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CHAPTER 9

Ambition Meets Opportunity

> Can I really afford to raise tuition above inflation? If so, I can afford this program. You quickly persuade yourself you ought to have the program. We prospered as an institution by following that strategy, but the world has changed and we can't do that any more.
>
> *James N. Rosse, 1990*[1]

In his 1978 report, *Planning for the Eighties*, Duke Chancellor Kenneth Pye spoke for many in higher education when he wrote that the coming decade would require stringency and selective retrenchment. Chancellor Pye called for a 15 percent reduction in the size of the faculty through selective elimination of programs. Although he did in fact bring about a few cutbacks, the decade of the 1980s, both at Duke and at other private research universities, was anything but austere. Buoyed by tuition increases that outpaced inflation by an average of four percentage points per year, the country's top private universities experienced a decade of steadily increasing expenditures. The example of Duke is especially striking: rather than shrinking, its arts and sciences faculty grew by 14 percent in the decade beginning with the 1981/82 academic year.[2] The preceding chapters have examined this period of rising outlays by focusing on four institutions. In this final chapter, the study's approach and principal findings are reviewed, and the causes of these increases are suggested. The chapter's last section discusses three issues arising from the study that have implications for future directions in higher education.

THE STUDY AND ITS LIMITATIONS

For its empirical findings, the present study relies principally on information covering the period beginning with the 1976/77 academic year and ending with the 1991/92 year for three private research universities—the University of Chicago, Duke University, and Har-

vard University—and one private liberal arts college—Carleton College. Owing to the small size of this sample, it is obviously impossible to make any claims of statistical representativeness. Nor can it be said that the group of institutions to which these four belong is representative of American higher education in general. One reason for eschewing the advantages of a large and representative sample is the prospect of learning new things from the deeper level of detail made possible by restricting the number of institutions. Moreover, although the findings are not necessarily applicable to the rest of American higher education, these institutions do stand as nonstatistical representatives of a subset of institutions of higher education whose small share of total enrollments belies their national significance. The three universities are among a relatively few private research universities that produce a disproportionate share of the country's scholarly research and train a disproportionate share of the world's scholars. Adding to these universities the equally small number of elite private liberal arts colleges, of which Carleton is one, these institutions also provide undergraduate education to a strikingly large share of the nation's leaders of all fields. Without minimizing the accomplishments of other private institutions or the giant public sector in higher education, one must conclude that the social and economic impact that these elite private institutions exert makes them well worth studying.

In some respects, these institutions are decidedly unrepresentative of American higher education. They enroll only a small fraction of the nation's undergraduates.[3] Their tuitions are far above the average. In 1991/92, the median amount that the 32 COFHE colleges and universities charged for tuition, fees, room, and board was $21,876, more than half again higher than the average for all private institutions in that year ($13,983) (U.S. Department of Education 1992, p. 308). Their students, both undergraduate and graduate, were among the best in the country. The faculty of the universities in this group evince loyalty to their disciplines, as well as to their institutions, attending more national and international meetings and publishing far more than the average faculty member. One visible corollary of the research orientation of the universities in the sample is the high ratio of arts and sciences graduate students to undergraduates, suggesting the great degree of complementarity of research and graduate training. In their internal governance, these institutions tend to give a more substantial role to their faculty, and sometimes to their students, than is the case in less prestigious colleges and universities.

But, as is so often the case when one looks closely at real examples

within any category, the four institutions exhibited remarkable variety, with observable differences in the way that activities were organized and carried out. Perhaps the most striking contrast in the present sample is in the methods used in undergraduate classroom instruction. The same introductory course that is taught by a professor to a class of 30 at one institution might be taught in a large lecture, with smaller sections led by graduate students meeting once a week, at another. At a third institution, the same course might be taught by a graduate student in its entirety. The best single predictor of the format used in undergraduate instruction appears to be the ratio of doctoral students to undergraduates; the greater the number of graduate students, the smaller the share of the faculty's attention that the undergraduate students will receive. Yet despite the substantial differences in format and in the amount of faculty attention given to undergraduates, remarkably, all the institutions vied for virtually the same students, and the bachelor's degrees offered by all of them generally were treated as close substitutes by employers and graduate schools alike.

