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Volume Author/Editor: Charles T. Clotfelter

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Chapter Author: Charles T. Clotfelter

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CHAPTER 2

A Peculiar Institution

> The research university reeks of professional dominance, with professors constantly sliding from the role of employee into that of salaried entrepreneur, going largely their own way in managing their time, their research, and their teaching.
>
> *Burton R. Clark, 1987*[1]

FEATURING the size of a small city, the complexity of a major conglomerate, the technical sophistication of the space program, the quaintness of a medieval monastery, and the political intrigue of a Trollope novel, the modern private research university in this country is a peculiar institution indeed. As an organizational type, its origins date to the Middle Ages, making its European examples some of the oldest continuously operating organizations other than the Roman Catholic Church. Probably its most famous example in this country, Harvard, founded in 1636, is today both among the very oldest and the most influential of American institutions.

A logical first step in understanding the rise in expenditures in private research universities is to consider the institutional context in which the increase occurred. To this end, the first section of this chapter describes universities as we know them in the United States, focusing on four aspects that distinguish them from other large organizations. Universities are not distinctive in all their features, of course. Therefore, it is essential to remember that universities, like corporations and many other nonprofit organizations, retain significant flexibility in allocating resources, an issue discussed in the second section. Awareness of these characteristics is essential for assessing the explanations that recent research on higher education has offered for the continual rise in expenditures, reviewed in the third section. The chapter's last section briefly describes the four institutions that serve as case studies in this book. Note that the characterization of universities presented in this chapter is meant to apply first and foremost to private, selective universities, such as those examined in this study. However, the discussion probably applies in many

respects not only to other research universities but also, with suitable modifications, to selective liberal arts colleges.

WHAT KIND OF FIRM IS A RESEARCH UNIVERSITY?

In the vernacular familiar to economists, a private college or research university is a firm, sharing the same essential elements as countless other firms, both nonprofit and for profit: employees are hired, physical capital is purchased and maintained, a service is produced, customers consume it, and revenues are collected. Yet these institutions constitute a distinctive class of firm, as even a brief visit to any campus will suggest. Employees and customers, often indistinguishable, may be seen making their way across parklike expanses, which separate imposing buildings of varying architectural design; inside these buildings may be found modern offices, labyrinths of laboratories, dining rooms, theaters, gymnasiums, and auditoriums. Beyond the areas of intense activity may lie acres of playing fields and parking lots, punctuated by the unmistakable silhouette of an outdoor stadium.

What Is the "Business" of the Private Research University?

To suggest the range of activities that are carried out on campuses, it is instructive simply to list them.[2] The first step in doing so is to recognize that a handful of activities are of paramount importance: they define the institution. These activities include the traditional trinity—teaching, research, and service—plus patient care in the universities with medical centers. Teaching takes place not only through formal instruction in classrooms and laboratories, but also in many less-formal interactions in such settings as offices, libraries, and local area communication networks. Service encompasses a wide variety of activities, from advising foreign governments to volunteering with local charities. Other activities, some of them almost as thoroughly identified with colleges and universities as the first three, support the defining functions. They include selecting among applicants; maintaining records on students; counseling students; and providing a range of campus services to students, such as dining, housing, and transportation. Another uniquely collegiate function is intercollegiate athletics, although how to classify it is not obvious. Part commercial enterprise, part student activity, it would, in recognition of its prominence, appropriately appear in the list of defining

processes for many universities. There also are semicommercial activities, such as stores, theaters, and golf courses, which sell to customers both on and off the campus. A third group of activities comprises supporting functions not unique to higher education, for example, general administration, legal counsel, financial accounting, investment management, public relations, maintenance, and security. These functions, although essential to the operations of the university, also are routinely performed by most large corporations and nonprofit organizations. In assessing the rise in university outlays, it will be useful to divide total university expenditures into broad categories such as these.

Of the university's defining activities, most observers probably would agree that the two most important are teaching and research. However, it is not always easy to distinguish between the two in practice. One central activity of all the institutions examined in this study is undergraduate education. For liberal arts colleges, this activity is the primary, if not exclusive, aim. In contrast, the three universities examined here offer a variety of graduate and professional programs. In 1992, in addition to undergraduate baccalaureate programs, Chicago, Duke, and Harvard offered professional degrees in business, law, medicine, public policy, and divinity, and graduate training in numerous arts and sciences fields. At least one university offered graduate professional training in education, engineering, social work, public health, architecture, and environmental studies. In addition, the universities' operating units include museums, marine laboratories, departments of athletics, university presses, and a laboratory school featuring classrooms for school children of all ages. By focusing exclusively on arts and sciences, the present study simplifies comparisons among the institutions.

Although vast differences exist among disciplines in methods of inquiry as well as subject matter, it is not too great a simplification to say that the major difference between a college and the arts and sciences component of a university is the presence of graduate students, particularly doctoral students. Their presence radically transforms the relationship between faculty and undergraduate students. Graduate students assist in the teaching of undergraduates by acting as graders and instructors. Probably more important, they provide a competing object of attention for faculty. In particular, the process of doctoral training involves both classroom teaching and highly individualized supervision. The relationship between faculty and doctoral student has been described as symbiotic, because the faculty member typically benefits materially, as does the apprentice. Faculty gain from the intellectual challenge of teaching and overseeing the

research of bright, energetic students as well as from students' services as laboratory and research assistants, as is evident from coauthorships and the acknowledgments found in faculty publications.[3]

Four Distinctive Features

As this short description makes clear, the functions of the research university can be readily distinguished from those of most other kinds of firms. Less readily observed, but perhaps more important, however, are the university's distinctive features as an organization. In his analysis of the modern university, Coleman (1973, p. 369) notes that the university is one of the few institutions in existence that traces its beginnings from the Middle Ages. In contrast to the hierarchical nature of the modern corporation, universities retain the nature of a community. As an organization, Coleman argues, the university displays three features that distinguish it from the modern corporation: (1) it has no corporate goal (other than to award degrees), (2) those who perform its central functions are not employees in the usual sense, and (3) it is governed along collective rather than hierarchical lines. This list suggests a useful outline for describing the distinctive institutional trademarks of universities. To these three institutional features, a fourth is added here relating to the nature of the commodity that colleges and universities provide to their customers, and to the implications this feature has for the market for higher education.

Mission: To Be "The Best"

In its purest conception, the modern corporation is the epitome of rational organization that is built around a central mission guiding all its decision making. Indeed, the crafting of "mission statements" has become a familiar part of contemporary corporate planning. Many colleges and universities, in their emulation of corporations' efforts to improve productivity, have undertaken similar planning exercises, often to discover that the process of crafting a mission statement is agonizingly difficult. The apparent reason for this difficulty, quite simply, is that the objectives of most universities are both varied and vague. Coleman's view that the university has no goal at all, except to award degrees, is hyperbole. More accurately, a university simply is many things to many people. This attribute explains the observation of Keohane (1993, p. 101) that a mission statement "sufficiently bland to encompass everyone's conception" is unsatisfy-

ing, whereas more specific statements quickly engender controversy. What is left, if it is actually put into words, is a general commitment to "excellence" or the aim to be "the best" (Cole 1993, p. 23). Using precisely these words, Duke provost Phillip Griffiths stated in an address to university trustees, "The goal for Duke University, clearly, is to be the best. More specifically, it is to strengthen Duke's position as the leading private teaching and research university in the Southeast and improve its national position among such universities" (Griffiths 1984). Such devotion to superlative achievement is by no means new, as Charles Eliot's inaugural as president of Harvard in 1869 illustrates (Morison 1965, pp. 329–30): "This University recognizes no real antagonism between literature and science, and consents to no such narrow alternatives as mathematics or classics, science or metaphysics. We would have them all, and at their best." To be sure, university mission statements often feature some specificity, usually organized into the traditional trinity of research, teaching, and service. What seems significant for the present analysis is the unconstrained nature of the stated aspirations.

