
Recent Trends in Academic Library Materials Expenditures

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ABSTRACT

LIBRARY EXPENDITURES HAVE INCREASED faster than inflation over the last six years. Ironically, libraries are losing ground economically in several key areas. How can this be? Claims on the library dollar—not only unit prices but the full spectrum of library budgetary demands—are growing even faster than the library budget. Not only have the prices of monographs and serials increased, but journal proliferation has placed additional pressures on the library dollar. Despite the stability of library funding over recent years, libraries are shifting funds away from book purchase toward serials purchase. But even this shift is not enough to cover the shortfall. Book collections are weaker, and still many libraries cannot provide comprehensive coverage of the journal literature. Both serial cancellations and serial acquisitions are taking place concurrently.

INTRODUCTION

This article analyzes the impact of the rising cost of materials on academic libraries. While a number of papers discuss a particular library's difficulties or aspects of the problems faced by libraries, this article attempts to analyze the pressures and resources of academic libraries as a group, reflected in Association of Research Libraries (ARL) and Association of College and Research Libraries (ACRL). Trends in total library expenditures and materials expenditures are compared with inflation indexes, the consumer price index (CPI),

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and the more specialized library price index (LPI). Inflationary trends and the impact of journal proliferation on library collections are discussed. If present trends continue, the cost of supporting a first rate library—one with on-site access to a wide range of current journals, a rich selection of recent monographs, and other reference and research materials especially in technical and scientific fields—will grow at a pace which is insupportable in the long run.

DATA SOURCES

Much of the statistical data comes from one of four sources. *ARL Statistics* is an annual publication of the Association of Research Libraries, a federation of over 100 major libraries across the United States and Canada. *ACRL University Library Statistics* is an analogous publication of the Association of College and Research Libraries which is published approximately every other year. In general, ACRL libraries are smaller than the ARL libraries but are similar in purpose. Price index data are extracted from *Inflation Measures for Schools and Colleges: 1993 Update*, an annual publication of Research Associates of Washington. Price data specific to the library world are from *Library Journal's* "Periodical Price Index."

DATA ORGANIZATION

The difference of scale between the typical university ARL library and ACRL library is such that they are best treated separately, although it will be seen that they are generally subject to the same trends and respond in similar ways. Connecticut and Brandeis are medium-sized members of the ARL and the ACRL, respectively. Connecticut, with 2.3 million volumes and a total budget of \$13.1 million, swamps Brandeis, with 900,000 volumes and a budget of \$3.8 million. In addition to university libraries, the ARL counts as members a dozen other research libraries. These libraries, listed in the end notes,¹ are distinct from the university research libraries in that they are tasked to serve not just an academic circle but a community of national, if not international, scope. Unlike university research libraries, these are often directly funded by the federal government in the United States or Canada. Finally, there are also two nominally municipal libraries—Boston and New York Public—which transcend, with a combined total of 13 million volumes, the confines suggested by their geographic names. These libraries, whose activities are in some respects unique, are excluded from the analyses since the focus of this article is academic libraries.

TOTAL LIBRARY EXPENDITURES

As shown in Table 1, when the aggregate ARL library expenditures stood at \$720 million by 1982, nominal expenditures more than doubled to over \$1.5 billion in 1992. ARL library expenditures have increased between 5.69 percent (1991) and 10.26 percent (1985) per year during these ten years (except in the recession year of 1992, when expenditures climbed by only 3.65 percent). ACRL library expenditures seem to follow the same general trend, though at a lower level. The ACRL did not publish statistical abstracts for 1983, 1985, 1987, 1990, or 1992. No projection is made for 1992, and the expenditure values for the gap years are interpolated estimates. Still, it is evident that the nominal expenditures of the ACRL libraries have grown substantially, if not to quite the same extent as the ARL libraries. To allow for variation in the number of member libraries over the decade (especially in the ACRL, where fifteen new libraries reported total expenditure data in 1989), it is possible to look at total expenditures on a per library basis. On this basis, ARL expenditures have climbed from \$7.12 million in 1982 to \$14.1 million in 1992, a 98 percent increase in ten years. ACRL expenditures have increased from \$2.63 million per library in 1982 to \$3.52 million in 1989, a 34 percent increase in nine years.