A second difference that is evident (largely between the liberal arts college and the research universities) is the sharp contrast in the duties of faculty. Even accounting for some degree of noncomparability across institutions, the number of hours that faculty devoted to classroom teaching differed sharply, with loads being the smallest at institutions at which faculty and graduate programs were rated the highest. Left unmeasured in this study are two activities that undoubtedly occupy a significant share of the time of faculty at research universities: research, and the one-on-one teaching that is an integral part of doctoral training.

The four institutions studied differed in numerous other ways, although many of the differences amounted to no more than accounting details. A particular function that resided in one department at one institution might have been placed elsewhere at another. One institution might have accounted for a given category of expenditure separately, whereas a second might have lumped it with other similar items. Missions differ as well, even within a reasonably consistent definition of arts and sciences; the presence or absence of museums, university presses, and major intercollegiate athletics programs illustrates this diversity. Indeed, differences such as these, and the problems they pose for making comparisons among institutions, are one of the major justifications for using case studies rather than cross-section financial data.

As a means of overcoming these differences among institutions in function, quality, and structure, the present study focuses primarily

on *changes* over time in quantities for given institutions. When expenditures are analyzed, primary attention is paid to internally financed expenditures, those funded from unrestricted revenues and endowment income. When they use internally financed funds—the most fungible of funds—institutions show their highest level of commitment to the activities so funded. Increases in spending on these activities have important implications for the continued well-being of the institutions. But they are not the whole story, of course. Externally funded spending, even though it does carry earmarked revenues to cover it, may have very real impacts on internally financed spending—for example, when universities take over funding for activities previously supported by outside grants.

PRINCIPAL FINDINGS

Because this study examines the experiences of only four institutions, strictly speaking, the results are applicable only to those four. However, it is useful to summarize the patterns that emerge when viewing all the findings together, for there is good reason to believe that general trends in this small group will have wider applicability. Most prominent among the findings—and one that does apply to other private institutions—is the overall increase in tuition levels and expenditures. For the entire 15-year period, the mean tuition and fees at the four institutions increased at a real annual rate of 4.6 percent; for the decade 1981/82 to 1991/92, for which most of the expenditure data apply, the rate was even higher, 5.3 percent. These increases apply to the advertised tuition, or sticker price; they overstate the increase in cost to the average student because financial aid to students has grown faster still.[4] A notable aspect of the increases in private tuitions is the breadth with which they covered private colleges and universities, extending far beyond the relatively small group of elite institutions. Although tuition and fees increased at an annual rate of 5.7 percent in the 32 COFHE institutions between 1981/82 and 1991/92, the 4.8 percent average for all private universities was only one percentage point slower. For all private institutions, the rate was 4.5 percent. The similarity of these rates suggests that other private institutions were willing and able to follow the price leadership of the elite ones.[5]

Total expenditures for arts and sciences components of the sample institutions likewise grew rapidly. For the period from the early 1980s to the early 1990s, internally funded expenditures grew at real annual rates of 5.3 percent at Harvard, 5.7 percent at Carleton,

6.0 percent at Chicago, and 6.8 percent at Duke. Faculty salaries, which accounted for a large portion of arts and sciences spending, grew in real terms, although less rapidly than total spending. Owing in part to the surprisingly low inflation in the early 1980s, by 1992, faculty salaries had regained, in real terms, levels that had not been achieved for two decades. Average faculty salaries rose most rapidly at Duke, which followed a policy during this period that emphasized the recruitment of senior scholars from outside the university. In part, expenditures on faculty also rose because the numbers of faculty increased at these institutions. The categories of compensation showing the highest growth rates, however, were nonregular faculty and professional staff.

Other than compensation, the types of expenditures experiencing the most rapid growth were financial aid—a big gainer at all four institutions—and, at more than one institution, computers and other capital expenditures. Although not one of the largest items, expenditures for computers grew rapidly in importance, as mainframe machines waned in significance and personal and minicomputers gained. These and other capital expenditures, including new construction, building renovations, and large equipment, were an important item of increase at Harvard. All the research universities expressed heightened concern over start-up costs, the up-front commitments that became a necessary part of the offers made to scientists and other scholars. Most of this increase in spending can be attributed to the growth in existing programs, as opposed to the creation of new programs. Perhaps the most important conclusion that arises from the scrutiny of spending increases, however, is that a large portion of increases simply cannot be attributed easily to any identifiable cause. Such widespread expenditure growth is consistent with across-the-board commitments to quality improvement and service enhancements. New services were offered to students, interdisciplinary seminars were launched, computer service staffs were upgraded, and research support to faculty was increased.

