The business of academic publishing: A strategic analysis of the academic journal publishing industry and its impact on the future of scholarly publishing


Glenn S. McGuigan, Business and Public Administration Reference Librarian
Penn State Harrisburg, USA
qxm22@psu.edu

Robert D. Russell
Department of Management, School of Business Administration, Penn State Harrisburg, USA
rdr7@psu.edu

Abstract

Academic libraries cannot pay the regularly escalating subscription prices for scholarly journals. These libraries face a crisis that has continued for many years revealing a commercial system that supports a business model that has become unsustainable. This paper examines the “serials crisis,” as it has come to be known, and the economics of the academic journal publishing industry. By identifying trends within the industry, an analysis of the industry is undertaken using elements of the five forces framework developed by Michael Porter. Prescriptions are offered concerning what can be done and what should be done to address this problem.

Introduction

Academic libraries face a crisis that threatens their very existence and challenges the fundamental structure of the scholarly publishing system. Academic libraries cannot continue to pay the regularly escalating subscription prices for scholarly journals that the publishers demand each year. As described by various authors [1], academic libraries face a crisis that has continued for many years, confronting a business model that threatens the mission of these libraries. The financial crisis brought about by journal price escalation must be confronted in a strategic manner by academic libraries if they are to continue providing the resources and services expected of them.

The first step in understanding the serial's crisis will be to examine the business model currently in place within academic publishing. Understanding the factors that determine the structure of the relationships among the industry’s major participants is crucial to understanding the source of the current crisis.

An analysis of the academic publishing industry will also be performed using Porter’s (1980) venerable Five Forces Framework [2]. This framework addresses how the external context of firms influences performance. Porter’s forces are useful in the context of the academic publishing industry since they can help to identify activities that create value in the industry as well as highlight the conditions that help to determine who is in the best position to appropriate the value added. The industry analysis combined with a description of the business model should help to provide a thorough understanding of the academic publishing industry and the role of major participants. By examining this industry using these tools, it is possible to understand why the academic journal publishers behave as they do in raising prices with such regularity and how they can generate above average returns.

The purpose of this paper therefore is to examine the “serials crisis” faced by academic libraries. Prescriptions will be offered concerning what can and should be done to address this problem.

The Business Model of Academic Publishing

Scholarly publishing relies upon an unusual economic model [3]. There are three important participants in the industry: (1) faculty scholars who write the journal articles and provide editorial services, (2) the publishers who act as a “middle man” by vetting, publishing and distributing the scholarly content of the journals, and; (3) colleges and universities that purchase the journals usually through their library systems.

Although faculty authors provide the content of academic journals and faculty editorial boards do many of the editorial tasks for the journal publishers, they are usually unpaid although some editors may receive a small compensation for their activities. Faculty members and the academic institutions that employ them, in turn, purchase the journals. This is a very unusual circumstance in that necessary inputs (articles and editorial services) to the publisher’s business are provided free of cost. It is made even more unusual given that the colleges and universities that purchase the journals partially subsidize the production of the journal by paying the salaries of faculty authors and editors.

Publishers have a mediating role in the industry. They collect, package and disseminate the articles produced by faculty authors. The primary user of the journals is the very same group that produced journal content – faculty of colleges and universities. After journal content is consumed by the faculty/scholars, new knowledge and research is produced and continues the cycle. The academic libraries
purchase and provide access to the journals. They act as agents for both faculty members who demand certain journals and university administrators who provide the budget for serials purchases. In an era of increasing budgetary restraints, this role has become increasingly fractious as the interests of budgetary officials and faculty members have diverged. Faculty members desire a large number of increasingly specialized journals while budget administrators desire to decrease the money spent on journal collections. The academic library is often caught in the middle of these conflicting concerns. The following diagram provides a simplified depiction of the scholarly journal production process, as it currently exists:

Cycle Diagram

The incentives of faculty scholars to participate in this cycle are twofold. First, the norms of the profession strongly encourage faculty members to participate in the generation and dissemination of new knowledge based on research or scholarly activities. Second, the academic process of promotion and tenure and the role of credentialism in determining faculty advancement strongly emphasize the production of scholarly articles. According to Thomas and Clay, “because tenure and merit pay decisions frequently hinge on publishing, faculty members, pursuing career advancement and job security, direct vast amounts of energy and creativity into writing articles on increasingly specialized topics.”

