

HIGHER EDUCATION FINANCE 101:

Basic Concepts About College Finance—Language, Patterns, Performance Measures, and Benchmarks for Boards

The economics of higher education are complex, made so because of the diversity of revenue streams and the different cost structures across types of institutions. The financial model in community colleges is quite different from that in liberal arts institutions, and both are different from research universities. The language of higher education finance—including the distinctions between revenues, expenditures, costs, prices, net prices, and cost centers—further complicates the discussion. To lay the groundwork for a short discussion of college cost concepts, it is helpful to clarify terminology.

Revenues

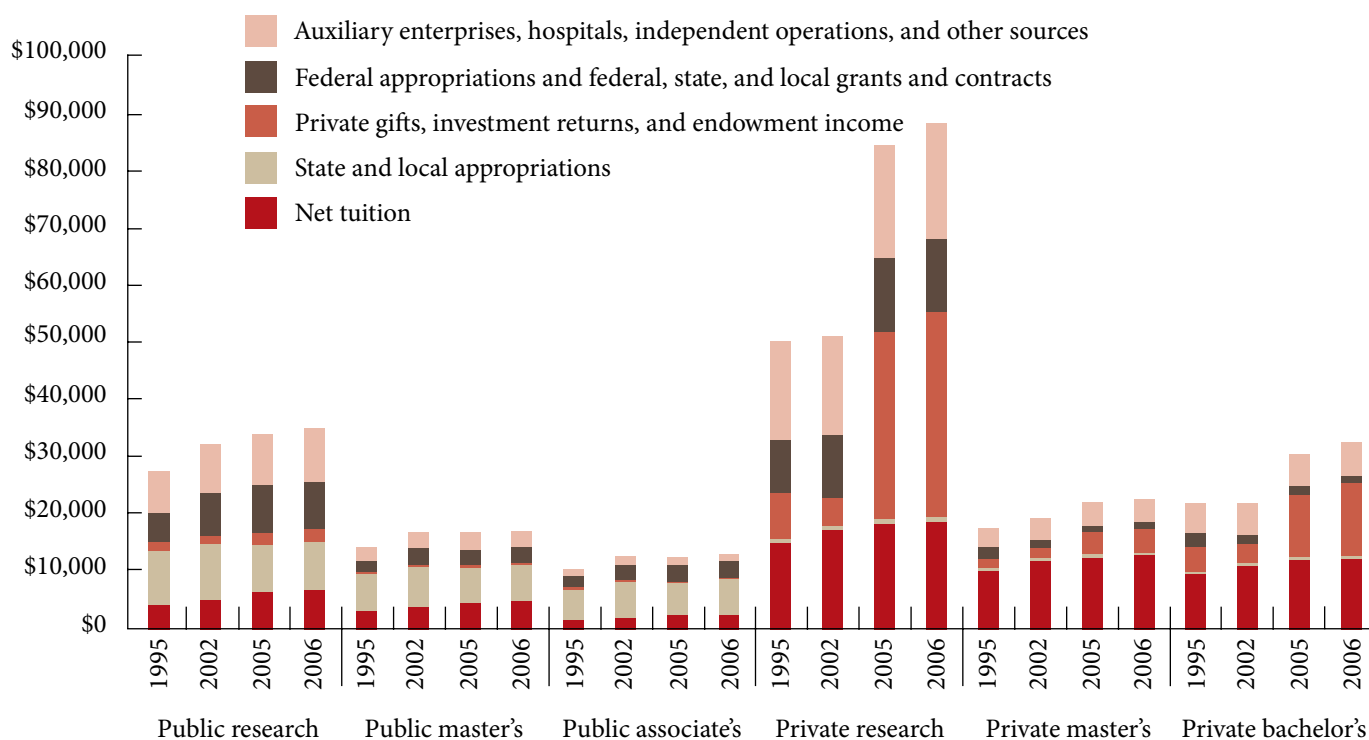
Revenues are where the money comes from. Revenues for institutions come from many sources (Table 1). Tuition and fees, state and local appropriations, endowment income, and federal funds are the dominant sources for the operating budget. Private gifts, bond resources, and federal and state capital outlay appropriations are the dominant sources for the capital budget. Capital outlay funding is largely separate from operating budgets, partly because of the different revenue sources and the longer horizon for amortizing costs. As a result, most discussions of higher education costs, in particular cost benchmarking between institutions, focus exclusively on operating budgets. Analysts estimate that the exclusion of capital funding from conventional cost analyses understates the total cost of all operations by 20 to 40 percent per student per year.