TABLE 1
AGGREGATED TOTAL LIBRARY EXPENDITURES BY ARL* AND ACRL LIBRARIES
IN MILLIONS OF DOLLARS AND PERCENT INCREASE FROM PRECEDING YEAR

Year	ARL Libraries ²		ACRL Libraries ³	
	Total Expenditures	Percentage Increase	Total Expenditures	Percentage Increase
1982	720		242	no data
1983	790	9.72	248**	2.48**
1984	858	8.55	254	2.42
1985	946	10.26	269**	5.91**
1986	1,027	8.61	284	5.58
1987	1,106	7.68	306**	7.75**
1988	1,194	7.89	328	7.19
1989	1,276	6.87	401***	22.26***
1990	1,391	9.02	406**	1.25**
1991	1,470	5.69	410	0.99
1992	1,523	3.65	no data	no data

*Excludes 12 nonuniversity ARL libraries.

**Interpolated estimate between preceding and following year.

***15 new libraries reported cost data to ACRL.

Figure 1 contrasts the percentage growth in annual expenditures in the ARL and ACRL libraries with the consumer price index (CPI), the general measure of inflation, as well as a specialized library price index (LPI) for each year since 1982. The library price index is a measure of inflation as it affects libraries and is influenced by changes in pay scales for librarians as well as by changes in serial and monograph prices. The percentage increase in total expenditures for both the ARL and ACRL is generally greater than the CPI or LPI. Prior to 1987, ACRL expenditures generally kept even with inflation but grew faster than LPI in 1987, 1988, and 1989. Since 1989, however, expenditures have been in decline. On the whole, real expenditures in ARL and ACRL libraries have been increasing.

This is not to discount the fact that some libraries are falling behind, and the aggregate certainly hides the horror stories. At California Polytechnic State University, the library has dropped 330 current journals (of 3,313) over the last five years while increasing the journal expenditure by 82 percent to \$700,000 per annum (Walch, 1993, p. 125). Staffing levels have been reduced by 24 percent over the last five years, from 70.5 FTE to 57 FTE, and monograph purchase has ground to a halt without a single new book being bought in three months. Roger Noll (1993) remarks that even Stanford, while able to purchase monographs, did not have the resources to catalog and shelve the new books. Thus they sit in the basement, inaccessible and unused. But these are exceptionally unfavorable circumstances and do not reflect the norm.

MATERIALS EXPENDITURES

In ARL libraries, as the total expenditures have increased, so too has the proportion devoted to materials (see Table 2). In these libraries, the materials share has risen every year since 1982, steadily expanding from 31.10 percent of the total expenditures to 33.86 percent in 1992 (Association of Research Libraries, 1992). The steadiness of the increases in a population of over 100 libraries suggests a fundamental shift in group activity. Among ACRL libraries, such a shift of additional resources to materials is not apparent. This is, perhaps, because they are already so heavily committed to materials that there is no additional money for reallocation to materials. In absolute numbers, ARL libraries' material expenditures have climbed from \$224 million in 1982 to \$516 million in 1992, an increase of 130 percent. ACRL material expenditures are up by 84 percent. In contrast, the CPI has increased only 47 percent and the LPI by 72 percent during this period.