Academic libraries have two conflicting incentives in the current business model. The first is to provide faculty with the journals that are necessary to supply current knowledge within various fields of expertise. As seen, domains of knowledge are becoming increasingly specialized which brings the requirement of adding more specialized journals to serials collections. Libraries are also under pressure from college budget administrators to control collection’s costs as prices increase and library budgets decline or remain stagnant. The most well-known almanac of the library and book trade industry, The Bowker Annual, describes this situation. “Surveys of libraries of all types show similar results – funding is ‘strained,’ staffing figures are flat, library ‘use’ is rising, materials acquisition costs continue to rise, and materials acquisitions (in counts) are flat.”

Costs for academic journals, or “serials” have persistently escalated over the past 20 years. From 1986-2005, serial expenditures for the member libraries of the Association of Research Libraries (ARL) have increased 302% while the number of serial items purchased has increased only 1.9% on average per year. The average annual percentage increase in price for all serials was 7.6%. Average increases vary by discipline as do prices. While the highest average prices are found in the scientific disciplines, such as chemistry ($3,429), physics ($2,865), and engineering ($2,071), average prices in other disciplines such as business ($820) and sociology ($528) also increase with regularity. To illustrate the severity of the problem, using data from a prominent Big Ten university, if the average changes in library budgets were compared to the average increase in serial costs from the years 2001-2005, the entire library budget would be consumed by journal costs by the year 2014.

Academic journal publishers operate on a for-profit basis and their major incentive is to maintain or increase profit margins. They justify their price increases for a variety of reasons. In a letter sent to academic librarians and posted on their Web site, Elsevier justifies the steady price increases because of an increase in articles per issue; the increase of electronic usage; and the increased costs of
While the authors grant these points, it is clear that the publishers maintain a high profit margin while academic libraries operate under increasing financial duress. It is the contention of the authors that price increases and high profit margins are more explainable by the bargaining power wielded by publishers rather than by cost pressure or because of high value-added activities on the part of the publishers.

**Industry Analysis**

The academic journal publishing industry encompasses the creation, review, packaging and distribution of knowledge and/or information in multiple formats for use mainly by academic and scientific consumers. Worldwide, the scientific, technical, and medical (STM) segment of the academic journal publishing industry generates a little more than $19 billion in revenue, with the top ten publishers accounting for approximately 43% of that revenue, according to a recent market research report referenced by Library Journal. North America is by far the largest market for this industry and accounted for over 60% of revenues in 2004. Therefore, if the percentage of revenues has not changed dramatically since that time, current revenue size of the industry in North America could be estimated to be approximately $11.5 billion.

As Thennes and Clay relate, commercial publishers within the last twenty to thirty years have taken control over many publications that had been controlled by non-profit academic and scholarly societies. The shift took place during the 1960's and 1970's as commercial publishers recognized the potential for profitability in acquiring journals from the societies. Scholarly societies have found it desirable to form partnerships with the large publishers since they are relieved of the costs and administrative burdens of publishing their journals. Edwards & Shulenburger state “the commercial publishers, which recognized the relative inelasticity of both supply and demand, acquired top-quality journals, and then dramatically raised prices, expecting that they would lose relatively little of the market” . This expectation turned out to be true.

The movement of for-profit publishers into the academic journal market and subsequent consolidation of publishers has resulted in a highly concentrated industry. Three giants dominate: Reed Elsevier, Springer and Wiley. Estimates indicate that these three account for approximately 42% of all journal articles published. The for-profit publishers skimmed the cream of the academic journals, acquiring the most prestigious and those with the largest circulation. Beyond the giants, however, there are a large number of smaller publishers (over 2,000). The large number of small publishers can be accounted for by the increasing specialization within academic disciplines. As disciplines fragment, each seeks to establish its own research tradition and to create journals that provide outlets for their research. The result is a large number of specialized journals often published by academic societies and each with a relatively small circulation. This dynamic has added to the serials crisis since the smaller journals have fewer subscribers and therefore higher costs per issue. As serial prices escalate and library budgets remain static, the inevitable result is cancellation of some journals. According to Okerson, “in view of the increasing size of the periodicals universe (and the increasing specialization in journals), the relatively fixed materials-and-binding budgets at libraries have resulted in decreasing numbers of subscriptions per title. Prices per title increase further, and the vicious cycle continues”.