Using data for selected departments in the sample institutions, the study also examines measures of faculty teaching and characteristics of classes taught. One general trend over the period of study was a decrease in measured classroom teaching loads. On the basis of data for three departments in each of the four institutions over the period 1976/77 to 1991/92, the unweighted average classroom teaching load fell by 12 percent in the representative humanities department, 26 percent in the natural science department, and 28 percent in the social science department.[6] The decreases occurred principally in undergraduate teaching, with some departments showing increases

in graduate teaching. These declines in classroom teaching loads go hand in hand with the increases observed in the size of the arts and sciences faculty at the institutions. Moreover, this growth definitely contributed to higher spending, although, as the calculations in chapter 5 show, it explains only a small part of the overall increase. No consistent trend was observed in the average size of classes in the sample departments, at either the undergraduate or graduate level. At the undergraduate level, the average size tended to increase in years of high enrollments. At the same time, in more than half the sample departments, the percentage of undergraduates enrolled in seminar-size classes increased through the period. Finally, in apparent reflection of the decline in faculty classroom teaching loads, the percentage of undergraduates who were taught in class by regular-rank faculty tended to fall.

WHY DID EXPENDITURES RISE?

Certainly the motivating fact of the present study is the impressive increase in spending by the nation's leading private research universities, an increase that was mirrored in tuition rates and matched in percentage terms by spending increases among other private institutions. At the outset of the study, the possible explanations for any increase in spending were divided into three generic reasons: (1) an increase in the cost of purchased inputs, (2) an expansion in the level or quality of activities being performed, and (3) an increase in inefficiency. On the basis of the evidence presented here, it is safe to ascribe spending increases in the four sample institutions to the first two explanations. Prices of inputs, most importantly labor inputs, increased in real terms over the period of study, although this increase may well be seen largely as making up for real declines occurring during the 1970s. The cost of providing other services, such as campus security and compliance with regulations, also appeared to rise. Based on the decomposition presented in chapter 5, one-fifth or less of the increase can be ascribed to increases in the market price of faculty and other purchased inputs. Spending also increased because institutions did more things, or attempted to do them better. Although new activities rarely showed up as new departments, existing entities took on new activities and expanded old ones. As for the third explanation, the study found little evidence that increasing inefficiency played an important role in the growth in spending, unless the drop in classroom teaching is prima facie evidence for such inefficiency. This view seems unreasonable, however, because it would

imply that research has little or no value. This is not to say that inefficiency was absent, but only that it did not grow so as to contribute importantly to the overall increase in expenditures.

In summarizing the sources of higher spending, it is useful to look beyond these broad categories of explanation to name in particular the major influences motivating the growth in spending. I believe four major causes deserve attention. The first two are more or less inherent characteristics of the institutions and cannot by themselves explain why spending would have increased during one period but not during any other. In contrast, the remaining causes are rather specific as to time, perhaps representing the spark that ignited a combustible collection of ready conditions.

Unbounded Aspirations

The first basic cause, or precondition, is the nature of the university as an organization. Featuring weak central control, a remarkable degree of freedom accorded to its faculty, and traditions of collegiality in governance, the university lacks any corporate goal other than the pursuit of excellence. When it comes to the research that it undertakes, the university has little to guide it other than an uncompromising devotion to the highest standards of inquiry. Limits do exist and compromises must be made, of course, but the official policies of any university provide few guideposts for making these compromises. Furthermore, administrators face a decidedly uneven set of incentives when considering the possibility of eliminating or downsizing any program that they oversee. In the same way it has been observed that, once established, government programs are difficult to eliminate, owing to the intense interest among the beneficiaries (and providers) in their continuation, so it appears to be for programs within universities. Moreover, the university's aim of excellence contains little that can be used to justify cuts in the same way a profit objective can be used to guide such decisions in corporations. This is not to say that universities never eliminate programs, of course, but only that the forces militating against cuts are powerful.[7]

This institutional imperative for excellence might also apply to activities other than research, but if so, certainly to a lesser extent. During the period of study, the universities appeared to have increasingly emphasized research at the expense of teaching. One piece of supporting evidence is the decline in average classroom teaching loads observed in the sample departments. Rosovsky's

plaintive observation in 1992 about Harvard was that these shifts simply occurred, with no official sanction. By all appearances, the reduction in classroom teaching loads was a widespread phenomenon. These reduced loads became part of the expectations of faculty in the same way that salary rates for scholars by field and reputation became established, through the national labor market for faculty. The reasons for the increased emphasis on research and for the accompanying changes in the expectations of faculty are not obvious, but the mechanism by which their effects were distributed to campuses across the country was the national market for faculty, which is one of the important dimensions of competition among institutions.

