subsidy, for journals in the same bundles. Second, the rigidity of the demand towards the catalogue of the Big Deal, also because of squeezing the university budget, makes less accessible and less attractive the other journals that do not benefit from the bundling strategy. This, in the case of oligopoly, might distort not only the standard competitive process as explained by the literature on bundling (Martin, 1999), but also the competition for the attention, and thus it makes once more the IF a stronger stylistic device.

It is worth noting that the problem is more important than explained. Even if we assume that a top tier journal receives and selects the best quality papers—and this can be partially questioned—there is still a hierarchy of second/third tier papers worth reading and publishing in lesser-known

journals. If we then introduce a more complex system of attention allocation in which, for example, a role is equally given to the bundling strategies relying upon not only the availability of a given journal but also of a catalogue of journals, the picture becomes more blurred because the readers' attention is not only directed by the quality of the journal but by the cost of accessing it. In other words, the audience between journals of the same quality will direct the attention to those that have a lower cost of access, and, of course, once a catalogue is available, the cost for the journals within the bundle will be zero.

4. Data and Methods

In order to study the market for attention, we extracted the data concerning bibliometric indices from the ISI Thomson Journal Citation Reports of the years 2000, 2007, and 2012. This dataset provided not only the IF and the II, but also a number of useful complementary figures such as the total number of articles published and the total citations in the preceding two years.

The sample of fields/relevant markets under scrutiny is represented by four germane but distinct fields: economics, management, business, and business and finance. The methodology we used measures the concentration of the distinct market, calculated by means of two main concentration indices, concentration ratio and the Hirschman-Herfindahl index, its trend across 14 years, and its evaluation according the mainstream industrial organization practice, with a special focus on the antitrust doctrine.

The basic idea is that the sum of IFs in a given period represents the total market and accordingly the IFs of single journals corresponding to their market share. However, since many journals are part of a bundle, what is relevant in terms of overall attention is the total share owned by distinct publishers. Then we will further define the analysis by comparing ACA and COM publishers.

As is well known, the concentration measure is a key issue of industrial organization as it tries to capture at the same time the number of firms and their market shares in the total of the

market (Curry & George, 1983). In a sense, market concentration is the child of the inability, structural or strategic, of the perfect competitive model attained in certain industries, so that a limited number of firms produce a substantial fraction of the output. The industry is fully concentrated in the case of a monopoly, and this can be associated with the market power that is defined as the ability to raise the price above a marginal cost. In general, this is associated with a positive profit, which as is well known, is not possible in perfect competition. Accordingly, market power becomes a rough measure of how distant an industry is from the competitive paradigm and how close it is to monopoly.

Now, it is well known in industrial organizations that the link between concentration and market power cannot be taken for granted and that there are cases in which the opposite is true (Donsimoni et al., 1984). Nonetheless, this relation holds, and it is regularly observed when the elasticity of demand is low, which is exactly the case of the scholarly publishing market. Moreover, in the last three decades, the steady growth of prices experienced by scholarly journals, extensively larger than the consumer price index, confirms not only the existence but also the persistence of the market power over a wide timespan (Ramello, 2010). Hence, in the present investigation we can assume an existing and strong relationship between concentration and market power. In our case, it will also imply the emergence of players who are able to control a large share of academic attention and will establish a link between control of academic attention and the profitability of the market.

The instruments generally used for assessing the degree of concentration can present drawbacks, as discussed e.g. in Sleuwaegen et al. (1989). However they are extensively used in industrial organizations to make comparisons and to evaluate the degree of competitiveness in markets.

The most common index is the concentration ratio summing up the market share of the largest n firms (CR_n) out of an industry of N firms. In notation:

$$CR_n = \sum_{i=1}^n s_i, \quad n \in N$$

Here s_i indicates the market share of the i th firm that is simply the quota of the market (%) served by that firm. It is worth noting that the n firms are ordered according to the market share. The CR_4 —i.e. the sum of the market share of the first 4 firms in terms of output—in particular has been extensively applied by the US antitrust, as indicated in merger guidelines since 1968 (Shy, 1996). It provides a first glimpse of the industrial structure although it does not differentiate among firm sizes nor give any information about the others outside those counted.