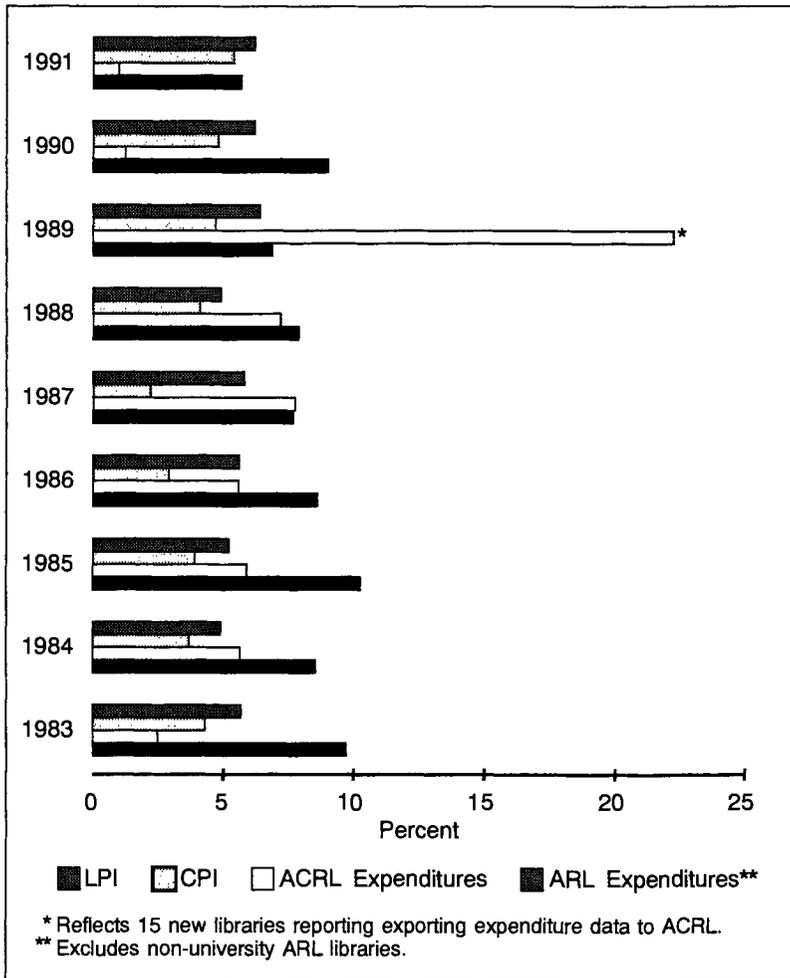


Figure 1. Percent of increase in total expenditures and price indexes

SERIAL AND MONOGRAPH EXPENDITURES

This expanded materials expenditure is increasingly devoted to serials. Figure 2, taken from *ARL Statistics, 1991-92*, displays the increased relative weight given to serials. Funds allocated to purchase serials are growing swiftly and consistently. Since the graph is in constant 1982 dollars, a horizontal line indicates expenditures just keeping pace with inflation, and a downward slope indicates real decline. Serials expenditures started an explosive growth around 1986

and grew faster than total expenditures for nonserials materials. By 1992, serials show the greatest percentage increase of any category reported. Moreover, while total library expenditures and nonserial materials show signs of stabilization in the last year or two, serials expenditure continues to climb. Indications are that journal prices will continue to climb. Faxon and EBSCO have estimated 6.2 percent and 7.0 percent price increases, respectively, for journals in 1994. EBSCO had originally estimated a 10.5 percent price increase, but the unexpected strength of the dollar on the international market has mitigated a portion of that calculation ("Journal Prices to Rise...", 1993).

TABLE 2
AGGREGATE MATERIAL EXPENDITURES BY ARL* AND ACRL LIBRARIES IN
MILLIONS OF DOLLARS AND AS A PERCENT OF TOTAL

Year	<i>ARL Libraries²</i>		<i>ACRL Libraries²</i>	
	<i>Material Expenditure</i>	<i>Percentage of Total</i>	<i>Material Expenditure</i>	<i>Percentage of Total</i>
1982	224	31.10	84	34.81
1983	252	31.84	88**	35.29**
1984	272	31.74	91	35.76
1985	299	31.58	100**	37.11*
1986	331	32.18	109	38.32
1987	360	32.51	118**	38.59**
1988	395	33.06	127	38.82
1989	421	33.00	158***	39.48
1990	461	33.13	157**	38.62**
1991	491	33.42	155	37.77
1992	516	33.86	no data	no data

Source: ACRL, 1982-92, ACRL Data Table

*Excludes 12 nonuniversity ARL libraries.