TABLE 1: Standard Reporting Categories for Operating Revenues

Revenue Source	Comments
Tuition and fees	Typically reported net of expenses for discounts or institutional aid.
Federal appropriations	The majority of federal funds go for student aid (reported separately) or for contract and grant research. Federal appropriations to institutions constitute a small amount for most institutions, with the exception of land-grant institutions that receive appropriations for agricultural research and extension.
State and local appropriations	General operating support for most public institutions. Local appropriations are most important as a general fund revenue source for community colleges.
Federal contracts and grants	Typically for research and development, although financial aid that goes to the institution (rather than to students) will show in this category.
State and local contracts and grants	Most state funds go for appropriations, such as reimbursements for training programs.
Private gifts, contracts, and grants	Includes both unrestricted and restricted funds. May include funds for capital projects, as well as operating revenues.
Investment returns	A new category in public reports. Trend data not yet available.
Endowment returns	Reported for nonprofit institutions only. A relatively new category, so trend data are not available.
Revenues from auxiliary enterprises	Dormitories, food services, intercollegiate athletics. Most institutions include spending on athletics within student services or instruction, and not as an auxiliary enterprise.
Hospital and clinic revenues	Revenues (net of discounts and allowances) generated by hospitals from daily patient, special, and other services and by health clinics, unless such clinics are part of the student health services program.
Federal grants for student aid	Pell grants, campus-based aid; these are typically subsumed within tuition revenues and therefore not counted twice in total revenues.
State and local student grants to students	State or local student aid. Subsumed within tuition revenues and not counted twice in total revenues.
Institutional grants to students	Institutional grants. Counted against “net tuition revenues.”
Other revenue sources	All other sources that may not fit within one of the categories above.

For the operating budget, all institutions publicly report annual revenues by major source. Revenue sources vary considerably among the major sectors (Figure 1). Public institutions are more dependent on state and local appropriations, and private institutions are more dependent on tuitions or revenues from endowments. The majority of private colleges have small endowments, so these institutions are the most dependent on tuitions for core funding. There are also differences in definitions of reporting categories for revenues between private nonprofit institutions and public institutions. In addition, most non-institutional sources of revenue for financial aid—including major items such as Pell grants or loans given to students—are accounted for as discounts against tuition, since they are used by students to pay for tuition.

FIGURE 1: Total Operating Revenue per FTE Student by Source, 1995, 2002, 2005, and 2006 (in 2006 dollars)



Source: Delta Cost Project IPEDS database, 20-year matched set.

Costs (spending, or expenses)

Costs are the amount of money that institutions spend and where they spend it. Institutions report spending in standard categories organized around functional activity areas, such as instruction, research, and service, but not around strategic categories, such as mission, core educational functions, and planning priorities (Table 2). To standardize measures of spending across institutions, most analyses divide spending by full-time equivalent (FTE) students to get an average cost per student (Figure 2, see page 4). This allows institutional comparisons to be put in context, although some reporting and analytical difficulties arise that make cost reporting problematic. These are discussed in more detail later. As is the case for reporting of revenues, there are differences in expense reporting between public and private institutions in areas such as operation and maintenance (reported separately for public institutions and distributed across functional categories for private institutions).