Not surprisingly, the larger and more complex the institution, the more difficult it is to give a simple statement of purpose. At one end of the spectrum is the small liberal arts college. Offering neither graduate training nor professional training, not to mention the vast array of research and service activities included under the tent of the large state universities, the liberal arts college has the luxury of a distinct and widely shared objective. It is noteworthy that, among the four institutions examined in the present study, in only one—Carleton College—did the official catalog offer a statement of purpose: "Carleton College strives to provide a liberal education of the highest quality. The goal of such an education is to liberate individuals from the constraints imposed by ignorance or complacency and equip them broadly to lead rewarding, creative, and useful lives."[4]

Faculty: Autonomy and Divided Loyalties

Coleman's second distinctive feature is that those who perform the institution's central functions, the faculty, are not employees in the conventional sense, but rather, "semi-independent professionals" (Coleman 1973, p. 369). From this perspective, faculty have the best of the community and corporate worlds—privilege, pay, and security without the obligations of obedience within a chain of command. More precisely, this favored position is enjoyed by faculty who have passed the profession's most prominent professional hurdle: the virtual lifetime guarantee of employment known as tenure.

Tenure most often is justified in terms of protecting the freedom to express unpopular ideas, but McPherson and Winston (1993a) argue that it is an institutional response to the highly specialized duties that professors are hired to perform and to the easy portability of skills to other employers. Whatever its origins, academic tenure inevitably limits the degree to which central authority can be exercised within a university. Not only could he as dean not order faculty to do very much, complained Henry Rosovsky in a letter to the Harvard faculty, he found it difficult even to gather basic information, such as the number of hours of classroom teaching by faculty. Without a strong social contract spelling out obligations, he warned, this autonomy could result in a "society largely without rules" (Rosovsky 1991, p. 18). To be fair, it is necessary to note the readily apparent fact that, despite this freedom, faculty in general do appear to work a great deal. In 1988, faculty reported in a survey an average work week of 53 hours; for those in private research universities, the average was 57 hours (U.S. Department of Education 1991, p. 51).

In addition to tenure, two aspects of university culture are worth noting because both have the potential to influence expenditures. The first is the strong allegiance that most faculty members feel to their own disciplines or professions. Like guild members of old and members of other professions today, most faculty display strong attachment to that national or international group of scholars who share the same disciplinary training or who teach and conduct research in similar areas of inquiry. It is accepted as fact, and probably expected, that the loyalties of the chemists, linguists, and political scientists of any university faculty will be divided between institution and profession. Two surveys conducted in the 1980s revealed that twice as many faculty stated their academic discipline to be "very important" to them as stated their college or university to be that important (Boyer 1990, p. 56). To Gray (1992, p. 237), this "dual citizenship" is simply an unavoidable fact of university life. Indeed, research universities encourage an outward-looking disciplinary orientation through such policies as the use of external committees to review departments and other programs, the reliance on outside letters of reference and evaluations of peer-reviewed publications in promotion and tenure reviews for individual faculty, and university-financed subsidies for attendance at professional meetings. As research has received increasing emphasis in most universities, one's standing in one's discipline, rather than in one's institution, has become the coin of the realm.[5] Moreover, as the elite liberal arts colleges increasingly expect faculty to conduct research, one would expect to see a similar outward orientation develop there as well. This

emphasis on research presents a dilemma for faculty, especially untenured ones, who come to realize that the *duties* of the job (especially teaching and advising) are largely distinct from the activities that will earn them advancement.[6]

The second noteworthy feature of the culture of the professorate is a live-and-let-live attitude toward disciplines (and thus departments) other than one's own. As noted by Cole (1993, p. 6) and Kennedy (1993, p. 137), the taboo against criticizing other disciplines in public is strong. Whether it arises out of a broader devotion to freedom of inquiry and expression or out of an appreciation of the vulnerability of all disciplines to attack from without, and whether this attitude is any more characteristic of academe than of other large organizations, it is not hard to see how this tolerance—combined with the participatory elements in university governance noted in the following section—could inhibit serious discussions of retrenchment in universities.

Governance: "Company of Equals"[7]

The third distinctive feature of the university highlighted by Coleman is the way that it governs itself. Coleman points out that the university more closely resembles a community than a hierarchically structured corporation. The decisions of major importance in any research university center around the approval and termination of programs, the requirements for degrees, the allocation of space and budgetary support among components, the hiring and promotion of faculty and senior staff, and the setting of institutional policy. Who actually makes these decisions? Within any institution, three obvious possibilities are the governing board, the administration, and the faculty. Private universities, like most nonprofit organizations, are governed ultimately by self-perpetuating boards of trustees, which have the legal responsibility to make all such decisions of consequence. Reporting to the governing board are the university's senior administrative officers (president, provost, vice presidents, and deans) who, subject to the board's approval, usually exercise broad powers over the day-to-day operation of the institution. Among the undeniably important decisions left largely to administrators are the setting of salaries, the allocation of space, the approval of positions, and the choice of enrollments and average class size that in turn determine faculty teaching loads. Although boards of trustees exert influence over the overall shape of policy, it is rare that these decisions are rejected at the level of the board.

The claim is sometimes heard that the faculty "run" the university.[8]

For most universities, this notion still seems to be an exaggeration; however, it may have more to recommend it than an organizational chart would suggest. The influence of the faculty is felt in two ways. First, most universities have established elaborate structures of deliberative committees to consider, review, or propose various decisions. The most prominent deliberative body is usually the faculty senate, although its role may be largely symbolic. Many institutions use committees composed of administrators, faculty, and, sometimes, students to deliberate over budgetary matters. Among the institutions examined in the present study, both Carleton and Duke have established such committees. In addition, faculty bodies appointed for the specific purpose of making recommendations often exert considerable influence. For example, faculty committees empaneled to review departments and other programs, to make recommendations on promotion and tenure cases, or to offer guidance on budget priorities have become an integral part of institutional decision making. To be sure, these arrangements, and the degree of influence they imply, differ from one institution to another.

Faculty appear to exert influence over university decisions in a second, informal way. Because most senior administrators come from the ranks of the faculty, they look to their colleagues for understanding, if not approval. This sensitivity is clear and understandable in the case of the departmental chairs, who typically anticipate returning to their previous roles as members of their departments. In the case of senior administrators, such as deans, provosts, and presidents, a similar influence is at work. As Feldstein (1993, p. 38) and Stigler (1993, p. 167) note, the incentives facing administrators are decidedly asymmetric: whereas policies of growth or maintenance of the status quo that require sacrifice from no one individual usually generate little if any dissent, proposals to cut programs can be expected to produce howls of protest and determined opposition. The participatory character of university decision making, and the faculty's role in it, ultimately lead to a form of governance that is difficult to model with precision. The observation of Caplow and McGee (1958, pp. 206–7) made more than 30 years ago still is descriptive: "The fundamental device by which stresses in the university are resolved is a kind of lawlessness, consisting of vague and incomplete rules and ambiguous and uncodified procedures."

Although it is difficult to quantify, the influence of the faculty, which also implies the influence of the disciplines and professional associations to which faculty feel allegiance, appears to be a real force in university governance. It may be a version of the old joke about who makes the important decisions in the family. The trustees

and administrators make the "important decisions," such as how to invest the endowment and where to locate new buildings, but the faculty have substantial influence over the "unimportant" decisions, such as what the curriculum will be and who will receive tenure. As one unnamed political scientist said, "On the things that count to the faculty, the faculty have a lot of power."[9] The truth is perhaps murkier than usual. Not only is it difficult to determine the loci of influence in a single institution, with all its complexities, the reality itself surely differs from one institution to another.

Product: Essential, Ephemeral

The fourth distinctive aspect of research universities lies in the nature of the product that they sell and what that implies about the market in which they sell it. Whatever else can be said about them, the services that colleges and universities provide are ill-defined and virtually unmeasurable. Even ignoring research and service, the remaining teaching-related services are noteworthy on at least three grounds. First, as suggested by the use of the plural, they are multidimensional; they include training in specific subjects as well as skills and experiences that, taken together, are recognized as a college education. Second, as McPherson and Winston (1993b) have emphasized, the quality of these services is not easily assessed, either by customers or by experts in the industry. In the terminology of economics, the output is an "experience" good, the quality of which can be judged only after it is consumed, as opposed to a commodity that can be assessed adequately by inspection before purchase. Because useful information therefore is hard to come by, consumers will be influenced by observable signals of quality, including new programs, prestigious professors, or even a high price. Third, the customers of the output are also inputs to the production process. A student's experience is affected not only by faculty, staff, and buildings, but also by his or her own efforts, and by the presence of other students. The characteristics of students also no doubt affect the pleasure that faculty derive in teaching. In addition, characteristics of the student body may have reputational aspects of their own, for example, when average standardized test scores are used in college rankings. For these reasons, institutions care about both the average quality and diversity of the students who enroll in them.

