Community Colleges in Context:

Exploring Financing of Two- and Four-Year Institutions

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As we emerge from the Great Recession in the United States, assuring adequate postsecondary educational opportunities to all who can benefit should be high on our list of public policy priorities. Community colleges—which educate a disproportionate share of students from low-income backgrounds, of adults returning to hone their skills for the labor market, and of students in need of strong academic and social supports to be able to do college-level work—deserve particular attention. Since these institutions depend more than other colleges on appropriations from state and local governments, smaller public budgets have meant they have seen declines in per-student revenues and expenditures, exacerbating the difficulties of meeting student needs and of achieving acceptable completion rates.

Both equity and efficiency considerations demand that we gain greater understanding of the reasons and potential remedies for the disappointing educational outcomes of the students served by community colleges. Our economy depends on an increasingly skilled labor force, and future growth will necessarily come from historically underrepresented populations. As achieving a middle-class standard of living becomes less and less possible without some sort of college credential, neglecting the needs of community college students relegates a large group of people to lives of unnecessary hardship.

This paper provides necessary background for developing policies to strengthen community colleges. We review the history and growth of the sector and examine the available data on revenues, expenditures, salaries, student subsidies, and the subsidies that institutions receive through tax exemption. In the absence of adequate data to distinguish expenditures on different types of students within institutions, we perform a hypothetical exercise to compare spending on community college students to spending on lower-division undergraduates in other sectors. Finally, we discuss the relevant considerations for determining equitable and efficient funding and we suggest ways that our ability to make those difficult decisions could be improved. There is no doubt that supporting the success of community college students requires much more than adequate funding for the students and their institutions. But without adequate funding, significant progress is unlikely.

BACKGROUND

Goals of Community Colleges

The history of community colleges dates back to the high school–based Joliet Junior College in Illinois, developed in 1901.[1] But the community college system as we know it has its roots in the report of the 1947 President's Commission on Higher Education, better known as the Truman Commission, which argued that higher education is necessary to the development of a democratic citizenry and should be more accessible. "Equal opportunity for all persons, to the maximum of their individual abilities and without regard to economic status, race, creed, color, sex, national origin, or ancestry is a major goal of American democracy. Only an informed, thoughtful, tolerant people can develop and maintain a free society."[2]

The Truman Commission believed that community colleges should be located so that they would be geographically accessible to most people. It believed that many more students could and should complete two years of undergraduate study than would earn four-year degrees. Re-conceptualizing junior colleges as community colleges, the Truman Commission introduced this term into the national vocabulary because of the importance of vocational education supplementing the transfer role of junior colleges and of the integration of this new type of institution into local communities.

Community College Enrollment

In the 1960s, the community college sector began to expand dramatically, and many more adults, including many women and people of color, enrolled in college. Community colleges were no longer just junior colleges—stepping-stones to four-year colleges—but were institutions providing the skills many needed to become productive members of the labor force. Between 1963 and 2010, fall enrollment at community colleges grew from around 700,000 students to more than 7 million. That increase corresponds to an average annual growth rate of 5.0 percent, which is considerably higher than the 3.2 percent annual rate of growth in fall enrollment experienced across all sectors of higher education. Over that time period, the community college sector's share of total fall enrollment rose from 15 percent to 34 percent.[3]

Many students enrolling in community colleges are returning to higher education after a break, but about 40 percent of first-time degree-seeking students enroll in this sector. This percentage grew rapidly, from 31 percent in 1966 to 51 percent in 1975, and held steady at about 50 percent through the early 1980s. At that point, other sectors began increasing their shares of first-time enrollment and two-year public colleges' share of beginning students declined to 37 percent by the mid-2000s, and stood at 39 percent in fall 2010.[4] The community college sector's share of first-time enrollment is higher than its share of total fall enrollment because students spend more years enrolled in four-year than in two-year institutions.

Composition of the Student Body

The demographic profile at community colleges looks very different from that of the student bodies at other types of postsecondary institutions. Public two-year college students today are disproportionately non-white. Hispanic students are overrepresented in the sector, constituting 18 percent of the students at community colleges but only 13 percent of all students at degree-granting institutions. In 2010, almost half of all Hispanic college students across the country were enrolled at community colleges.[5] Black students are not overrepresented at community colleges, but instead they enroll in disproportionate numbers at for-profit institutions. As Table 1 indicates (page 76), the share of black students in total enrollment at for-profit institutions (29 percent) was

TABLE 1
Fall Enrollment in Degree-Granting Institutions
by Racial/Ethnic Group, 2010

	Total	*Public Two-Year*	*Public Four-Year*	*Private Nonprofit Four-Year*	*For-Profit*
White	61%	57%	64%	66%	49%
Black	14%	15%	12%	12%	29%
Hispanic	13%	18%	11%	8%	14%
Asian/Pacific Islander	6%	6%	7%	6%	4%
Other	6%	4%	7%	8%	4%

Source: Thomas D. Snyder and Sally A. Dillow, *Digest of Education Statistics 2011* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 2012), table 241.