Although it is difficult to acquire information regarding the profitability of journal publishers, it can be surmised that the small publishers operate at a very low level of profits or on a break-even basis. This is likely not the case for the big three for-profit publishers. For example, the profit margins achieved by Elsevier during a three year period reveals unusually high figures rarely found for firms in other industries. The following data, acquired from the UK Competition Report and the RMA Annual Statement Studies, provides the operating profit margins for Elsevier by business segment in percentages for 1998-2000 and for the larger industry of periodical publishers.

**Table 1: Operating Profit Margins**

<table>
<thead>
<tr>
<th>Year</th>
<th>Elsevier Science &amp; Medical</th>
<th>Total Elsevier Journals</th>
<th>All Periodical Publishers*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>35.9</td>
<td>25.7</td>
<td>4.9</td>
</tr>
<tr>
<td>1999</td>
<td>35.4</td>
<td>23.4</td>
<td>4.7</td>
</tr>
<tr>
<td>2000</td>
<td>36.4</td>
<td>21.0</td>
<td>4.3</td>
</tr>
</tbody>
</table>

*Industrial ratios based upon accounting periods from April 1 of year listed to March 31 of following year.

As can be noted from the table, the operating profit margins for Elsevier in the Science and Medical segment are extraordinarily high. For example, in the year 2000, the operating profit margin for the Science and Medical segment was more than 8 times that of the margin for the larger industry. These high margins exist even as critics question the value provided by the journal publishers. In an investment analysis report of Reed Elsevier (referred to by its ticker symbol REL), a Deutsche Bank analyst argues that the value added to the publication process by the academic publishers is not high enough to explain the margins that are earned.
In justifying the margins earned, the publishers, REL included, point to the highly skilled nature of the staff they employ (to pre-vet submitted papers prior to the peer review process), the support they provide to the peer review panels, including modest stipends, the complex typesetting, printing and distribution activities, including Web publishing and hosting. REL employs around 7,000 people in its Science business as a whole. REL also argues that the high margins reflect economies of scale and the very high levels of efficiency with which they operate.

We believe the publisher adds relatively little value to the publishing process. We are not attempting to dismiss what 7,000 people at REL do for a living. We are simply observing that if the process really were as complex, costly and value-added as the publishers protest that it is, 40% margins wouldn’t be available. [19]

This statement by Deutsche Bank is an astonishing comment on the profitability of the industry. The notion that Elsevier, and therefore the other commercial publishers, add “little value to the publishing process” and cannot justify the high profit margins is significant. This statement by Deutsche Bank, while aimed towards investors, reveals the skepticism of investment analysts regarding the value that Elsevier, and therefore other firms with similar business models, claim to add to the publishing process.

If the large publishers provide little value-added, what explains their apparently high profit margins and ability to consistently raise prices? The first element that may account for the large publisher’s profits is the concentration of the industry. As noted, the top three publishers of scientific journals (Elsevier, Springer-Kluwer and Wiley-Blackwell) account for approximately 42% of all articles published. Although there are over 2,000 publishers of academic journals, no other publisher beyond the big three accounts for more than a 3% share of the journal market. Moreover, the big three control the most prestigious journals with the largest circulations.

Because of the oligopolistic structure of the industry, rivalry between publishers is low (at least among the big three). Rivalry is further attenuated because there is little direct competition between the individual journals produced by each publisher. This is due to the specialized character of academic journals which are targeted to specific academic disciplines thus each journal has its own distinct target audience. This is a form of product differentiation. Moreover, the publishers that own prestigious journals are able to take advantage of another form of differentiation since faculty and libraries will always seek out the most influential journal within any given discipline.