Prices (tuition and fees)

What most people call “college costs” are more precisely prices, or what students are charged to attend a college. The average posted price is the “sticker price,” and the “net price” is tuition and fees less grant aid. For purposes of cost analysis, revenues from tuition and fees are calculated on the basis of net tuition revenue. Aid to students in the form of loans is not treated as a discount, since students have to repay it.

TABLE 2: Standard Reporting Categories for Spending

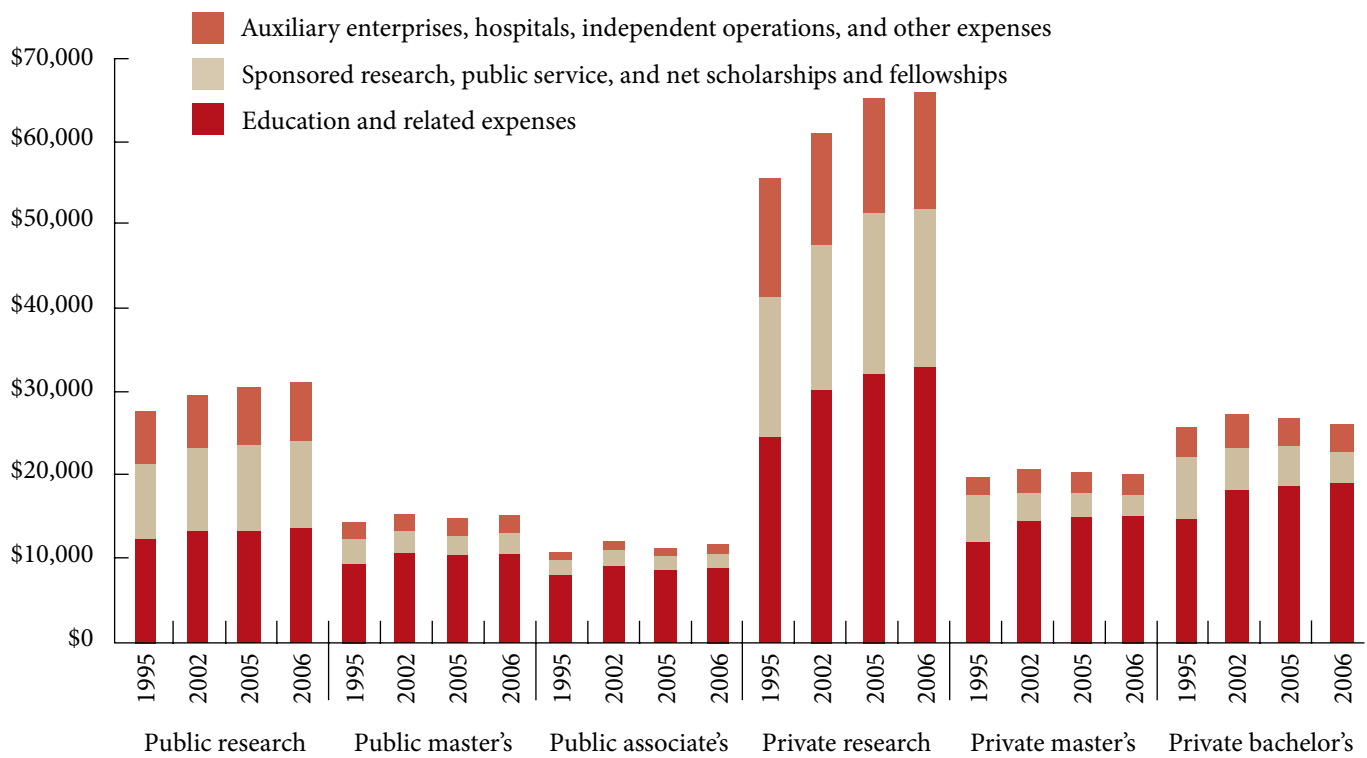
Spending Category	Comment
Instruction	Departmental instruction (all faculty, including adjuncts and part-time faculty and teaching assistants), and departmental-based administration (department heads and support staff). Academic administrators whose time is primarily administrative (deans) are included within institutional support. Includes faculty time for individual research. Includes all types of instruction (undergraduate to graduate and professional, occupational, developmental), and both credit and noncredit instruction.
Organized research	Sponsored research. May include portion of faculty salaries that is paid from research contracts.
Public service	Organized activities explicitly designed to serve public. May include agricultural extension services, university schools, and contracted services for state and local governments.
Academic support (libraries, computer centers)	Centrally organized academic activities that support instruction and research, such as libraries, computer centers, museums, and galleries.
Institutional support (administration)	Centrally organized administrative activities that serve all functional areas. Includes presidents and chancellors' offices, long-range planning, legal and fiscal services, purchasing, printing, public relations, university development, human resources, accounting, institutional research.
Student services	Administrative and support services oriented to support of students. Includes admissions and registrars' offices, as well as student activities, placement and counseling centers, and supplemental support services. Includes student health centers and athletics that are not revenue-generating activities.
Operation and maintenance of the plant	General maintenance and repair, building and grounds management. Includes utilities, property insurance, fire protection. Institutions may include depreciation costs in this category. Not separately reported by private nonprofit institutions; their O&M expenses are distributed across other functional categories.
Depreciation	The allocation of the cost of capital assets, less salvage value, as an expense over the estimated life of the asset. Not separately reported by private nonprofit institutions, and available for publics only in recent years.
Auxiliary enterprises	Spending in self-supporting activities, such as dormitories and food services.
Hospitals and clinics	Supported from revenues generated in these activities.
Scholarships and fellowships	The proportion of spending on scholarships and fellowships that is not applied to tuition, such as scholarships to pay for living allowances.