The Nature of Competition

A second precondition necessary for understanding the increase in spending is the nature of the competition that exists among institutions. For the private institutions that are the subject of this study, competition exists at two levels among two overlapping sets of institutions. First is the competition for students, which takes place largely among a group of prestigious public and private colleges and universities. The second arena of competition, and here it is confined largely to research universities and other research organizations, is for faculty. In both of these dimensions there exists active and continuous competition among institutions. Some information in the relevant markets, on such characteristics as tuitions, admissions success, and faculty salaries, was readily available, if not perfectly known. Institutions were both aware of what their competitors were doing and willing to adjust their behavior accordingly. At the same time, other information, especially indications of quality that would be helpful to consumers, was virtually nonexistent.

In the market for students, especially that for undergraduates, two features seem especially noteworthy. The first relates to the nature of the commodity, this amorphous thing called a college education. Because it is little understood and even less perfectly measured, suppliers have abundant opportunities to provide signals to potential consumers about the quality of their services. In addition to tangible indicators, such as buildings, prominent alumni, and published professors, one possible indicator is price itself. Indeed, evidence indicates that institutions did not necessarily view tuition increases as harmful to their attractiveness, so long as their tuition did not depart from those of the pack of competing colleges. The other, comple-

mentary aspect of competition in the market for students was an effective compact on financial aid to which all suppliers subscribed. Virtually all the colleges and universities that competed with the sample institutions for the nation's top high school graduates had pledged to provide need-based financial assistance according to a fairly uniform formula. Each would offer applicants a package of loans, employment, and grants equal to the difference between the student's theoretical ability to pay and the total cost of attendance.[8] Consequently, tuition increases largely would be cushioned,[9] easing concerns that rising tuition would close the college's doors to low-income applicants. Together, these two features of the competitive environment made it feasible for institutions to finance their ambitious goals by increasing tuition, subject only to the strength of the market's demand and the behavior of their competitors.

The second major dimension of competition among these colleges and universities covers the several arenas related to faculty and research, the most important of which is the market for faculty. Owing to their strong disciplinary orientation and a degree of specialization that limits the number of professors in a subfield who can find work in any given local labor market, the market for research faculty is decidedly national in scope, if not international. Most of the professional expertise that a scholar builds up over the course of a career is easily portable from one institution to another. Accordingly, institutions that aspire to excellence in research must, within limits, meet the prevailing standards for salary and conditions of work to hire and retain faculty.[10] The significance of this aspect of competition is in the interpretation of rising faculty salaries as a factor contributing to rising costs: because the market is competitive in the sense described, individual institutions had little choice but to meet the going price and conditions of work. Only when an institution chose to upgrade the quality of its faculty, as Duke did during the study period, can a portion of the increasing cost of faculty be laid to a deliberate policy to modify the quality of its purchased inputs. In contrast, increased spending to finance lower classroom teaching loads or higher start-up costs that merely meet the market might be viewed more appropriately as increases in the cost of inputs.

A Surge in Demand

The conditions described under the first two headings might never have been given the chance to contribute to a rise in spending were it not for a push from a force outside higher education. That push

came principally from a surge in the demand for the kind of high-quality undergraduate training that the most selective colleges and universities offered. Whether caused by the dramatic increase in the economic payoff to college, the rapidly advancing affluence of the affluent, or merely the snob appeal of purchasing a conspicuously expensive service, the premium on acceptance at one of the nation's most selective colleges appeared to grow during the 1980s. Applications to Ivy League and other selective institutions rose steadily at the same time that their enrollments remained virtually constant.