There is no more striking evidence of the power of the large academic publishers than the fact that two of the most important inputs to the production of a journal – the articles themselves and editorial review – are provided virtually free of charge to the publishers. As seen in the business model, faculties have strong incentives to produce articles and participate in editorial reviews, activities that are promoted both by the values of the profession and academic tenure and review procedures. Academic journals are the primary means for disseminating scholarly work and this fact places the journal publishers in a uniquely powerful position. Although they may not provide a great deal of value through their operational activities as illustrated by the Deutsche Bank analysis, they occupy a strategic position in the current business model by controlling the flow of scholarly exchange necessary to the process of knowledge creation. In the current model, faculty members are more dependent upon the publishers than the publishers are on faculty members. The dependency is increased by the fact that there are a relatively large number of faculty members seeking an outlet for their scholarly output compared to the number of journals available within any academic discipline.

The bargaining power of the academic libraries in the current business model is also quite weak. Acting as agents for their faculty, the libraries simply have little choice regarding what journals they can acquire. Since the publishers have been able to differentiate their product lines both on the basis of academic specialization and reputation, academic libraries cannot substitute one journal for another and meet the specialized needs of faculty scholars and other patrons. The bargaining power of the publishers is illustrated by the practice of “bundling” packages of journals for sale to the library, thereby constraining the ability of libraries to choose which journals they wish to acquire.

All these factors combine to ensure that demand for academic journals is inelastic. Inelastic demand explains how publishers can persistently increase the price of journals with little resistance on the part of either faculty or the academic library. Although journal publishers may seem to add little value through what they do, they have a great deal of bargaining power because of their position in the current business model. It is apparent that the universities have not been able to leverage either the value-added services of faculty authors and editors nor the bargaining power of the faculty consumer. It would seem that the publisher’s role as an intermediary, controlling the flow of knowledge between producer and consumer, gives them the power to charge what the market will bear.

Publishers are able to expropriate the value-added by authors (copyrights adhere to the publisher and not the author) while university libraries are unable to create bargaining power as buyers of the journals. The result of the current industry structure is increasing prices and high margins for the large, for-profit journal publishers. In the next section, we turn to possible strategies that could lessen the bargaining power of the journal publishers and restore some measure of balance between publishers and academic libraries.

**Strategic Solutions**

A time-honored strategy that addresses the problem of publisher concentration is the creation of buyer consortia or alliances among academic libraries. An alliance of a large number of academic libraries would increase their customer base (number of faculty members) and thereby increase the bargaining power of the libraries relative to the publishers. Library consortia have a long history in linking institutions for the purpose of sharing information and resources, and for engaging in various collaborative activities. However, their influence on assuaging journal price escalation has been minimal. One reason for this is that the fragmented nature of library consortia diminishes their bargaining power. Most consortia have been formed on the basis of diverse criteria such as geographic proximity or organizational characteristics (e.g. Community College Libraries Consortium). When consortia are based on such varied criteria, It is difficult to establish a common base to bargain with the large publishers.

There are umbrella consortia, however, that could provide the organizational base for effective bargaining. The ARL, an alliance of the...
major research libraries in the United States, is critically important as a policy related organization; however, it is not active as a buyer group. If the ARL decided to represent the entire group of academic journal subscribers, it could wield considerable clout with the large journal publishers. Another important library consortium is the International Coalition of Library Consortia (ICOLC). It includes over 150 organizations, many of these of both a regional and academic nature. As an umbrella organization, the ICOLC has not negotiated with publishers and has served mainly as a forum for information exchange between organizational members but just as the ARL, the ICOLC could adopt a more activist stance and prove to be an effective counter-balance to the journal publishers.