Closely related to these aspects of the commodity that colleges and universities produce is the question of competition in the "market": do colleges and universities compete with one another? Even casual observation confirms that they do indeed, but, owing to the uncer-

tainty about quality, it certainly is not carried out in the conventional model of price competition. As evidence presented here will illustrate, institutions are keenly aware of their competition, of the programs, rankings, prices, and admissions success of the institutions with which they compare themselves.

According to Gray (1992), competition impels institutions to match the programs offered elsewhere, pushing up spending and, in the process, making institutions more homogeneous. In the market for undergraduate students, quality-based competition may have perverse effects when expensive tuition, rather than acting as a deterrent to enrollment, serves as a signal of high quality.[10] Indeed, some commentators have argued that a policy of tuition restraint could have the ironic effect of damaging an institution's competitive position in attracting good students.[11] Although this seemingly perverse price effect might simply be one more modern example of the phenomenon of conspicuous consumption, it probably has more to do with consumers' inherent difficulty in making informed judgments about quality in this arena. Another potential force for higher spending arising out of the competition noted by these authors is the temptation to use scholarships in a bidding war to attract top students.[12]

OPERATIONAL FLEXIBILITY

Like ordinary households and firms, universities have considerable latitude in deciding what to buy and how much to spend. This flexibility is not absolute, of course. Universities, as with other economic actors, are subject to legal constraints and to the discipline of the markets in which they compete. For example, because the institutions examined in the present study compete for many of the same high school seniors, they will be understandably reluctant to make decisions that would undercut their ability to compete for their share of the students.

Within these constraints, however, institutions retain significant flexibility, chiefly along four dimensions: (1) input mix, (2) sources of funding, (3) intertemporal allocation, and (4) outputs. These dimensions are important because their implied latitude of operation will tend to frustrate attempts to assign specific causes to increases in spending. A university, like the textbook firm, has a choice of methods of producing many of its servies or outputs, each method implying a different mix of inputs. For example, it can teach introductory undergraduate courses by using small classes, large lectures,

or a combination of large lectures and small sections; the classes can be staffed with regular faculty, adjunct and visiting faculty, or graduate students. Similar alternatives exist for other functions, such as advising, graduate instruction, residential housing arrangements, and library circulation.

Among the variables under the control of university administrators are enrollments, the number of faculty, the delegation of faculty to specific departments, the assignment of other duties, the relative size of graduate programs, the frequency of maintenance and repair, and the use of computers and other capital to substitute for labor. As is discussed at more length in chapter 7, administrators necessarily face trade-offs along all these dimensions, including such derivative measures as teaching loads and average class size. The "leveraging of faculty time" that Massy and others have highlighted (for example, the devolution of functions, such as advising and departmental administration, onto nonfaculty staff) may reflect the kind of factor substitution implied by these trade-offs.[13] As an example, institutions can minimize their need to hire relatively expensive faculty by shifting some tasks that faculty traditionally have performed, such as advising or departmental administration, onto other employees. The implication of this kind of flexibility for understanding rising expenditures is the same as in the textbook analysis of the firm: the university can blunt the effect of rising input costs by conserving on those inputs the costs of which are increasing most rapidly. As long as universities wish to conserve their resources, therefore, any rise in expenditures over time can be assumed to be occurring despite the best efforts of an institution to reduce those expenditures through factor substitution.

A second degree of latitude open to administrators is the real, but limited, fungibility of funds at their disposal. Although income from endowments and grants and contracts is restricted as to use, unrestricted funds are not. Thus, unrestricted funds can be used, for example, to continue a program that was begun with external funding; Ehrenberg, Rees, and Brewer (1993) found this to be the case when universities substituted unrestricted funding to support graduate students in the wake of cuts in National Science Foundation funding. Similarly, increasing endowment or external support for an activity already under way can free up unrestricted funds. Of course, donors and granting agencies may recognize this possibility and attempt to avert it. In the case of gifts, fund-raising sometimes takes on the appearance of an elaborate dance in which the donor tries to structure a gift that will "make a difference" by causing activities to be undertaken that would not otherwise have been imple-

mented, and the institution tries not to commit to doing anything that it would not otherwise have done.[14] (By lumping together unrestricted and endowed funds as "internal," the present study carries with it the implicit assumption that the institutions are ultimately successful, because they have the option of refusing gifts when the conditions either will be too expensive to fulfill or are otherwise unacceptable.)

A third dimension of administrative flexibility, and an option open to almost any economic actor, is to save money in the short term by undertaking actions that may well be unwise in the long run. An institution can save money in the short term, for example, by deferring the maintenance of its buildings and other physical assets; there is evidence that many institutions followed this policy during the 1970s and 1980s. Similarly, an institution can increase its revenues in the short run by raising the spending rate from its endowment and other financial assets. It may also have some latitude 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.

A final dimension for maneuvering lies in the ability to change the mix or quality of the output. Programs can be added, eliminated, upgraded, or allowed to deteriorate. These shifts may be minor, for example, by not replacing a retiring historian specializing in British colonialism, or major, for example, by instituting a new department of women's studies. More subtly, an institution can allow the quality of what it produces slowly to decline, such as by increasing the size of courses with no concomitant improvements, by hiring less talented faculty, or by cutting financial aid awards. Or it may do so in a noticeable way, for example, by dropping its need-blind admissions policy or by ending its commitment to meet 100 percent of demonstrated financial need. Or it may try to raise quality gradually by increasing faculty salaries faster than the market. In light of these illustrative possibilities, it is useful to combine an analysis of changing expenditures with attention to other important changes in the institutions being studied—an aim of the present study.

EXPLAINING THE INCREASE IN EXPENDITURES

The phenomenon of rising expenditures in higher education is not new, so it should not be surprising that it has attracted the attention of scholars. In summarizing this previous analytical work, it is useful

to distinguish analyses that seek to decompose the increases into identifiable parts from those that propose some behavioral explanation for the trends.

Decomposing the Increases

A first step to understanding why expenditures have risen in real terms is measurement. Two recent studies have used financial data on expenditures of a large set of institutions, from the Higher Education General Information Survey (HEGIS) and the Integrated Postsecondary Education Data System (IPEDS), to identify the sources of expenditure increases. In the more detailed of these two studies, Getz and Siegfried (1991) examine changes in spending between 1978/79 to 1987/88. Blasdell, McPherson, and Schapiro (1993) extend the period to 1988/89. Both studies examine expenditures, divided by FTE enrollment, and broken down by type, for various classes of institutions. These data cover entire institutions, each observation including an institution's professional schools and on-campus medical center, if any.

To separate the components of the increase in spending, Getz and Siegfried divided the increase in general expenditures per FTE into five components.[15] Table 2.1 shows these components for three groups of research universities over the period 1978/79 to 1987/88. For all research universities covered by the study, total general spending per FTE rose at a 3.08 percent annual rate. The largest contributor to this increase was the average faculty salary rate, which rose at a 1.91 percent rate. The second largest contributor was the increase in the nonfaculty share of instructional spending. The remaining two components served more or less to cancel each other out, with the relative growth in noninstructional spending boosting per-student spending somewhat, and a decline in the student-faculty ratio over the period reducing the growth in spending per student. Relative to all research universities, private research universities showed more-rapid growth in total expenditures, number of faculty, and noninstructional spending. Among all higher education institutions, the category showing the fastest growth in spending was Liberal Arts I colleges, with a 4.62 percent average annual growth rate in spending per FTE. In addition to the trends shown for all research universities, these colleges increased rather than decreased their faculty-student ratios and showed more-rapid growth in noninstructional expenditures (Getz and Siegfried 1991, p. 380).