**Interpolated estimate between preceding and following year.

***15 new libraries reported cost data to ACRL.

Figures 3 and 4 compare the serial expenditures with that for monographs in both ARL and ACRL libraries. In contrast to the swift growth of the serial expenditures in these libraries is the nearly fixed level of expenditures on monographs. A fixed budget in inflationary times is, of course, declining in real terms. It may fairly be asserted that serials are crowding out monographs in library acquisition. Indeed, the share of material expenditures devoted by

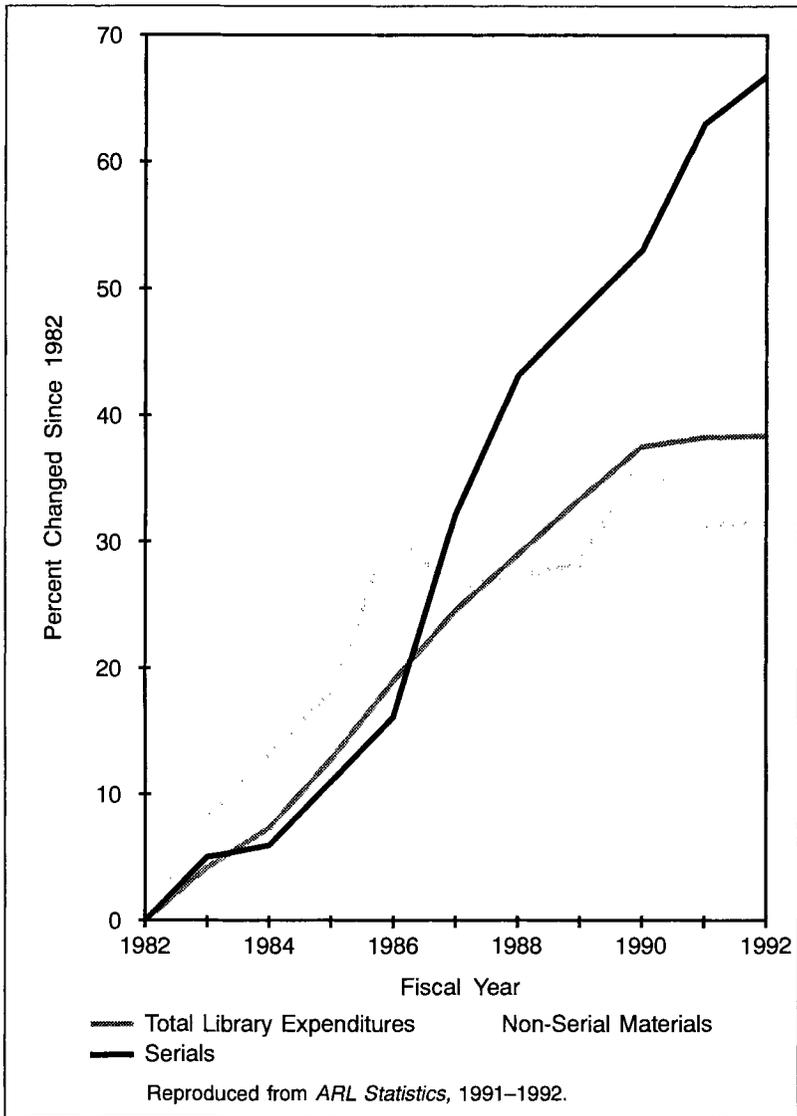


Figure 2. ARL library expenditures, 1982-1992, in constant (1982) dollars

ARL libraries to monographs has fallen from 40.32 percent to 33.04 percent between 1986 and 1992. This seven point drop is a one-sixth decline in the portion of materials expenditures for monographs. Again, it is critical to recognize that even what seems to be a modest

