Scholarly journals are sometimes regarded as substitutes even though each provides unique content

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Key points
- Although faculty at the top universities may expect immediate access to every wanted journal, this expectation is not shared by most US college/university faculty.
- This situation allows librarians at most universities to compare and select journals or full-text databases on the basis of their cost-effectiveness or other characteristics.
- Librarians who view journals as potential substitutes can behave accordingly when negotiating prices—a situation that results in price discrimination as well as competition among publishers/vendors.
- The perspectives of customers (librarians/purchasers) do not always mirror those of consumers (faculty or other end users).

Keywords: academic libraries, collection development, journals, market structure, price discrimination, selection, substitution

INTRODUCTION

Substitution—customers' ability to choose among comparable products—is a key factor in economic competition, as it prevents any one seller from charging inordinately high prices. If two products are sufficiently similar from the customer's perspective, an increase in the price of one will generally drive customers to the other, thereby reducing overall revenue for the company that charges higher prices. It is not difficult to find substitutes within most consumer markets. For instance, most auto manufacturers offer similar products within each size/price/lifestyle category (Björk, 2021).

However, economists generally adopt a no-substitution perspective with regard to scholarly journals—an assumption that because particular scholarly journals and full-text databases are unique in their content, they cannot be regarded as substitutes (e.g., Edwards & Shulenburger, 2003; Grossmann & Brembs, 2019; Haucap et al., 2021; Tennant & Brembs, 2018). In this scenario, the scholar requires access to every relevant paper; access to a relevant paper in one journal does not reduce the need for other relevant papers in other journals. This no-substitution perspective has been used to explain the high prices of scholarly journals. When substitution is not possible, publishers face little competition and therefore lack strong incentives to keep prices low. In the extreme case, each publisher has a monopoly on its own journal content.

This essay draws on recent and earlier research to challenge the assumption that journals or databases with unique content cannot be regarded as substitutes. While such an assumption may be reasonable for the top research institutions, there is reason to believe that it is not valid for most other US colleges and universities. The argument introduced here implies that there is competition among publishers/vendors, and that the price discrimination practiced by many of them—commercial publishers, in particular—may have arisen in response to the different collection development strategies pursued by different types of colleges and universities.
CONSUMERS AND CUSTOMERS

The conventional no-substitution perspective on journal pricing is based on the assumption that faculty and other serious scholars are the only consumers of the journal literature. Because individual scholars are likely to need access to every article relevant to a particular research project, it is reasonable to conclude that for them, no article can substitute for another.

However, institutions of higher education serve students as well as faculty, and some are focused almost exclusively on undergraduate education. Most undergraduates are not expected to read or cite all the relevant literature, and many course assignments even specify the number of articles that students are required to use. Within this context, access to one relevant article will directly influence the number of other articles the student must obtain. When one good article can substitute for another, the no-substitution perspective is no longer realistic.

There is also a second, more fundamental argument against the no-substitution perspective—that it fails to recognize the distinction between consumers (those who read and cite the journal literature) and customers (those who make the selection and purchasing decisions for academic libraries). While faculty and students are the primary consumers of the scholarly literature, the primary customers are librarians, whose collection development strategies vary systematically based on the types of institutions they represent (e.g., top research universities vs. undergraduate colleges). Moreover, price discrimination—the practice of charging different prices to institutions with different characteristics—can be explained at least partly as a response by publishers to systematic differences in libraries’ collection development strategies.

PRICE DISCRIMINATION

Price discrimination is a key feature of the for-profit journal market. The deals negotiated by libraries (or library consortia) and commercial publishers sometimes incorporate sophisticated forms of price discrimination based on institutional characteristics such as enrollment, library budget, past years’ expenditures, degrees granted, or the number of faculty or students in particular subject areas. In the United States, prices are especially likely to vary with Carnegie classification, which represents the type of institution—major research university, other doctoral university, master’s university, liberal arts college, comprehensive bachelor’s institution, or two-year college. In particular, we can make a clear distinction between the ~150 universities in the Carnegie R1 category (doctoral universities with very high research activity) and all other US institutions of higher education.