In their comparison of expenditure increases of different types, Blasdell, McPherson, and Schapiro (1993) show that private institu-

TABLE 2.1
Components of Growth in Expenditure per FTE Student in Research Universities, 1978/79 to 1987/88

	Research Universities			
		Private		*Liberal Arts I Colleges*
	All	*No On-Campus Medical School*	*On-Campus Medical School*	
Number of Observations	87	27	4	122
Real Growth Rates in:				
Instructional expenditures (I$)	3.53%	3.50%	3.82%	3.75%
Faculty salaries (F$)	2.33	2.99	3.22	2.65
Number of faculty (F)	0.42	0.95	0.78	0.82
Number of students (S)	0.67	0.32	1.13	0.40
General expenditures (E$)	3.76	4.50	4.74	5.02
Components of Growth Rate of General Expenditures per Student [r(E$/S)]				
Instruction as percentage of total general expenditures [−r(I$/E$)]	0.23%	1.00%	0.92%	1.27%
Faculty salaries as percentage of instructional expenditures [−r(F$/I$)]	1.20	0.50	0.60	1.10
Average faculty salaries [r(F$/F)]	1.91	2.04	2.43	1.83
Student/faculty ratio [−r[S/F)]	−0.25	0.64	−0.35	0.42
Total	3.08%	4.18%	3.61%	4.62%

Sources: Getz and Siegfried (1991), Tables 14.4 and 14.5, and pp. 360–85; and author's calculations.

Note: r( ) refers to the growth rate.

tions had very large increases in expenditures for plant additions over the period of study. They also highlighted the decline in the portion of private universities' revenues obtained from federal grants and contracts.[16]

External Forces

In an effort to go beyond a mere accounting of these increases, one useful distinction is to separate influences that are external to uni-

versities as a whole from those that may be said to occur within institutions themselves. For example, rising input prices require increases in total outlays just to maintain a given level of output. Thus, the Higher Education Price Index (HEPI), an index reflecting the inputs typically purchased by colleges and universities (mostly trained workers), rose during the 1980s at a rate slightly faster than the CPI.[17] (To be sure, these factor prices are affected by actions of the industry, but from the perspective of a single institution they are largely exogenous.) A similar external effect on higher education is that of rising costs associated with the expansion of knowledge and the increasing sophistication of scientific research. The growth in the sheer amount of knowledge to be dealt with, absorbed, recorded, and taught may be seen most clearly in its effects on library holdings and the increasing specialization within academic disciplines, the latter putting upward pressure on the numbers of faculty, courses, journals, and library holdings.[18] A related force is what has been termed "sophistication inflation" (President's Council of Advisors on Science and Technology 1992). This force can be seen in the rising cost of scientific instrumentation and, more generally, in the high cost of conducting scientific research.[19]

One external force on university costs noted by more than a few observers is government regulation.[20] Regulations covering such areas as student records, workplace safety, employee discrimination, handicap access, athletics, retirement, and federal grants, it is argued, necessitate increased administrative effort and expense. Another impact of government is the reduction in federal funding for research, training, and financial aid, and the increased pressure exerted on internal funding to make up for the reductions.

Internal Mechanisms Fostering Expenditure Growth

Perhaps the richest set of explanations that has been offered to explain the growth in expenditures in colleges and universities is that appealing to the internal dynamics of the decision-making mechanisms inside the institutions. As suggested in the preceding discussion, however, the inside/outside dichotomy is by no means a precise one.

Revenue-Driven Expenditures

Elegant in its simplicity, one of the most frequently cited explanations for rising expenditures is that of Howard Bowen (1980).

Bowen argues that, because of the imprecise but all-embracing striving for excellence motivating all research universities, there is no limit to the amount of money that a thriving, creative institution usefully can spend. Institutions therefore raise all the revenue they can, and they spend everything they raise. Quality increases, functions proliferate, and expenditures rise. Reminiscent of Parkinson's Law and more serious models of bureaucratic growth, this general concept underlies criticism of the growth in administrative bureaucracies and recently has been recast by Massy and his colleagues as the "growth force."[21] Although such increases are not necessarily wasteful, the interpretation usually given to this dynamic is an unfavorable one. Whatever the interpretation, however, this intuitively appealing notion provides little in the way of theory to explain why this dynamic might materialize.[22]

The "Cost Disease"

A second explanation focusing on forces within institutions is the idea from William Baumol and William Bowen that the production functions at work in universities, much like those in a chamber orchestra, are inherently inhospitable to technological progress.[23] In the unchanging technology of education, it is argued, teaching and research methods do not change, and faculty-student ratios are fixed. As Rosovsky (1992, p. 185) remarks, "techniques of instruction have changed relatively little in a thousand years: the professor still stands on the podium, lecturing to students." Meanwhile, advancing productivity in other parts of the economy raises the general level of wages, necessitating an increase in the real cost of producing output in the technologically frozen industries. Because of a method of production that is inherently resistant to productivity enhancements, this view argues, real costs will tend to rise over time.

Research Emphasis and Productivity

A mounting emphasis on research—probably motivated by forces external to universities but carried out by decisions within them—and rising standards for its performance, is another general cause that has been cited for increasing costs. The emphasis that universities place on research, as opposed to teaching, stands at the center of a controversy that continues unabated and is played out in institution after institution. That the emphasis on research in universities, at least in research universities, increased during the 1980s has been acknowledged. Bok (1992, p. 16), for example, has written: "What

presidents and deans are held accountable for is improving the prestige of their institutions, and the prestige of their institutions comes from the research reputation of their faculties."[24] More amorphous is the effect on research and its costs of the rising capacity of scientific equipment. Shapiro (1993, p. 13) has argued that the dramatic increases in computational capacity have "changed the scholarly agenda and the way we approach it," making large capital expenditures on networks and computers essential. "Productivity gains, if any, have been taken in quality improvements and agenda expansion rather than cost reduction." Feeding on changes external to universities but manifesting itself in internal decisions about priorities, this set of effects implies rising costs for research, including the operation of research libraries. It also may manifest itself in a reduction in average classroom teaching loads.

Asymmetric Incentives

Several commentators explain rising expenditures in terms similar to the explanations of public-choice theorists for governmental growth.[25] The tradition of collegial decision making combined with a reluctance to criticize others sets the stage for logrolling, whereby faculty assent to the growth in the programs favored by colleagues in return for their reciprocal support. In this "politics of self-preservation" (Kennedy 1993, p. 139), cuts in any program are extremely difficult to achieve.[26] As Feldstein (1993, p. 38) notes, administrators have little incentive to achieve economies, because such economies can be achieved only at significant political cost.[27] Another form of asymmetric incentives, noted in the discussion of the competitive aspects of the higher education market, is the bias toward price hikes that arise from the function of price as a signal of quality.

Inertia

Add to these forces other mechanisms that impede change of any kind, particularly cost cutting. One quite visible manifestation of the heavy hand of the past is the enormous capital investment that is the campus. Given the sheer magnitude and functional specialization represented by the physical plant of campuses, it is little wonder that universities rarely move. Moreover, it is difficult to avoid the costs of operating and maintaining that capital. Another inertial force is of course academic tenure, which, barring financial disaster, means that a large share of an institution's personnel budget is virtually uncontrollable in the short run. In addition to these constraints, the time-

honored tendency for favorable working circumstances to become seen as entitlements is yet another barrier to cost cutting.[28]

THE FOUR INSTITUTIONS

As noted in chapter 1, the present study uses as cases four institutions: the University of Chicago, Duke University, Harvard University, and Carleton College. A list alone is sufficient to highlight one enormous distinction among the four: whereas three are research universities, combining an undergraduate program with postgraduate training in professional schools and the arts and science, one is a liberal arts college, offering only bachelor's degrees. Furthermore, as shown in Table 2.2, among the research universities there exist sizable differences in relative weighting among baccalaureate, graduate, and professional training. At Duke, which is most similar to Carleton in terms of its relative emphasis on undergraduate education, undergraduates in 1991/92 accounted for 57 percent of all students, compared with only 37 percent at Harvard and at Chicago. Moreover, Duke's arts and science graduate enrollment was considerably smaller than those of the other two universities. One revealing statistic is the ratio of undergraduates to graduate arts and science students. The lower the ratio, the greater the use that can be made of graduate students in undergraduate instruction, and the more time that faculty will have to devote to their research and to the training of graduate students. In 1991/92, this ratio stood at 3.0 at Duke, compared with 2.0 at Harvard and 1.0 at Chicago. The institutions examined therefore differ in important ways.

This mix of dissimilar institutions was intentional. Because all four institutions compete for undergraduate students and offer undergraduate education, the hope was that including one institution specializing in that activity would provide an illuminating contrast along a number of dimensions. Before undertaking a detailed examination of the four institutions, it is useful to begin by providing some descriptive background on them.