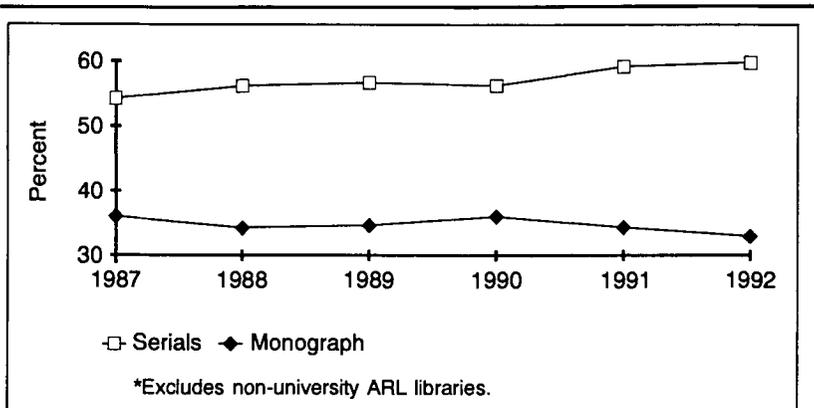


Figure 3. Percentage of material expenditures for monographs and serials in ARL libraries*

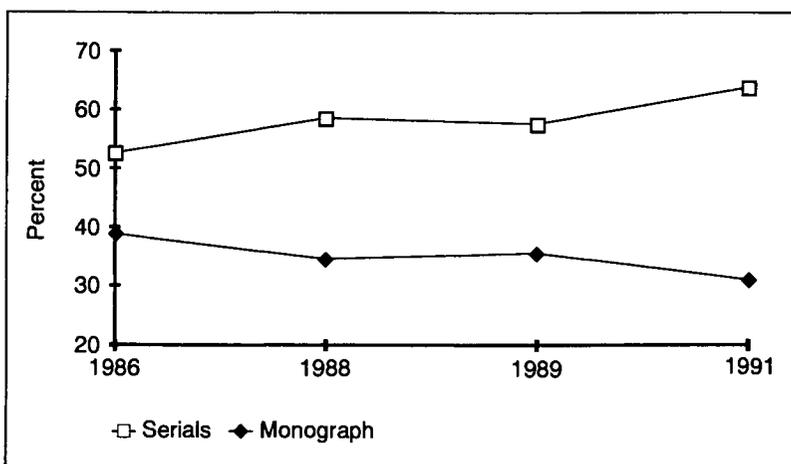


Figure 4. Percentage of material expenditures for monographs and serials in ACRL libraries

change in the percentage of budget can in fact carry major implications. This trend is as pronounced in the ACRL libraries (see Figure 4), where monograph expenditures have fallen from 38.9 percent of the materials expenditures in 1986 to only 31 percent in 1991. These trends may be sustainable, simply altering the nature of library collections over time, were it not for the fact that even this tilt toward serials is not keeping pace with serial prices in certain disciplines. The problem, as discussed later, is that, as a category,

serial prices are increasing rapidly, and libraries are being asked to subscribe to new journals.

THE RACE BETWEEN EXPENDITURES AND PRICES

A way to examine the dynamics between rising expenditures on the one hand and the rising cost of materials on the other is to normalize both prices and expenditures to a common year and track the percentage change. Table 3 displays indexes for select categories of library expenditures normalized to 1986 which serve as a baseline for subsequent analysis of prices. Indexes for specific categories of monographs such as U.S. college books, North American academic books, and median price of monographs purchased by ARL libraries, are presented in Table 4; the indexes for serials of selected subject fields (for example, chemistry and physics, engineering, medicine), and for the general academic periodicals (United States and foreign) are presented in Table 5.