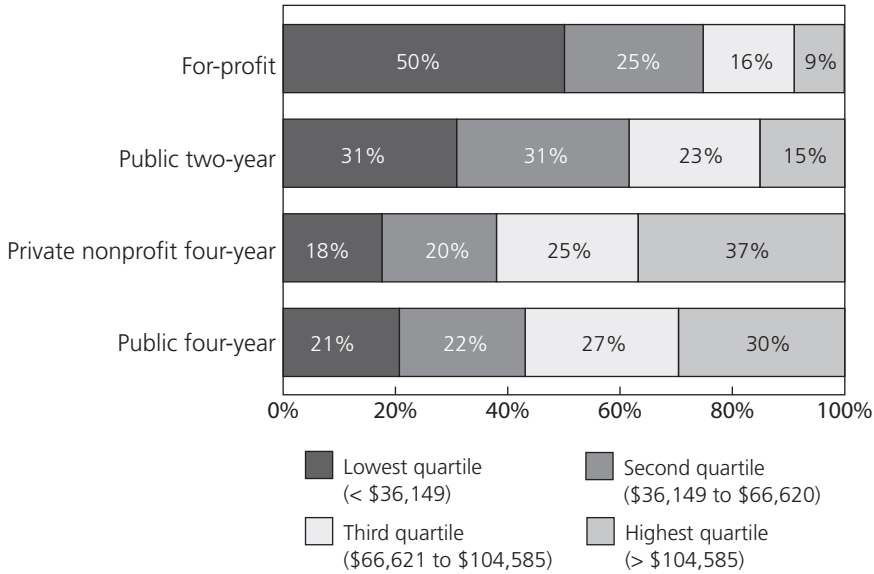
more than twice as high as the share of black students in total postsecondary enrollment (14 percent) in 2010.

Both students who are older than traditional college age and those who are younger are over-represented at community colleges. In 2011, when fall enrollment at community colleges was 39 percent of the total, 66 percent of students under 18 years of age and 48 percent of students aged 25 or older were enrolled at community colleges.[6] It is perhaps unsurprising that so many younger students enroll at community colleges, since community colleges are located close to home and offer a comparatively wide range of degree- and non-degree programs, in particular for vocational training. Moreover, many of the younger students are participating in dual-enrollment programs with their high schools. For adults, at least part of the appeal of community colleges is that community colleges are well equipped to accommodate the busy schedules of those with full-time jobs and families to care for.

Another distinguishing feature of community colleges is their high rate of part-time enrollment. More than half (54 percent) of all students enrolling part-time did so at community colleges in 2010. In contrast, the community college sector claimed only 23 percent of all full-time students that year. Within the community college sector, part-time students are in the majority, with 59 percent of community college students enrolling part-time in 2010.[7]

Community college students tend to come from lower income backgrounds than do students in the other sectors. Figure 1 shows the

FIGURE 1
Distribution of Undergraduates by Income Quartile and Sector, 2007–08



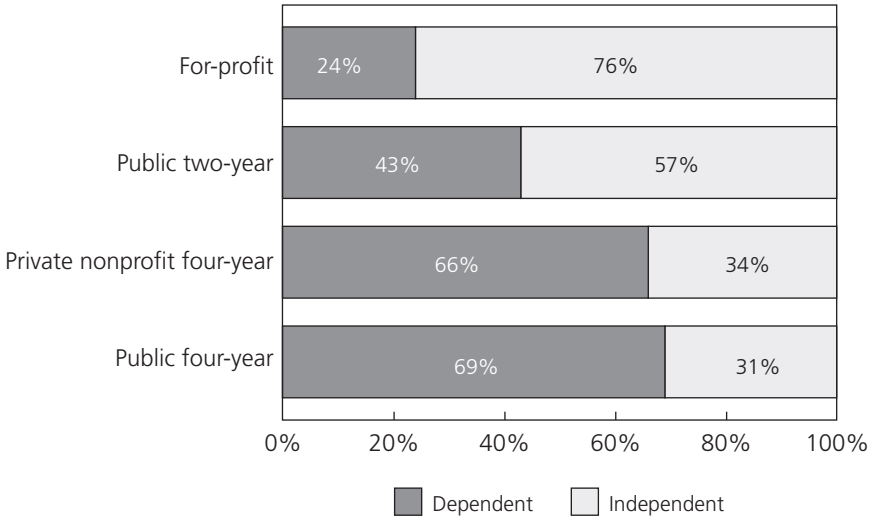
Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2007–08 National Postsecondary Student Aid Study (NPSAS:08).

distribution of dependent undergraduate students across income quartiles within each sector in 2008.[8] About one-third of the dependent students enrolling at community colleges (and about half of those at for-profit institutions) were from the lowest family income quartile in 2008, compared to about 20 percent of the dependent students at public and private nonprofit four-year colleges and universities. As shown in Figure 2, however, dependent students constituted only 24 percent of undergraduate enrollment in the for-profit sector and 43 percent at community colleges. These figures compare to 66 percent at private nonprofit four-year institutions and 69 percent at public four-year institutions.[9]

Degrees and Certificates at Community Colleges

Most programs at community colleges lead to associate's degrees or to certificates of varying program duration. As Table 2 indicates,

FIGURE 2
Distribution of Undergraduates
by Dependency Status and Sector, 2007–08



Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2007–08 National Postsecondary Student Aid Study (NPSAS:08).

