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Chapter Title: Patterns and Trends in Expenditures

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Patterns and Trends in Expenditures

Within wide limits, institutions can adjust to whatever amount of money they are able to raise.

Howard Bowen, 1980¹

THIS CHAPTER presents information on trends in real expenditures for the sample institutions. The data were taken from detailed financial information provided by each of four institutions: Duke, Harvard, Chicago and Carleton. Although efforts have been made to compile this information in comparable forms, the differences among institutions in mission, organization, and accounting practices make it inevitable that the presentations will not be uniform. The aim of the study was to collect data at five-year intervals beginning in 1976/77, but the lack of machine-readable data for the early part of the study period made it impossible to collect a detailed, consistent data set for any institution. However, other data were used in an attempt to validate the trends observed in the detailed data. As noted in chapter 1, expenditures for professional schools and medical centers were excluded from the analysis, as were the expenditures of auxiliaries. The present chapter begins by considering the source of funds and then turns to how expenditure data may be usefully organized and presented. Tabulations for the sample institutions follow.

WHICH EXPENDITURES ARE WE INTERESTED IN?

In considering the problem of rising outlays, all expenditures are not of equal importance, and some changes other than in expenditures are as significant as the expenditures themselves. In this section, I make four arguments. First, outlays as reported are not identical to costs, but for the most part, the differences are not crucial. Second, changes in internally financed expenditures are of more significance to the current concern over rising outlays than are those financed by grants and contracts. Third, expenditures may rise for three conceptually different reasons, and each has different implica-

tions for the assessment of the increases. Fourth, some "real" effects that are either a cause or a by-product of rising expenditures are worth special attention.

Costs, Prices, and Outputs

According to the economics textbook theory of the firm, an enterprise is seen as taking inputs, doing something to them, and producing one or more outputs. Both inputs and outputs may be goods or services. The cost of producing is the forgone economic benefit of the resources used, which, under ideal conditions, is equal to the actual outlays of the firm. This textbook equivalence is not a bad starting assumption in the case of higher education. Probably the largest category of economic cost that is not reflected in published records of university expenditures is the opportunity cost of the land on which the campus is located. Although universities own and therefore do not pay rent on campuses, they forgo significant income by using them rather than renting them out. A similar point applies to the physical plant, with the additional cost being the difference between the economic depreciation and the amounts spent to maintain or refurbish that plant. Another element in true economic cost that always is omitted from reported expenditures is the value of time, including the time of students as well as that donated by trustees and other volunteer workers.² However, the available expenditure data cover most of the important economic costs of universities.

Source of Funds

For the purpose of considering the causes and implications of the rise in spending by colleges and universities, it is clear that not all expenditures are created equal. They differ in both their financial impact and their interpretation. One of the basic motivations for interest in expenditures is the increase in tuitions that students and their families must pay. Thus, expenditures financed by tuitions will have a very different interpretation than those financed by grants and contracts. In order to assess the importance of revenue sources, it is helpful to consider the four principal sources of college and university funding: (1) unrestricted revenues (tuition, unrestricted annual gifts, and unrestricted investment income); (2) restricted gifts and endowment income; (3) grants and contracts; and (4) fees and

charges for specific services. In accordance with the practice of "fund accounting" that is common in private colleges and universities, every expenditure is assigned to revenue of one of these types. Because of this close correspondence between revenues and expenditures, it is useful to use the source of revenue as a guide to categorizing expenditures.

One type of expenditure that quickly may be separated from others is that for auxiliaries, which are a class of activities that are designed to have their own dedicated fees. Examples include bookstores, dormitories, dining halls, and student health services. By convention, these activities normally are excluded or are treated separately in analyses of higher education, largely because their functions are easily distinguished, are not integrally academic, and may differ from institution to institution owing simply to differences in the make-or-buy decision (the degree to which service activities are contracted out or to which the private market is allowed to provide services). It makes sense to follow this conventional approach in the present case.

Among the remaining three categories, the most important distinction lies in the degree of discretion that an institution has over how to use those revenues. In the case of grants and contracts, it has very little. Revenues from these sources cover direct costs and indirect costs (how well actual costs are covered is a different, although related, point), and institutions must record rather explicitly the purposes for which the revenues are spent, both through budget and grant reports and through audits of indirect cost rates. In the present study, the direct expenditures funded by grants and contracts will be referred to as *externally funded* expenditures. This is not to say, however, that no spillover effects exist between externally funded and internally funded spending. Grants and contracts probably are used occasionally to pay for activities that the institution would have financed out of internal funds had the external funds been unavailable. More obviously, external funding also generates administrative and infrastructure costs that are impossible to assign to outside grants. These expenditures are paid for out of general revenue, one source for which is the overhead recovery from all grants and contracts. Therefore, although most administrative costs are identified as unrestricted, a portion of them certainly arises because of externally funded grants and contracts.

The two categories that remain—spending financed by unrestricted revenues and those financed by restricted gifts and endowments—will be referred to together as *internally financed* expenditures, on the theory that institutions exercise considerable discretion

over their use. Institutions, by definition, have considerable latitude to decide how to spend unrestricted revenues. Within the limits set by laws and regulations, private institutions are accountable only to their governing boards and to the test of the market as to how they spend unrestricted funds. Institutions have somewhat less discretion in the case of expenditures financed from restricted gifts and endowments. For the purpose of this study, these expenditures are grouped together with those funded by unrestricted funds as *internally financed* expenditures, based on the reasoning that, in practice, they are much more like unrestricted current expenditures than expenditures on grants and contracts. Because endowments grow out of gifts that the institution accepted and usually solicited, it does not seem unreasonable to believe that most of their conditions are consistent with the institution's aims. To be sure, some gifts are accepted reluctantly, and institutional missions do change over time, but in general, however, the income from most endowments is used for purposes that continue to be fully consistent with institutional goals. Another reason why it is sensible to lump unrestricted and endowed expenditures is that one often is a substitute for the other. Unrestricted funds often are needed, for example, to supplement the income of restricted endowments established for endowed chairs; funds from the endowments attached to restricted scholarships typically are used to bolster an institution's commitment to meet the financial need of students.

The Interplay Between Real and Financial Effects

At least as important as the increases in the level of expenditures themselves and shifts in their composition are the accompanying altered nonmonetary quantities. As noted in chapter 2, colleges and universities have considerable latitude to respond to changes in such economic circumstances as increasing costs. They have the option of responding to changes in the relative cost of inputs by adjusting inputs in precisely the way that textbooks describe the behavior of the firm, that is, by economizing on the use of one input by substituting a less expensive one. For example, a university can minimize the need to hire relatively expensive faculty by shifting some tasks traditionally performed by faculty, such as advising or departmental administration, to other employees. Another widespread form of substitution that has occurred in many business operations, including those in universities, is the substitution of computers for clerical employees, a trend examined in chapter 6.

But there are other available avenues of flexibility that are not typical of those in textbook discussions. One alternative—an option open to almost any economic actor—is to save money in the short run by undertaking actions that may well be unwise in the long run. An institution can save money in the near term, for example, by deferring the maintenance of its buildings and other physical assets. Similarly, it can increase its revenues in the short run by raising the spending rate from its endowment and other financial assets. It also may have some flexibility in the extent to which it uses grants and contracts to cover what otherwise might be considered ordinary expenditures, such as faculty salaries. Or it may accept gifts that will generate costs in excess of the additional revenue generated. Another class of response to rising costs is, of course, simply that of allowing quality to be degraded, such as by increasing the size of courses without providing concomitant improvements, by hiring less talented faculty, or by reducing the amount of financial aid awards. In light of these possibilities, it is useful to combine an analysis of changing expenditures with attention to other important changes in the institutions being studied. Thus, to supplement the attention focused on expenditures, chapters 5 through 8 examine in part non-monetary quantities.

SPENDING, BY TYPE AND DEPARTMENTAL GROUP

Basic to any evaluation of rising expenditures is information about which categories have experienced the greatest increases. In this study, the two dimensions of classification used to define categories of expenditures are (1) the organizational entity, which corresponds roughly to function; and (2) the type of expenditure. Although a contemporary university may contain hundreds of separate administrative entities, including academic departments, institutes, programs, centers, service divisions, and the like, I have tried to minimize the number of departmental groups. Academic departments, the entities directly responsible for most teaching and research, are separated from purely administrative entities, and the latter are further divided between academic units, such as those headed by provosts and deans, and other administrative offices. Given the different functions of the various entities within a university and the continuing interest in the allocation of resources between administrative and academic units, this functional classification is essential to any analysis of rising expenditures in universities. An additional advantage of dividing expenditures by entity in this way is that it allows

the apportioning of general university expenses. General administrative functions, such as physical plant or personnel, provide services to all parts of a university, so it is reasonable to assign only a portion of these costs to the arts and sciences enterprise that is the subject of this study.³

The other dimension of classification is the type of expenditure. Because universities are labor-intensive enterprises, the largest broad category of expense consists of salaries, wages, and related compensation. In all the expenditure tables in this chapter, fringe benefits are added to salaries to yield total compensation.⁴ Moreover, because there are several distinct categories of labor in universities, it is useful to divide this compensation further between faculty and several other classes of employees. Most, but not all, faculty are classified as regular faculty, that is, those who have tenure or are on the "tenure track" and who hold the title of professor, associate professor, or assistant professor. In addition to payments to labor, other types of payments that are distinguished include scholarships, purchases of goods and services, general operating costs, and capital expenditures. The figures used for capital expenditures are based on actual capital outlays on structure and equipment. Averages of several years were used, rather than one year's outlay, because of the inherent lumpiness of capital spending.⁵ This approach is best illustrated by turning to the sample universities.

PATTERNS AND TRENDS: DUKE

Detailed Expenditures

Table 4.1 presents a tabulation for Duke that uses the described method of categorization. The top section shows the internally financed expenditures for Duke over the period 1983/84 to 1991/92, in constant dollars, with departments divided into 13 groups and expenditures split into 14 different categories, by type.⁶ For each departmental group not entirely in arts and sciences, a portion of all of the group's expenditures was allocated to arts and sciences, using estimates provided by administrators at each university. The same proportions for each line of the table were applied to all years.⁷ Although the question of allocation of general expenditures is important, the specific formula used is of secondary importance for the purposes at hand. The primary aim in these calculations is to use a rather simple and transparent method for allocation and to make it relatively easy to calculate what difference it would make if other

TABLE 4.1

Expenditures, Levels and Changes, by Departmental Group and Type: Duke
(Internally Financed Funds Only; in Thousands of 1991/92 Dollars)*Type of Expenditure*

| | <i>Compensation</i> | | | | <i>Students</i> | <i>Professional Services</i> | <i>Contract Work</i> |
|--------------------------------|------------------------|----------------------|-----------------------------|--------------------------|-----------------|------------------------------|----------------------|
| | <i>Regular Faculty</i> | <i>Other Faculty</i> | <i>Administrative Staff</i> | <i>Nonexempt Workers</i> | | | |
| Humanities | 10,090 | 2,882 | 1,643 | 1,313 | 60 | 204 | 108 |
| Social Sciences | 8,170 | 1,034 | 1,084 | 1,321 | 48 | 104 | 83 |
| Natural Sciences | 9,305 | 1,331 | 2,317 | 2,591 | 59 | 68 | 129 |
| Engineering | 4,221 | 321 | 469 | 505 | 21 | 19 | 16 |
| Library | 0 | 0 | 3,291 | 2,699 | 240 | 226 | 37 |
| Student Services | 0 | 70 | 2,563 | 1,022 | 93 | 83 | 135 |
| Plant | 0 | 0 | 292 | 1,220 | 1 | 0 | 110 |
| Admissions and Financial Aid | 0 | 0 | 861 | 607 | 151 | 1 | 109 |
| Arts and Sciences | | | | | | | |
| Administration | 2,049 | 800 | 4,318 | 1,814 | 269 | 398 | 856 |
| Provost | 597 | 89 | 1,537 | 231 | 51 | 25 | 91 |
| Alumni Affairs and Development | 0 | 0 | 2,949 | 1,196 | 27 | 149 | 624 |
| General Administration | 3 | 35 | 3,046 | 5,250 | 117 | 40 | 440 |
| Subtotal | 34,435 | 6,561 | 24,371 | 19,769 | 1,137 | 1,315 | 2,738 |
| Athletics | 0 | 0 | 2,935 | 456 | 80 | 117 | 163 |
| Total | 34,435 | 6,561 | 27,306 | 20,226 | 1,217 | 1,433 | 2,901 |

*Changes in Expenditures 1983/84 to 1991/92**Type of Expenditure*

| | <i>Compensation</i> | | | | <i>Students</i> | <i>Professional Services</i> | <i>Contract Work</i> |
|--------------------------------|------------------------|----------------------|-----------------------------|--------------------------|-----------------|------------------------------|----------------------|
| | <i>Regular Faculty</i> | <i>Other Faculty</i> | <i>Administrative Staff</i> | <i>Nonexempt Workers</i> | | | |
| Humanities | 3,642 | 2,099 | 854 | 542 | 29 | 101 | 35 |
| Social Sciences | 2,437 | 629 | 518 | 372 | -50 | 82 | 42 |
| Natural Sciences | 3,431 | 804 | 1,083 | 632 | -90 | -7 | 43 |
| Engineering | 1,812 | 270 | 206 | 87 | -1 | 1 | 11 |
| Library | 0 | 0 | 740 | 356 | 74 | 70 | -1 |
| Student Services | 0 | 65 | 990 | 233 | 63 | 25 | 100 |
| Plant | 0 | 0 | 38 | 109 | -3 | -1 | 23 |
| Admissions and Financial Aid | 0 | -9 | 144 | 303 | 147 | 1 | 85 |
| Arts and Sciences | | | | | | | |
| Administration | 890 | 420 | 2,728 | 707 | 76 | 246 | 473 |
| Provost | -239 | 29 | 906 | 26 | 44 | -8 | 77 |
| Alumni Affairs and Development | -8 | 0 | 1,244 | 420 | 24 | 4 | 540 |
| General Administration | -3 | 33 | 857 | 1,549 | 8 | -194 | 218 |
| Subtotal | 11,961 | 4,339 | 10,307 | 5,337 | 322 | 320 | 1,646 |
| Athletics | 0 | 0 | 1,081 | 148 | 13 | 13 | -14 |
| Total | 11,961 | 4,339 | 11,388 | 5,485 | 335 | 333 | 1,633 |

Source: Calculations using unpublished data from Duke University.