TABLE 3
BASELINE INDEXES NORMALIZED TO 1986

<i>Year Heading</i>	1986	1987	1988	1989	1990	1991	1992
ARL Library Expenditures, Total and by Category ³							
Total Expenditures	1.00	1.08	1.16	1.24	1.35	1.43	1.48
Material Expenditures	1.00	1.09	1.19	1.27	1.39	1.49	1.56
Serial Expenditures	1.00	1.18	1.34	1.44	1.57	1.76	1.87
Monograph Expenditures	1.00	0.97	1.02	1.10	1.25	1.27	1.28
Price Indexes*							
CPI	1.00	1.02	1.06	1.11	1.17	1.23	1.27
LPI	1.00	1.06	1.11	1.18	1.26	1.33	1.40

*Sources: ARL Statistics, 1986-1992, ARL Library Data Table.

TABLE 4
INDEXES FOR MONOGRAPH CATEGORIES*

<i>Year Heading</i>	1986	1987	1988	1989	1990	1991	1992
Median Price of Monographs Purchased by ARL Libraries**	1.00	1.08	1.21	1.25	1.35	1.38	1.44
U.S. College Books	1.00	1.08	1.13	1.23	1.31	1.36	1.44
North American Academic Books	1.00	1.10	1.16	1.23	1.32	1.39	1.47

*Research Associates of Washington, 1993, pp. 5, 45.

**Research Associates of Washington, 1993, p. 47.

TABLE 5
INDEXES FOR CATEGORIES OF SERIALS

Row Num- ber	Year Heading	1986	1987	1988	1989	1990	1991	1992
		<i>Periodicals—General and by Subject</i>						
1	U.S. Periodicals (Except Soviet Translations)	1.00	1.10	1.20	1.31	1.44	1.61	1.80
2	U.S. Academic Periodicals*	1.00	1.13	.28	1.36	1.51	1.72	1.85
3	Median Price of Current Monograph in ARL Libraries**	1.00	1.17	1.32	1.47	1.51	1.69	1.85
4	Fine Arts	1.00	1.08	1.15	1.24	1.30	1.37	1.46
5	History	1.00	1.06	1.16	1.24	1.36	1.47	1.66
6	Chemistry and Physics	1.00	1.11	1.25	1.39	1.56	1.79	2.08
7	Engineering	1.00	1.12	1.24	1.39	1.50	1.73	2.08
8	Medicine	1.00	1.12	1.19	1.31	1.44	1.65	1.82
9	Math and General Sciences	1.00	1.12	1.23	1.33	1.45	1.61	1.81

*Source: Carpenter & Alexander, 1992, pp. 61-62.

**Source: Research Associates of Washington, 1993, p. 47.

Monographs

Monographs cost more today than a few years ago, of course. The median price for monographs purchased by ARL libraries, up 44 percent in six years, has grown faster than either the CPI or LPI (see Table 4). U.S. college book and North American academic book indexes are almost exactly the same as the median price, as might be expected from the definitions (Research Associates of Washington, 1993). These three indexes have increased nearly at the same pace as the aggregate total library expenditures or aggregate materials expenditures of ARL libraries but have increased at a faster rate than monograph expenditures (see Table 3).

In spite of the growth in materials expenditure (see Table 2), spending on monographs does not seem to reflect higher monograph prices. As a result, many libraries are purchasing fewer monographs (see Table 6). ARL libraries have purchased fewer books each year from 1986 to 1990, recovering somewhat in 1991. During this period, these libraries were each buying 700 fewer books per year, an average decrease of 2.2 percent in the number of monographs purchased from year to year. The ACRL libraries were hit even harder for their size. While the ARL libraries managed to buy more monographs in 1991 and 1992, the average number of monographs purchased by ACRL libraries continued its downward trend, buoyed only in passing by the substantial expansion of the ACRL in 1989. Since 1989, both the median and total number of monographs purchased have fallen

TABLE 6
 AGGREGATE AND MEDIAN NUMBER OF MONOGRAPHS PURCHASED BY ARL**
 AND ACRL LIBRARIES

Year	ARL Libraries		ACRL Libraries*	
	Aggregate	Median	Aggregate	Median
1986	3,006,538	33,210	1,205,018	no data
1987	2,831,134	29,644	1,196,232***	no data
1988	2,660,660	28,278	1,187,446	10,940
1989	2,733,033	27,615	1,399,140	11,856
1990	2,722,391	29,310	1,325,336***	11,133***
1991	2,942,638	29,177	1,251,531	10,410*
1992	3,302,142	28,690	no data	no data

*Source: ARL, 1986-92, ARL Library Data Table.