Antecedents

Like the speaker who needs no introduction, Harvard is certainly one of the most celebrated universities in the world. Founded in 1636, it is the oldest and surely one of the most influential institutions of higher education in the United States. Although heavily in-

TABLE 2.2
Enrollments at the Sample Institutions, 1976/77 to 1991/92

	1976/77[a]	*1981/82*	*1986/87*	*1991/92*	*Growth Rate, 1977–92*[a]
University of Chicago					
Undergraduate students	2,442	2,867	3,166	3,447	2.9
Arts and sciences graduate students	2,693	2,504	2,886	3,395	1.9
Professional school and other students	2,262	2,323	2,554	2,601	1.2
Total	7,397	7,694	8,606	9,443	2.0
Percentage undergraduate	33	37	37	37	
Ratio of undergraduates to arts and science graduate students	0.9	1.1	1.1	1.0	
Duke University[b]					
Undergraduate students	5,805	5,849	6,068	6,001	0.2
Arts and sciences graduate students	1,480	1,191	1,497	2,028	2.1
Professional school and other students	2,076	2,178	2,356	2,557	1.4
Total	9,361	9,217	9,920	10,585	0.8
Percentage undergraduate	62	63	61	57	
Ratio of undergraduates to arts and science graduate students	3.9	4.9	4.1	3.0	
Harvard University					
Undergraduate students	6,439	6,497	6,620	6,677	0.2
Arts and sciences graduate students	2,358	2,318	2,604	3,391	2.4
Professional school and other students	6,400	7,238	8,074	8,205	1.7
Total	15,197	16,053	17,298	18,273	1.2
Percentage undergraduate	42	40	38	37	
Ratio of undergraduates to arts and science graduate students	2.7	2.8	2.5	2.0	
Carleton College					
Undergraduate students	1,736	1,832	1,825	1,798	0.2

Sources: University of Chicago: Unpublished table, entitled, "Table I-D, Enrollment by Department or Field of Studies, Degree Students"; Duke University: Office of the Registrar, *Annual Statistical Report*, table entitled, "Registrar's Enrollment Statistics;" Harvard University: Unpublished tables, and Office of Budgets, *Statistical Profile, 1991–92*; Carleton College: Unpublished tables.

[a]Data for Chicago are for 1979/80; growth rates for Chicago are based on 12 years.
[b]Full-time equivalents.

fluenced by American Protestantism and an early supplier of Puritan ministers in New England, Harvard from its beginning has been independent of any formal church ties. Over the years, its practices, including the lecture and the undergraduate major, have been emulated widely. Its house system, in which undergraduates live in largely self-contained residential units for three years, is another distinctive feature that Harvard shares with only a few other American institutions. Harvard is the largest of the four sample institutions, with a total enrollment of more than 18,000 in 1992. In addition to its undergraduate college, Harvard features a graduate school of arts and sciences and schools offering professional training in such fields as law, medicine, business administration, education, design, public policy, and public health. Harvard's endowment, at some $5 billion in 1992, is the largest of any American university.

Founded in 1892, the University of Chicago was from its beginning to be a center of graduate training as well as an undergraduate college. Its rapid rise to prominence was fueled by a series of gifts from John D. Rockefeller, amounting to $35 million by 1916; by what has been called "the greatest mass raid on American college faculties in history" (Rudolph 1962, p. 350); and by its application of innovative educational ideas. Among the distinctive features of Chicago's approach was coeducation, the quarter system, a general curriculum for students in their first two years of college, and a system of major and minor studies (Rudolph 1962, pp. 350–1). Ironically, its early prominence also arose from its success in football under the hand of famed coach Amos Alonzo Stagg, who had been hired away from Yale (McNeill 1991, pp. 4–6). Football is not what the University of Chicago is known for today, of course. Symbolic of its change in direction was the naming of Robert M. Hutchins as president in 1929. Under President Hutchins, Chicago established the four graduate divisions that remain today—physical science, biological science, social science, and humanities—and sought to offer a core curriculum to undergraduates (McNeill 1991, pp. 31–2). Among Chicago's contributions to research were the first department of sociology, the first artificially produced nuclear chain reaction, and the "Chicago school" of economics. Like Harvard, Chicago has an array of professional schools covering most of the fields offered by the largest private universities as well as social work.

In the same year in which the University of Chicago was founded, Trinity College, an institution with strong ties to the Methodist church, moved to Durham, North Carolina, from a rural county in the Piedmont. After receiving a gift from James B. Duke, it changed its name to Duke University in 1924 and quickly undertook a mas-

sive building program that resulted in two separate campuses, one of which was designated for the university's women's college. Duke's gift, like Rockefeller's to Chicago, enabled the university to establish nationally recognized programs quickly, particularly in medicine. Like Chicago, Duke also used football to gain early notoriety; it remains one of the few private, selective research universities to continue to compete in big-time intercollegiate athletics. Emphasizing professional training, Duke established, in addition to a school of medicine, schools of law, engineering, forestry, nursing, and divinity, adding business administration only in 1969. A major reallocation of resources occurred during the 1980s, when the undergraduate nursing school was dropped and those places were used to expand undergraduate enrollments in engineering and arts and sciences. Another program dropped during this period was education, which had accounted for a sizable portion of the doctorates awarded by Duke.

Founded in 1866 as one of 40 colleges sponsored by Congregationalists, Northfield College, in the Minnesota town of that name, became Carleton College in 1871 in honor of an early benefactor. Like the University of Chicago, it was coeducational from its beginning and it shared with Chicago the use of a quarter system, but its size, rustic surroundings, and lack of graduate training made it altogether different in most other ways. A century later, Carleton remains small, relatively isolated, and firmly dedicated to the mission of undergraduate education. It retains a Midwestern work ethic and an ethos of egalitarianism, symbolized by the prohibition of automobiles for students and a high proportion of students who work on campus.

Undergraduates

All four of these institutions display the objective indicators that are the hallmarks of selective undergraduate colleges: strong high school records of entrants, difficulty of admission, and low dropout rates. Among the classes of students who entered in the fall of 1991, the vast majority at each institution had ranked in the top 10 percent of their high school classes, this share ranging from 69 percent at Chicago to 95 percent at Harvard. Acceptance rates ranged from 57 percent at Carleton to 17 percent at Harvard, giving one indication of the difficulty of getting in. Applicants evidently valued these acceptances, as indicated by the relatively high percentages of accepted applicants who decided to enroll, ranging from Chicago's 31 percent

to Harvard's 74 percent. Once enrolled, undergraduates at these colleges were very likely to stay on, as illustrated by the high percentage of first-year students who returned as sophomores, which ranged from 93 percent at Chicago to 99 percent at Duke.[29]

Although the clientele of selective colleges and universities tends to be affluent, enrollment statistics nevertheless suggest a significant degree of diversity on several scales. Table 2.3 reports on some characteristics of the undergraduate student bodies in 1981/82 and 1991/92. In terms of geographic diversity, Duke and Harvard showed the lowest representation from their states, but all drew from a national pool of applicants. The racial and ethnic diversity of the colleges increased during the decade; this development is particularly marked in the case of Asian-Americans, a group whose share at least doubled at each institution over the decade. Reflecting this growth, Carleton's president, Stephen Lewis, noted in his address to alumni in 1993 that the second most common surname in the first-year class was Yang (Lewis 1993). International students remained a small group in these undergraduate student bodies, except at Harvard, where they constituted 8 percent of undergraduates in 1991/92.

Once enrolled, the undergraduates at these selective institutions distributed themselves among disciplinary majors in similar ways. Table 2.4 lists the most popular majors among the undergraduates at the sample institutions at the beginning and the end of the period of study. The changes shown there reflect larger trends among undergraduates in this country, namely, a decline in the number of science majors and an end to the temporary boom in economics. By 1992, political science was among the top majors in all four institutions and English was in this place in three of the four undergraduate colleges sampled. Despite these similarities in favored fields of study, however, there was a significant difference among the graduates of three institutions (no information was available for Harvard) in their propensity to attend graduate school in an arts and sciences discipline as opposed to a professional school. Among Carleton and Chicago graduates, the number going to graduate school far exceeded the number going to law school or medical school. Duke's graduates were much more professionally oriented, with approximately equal numbers going into law, medicine, and graduate study.[30]

Research and Graduate Programs

Among the three universities included in the present study are two of the preeminent national research universities, Harvard and Chi-

TABLE 2.3
Characteristics of Undergraduates at Four Institutions, 1981/82 and 1991/92

	Carleton College		*University of Chicago*		*Duke University*		*Harvard University*	
	1981/82	*1991/92*	*1981/82*	*1991/92*	*1980/81*[b]	*1991/92*	*1981/82*	*1991/92*
Percentage of Students Who Were:								
State residents	28	25	33	25	16	12	21	16
African-American	4	3	5	4	7	8	7	8
Native American	1	1	2	1	1	1	1	1
Hispanic	3	3	4	3	1	4	4	7
Asian-American[a]	4	8	8	19		8	5	19
Total minority	12	15	19	27	9	21	17	35
International	2	1	1	3	2	1	6	8

Source: Peterson's Guide to Four-Year Colleges, 1983 and 1993 (Princeton, NJ: Peterson's Guides).
[a]Not reported for Duke for 1980/81.
[b]Not reported for 1981/82.