TABLE 4.1 (cont.)

| <i>Computers</i> | <i>Financial</i> | | <i>General Operating</i> | | | | <i>Total</i> |
|------------------|------------------|-----------------|--------------------------|----------------|--------------------|-----------------|--------------|
| | <i>Aid</i> | <i>Supplies</i> | <i>Expenses</i> | <i>Capital</i> | <i>Maintenance</i> | <i>Residual</i> | |
| 42 | 3,513 | 333 | 1,250 | 140 | 54 | 7 | 21,639 |
| 86 | 2,790 | 304 | 1,129 | 1,478 | 15 | 4 | 17,650 |
| 253 | 3,999 | 943 | 902 | 3,894 | 1 | -0 | 25,794 |
| 93 | 1,477 | 199 | 183 | 184 | 60 | 2 | 7,771 |
| 88 | 12 | 241 | 360 | 3,789 | 207 | 6 | 11,196 |
| 407 | 244 | 175 | 112 | 1,819 | 60 | 0 | 6,785 |
| 2 | 0 | 118 | 867 | 389 | 1,050 | 0 | 4,048 |
| 213 | 16,124 | 67 | 686 | 1 | 22 | 1 | 18,842 |
| 405 | 3,229 | 518 | 4,916 | 804 | 134 | 16 | 20,525 |
| 773 | 41 | 142 | 50 | 54 | 34 | 1 | 3,715 |
| 573 | 1 | 272 | 1,587 | 55 | 46 | 1 | 7,480 |
| -462 | 27 | 3,060 | -7,635 | 28 | 333 | -53 | 4,229 |
| 2,471 | 31,457 | 6,373 | 4,409 | 12,635 | 2,017 | -15 | 149,673 |
| 8 | 4,052 | 526 | 3,566 | 129 | 386 | 2 | 12,420 |
| 2,479 | 35,508 | 6,900 | 7,974 | 12,764 | 2,402 | -13 | 162,093 |

| <i>Computers</i> | <i>Financial</i> | | <i>General Operating</i> | | | | <i>Total</i> |
|------------------|------------------|-----------------|--------------------------|----------------|--------------------|-----------------|--------------|
| | <i>Aid</i> | <i>Supplies</i> | <i>Expenses</i> | <i>Capital</i> | <i>Maintenance</i> | <i>Residual</i> | |
| -62 | 2,233 | 166 | 737 | -109 | 26 | 12 | 10,306 |
| -4 | 1,757 | 116 | 7 | 1,404 | -10 | -3 | 7,298 |
| 123 | 2,216 | 173 | 121 | 2,957 | 90 | 9 | 11,584 |
| 60 | 729 | 26 | 18 | -1,348 | -36 | -16 | 1,818 |
| -44 | 11 | 34 | 186 | 1,190 | 150 | 1 | 2,766 |
| 78 | 197 | 62 | -489 | 985 | 23 | -1 | 2,331 |
| 2 | 0 | -18 | -64 | 77 | 232 | 0 | 395 |
| -280 | 10,873 | 50 | 305 | 1 | 20 | 1 | 11,640 |
| -528 | 1,543 | 168 | 3,007 | 494 | 2 | 18 | 10,243 |
| 710 | -16 | 111 | -361 | 26 | 10 | 1 | 1,316 |
| 393 | 1 | 90 | 236 | -10 | 1 | 1 | 2,935 |
| 174 | 20 | 402 | -2,458 | -204 | 26 | -36 | 392 |
| 620 | 19,564 | 1,379 | 1,244 | 5,464 | 534 | -14 | 63,024 |
| -2 | 2,114 | 142 | 589 | -318 | 214 | -496 | 3,485 |
| 618 | 21,678 | 1,522 | 1,833 | 5,146 | 747 | -510 | 66,508 |

reasonable weights were used. In all likelihood, the specific allocation rules will make little difference in any assessment of overall trends and patterns of expenditures.⁸

As noted in appendix 4.1, this table takes into account interdepartmental charges, such as a payment by the English department to the purchasing department for a box of pencils. Consequently, the totals in the far-right column of the table more nearly reflect resource use by the divisions of the university than they would if transfers were not counted.⁹ Mindful of these caveats and limitations, one can view the tables as a rough summary of the university's expenditures for arts and sciences. The top part of the table gives the breakdown of total spending for the 1991/92 academic year. Duke spent an estimated \$150 million in the arts and sciences and engineering, and \$162 million if athletics is included. (Recall that professional schools, the medical center, and most auxiliaries are excluded.) By departmental group, the natural sciences accounted for the largest share, \$26 million, or about one-fifth of the total. By type of expenditure, scholarships and graduate assistance comprised the largest category, at \$36 million (including athletics). Of this figure, scholarships for undergraduates (excluding athletic scholarships) roughly corresponds to the entry in that column for admissions and financial aid, or \$16 million, whereas the amounts in the various departmental groups correspond to graduate assistance.¹⁰ Next in size was faculty compensation, at \$34 million, followed by compensation for administrative staff and nonexempt (hourly) workers. Spending for computers accounted for \$2.5 million, and other capital expenditures totaled \$13 million.¹¹

The bottom half of Table 4.1 shows the changes in expenditures, in constant dollars, over the eight-year period between 1983/84 and 1991/92. The subtotal on the far-right column indicates that, excluding athletics, total spending increased \$63 million during this period, an increase of more than 70 percent. What is apparent is that a large share of the total increase in spending can be attributed to just a few categories.¹²

To make it easier to examine the broad pattern of changes in expenditures, Table 4.2 presents levels and changes only for the subtotals for the rows and columns in Table 4.1. Thus, total spending is broken down once by departmental grouping and again by type of expenditure. For each subtotal, the table shows total spending for the beginning and ending year of the period and other measures of share and growth. Columns 3 through 5 give a simple way to show the relative importance of the various categories in contributing to

the overall increase in spending. The contribution of any category is, by definition, the product of its share of the total, shown in the third column, and its percentage increase, shown in the fourth.¹³ Columns 3 through 5 in the bottom part of the table show, for example, that faculty salaries accounted for the largest share of spending in 1992 (23 percent), and that the salaries of nonregular faculty showed the fastest growth (66 percent). The category with the largest contribution, however, was financial aid, contributing 13 percent of the total 42 percent increase, or more than 30 percent of the total growth. None of the departmental groups shown in the top section of the table contributed much to the overall increase. Columns 6 and 7 express these increases in terms of annual growth rates, both nominal and real.

Internally Funded Versus Externally Funded Expenditures

Because the implications of changes in internally funded expenditures may be radically different from those applying to changes in spending from external funds of various types, it is important to investigate the patterns of funding underlying these expenditures. The remaining columns of Table 4.2 focus on differences between internally funded and externally funded expenditures. The eighth column gives, for 1986/87, the percentage of the category funded with external funds. The departmental group most dependent on outside funding is the natural sciences (more than 40 percent external funding). By category, wages paid to students receive the largest share of outside support, reflecting the work-study program that is an important part of the federal role in financial aid, but which is not shown in the financial aid category. The last four columns show in more detail changes over the eight-year period in expenditures, by type. Overall, internally funded spending decelerated slightly between the 1984–87 and 1987–92 periods, while the growth in externally financed spending remained steady.

To examine further the revenue sources for these spending increases, Table 4.3 shows how the distribution of spending by type of funding changed over the eight-year period for which detailed data were available. Although there was a dip in the share of federal funding for arts and sciences at Duke in the first part of the period, the share actually increased from 1987 to 1992.¹⁴ By 1991/92, about one-fifth of arts and sciences spending at Duke was supported by federal funds, 5 percent was based on sponsored research from

TABLE 4.2
Shares of Expenditure Growth, by Departmental Group and Type of Expenditure: Duke
(In Millions of 1991/92 Dollars Unless Otherwise Indicated)

| Department Group | Internally Funded Expenditures | | Percent Share 1991/92 (3) | Percentage Increase ^a (4) | Contribution ^b (5) | Annual Growth Rate (1983/84 to 1991/92) (6) | | Percent- age Ex- ternally Funded (8) | Real Annual Growth Rates | | | |
|------------------------------|--------------------------------|-------------|---------------------------|--------------------------------------|-------------------------------|---|----------------------|---|----------------------------------|----------------------------------|---------------|-------|
| | 1983/84 (1) | 1991/92 (2) | | | | Real Nominal (7) | 1986/87 Internal (9) | | 1983/84 to 1986/87 External (10) | 1986/87 to 1991/92 Internal (11) | External (12) | |
| | Humanities | 11.3 | 21.6 | 0.14 | 0.48 | 0.07 | 8.1 | 11.7 | 8.9 | 11.7 | 12.55 | 5.9 |
| Social Sciences | 10.4 | 17.7 | 0.12 | 0.41 | 0.05 | 6.7 | 10.3 | 27.4 | 6.3 | 20.38 | 6.9 | 12.67 |
| Natural Sciences | 14.2 | 25.8 | 0.17 | 0.45 | 0.08 | 7.5 | 11.1 | 41.5 | 10.3 | -1.54 | 5.8 | 5.72 |
| Engineering | 6.0 | 7.8 | 0.05 | 0.23 | 0.01 | 3.3 | 7.0 | 28.3 | 1.2 | 10.30 | 4.6 | 9.09 |
| Library | 8.4 | 11.2 | 0.07 | 0.25 | 0.02 | 3.5 | 7.2 | 1.0 | 3.9 | 82.39 | 3.3 | 31.99 |
| Student Services | 4.5 | 6.8 | 0.05 | 0.34 | 0.02 | 5.3 | 8.9 | 0.1 | -0.6 | 0.00 | 8.8 | 22.07 |
| Plant | 3.7 | 4.0 | 0.03 | 0.10 | 0.00 | 1.3 | 4.9 | 0.0 | 5.2 | 0.00 | -1.1 | 0.00 |
| Admissions and Financial Aid | 7.2 | 18.8 | 0.13 | 0.62 | 0.08 | 12.0 | 15.7 | 19.1 | 15.6 | -7.02 | 9.9 | 1.70 |
| Arts and Sciences | 10.3 | 20.5 | 0.14 | 0.50 | 0.07 | 8.6 | 12.3 | 26.4 | 12.1 | 63.90 | 6.6 | 7.66 |
| Administration | 2.4 | 3.7 | 0.02 | 0.35 | 0.01 | 5.5 | 9.1 | 7.0 | 7.5 | 14.77 | 4.2 | -3.72 |
| Provost | | | | | | | | | | | | |
| Alumni and Development | 4.5 | 7.5 | 0.05 | 0.39 | 0.02 | 6.2 | 9.9 | 0.0 | 6.1 | 0.00 | 6.3 | 0.00 |
| General Administration | 3.8 | 4.2 | 0.03 | 0.09 | 0.00 | 1.2 | 4.9 | 0.4 | -0.3 | -129.96 | 2.1 | -6.52 |
| Total | 86.6 | 149.7 | 1.00 | 0.42 | 0.42 | 6.8 | 10.5 | 21.7 | 8.2 | 7.30 | 6.0 | 7.46 |

| | | | | | | | | | | | | |
|----------------------------|------|-------|------|------|------|------|------|------|------|--------|------|-------|
| Regular Faculty | 22.5 | 34.4 | 0.23 | 0.35 | 0.08 | 5.3 | 9.0 | 18.6 | 5.5 | 8.30 | 5.2 | 8.65 |
| Other Faculty | 2.2 | 6.6 | 0.04 | 0.66 | 0.03 | 13.5 | 17.2 | 21.4 | 23.2 | 2.75 | 7.7 | 2.69 |
| Administrative Staff | 14.1 | 24.4 | 0.16 | 0.42 | 0.07 | 6.9 | 10.5 | 10.5 | 7.5 | 14.37 | 6.5 | 4.11 |
| Nonexempt Workers | 14.4 | 19.8 | 0.13 | 0.27 | 0.04 | 3.9 | 7.6 | 13.0 | 4.1 | 1.65 | 3.8 | 5.19 |
| Students | 0.8 | 1.1 | 0.01 | 0.28 | 0.00 | 4.2 | 7.8 | 53.9 | 11.4 | -7.24 | -0.2 | -1.67 |
| Professional Services | 1.0 | 1.3 | 0.01 | 0.24 | 0.00 | 3.5 | 7.1 | 23.2 | 11.9 | 16.05 | -1.6 | 12.67 |
| Contract Work | 1.1 | 2.7 | 0.02 | 0.60 | 0.01 | 11.5 | 15.2 | 31.3 | 8.6 | -4.54 | 13.3 | 43.23 |
| Computers | 1.9 | 2.5 | 0.02 | 0.25 | 0.00 | 3.6 | 7.3 | 30.2 | 3.8 | 1.23 | 3.5 | 4.72 |
| Financial Aid | 11.9 | 31.5 | 0.21 | 0.62 | 0.13 | 12.2 | 15.8 | 34.9 | 15.8 | 27.74 | 10.0 | -0.68 |
| Supplies | 5.0 | 6.4 | 0.04 | 0.22 | 0.01 | 3.0 | 6.7 | 21.8 | 6.7 | 4.51 | 0.8 | 4.21 |
| General Operating Expenses | 3.2 | 4.4 | 0.03 | 0.28 | 0.01 | 4.1 | 7.8 | 25.2 | 15.1 | -11.19 | -2.4 | 14.75 |
| Capital | 7.2 | 12.6 | 0.08 | 0.43 | 0.04 | 7.1 | 10.7 | 17.8 | 1.4 | -14.53 | 10.5 | 17.38 |
| Maintenance | 1.5 | 2.0 | 0.01 | 0.26 | 0.00 | 3.8 | 7.5 | 24.2 | 11.5 | -15.61 | -0.8 | -8.70 |
| Total | 86.6 | 149.7 | 1.00 | 0.42 | 0.42 | 6.8 | 10.5 | 21.7 | 8.2 | 7.30 | 6.0 | 7.46 |

Source: Calculations using unpublished data from Duke University.

^aChange as a percentage of 1991/92 level.

^bProduct of the share and the percentage increase.

TABLE 4.3
Expenditures, by Source of Funds: Duke, 1984, 1987, and 1992 Fiscal Years
(Percentage Distribution)

| | Federal | | | Other Sponsored Research | | | Gifts and Endowment | | | Other Unrestricted Funds | | |
|------------------------------|---------|---------|---------|--------------------------|---------|---------|---------------------|---------|---------|--------------------------|---------|---------|
| | 1983/84 | 1986/87 | 1991/92 | 1983/84 | 1986/87 | 1991/92 | 1983/84 | 1986/87 | 1991/92 | 1983/84 | 1986/87 | 1991/92 |
| Humanities | 4 | 4 | 5 | 5 | 5 | 5 | 7 | 7 | 7 | 84 | 84 | 83 |
| Social Sciences | 14 | 12 | 26 | 6 | 16 | 10 | 4 | 5 | 4 | 76 | 67 | 61 |
| Natural Sciences | 41 | 36 | 39 | 11 | 6 | 6 | 4 | 10 | 5 | 44 | 48 | 51 |
| Engineering | 20 | 21 | 23 | 8 | 9 | 10 | 7 | 8 | 4 | 65 | 63 | 63 |
| Library | 0 | 1 | 2 | 0 | 0 | 2 | 5 | 7 | 8 | 95 | 92 | 88 |
| Student Services | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 6 | 7 | 93 | 94 | 93 |
| Plant | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 100 | 100 | 99 |
| Admissions and Financial Aid | 30 | 17 | 12 | 2 | 2 | 2 | 15 | 16 | 19 | 54 | 65 | 68 |
| Arts and Sciences | 25 | 25 | 23 | 3 | 1 | 4 | 6 | 12 | 12 | 66 | 62 | 61 |
| Administration | 0 | 0 | 2 | 6 | 7 | 3 | 45 | 34 | 19 | 49 | 59 | 76 |
| Provost | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 10 | 97 | 95 | 90 |
| Alumni and Development | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| General Administration | 1 | 0 | 0 | 0 | 0 | 0 | 9 | 11 | 3 | 90 | 89 | 96 |
| Total | 20 | 17 | 19 | 5 | 5 | 5 | 7 | 10 | 8 | 68 | 68 | 68 |

Source: Calculations using unpublished data from Duke University.

other sources, and 8 percent came from gifts and endowment, leaving about two-thirds of spending funded from unrestricted sources, mainly tuition.

PATTERNS AND TRENDS: HARVARD

Detailed Expenditures

Table 4.4 presents similar tabulations of expenditures for Harvard. As in the previous presentation, expenditures have been classified by administrative unit and type of expenditure. Although every reasonable attempt has been made to make the classes comparable among institutions, several important differences remain. The most important of these, one owing to the considerably more decentralized approach to accounting followed at Harvard and, therefore, to the kind of data available in comparable form, is that Harvard's figures generally apply only to its Faculty of Arts and Sciences—which includes Harvard College, the Graduate School of Arts and Sciences, and the major libraries—and to a number of “affiliated departments,” such as the museums and the massive Division of Applied Sciences, whose budgets traditionally have been overseen by Arts and Sciences. (Table A4.3, in the appendix of the chapter, lists each administrative unit included in the tables.)

