The best business model for scholarly journals: an economist's perspective

The answer to the question 'What is the best business model for scholarly journals?' depends on who is asking. In this article, we first characterize the views of some of the major players in the market (for-profit publishers, non-profit publishers, libraries) on which business model is best. We will consider the two commonly discussed business models, the traditional (or 'Reader Pays') model on the one hand and the Open Access (OA) ('Author Pays') model on the other.

While it is interesting to understand the incentives of these big players, of yet more interest is the question of which business model is best for society as a whole. A good proxy for this is to consider which model is best for scholars as both authors and readers. We outline a new framework for the formal economic analysis of scholarly journals and use this framework to sketch some results on the relative social value of Reader-Pays versus Author-Pays journals.

Perspectives of the big players

Large commercial publishers strongly advocate the status quo-the Reader-Pays business model. The fact that they have used the Reader-Pays model when they were free to choose an Author-Pays or any other alternative model suggests that the Reader-Pays model has been judged to be the most profitable. The economics behind this judgement is straightforward. Libraries are willing to pay high prices for journals because journals are monopolists over the articles they carry. If a scholar the library serves needs an article in the journal for their research, there is no convenient substitute for it.

In the near term, the transition from print to digital distribution may also increase the profitability of the Reader-Pays model (see refs [1] and [2] for a discussion of the bundling and price discrimination strategies facilitated by digital distribution). The Author-Pays model, by contrast, gives publishers much less market power. Authors can freely substitute among journals of relatively similar prestige when deciding where to submit an article and can base this decision in part on which charges the lowest submission fees, putting downward pressure on these fees.

Even if the OA model is regarded to be a less profitable business model, commercial publishers might still fear the expansion of OA for a number of reasons. The first obvious reason is that the expansion of OA means the entry of OA journals, and the entry of any competitor, regardless of the underlying business model, reduces the profits of incumbents. Second, OA journals may be tougher competitors than average, for example if they are non-profit journals committed to maximizing 'impact' rather than profit (although of course an OA journal need not be non-profit). A third possibility is a coordinated boycott among authors and readers of traditional for-profit journals if OA gains popularity.

Non-profit publishers profess a number of (sometimes conflicting) objectives. They would like to have as broad a readership as possible but also to earn a surplus to subsidize other operations. The status quo has historically allowed them to do both. Yet OA is a tempting alternative. Readership would expand further under OA. In addition, it may be a way to combat the looming threats posed by the bundling strategies of the large commercial publishers (the 'Big Deal') and the decline of individual (non-institutional) subscriptions. Big Deal contracts have reduced the ability of libraries to reallocate funds from, say, Elsevier, to other publishers, especially small non-profits. Open Access can bypass this problem by relying on author fees, but are the authors (or their funding sources) willing to pay? And how much?

For more than a decade, the largest purchasers of most scientific journals, university libraries, have voiced concerns about a 'serials crisis' that has forced them to cancel journals even as their serials budgets increased. The procurement process used by these same libraries, maximizing quality-adjusted content subject to a fixed budget constraint, may have contributed to this crisis, as previously suggested[3]. Librarians have been among the strongest supporters of OA, not surprisingly because it would immediately eliminate the 'serials crisis'. In the longer term, they might worry that the 'serials crisis' could be replaced by a 'budget crisis' as administrators reallocate library budgets to help university scholars pay for author fees in the Open-Access regime.

The largest university libraries may be harmed the most because, though they may subscribe to more journals than the average library, their affiliated scholars may publish proportionately more articles than the average scholar. An offsetting effect, as noted above, is that with OA, so long as authors have an incentive to choose the best combination of price and quality when choosing where to submit an article, publishers are forced to compete on the basis of submission fees as well as the usual quality dimensions in their effort to attract the best articles. (Note that arrangements that allow authors to submit articles at zero cost, e.g. institutional memberships, remove this incentive.) Thus, the potential exists to moderate if not eliminate the inflationary patterns observed in recent years.