TABLE 2.4
Largest Undergraduate Majors

	1976/1977	*1991/1992*
Carleton College	Biology (13.7) History (11.9) English (11.3)	History (12.3) English (12.1) Political science (11.5)
University of Chicago	Biological sciences (11.4) Economics (10.0) Political science (5.1)	Economics (7.9) Biological sciences (7.5) Political science (6.5)
Duke University	History (11.2) Economics (9.1) Zoology[a] (9.1)	English (11.0) Political science (10.3) History (9.8)
Harvard University	Economics (11.8) Biology (10.5) Government[b] (8.7)	Government (11.6) English[c] (8.0) Biology (7.7)

Sources: Carleton College, University of Chicago, and Harvard University: unpublished tabulations; Duke University: Office of the Registrar, *Annual Statistical Report*, 1976–77 and 1991–92.

Notes: Numbers in parentheses indicate percentage of students. Figures for Duke and Carleton refer to graduating seniors; figures for Harvard are for all those with declared concentrations.

[a]Duke had no biology major in 1976/77, only zoology and botany.

[b]Corresponds to political science at most institutions.

[c]English and American Literature and Language.

cago. The third, given its history and the relative size of its schools, stands between those two universities and a purely undergraduate college. Research and graduate training go hand in hand. In the terminology of economists, the production of research and the training of graduate students are joint products: the one is produced more or less as a by-product of the other. In describing the sample institutions, it is important to acknowledge probable quality differences in these outputs. Although virtually every academic scholar has an opinion on the ranking of universities in his or her discipline, there is little consensus on just how that quality should be measured. Two of the most common criteria used in the occasional studies on the subject are counts of faculty publications and subjective reputational rankings.

In their assessment of graduate programs, Jones, Lindzey, and Coggeshall (1982) gathered information on a number of different aspects of faculty research and graduate training. A sampling of their findings provides an illuminating comparison among the three universities examined here. Table 2.5 presents data on nine depart-

TABLE 2.5
Measures of Quality of Graduate Programs in Nine Disciplines, 1980

Field and University	*Number of Faculty*	*Number of Graduate Students*[a]	*Percentage of Graduates with*		*Ratings of*		*Percentage of Faculty with Grants*[d]	*Number of Faculty Articles*[e]
			Post-Graduate Employment[b]	*University Employment*[b]	*Scholarly Quality*[c]	*Effectiveness in Teaching*[c]		
History								
Chicago	46	125	59	23	4.5	2.3	—	149
Duke	35	83	60	13	3.7	2.1	—	82
Harvard	29	123	78	39	4.8	2.4	—	61
French								
Chicago	8	36	NA	NA	3.1	1.9	—	—
Duke	9	9	42	0	3.2	1.9	—	—
Harvard	9	21	50	18	3.2	1.6	—	—
English								
Chicago	33	72	65	40	4.4	2.4	—	—
Duke	21	76	52	18	3.2	1.9	—	—
Harvard	33	91	77	36	4.5	2.5	—	—
Physics								
Chicago	38	115	85	39	4.6	2.6	50	246
Duke	19	46	64	46	3.0	1.9	26	53
Harvard	28	93	88	41	4.9	2.8	68	337
Mathematics								
Chicago	30	77	91	63	4.8	2.7	60	69
Duke	21	21	50	21	2.8	1.5	52	39
Harvard	26	48	95	65	4.8	2.7	35	51
Chemistry								
Chicago	28	119	81	47	4.4	2.5	79	84
Duke	22	78	79	41	2.9	1.9	64	88
Harvard	24	174	86	51	4.9	2.8	75	114

Psychology								
Chicago	60	217	77	45	4.2	2.2	40	187
Duke	33	81	63	39	3.7	2.1	36	75
Harvard	27	82	71	51	4.6	2.3	52	173
Political Science								
Chicago	27	103	72	32	4.5	2.4	15	85
Duke	23	40	59	11	3.4	1.8	4	54
Harvard	23	158	81	41	4.7	2.4	9	68
Economics								
Chicago	27	120	93	44	4.8	2.7	22	94
Duke	22	60	80	21	3.0	1.8	18	90
Harvard	34	130	91	46	4.9	2.4	27	197

Source: Jones, Lindzey, and Coggeshall (1982).

Note: Figures refer to numbers of faculty and graduate students in December 1980.

[a]Number of full-time and part-time graduate students.

[b]Percentage of fiscal year 1975/76 program graduates who, at the time they completed requirements, had made definite commitments for postgraduate employment, total and in Ph.D.-granting institutions, respectively.

[c]Mean rating of the scholarly quality of program faculty and of the effectiveness of the program in education research scholars/scientists.

[d]Percentage of program faculty members holding research grants from the Alcohol, Drug Abuse, and Mental Health Administration, the National Institutes of Health, or the National Science Foundation at any time during the fiscal years 1978 to 1980.

[e]Number of published articles attributed to program faculty members, 1978–80.

—: no information gathered.

NA: no information available.

ments at the three universities for 1980. Measured by size of faculty or graduate enrollments, Harvard and Chicago's departments are consistently larger than Duke's—which is not surprising, given the institutions' graduate enrollment figures. Two measures gauge the success of students in finding employment after graduate school: (1) the percentage who landed any job, and (2) the percentage obtaining employment in universities. On these scales, Harvard's percentages tend to be slightly higher than those of Chicago's, but both clearly exceed Duke's. Much the same can be gleaned from the reputational ratings in the next two columns, which are based on national surveys of faculty. According to these data, Harvard ranked first in scholarly quality in all but one field and tied with Chicago in the other. The last two columns present information on faculty research, one on the percentage of faculty with grants and the other on the number of published articles attributed to faculty members between 1978 and 1980. The first tends to track the reputational rankings; the second is influenced by faculty size.

The more common means of comparing programs (again, quality measures for faculty research and graduate training become almost interchangeable) is through the use of rankings, which may be based on elaborate analysis or on simple tabulations of ratings or faculty publications. Table 2.6 summarizes the results of two rankings of graduate programs in 14 disciplines spanning the period covered in the present study; this summary allows some assessment of both the position and the change in position over time for departments in the three universities. The rankings are based on the qualitative ratings of a large sample of scholars on the quality of graduate faculty in the nation's graduate programs in a variety of disciplines. In most cases, the fields shown in the table were represented at all three of the sample universities. Although these rankings are certainly imperfect, they are a useful way of summarizing prevailing informed opinions about quality.

For the disciplines shown, the rankings clearly indicate that Harvard's position in most disciplines was unassailable over this period, and remained so although some slippage from the very high rankings of 1969 is apparent. With a few exceptions, Duke's departments are ranked behind those of both Chicago and Harvard in 1993. These rankings, like those in Table 2.5, leave little doubt about the scholarly verdict regarding relative quality in research and graduate training among the three universities over the study period. Some movement is evident, however, with Duke's ranking improving in a majority of the disciplines, whereas those of Harvard and Chicago generally fell.