Not only are the professional schools excluded from these tabulations, as they are with the Duke tabulations, so, too, are most of the central administrative units that serve the entire university, covering such functions as accounting, personnel, campus security, and the office of the president. As a result of this accounting structure, the data for Harvard show both fewer university-produced services and fewer internal “sales” of services than is the case with Duke. The virtue of using this more restricted accounting base is that it greatly reduces the necessity of relying on arbitrary rules for allocating general expenditures to arts and sciences. It does, however, add one more difference between the data sets for Duke and Harvard. Although intra-institutional purchases of services should appear in either case as expenditures by academic departments, they will appear as internal transactions in the Duke data but will be indistinguishable from purchases of outside services in the Harvard data. Other significant differences between the data for the two institutions include marked differences in the list of departments and different classification systems used to classify expenditures by type. These differences in organization and accounting practices are only the most

TABLE 4.4
Expenditures, Levels and Changes, by Departmental Group and Type: Harvard
(Internally Financed Funds Only; in Thousands of 1991/92 Dollars)
Type of Expenditure

| | <i>Compensation</i> | | | | | <i>Extra Comp</i> |
|------------------------------|----------------------------|--------------------------|---------------------------------|-----------------|----------------|-----------------------|
| | <i>Regular Faculty</i> | <i>Other Faculty</i> | <i>Administrative Staff</i> | <i>Students</i> | <i>Support</i> | |
| General Academic | 2,164 | 271 | 4,368 | 6,619 | 1,469 | - 111 |
| Humanities | 19,944 | 5,384 | 5,491 | 3,746 | 2,641 | - 362 |
| Social Sciences | 12,122 | 1,366 | 2,141 | 2,955 | 1,974 | - 78 |
| Natural Sciences | 16,757 | 1,073 | 8,200 | 4,535 | 6,656 | - 340 |
| Museums | 1,078 | 6 | 1,990 | 197 | 1,109 | 5 |
| Library | 2,357 | 3 | 6,535 | 1,708 | 7,448 | 14 |
| Student Services | 621 | 268 | 4,490 | 935 | 1,962 | - 14 |
| Admissions and Financial Aid | 225 | 0 | 2,042 | 502 | 694 | 14 |
| Administration | 3,292 | 263 | 4,258 | 67 | 1,201 | 877 |
| Plant | 14 | 0 | 3 | 35 | 6 | 0 |
| Athletics | 496 | 225 | 2,667 | 860 | 395 | 6 |
| Total | 59,070 | 8,857 | 42,185 | 22,160 | 25,554 | 11 |

Changes in Expenditures, 1981/82 to 1991/92
Type of Expenditure

| | <i>Compensation</i> | | | | | <i>Extra Comp</i> |
|------------------------------|----------------------------|--------------------------|---------------------------------|-----------------|----------------|-----------------------|
| | <i>Regular Faculty</i> | <i>Other Faculty</i> | <i>Administrative Staff</i> | <i>Students</i> | <i>Support</i> | |
| General Academic | 1,669 | - 409 | 3,413 | 3,545 | 964 | 47 |
| Humanities | 6,791 | 2,543 | 2,500 | 1,052 | 557 | 2,197 |
| Social Sciences | 5,071 | 576 | 1,225 | 809 | 550 | 1,173 |
| Natural Sciences | 4,862 | 342 | 4,703 | 1,424 | 1,264 | 1,601 |
| Museums | - 126 | 6 | 1,225 | - 44 | 27 | 5 |
| Library | - 539 | 3 | 3,926 | 679 | 2,147 | 13 |
| Student Services | 372 | 113 | 2,746 | 390 | 272 | 374 |
| Admissions and Financial Aid | - 77 | 0 | 1,197 | 246 | 45 | 305 |
| Administration | 1,235 | - 95 | 2,938 | 542 | 387 | - 5,642 |
| Plant | 14 | 0 | 3 | 35 | 6 | 0 |
| Athletics | - 92 | - 98 | 1,259 | 257 | 4 | 1 |
| Total | 19,181 | 2,979 | 25,135 | 8,935 | 6,224 | 72 |

Source: Calculations using unpublished data from Harvard University.

TABLE 4.4 (cont.)

| <i>Operating Expenses</i> | <i>Capital</i> | <i>Supplies</i> | <i>Professional Services</i> | <i>Maintenance</i> | <i>Financial Aid</i> | <i>Computers</i> | <i>Total</i> |
|---------------------------|----------------|-----------------|------------------------------|--------------------|----------------------|------------------|--------------|
| 6,474 | 39 | 246 | 1,452 | 171 | 740 | 625 | 24,526 |
| 3,861 | 1,612 | 790 | 799 | 0 | 5,804 | 294 | 50,006 |
| 2,905 | 2,024 | 539 | 388 | 0 | 4,490 | 392 | 31,217 |
| 7,134 | 8,062 | 5,406 | 1,616 | 1,798 | 6,944 | 1,963 | 69,803 |
| 3,044 | 3,164 | 518 | 758 | 584 | 18 | 155 | 12,626 |
| 3,772 | 713 | 7,201 | 2,368 | 1,707 | 98 | 314 | 34,237 |
| 10,583 | 1,082 | 1,168 | 2,048 | 11,545 | 435 | 130 | 35,253 |
| 1,988 | 7 | 86 | 103 | 0 | 29,128 | 139 | 34,929 |
| 30,260 | 9,944 | 262 | 6,712 | 143 | 199 | 198 | 57,675 |
| 6,781 | 720 | 218 | 755 | 8,152 | 2 | 3 | 16,689 |
| 3,598 | 176 | 988 | 1,119 | 1,230 | 17 | 15 | 11,791 |
| 80,402 | 27,543 | 17,421 | 18,118 | 25,329 | 47,874 | 4,228 | 378,752 |

| <i>Operating Expenses</i> | <i>Capital</i> | <i>Supplies</i> | <i>Professional Services</i> | <i>Maintenance</i> | <i>Financial Aid</i> | <i>Computers</i> | <i>Total</i> |
|---------------------------|----------------|-----------------|------------------------------|--------------------|----------------------|------------------|--------------|
| 2,521 | -83 | 94 | 826 | -62 | 391 | 585 | 13,499 |
| 1,840 | 1,248 | 95 | 234 | 0 | 2,515 | 274 | 21,846 |
| 1,460 | 1,821 | 278 | -124 | 0 | 1,962 | 294 | 15,097 |
| 2,681 | 1,227 | 1,258 | 83 | 641 | 2,593 | 1,932 | 24,609 |
| 1,317 | 649 | -30 | 86 | 39 | -5 | 140 | 3,288 |
| 1,503 | 250 | 2,048 | 1,156 | 29 | 98 | 152 | 11,465 |
| 4,360 | 822 | 169 | 1,500 | 3,667 | 431 | -2 | 15,213 |
| 1,372 | 3 | -25 | 71 | 0 | 13,750 | 75 | 16,963 |
| 15,360 | 6,106 | 50 | 6,447 | 143 | 172 | 97 | 27,740 |
| 1,456 | -1,517 | 214 | 445 | 1,827 | 2 | 3 | 2,489 |
| 1,133 | -94 | -104 | 285 | 245 | 17 | 14 | 2,827 |
| 35,003 | 10,432 | 4,048 | 11,009 | 6,527 | 21,927 | 3,563 | 155,036 |

obvious reasons to re-emphasize the significant sources of noncomparability of figures for different institutions. Equally important are the myriad differences in history, mission, and, indeed, quality, among institutions.

The resulting tabulations for Harvard contain 11 departmental groupings and 13 expenditure types.¹⁵ The time period covered by detailed financial records in electronic form, which extends back to the 1981/82 academic year, is two years longer than for Duke. The top section of the table presents total expenditures for the 1991/92 academic year, expressed in thousands of dollars. For all of arts and sciences, broadly construed to include the affiliated departments listed, total expenditures were some \$379 million. The largest share of this total, roughly \$70 million, is attributed to natural sciences, which, at Harvard, includes the Division of Applied Science. Administration accounted for the second largest share—\$58 million. Humanities was next, at \$50 million, followed by student services, admissions and financial aid, the library, and social sciences. By type of expenditure, the broad category of general operating expenses was the largest, totaling \$80 million in 1991/92. This category owes its large size relative to that in the Duke tabulation to the exclusion from the Harvard data of most central university support functions. Consequently, many purchases of university-produced services appear as operating expenses, rather than as expenditures for the labor and other inputs used to produce those services. Much the same can be said for the larger size of Harvard's maintenance and professional services relative to those of Duke. The next largest category was compensation for regular faculty (faculty with appointments lasting longer than one year), at \$59 million, followed by compensation for staff, at \$42 million.¹⁶

The bottom part of the table shows changes over the decade, by category. Of the 143 cells shown, the largest increase at \$15 million, was registered by general operating expenditures in administrative units. The only other item that increased by more than \$10 million was the financial aid category of the admissions and financial aid line, which corresponds roughly to undergraduate financial aid, at \$14 million. This item also registered the largest gain at Duke over the comparable eight-year period.

Internally Financed and Externally Financed Expenditures

Table 4.5 presents figures for Harvard, comparable to those in Table 4.2, for the 10-year period covered by the detailed financial data. As in the comparable table for Duke, figures are given for the subtotals for departmental groups and types of expenditures. The table's sixth column shows the average annual real growth rate in total expenditures. For all of arts and sciences, real expenditures grew at an aver-

age annual rate of 5.3 percent, a rate that would imply a doubling of spending every 13 years. Comparing departmental groups, the table reveals considerable similarity in overall growth rates. With the exception of plant, athletics, and museums, the rates of growth in spending in the remainder of the groups were clustered between 4.1 and 8.0 percent. By contrast, rates of growth among the various types of expenditures showed much larger differences. The most rapidly growing item, perhaps not surprisingly, was computers, which grew from a modest base almost sixfold. Next came professional services, at 9.4 percent, and compensation for professional staff, at 9.1 percent. The extent to which the latter increase can be ascribed to the unionization of Harvard's clerical workers is uncertain; the increase appears to be spread rather evenly between the first and second halves of the period. The only other above-average rate of increase was in financial aid.

The eighth column of the table shows that the sources of funding differ markedly, especially among the departmental groups. The percentage of funds from external funds (grants and contracts) ranged from a low of zero for plant to a high of 49 percent in the natural science units. The share of external funding varied much less by type of expenditure. For Harvard as a whole, about 20 percent of all arts and sciences spending in 1987 was funded by external sources.

The last four columns of the table show how the growth rates of spending differed by period and type of funding. Overall, spending from internal sources exceeded that from external sources during both periods, the difference narrowing considerably during the latter period. Focusing on the four academic departmental groups shows a decline in the growth in internally financed spending in every case. By contrast, external funding accelerated in the humanities and social sciences. However, the natural sciences, the academic division most dependent on outside funding, did not follow this pattern, but instead saw a slowing in the rate of spending supported by external funds.

The patterns of growth by type of expenditure show considerable variation. Double-digit growth rates were recorded in six instances (excluding extra compensation, a small residual category), and not one of the six was compensation for employees. During the first half of the period, there were large increases in internally funded spending for capital and computers. During the second half, expenditures for both computers and for professional services grew very rapidly, and these increases drew from both internal funds and external funds.

TABLE 4.5

Shares of Expenditure Growth, by Departmental Group and Type of Expenditure: Harvard
(In Millions of 1991/92 Dollars Unless Otherwise Indicated)

| | Internally Funded Expenditures | | Percent Share 1991/92 | Percentage Increase ^a | Contribution ^b | Annual Growth Rate 1981/82 to 1991/92 | | Real Annual Growth Rates | | | | |
|--------------------|--------------------------------|---------|-----------------------|----------------------------------|---------------------------|---------------------------------------|------------------------------|--------------------------|--------------------|----------|----------|----------|
| | 1981/82 | 1991/92 | | | | Real Nominal | Percentage Externally Funded | 1981/82 to 1986/87 | 1986/87 to 1991/92 | Internal | External | External |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Departmental Group | | | | | | | | | | | | |
| General | | | | | | | | | | | | |
| Academic | 11.0 | 24.5 | 0.06 | 0.55 | 0.04 | 8.0 | 11.8 | 4.4 | 13.0 | 3.8 | 3.0 | -17.9 |
| Humanities | 28.2 | 50.0 | 0.13 | 0.44 | 0.06 | 5.7 | 9.6 | 6.4 | 7.6 | -8.5 | 3.8 | 16.3 |
| Social Sciences | 16.1 | 31.2 | 0.08 | 0.48 | 0.04 | 6.6 | 10.5 | 21.0 | 7.2 | 8.5 | 6.0 | 6.6 |
| Natural Sciences | 45.2 | 69.8 | 0.18 | 0.35 | 0.06 | 4.3 | 8.2 | 49.0 | 5.4 | 5.5 | 3.3 | 3.9 |
| Museums | 9.3 | 12.6 | 0.03 | 0.26 | 0.01 | 3.0 | 6.9 | 22.4 | 1.3 | -8.8 | 4.7 | -11.2 |
| Library | 22.8 | 34.2 | 0.09 | 0.33 | 0.03 | 4.1 | 7.9 | 1.5 | 3.8 | 1.9 | 4.4 | 5.7 |
| Student Services | 20.0 | 35.3 | 0.09 | 0.43 | 0.04 | 5.6 | 9.5 | 1.6 | 3.4 | 1.2 | 7.9 | 2.5 |
| Admissions and | | | | | | | | | | | | |
| Financial Aid | 18.0 | 34.9 | 0.09 | 0.49 | 0.04 | 6.6 | 10.5 | 7.4 | 7.8 | 0.8 | 5.5 | -0.2 |
| Administration | 29.9 | 57.7 | 0.15 | 0.48 | 0.07 | 6.6 | 10.4 | 1.6 | 7.0 | -3.8 | 6.1 | -1.9 |
| Plant | 14.2 | 16.7 | 0.04 | 0.15 | 0.01 | 1.6 | 5.5 | 0.0 | -0.4 | 0.0 | 3.7 | 0.0 |
| Athletics | 9.0 | 11.8 | 0.03 | 0.24 | 0.01 | 2.7 | 6.6 | 0.7 | 3.6 | -13.1 | 1.8 | -12.5 |
| Total | 223.7 | 378.8 | 1.00 | 0.41 | 0.41 | 5.3 | 9.1 | 19.7 | 5.8 | 3.8 | 4.7 | 4.1 |

| | | | | | | | | | | | | |
|-----------------------|-------|-------|------|------|------|------|------|------|------|------|------|------|
| Regular Faculty | 39.9 | 59.1 | 0.16 | 0.32 | 0.05 | 3.9 | 7.8 | 2.7 | 4.2 | -2.1 | 3.6 | 6.0 |
| Other Faculty | 5.9 | 8.9 | 0.02 | 0.34 | 0.01 | 4.1 | 8.0 | 33.3 | 2.8 | 1.9 | 5.4 | 2.5 |
| Professional Staff | 17.0 | 42.2 | 0.11 | 0.60 | 0.07 | 9.1 | 12.9 | 25.1 | 10.0 | 3.5 | 8.1 | 6.8 |
| Students | 13.2 | 22.2 | 0.06 | 0.40 | 0.02 | 5.2 | 9.0 | 23.7 | 9.2 | 3.7 | 1.2 | 3.8 |
| Support Staff | 19.3 | 25.6 | 0.07 | 0.24 | 0.02 | 2.8 | 6.6 | 15.4 | 3.2 | 0.1 | 2.3 | 1.6 |
| Extra Compensation | -0.1 | 0.0 | 0.00 | 6.32 | 0.00 | 0.0 | 0.0 | 34.2 | 23.4 | 38.6 | 0.0 | -2.2 |
| Operating Expenses | 45.4 | 80.4 | 0.21 | 0.44 | 0.09 | 5.7 | 9.6 | 26.0 | 7.5 | 5.0 | 3.9 | 3.2 |
| Capital | 17.1 | 27.5 | 0.07 | 0.38 | 0.03 | 4.8 | 8.6 | 24.3 | 3.2 | 9.5 | 6.3 | -5.4 |
| Supplies | 13.4 | 17.4 | 0.05 | 0.23 | 0.01 | 2.6 | 6.5 | 23.4 | 4.3 | 1.4 | 1.0 | 3.5 |
| Professional Services | 7.1 | 18.1 | 0.05 | 0.61 | 0.03 | 9.4 | 13.2 | 23.7 | 6.5 | -6.9 | 12.2 | 15.2 |
| Maintenance | 18.8 | 25.3 | 0.07 | 0.26 | 0.02 | 3.0 | 6.8 | 0.0 | 2.3 | 0.0 | 3.6 | 0.0 |
| Financial Aid | 25.9 | 47.9 | 0.13 | 0.46 | 0.06 | 6.1 | 10.0 | 21.8 | 7.1 | 7.4 | 5.2 | 3.1 |
| Computers | 0.7 | 4.2 | 0.01 | 0.84 | 0.01 | 18.5 | 22.4 | 29.8 | 13.7 | 9.9 | 23.4 | 22.1 |
| Total | 223.7 | 378.8 | 1.00 | 0.41 | 0.41 | 5.3 | 9.1 | 19.7 | 5.8 | 3.8 | 4.7 | 4.1 |

Source: Calculations using unpublished data from Harvard University.