Price discrimination is widespread among commercial publishers but less common among non-profit publishers. Comprehensive data compiled by Bergstrom et al. (2014, appendix table S1 17) show that while commercial publishers charge relatively high prices when selling to the R1 institutions, they charge relatively low prices to all other four-year colleges and universities. Among the R1 institutions, the average cost of an article in a commercial publisher’s journal database is 2.2 times that of an article in a non-profit provider’s database. However, among the colleges and universities in the other Carnegie categories, the corresponding figures range from less than 0.4 to 0.9, indicating lower prices for commercially published journals than for those published by non-profits (Bergstrom et al., 2014; Walters, 2022; Walters & Markgren, 2021b). Overall, price discrimination makes commercial publishers’ journals relatively expensive for R1 institutions but relatively inexpensive for everyone else.

DISTINCTIVE COLLECTION DEVELOPMENT STRATEGIES

It is possible that commercial publishers’ practice of offering lower prices to institutions outside the R1 group evolved in response to the distinctive collection development strategies adopted by undergraduate and master’s universities. To understand why, we should first recognize three important differences between R1 libraries and other academic libraries. First, R1 libraries are especially likely to collect extensively, in a broad range of subjects and languages. The top journals in dentistry or agriculture may be of great importance to a major university but will not be needed by many undergraduate liberal arts colleges. Second, R1 institutions tend to collect more intensively as well; within each relevant subject area, they are likely to have a longer list of wanted journals—journals the faculty regard as essential to their research and teaching.

A third difference lies not in the set of wanted journals but in the expectation that any particular wanted journal will be held by the library. Faculty at the foremost research universities may have very high expectations. The librarians’ goal at those institutions is to provide immediate access to every wanted journal. In contrast, faculty at bachelor’s and master’s institutions are more likely to understand that immediate access is sometimes an unreasonable expectation. At these institutions, the librarians’ goal is more often (a) to collect an adequate number or proportion of the journals wanted by the faculty, perhaps with a minimum target within each subject area, and to rely on delayed access to the others through mechanisms such as interlibrary loan; or (b) to acquire full-text databases that fill specific niches without regard for the particular journals included within each database (e.g., ‘We need either EBSCO Business Source Ultimate or ProQuest One Business’).

With these more limited goals, librarians at most colleges and universities tend to view the wanted journals or databases within a particular discipline as substitutes, and to behave accordingly when making selection decisions and negotiating prices. In fact, many of the journal selection methods documented in the library literature since 1973 have involved the explicit comparison of journals or databases based on attributes such as price per journal, price per citation, or price per download (Walters & Markgren, 2020, table 1 and supplementary appendix A). These
collection development strategies do not just allow substitution; they are based on the premise that substitution will take place among comparable journals on the basis of cost-effectiveness. Arguably, they also require substitution, since most colleges cannot afford to provide immediate access to every wanted journal.

Within this framework, librarians can make credible threats to cancel (or not acquire) any product for which they believe the price is too high. Substitution and price discrimination therefore have the potential to benefit colleges and universities outside the R1 group (which obtain lower prices and access to more journals) as well as publishers and vendors (which gain subscribers that cannot afford to pay higher prices). The advantages of price discrimination are especially apparent in the United States, where R1 universities account for less than 6% of all four-year degree-granting institutions (National Center for Education Statistics, 2022).

FOUR HYPOTHESES

Economic research on scholarly publishing might benefit from a more realistic understanding of the institutional factors that influence purchasing decisions in the academic library environment. Investigations grounded in invalid assumptions such as the no-substitution perspective are likely to yield biased or misleading results. In particular, researchers should account for the distinction between consumers and customers, recognizing that librarians—not just faculty—are decision-makers and economic actors.

The argument set forth here provides a possible explanation for the widespread price discrimination that is a central part of the scholarly communication system, showing how it may have arisen in response to the collection development strategies adopted by librarians at different types of colleges and universities. This explanation is consistent with the available evidence, but it is also somewhat conjectural; it has not been tested thoroughly. Likewise, more formal methods might be used to evaluate four key hypotheses:

1. Particular information products (e.g., journals and full-text databases) may be regarded as substitutes even though each is unique in its content.
2. Customers (librarians and others who make purchasing decisions) may regard particular products as substitutes even when consumers (end users) do not.
3. Certain customers (such as the librarians at bachelor’s and master’s institutions) may regard information products as substitutes even when others (such as the librarians at the major research universities) do not.
4. Certain consumers (such as students) may regard particular information products as substitutes even when others (such as faculty) do not.