Costs, prices, and subsidies

In public and private nonprofit institutions, revenues from student tuition and fees have historically covered only a portion of what an institution spends in operating funds to educate each student. The difference between what is spent (educational cost) and the amount of cost covered by tuition revenue (price) is made up from a general subsidy paid by the institution.

The cost/price/subsidy relationship is the major financial difference between public/nonprofit and profit-making institutions. If profit is the goal, an institution charges more than it costs to provide a service or deliver a product, and the difference is profit. In a public or nonprofit institution, average price is less than average cost. But there are large variations around the averages—some disciplines and programs cost much more than others and some are less expensive. A lower-division English literature student who is paying full tuition, for example, costs the institution much less than an upper-division chemistry major with a tuition waiver. The “savings” from the low-cost student are then used to pay for the higher-cost student—a distribution of funds known as a “cross-subsidy,” even though an actual funding transfer typically is not made. In most institutions, lower-division courses provide subsidies for upper-division courses, and undergraduate education helps subsidize graduate education. There are also cross-subsidies across functional areas, such as between dormitories and instruction or between hospitals and clinics and organized research or community service. While some critics of higher education view cross-subsidies as a bad practice resulting in a blurred sense of cost, they can contribute both to educational quality and fiscal integrity, albeit typically not to transparency.

FIGURE 2: Total Operating Expenses per FTE Student by Category, 1995, 2002, 2005, and 2006 (in 2006 dollars)



Source: Delta Cost Project IPEDS database, 20-year matched set.

One of the most prominent trends in higher education finance in the last decade has been that the subsidy share of costs—the proportion of educational costs paid for either by state funds or institutional resources—is declining, so the student share of educational costs is increasing. This is occurring both in public and private institutions (Figure 3). In the past, institutions could ease some of the pressure of public concern about tuition increases by pointing out that no student actually pays the full cost of his or her education because of the large subsidies from state and institutional resources. Increasingly, this will not be the case, because student tuitions are paying more and more of the full cost of education, particularly “full-pay” undergraduates in large research universities (or out-of-state students, who are clearly a “profit center” in this nonprofit environment). As the student share of costs increases, issues surrounding the appropriate role of student tuitions as a revenue source for cross-subsidies will become more prominent.