^aChange as a percentage of 1991/92 level.

^bProduct of the share and the percentage increase.

TABLE 4.6
Expenditures, by Source of Funds: Harvard, 1984, 1987, and 1992 Fiscal Years
(Percentage Distribution)

| | Federal | | | Other Sponsored Research | | | Gifts and Endowment | | | Other Unrestricted Funds | | |
|------------------------------|---------|---------|---------|--------------------------|---------|---------|---------------------|---------|---------|--------------------------|---------|---------|
| | 1981/82 | 1986/87 | 1991/92 | 1981/82 | 1986/87 | 1991/92 | 1981/82 | 1986/87 | 1991/92 | 1981/82 | 1986/87 | 1991/92 |
| General Academic | 7 | 4 | 2 | 0 | 0 | 0 | 10 | 4 | 6 | 83 | 91 | 92 |
| Humanities | 7 | 5 | 4 | 6 | 2 | 7 | 38 | 35 | 33 | 49 | 59 | 55 |
| Social Sciences | 19 | 14 | 12 | 1 | 7 | 10 | 35 | 27 | 29 | 45 | 52 | 49 |
| Natural Sciences | 51 | 47 | 43 | 1 | 4 | 9 | 26 | 27 | 28 | 22 | 21 | 21 |
| Museums | 31 | 24 | 11 | 8 | 3 | 3 | 37 | 47 | 61 | 24 | 26 | 25 |
| Library | 2 | 2 | 1 | 0 | 0 | 1 | 25 | 26 | 22 | 74 | 72 | 76 |
| Student Services | 2 | 2 | 0 | 0 | 0 | 1 | 9 | 11 | 13 | 90 | 87 | 86 |
| Admissions and Financial Aid | 10 | 6 | 5 | 0 | 1 | 0 | 56 | 48 | 49 | 34 | 45 | 45 |
| Administration | 3 | 2 | 1 | 0 | 0 | 0 | 13 | 20 | 21 | 84 | 79 | 78 |
| Plant | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 19 | 16 | 82 | 81 | 84 |
| Athletics | 2 | 1 | 0 | 0 | 0 | 0 | 10 | 15 | 20 | 88 | 85 | 80 |
| Total | 21 | 18 | 15 | 2 | 2 | 5 | 26 | 26 | 27 | 51 | 53 | 53 |

Source: Calculations using unpublished data from Harvard University.

Changes in the sources of funding are shown in more detail in Table 4.6, which gives the percentage distribution of expenditures by type of funding for the beginning, middle, and end of the period under study. The table clearly reveals two striking facts. First, it shows the heavy reliance on federal support in the natural sciences. About one-half of all spending in the natural sciences used federal support, whereas no other group depended on that source for as much as one-fifth of its spending. The second striking fact is the across-the-board decrease in the importance of federal funding. For the university as a whole, the share of total spending supported by federal funds fell from 21 to 15 percent. A slight offset to that decline was the growing importance of nonfederal sponsored research, mainly foundations, which was especially evident in the social sciences. With gifts and endowment remaining steady at about one-fourth of the total, the net decline in outside support resulted in an increase in the share of unrestricted spending from 51 percent in 1982 to 53 percent a decade later. Thus, unrestricted revenue, of which tuition is a major component, came to have a larger importance in funding the rising arts and sciences expenditures.

PATTERNS AND TRENDS: CHICAGO

Detailed Expenditures

The basic expenditure summary for the University of Chicago is presented in Table 4.7. For the most part, the departmental groups and expenditure classifications are similar to those used for Duke and Harvard, with one difference: the classification of payments to students is combined with nonexempt compensation. Because administrative and service components from the entire university were used in making the table, the interpretation of the columns for service-related functions, namely maintenance, professional services, and general operating expenses, is closer to the Duke case than to the Harvard case.

For all of Chicago's arts and sciences in 1991/92, estimated expenditures were roughly \$247 million, standing between Duke's \$162 million and Harvard's \$379 million. As in the comparable case of Duke, Chicago's largest single category of expenditure was financial aid, at \$54 million, followed by compensation for regular faculty, at \$51 million. Of the departmental groups, admissions and financial aid represented the largest expenditure, \$51 million, followed by general administration, at \$49 million, and natural sciences, at \$48

TABLE 4.7

Expenditures, Levels and Changes, by Departmental Group and Type: Chicago
(Internally Financed Funds Only; in Thousands of 1991/92 Dollars)
Type of Expenditure

| | <i>Compensation</i> | | | | | |
|-------------------------------------|------------------------|----------------------|-----------------------------|--------------------------|------------------------------|----------------------|
| | <i>Regular Faculty</i> | <i>Other Faculty</i> | <i>Administrative Staff</i> | <i>Nonexempt Workers</i> | <i>Professional Services</i> | <i>Contract Work</i> |
| Humanities | 11,398 | 1,416 | 962 | 398 | 530 | 34 |
| Social Sciences | 11,194 | 809 | 784 | 626 | 265 | 0 |
| Natural Sciences | 17,144 | 2,040 | 3,762 | 2,135 | 1,056 | 0 |
| Library | 0 | 1,935 | 1,280 | 2,407 | 622 | 0 |
| Student Services | 0 | 0 | 646 | 375 | 86 | 0 |
| Plant | 0 | 0 | 1,770 | 4,602 | 5,215 | 0 |
| Admissions and Financial Aid | 0 | 33 | 810 | 493 | 408 | 0 |
| Provost | 488 | 65 | 356 | 101 | 173 | 0 |
| Alumni and Development | 9 | 0 | 4,355 | 1,054 | 2,235 | 0 |
| Arts and Sciences Administration | 6,118 | 881 | 3,550 | 1,897 | 1,970 | 0 |
| General Admin- istration | 3,129 | 242 | 13,557 | 10,592 | 3,875 | 0 |
| Other | 1,062 | 676 | 1,244 | 1,058 | 1,307 | 0 |
| Total | 50,543 | 8,096 | 33,076 | 25,737 | 17,743 | 34 |

Changes in Expenditures, 1983/84 to 1991/92
Type of Expenditure

| | <i>Compensation</i> | | | | | |
|-------------------------------------|------------------------|----------------------|-----------------------------|--------------------------|------------------------------|----------------------|
| | <i>Regular Faculty</i> | <i>Other Faculty</i> | <i>Administrative Staff</i> | <i>Nonexempt Workers</i> | <i>Professional Services</i> | <i>Contract Work</i> |
| Humanities | 1,498 | 561 | 562 | -217 | 129 | 34 |
| Social Sciences | 2,731 | 276 | 267 | -183 | 83 | 0 |
| Natural Sciences | 3,003 | 1,155 | 1,791 | -554 | 213 | 0 |
| Library | 0 | 1,935 | -930 | 108 | -630 | 0 |
| Student Services | -120 | -1 | 185 | -39 | -18 | 0 |
| Plant | -79 | 0 | 943 | 3,570 | 5,024 | 0 |
| Admissions and Financial Aid | -38 | 22 | 249 | -26 | -186 | 0 |
| Provost | 381 | 55 | 140 | 50 | 94 | 0 |
| Alumni and Development | 7 | 0 | 1,877 | -28 | -468 | 0 |
| Arts and Sciences Administration | 2,552 | 535 | 1,769 | -117 | 1,031 | 0 |
| General Admin- istration | 900 | -97 | 3,331 | -915 | -777 | 0 |
| Other | 517 | 427 | 442 | 256 | 637 | 0 |
| Total | 11,354 | 4,868 | 10,626 | 1,906 | 5,133 | 34 |

Source: Calculations using unpublished data from the University of Chicago.

TABLE 4.7 (cont.)

| <i>Computers</i> | <i>Financial Aid</i> | <i>Supplies</i> | <i>General Operating Expenses</i> | <i>Capital</i> | <i>Maintenance</i> | <i>Residuals</i> | <i>Total</i> |
|------------------|----------------------|-----------------|-----------------------------------|----------------|--------------------|------------------|--------------|
| 110 | 375 | 385 | 825 | 626 | 38 | -41 | 17,055 |
| 109 | 324 | 151 | 467 | 95 | 21 | -164 | 14,682 |
| 617 | 2,266 | 1,915 | 1,595 | 15,502 | 242 | 42 | 48,315 |
| 268 | 1 | 3,575 | 216 | 30 | 53 | 62 | 10,449 |
| 22 | 26 | 69 | 27 | 321 | 7 | 16 | 1,595 |
| 37 | 0 | 1,486 | 3,083 | 24 | 1,288 | 196 | 17,701 |
| 19 | 48,906 | 98 | 429 | 8 | 14 | 24 | 51,242 |
| 44 | 5 | 25 | 271 | 21 | 8 | 3 | 1,559 |
| 75 | 47 | 210 | 920 | 75 | 21 | 151 | 9,151 |
| 514 | 1,953 | 838 | 921 | 198 | 515 | -1 | 19,353 |
| 2,022 | -2 | 2,464 | 9,017 | 2,077 | 1,437 | 408 | 48,819 |
| 26 | 57 | 595 | 689 | 87 | 51 | -141 | 6,710 |
| 3,862 | 53,958 | 11,809 | 18,460 | 19,064 | 3,694 | 556 | 246,632 |

| <i>Computers</i> | <i>Financial Aid</i> | <i>Supplies</i> | <i>General Operating Expenses</i> | <i>Capital</i> | <i>Maintenance</i> | <i>Residuals</i> | <i>Total</i> |
|------------------|----------------------|-----------------|-----------------------------------|----------------|--------------------|------------------|--------------|
| 92 | 219 | 214 | 425 | 543 | 21 | -19 | 4,063 |
| -92 | 75 | 61 | 151 | -45 | 3 | -108 | 3,217 |
| -45 | 393 | 481 | 1,324 | 10,401 | -179 | 16 | 17,997 |
| 242 | 1 | 1,459 | 349 | -5,640 | -21 | 62 | -3,066 |
| 11 | -25 | 23 | 79 | 321 | 2 | 10 | 430 |
| 35 | 0 | 693 | -149 | -37 | 1,281 | 165 | 11,446 |
| -14 | 30,438 | 29 | 933 | 8 | 5 | 14 | 31,434 |
| 43 | -144 | 21 | 241 | 17 | 4 | -2 | 900 |
| -53 | -161 | 15 | 615 | 66 | -1 | 84 | 1,952 |
| 270 | 1,452 | 523 | 1,514 | -5 | 316 | 36 | 9,877 |
| 907 | -43 | -953 | 8,384 | 579 | 366 | -1 | 11,681 |
| 17 | 56 | 242 | 1,967 | 11 | 36 | -102 | 4,506 |
| 1,413 | 32,260 | 2,808 | 15,831 | 6,217 | 1,832 | 155 | 94,436 |

million. By far the largest of the individual cells in the table for 1991/92 expenditures was the cell for financial aid at the admissions and financial line, a figure corresponding roughly to aid for undergraduates.

The bottom part of the table shows the changes in expenditures, in 1991/92 dollars, over the eight years beginning with the 1983/84 academic year. During this period, the largest increase, representing an astounding one-third of the total increase in spending, was in undergraduate financial aid. No other item of increase comes anywhere near that figure in magnitude.

Internally Financed and Externally Financed Expenditures

Table 4.8 presents summary measures for the column and row totals. Overall, internally financed spending at Chicago rose at an annual rate of 6.0 percent, which stands between Harvard's 5.3 percent rate and Duke's 6.8 percent rate. As in the comparable tables for Duke and Harvard, column (5) shows the contribution of each category to the total percentage increase of 38 percent over the period. Not surprisingly, of the departmental groups, admissions and financial aid was the largest contributor to this increase, representing by itself a 13 percent increase in total spending, or one-third of the total. Large percentage increases occurred in several groups, including plant, admissions and financial aid, and the provost's areas of administration. However, the large share of total spending accounted for by admissions and financial aid, combined with the rapid increase, was responsible for that group's major impact on total spending. With respect to types of expenditures, the most rapid growth was recorded for general operating expenses, financial aid, and nonregular faculty.

Regarding the importance of external funding, the third entry in column (8) shows the importance of federal support in the natural sciences. Over the period, externally financed spending slowed between the 1984-87 period and the 1987-91 period, while the rate of growth of internal funding increased. As with Duke and Harvard, the rates of growth in internal and external funding for the various groups over these two time periods varied greatly, looming quite large in cases in which the base amounts were small.

The changes in the sources of funding at Chicago are summarized in Table 4.9. The importance of federal funding decreased, as it did at Harvard. At Chicago, this funding source fell from 22 percent of

TABLE 4.8
Shares of Expenditure Growth, by Departmental Group and Type of Expenditure: Chicago
(In Millions of 1991/92 Dollars)

| | Internally Funded Expenditures | | Percent Share 1991/92 | Percent Increase ^a | Contribution ^b | Annual Growth Rate 1983/84 to 1991/92 | | Real Annual Growth Rates | | | | |
|--------------------------------|--------------------------------|---------|-----------------------|-------------------------------|---------------------------|---------------------------------------|---------|---------------------------|--------------------|----------|----------|----------|
| | 1983/84 | 1991/92 | | | | Real | Nominal | 1986/87 Externally Funded | 1983/84 to 1986/87 | Internal | External | Internal |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Departmental Group | | | | | | | | | | | | |
| Humanities | 13.0 | 17.1 | 0.07 | 0.24 | 0.02 | 3.4 | 7.1 | 8.9 | 4.3 | -9.0 | 2.8 | 9.8 |
| Social Sciences | 11.5 | 14.7 | 0.06 | 0.22 | 0.01 | 3.1 | 6.7 | 37.1 | -0.5 | 20.3 | 5.3 | -5.0 |
| Natural Sciences | 30.3 | 48.3 | 0.20 | 0.37 | 0.07 | 5.8 | 9.5 | 64.2 | 1.9 | 1.5 | 8.2 | 2.4 |
| Libraries | 13.5 | 10.4 | 0.04 | -0.29 | -0.01 | -3.2 | 0.4 | 3.8 | -12.0 | 7.1 | 2.1 | 0.6 |
| Student Services | 1.2 | 1.6 | 0.01 | 0.27 | 0.00 | 3.9 | 7.6 | 0.0 | -0.3 | 0.0 | 6.5 | 0.0 |
| Plant | 6.3 | 17.7 | 0.07 | 0.65 | 0.05 | 13.0 | 16.7 | 0.0 | 33.3 | 0.0 | 0.8 | 0.0 |
| Admissions and Financial Aid | 19.8 | 51.2 | 0.21 | 0.61 | 0.13 | 11.9 | 15.5 | 13.7 | 15.5 | 0.6 | 9.7 | 11.7 |
| Provost | 0.7 | 1.6 | 0.01 | 0.58 | 0.00 | 10.8 | 14.4 | 23.4 | 20.7 | 175.0 | 4.8 | -2.8 |
| Alumni Affairs and Development | 7.2 | 9.2 | 0.04 | 0.21 | 0.01 | 3.0 | 6.7 | 0.3 | -4.8 | 81.4 | 7.7 | 0.0 |
| Academic Administration | 9.5 | 19.4 | 0.08 | 0.51 | 0.04 | 8.9 | 12.6 | 16.5 | 10.4 | 9.6 | 8.0 | 16.0 |
| General Administration | 37.1 | 48.8 | 0.20 | 0.24 | 0.05 | 3.4 | 7.1 | 4.6 | -6.9 | -10.2 | 9.6 | -7.8 |
| Other | 2.2 | 6.7 | 0.03 | 0.67 | 0.02 | 13.9 | 17.6 | 3.8 | 8.4 | -2.1 | 17.2 | 9.6 |
| Total | 152.2 | 246.6 | 1.00 | 0.38 | 0.38 | 6.0 | 9.7 | 29.3 | 3.8 | 2.8 | 7.4 | 3.4 |