The Herfindahl-Hirshman index (HHI) solves the previous issue since it provides a measure that is a convex function of all of the firms' market shares, which are the sum of squares of the market shares of every firm.

$$HHI = \sum_{i=1}^N (s_i)^2$$

Both measures present pros and cons. They are highly correlated and often produce comparable results (Sleuwaegen et al., 1989). However, the HHI has gained more space in the current antitrust practice and it is extensively used today for measuring concentration in the case of horizontal mergers. According to the Horizontal Merger Guidelines issued by the U.S. Department of Justice and the Federal Trade Commission on August 9, 2010, its values can be divided into three categories. When HHI is below 1500, the industry is retained, unconcentrated, when HHI lies between 1500 and 2500 the industry is moderately concentrated, but it is highly concentrated when $HHI > 2500$ (Section 1.5). In particular here, an increase of more than 100 points of the index is usually interpreted as an indicator of actions that may lessen competition while in general, theoretical and empirical evidence in the current antitrust practice shows that a higher HHI value indicates a higher price–cost margin (Viscusi et al., 2005).

Although the previous division supplies rough and preliminary information on the industrial structure and a more refined economic analysis is needed in order to decide about a merger proposal, it provides a useful framework for a general overview.

We calculate here market shares as a fraction of the total impact factor, considered as the supply of academic attention. However a caveat should also be raised as far as the inference of market power is concerned, despite the fact that here we consider four distinct disciplines as markets, a number of publishers operate multimarkets that are in several fields. Accordingly, a high concentration in one field can be strengthened by concentration in other disciplines.

5. Results and Discussion

5.1 Concentration Trends of The Academic Attention

The tables below report the results of the analysis. It is worth remembering that they represent a sample of fields and hence they only sketch the overall scholarly publishing system. Nonetheless, taken together, they illustrate the overall dynamics, while also offering a better insight into what is happening in this homogenous field, i.e. the relevant market. Since the attention of scholars is mostly focused on single fields and the journals therein are poorly substitutable with journals of other fields, their treatment as specific relevant markets provides a better representation of the competition within the market. The parallel pictures then permit us to broaden the perspective with a more nuanced representation, while the general illustration of all the journals listed in the JCR, given the idiosyncratic character of attention within distinct scientific communities, would produce a distorted image.

Table 1 shows the concentration rate for the first four publishers, respectively in economics, in management, in business, and in business and finance. As we previously explained, the main indicator for capturing academic attention is the impact factor (IF). However, in order to provide more robust results, we calculated the concentration index using other indicators. More precisely, the immediacy index (II) portrays a measure of the attention within a single year.

Since 1999, for about all the figures, the CR4 has been close or above 50%, which means that the first four publishers have long been controlling half of the academic attention within the field studied, although with small nuances according to each distinct index. Quite interestingly, all of these values increased over the 14 years, reaching or even exceeding 60% everywhere in 2012. This means that more than one half of the academic attention (as measured by the IF) is still concentrated in the hands of four publishers. Given the extremely low elasticity of this industry (where each journal can be seen as a sort of monopolist), the market power that has been accruing in these top four publishers is immense.

In general, with all the limits observed in this literature, the CR4 provides a rough measure of the competitiveness in the market. Values of the CR4 ranging from 50% to 80% are a signal of a medium concentration that becomes an indication of substantial market power if coupled with raising prices. Since this is exactly what has been remarked in scholarly publishing, it should substantially raise a concern from the antitrust point of view.

Furthermore, the trend of increasing concentration has uniformly spread across the discipline under observation for any measure used. This trend is even steeper if we look at it in terms of the total citations. The figures show that not only since the beginnings did the main four publishers drive more than the 50% of citations, but also this value has reached 75% in economics and almost 84% in business & finance, meaning that three citations out of four, and four out of five, respectively, are essentially directed in both of these fields only to journals managed by the four top publishers.

A similar trend characterizes the number of articles, showing that even if we split the academic attention into the basic components such as authorship and readership, a handful of publishers have still become the gatekeepers.