The first of these assertions may seem obvious to many academic librarians, but it is often overlooked by researchers who study market structure, substitution and price discrimination. Although McCabe described a typical librarian’s perspective more than two decades ago (McCabe, 2002; Nevo et al., 2005), more recent authors have generally ignored the ways in which scholarly journals are actually evaluated and selected (e.g., Björk, 2021; Edwards & Shulenburger, 2003; Grossmann & Brems, 2019; Haucap et al., 2021; Tennant & Brems, 2018). Aside from McCabe and his co-authors, most economists seem to consider substitution among journals and databases only to the extent that open access preprints can serve as substitutes for the final published versions of articles (Armstrong, 2015; Mighelli & Ramello, 2014). For instance, Björk (2021) avoids any discussion of the librarian’s role, or of the distinction between consumers and customers.

IMPLICATIONS AND POSSIBILITIES

For publishers, a key implication of the argument outlined here is that price discrimination tailored to the needs of bachelor’s and master’s institutions can help bring in revenue from institutions that would not subscribe if higher prices were charged. Most commercial publishers seem fully aware of this situation. At the same time, there is some evidence that the publishers most likely to practice widespread price discrimination are those with the personnel, data, and other resources needed to carefully evaluate elasticity of demand and the potential effects of substitution—that is, commercial publishers and perhaps the larger non-profits (Walters, 2022). Smaller, specialized non-profit publishers may have overlooked the benefits of reaching outside their traditional core markets (e.g., research universities), or they may lack the information or expertise needed to determine the degree of price discrimination that would best serve their needs. Non-profit publishers that do not yet practice large-scale price discrimination may want to consider the practices that many commercial publishers have used to avoid journal cancellations and maintain revenue in an era of static or shrinking library budgets.

More generally, publishers should better understand the collection development strategies adopted, consciously or unconsciously, by librarians and other decision-makers. Some of these strategies have been fully documented in the library literature (e.g., Walters & Markgren, 2020, 2021a) while others may need to be explored through conversations with current and potential customers. After all, it is good to know whether most undergraduate institutions regard the journals in each subject area as potential substitutes, but perhaps more useful to know how each individual institution determines how or when a substitution will be made.

One of the key points presented here—that price discrimination results in higher prices for the R1 universities but in lower prices for everyone else—is based mainly on aggregated price data for each Carnegie category (Bergstrom et al., 2014, appendix table SI 17). For that reason, particular institutions—or particular subject areas within those institutions—may be exceptions to the
rule. At an R1 institute of technology, for instance, the no-substitution assumption may be valid in the natural sciences and engineering but not in the social sciences and humanities. Publishers can take advantage of this situation by correctly identifying the subject areas in which the no-substitution assumption holds true. Conversely, librarians can negotiate more effectively by making a convincing argument that they regard the journals in certain subject areas as potential substitutes even when they do not. This is especially relevant for universities right on the cusp of R1 status. For example, some library directors might be inclined to join major-university consortia to show that their institutions have gained a certain level of prestige—but in doing so, they signal their ability to pay as well as the relative inflexibility of their collection development goals (i.e., their need to adopt a no-substitution perspective).

The American system of higher education is highly stratified, and the distinction between the top research universities and the others may be sharper in the United States than elsewhere. For instance, fewer than 12% of the US colleges/universities that offer bachelor’s degrees in history also offer doctorates in the same field; for the United Kingdom, the equivalent value is 36% (National Center for Education Statistics, 2022; UCAS, 2022). Further research is needed to determine whether the relationships described here for the United States hold for other nations as well. Finally, it may be worthwhile to examine whether the principles that apply to scholarly journals and full-text journal databases can be extended to other kinds of online resources—to purely bibliographic databases, statistical databases and online reference resources, for example. For many of these products, the needs of the various types of institutions may be less distinct than they are for scholarly journals.

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