FACTORS THAT DETERMINE COST

While each institution has its own cost DNA, there are common spending patterns across types of institutions. In fact, a relatively small number of major factors explain much of the variation between institutions in revenue and spending patterns.

Revenue availability

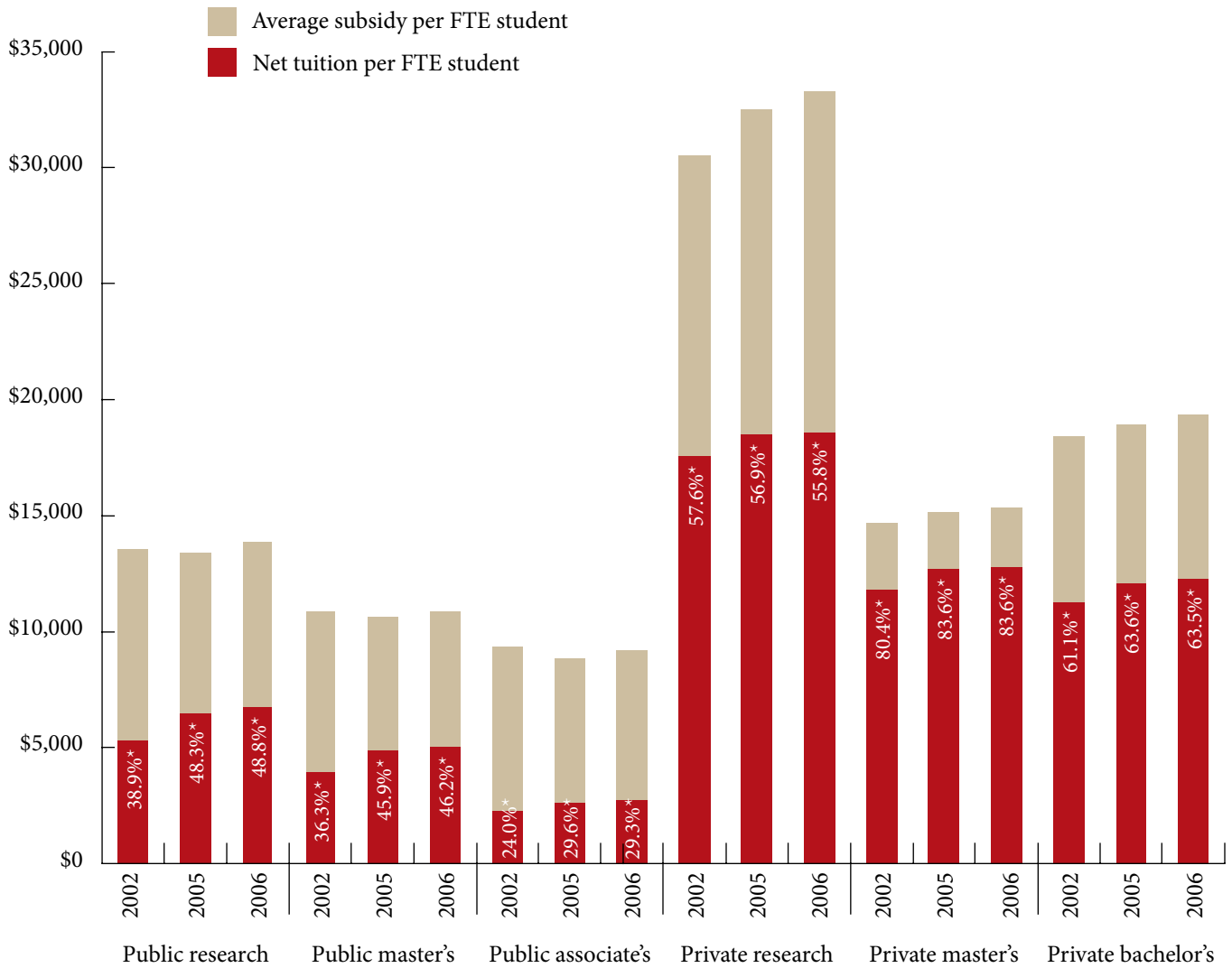
Higher education institutions operate under what economist Howard Bowen called the “revenue theory of costs”—that is, institutions raise all the money they can and spend all the money they have. Along with admissions selectivity and faculty credentials, revenues are widely seen as indicators of institutional quality. The incentive to increase funding in order to be able to increase quality is strong in higher education. It is part of the reason why economists believe that as long as revenues are available, higher education will find a way to spend them.