Another consortium that could provide the foundation for a powerful bargaining coalition is the Committee on Institutional Cooperation (CIC), an association comprised of the “Big 10” (now 12), teaching and research universities. The CIC’s Center for Library Initiatives (CLI) has been a leader in cooperation by supporting the preservation of journal collections through cooperative archiving, initiating best practices and standards in academic librarianship, and managing consortial agreements and licenses between member libraries and publishers. If the CIC could link the Big 10 universities in a buying collective, they may be able to bring significant bargaining power to the group. Nevertheless, the CIC represents only a dozen of the major research university libraries in the United States. The need for a super coalition of academic libraries to strengthen the bargaining position of the buyer groups with the journal publishers is evident. Academic libraries within the United States are the principal customer of the academic journal publishers. U.S academic libraries account for approximately 60% of the global market for academic journals [20]. Therefore, a large coalition of academic libraries would concentrate buying power in one group, significantly increasing their ability to bargain price with the large journal publishers. The CIC, as an institutional consortium intensely involved with collection development issues, would be a logical candidate to assume a leadership role in building the coalition. The CIC possesses the experience and the status to provide leadership in this endeavor. Additionally, the ICOLC, as a collective of most of the major library consortia, could form an institutional structure for a bargaining coalition or assist with linking together consortia or institutions to form such a coalition.

The advantages established by the large publishing companies within the current business model of academic publishing based on their role as gatekeepers of knowledge flow are difficult to overcome even for large buying consortia. Entry into the traditional publishing industry by potential competitors is also difficult due to cost advantages due to the economies of scale, the learning curve effect, and established market share. High product differentiation due to the prestige of journals and editorial boards and the publishers’ gatekeeper role, give traditional publishing houses a great deal of bargaining power over academic libraries and faculty members who provide scholarly articles.

The potential exists, however, to radically transform the academic publishing industry through the adoption of new electronic publishing technologies using the internet as a medium for transmission. An electronic-based publishing strategy enacted by academic consortia could overcome many of the advantages of the large publishers and radically change the business model of academic publishing.

There are several variants of an electronic publishing strategy. One potential initiative is for the academic libraries, acting through buying collectives, to demand electronic-only journals. Such an initiative would force publishers to unbundle electronic and paper journals. This should reduce the overall price of journal subscriptions since the academic consortia would not pay the publishing costs for paper journals. The fixed costs for establishing a Web-based publishing capability are less than those for printing paper journals and the variable cost of an electronic publication is virtually zero once the original article has been posted on the web. Just as the internet has helped to decouple traditional supply chains in global markets, a move to electronic, Web-based journal publishing and distribution would loosen the ties that bind academic libraries to the for-profit publishers. In order for this strategy to be successful, however, academic libraries must be well on their way toward establishing the electronic library-of-the-future. Without significant electronic and online capabilities, this strategy will not work.

A more radical initiative for the academic libraries would be to strongly support the open access (OA) movement for disseminating scholarly works via the internet. Basically, the open access movement provides “peer-reviewed journals whose content is made freely available on the internet upon publication for use by anyone anywhere for any purpose as long as the authors are properly acknowledged” (Information Access Alliance, 2008). Open access journals are supported by a variety of organizations to include academic institutions, scholarly societies and government agencies. Costs of the electronic journals are paid in a variety of ways ranging from “author pays” models to subsidies from sponsoring institutions.

A major player within the OA movement has been the Scholarly Publishing and Academic Resources Coalition (SPARC), an alliance of universities and research libraries. SPARC’s goals are to reduce the cost of scholarly journals by providing lower cost or free, non-commercial, peer-reviewed scholarly journals. According to SPARC, it is their intent to create “publisher partnerships and advisory services --- to demonstrate alternatives which rely on different business models than traditional journals and promote competition for authors and buyers. SPARC’s goal is to stimulate expansion of the non-profit sector’s share of overall scholarly publishing activity” [21].

The expansion of online OA publishing for academic journals could have enormous long term consequences for the academic publishing industry. Just as the emergence of WIKIs and blogs greatly expanded opportunities for social and political commentary, the production and distribution of scientific knowledge could be greatly enhanced by the emergence of online OA journals. Not only would publication of scholarly articles be facilitated, but opportunities for serving on editorial boards would also be greatly expanded. The broader opportunities for publishing and editorial review offered by OA journals could contribute to the end of the Babylonian priesthoods that characterize the editorial review boards of too many of the most prestigious academic journals and lead to a flowering of innovation and knowledge creation among academic researchers.