TABLE 2
Associate's Degrees and Certificates by Sector, 2010

	Associate's Degrees	*Certificates of Two but Less Than Four Years*	*Certificates of One but Less Than Two Years*	*Certificates of Less Than One Year*	*Percentage of Total*
Public four-year	12.0%	12.3%	3.8%	7.2%	9.4%
Private nonprofit four-year	4.3%	5.9%	1.8%	1.2%	3.2%
For-profit four-year	13.4%	2.8%	6.8%	2.6%	9.7%
Public two-year	62.1%	57.4%	53.7%	71.6%	62.6%
Private nonprofit two-year	0.7%	0.6%	0.6%	0.7%	0.7%
For-profit two-year	7.5%	21.0%	33.3%	16.7%	14.4%
Percentage of all awards	58.9%	0.8%	18.6%	21.6%	100%

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS).

community colleges award the majority of the associate's degrees and certificates, including a particularly large share of certificates for programs that are less than one year in duration.[10]

The number of certificates awarded across all of higher education has been growing rapidly in recent years, having risen from about 550,000 in 2000 to nearly one million a decade later, and for many students they are a cost-effective and relatively quick path to better jobs, higher wages, and further postsecondary degrees.[11] A recent study by Anthony Carnevale, Stephen Rose, and Andrew Hanson carefully examines the pay-offs to this increasingly popular postsecondary option.[12]

Certificate programs are usually oriented toward vocational or occupation-specific training. The community college sector, where a large number of certificates are awarded, is therefore a common destination for students seeking to develop those types of skills. Some people see community colleges mainly as stepping-stones to further education, while others see them principally as destinations in and of themselves that offer shorter-term, often (though not exclusively) vocationally oriented forms of postsecondary education. The current reality is that community colleges serve both of these purposes. They produce many more associate's degrees and certificates than does any other sector, but many community college students also move on to bachelor's programs at four-year institutions. According to the National Student Clearinghouse, 26 percent of the students who began their studies at community colleges in 2006 had transferred to four-year institutions within five years.[13] For a thorough account of the multi-faceted nature of the community college, see Kevin Dougherty's book, *The Contradictory College*.[14]

Variation across States

The role of community colleges varies considerably across state systems of higher education. Nationally, about one-third of all postsecondary students—and almost half of all of those enrolled in the public sector—attend community colleges; but in 2010, the share of postsecondary students enrolled in community colleges ranged from lows of 3 percent in Alaska and 10 percent in Nevada to highs of 58 percent in California and 61 percent in Wyoming. In thirteen states, less than one quarter of all undergraduates were enrolled in this sector, while in six states, more than half of all undergraduates were in community colleges.[15]

Tuition prices at community colleges also vary widely across the country. In 2012–13, the sticker price for a full-time community college

student was $1,418 in California and $1,537 in New Mexico, compared to $6,790 in Vermont and $6,752 in New Hampshire. The average community college tuition was only 15 percent of the average tuition at public four-year institutions in California, 23 percent in Arizona, and 26 percent in Texas. In contrast, those ratios were 68 percent in New York and 73 percent in South Dakota.[16]

While many factors other than price affect enrollment decisions—and prices and institutional patterns and structures are themselves determined by state policies and populations—there is a correlation between prices and enrollment patterns. In the five states with the highest community college tuition in 2010–11—South Dakota, Massachusetts, Minnesota, New Hampshire, and Vermont—the average state's price was $5,328 and, on average, 24 percent of undergraduate fall enrollment was in community colleges. In the five states with the lowest community college tuition—Arizona, North Carolina, Texas, California, and New Mexico—the average state's price was $1,551 and, on average, 52 percent of undergraduates were enrolled in community colleges in the fall. Figure 3 plots each state's community college enrollment rate against its average community college tuition during the 2010–11 academic year.[17]

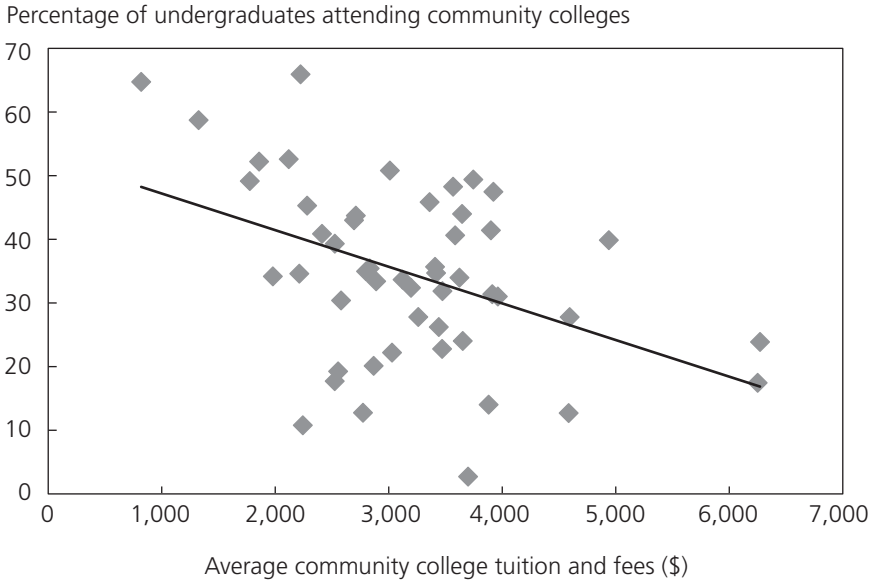
COMMUNITY COLLEGE FINANCE

Are Comparisons of Per-Student Costs across Institutions Reliable?