In almost any other unregulated market, an increase in demand against a fixed supply is sure to push up the equilibrium price. It is a distinctive feature of the market for higher education, however, that the supplying firms made it a practice *not* to charge what the market might bear, choosing instead to ration demand by electing talented and diverse student bodies who would best fit their institutional objectives.[11] At the same time, however, the trustees and administrators of these favored institutions could not fail to observe that their admissions offices were being besieged by eager applicants, and that an unusually large tuition increase would not cool the ardor of prospective students. And, tuition increases would be safer still if competing institutions were to increase their tuitions by comparable amounts. Indeed, to be left behind when all of one's competitors were announcing healthy increases in tuition might invite the suspicion among imperfectly informed consumers that the quality of one's product lagged behind those of its rivals. Thus, the strong demand from consumers enabled the selective institutions—as a group—to increase tuitions faster than the rate of inflation. Individual colleges and universities, for which such actions would be suicide if pursued alone, were protected from adverse consequences in their admissions by staying safely within the pack.

From their perspective, colleges and universities were not hiking tuition as a simple reaction to the strong demand. Rather, these extraordinary increases meant extra revenue to finance priority items, items that stood at the top of long lists on the desk of every provost and president, items that would serve their institutions' lofty aims for excellence. The opportunity for extra revenue was a rare chance to enhance the quality of a few departments by hiring a handful of nationally known scholars, or to compete more successfully for the best graduate students by increasing stipends, or to upgrade the quality of services provided to undergraduate students. One specific area of opportunity lay in attracting renowned faculty from the public research universities, the financial stringencies of which limited

their ability to match the high salaries that some top scholars were being offered. During the 15-year period covered by this study, the average earnings advantage of faculty in private universities over those in public universities more than doubled.[12] During the 1980s, then, the ever-present urge for improvement met an opportunity to make some of that possible. In short, the surge in demand served as a catalyst, activating the pent-up institutional imperative for excellence.

Uncontrollables

The fourth cause for the rise in spending is a grab bag of contributing factors over which colleges and universities, even when taken together, could exert little control. Perhaps the most important of these was the worldwide increase in the earnings of highly educated professionals, of which university faculty are a part. The real earnings of doctors, lawyers, and business executives rose significantly during the 1980s. Those of university faculty rose as well, although at a somewhat slower rate. Although the job offers made by colleges and universities, taken together, had some effect on the rate of increase in faculty salaries—spurred in part by the demand for college training discussed above—these rising salary levels were largely exogenous, reflecting economy-wide shifts in the value of technical and professional training.[13] As purchasers of labor services in a competitive labor market, then, colleges and universities had little choice but to pay the market price.

A different type of uncontrollable influence was the technological revolution that manifested itself in the thousands of personal computers that seemed to materialize overnight throughout universities. As in virtually every industry in the economy, administrators in higher education found that computers appeared on purchase orders and desks in every department. These new machines enabled some economies to be realized, but their initial impact simply was to increase costs and improve productivity. Not only were the machines themselves expensive, the dizzying rate at which improved models were produced made it necessary to replace machines at a rapid rate. Most important, the introduction of this technology made it imperative to hire or train a new cadre of professionals to ensure that ordinary employees could make use of the machines on their desks. The net effect on costs of this technological onslaught is exceedingly difficult to distill, combined as it was with undeniable advances in productivity and improvements in service quality. Further-

more, it appears likely that the full impact of computers on university costs—like that on costs in other industries—cannot yet be fully assessed. It is possible that larger cost savings may be realized from the reconfiguration and reduction in administrative staffs.

A third uncontrollable element, largely unique to higher education, arose from the changing role of the federal government in its support of higher education. Although the aggregate dollars of federal expenditures for research, student financial aid, and other programs involving payments to institutions kept pace with inflation, some aspects of that support necessitated increased spending by colleges and universities. In the area of student financial aid, limitations in programs offering grants and the substitution of increasing amounts of loan moneys left the expensive private institutions with the responsibility of paying, out of their own internal funds, for virtually all the incremental costs in the need-based financial aid system. In the area of sponsored research, federal funding agencies increasingly tended to require institutions to share the cost of equipment and other direct costs of research. On top of these trends were layered real increases in the compliance cost of federal regulations, from the accounting requirements concerning indirect costs embodied in the continuously evolving rules for the calculation of indirect costs to regulations on handicap-access and drug-free workplaces. Some of these costs were evident in the growth in offices of sponsored programs at the sample institutions. Others no doubt were buried in numerous administrative budgets. The overall magnitude of these practices and regulations is difficult to assess.