If the different perspectives converge toward a substantial concentration of the market, it is worth noting that this took place despite the technological change arising in the very same period and bringing about a disruptive innovation, that of open access publishing. This not only brought

about the forbidden dream of making scientific knowledge a public good, but also of making accessible the publishing technology at a low cost to a wide number of people. This, in theory, has boosted the entry opportunities into the publishing business (Migheli & Ramello, 2013; McCabe 2014).

However, despite new signals coming from specific case studies (including economics), the stability of the previous market structure and the increase in concentration confirm a substantial rigidity in the market of economic attention.¹⁴ This, in addition to the market power of the largest four publishers, and the fact that it has been increasing over time, help to explain the continuous growth of the prices at which the publishers sell the “journal bundles.” No substantial differences emerge when comparing CR4 for long term (IF) and short term (II) attention.¹⁵

Field	Year	Total Cites	Impact Factor	Immediacy Index	Articles
Economics	1999	57,36	47,31	53,67	46,64
	2006	70,93	62,49	62,72	74,62
	2012	75,10	65,44	69,74	71,87
Management	1999	54,48	48,71	50,65	41,86
	2006	56,52	53,86	56,97	50,17
	2012	59,46	60,78	60,55	54,83
Business	1999	51,69	48,70	48,52	60,11
	2006	50,26	48,56	55,14	48,38
	2012	58,31	58,73	57,32	60,58
Business & Finance	1999	68,93	54,68	67,40	76,98
	2006	82,43	76,17	71,84	74,54
	2012	83,91	73,08	70,35	70,69

Data source: Journal Citation Report 2000, 2007, 2013

¹⁴ One could argue that it depends on the inability of new journals of being listed in JCR. This is not true since JCR in all the fields is expanding the lists of the journals and there new comers becoming part of the markets of academic attention.

¹⁵ For the whole field, the correlation index is quite high, ranging from 0.68 in business to 0.98 in business & finance.

Table 2 reports the HHI figures-calculated on the same relevant markets. Findings add some more food for the discussion. It is worth repeating that the HHI is obtained as the sum of the squared individual firms' market shares, and hence it provides a picture that considers not only the top firms in term of market share but also and equally the distribution of the remaining market shares across competitors. According to the standards used by the U.S. Federal Trade Commission and the Department of Justice (2010), in the case of horizontal mergers, these figures do not denote *per se* an extreme concentration. $HHI < 1500$ describes, in general, unconcentrated markets; and $1500 < HHI < 2500$ stands for moderately concentrated markets. Hence from this respect the market for academic attention starts from a level of low concentration and reaches, at most, the upper level of the moderate concentration with only one exception, that of citations in finance, where the concentration is very high.

However, once more, what is relevant here are not the single figures *per se*, rather the path of progressive and substantial concentration. Since the HHI is used by the antitrust agencies in the case of mergers as a screening device, what is relevant here is whether the change in market structure affects the competitive process. In general, an increase in the HHI of less than 100 is considered a small change in concentration and as such does not raise concerns on the level of competition. By contrast, larger increases, especially if taking place in moderately concentrated markets, should warrant scrutiny by the antitrust agency.

It is easy to see that the above is always the case for all the relevant markets (and for all the indicators) in which at every time frame the increase has been substantial. This should raise significant concern for the competition in attention, and in case of low elasticity of demand, in terms of the market power. As previously discussed, since in journal publishing, substitutability is significantly constrained by the rigidity of the demand being further enhanced by the bundling strategies, we can expect here a strong correlation between concentration and market power.

Considering the case of a Cournot oligopoly as representative for a given demand elasticity ϵ , the weighted price cost margin, that is to say the average output-weighted price-cost margin measuring the average mark-up in the market for the attention – essentially the average Lerner index considering all the firms – can be written as $PCM \equiv \frac{HHI}{|\epsilon|}$ (Kaplow & Shapiro, 2007). This equation, which draws a strict relationship between the concentration increase and the market power, provides a good description of what happened in the scholarly journal market.