Available data on institutional revenues and expenditures are unfortunately not adequate for reliable comparisons of expenditures on specific activities across sectors. It is also not possible to precisely separate expenditures on graduate students from expenditures on undergraduates—much less spending on lower- versus upper-level undergraduates. A major problem with the available data is that the counts of students include only those registered for credit. Community colleges offer many non-credit programs. While the revenues generated and expenditures devoted to these programs are included in the totals, the participating students are not. This problem biases per-student revenues and expenditures upward relative to those computed for four-year institutions.

In addition, there are significant differences in the costs of educating students in different disciplines, regardless of the types of institutions in which they are enrolled. Thus, differences between institutions in the mix of available programs make a large difference in the cost of educating

FIGURE 3
Average Community College Tuition and the Percentage of Undergraduates Attending Community Colleges, Across States, 2010–11



Source: Thomas D. Snyder and Sally A. Dillow, *Digest of Education Statistics 2011* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 2012), table 226; Sandy Baum and Jennifer Ma, "Trends in College Pricing 2012," College Board, 2012.

students. According to a National Center for Education Statistics (NCES) report based on the Delaware Cost Study, disciplinary mix explains most of the variation in instructional costs across institutions. For example, instructional costs in mechanical engineering are about three times as high as those in English. The time members of the faculty spend teaching, the other responsibilities they have, and the number of students they teach also make a significant difference in per-student costs.[18]

Within the community college sector, technical occupational training is much more expensive than liberal arts education. At one college in upstate New York, the cost per credit hour and per degree granted for a student in the health science and technical areas is three to four times higher than it is for a typical liberal arts student.[19] Engineering

programs spend much more per student than do humanities programs. Unfortunately, the institutional-level data in the NCES' Integrated Postsecondary Education Data System (IPEDS)—on which most estimates of institutional costs, revenues, and subsidies rely—do not allow for accurate comparisons at the program level.

In addition to disciplinary mix, differences in missions across institutions make per-student figures unreliable as estimates of the difference between the amount spent on students enrolled in community colleges and the amount spent on those pursuing their first two years of undergraduate education at four-year institutions. There is broad agreement, however, that it costs more to educate upper-division undergraduates than lower-division undergraduates, and more yet to educate graduate students.

Why should there be cost differences? One issue is that teaching faculties in universities include graduate students in addition to part-time, full-time, adjunct, tenure-track, and tenured faculty members, instructors, and assistant, associate, and full professors. The tenured professors working with graduate students are paid more than the assistant professors teaching juniors and seniors, and much more than the graduate students staffing entry-level courses. Teaching loads vary considerably, both within and between institutions. Another issue is that instructional expenditures include departmental (unfunded) research, which arguably has minimal impact on the quality of lower-level courses. Class sizes are also generally larger for introductory level courses.

The general consensus in the literature is that it costs about one-and-a-half times as much to educate upper-level undergraduates as it does to educate lower-level undergraduates, and about three times more to educate graduate students. These ratios lead some researchers to estimate that costs per lower-division student at four-year public universities are similar to costs per community college student—or slightly lower, or slightly higher.[20] Even if expenditures per student are lower at community colleges, because community college students almost always pay lower tuition than do four-year college students, lower costs per student do not necessarily imply lower subsidies per student.

A recent attempt to compare spending on students in two- and four-year public colleges comes from Richard Romano and Yenni M. Djajalaksana.[21] Because their goal is to determine whether it would relieve pressure on state budgets if more students were to begin their studies at community colleges, the authors use public master's universities—the most likely alternative institutions for community college students—as the main comparison group. They estimate that, after subtracting the

research and public service components, education and general expenditures per student were almost $2,000 (22 percent) higher at the median public master's university than at the median public two-year college in 2005. However, adjusting for spending one-and-a-half times as much on upper-division as on lower-division students, expenditures per student were about $1,800 (20 percent) *less* in the four-year institutions.

With these caveats in mind, we begin by comparing data on the expenditures, revenue sources, and institutional subsidies per full-time equivalent (FTE) student, as well as faculty salaries, in the community college sector to other institutional sectors. These analyses are based on data from the Delta Cost Project, a multi-year project at the American Institutes for Research that has used data from IPEDS to create a large set of variables detailing institutional characteristics that can be compared over time.

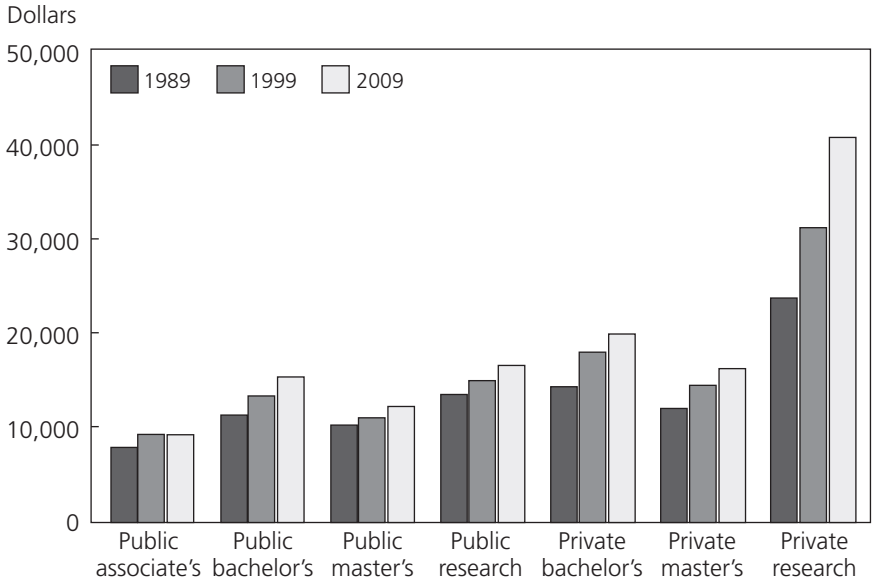
Following discussion of these data, we focus on developing a constructive approach to making the comparisons more meaningful. Assumptions about actual—and appropriate—spending differences on students at different levels are critical to drawing conclusions about the funding of students in community colleges and other institutions. In the absence of a clear method for estimating the appropriate ratios, we estimate what the ratios would have to be for the levels of revenue and expenditures at community colleges to be equivalent to the revenues and expenditures for lower-division students at four-year public universities.