| Type of Expenditure | 39.2 | 50.5 | 0.20 | 0.22 | 0.05 | 3.2 | 6.8 | 12.4 | 2.9 | 2.3 | 3.4 | 0.6 |
|----------------------------|-------|-------|------|------|------|------|------|------|-------|------|------|------|
| Faculty | 3.2 | 8.1 | 0.03 | 0.60 | 0.02 | 11.5 | 15.2 | 62.9 | 3.5 | 5.0 | 16.3 | 8.2 |
| Administrative Staff | 22.5 | 33.1 | 0.13 | 0.32 | 0.04 | 4.8 | 8.5 | 12.9 | 3.7 | -0.7 | 5.5 | 9.5 |
| Nonexempt Staff | 23.8 | 25.7 | 0.10 | 0.07 | 0.01 | 1.0 | 4.6 | 16.4 | 7.4 | -1.1 | -2.9 | -7.2 |
| Professional Services | 12.6 | 17.7 | 0.07 | 0.29 | 0.02 | 4.3 | 7.9 | 17.4 | 7.1 | 0.1 | 2.5 | 0.7 |
| Subcontracts | 0.0 | 0.0 | 0.00 | 1.00 | 0.00 | 0.0 | 0.0 | — | 0.0 | 18.9 | 0.0 | 14.7 |
| Computers | 2.4 | 3.9 | 0.02 | 0.37 | 0.01 | 5.7 | 9.4 | 35.7 | 3.5 | 27.6 | 7.0 | 6.7 |
| Financial Aid | 21.7 | 54.0 | 0.22 | 0.60 | 0.13 | 11.4 | 15.0 | 25.5 | 14.6 | 8.0 | 9.4 | 10.1 |
| Supplies | 9.0 | 11.8 | 0.05 | 0.24 | 0.01 | 3.4 | 7.1 | 23.2 | 14.2 | 7.5 | -3.1 | -2.1 |
| General Operating Expenses | 2.6 | 18.5 | 0.07 | 0.86 | 0.06 | 24.4 | 28.0 | — | 0.0 | 1.1 | 0.0 | -1.1 |
| Capital | 12.8 | 19.1 | 0.08 | 0.33 | 0.03 | 4.9 | 8.6 | 84.8 | -17.0 | -6.5 | 18.1 | 2.6 |
| Maintenance | 1.9 | 3.7 | 0.01 | 0.50 | 0.01 | 8.6 | 12.2 | 19.0 | 12.3 | 7.2 | 6.3 | -4.8 |
| Residual | 0.4 | 0.6 | 0.00 | 0.28 | 0.00 | 4.1 | 7.7 | — | 7.2 | 7.4 | 2.2 | 5.2 |
| Total | 152.2 | 246.6 | 1.00 | 0.38 | 0.38 | 6.0 | 9.7 | 29.3 | 3.8 | 2.8 | 7.4 | 3.4 |

Source: Calculations using unpublished data from the University of Chicago.

^aChange as a percentage of 1991/92 level.

^bProduct of the share and the percentage increase.

— Percentage not meaningful due to transfers and negative accounting entries.

TABLE 4.9
Expenditures, by Source of Funds: Chicago, 1984, 1987, and 1992 Fiscal Years
(Percentage Distribution)

| | Federal | | | Other Sponsored Research | | | Gifts and Endowment | | | Other Unrestricted Funds | | |
|------------------------------|---------|---------|---------|--------------------------|---------|---------|---------------------|---------|---------|--------------------------|---------|---------|
| | 1983/84 | 1986/87 | 1991/92 | 1983/84 | 1986/87 | 1991/92 | 1983/84 | 1986/87 | 1991/92 | 1983/84 | 1986/87 | 1991/92 |
| Humanities | 10 | 6 | 6 | 3 | 3 | 6 | 8 | 9 | 13 | 79 | 82 | 75 |
| Social Sciences | 15 | 14 | 10 | 9 | 24 | 16 | 8 | 4 | 4 | 68 | 59 | 70 |
| Natural Sciences | 58 | 58 | 48 | 3 | 4 | 6 | 2 | 3 | 3 | 36 | 35 | 43 |
| Library | 0 | 2 | 3 | 2 | 2 | 0 | 7 | 4 | 3 | 91 | 92 | 93 |
| Student Services | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 9 | 2 | 93 | 91 | 98 |
| Plant | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 100 |
| Admissions and Financial Aid | 20 | 12 | 10 | 0 | 2 | 5 | 19 | 12 | 7 | 62 | 75 | 78 |
| Provost | 0 | 1 | 0 | 0 | 22 | 17 | 6 | 9 | 20 | 94 | 67 | 63 |
| Alumni and Development | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 99 | 97 | 100 |
| Arts and Sciences | | | | | | | | | | | | |
| Administration | 12 | 6 | 10 | 5 | 11 | 13 | 29 | 24 | 23 | 54 | 59 | 54 |
| General Administration | 3 | 7 | -2 | -1 | 2 | 3 | 1 | 10 | 1 | 97 | 81 | 97 |
| Other | 2 | 1 | 0 | 3 | 3 | 2 | 16 | 2 | 1 | 78 | 94 | 97 |
| Total | 22 | 26 | 19 | 2 | 5 | 6 | 6 | 7 | 5 | 71 | 62 | 70 |

Source: Calculations using unpublished data from the University of Chicago.

total arts and sciences funding in 1983/84 to 19 percent by 1991/92. Federal funding was of greatest importance in the natural science departments. At the same time that federal funding was becoming less important, sponsored research from other sources increased in importance. Reflecting the trends in the other universities, there was an increase over the period in the percentage of expenditures supported by other unrestricted funds.

PATTERNS AND TRENDS: CARLETON

Detailed Expenditures

Not only is Carleton College quite different from the three research universities covered in this study, the financial information available for it was distinctive as well, in that detailed disaggregated data were not available in machine-readable form even for the last 5 years of the period of study. The next best alternative was to use tabular summaries of expenditures contained in annual financial reports published by the college. Although these reports offer the advantage of consistent coverage for the entire 15-year period of the study, they present breakdowns only for six categories of expenditures, two of which (student work and travel) are quite small. Moreover, these data do not permit the separation of internally funded and externally funded expenditures. The classification by departments was considerably more detailed than in the three sample universities. Therefore, the departmental groups could be rearranged to be somewhat comparable to the presentations for the research universities. The components included in the departmental groups listed are noted in appendix Table 4A.5. It also was possible to add two additional "departmental" categories that actually reflect different types of expenditures or sources of funding. The category for scholarships in effect adds one important additional expenditure type, and the organized research category can be viewed as largely comprising outside grant and contract funding.

Table 4.10 presents the division of expenditures for Carleton in 1991/92. Out of a total of \$43 million spent during that year (which includes externally financed expenditures), fully one-half was accounted for by the nearly all-inclusive compensation category. Of the 98 individual cells in the table, the largest category of spending was for scholarships, at \$7.4 million, very much in line with the high cost of undergraduate aid in the research universities. The bottom

section of the table shows changes in real spending for all the categories over the decade 1982–1992. Here again, financial aid is the largest single category, with an increase of \$4 million, or about one-fifth of the total increase.

Table 4.11 summarizes the changes in spending for Carleton over the entire 15-year period in a form similar to that used for the research universities. Overall spending doubled over this period, for an average annual growth rate in real terms of 4.7 percent. For the decade 1982–1992, the annual rate was 5.7 percent, which compares with 6.8 percent for internally funded spending at Duke, 5.3 percent at Harvard, and 6.0 percent at Chicago. The departmental groups showing the most rapid growth over the decade were computing and organized research, but the line with the largest contribution was scholarships, owing to the relative importance of this item (17 percent of all spending) and to its strong rate of growth (7.9 percent). Variation in growth rates among the types of expenditures showed much less variation; equipment expenditures rose the fastest during the 1982–1992 period.

SUMMARY

This chapter presents data on expenditures for the four sample institutions. It focuses on internally financed expenditures, that is, spending that is not specifically tied to outside grants and contracts. For each institution, expenditures are divided by type and departmental group and are compared over time to determine both the distribution of spending of different types and the growth in that spending. In line with the aggregate trends noted in chapter 1, expenditures at the sample institutions grew rapidly in real terms from the early 1980s to 1991/92. The annual growth rates in total spending were: Duke, 6.8 percent; Harvard, 5.3 percent; Chicago, 6.0 percent; and Carleton, 5.7 percent. Among the components of this overall increase, financial aid was conspicuous for its growth; all the institutions experienced rapid growth in this category. Another regularity among the three universities was a decline over the period in the importance of federally supported expenditures. It is worth noting a proviso stated earlier. Despite the attempts made to arrange the expenditure data in comparable ways for all four institutions, the differences among institutions in organizational structure, accounting conventions, and functions mean that comparisons among institutions inevitably will be problematic. For this reason, the present

112 PATTERNS AND TRENDS IN EXPENDITURES

TABLE 4.10

Expenditures, Levels and Changes, by Departmental Group and Type:
Carleton (In Thousands of 1991/92 Dollars)

Type of Expenditure

| | <i>Compensation</i> | <i>Student Work</i> | <i>Supplies</i> |
|---------------------------------------|---------------------|---------------------|-----------------|
| Humanities | 5,664 | 133 | 127 |
| Natural Sciences | 3,136 | 157 | 151 |
| Social Sciences | 1,898 | 27 | 59 |
| General, Other Academic Departments | 1,386 | 81 | 66 |
| Organized Research | 589 | 16 | 94 |
| Library | 784 | 167 | 28 |
| Academic Administration | 435 | 50 | 83 |
| Computing | 565 | 76 | 298 |
| Student Services | 1,534 | 343 | 235 |
| Admissions and Financial Aid | 777 | 26 | 286 |
| Scholarships | 0 | 0 | 0 |
| General Administration | 1,914 | 83 | 182 |
| Alumni, Development, Public Relations | 1,720 | 49 | 879 |
| Plant | 1,242 | 50 | 56 |
| Total | 21,645 | 1,258 | 2,545 |

Changes in Expenditures, 1981/82 to 1991/92

Type of Expenditure

| | <i>Compensation</i> | <i>Student Work</i> | <i>Supplies</i> |
|---------------------------------------|---------------------|---------------------|-----------------|
| Humanities | 2,189 | 72 | 36 |
| Natural Sciences | 1,215 | 21 | 44 |
| Social Sciences | 590 | 10 | 31 |
| General, Other Academic Departments | 576 | 20 | 22 |
| Organized Research | 462 | 13 | 41 |
| Library | 267 | 11 | 1 |
| Academic Administration | 210 | 39 | 45 |
| Computing | 329 | 45 | 268 |
| Student Services | 617 | 107 | 104 |
| Admissions and Financial Aid | 274 | 11 | 77 |
| Scholarships | 0 | 0 | 0 |
| General Administration | 849 | 39 | 109 |
| Alumni, Development, Public Relations | 784 | 23 | 422 |
| Plant | 336 | 0 | 3 |
| Total | 8,699 | 411 | 1,204 |

Source: Calculations using data in Carleton College, *Report of the Treasurer, 1976/77, 1981/82, 1986/87, and 1991/92.*

TABLE 4.10 (cont.)

| <i>Equipment</i> | <i>Travel</i> | <i>Other Expenses</i> | <i>Total</i> |
|------------------|---------------|-----------------------|--------------|
| 49 | 13 | 111 | 6,097 |
| 165 | 12 | 48 | 3,670 |
| 10 | 2 | 29 | 2,025 |
| 16 | 116 | 1,837 | 3,503 |
| 355 | 103 | 162 | 1,319 |
| 808 | 10 | 59 | 1,856 |
| 52 | 70 | 398 | 1,089 |
| 690 | 18 | 24 | 1,671 |
| 96 | 274 | 759 | 3,240 |
| 6 | 136 | 56 | 1,288 |
| 0 | 0 | 7,394 | 7,394 |
| 32 | 160 | 1,036 | 3,407 |
| 36 | 218 | 328 | 3,231 |
| 79 | 4 | 2,158 | 3,589 |
| 2,394 | 1,136 | 14,400 | 43,378 |

| <i>Equipment</i> | <i>Travel</i> | <i>Other Expenses</i> | <i>Total</i> |
|------------------|---------------|-----------------------|--------------|
| -59 | -16 | 79 | 2,302 |
| 125 | -74 | 1 | 1,332 |
| 7 | -1 | -12 | 625 |
| 1 | 63 | 785 | 1,468 |
| 313 | 59 | 27 | 916 |
| 266 | 1 | -1 | 545 |
| 38 | 2 | 275 | 610 |
| 538 | 13 | 15 | 1,208 |
| 70 | 140 | 380 | 1,419 |
| -4 | 65 | 16 | 439 |
| 0 | 0 | 4,023 | 4,023 |
| 10 | 78 | 629 | 1,714 |
| -38 | 72 | 20 | 1,283 |
| -3 | -1 | 621 | 955 |
| 1,263 | 401 | 6,859 | 18,837 |

TABLE 4.11
Shares of Expenditure Growth, Growth Rates, by Departmental Group and Type of Expenditure: Carleton

| Departmental Group | Expenditures (\$1000) | | | | Share 1991/92 | Percentage Increase | Contribution | Real Growth Rates | | Nominal Growth Rate |
|------------------------------|-----------------------|---------|---------|---------|---------------|---------------------|--------------|--------------------|--------------------|---------------------|
| | 1976/77 | 1981/82 | 1986/87 | 1991/92 | | | | 1981/82 to 1991/92 | 1976/77 to 1991/92 | |
| | | | | | | | | | | |
| Humanities | 3,746 | 3,795 | 5,129 | 6,097 | 0.14 | 0.38 | 0.05 | 4.7 | 3.2 | 6.6 |
| Natural Sciences | 2,138 | 2,338 | 3,389 | 3,670 | 0.08 | 0.36 | 0.03 | 4.5 | 3.6 | 6.4 |
| Social Sciences | 1,223 | 1,401 | 1,857 | 2,025 | 0.05 | 0.31 | 0.01 | 3.7 | 3.4 | 5.6 |
| General, Other | | | | | | | | | | |
| Academic De- partments | 1,389 | 2,035 | 2,470 | 3,503 | 0.08 | 0.42 | 0.03 | 5.4 | 6.2 | 7.3 |
| Organized | | | | | | | | | | |
| Research | 462 | 403 | 1,423 | 1,319 | 0.03 | 0.69 | 0.02 | 11.9 | 7.0 | 13.8 |
| Library | 1,272 | 1,311 | 1,692 | 1,856 | 0.04 | 0.29 | 0.01 | 3.5 | 2.5 | 5.4 |
| Academic Ad- ministration | 462 | 479 | 695 | 1,089 | 0.03 | 0.56 | 0.01 | 8.2 | 5.7 | 10.1 |
| Computing | 461 | 463 | 1,354 | 1,671 | 0.04 | 0.72 | 0.03 | 12.8 | 8.6 | 14.7 |
| Student Services | 1,598 | 1,822 | 2,395 | 3,240 | 0.07 | 0.44 | 0.03 | 5.8 | 4.7 | 7.7 |

| | | | | | | | | | | |
|---------------------------------------|--------|--------|--------|--------|------|------|------|-----|-----|-----|
| Admissions and Financial Aid | 621 | 849 | 1,104 | 1,288 | 0.03 | 0.34 | 0.01 | 4.2 | 4.9 | 6.1 |
| Scholarships | 2,428 | 3,370 | 4,912 | 7,394 | 0.17 | 0.54 | 0.09 | 7.9 | 7.4 | 9.8 |
| General Administration | 1,532 | 1,692 | 2,465 | 3,407 | 0.08 | 0.50 | 0.04 | 7.0 | 5.3 | 8.9 |
| Alumni, Development, Public Relations | 1,215 | 1,948 | 2,160 | 3,231 | 0.07 | 0.40 | 0.03 | 5.1 | 6.5 | 7.0 |
| Plant | 2,787 | 2,635 | 3,136 | 3,589 | 0.08 | 0.27 | 0.02 | 3.1 | 1.7 | 5.0 |
| Total | 21,334 | 24,541 | 34,181 | 43,378 | 1.00 | 0.43 | 0.43 | 5.7 | 4.7 | 7.6 |
| Type of Expenditure | | | | | | | | | | |
| Compensation | 11,793 | 12,946 | 17,481 | 21,645 | 0.50 | 0.40 | 0.20 | 5.1 | 4.0 | 7.0 |
| Student Work | 625 | 847 | 1,083 | 1,258 | 0.03 | 0.33 | 0.01 | 4.0 | 4.7 | 5.9 |
| Supplies | 1,023 | 1,341 | 1,980 | 2,545 | 0.06 | 0.47 | 0.03 | 6.4 | 6.1 | 8.3 |
| Equipment | 1,182 | 1,132 | 3,014 | 2,394 | 0.06 | 0.53 | 0.03 | 7.5 | 4.7 | 9.4 |
| Travel | 521 | 735 | 765 | 1,136 | 0.03 | 0.35 | 0.01 | 4.4 | 5.2 | 6.3 |
| Other Expenses | 6,189 | 7,541 | 9,857 | 14,400 | 0.33 | 0.48 | 0.16 | 6.5 | 5.6 | 8.4 |
| Total | 21,334 | 24,541 | 34,181 | 43,378 | 1.00 | 0.43 | 0.43 | 5.7 | 4.7 | 7.6 |