ISSUES FOR THE NEXT 15 YEARS

The 15-year period between 1976/77 and 1991/92 was one of rapid growth in spending in the nation's leading private research universities. As Shapiro (1993, p. 15) wryly noted, there has to be some limit to the portion of national income taken up by the amount spent on higher education. Assuming this to be the case, that a continuation of past rates of real expenditure increases will not be sustainable, how will colleges and universities slow the growth in spending? The last section of this chapter examines three issues that seem likely to be central in determining how a new stringency will affect the operation of colleges and universities, with particular attention given to the private research universities.

The Arrangements for Work

Central to the cost structure of research universities are the everyday modes of getting work done, the methods of accomplishing ordinary tasks, the traditions of assigning work, and the customs followed in distributing responsibilities. The visible manifestations include such mundane matters as who types manuscripts, how telephones are answered, how classroom teaching assignments are made, who advises undergraduates about academic matters, and how administrative offices are organized. Arrangements concerning the amount and nature of teaching also are relevant. The substantial freedom traditionally enjoyed by faculty—over topics for study, methods of teaching, hours of work, and outside activities—is believed to be vital to effective production of the creative work demanded of them, and with justification. This freedom is especially valued at the research universities, such as those examined in the present study. As Rosovsky and Bok have pointed out with eloquence,[14] however, it is possible for the social contract under which faculty operate to be stretched too far. These observers have cited as areas of concern unsanctioned declines in teaching loads and excessive consulting. Because of tenure, it is impossible to consider the mechanisms conventionally employed in the corporate world for enforcing compliance with specific organizational guidelines. And, now that mandatory retirement is a thing of the past, the issue of faculty productivity will become all the more important.

How universities deal with these challenges largely will determine their success in reducing costs. Partly out of a reluctance to tread on the traditional prerogatives of faculty and partly from a belief that such methods as total quality management and process re-engineering simply do not transfer easily to teaching and research, management remedies now in vogue have been applied in universities almost exclusively in administrative units.[15] In those administrative areas, it seems reasonable to expect that work processes will be transformed gradually so as to adapt to the capacities of computers and other equipment. But there is no reason to believe that productivity increases cannot also be achieved in the traditional domain of faculty work processes. Nor does it seem obvious that such improvements must necessarily do violence to the freedom that has been a characteristic of faculty work, or of the institution of tenure. Whatever else happens, the change in retirement rules may well necessitate regular evaluations of tenured faculty less perfunctory than has been the norm. In the end, the traditions of independence and collegiality,

which often seem to be quaint anachronisms, may turn out to offer exactly the kind of environment most amenable to the redesign of work processes.

The 15 years covered by this study already witnessed changes in the ordinary work arrangements for faculty. Although faculty have been relieved of a part of their traditional tasks, including a portion of academic advising and some administrative tasks, it is the ironic fact that they have assumed some of the clerical duties previously performed by secretaries, such as answering their telephones and doing more of their own typing, simply because the new technology increases the efficiency of this arrangement. Techniques of classroom teaching appear to be the most resistant to the incorporation of new technology, but evidence of change is here, too. Taken as a whole, electronic innovations probably will serve to exacerbate the outward-looking nature of university faculty. It is hard to anticipate any other result when a professor finds it easier to send a message to a colleague a continent away via electronic mail than to go downstairs to chat with a fellow department member. An increase in national and international exchange of ideas seems a likely result of these advances. More uncertain is whether "distance learning" through electronic communication will become a standard technique of education at universities.

The Teaching-Research Trade-off

The second issue that inevitably will persist as universities cope with cost pressures in the next decade and a half is the tension between research and undergraduate teaching. Unlike the issue of productivity, which is essentially independent of an institution's purposes, the teaching-research trade-off involves both matters of efficiency and matters of mission. Because both research and teaching are basic activities for which universities are known, their relevance to mission is obvious. In considering this trade-off, it is useful to consider these two aspects separately.