Institutional mission

Institutional mission also influences costs: research universities have higher costs than teaching institutions; technical and vocational programs are usually more expensive than academic programs; and small institutions with a broad range of programs are more expensive than larger ones with fewer curricular offerings. Mission distinctions carry with them

connotations about expectations for faculty work, in particular the role of faculty research as a normal part of the expected faculty workload. In research universities, faculty have lower teaching loads than in master's institutions, and master's institutions usually have lower teaching loads than community colleges. Differences in teaching loads in turn relate to class size, which correlates strongly with costs.

FIGURE 3: Trends in Higher Education Subsidies, 2002-2006



*Share of educational costs from net tuition revenue

Source: Delta Cost Project IPEDS database, 20-year unmatched set.

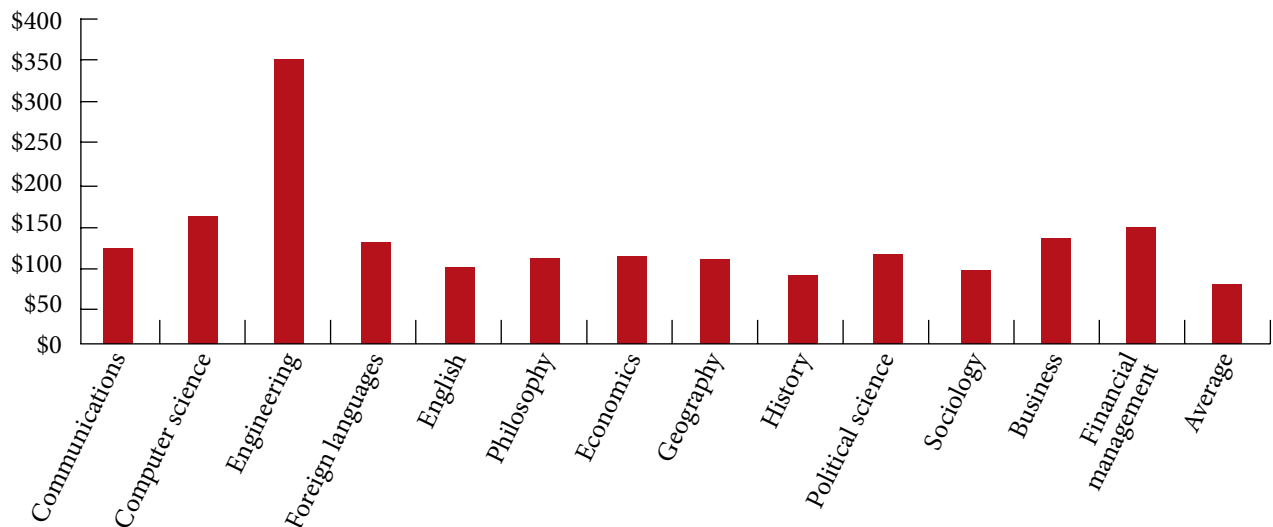
Discipline mix

Studies of the cost of instruction show that differences between institutions in spending are highly related to the mix of disciplines in the instructional and research programs—even more so than the undergraduate/graduate/ professional mix or class size. Laboratory sciences, performing arts, and agriculture have historically been among the most expensive disciplines because of the facilities required for effective teaching and research. Demand for faculty also increases costs. This explains relatively high costs in the areas of business, economics, and computer science, where credit-hour costs have grown well ahead of average credit-hour costs for the professoriate. Figure 4 (page 6) shows the spread of credit-hour costs by major discipline areas for a sample of public comprehensive institutions, taken from the Delaware Study of Instructional Costs and Productivity, a data-sharing project based at the University of Delaware.