TABLE 2.6
Rankings of Graduate Programs in Selected Fields, Harvard, Chicago, and Duke, 1969 and 1993

	Harvard		*Chicago*		*Duke*	
Discipline	*1969*	*1993*	*1969*	*1993*	*1969*	*1993*
Classics	1	1	12	7	NR	44
Spanish	1	10	16	NR	17.5	2
Philosophy	2	3	9	12	26*	44
English	2.5*	2*	4.5*	10	23	5.5*
History	1.5*	4	8.5*	8	19*	15
French	3.5*	17	6	16	20.5*	3
Chemistry	1	3.5*	9.5*	10*	48.5*	44
Mathematics	1.5*	4	4	5	36*	34.5*
Physics	2*	1	9.5*	7	24.5*	42.5*
Biochemistry	1	5	17*	23.5*	11.5*	15
Sociology	1.5*	7	3	1	26*	20
Psychology	4	6	17.5*	18	25*	33
Economics	1.5*	1.5*	3	1.5*	24.5*	22
Political Science	2	1	4	6	27.5*	14

Sources: 1969: Roose and Anderson 1970; 1993: Goldberger, Maher, and Flattau 1995.

Notes: Ratings are based on assessments of the quality of graduate faculty by a national sample of scholars in each of the survey years. In cases in which institutions are tied for a given rank, the average of all the possible ranks of the tied institutions is given. For example, if an institution is one of four tied for 10th place, its average rank is 11.5 (the average of 10, 11, 12, and 13). These ties are indicated by an asterisk.

Their usefulness notwithstanding, ratings such as these inevitably hide a multitude of developments at each institution. During the period of study, each institution strenuously attempted to improve individual departments, sometimes devoting hundreds of person-hours to the recruiting of a single scholar. In the case of Duke, the administration pursued deliberate policies designed to improve the faculty and graduate school, including the hiring of prominent scholars and increasing the number of doctoral students. In pursuit of his objective "to be the best," Provost Phillip Griffiths argued that the size of both the faculty and the graduate student enrollment would have to increase. He stated, "A principal barrier to recruiting faculty of the desired level of excellence is the size and quality of Duke's graduate student body."[31] In fact, graduate enrollments increased, between 1976/77 and 1991/92 at an annual rate of 3.3 percent.[32]

Budgetary Issues: The View from Carleton

Despite their differences in size and mission, these and other private institutions faced many common issues during the period of study. It is illuminating to view these issues from the perspective of a single institution, and an opportunity for this is afforded by Carleton's open and inclusive budget process, which featured a budget committee composed of faculty, administrators, and students, whose regular meetings often were attended by members of the college community.[33] Meeting throughout the academic year, the committee discussed the impact of major budget decisions, including those concerning increases in tuition, faculty salaries, the size of the student body, financial aid policy, and other expenditure items. The budget committee submitted its recommendations to an administrative committee, which was the effective final decision-making body. The budget committee's deliberations, recorded in published minutes and covered by the student newspaper, provide a fascinating perspective on the economic environment of private selective institutions during this period.

Several recurrent themes recorded in the minutes illustrate the trade-offs that both colleges and universities faced. One trade-off was between raising tuition, with the additional revenue that this step would bring, and the potential dampening effect that this increase was thought to have on the decisions of potential students, particularly those with financial need. Recognizing that the cost of financial aid was a growing share of the budget, Carleton considered the possibility that it might have to abandon the policy of need-blind admissions (a policy, followed through the 1980s to some degree by virtually all selective colleges and universities in the country, whereby applicants are judged for admission without regard to their financial need). The committee set maximum limits for Carleton's financial aid expenditures, stated as percentages of tuition income; if reached, these limits determine the portion of an entering class that would be selected under the need-blind rule. In fact, these ceilings were not reached, so Carleton did not abandon the policy during the period under study. Another trade-off was between increasing the college's enrollment, again bringing in additional revenue, and the damage that this step might do to the intimate atmosphere made possible by the college's small size.

In its efforts to develop recommendations consistent with a balanced college budget, the committee also worried about a number of other issues that were not unique to Carleton, including the growth

in administrative and support personnel, maintenance of its buildings, the cost and allocation of computing equipment, the spending rate from endowment, and, quite prominently, the competitiveness of its faculty salaries. One striking fact that emerges from a reading of the minutes of the committee is the very high degree of awareness at the college of its competitors' tuitions and faculty salaries. College administrators and committee members had information on average rates of increase for several groups of comparison institutions. In the case of faculty salaries, the AAUP's annual survey of faculty salaries, showing average salary, by rank, for individual institutions, is readily available to any institution. The committee examined salary comparisons between Carleton and several groups of comparable institutions. Among 30 colleges, for example, the committee was shown tabulations in 1987 in which Carleton was ranked 20th in compensation for full professors and 13th for assistant professors. Owing to the presence of faculty on the committee, it should not be surprising that the adequacy of faculty salaries was one of the committee's most frequent topics of discussion during the period of study; nevertheless, the administration itself appeared to regard Carleton's ranking on this score to be both important and largely outside the college's control. At one committee meeting in 1984, President Robert Edwards made an appearance to appeal for a higher-than-anticipated increase in faculty salaries, citing the "anarchy of competition" to which Carleton was subject and the difficulty the college was having in attracting faculty, especially at the junior level.[34] Information on tuition was likewise available for discussion, as noted in the next chapter.

SUMMARY

As institutions, universities are remarkable in their decentralization and diffusion of authority, if not in the outright disorganization that this decentralization might suggest. Owing to the institution of lifetime tenure among faculty and deep-seated traditions of tolerance, participation and consensual decision making, research universities are more akin to political jurisdictions than to corporations. Although universities may have general institutional objectives, these are seldom spelled out with much specificity. Nonetheless, there exists a general consensus within institutions that they should strive for excellence. Because standards of excellence are disseminated through the various academic disciplines and are widely accepted by faculty and administrators, each institution carries with it a set of

goals that few could actually achieve. Consequently, room for improvement always exists, and university leaders always can produce lists of worthwhile projects for which money readily could be spent. As the next chapter shows, the decade of the 1980s offered a period in which some of these ambitious aims could be satisfied.

Appendix 2.1

A Simple Financial Model of a University

To CONSIDER the financial implications of decisions about expenditures, it is useful to examine a simple analysis of a university's revenues and expenditures. This analysis simplifies the situation faced by actual universities in several ways. It lumps undergraduate and graduate students together. In addition, the model, like the empirical work in the study, ignores professional schools. The model also ignores two financially important kinds of enterprises contained within universities that finance themselves largely with earmarked fees for services supplied: (1) so-called auxiliaries, typically consisting of dormitories, dining halls, health services, and book stores; and (2) university hospitals. Although it is not hard to argue that most of the functions of university hospitals are quite distinct from the rest of what occurs in research universities, it is more difficult to make this argument for auxiliaries. By tradition, however, auxiliaries are set up as break-even service operations and are treated separately in most analyses of higher education finances. I follow that convention in this study.

In the part of the university that remains, it is convenient to consider four major forms of revenue and four categories of expenditures. The sources of revenue include (1) tuition, which is equal to the tuition rate per student (T) multiplied by enrollment (E); (2) current gifts and endowment and investment income (G); (3) grants and contracts (C); and (4) federal and state support of university-administered financial aid (F). To relate these revenue sources to the internal–external split described in chapter 2, tuition, gifts, and endowment are internal means of financing, whereas grants, contracts, and federal support are external. Grant and contract revenue by definition is equal to the amount of direct costs associated with the grant (D) plus payments made for indirect costs, where i is the rate that is applied to direct costs, $C = (1 + i)D$.

Expenditures are divided into four categories: (1) instruction (I), (2) research (R), (3) student aid (S), and (4) general administrative and operating costs (A). (Including or excluding capital costs in these expenditures does not affect the basic points made here.) The institution's total research effort is assumed to increase with the amount

of sponsored research but not to be identical to it. More specifically, the simple linear relation $R = a + bD$, where $b < 1$, implies that total research rises with sponsored research, but not dollar-for-dollar. It also implies that some research would be conducted in the absence of outside support.[35] Student aid is assumed to be need-based at the margin, which implies that the amount of aid required will be a function of the financial characteristics of the student population and tuition and other costs of attendance. The total aid bill is written simply as $S = (a_s + jT)E$, where a_s is a constant that depends on the income distribution of the student population and j is a constant related to the proportion of students receiving financial aid.