Source: Calculations using data in Carleton College, *Report of the Treasurer, 1976/77, 1981/82, 1986/87, and 1991/92.*

study focuses on *changes* in spending over time for the same institution. One cannot expect to discover, for example, which institution spends the highest percentage on natural sciences or administration. In the next chapter, these expenditure data are combined with other observable quantities in an effort to find explanations for the spending increases.

Appendix 4.1

Dealing with Interdepartmental Transfers and Recharges

THE KIND of fund code accounting practiced by the universities studied here involves a significant amount of internal transfers and recharges. The first aim in dealing with these transfers and recharges is to avoid double counting. Beyond that, however, the way these are dealt with will have implications for the kind of information that can be gathered. Consider, for example, a simple kind of recharge whereby one unit of the university (let us say, the copy center) performs a service for another (in this case, the physics department). The copy center purchases inputs and “sells” the output to the academic department. Suppose that, during a year, it buys \$500 worth of paper, pays \$250 for machine rental, and pays workers \$250 to photocopy material for the physics department. The end-of-year ledger will show expenditures for these items under the copy center (general administration); a recharge receipt of $-\$1,000$, also under the copy center; and a recharge expenditure of $\$1,000$, under the physics department. If all recharges are ignored, the university’s expenditures are reflected correctly, but the portion accounted for by physics is understated and the portion accounted for by general administration is overstated. Stated another way, the summary table for the university would look different if physics had purchased the photocopying service directly from an outside vendor. If the recharges are counted, as they are in the chapter, it is possible to reflect both the university’s expenditures on inputs and the use of the resulting goods and services within the university. However, this approach necessitates the inclusion of the recharges, which appear as a negative entry in the general operating columns of the origin-destination expenditure tables.

It is useful to illustrate the approach taken with a simple example. Table 4A.1 shows the categorization of expenditures for a hypothetical university having three departmental groups (all arts and science departments, a professional school, and general administration) and three types of expenditures (salaries, services provided by one unit for another, and other operating expenses). Many services are provided by one unit for another—for example, security, housekeeping,

TABLE 4A.1
Accounting for Shared Costs and Internally Provided Services:
A Simple Example

| <i>Departmental Group</i> | <i>Type of Expenditure</i> | | | <i>Total</i> |
|---|----------------------------|-------------------------------------|---------------------------------|--------------|
| | <i>Salaries</i> | <i>Services Provided Internally</i> | <i>Other Operating Expenses</i> | |
| <i>Entire University</i> | | | | |
| Arts and Sciences Departments | 60 | 10 | 20 | 90 |
| Professional School ^a | 50 | 20 | 30 | 100 |
| General Administration | 40 | -30 | 100 | 110 |
| Total | 150 | 0 | 150 | 300 |
| <i>Arts and Sciences Only—Allocating 50% of General Administration to Arts and Sciences, Counting Internal Transactions</i> | | | | |
| Arts and Sciences Departments | 60 | 10 | 20 | 90 |
| General Administration ^b | 20 | -15 | 50 | 55 |
| Total | 80 | -5 | 70 | 145 |
| <i>Arts and Sciences Only—Allocating 50% of General Administration to Arts and Sciences, Ignoring Internal Transactions</i> | | | | |
| Arts and Sciences Departments | 60 | — | 20 | 30 |
| General Administration ^b | 20 | — | 50 | 70 |
| Total | 80 | — | 70 | 150 |

^aOmitted below.

^bExpenditures for arts and sciences assumed to be 50 percent of actual levels shown in the top section.

repairs, and photocopying. Although practices differ, institutions typically make accounting entries for services that are easily attributable; these services are the ones measured in the second column. The top part of the table presents expenditures for the university as a whole. It shows that the units of the general administration spent a total of \$140 on salaries and other operating expenses but "sold" \$30 worth of services to academic units. Including the column for internal transfers makes it possible to attribute all identifiable expenditures to the units that are the ultimate beneficiaries. Thus, the \$30 worth of services provided by the general administration appropriately is assigned to the arts and sciences departments and to the professional school. These services are counted toward the ultimate user in the same way as if they had been purchased outside the university.

A problem arises, however, in allocating services that are not re-

corded by means of internal transfers of this sort. General operations, ranging from groundskeepers and road repair to the president's office, are not easily allocated. In the present study, which examines only arts and sciences, a portion of these general functions is attributed to arts and sciences, where the specific proportions are based on the rough estimates and educated guesses of administrators at each institution. In the example shown in Table 4A.1, that proportion is 50 percent. The middle section of Table 4A.1 shows the resulting summary of expenditures for the arts and sciences portion of the university only: the line for the professional school is omitted, and only 50 percent of each entry for general administration is included. The problem is that, after some entities have been omitted and a proportion applied to general administrative expenditures, the internal transfer column no longer necessarily sums to zero—it may be positive or, as it is in this case, negative. One approach that avoids this ambiguity is to ignore internal transfers altogether, as is done in the third section of Table 4A.1. By ignoring internally provided services, however, this approach overstates the portion of the university's total expenditures accounted by general administration. Furthermore, to the degree that various components of the academic division use differing amounts of such services, the approach illustrated in the table's third section would misstate their relative sizes as well. Thus, the approach taken in the present study is that illustrated by the second section: a portion of general administrative units is assigned to arts and sciences, and internally provided services are recorded where possible. In practice, these transfers usually will come close to netting out. The gain in reflecting the relative size of departmental groups appears to be worth the loss in accounting tidiness.

To summarize, the approach taken here implies that the costs of some activities that are performed by a service unit in the university (such as photocopying) will be reflected in three places. The total cost will show up as a general operating cost under the department that ordered it; the cost of inputs will show up in the appropriate columns in general administration; and a negative entry (the recharge) will appear in the general operating column for administration. As a consequence, the arts and sciences totals along the bottom of the table will reflect the actual use of resources, and the totals along the right-hand side will reflect total spending by the divisions of the university.¹⁷ As noted in the text, the accounting data for Duke and Chicago include the expenditures of general administration units. Thus this approach will make the most pronounced difference in tabulations for those institutions.

A related issue arises in measuring expenditures for purchases of capital, which includes such items as computers and scientific equipment. At most institutions, data on operating expenses in the general ledger do not include expenditures for construction or for some major capital expenditures. At Duke, these capital items are paid for out of separate plant accounts. Those accounts receive their funds either by way of transfers from operating accounts, which are readily monitored, or by way of borrowing. In the case of debt finance, similar transfers from operating accounts are used to retire the debt. At Duke, the funding of capital expenditures is treated differently in administrative units and academic units. Administrative units employ depreciation ("betterments") codes, wherein current funds are transferred into plant accounts, from which expenditures for such items as computers, renovation, and furniture are made. Academic expenditures for these items are often made from current accounts, however, and are designated here as computers or capital expenditures. Thus, although I ignore most transfers, I include transfers to plant accounts for academic units because they reflect capital expenditures that have taken place or that will take place.

Appendix 4.2

Categories Used to Create Expenditure Tables

TO EXAMINE IN some detail changes in expenditures over time for individual universities, it was convenient to categorize expenditures by departmental group and by type of expenditure. These categories are only approximately comparable among institutions, however, in part because the available data differ in a variety of ways. The data from Harvard, which are from the Faculty of Arts and Sciences, provide virtually no detail on a number of nonacademic departments. In contrast, the information for Duke and Chicago covers all departments in the university with equal detail. Another reason why the categories are not strictly comparable is simply the difference in the functions that each institution carries out: one university may offer programs that are simply not found in another university. Thus, "natural sciences" represents an amalgamation of departments and other administrative entities that has a different weighting of disciplines, not to mention individuals, from one institution to the next.

The categories used in this study are summarized in this appendix in some detail for each of the institutions examined. In most cases, it seems fairly clear how to categorize a program or a type of expenditure, although some choices may be debatable. For the most part, "area studies" programs were placed under humanities, although there is undeniably a social science element in much that goes on in such programs. Another ambiguous discipline is history, which I also grouped with humanities.¹⁸

Tables 4A.2 through 4A.5 give detailed descriptions of the entities and types of expenditures used in defining the departmental groupings and types of expenditures in the tables presented in the chapter.

TABLE 4A.2
Detailed Expenditure Categories, Duke

| <i>Rows (Departmental Groupings)</i> Line Name | Number | Primary-Component Code | Description | | | |
|---|--------|---|---|---|---|--|
| Humanities | 1 | 22010, 22170, 22340, 22420, 22460, 22540, | Art and Art History, Classical Studies, English, Germanic Language and Literature, History, Music, Philosophy, Religion, Slavic Language and Literature, Literature, Program in Literature, Judaic Studies, Inter-departmental Communication on Linguistics, Humanities Computing Program, Asian and African Language and Literature, Asian/Pacific Language and Literature, Canadian Studies, Islamic Studies, Latin American Studies, Language Lab, Soviet and Eastern European Studies, Romance Studies, Art Museum, Carlyle Letters, Science, Technology and Human Values, Women's Studies, Documentary Studies, Duke Carole, Institute of the Arts, Drama, Dance, 20th Century American Program, Committee on Linguistics, Focus, International Studies, Film and Video, Medieval Studies, Office of the Editor of Journal of American Speech, Schindorf Exchange, Romance Studies, Graduate Program in Literature, University Writing Program | | | |
| | | 22580, 22780, 22900, 22475, 23030, 23200, | | | | |
| | | 23233, 23280, 23351, 23352, 23356, 23357, | | | | |
| | | 23358, 23820, 23960, 22820, 23010, 23020, | | | | |
| | | 23035, 23070, 23100, 23110, 23120, 23150, | | | | |
| | | 23180, 23231, 23233, 23332, 23350, 23810, | | | | |
| | | 23945, 23025, 23960, 22820, 23238, 23033, | | | | |
| | | 23236 | | | | |
| | | Social Sciences | | 2 | 22020, 22040, 22210, 22250, 22700, 22740, | Biological and Cultural Anthropology, Economics, Education, Political Science, Psychology, Public Policy, International Development Research, Sociology, Management Sciences, Environmental Center, Human Development, Marxism and Society, Center for East-West Trade, Demographic Studies, Psychology Clinic, Fast Track Program |
| | | | | | 22745, 22800-222806, 22940, 22090, 23060, | |
| | | | | | 23232, 23234, 23355, 23940, 23995, 23205 | |
| | | | | | | |
| Natural Sciences | 3 | 22050, 22130, 22180, 22380, 22500, 22660, | Botany, Chemistry, Computer Science, Geology, Mathematics, Physics, Zoology, Communication on Cellular and Molecular Biology, Program in Genetics, Program in Neurosciences, Biology, Primate Facility, Physics Instrument Shop, Cryogenics, Marine Lab, Statistics and Decision Sciences, Liquid Air Department, Computer Science Lab | | | |
| | | 22661, 22980, 23040, 23090, 23235, 23260, | | | | |
| | | 23261, 23990, 29661, 29663, 23980-23986, | | | | |
| | | 23989, 23330, 29662, 29180 | | | | |

| | | | |
|----------------------------------|----|--|--|
| Engineering | 4 | 22301-22304, 23065, 23303 | Civil, Electrical, Mechanical, and Biomedical Engineering; Center for Biochemical Engineering |
| Libraries | 5 | 51000-59000 | All library administration, collections, public services, and technical services |
| Student Services | 6 | 11301-11320, 11350-11352, 11370-11380, 98312, 98313 | Office of Vice President Student Affairs, Registrar, Arts and Sciences Special Programs, International Office, Career Development Office, Counseling and Psychological Services, Sexual Assault Program |
| Plant | 7 | 13300-13410, 23050 | Physical Plant, Chief Engineer, Duke Gardens |
| Admissions and Financial Aid | 8 | 11330-11349, 11390, 11360, 36913 | Office of Admissions, Office of Financial Aid, Undesignated Student Financial Assistance, A.B. Duke Regional Prize Office |
| Arts and Sciences Administration | 9 | 21007-21940, 22861-22863, 22951-22958, 22990, 23080, 23190-23195, 23300, 23400-23621, 23740, 23075 | Arts and Sciences Administration, ROTC, Study Abroad, Unallocated Budget, Special Programs and Short Courses, Phi Beta Kappa, Continuing Education, Talent Identification, Health & Physical Education, Intramurals, Club Sports, String School, Locker and Towel Service, Preschool Laboratory, Arts and Sciences Roundtable on Science and Public Affairs |
| Provost | 10 | 11100-11255, 22350 | General Administration, Academic Administration |
| Alumni Affairs and Development | 11 | 14000-14805 | Vice President Alumni Affairs and Development, Director—University Development, Alumni Affairs, Office of Development, Office of Vice President for Alumni Affairs and Development, Office of Public Relations, Gift Records Office, Office of University Publications |
| General Administration | 12 | 10000-10501, 13000-13224, 13500-13999, 18000-18500 | General Activity, Office of the President, Office of University Counsel, Office of Executive Vice President—Asset Management, Office of Executive Vice President for Administration (Accounting, Business & Finance), Materials Management, Public Safety, Human Resources, Vice President for Planning and Treasury, Service Components, General Administrative Expense |

TABLE 4A.2 (cont.)