The expansion OA publishing would have the advantage of facilitating the emergence of smaller, more specialized academic journals. As has been discussed, these journals are often squeezed out of library budgets by the burgeoning costs of the larger journals published by for-profit firms. OA publishing offers a low cost alternative for producing specialized journals as well as providing easy access to potential readers anywhere in the world.
The proliferation of online OA journals in combination with aggressive consortia licensing would significantly alter the current business model of academic journal publishing. The creation of OA electronic journals is a form of entry into the academic publishing industry. By multiplying the number of journals available not under the control of for-profit publishers, OA publishing would increase competition within the industry as well as increase the bargaining power of academic libraries and faculty authors. As the use of e-journals becomes more accepted, traditional publishers would most likely be forced to change their role. Rather than acting as oligopolists that profit by controlling access to a small number of prestigious journals, they may be forced to act as agents of the libraries, negotiating with journal providers and packaging e-journals as requested by the libraries. The publishers would retain a degree of bargaining power based on their control of the larger, more prestigious journals. Their power, however, would be lessened by the unbundling of the electronic and bound journals as well as the increased opportunity of faculty to publish in alternative electronic journals.

In order for the new business model to work, four conditions must be present: (1) academic libraries must be prepared to make the leap to primarily online sources for much of their current serials collection; (2) faculty must accept the new online journals as valid sources for new knowledge as well as credible outlets for their own scholarly work; (3) the new electronic journals must implement a credible review process and form high quality editorial review boards, and; (4) colleges and universities must accept the new electronic journals as valid in their promotion and tenure process. Although the technology exists to make online OA journals a reality, the cultural changes in the value system of the professoriate and academic administrators required to change the business model of academic publishing may prove to be a difficult challenge.

**Conclusion**

An analysis of the academic publishing industry indicates that the industry presents both threats and opportunities for academic libraries. Within the current business model, bargaining power of academic libraries as buyers is weak. Similarly, the bargaining power of faculty/scholars as suppliers of intellectual property is weak. The industry is highly concentrated with three for-profit publishers controlling the distribution of many journals including the largest and most prestigious. These factors contribute to an industry environment where the commercial publishers are able to increase prices due to the lack of alternative sources for the distribution of intellectual content held within academic journals.

The approach of analyzing the industry through a business perspective is important so that a clearer understanding of the industry landscape can be drawn. This project will hopefully contribute to the public discourse that is taking place regarding the current business model of academic publishing and scholarly communication. Based upon this analysis, the business model is no longer sustainable. The authors are hopeful, however, that change in the academic journal industry business model is possible, but it will not take place unless academic libraries pursue strategies similar to those outlined here. This includes the creation of large coalitions or consortia to aggressively negotiate with the journal publishers as a buyer group as well as the facilitation of alternative methods of scholarly publishing through OA initiatives such as those advocated by SPARC. What is critical is that academic libraries must act and use technology to begin the process of change immediately. The “serials crisis” has created an opportunity for change. In an analysis of the scientific and academic publishing industry, the Wellcome Trust, which funds many research activities, emphasizes the fact that the existence of this crisis does not mean that change will happen:

> The existence of the means to create significant change does not mean that change will occur. The fact that electronic media exist has implications for the market. It is up to the players in the market to decide how they will use the means at their disposal. The dominance of the commercial publishers will be challenged only if the other players use the opportunities available to them.[22]

**Notes**


for academic works could lead to conflict with the obligations of the United States under the TRIPS Agreement" (Shavell 2010, p. 339). Beyond the feasibility requirement there are also several reasons why an abolishment of copyright is also not reasonable from an economics perspective. First and foremost, our analysis has shown that OA may not necessarily increase the effort incentives of researchers due to the rent-seeking motive in the publishing game. A closer look at the history of the academic journal publishing market actually shows that both academic societies and universities can look back on a great tradition in publishing academic journals. We have seen that the first journal titles were launched throughout the sole initiative of academic association.