Expenditures

This section discusses the types of expenditures that are directly related to the actual educating of students. In the Delta Cost Project data, there are three expenditure items that, taken together, constitute total education and related (E&R) spending. They are instruction, student services, and the "education share" of spending on a basket of other budget items—academic support, institutional support, and operations and maintenance.[22]

Even when only looking at E&R expenditures, large differences exist across institutions, as shown in Figure 4 (page 84). At community colleges, since 1989, E&R expenditures have grown at an average annual rate of 0.8 percent after adjusting for inflation, reaching $9,348 per FTE student in 2009. In every year during that time period, community colleges had lower E&R expenditures per FTE student than did each of the other sectors (even without considering non-credit enrollees). Indeed, in every one of those years and in every subcategory of

FIGURE 4
Total Education and Related (E&R) Expenditures per FTE Student by Carnegie Sector, 1989, 1999, and 2009 (in 2009 dollars)



Source: The Delta Cost Project, American Institutes for Research; calculations by the authors.

TABLE 3
Total Education and Related (E&R) Expenditures per FTE Student by Carnegie Sector, 1989, 1999, and 2009 (in 2009 dollars)

	1989	*1999*	*2009*
Public associate's	$7,999	$9,383	$9,348
Public bachelor's	$11,443	$13,480	$15,504
Public master's	$10,376	$11,152	$12,360
Public research	$13,638	$15,112	$16,731
Private bachelor's	$14,462	$18,143	$20,079
Private master's	$12,149	$14,612	$16,391
Private research	$23,911	$31,405	$41,019

Source: The Delta Cost Project, American Institutes for Research; calculations by the authors.

E&R spending—instruction, student services, and the "education share" of other expenditures—community colleges spent less per FTE than did each of the other sectors. (The one exception was in 1996, when community colleges spent $1,000 per FTE student on student services, compared to $965 at public master's institutions.) The gap between E&R expenditures per FTE at private research universities and E&R expenditures per FTE in each of the other sectors has increased markedly since 2000; the gap between public master's universities and public associate's colleges has not.

Revenue

In addition to spending less, community colleges also bring in less revenue per FTE student (even without considering non-credit enrollments) than do institutions in any of the other sectors. Figure 5 (page 86) shows that in all sectors, revenue per FTE student increased from 1989 to 2009.[23] Revenue per FTE student grew at an average annual rate of 1.2 percent at community colleges, compared to 0.9 percent in public master's institutions and 1.5 percent in public research universities.

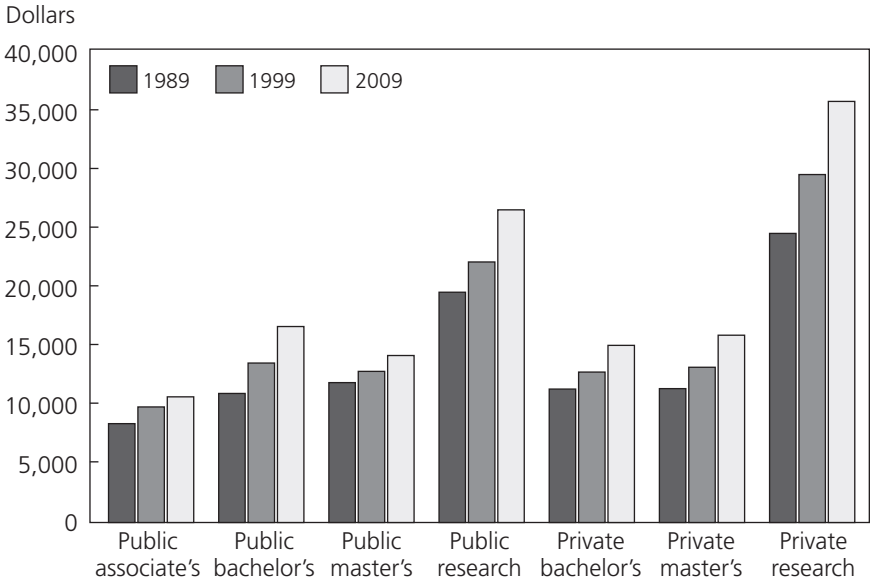
In 2009, 58 percent of the revenues of community colleges came from state and local appropriations.[24] This compares to 45 percent, 43 percent, and 34 percent in the public bachelor's, public master's, and public research sectors, respectively. (State and local appropriations to private institutions are extremely small.) State appropriations constituted a much larger portion of the budgets in all four public sectors twenty years ago than they do today, but community colleges have been most dependent on this source of funding as far back as the data go.