Perspective of scholars

Prestige is the currency of academia. Aside from the pure enjoyment of prestige, a scholar's chances for promotion, tenure, a higher salary, etc., increase with his or her prestige. Prestige comes from doing high-quality research. Given the difficulty in measuring quality, shorthand measures, such as the reputation of the journal in which an article is published or the number of citations it generates, are used instead. Authors thus have an incentive to submit their articles to prestigious journals both because of the reputation of the journal itself and because prestigious journals attract more readers, and with more readers, authors can expect more citations for their papers. Given this dynamic, it is not immediately obvious whether scholars should prefer the Author-Pays or Reader-Pays model (or some combination of the two).

The submission fees associated with OA increase the expense of conducting and disseminating research for authors. At the margin, this will reduce the amount of research and number of published articles, indirectly harming readers. On the other hand, the subscription fees associated with the traditional business model reduces the number of readers as libraries continue to cancel subscriptions, directly harming readers, and indirectly harming authors (through the reduction in the number of readers). Considering both the scholar-as-author and scholar-as-reader roles simultaneously, assessing the net value of OA for scholars appears complicated.

A framework for the economic analysis of the journals market

Sorting out the complicated question of what business model is best for scholars is aided by a formal economic framework for analysis. The basis for this framework is the journal mediated dynamic between readers and authors, referred to in the economics literature as a 'two-sided' market (see ref. [4] for a discussion of how such a framework has been used for the economic analysis of markets, ranging from telephone networks to credit card payment systems). On one side of the market, authors benefit from greater impact and citations and thus prefer a journal that has more readers.

On the other side of the market, readers benefit from content and thus prefer journals with more articles. Determining the optimal balance between these two sets of players involves measuring the benefits that each side obtains from greater or lesser participation by the other side, calculating the costs of adding (or subtracting) authors and readers, and then identifying the set of prices, i.e. the author fee and subscription price, that maximizes overall net benefits.

Preliminary analysis of this problem[5] suggests that optimal prices will differ depending on the degree of competition in the market for journals. At one extreme-a monopoly journal-prices chosen by a profit-maximizing journal will typically be positive for both authors and readers, even if distribution costs are assumed to be zero. (The positive prices on both sides of the market allow the journal to extract some surplus from both sides of the market.)

This result implies that low distribution costs will not automatically result in an Open-Access market outcome. This result does not imply that OA is not viable in a monopoly setting. If the journal had the goal of maximizing its readership rather than profit maximization, the absence of competition would facilitate its ability to experiment with business models other than the traditional, including the Open-Access model.

At the other extreme-perfect competition between equal-quality journals-a continuum of equilibriums are possible, some of which favour readers and some of which favour authors, often including Open-Access as an equilibrium. When distribution costs are

negligible, OA emerges as an equilibrium, and it is economically efficient (at least in the benchmark case in which author and reader benefits are taken to be roughly equal). In other words, OA maximizes the total net benefits for authors and readers (i.e. scholars) and for society as a whole. Taken together, this set of results suggests that OA may be viable in a competitive setting and may be efficient, but its emergence is not a guarantee.

Intuitively, OA is seen to be efficient in a setting with negligible distribution costs and roughly equal author and reader benefits because prices reflect the costs of adding authors and readers. Even if distribution costs are zero, adding an author is still costly because of first-copy production costs. Positive author fees reflect this cost. Adding a reader is costless, reflected in the zero reader fee associated with OA. This intuition relies on the assumption of roughly equal author and reader benefits. If readers obtain disproportionate benefits from reading additional articles, it may be efficient to have positive reader fees in order to subsidize authors' submissions.

Thus far, our framework abstracts from a number of details of the actual market for journals that may affect the viability of OA, and it would be useful to include these details in a broader framework. For example, a decision by funding institutions to support author fees would promote the emergence of OA. Also, our current approach is static in nature, and does not take into account the difficulty in entering the journals market where reputations may take a long time to establish or change. We abstracted from such entry barriers because they apply to any new journal, not just Open-Access journals. In practice, however, the expansion of OA will probably require the formation of new journals, and so the prospects for OA in this type of environment need to be considered carefully.

Mark J. McCabe School of Economics, Georgia Institute of Technology, Atlanta, Georgia, USA

Christopher M. Snyder Department of Economics, George Washington University, Washington DC, USA

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