Campus size

Size matters in costs in higher education. Institutions with large enrollments are able to offer classes at lower average credit-hour costs than are smaller institutions. The reason is that the marginal cost of adding additional students to programs that are already established is less than if institutions need to add additional faculty, facilities, and support in order to build capacity. In contrast, institutions that have chosen to remain small—below 1,000—have inherently more expensive instructional programs because administrative costs are spread over fewer departments. This is the case even if they keep curricular options to a minimum and avoid building high-cost graduate or research programs.

FIGURE 4: Instructional Spending per Student Credit Hour



Source: Delaware Study of Instructional Costs and Productivity. Sample of costs from public comprehensive colleges, 1998-2001.

Admissions selectivity

The degree of admissions selectivity has been found to correlate with campus spending. The more selective institutions tend to be wealthier, and they are more likely to have faculty with expectations for research, even if they do not have large graduate programs. The fact that the institutions that attract the best-prepared students also have the most resources to invest in their education has long been a bone of contention within higher education and with some policymakers, since the obverse pattern is also true: the institutions that serve the least well-prepared students also have the least to invest in their success. Balancing the funding needs of open-access institutions with the expectations for funding to maintain quality in the more selective institutions is one of the most difficult issues faced by public multi-campus governing and coordinating boards, which must accommodate very different missions under a single umbrella.

Mix by level of instruction

Traditionally, costs increase as the student progresses through the instructional program. Lower-division instruction costs less than upper-division instruction, and undergraduate education costs less than graduate education. The higher costs of upper division and graduate education result in part from the greater degree of specialization in course offerings at higher levels of study in contrast to lower-division instruction, where the curriculum is more standardized and class sizes can be larger. But the higher costs also relate to faculty staffing patterns and the fact that senior faculty are more likely than junior faculty to teach graduate level classes. The common weights assigned to costs at different levels of instruction are: lower division, 1.0; upper division, 1.5; first-year graduate students, 2.1; professional students (excluding medicine), 2.5; and advanced doctoral students, 3.0. (These weights derive from studies of costs of instruction done in research universities by Howard Bowen in the 1970s and probably are not reflective of spending patterns in liberal arts institutions.) Critics of higher education point to these cost distributions as evidence that institutions have incentives toward “mission creep” in order to increase the size of their graduate and professional programs relative to undergraduate education—in turn, to justify more money for the institutions and lower teaching loads for the faculty.

Accounting for the costs of inflation

For many years, higher education analysts have argued that special indices other than the Consumer Price Index need to be used to adjust for inflation for higher education because its “market basket” of spending is so different from that of the typical family. As a result, at least two specialized price indices have been designed for higher education: the Higher Education Price Index (HEPI), initially developed by Kent Halstead and now maintained by Commonfund, and the Higher Education Cost Adjustment (HECA), developed by the State Higher Education Executive Officers (SHEEO) organization. The HEPI adjusts prices based on a sample of data collected from colleges and universities reflecting their patterns of spending (professional salaries and wages, equipment, utilities), in contrast to the composition of household expenditures contained in the Consumer Price Index for All Urban Consumers (CPI-U). The HEPI has been criticized as self-referential—for instance, justifying higher spending based on higher spending. The HECA was developed as an alternative. It adjusts prices using two federal indices, the Employment Cost Index (ECI) and the gross domestic product (GDP) implicit price deflator. The ECI is based on a survey of private sector professional workers, and the GDP deflator reflects general price inflation in the U.S. economy. Between 1990 and 2002, the CPI-U increased an average of 3.4 percent per year compared with an average change of 4.47 percent per year for the HEPI and 4.07 percent per year for the HECA.⁵