At community colleges, the decrease in funding from state and local appropriations has been accompanied by a rise in tuition revenue per FTE student, net of institutional grant aid. In 2009, community colleges' net tuition revenue per FTE student stood at $2,907, which was considerably lower than the same figure for any other sector—public or private—yet still represents a steady average annual growth rate of 3.1 percent since 1987. Unlike most private institutions and many public four-year institutions, community colleges don't benefit significantly from private gifts, investment income, and endowment earnings.

Salaries

The funding levels of community colleges are reflected in much higher student/faculty and student/staff ratios than those found in public

FIGURE 5
Total Revenue per FTE Student by Carnegie Sector, 1989, 1999, and 2009 (in 2009 dollars)



Source: The Delta Cost Project, American Institutes for Research; calculations by the authors.

TABLE 4
Total Revenue per FTE Student by Carnegie Sector, 1989, 1999, and 2009 (in 2009 dollars)

	1989	*1999*	*2009*
Public associate's	$8,398	$9,817	$10,675
Public bachelor's	$10,963	$13,546	$16,648
Public master's	$11,883	$12,839	$14,186
Public research	$19,562	$22,132	$26,561
Private bachelor's	$11,335	$12,779	$15,048
Private master's	$11,373	$13,187	$15,911
Private research	$24,558	$29,559	$35,771

Source: The Delta Cost Project, American Institutes for Research; calculations by the authors.

TABLE 5
Composition of Revenues at Public Associate's Institutions, 1989, 1999, and 2009

	1989	*1999*	*2009*
Net tuition revenue	18%	22%	27%
State and local appropriations	72%	65%	58%
State and local grants and contracts	7%	8%	9%
Federal revenue net of Pell	5%	6%	7%

Source: The Delta Cost Project, American Institutes for Research; calculations by the authors.

TABLE 6
Composition of Revenues at Public Institutions, 2009

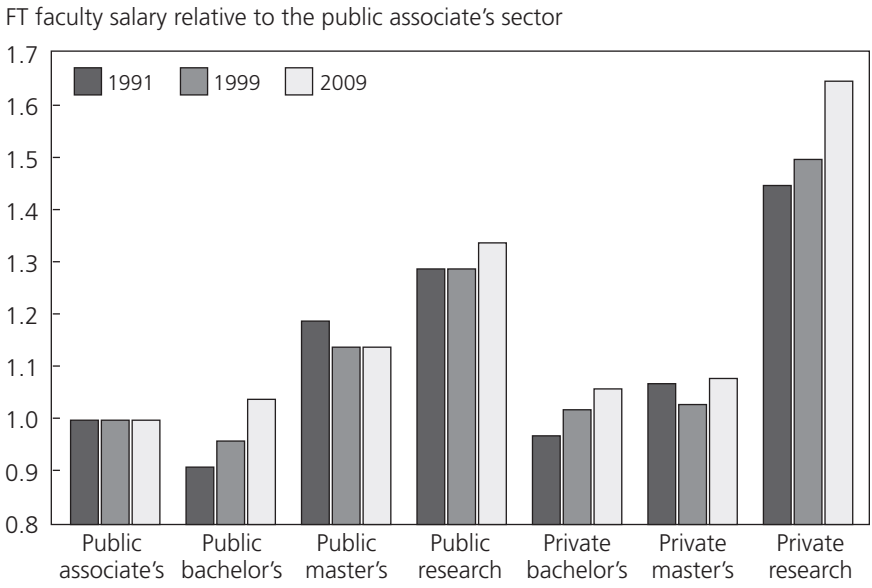
	Public Associate's	*Public Master's*	*Public Research*	*Public Bachelor's*
Net tuition revenue	27%	43%	32%	27%
State and local appropriations	58%	43%	34%	45%
State and local grants and contracts	9%	8%	12%	6%
Federal revenue net of Pell	7%	7%	22%	23%

Source: The Delta Cost Project, American Institutes for Research; calculations by the authors.

four-year colleges. In fall 2009, community colleges averaged 22 FTE students per FTE faculty member, compared to a ratio of 15-to-1 in public four-year institutions. When all staff were considered, the ratios were 10-to-1 at public two-year institutions and 5-to-1 at public four-year institutions. Given the variation in funding levels across states, it is not surprising that the student/faculty and student/staff ratios also differ considerably. California, which has the lowest community college prices and the largest fraction of students enrolled in that sector, had a student/faculty ratio of 27-to-1 at community colleges in 2009 compared to 17-to-1 in the public four-year sector. New Hampshire, which has the highest tuition levels, had a ratio of 9-to-1 at community colleges compared to 18-to-1 in the four-year sector.[25]

Comparisons of faculty salaries between the two- and four-year sectors are problematic because the job qualifications and responsibilities

FIGURE 6
Average Full-Time Faculty Salary Relative to the Public Associate's Sector, 1991, 1999, and 2009