Field	Year	Total Cites	Impact Factor	Immediacy Index	Articles
Economics	1999	1013	757	936	941
	2006	1675	1295	1321	1869
	2012	2007	1749	1717	1990
Management	1999	971	842	1022	745
	2006	1031	993	1001	989
	2012	1142	1206	1189	1023
Business	1999	925	807	857	1321
	2006	897	812	961	867
	2012	1107	1090	1044	1139
Business & Finance	1999	1918	1194	1432	2912
	2006	2649	1892	1925	1693
	2012	2634	1863	1685	1700

In addition, when considering mergers, the presence of significant competitors is also important, as close rival firms are likely to constrain anti-competitive behaviours. Now in the market for academic attention, this presence is limited essentially because the entry is strictly regulated.¹⁶ Accordingly, the contestability is limited only to the journals and publishers already included in the report. Moreover, as previously said, the competition among journals is limited by the idiosyncratic features of the market because the substitutability of items depends on the ranking

¹⁶ The ISI Thomson website provides the procedure for being considered by JCR. However in a number of private interviews conducted, editors told us that the whole evaluation process including final decision are quite opaque.

itself. For instance, in terms of readership, a highly ranked journal and an article therein have very poorly substitutable with others because they are a strong focal point for the attention. Some degree of competitiveness exists in the lower fringes of the market for listed but lesser-known journals. However, this is further attenuated by the bundling strategies characterizing the market. Those practices are *de facto* subsidizing the attention within the same catalogue and, as earlier discussed, this alters the competition in favour of major players.

5.2 Academic vs Commercial Publishers

The Big Deal characterizes in general the COM publishers, while the ACA publishers generally operate with just one or with a significantly smaller bundle of journals. Hence we expect a trend of increasing market concentration in the hands of COM publishers with the contextual reduction of the ACA market share.

It is thus interesting to reframe the analysis by considering the CR4 and the market shares separately for COM and ACA market segment, as presented in Table 3 (the HHI does not permit such calculation). Here it is fairly evident to grasp a generalized trend in concentration of the top four COM players, accompanied by the contemporary decrease in concentration of the top four ACA publishers. In other words, the rise in concentration only characterises the COM segment, and this is at the same time accompanied by a substantial erosion of the ACA segment, as shown by the changes in market shares. The reduction is substantial everywhere, and in all four fields in 2012, the COM publishers controlled 65% of the market in economics and from 73% up to 84% in the other fields. This happened in 14 years from a situation of substantial parity everywhere or even reversing the status quo in business (in 1999, ACA controlled 66.63% against 33.37%, becoming in 2012 COM, 27.18% vs. ACA 72.82%).

The splitting of the market of attention into two submarkets, COM and ACA, and the consideration of the CR4, make it easy to see that in both of the submarkets, the concentration rate is high everywhere and very high in the COM segment. Essentially, the first four firms in all fields

have the lion's share, leaving to the other numerous COM publishers a fringe of the market. The stability of these values across the years implies that the contestability of the position for the top four players is very low.

This situation is common to many markets for information goods in which a handful of leaders of the market, the major players, represent, *per se*, a separate segment characterized by substantial inertia in attention, thus providing them a substantial stability. The remaining COM segment is, to some extent, a separate market in which the other players compete with each other (Nicita & Ramello, 2007). In addition, it is also worth noting that although ACAs and COMs represent two distinct segments, there is still a monotonic erosion of the former by the latter.

The results presented so far and their discussion suggest a caveat. The market share of the commercial publishers and the growth of their concentration might have grown, had they been able to attract better journals than the academic publishers. In other words, the COM companies might have better marketing strategies, and they might be more competitive in the market of academic attention than the ACA publishers are.

To understand whether COM publishers attract better journals or are better able than ACA publishers to boost the IF of their titles, we compared the average IFs by type of publisher (Table 4). From this comparison, we noticed two phenomena. First the number of COM titles has grown more than have those of ACA for all the fields considered. This suggests that the COMs are, on average, more dynamic than the ACAs. Second, the average IF of COMs has also grown faster than have ACAs. Last but not least, as a result of the faster growth of the COMs, while in 1999 the average IF of ACA was always larger than the average IF of COM, in 2012, this was true only for the journals in Economics and in Management, whereas the situation was the opposite for titles in Business and Business and Finance. As for Economics and Management, the trend observed during the period examined suggests that the average IF of COM will overtake that of ACA in the not-too-distant future. In other words, it seems plausible that the growing power and attractiveness of commercial publishers could be explained either by their greater ability than academic publishers

on the average in producing good journals and portfolios, or by their superior ability to endogenously manage academic attention, thus favouring the primacy of their own titles.