| Type | Description | Object Codes | Description |
|------|---------------------------------------|--|--|
| 1 | Compensation: Regular Faculty | 6001, 6013, 6003, 6004 | Administrative effort supporting instruction, instruction, cost sharing—training, cost sharing—sponsored research |
| 2 | Compensation: Other Faculty | 6015, 6350—6371 | Compensation for nonfaculty instructors, postdoctoral stipends and awards |
| 3 | Compensation: Administrative Staff | 6019, 6098, 6018, 6000 | Other professional staff, allocated vacancy allowance, staff, administrative effort supporting general services |
| 4 | Compensation: Nonexempt | 6051, 6052, 6056, 6055, 6061, 6062, 6065, 6066, 6071, 6072, 6075, 6076, 6090, 6099, 6190, 6064, 6073, 6074 | (Clerical, technical, service, skilled crafts) effort supporting general departmental operations, instruction/training/departmental research, exceptional performance awards, allocated vacancy allowance—biweekly |
| 5 | Compensation: Students | 6057, 6067, 6077—6079, 6205, 6084—6087, 6093—6096, 6210, 6097, 6380—6399, 6010, 6017, 6069, 6070, 6088 | Students (undergraduates, graduates, house counselors) payments to professional students, subspecialty fellows |
| 6 | Professional Services | 6220, 6221, 6225, 6228—6229, 6921, 6922 | Other professional services, experimental subjects, consultants, trust beneficiary distribution, data processing service, other computing services |
| 7 | Contract Work | 6916, 6927, 6971, 7151, 7152, 7991 | Contract work, subcontracts, student labor recharge, student labor resale recharge, temporary service recharge |
| 8 | Computers | 6672, 6674, 6676, 6774, 6776, 7180, 7994, 7321—7335, 6874, 6672 | Microcomputers, mini-mainframe computers, software, computer recharges, computer maintenance and repair, machinery and equipment |
| 9 | Financial Aid | 6012, 6014, 6058, 6068, 6094, 6095, 6311—6327, 6330—6349, 6069 | Salaries for graduate student research, instruction and support, graduate stipends and awards, undergraduate stipends, awards and scholarships |
| 10 | Supplies and Materials | 6440—6469, 6471—6499, 6702, 6710, 6720, 6725, 6727, 6730, 6740, 6747, 6750, 6757, 6771, 6772, 6761, 6763, 7141, 7144, 7565 | Supplies and materials, minor acquisitions of land, buildings, utilities and building appurtenances, ships and vessels, automotive equipment, furniture, library materials, recharges for copy equipment rentals, midrange copier, office products |
| 11 | Other General Operating Expenses | 6470, 6535, 6936, 6980, 6981, 6982, 6983, 6986—6989, 6914, 6938, 6954, 6994, 6500—6534, 6546—6599, 6536— | Printing and publication, freight and mail, telephone services, travel, direct utility charges, university subsidies, cost of food items sold, cost of other goods sold, collection agency fees, training expenses, contributions, dormi- |

6544, 6915, 6901-6912, 6917-6920, 6926, 6928-6934, 6940, 6944, 6969, 6947-6952, 6956-6964, 6965, 6970, 6972-6977, 6984, 6988, 6990-6993, 6999, 7100, 7120, 7140, 7145, 7146, 7149, 7166, 7153-7165, 7175, 7185-7188, 7440, 7450, 7510-7549, 7560, 7565, 7850, 7851, 7860, 7992, 7993, 7995, 6967, 6968, 7508, 6942, 7241, 7610

tory charges/housing/board—outside Duke, interview expense, relocation expense, entry fees, public relations and social expense, equipment rentals, groundskeeping, housekeeping, insurance and interest expense, laundry, losses, damages and other write-offs, maintenance non-billable payroll cost, business-related meals meetings and symposiums, moving and assembly, valet parking, royalties, space rentals, services purchased (not under contract), student damage, taxes and licenses, landfill tipping fee, transportation (of persons), business travel and living expenses, university copy center recharge, printing services recharge, mail room recharge, recharges for accounting, university functions, investment and management, benefits and records office, child care, job training, health care plan manager, workers' compensation administration, audiovisual education, student labor technical recharge, conference services recharge, moving services recharge, recharges for transit, motor pool, vehicle repair, fuel service, liquid air recharges, various credits for services rendered, office machines and products recharge, Searle Center recharges, nuclear magnetic resonance support recharge, university photographer recharge, Crystal Structure Center recharge, operating expenses nonresearch grants, hospitalization (workers' compensation), operating expenses research grants, credit for third-party sale of equipment, pediatric metabolic recharge (Chemistry Department), Physics Instrument Shop recharge

Capital (minus computers), credit for transfers of equipment; acquisition to be capitalized—land, buildings, utilities, and building appurtenances, ships and vessels, automotive equipment, library materials, furniture, construction/renovation materials, plant and equipment, Duke communications systems Maintenance and repair, physics instrument shop recharge—capital equipment fabrication

| | | |
|----|------------------------|--|
| 12 | Capital | 6600, 6627, 6675, 6681-6697, 6634, 6639-6671, 7509 |
| 13 | Maintenance and Repair | 6802-6816, 6820-6899, 7611 |
| 14 | Residual | |

Source: Unpublished data from Duke.

*Object code 6016 (sponsored research—faculty and staff) has been allocated to the faculty salaries and staff salaries expenditures types. Ninety percent of code 6016 was placed in faculty salaries and ten percent went to staff salaries. This 90:10 ratio was estimated by Tom Davis, Director of Sponsored Programs.

TABLE 4A.3
Detailed Expenditure Categories, Harvard

| <i>Line Name</i> | <i>Number</i> | <i>Code</i> | <i>Description</i> |
|------------------|---------------|--|--|
| General Academic | 1 | Megasub M13 | Core Curriculum, Freshman Seminar, House Seminars, General Education, Society of Fellows, Danforth Teaching Lab, Derek Bok Center, University Extension, Continuing Education |
| | | Megasub 153 (except subdept 349) | |
| | | Megasub 040, 480 | |
| | | Depts 17, 34 | |
| Humanities | 2 | Groupcode HU | Celtic Language and Literature, Canadian Studies, Classics, Comparative Literature, Erasmus Lectureship, Linguistics, English-American Language and Literature, Fine Arts, Germanic Language and Literature, Sanskrit and Indian, Music, Philosophy, Poetry, Romance Language and Literature, Near East Language and Literature, Center for Jewish Studies, Slavic Language and Literature, East Asian Language and Literature, Visual and Environmental Studies, Carpenter Center Courses, Film Committee, Department of History, History of Science, Afro-American Studies, Center for Middle Eastern Studies, Aga Kahn Program, Russian Research Center, Ukrainian Studies, Civilization of France, Japan Institute Council of East Asian Studies, Chinese Studies, Korean Studies, Vietnamese Studies, National Resources Center, Afro American DuBois Endowment, Collection of Historical Scientific Instruments, Charles Warren Center, Degrees in American Civilization, Committee on History and Literature, Regional Studies of East Asia, Latin American Studies, Committee on African Studies, Modern Greek Studies, Literature Concentration, Folklore and Mythology, Medieval Studies, Coolidge Hall Operations, Committee on Women's Studies, Committee on the Study of Religion Expository Writing, Piano Technical Services, Modern Language |
| | | Groupcode IC (except megasub M04) | |
| | | Groupcode OC (except megasub M08) | |
| | | Megasubs 097, 100, 103, 109, 116, 086, 159, 221, 232, 285, 370, 372, 400, 448, M11, 095, 101, 102, 123 | |
| | | Subdepts 098, 380 in megasub M16 | |
| | | Subdepts 449, 467 in megasub 001 | |

| | | |
|------------------|---|---|
| Social Sciences | 3 | <p>Center, Loeb Drama Center, Mellon Fellowships, Zemurray Radcliffe Professor, Charles Warren Fund, Latin American Scholarship Program, Far East Studies, East Asian Studies</p> <p>Anthropology, Biological Anthropology, Archeological Anthropology, Behavioral Science Center, Psychology Department, Laboratory General Psychology, Study of Black Politics, Department of Government, Government Department Data Center, American Center, Political Economy Program, Economics 10 Course, Department of Economics, Harvard Institute of Economic Research, Quarterly Journal of Economics, Harvard Institute of Social Research, Center for International Affairs, Social Studies—Teaching & Research, Degrees in Social Studies</p> <p>Astronomy, Animal Care Facilities, Mathematics, Dept of Statistics, Biology Labs, Biology Undergraduate Tutorial, Biochemistry General 10, Biochemistry Lab, Biochemistry Program, Biochemistry & Molecular Biology, Teaching and Research Grants—Biochemistry, Biology Prather Lecture, Biology Teaching and Administrative Cost, Biology Cellular and Developmental Biology, Chemistry Dept, Chemistry Labs, X-ray Facility, FTIR Room, Vax Room, Mass Spectrometry, Nuclear Magnetic Resonance Room, Glass Shop, Earth and Planetary Science, Physics Dept, Physics Lab, Jefferson Laboratories Machine Shop, Physics NSF Supplement, Cyclotron Development and Operations, Oceanography, Committee Biophysics Studies, Quantitative Reasoning, Math Core Computer Instruction, Computer Technical Services, Computer Operations General, Course Computer Expenses, Computer Based Lab, Science Center, Science Center Stock Room, Division of Applied Sciences, Organismic and Evolutionary Biology/Research, Harvard Forest, Observatory Biomedical Annex</p> <p>Museum of Comparative Zoology, Peabody Museum, Semitic Museum</p> |
| | | <p>Groupcode SS (except megasubs 167, 320, 325)</p> <p>Megasubs M04, 130, 131</p> |
| Natural Sciences | 4 | <p>Groupcodes NS, AS</p> <p>Megasubs M08, 135, 250, 349</p> <p>Subdept 349 in megasub 153</p> <p>Megasubs M07, 438, M20</p> <p>Depts 44, 49, 52, 66</p> <p>Subdepts 831 in megasub 001</p> |
| Museums | 5 | <p>Depts 63, 69, 74</p> |
| Library | 6 | <p>Dept 58</p> |
| Student Services | 7 | <p>Megasub 016</p> <p>Subdepts 067, 068, 069, 071, 614, 755 in megasub M15</p> |

TABLE 4A.3 (cont.)

| <i>Rows (Departmental Groupings) Line Name</i> | <i>Number</i> | <i>Code</i> | <i>Description</i> |
|--|---------------|--|---|
| Admissions and Financial Aid | 8 | Depts 22, 78, 91 Subdepts 021, 023, 025, 060, 061, 048, 140 in megasub D91 Groupcodes GS, UA Megasubs M22, 041 Subdepts 066, 070 in megasub M15 | Burr Senior Tutors, Registrar's Office Computers, Registrar Harvard College, Freshman Dean's Office Unrestricted, Freshman Dean's Office Restricted, Career Services, Bureau of Study Counsel Committee Administrative Scholar Undergraduate, Dean Admissions & Financial Aid, Faculty Aide Prog, University Financial Aid, Prize Office, Admissions GSAS, GSAS Admissions & Financial Aid |
| Administration | 9 | Groupcode CA, GE Megasubs 480, 035, 040, 045, 050 Subdept 065 in megasub M15 Subdepts 007, 125 in megasub M16 Subdepts 018, 020, 046 in megasub sub D91 | Administration, Academic Planning, Finance, Administrative Computing Systems, Administrative Salaries, Dean Faculty A&S, Secretary, FAS—Personnel Services, Administration General, Audio Visual Service, Dept of Media Services, Overhead on Government Contracts, Administrative Special, FAS—Recruitment & Relocation, Associate Dean GSAS, Institutional Research and Evaluation, Associate Dean Undergraduate Education, Sourcebook Publication, Harvard Foundation, Dean of Harvard College, Associate Dean Special |
| Plant | 10 | Group PR Subdepts 800-899 Subdepts 487, 488 in megasub 001 | Buildings Administration, Pooled Reserve Building Maintenance |
| Athletics | 11 | Dept 85 | Athletics |
| <i>Columns (Expenditure Types) Description</i> | <i>Number</i> | <i>Code</i> | <i>Description</i> |
| Compensation—Regular Faculty | 1 | Class 01, 02 | Compensation for tenured faculty and faculty with appointments more than one year |
| Compensation—Other | 2 | Class 03 | Compensation for faculty with appointments one year or less |

| | | | |
|----------------------------------|----|---|---|
| tion— Professional Staff | | | empt from overtime |
| Compensa- tion—Stu- dents | 4 | Class 05, 07, 23 | Wages to Harvard or Radcliffe students, wages to non-Harvard or non-Radcliffe students, Payments to exempt employees enrolled as students |
| Compensa- tion—Nonex- empt | 5 | Class 06, 08 | Compensation to support staff, not exempt from overtime, Non-exempt support staff in service departments |
| Extra Compen- sation | 6 | Class 10 | Unallocated costs of fringe benefits, extra compensation and over- time |
| Operating Ex- penses | 7 | Class 15, 16, 19, 20, 33, 34, 35, 39, 11, 17, 18, 22, 24, 25, 28 | Cost of binding books and publications, design and layout of printed mat, telephone, postage, express and freight, heating, ven- tilation and AC, water, light and power, gas, rubbish removal, vine trimmings, insurance, items charged to grants that do not earn overhead, travel, foreign travel, subscriptions and books, share of university expenses, transfers, miscellaneous |
| Capital | 8 | Class 12, 31, 27 | Cost of equipment, building improvements and alterations, payment of debt service |
| Supplies | 9 | Class 13 | Cost of supplies and equipment with unit value less than \$100 |
| Professional Services | 10 | Class 26 | University Police Service |
| Maintenance | 11 | Class 29, 30, 32, 36, 37, 38 | Maintenance expenses, building maintenance including painting, roofing, minor repairs, custodial- and maintenance-related ex- penses for buildings Mechanical maintenance, care of fire protection equipment, eleva- tors and HVAC operations, grounds maintenance and snow re- moval |
| Financial Aid | 12 | Class 40, 41, 42, 43, 44, 45 46, 49 | Fellowships and scholarships, tuition scholarships, beneficiary aid, prizes, dependency allowance as part of govt grants or contracts, research fellow stipends |
| Computers | 13 | Class 14 | Charges for Office of Information Technology and outside com- puter services |

*Abbreviations: FAS Faculty of Arts and Sciences
GSAS Graduate School of Arts and Sciences*