From the standpoint of efficiency, the question is whether there really *is* a trade-off at all. It is the oft-repeated mantra of deans and provosts in research universities that good research makes for good teaching, or, in the words of economics, that the two activities are complementary. The professor who has an active research program, it is argued, can offer students fresh insights and the sense of active inquiry. Granting that there is truth to this argument, and leaving open the possibility of future improvements in efficiency that may

make it possible to improve teaching and research at the same time, it seems self-evident that the complementarities between undergraduate teaching and research can only go so far. Once they are exhausted, a trade-off between these two activities must be made: at some point, it becomes possible to increase one only at the expense of the other. In contrast to graduate instruction, which often is carried out in conjunction with research, undergraduate teaching necessarily takes up time that cannot be used for research, and vice-versa. It seems safe to assume that, to the extent that their faculty is being engaged efficiently, research universities now operate in that range in which the two activities are in fact rivals. The trade-off is real.

A choice remains, of course, and this is the aspect of the trade-off that is relevant to institutional mission. During the past 15 years, a period of increasing emphasis on research, it has been observed that undergraduates and faculty were content with a "tacit bargain" by which both sides agreed to limit their demands on the other.[16] The descriptive measures of undergraduate course characteristics presented in chapter 8 also provide scattered evidence consistent with a view that undergraduate education may have suffered. The question for the research universities is whether they will maintain the current relative emphasis between research and undergraduate teaching. Judging from the interest that prospective students have shown in attending, there seems little reason to think that the private research universities will come under much market pressure to give more attention to undergraduate teaching. But, should demand slacken, the teaching-research trade-off may well be an issue that commands the increasing attention of administrators.

Comprehensiveness

The third issue likely to arise as universities consider ways to cope with rising costs is whether they can afford to continue to be "full-service" institutions, offering degrees, conducting research in all or virtually all of the recognized academic fields, and performing many other services as well. To use one of the sample institutions as an illustration of the panoply of a university's functions, in 1992, the University of Chicago offered graduate degrees in 74 fields and undergraduate majors in 51; it operated a massive medical center, four world-famous science research facilities, an observatory, the editorial offices of numerous scholarly journals, a university press, four museums, a library with more than 6 million volumes spread over nu-

merous buildings, a laboratory school for elementary and secondary students, an intercollegiate athletics program fielding varsity teams in 20 sports, a bus service, a travel agency, a news agency, a printing department, numerous dormitories and dining halls, and the largest private police force in Illinois.[17] In addition to offering degree programs to graduate, professional, and undergraduate students, research universities routinely undertake research supported by government agencies, corporations, and foundations; offer executive training to business professionals, government officials, and foundation executives; and provide continuing education classes to adults.

More than one observer of research universities has suggested that a range of activities this broad is problematic. Gray (1992, p. 236), who presided over the activities enumerated in the preceding paragraph, has argued that this comprehensiveness represents the most serious problem of research universities, that they are "burdened by too many tasks, too many demands, and too great a confusion of expectations." In her opinion, a major cause is the competition among institutions that, as we have seen, involves matching quality for quality. In his essay two decades before, Coleman (1973) advanced a similar theme, suggesting that some of the functions carried out by universities must be partitioned or jettisoned. In particular, Coleman argues that undergraduate education is ultimately incompatible with the research and graduate training functions and ought to be separated, which responds of course to the tension between research and teaching discussed above and is in effect accomplished in liberal arts colleges.[18] Regardless of whether these functions are compatible, the broad scope of the enterprise as a whole certainly has cost implications, as Gray and others have stressed. In his plan for reducing expenditures at Duke, for example, Kenneth Pye argued forcefully for selective retrenchment rather than across-the-board cuts. One approach is simply to learn to "do without." Where resources can be shared among institutions, however, this degree of stringency may not be entirely necessary. One can find numerous examples of neighboring institutions that share computing facilities, coordinate library acquisitions, and even allow cross-registration for courses. Such sharing has long been institutionalized in interlibrary loan. With the advent of widespread access to electronic communication, this kind of cooperation should become significantly easier to accomplish.

Ultimately, the degree to which comprehensiveness will be restricted largely will be like the extent to which expenditure growth will be restrained, a function of the growth in revenues. As has been the case in the past, revenues will largely determine the growth in

spending. As long as universities hold the high aspirations that have characterized them in the past, the imperative for excellence will place pressure on spending. Only when revenue growth slows will spending growth slow. As to that possibility, it does indeed seem likely that the major sources of university funding will grow more slowly during the next 15 years. Although periods of scarcity have been forecast before but have not materialized, all indications now seem to point to a tightening of constraints. If every challenge presents an opportunity, then these institutions have an opportunity to employ new technologies and techniques to improve the manner in which they accomplish the traditional aims of the research university.