Common cost benchmarks for boards

For policymakers to make any sense of spending data, the data need to be organized into context through comparisons with other institutions and presentation of historical information showing changes in spending over time within the institution. This means using cost analysis and benchmarking costs against those of other institutions. Cost analysis allows spending information to be evaluated relative to some measures of performance—cost per unit of instruction, cost per student, or cost per degree granted. Most cost measures use FTE student enrollments as the unit of analysis. Since some costs are not properly ascribed to students (particularly research costs), cost analysis often is confined to estimates of the costs of instruction, which are sometimes embellished to cover the cost of education (instructional costs plus related administrative and student-support costs). This yields an aggregate figure for all students across all discipline areas and levels of instruction. It is useful for showing trends over time and for evaluating changes in subsidy patterns. In addition to cost of instruction/ cost of education, a variety of other benchmarks are commonly used—for example, central administrative expenses as a percentage of total expenses, spending on operations and maintenance per assignable square feet of space, and tuition discount rates.

The metrics of cost analysis in higher education have been bogged down for many years in methodological disputes about the best way to ascribe costs to functions. Teasing apart the separate costs of teaching and research is one common issue. Another is trying to separate average costs for undergraduate and graduate education. Data availability has been yet another problem. The federal integrated postsecondary education data surveys (IPEDS) system is the best potential source for such data, but differences in reporting conventions between public and private institutions and changes in definitions over time make longitudinal analysis of patterns difficult. And without some longitudinal basis for evaluating spending in relation to enrollments, inflation, and degree production, the data lose all meaning. Still, IPEDS data can be used to make aggregate comparisons of spending patterns between institutions, and reports designed by the institution can be customized to show spending in comparison to peer institutions. The AGB benchmarking system uses IPEDS data and is a readily available source for such benchmarks.

Many efforts have been made over the years to develop common cost-reporting methodologies and to encourage institutions to provide data so that comparison information can be readily shared. The pattern among these has been that while the methodological and data-collection issues can be resolved, the resulting products seem to have a short shelf life and rarely get translated into common use for decision making. NACUBO led a major national effort in 1998 to develop a methodology for measuring the costs of undergraduate education. Follow-up studies since then show that relatively few institutions actually use it. Many institutions participate in voluntary data-sharing efforts on costs and swap information with peer institutions on a confidential basis. These efforts are particularly common for comparing information on faculty salaries. Before 1991, some private institutions (called the “Overlap Group” because of their overlapping admissions pools) shared data on financial-aid packages being offered to students. The U.S. Department of Justice investigated this as a violation of the Sherman Antitrust Act, a consent decree was reached, and the practice dropped. Somewhat more public, but still confidential, cost consortia do exist, such as the Delaware Study of Instructional Costs and Productivity, which collects data on the direct cost of instruction from a voluntary consortium of institutions. Several states (Ohio, Illinois, Florida, and New York) maintain longitudinal cost data for public institutions. These data-rich sources show a wealth of information about changes in spending over time, including how costs have changed in graduate education compared with undergraduate education and what disciplines have seen the greatest growth in spending. Interestingly, they share another common characteristic: none of them appears to be used for board-level

decision making. The cost data are separated from budget data and rarely find their way into public reports, even if the data are maintained in publicly accessible formats.

The history of higher education cost analysis is instructive for improving governing board capacity to monitor college costs. This is especially so given that cost metrics are rarely in useful formats for decision making. The nature of cost analysis invites presentation of information at a level of detail that is confounding to all but a few researchers and academic economists. Figuring out how to condense spending data into analytically honest benchmarks that are accessible to boards and actually contribute to better-informed decision making about resource allocation would seem to require a different approach than the one that historically has been taken within higher education.



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