Table 3 Academic and Commercial Publishers

	Economics			Management			Business			Business and Finance		
	1999	2006	2012	1999	2006	2012	1999	2006	2012	1999	2006	2012
CR4 commercial	40.26	60.22	60.07	38.41	52.60	60.74	27.42	41.76	58.73	53.14	70.92	71.88
CR4 academic	27.12	18.02	22.30	32.94	26.43	11.76	40.89	30.46	17.81	21.94	19.53	16.60
Market share of commercial	49.19	65.93	65.54	51.41	65.62	84.56	33.37	55.16	72.82	55.68	72.92	77.26
Market share of academic	50.51	34.07	34.46	48.59	34.38	15.44	66.63	44.84	27.18	44.32	27.08	22.74
CR4 between commercial only	81.84	91.33	91.65	74.71	80.16	71.88	82.18	75.71	80.65	95.45	97.26	93.04
CR4 between academic only	53.69	66.36	64.71	67.79	76.87	76.18	61.36	67.92	64.97	49.50	72.11	73.02

Table 4. Number of journals in the ISI Thompson database and average IF by year and type of publisher

	Economics						Management					
	1999		2006		2012		1999		2006		2012	
	Commercial	Academic	Commercial	Academic	Commercial	Academic	Commercial	Academic	Commercial	Academic	Commercial	Academic
Number of journals	90	75	128	47	225	107	42	18	61	18	148	24
Average IF	0.674	0.835	0.789	1.111	1.024	1.132	0.554	1.222	0.963	1.709	1.569	1.766
	Business						Business and Finance					
	1999		2006		2012		1999		2006		2012	
	Commercial	Academic	Commercial	Academic	Commercial	Academic	Commercial	Academic	Commercial	Academic	Commercial	Academic
Number of journals	26	26	43	22	83	33	20	14	29	13	65	21
Average IF	0.614	1.226	0.995	1.580	1.585	1.488	0.693	0.788	1.129	0.935	1.047	0.954

Conclusions

Today, scholarly publishing is an essential way to actively participate in the scientific debate and to operate in the modern research environment, which extends far beyond the confines of individual research institutions. However the whole system is subject to different stances not only connected to the production and circulation of newly created knowledge. The overall picture is thus difficult to be drawn although an extensive literature, which has especially flourished in the last decade, has tried to provide different glimpses on specific features.

In this paper, we have tried to broaden the perspective on an important although so far neglected issue, that of academic attention. In a world that is increasingly rich with information, a key economic problem is how to allocate the scarce attention and what kind of dynamics this situation can foster. By focusing on selected fields and by using standard tools of the industrial organization, the research draws a picture of the trend that has occurred over the last 14 years in the market for academic attention and attempts to provide an interpretation of it. The different indices used as a proxy for academic attention show that a trend of progressive concentration took place and that specific strategies adopted by players, such as bundling together large number of titles, besides providing the usual benefits determined by price discrimination in term of consumer surplus extraction, can also produce subsidies of attention from well-known journals to lesser-known journals that are part of the same bundle. This, of course, has an impact on the readers' and authors' choice of how to direct their attention, and it can affect their choices as they are no longer determined simply by the quality of the articles and the journals.

In general excessive concentration can push the firms to exploit their dominant position. Indeed, the scientific community has repeatedly observed tensions between the always shrinking libraries' budgets and the increasing subscription demands. These two opposite forces might likely lead the market to some equilibrium, or to fostering the emergence of new standards and new products (such as open access journals). Findings do not provide any specific implications on this respect. However, it must be underlined that the preservation of a substantially competitive

scholarly publishing seems to better match the substantial openness required by the scientific environment and the freedom of researchers.

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