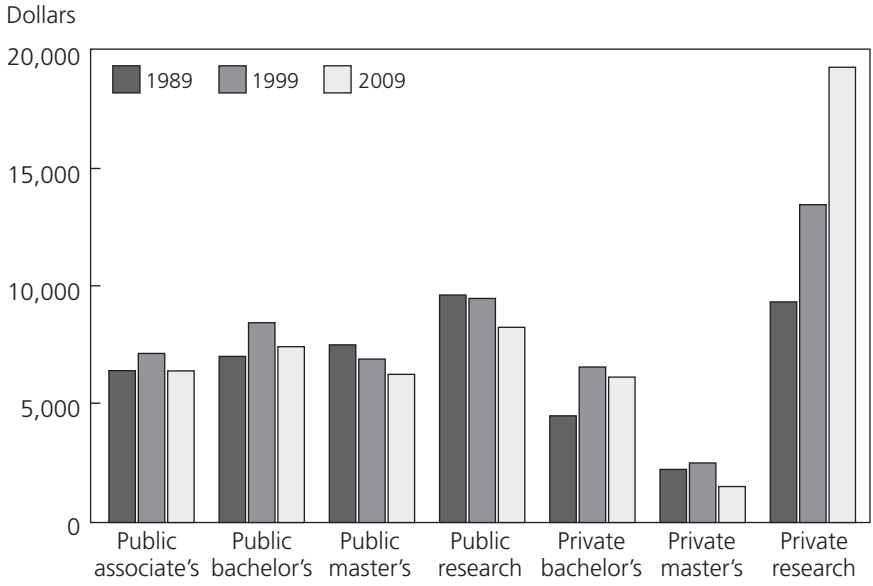


Source: The Delta Cost Project, American Institutes for Research; calculations by the authors.

are quite different. In fall 2003, when 73 percent of faculty in public four-year colleges and universities had PhDs, only 18 percent of those teaching in community colleges had this level of education. For 17 percent of community college faculty members, the highest level of education was a bachelor's degree or lower.[26] This was the case for only 3 percent of those teaching in public four-year colleges. Faculty at community colleges spend about 78 percent of their work time teaching, compared to 65 percent for those at public master's universities and 58 percent for faculty overall.[27] Research accounts for a significant portion of the time of university faculty, but is generally not part of the job description of community college faculty. However, community college faculty members may well spend more time on curricular development, student support, and pedagogical development than do faculty members at other institutions.

As shown in Figure 6, in both 1991 and 1999, the ratio of the average full-time faculty salary at public research institutions to that at community

FIGURE 7
Average Subsidy per FTE Student, 1989, 1999, and 2009
(in 2009 dollars)



Source: The Delta Cost Project, American Institutes for Research; calculations by the authors.

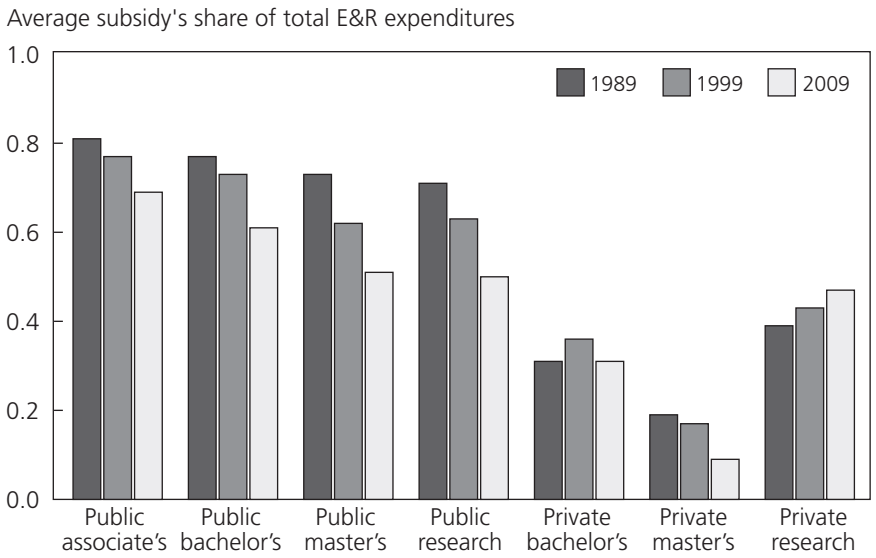
colleges was 1.29. By 2009, salaries in public research universities averaged 34 percent more than those at community colleges. However, the ratio of the average salary at public master's universities to that at community colleges was 1.19 in 1991, and 1.14 in both 1999 and 2009.

Subsidies

Most students are subsidized, with their tuition and fees covering less than the full cost of their education. The difference between average E&R spending and average net tuition (net of institutional grant aid) is a measure of the level of the average subsidy per student. Figure 7 shows this measure across sectors and over time.

The average subsidy per FTE student at community colleges ($6,440 in 2009) compares favorably to that of private master's institutions ($6,294). However, the average subsidy per student in 2009 was $8,293

FIGURE 8
The Average Subsidy's Share of Total E&R Expenditures, 1989, 1999, and 2009



Source: The Delta Cost Project, American Institutes for Research; calculations by the authors.

at public research universities and $7,469 at public bachelor's colleges. At community colleges, the average subsidy per FTE student has fluctuated over time, but in 2009, community colleges were subsidizing students' educations to roughly the same extent as they had in 1989. There is much more variation in subsidy levels across types of private institutions. In 2009, the average student in a private research university enjoyed a subsidy of $19,342, while the figure for private master's universities was only $1,528.

Due to the considerable differences in total E&R expenditures between sectors, the differences in dollar subsidies do not necessarily correspond to differences in the shares of E&R expenditures that are covered by the average subsidy. That share is displayed for each sector in Figure 8. In every year for which data are available, the average subsidy has covered a larger share of E&R expenditures at community colleges than in any other sector, despite having gradually declined from a high

of 81 percent in 1989 to a low of 69 percent in 2009. The average subsidy's share of E&R expenditures declined over that time period in all of the public sectors, but to a greater extent at research, master's, and bachelor's institutions than at community colleges. The large share of E&R expenditures that is covered by the average subsidy at community colleges translates directly into a low share being covered by net tuition. In other words, students bear a smaller share of the cost of their education at community colleges than in any other sector.