TABLE 4A.4
Detailed Expenditure Categories, Chicago

| <i>Row (Departmental Groupings) Line Name</i> | <i>Number</i> | <i>Code</i> | <i>Description</i> |
|---|---------------|---|--|
| Humanities | 1 | Exec 21 (except 200), 41 Dept 303, 308, 403, 458 | Art, English, Committee on Social Thought, Classical Languages and Literature, East Asian Languages and Literature, Germanic Languages and Literature, Linguistics, Music, Near Eastern Languages and Civilizations, Philosophy, Romance Languages and Literature, Slavic Languages and Literature, South Asian Languages and Literature, History, New Testament and Early Christian Literature, Committee on Art and Design, Language Laboratory, Center for International Language Studies, Humanities Collegiate Division, Oriental Institute |
| Social Sciences | 2 | Exec 23 (except Dept 300, 302, 303, 308) Dept 404 | Psychology, Anthropology, Economics, Social Sciences Collegiate Division, Education, Committee on Geographic Studies, Political Science, Sociology |
| Natural Sciences | 3 | Exec 22 (except Dept 250, 257, 258, 263, 264) Dept 402 Dept 141, 142, 144, 146, 401 | Astronomy and Astrophysics, Chemistry, Ben May Institute, Mathematics, Geophysical Sciences, Statistics, James Franck Institute, Enrico Fermi Institute, Computer Science, Center for Advanced Radiation Resources, Physical Sciences Collegiate Division, Biochemistry, Biophysics and Theoretical Biology, Ecology and Evolution, Biochemistry/Molecular Biology, Biological Sciences Collegiate Division |
| Library | 4 | Dept 470 | Library |
| Student Services | 5 | Exec 43 Dept 660, 661, 665-669 | International House, International Student Services, Office of the Dean of Students, Career and Placement Services, Mandel Hall, Student Activities Office, Ida Noyes Clubhouse, Reynolds Club |
| Plant | 6 | Dept 649, 652 (until 1988/89) 655, 657, 702, 703, 706, 710, 742, 744 | Office of Energy Management Conservation and Safety, Facilities Planning and Management, Utilities, Physical Plant and Construction (until 1988/89), Energy Management and Conservation, Safety Coordinator, Office of Hazardous Waste Disposal, Office of Radiation Safety |

| | | |
|----------------------------------|----|---|
| Admissions and Financial Aid | 7 | Dept 415, 615, 616, 662, 663 College Admissions and Financial Aid, Central Unrestricted Student Aid, Graduate Admissions and Aid, Office of Student Loan Counseling, Graduate Student Aid |
| Provost | 8 | Dept 610, 611, 651, 652 (since 1988-89) Office of the Provost, Academic Contingency |
| Alumni Affairs and Development | 9 | Exec 60 Dept 673, 674, 680 Office of the Vice President for Development, Development Office, Office of Alumni Affairs, Alumni Magazine, Office of the Vice President for University News and Community Affairs |
| Arts and Sciences Administration | 10 | Dept 405, 200, 250, 264, 300, 400, 664, 302, 100, 104, 105 Humanities Divisional Administration, Social Science Divisional Administration, College Administration, New Collegiate Division, Physical Sciences Division (PSD) Administration, PSD Graduate Dean of Students, Registrar/SIS, Social Science Divisional Administration—Credit, New Collegiate Division Biological Sciences Division (BSD) Academic Administration, BSD Facilities Management, BSD Introduction and Research Services |
| General Administration | 11 | Exec 50, 65, 75, 70 (except Dept 680, 717, 718) Dept 405, 406, 640-648, 650, 653, 690-694, 622, 671, 716, 746, 750, 705, 707, 711, 713, 106-108, 257, 258, 471, 263, 450-455 College Summer Programs, Employee Relations, University Computing General Management, University Computing Finance and Administration, Administration and Library Information Systems, Academic and Public Computing, Networking and Large Scale Computing, Planning and Vendor Relations, Office of the President, Dean and Directors, Office of Investments, Office of Legal Counsel, Secretary of the Faculties, Secretary of the Board of Trustees, Office of the Vice President for Business and Finances, Office of Financial Planning and Budget, Information Systems Group, Office of the Comptroller, Office of Internal Audit, Professional Accounting Expense, Operations Office, Auxiliary Services (became Operations Office in 1984/85), Purchasing Office, Risk Management Office, Faculty Exchange, Office of Official Publications, Office of University News and Information, Office of Special Events, Security Department, University Publications, Central Debt Service, Insurance and Rent, Business Administration Credits, Centrally Budgeted Restricted Funds, Affirmative Action Office, University Human Resources Management, Printing Department, Consolidated Budget Administration, Biological Sciences Division Audio Visual Service, BSD Animal Resources Center, BSD Lab Materials Management, Physical Sciences Division Glass Shop, Central Shop, Library Photoduplication, Research Institute—Graphic Arts, Office of the Vice President for Research Physical Education and Athletics, Smart Museum, Office of Continuing Education |
| Other | 12 | Dept 672, 740 Exec 46 |

TABLE 4A.4 (cont.)

| <i>Columns (Expenditure Types)</i> Description | <i>Number</i> | <i>Code</i> | <i>Description</i> |
|---|---------------|--|---|
| Compensation—Regular Faculty | 1 | Subaccount 1000-1099 | Salaries and wages: faculty, faculty extra service, faculty three-quarter salary accrual |
| Compensation—Other Faculty | 2 | Subaccount 1100-1199, 8370-8399 | Salaries and wages: other academic, stipends—postdoctoral fellowships |
| Compensation—Professional Staff | 3 | Subaccount 1200-1399 | Salaries and wages: professional, supervisory/managerial/administrative |
| Compensation—Non-empt Staff | 4 | Subaccount 1400-1799 | Salaries and wages: technical, services/trades, clerical—nonunion, clerical—union |
| Professional Services | 5 | Subaccount 2100-2999, 3100-3199, 4100-4199, 4300-4599, 4900-4999 | Services: audiovisual, animal care, central shop charges—PSD, computing—Computation center, computing—other University computers, computing—Non—university computers, consultants and professional fees, departmental service unit charges, duplicating/printing, human subjects/volunteer expense, radiation protection, temporary agency help, transportation services/livery services, all other services Subcontracts, indirect costs—subcontracts |
| Subcontracts | 6 | Subaccount 8600-8699, 9103-9107 | Computing equipment, computer software, lease/rental: computing/word processing equipment |
| Computers | 7 | Subaccount 6300-6399, 5800-5999, 7800-7899 | Research assistants (Ph.D.), research assistant tuition aid, student aid—graduate students, stipend aid—graduate student dependents, tuition aid, student prizes, fee aid, institutional/supply allowance—graduate students, research and course assistants, all other RAs/TAs, salaries and wages: writing lecturers, course assistants, writing interns, laboratory course assistants, College Fellows |
| Financial Aid | 8 | Subaccount 1800, 1801, 8310-8399, 1804-1899, 1802 | |

| | | | |
|----------------------------|----|---|---|
| Supplies | 9 | Subaccount 5100-5799, 5900-5999, 6500-6599, 8500-8599 | Animal purchase/supplies, food supplies, hospital/clinical supplies, laboratory supplies, office and educational supplies, shop supplies, wearing apparel, printing supplies, recreational supplies, all other supplies (except computer software), furniture and fixtures, library materials acquisitions, art acquisitions |
| General Operating Expenses | 10 | Subaccount 0991-0998, 3700-3798, 3200-3299, 4200-4299, 4600-4699, 3800-4099, 7100-7599, 7900-8199, 8905-8985, 9100-9102, 9108-9179, 9800-9829, 9840-9899, 9901-9907, 9909-9911, 9004, 9009 | Electricity recharges, metropolitan sanitary district recharges, gasoline purchases, water recharges, city sewer recharges, steam recharges, gas fuel recharges, postage/ mailing/shipping charges, profession developmental charges and fees, staff benefit expenses, relocation expenses, equipment lease/rental charges (except on computer equipment), credit transfers, publication costs, utilities/electricity/water/steam/fuel/oil/sewer/property tax payments, advertising, selling and marketing costs, automobile use costs, fines and penalties, housing and personal living expenses, donations and contributions, membership costs, noncash gifts, pension costs, trustee expenses, procurement card charges, insurance, telephone/teletype/telex, subscriptions, domestic travel—faculty/staff/students, domestic travel—other, foreign travel—faculty/staff/students, foreign travel—other, cost of goods sold, credit subaccounts, unallowable cost subaccounts, interest expenses, indirect costs (except for subaccounts 9103-9107), physical plant department services, office of facilities, planning and management—fixed services Scientific and technical equipment, shop machinery and tools, vehicles, all other equipment, construction/property acquisition, purchase of land and buildings, renovation and alteration, general purpose office equipment (includes typewriters, copiers, audiovisual equipment, and duplicating equipment) |
| Capital | 11 | Subaccount 6100-6299, 6400-6499, 6600-6999, 8700-8899 | Maintenance/repair costs |
| Maintenance | 12 | Subaccount 00-99, 3300-3399 | |
| Residuals | 13 | Subaccount 1901-1909 | |

TABLE 4A.5
Expenditure Categories, Carleton

| <i>Departmental Group</i> | |
|---------------------------------------|--|
| Humanities | American Studies, Archaeology, Art and Art History, Arts Studies, Asian Languages and Literature, Asian Studies, African/African-American Studies, Classical Languages, Cognitive Studies, English, Media Studies, German and Russian Languages, History, Judaic Studies, Latin American Studies, Linguistics, Music, Philosophy, Religion, Romance Languages, Russian Studies, Women's Studies, Colloquia Performance Program |
| Natural Sciences | Biology, Chemistry, Geology, Mathematics and Computer Science, Physics and Astronomy |
| Social Sciences | Economics, Educational Studies, Political Science, Psychology, Sociology and Anthropology, Urban Studies |
| General, Other Academic Departments | Integrated General Studies, Physical Education, Studies in Technology and Public Policy, Learning Disabilities Program, Science and Ethics, Other Educational Programs |
| Organized Research | |
| Library | |
| Academic Administration | Instructional support, less computer center; registrar |
| Computing | Computer center; data processing |
| Student Services | Student services, less admissions, financial aid, registrar |
| Admissions and Financial Aid | Financial aid; admissions and minority admissions; student financial services in 1992 |
| Scholarships | Student aid, less faculty and staff scholarships |
| General Administration | Administration; general institutional, less data processing |
| Alumni, Development, Public Relations | Public services and information (1977); development (other years) |
| Plant | |
| <i>Type of Expenditure</i> | |
| Compensation | Salaries plus staff benefits allocated in proportion to salaries; for faculty, also includes furloughs and faculty-staff financial aid |
| Student Work | |
| Supplies | |
| Equipment | Includes maintenance and new equipment |
| Travel | |
| Other Expenses | |

Source: Carleton College, *Report of the Treasurer*, Schedule B-2, "Detail of Current Expenditures," 1976/77, 1981/82, 1986/87, and 1991/92.

Appendix 4.3

Trends in Duke Expenditures from 1976/77 to 1983/84

AS NOTED IN chapter 4, machine-readable financial data were not available for Duke or Chicago before 1983/84 or for Harvard before 1981/82, making it impossible to conduct a full analysis of trends in spending at any of the three universities over the entire 15-year study period. Almost no machine-readable accounting data for Carleton were available, but consistent tabular information covering the entire 15-year period had been published. As a partial remedy for this deficiency (mainly as a check on the representativeness of the most recent period), accounting records for Duke extending back to 1976/77, stored as microfiche, were examined. Because it was impractical to undertake the kind of full examination of expenditures by unit and type made possible by computers, aggregated data in the form of fund codes were collected for a selected number of departmental units. In order to use these data to get an idea of trends in the earlier period, two questions were posed: First, using the fund code data, how did the growth in spending in the earlier period compare with that in the period 1984–1992? Second, how do the two types of data compare for the period for which detailed information exists? If both types of data yield similar results for the more recent period, then one can more confidently rely on the fund code information for the earlier period.

Fund codes are the basic accounting unit used in most private colleges and universities. In the case of academic departments at Duke, a single fund code often covered an entire department over the entire 15-year period in question; this comparability allows at least a gross analysis of trends in spending over time. On the administrative side, however, fund codes appear to have proliferated in accordance with changes in organizational changes, making it necessary in most cases to add together a number of individual fund codes to approximate the total expenditure for any one administrative area.¹⁹

Table 4A.6 presents a comparison between fund code data and detailed accounting data (for unrestricted expenditures only) for selected academic department groupings and administrative areas.²⁰ The first two columns compare the 1992 dollar amounts of expenditures, giving some idea of how closely the total from the selected

TABLE 4A.6
Growth in Real Expenditures, Selected Duke Fund Codes

| | Comparable Amounts, 1991/92 (\$M) | | Annual Growth Rates, by Fiscal Year | | | |
|--|--------------------------------------|-----------------------|-------------------------------------|------------|-----------------|--------------------|
| | Fund Codes | Total Unrestricted | 1976/77-1983/84 | | 1983/84-1991/92 | |
| | | | Fund Codes | Fund Codes | Fund Codes | Total Unrestricted |
| Academic Departmental Groups (Excluding Graduate Aid) | | | | | | |
| Natural Sciences | \$13.4 | \$14.5 | 0.7 | 5.6 | | 4.7 |
| Humanities | 12.0 | 14.1 | 0.3 | 6.1 | | 6.6 |
| Social Sciences | 12.2 | 11.0 | 0.6 | 3.1 | | 3.9 |
| Engineering | 5.8 | 5.5 | 3.8 | 6.4 | | 5.9 |
| Selected Departments | | | | | | |
| Library | 14.7 | 11.4 | 3.0 | 3.7 | | 3.4 |
| Student Services | 3.9 | 3.3 | 4.5 | 1.7 | | 2.4 |
| University Counsel | 1.6 | 1.0 | 14.2 | 8.1 | | 3.4 |
| Provost | 6.7 | 8.7 | -0.3 | 4.6 | | 5.4 |
| Accounting | 8.9 | 8.7 | 5.0 | 4.5 | | 7.4 |
| Alumni and Development | 9.4 | 5.6 | 1.7 | 5.4 | | 5.9 |
| Human Resources | 3.5 | 3.4 | 12.1 | 1.7 | | 2.0 |
| Selected Financial Aid Categories | | | | | | |
| Undergraduate Awards | 8.8 | 12.1 | 2.5 | 14.4 | | 14.5 |
| Graduate Awards | | | | | | |
| Natural Sciences | 2.0 | 3.6 | 3.0 | 5.9 | | 10.1 |
| Humanities | 0.8 | 2.6 | -3.3 | 17.1 | | 10.2 |
| Social Sciences | 0.6 | 2.3 | -0.4 | 12.9 | | 11.9 |
| Engineering | 0.3 | 1.3 | 6.8 | 3.0 | | 10.4 |

Source: Unpublished accounting data for 1976/77, 1983/84, and 1991/92; and tabulations by Duke Planning Office.

Note: Selected departments included the following fund codes: library, 1540100-1541090; student services, 1551000-1552811, 1554000, 1559600, 1809033, and 1809037; university counsel, 1570400-1570415; provost, 1571100-1571550; accounting, 1573100-1573180; alumni and development, 1574800, 1574805, and 1574000-1574500; human resources, 1573500-1573513; undergraduate awards, 1680102 and 1681110; and graduate awards: natural sciences, 1681423, 1681426, 1681428, 1681441, 1681447, and 1681459; humanities, 1681435 and 1681432; social sciences, 1681439; social sciences, 1681432 and 1681433; and engineering, 1681432 and 1681433.

fund codes approximates the total unrestricted spending as calculated using the detailed financial data.²¹ Comparisons are made for academic departmental groupings (the same ones used in Table 4.2, specific administrative areas, and several categories of financial aid. In general, the amounts shown in the first two columns are similar in magnitude. The similarity suggests that, in most cases, the fund codes chosen provide reasonably similar coverage to the tabulations based on the detailed financial data. The largest differences are in the financial aid categories. Other than simply providing less coverage, one reason why the total based on fund codes is smaller is the omission of salaries to graduate student instructors, which are added to financial aid in the total unrestricted numbers. However, there are other categories in which the differences in totals suggest that the two sets of data are not comparable.

Turning to the growth rates for these categories of spending, it is instructive to begin by comparing the last two columns, in order to assess the similarity of growth rates calculated for the period 1984–1992 using the two methods of measuring expenditures. In a majority of categories, the two growth rates calculated for the period are within one percentage point. Where the rates diverge significantly, it is for a category in which the two measures differ in coverage. In summary, even if two different bases are used to collect data, the growth rates for the 1984–1992 period appear to be fairly comparable in most cases. This comparability gives us some confidence that using the fund code information to detect trends over a longer period will provide useful supplemental information on rates of growth in expenditures.

With this background, it is now possible to compare the growth in expenditures based on fund codes. Was the period 1977–1984 one of slower or faster growth compared to the 1984–92 period for which detailed data are available? Looking first at the four major departmental groups, there is little doubt as to the answer: real expenditures accelerated rapidly in each division after 1984. Engineering led the way in both periods. Marked by the hiring of a number of prominent professors beginning in 1983, the humanities division showed the most dramatic jump in its rate of spending increase. The administrative units shown in the next section of the table generally exhibited faster rates of growth, especially in the earlier period. Whereas three of the four academic groups had growth rates of less than 1 percent from 1977 to 1984, only one among the selected administrative units did. But these rates of growth generally subsided during the second half of the period, falling from an average of 5.7 to 4.2. The unit displaying the most rapid increase over the entire

period is the university counsel.²² There was a similar racheting-up of spending in the selected financial aid categories. No doubt the item with the largest impact was undergraduate financial aid. (Recall that these expenditures are taken from unrestricted funds and thus do not include endowed scholarships or government-financed aid.) After growing at "only" 2.5 percent per year in real terms before 1984, this item exploded after 1984, growing at a 14.4 percent rate. Moreover, although the magnitudes are smaller, there were similar jumps in three of the four categories of graduate aid, with the largest increase recorded for humanities, perhaps indicating the degree to which support for graduate students is considered a necessary ingredient to improvement in academic departments. Overall, these comparisons suggest that the growth in administrative expenditures slowed after 1984 (although continuing to increase in real terms), whereas academic budgets generally grew significantly only during the later period.