**Excludes 12 non-university ARL libraries.

***Interpolated estimate from the preceding and following year.

precipitously. The 1991 median (10,410) is 88 percent of 1989's (11,856). On the average, these libraries bought 180 fewer monographs each year since 1988.

Serials

As swiftly as monograph prices have risen, serial prices have risen even faster. In 1992, U.S. periodicals were 80 percent more expensive than in 1986 (rows 1-3, Table 5). If serial expenditures are keeping pace with serial prices in general, it is because the price increases in some disciplines have been relatively modest. Annual price increases for fine arts journals have ranged from 4.0 percent to 5.5 percent per year for the last three years and are up 46 percent from 1986 to 1992 (row 4). During this period, history journals increased by 66 percent (row 5).

In contrast to the relatively modest price increases in humanities serials, stand the price increases in the scientific, technical, and medical disciplines (rows 6-8). The price increases have been greatest in chemistry and physics and in engineering. On the average, journals in 1992 were 108 percent more expensive than in 1986 in these fields and 82 percent more expensive in medicine. These fields drive serials expenditures. As shown in Table 3, the CPI, in contrast, increased by a bare 27 percent over the same years; the LPI by 40 percent; the ARL libraries' total expenditures by 48 percent; material expenditures by 56 percent; and serial expenditures by 87 percent. The prices of scientific, engineering, and medical journals are racing ahead of all other measures of costs or expenditures.

IMPACT OF JOURNAL PROLIFERATION ON SERIAL EXPENDITURES

It must be the best of times and the worst of times in serials. Articles on serials cancellations abound. Indeed, fifty ARL libraries

had plans to terminate over \$7 million worth of serial subscriptions in 1992. Although there is a steady stream of reports of cancellations of current subscriptions, new serials emerge. *Ulrich's* reports that 3,800 new serials were launched since January 1, 1990 (Bowker International Serials Database, 1992, p. vii). The median number of current serials in ARL libraries has increased every year but one, climbing from 20,537 in 1985 to a peak of 22,287 in 1991 before declining to 21,750 in 1992. The aggregate number of serials held has climbed every year, from 2.9 million in 1985 to 3.1 million in 1992. The increased cost of providing adequate serial collections reflects both increased unit cost and a greater aggregate number of serials held.

Suppose, for example, that a library was committed to providing on-site access to all the titles listed in *Index Medicus*. The index listed 2,352 titles in 1992. To purchase most of these titles would have cost \$660,722. This compares to a cost of \$420,000 for 2,251 titles in 1988 which is an increase of 58 percent over five years. The average cost per title is up 53 percent, from \$184.20 in 1988 to \$280.92 in 1992 (Bowker International Serials Database, 1992, p. vii), the remaining 5 percent of extra costs being attributable to the larger number of serials. Similar circumstances surround serial collections in other fields. The periodical price index surveyed seventy-six journals in mathematics in 1990. Just two years later the price index surveyed eighty-three titles, presumably as a reflection of the increased number of journal titles. The price index reported the average price of the journals had risen from \$251.99 to \$302.17 (Carpenter & Alexander, 1992, p. 57). But even more important than this 20 percent average price rise was the cost to maintain a full collection. To buy all seventy-six journals in 1990 would have cost \$19,151. To buy all eighty-three in 1992 would have cost \$25,080, an increase not of 20 percent but of just over 30 percent. Thus, not only are serials becoming more expensive, but there is tremendous pressure to add new serials to the collection.