A balanced university budget can be written in terms of total revenues and expenditures:

$$TE + G + C + F = I + R + A + S. \tag{2.1}$$

Because of the differences in the importance of internally and externally funded expenditures, it is useful to split both the expenditures and revenues in this way. External funds abide by the budget function:

$$C - iD + F = D + S_f, \tag{2.2}$$

where S_f is the portion of student financial aid paid for by federal and state aid programs. Indirect-cost payments are treated as unrestricted revenue because they are not restricted as to specific expenditure object. As for internal funds, the budget equation is

$$TE + G + iD = I + (R - D) + A + (S - S_f), \tag{2.3}$$

which may be rewritten as

$$TE + G = [a - (1 + i - b)D] + [(a_s + jT)E - S_f] + I + A, \tag{2.3'}$$

where

T = tuition rate,
E = enrollment of undergraduate and graduate students,
G = current gifts and endowment and investment income,
C = grants and contracts $= D(1 + i)$,
I = expenditures for instruction,
R = expenditures for research $= a + bD$,
D = direct costs of sponsored research,

S = student aid = $(a_s + jT)E$,
A = other administrative and operating costs, and a, a_s, b, i, j = constants.

This equation may be rewritten further as

$$(1 - j)TE + G = [a - (1 + i - b)D] + [a_sE - S_f] + I + A. \quad (2.4)$$

This rewritten expression shows that, in order to raise another dollar for internally financed expenditures, such as administration, it would be necessary to increase tuition by $1/(1 - j)$, to compensate for the requisite increase in financial aid.

With these alternative forms of the budget constraint as background, one can consider a basic question for this study: In which expenditures are we interested, and why? One obvious possible answer is "all of them." If we simply were interested in a measure of the total activity of universities, then we would want to consider all the items on the right-hand side of equation (2.1), which correspond to the sum of internally and externally funded expenditures on the right-hand sides of equations (2.2) and (2.3). (Of course, as noted, the logic of total output would have us include auxiliaries as well; however, they are being ignored here, as is normally the practice, because dedicated fees are used to finance them separately and because their functions are fairly distinct from others we are considering in universities.) But, as "complete" a view as this method might yield, it is likely to miss a basic source of concern about rising expenditures in higher education—the fear that escalating costs either will cause vital functions to be curtailed or will price some students out of the market. If this concern is the dominant one, then it is clear that not all expenditures are equally important. Increases in sponsored research will have quite different implications from increases in items financed by tuition or other forms of unrestricted revenue. For example, if a faculty member is awarded a grant that pays to refit a laboratory with new equipment and to hire several research personnel, there is no necessary diminution of resources to pay for the ongoing functions of instruction and administration. In contrast, an increase in staff and faculty salaries must be matched either by increases in unrestricted income or in appropriately designated gift or endowment income or by decreases in some other category of internally funded expenditure. If these concerns motivate the interest in rising outlays, which I believe is the case, then it is not very helpful to look only at total spending.

The approach taken in this study is to place primary emphasis on

internally funded spending, on the principle that externally funded expenditures bring with them earmarked sources of revenue and therefore have a limited impact on the "core" functions of the university. The impact of externally funded spending is said to be limited, rather than nonexistent, because this spending affects the level of unrestricted spending in several ways. One obvious way is through substitution. For example, government funding for scholarships will reduce the amount of internal funds needed to pay for financial aid. A second, more general way that restricted expenditures might affect unrestricted spending is through substitution by donors. The campaign to raise funds for a new library may well reduce the university's receipt of unrestricted gifts.

A third form of interaction between restricted and unrestricted expenditures occurs in the important area of funding research. The model presented in equation (2.3) reflects the facts that sponsored research is a subset of all research conducted in universities, research has widespread costs as well as easily attributable (direct) costs, and sponsoring agencies taken together reimburse universities for more than the direct costs of research. Figure 2.1 illustrates the financial impact of sponsored research. The university's total research costs (R) are shown as a function of the direct costs of sponsored research (D) by the line $R = a + bD$. The assumption that the slope b is less than one implies that cuts in sponsored research will result is less than dollar-for-dollar reductions in total research expenditures. This would be the case, for example, if universities acted toward research in the same way that they do regarding the funding of graduate students, where Ehrenberg, Rees, and Brewer (1993) found considerable substitution between external and internal financing. The revenue received to cover sponsored research is shown in the figure by the line $C = (1 + i)D$; the higher the indirect cost rate i, the steeper this line.[36] At a level of sponsored research D^*, grants and contracts would theoretically pay for all the university's research costs, although this level presumably exceeds the actual level achieved by virtually all universities. The relationship between the costs and revenues associated with research represented here offers one good reason why it is misleading to look only at a university's total expenditures: a decrease in grants and contracts reduces the university's total spending but *increases* the net cost of research—a net cost that must be covered either by an increase in internally generated revenues or by a decrease in other expenditures.[37]

In summary, a sensible analysis of rising outlays must do more than simply measure total expenditures of universities. Not all expenditures have the same implications for the well-being of univer-

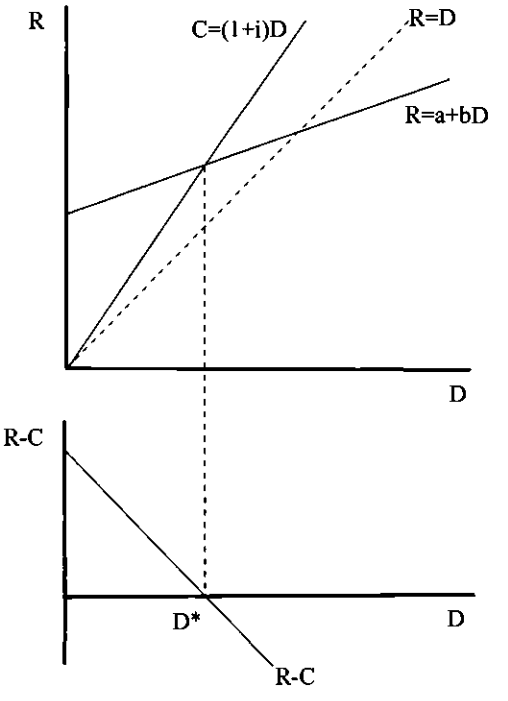

Figure 2.1 The Net Costs of Research.
R = cost of research
D = direct cost of sponsored research
$R - C$ = net cost of research

sities. As the logic of omitting auxiliaries suggests, increases in expenditures that are "tied" to a particular revenue stream may well have different implications than increases in expenditures that are not. Spending associated with grants and contracts, or at least the portion that is a direct cost, is attached to a dedicated revenue source. Likewise, growth in undergraduate financial aid that arises from increases in tuition may be viewed simply as a reduction in the net tuition that is received. Some view internally financed scholarships simply as "price discounts" (as I explain elsewhere, I do not take this approach).

Although it may be helpful in identifying relevant concepts of expense, the simplified accounting framework discussed here does not address some quite important issues of institutional behavior. For example, should one want to predict a university's response to such changes as a reduction in federally funded graduate fellowships or a cut in the allowable rate of overhead on federal grants, it would be

necessary to develop a more fully specified model of behavior. This model would have to consider institutional objectives, such as the relative emphasis on undergraduate and graduate instruction, as well as to posit a mechanism by which decisions, such as the setting of tuition, are made. Some research on institutional behavior has been conducted[38]; however, I am not attempting to undertake any in this book.

Appendix 2.2

Decomposing Rates of Growth in Expenditures

IN THEIR 1991 study of costs, Getz and Siegfried (Clotfelter et al. 1991) decompose the annual growth rate in general expenditures per student into four components, based on the identity:

$$E\$/S = (E\$/I\$)\,(I\$/F\$)\,(F\$/F)\,(F/S), \tag{2.5}$$

where

$E\$$ = general expenditures,
S = number of FTE students,
$I\$$ = instructional expenditures,
$F\$$ = faculty salaries,
F = number of faculty.

Because the exponential growth rate $r(\ )$ of a product is equal to the sum of the growth rates of each component, and the growth rate of a quotient is the difference in the growth rates,[39] equation (2.5) implies:

$$r(E\$/S) = r(E\$/I\$) + r(I\$/F\$) + r(F\$/F) + r(F/S), \tag{2.6}$$

which can be rewritten using more familiar quantities:

$$r(E\$/S) = -r(I\$/E\$) - r(F\$/I\$) + r(F\$/F) - r(S/F), \tag{2.6'}$$

where $I\$/E\$$ is the share of general spending devoted to instruction, $F\$/I\$$ the share of instructional spending constituting faculty salaries, $F\$/F$ the average faculty salary, and S/F the overall student-faculty ratio.