CONCLUSION

ARL and ACRL libraries' data show that academic libraries have enjoyed an increasing level of support. Expenditures have increased in comparison to the broad measures of inflation—the CPI and LPI. The near doubling of ARL expenditures per library in ten years is evidence of a deep commitment to library resources. The critical issue for libraries and librarians, however, is that library expenditures have actually decreased with respect to the demands placed upon libraries by the constituencies they serve.

Decreasing real library expenditures on monographs deserves attention. There has been an absolute decline in the number of monographs purchased. Among the ARL libraries, monographs purchased have decreased from 3,006,538 in 1986 to 2,722,391 in 1990, while, among ACRL libraries, the number of monographs purchased has increased from 1,205,018 in 1986 to 1,251,531 in 1991. However, this increase in the ACRL aggregate total reflects an increase in the number of ACRL libraries not an increase in the average number of monographs purchased. Academic libraries are buying an ever smaller slice of the monograph pie.

Whereas the decline in the number of monographs purchased is absolute, there are more serials purchased from year to year. Still there is a decline in the proportion of serial universe covered. The repeated references to the cancellations of serials are evidence of the inadequacy of current funds to meet the needs of academic libraries. Although the literature abounds with reports of serial cancellations, the median number of current serials is actually up in ARL libraries—from 20,537 in 1986 to 21,750 in 1992.

Indeed, many of the patterns observed here have been evident since 1973. The *ARL Serials Prices Project*, published in 1989, reported:

The average funding support to ARL libraries rose 243% from 1973 to 1987 (compared to a 182% rise in the U.S. CPI during the same period). Nonetheless, ARL libraries' average percent of expenditures devoted to materials rose from 29.2% to 33.1% with an accompanying shift in the percentage devoted to serials from 40.4% to 56.2%. During this same period, the average serials holdings of ARL libraries dropped from 32% of the estimated universe to 26.4%. According to data collected by ARL, in 1988 the median price of a purchased serial was \$115.00—an increase of 32% since 1986. (ARL, 1989, p. 2)

Since we excluded the twelve nonacademic ARL libraries, strictly speaking, a direct comparison between the ARL project and our study is inappropriate. However, over 90 percent of the libraries overlap. This said, since 1987, university ARL library expenditures are up 37.7 percent while the CPI is up only 24.3 percent—a rate of real increase in expenditures from 1987 to 1992 of 2.2 percent per year. Expenditures of the ACRL libraries have increased as well. The steady upward creep of the share of total expenditures devoted to materials, evident in all ARL libraries since 1973, has continued. Within the material expenditure category, the proportion devoted to serials has continuously grown. This unprecedented level of spending on serials within ARL libraries is only four points behind that of the ACRL libraries, which have historically devoted a greater share of their material budget to serials.

It is clear that libraries are under stress generated by the long-term increase in the *number* and *cost* of serials. Library expenditures, although growing in real terms, are not keeping pace with the demands upon them. The libraries seem to have adapted to the situation so far, if at the cost of holding a reduced slice of the pie, both in serials and in monographs.

NOTES

- ¹ The Boston Public, Canada's Institute for Science and Technology, the Center for Research Libraries, the Library of Congress, the Linda Hall Library, the National Agricultural Library, the National Library of Canada, the National Library of Medicine, the Newberry, the New York Public and New York State Libraries, and the Smithsonian.
- ² While on one level, this may not seem like much of a change, it must be borne in mind that the whole universe is only 100 points. Moreover, every extra percentage point in the share of income devoted to one area must come out of another.
- ³ *Inflation Measures* uses a selection of 6,000 titles featured in *Choice* for smaller college libraries to compute the "college book" index, a list of approximately 85,000 titles from large library approval plans for computing the "academic book" index, and a weighted average of monograph prices in Canada, Germany, France, Italy, Japan, the Netherlands and the United Kingdom to compute the "foreign" index (see pages 42 and 47).

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