Subsidies to Private Colleges through Tax Exemption

As the data about subsidies discussed above indicate, students enrolled in private research universities receive significantly larger subsidies than students enrolled in either two- or four-year public colleges. Seminal studies on student subsidies by Gordon Winston in the 1990s indicated that students in the most selective, best-endowed private colleges received subsides averaging about $23,000 in 1995—far more than the total cost of education in public institutions.[28] This pattern persists today, but most of these subsidies are from private funds. From a policy perspective, it is really the allocation of public subsidies that is most relevant.

Not visible in the subsidy data discussed above are the savings enjoyed by private nonprofit institutions as a result of their nonprofit status—their exemption from property, sales, and income taxes, as well as the tax deductions from which donors benefit. Public colleges also benefit from this tax-exempt status, but the benefits flow primarily to four-year colleges, particularly the flagship institutions with foundations and loyal alumni. How best to estimate the value of these subsidies depends on what type of tax might most reasonably be imposed if the tax exemption were lifted.

Endowment Earnings. If private colleges and universities were for-profit entities, they would pay taxes on their profits. The logical way to measure profits would be in terms of increases in net worth—essentially, increases in endowment value. In 2010, private colleges held a total of about $245 billion in endowment assets. However, thirteen universities held half of these assets.[29] The total value of the assets held by these thirteen universities declined from $154 billion in 2008 to $115 billion in 2009, and increased to $124 billion in 2010.[30] In other words, a tax on "profits" would not yield predictable revenues.

The thirteen wealthiest institutions had endowment assets averaging almost $640,000 per FTE student in 2010—generating over $30,000 per student per year in revenues. However, most students receive much lower subsidies from endowments. In 2010, the median student in a private doctoral university benefited from $58,800 in endowment assets—or less than $3,000 in annual revenue. For students in private master's universities, the figure was $10,410 of assets (about $500 per student per year), and for those in private bachelor's colleges, it was $24,650 of assets (about $1,200 per student per year).[31]

It might be possible to impose a tax on the income from college endowments. If we assume that annual earnings average about 5 percent of asset values, all private college endowments would generate a total of about $12 billion in annual incomes. With federal corporate income tax rates ranging from 15 percent to 35 percent, a tax on these incomes could raise between $2 billion and $4 billion per year. Using a rate of return of 8 percent would yield tax revenues of $3 billion to $7 billion per year.

A 2007 Congressional Research Service (CRS) report indicated that taxing endowment income at the 35 percent corporate tax rate could yield about $18 billion in tax revenues.[32] However, the path of the economy in the intervening years suggests that this estimate is too high. After declining precipitously in 2008, the total value of private college endowments had recovered to about 93 percent of the 2007 value by 2010.[33] Starting with the $340 billion asset value that is the basis of the CRS calculation and adjusting for the decline yields a total current value of about $316 billion. The 15.3 percent return for 2007 reported by CRS was an anomaly. According to the National Association of College and University Business Officers and Commonfund Institute, the average ten-year return of U.S. higher education endowments and affiliated foundations for the period ending June 30, 2011, was 5.6 percent.[34] Taxing an annual 5.6 percent return of $17.7 billion at 35 percent would yield tax revenues of about $6.2 billion.

No such tax on income applies to museums, hospitals, or other endowed nonprofit institutions. Moreover, this would be a tax on endowment earnings—not a tax on profits. Because institutional expenditures tend to equal total revenues—after allowing for maintenance of the purchasing power of the endowment—taxing profits would be unlikely to generate significant revenues.

Public universities held a total of about $74 billion in endowment assets in 2010, which was about $13,000 in assets or just over $600 in revenue per FTE student per year. As is the case in the private sector,

these assets are highly concentrated in a few institutions. Nine universities have one-third of the endowment assets, and the wealthiest twenty-one have one-half.[35] While the largest endowment per student generates almost $9,000 per student per year, the tenth largest generates just over $2,000 per student.

Most tax-exempt private foundations are subject to an excise tax of 2 percent on their net investment income. This is the amount by which income, dividends and rents, and net capital gains exceed the costs associated with generating that income. In other words, the tax rate on foundation income is much lower than the tax rate on corporate profits, but the tax is on income—not the amount by which income exceeds costs. A 2 percent tax on the endowment income of private colleges would generate $240 million to $400 million per year.

Property Taxes. Nonprofit colleges are also exempt from property taxes. The fact that many institutions make payments to local governments in lieu of property taxes, and the variation in property values and in property tax rates across regions, make estimating the associated subsidy virtually impossible.

Tax Exemption for Donations and Exclusion of Interest on Bonds for Private Education Facilities. The absence of tax revenues on interest paid by educational institutions on facilities bonds cost the federal government about $2.1 billion in 2011.[36] The tax expenditure for the deductibility of charitable contributions to educational institutions is about $3.5 billion. Not all of these benefits accrue to colleges—or to private colleges. But these two provisions could contribute about $4 billion in tax subsidy to private colleges.

Sales Taxes. Nonprofit colleges and universities are exempt from sales taxes. There is no simple way to estimate the value of this exemption.

If we assume the most extreme case—that private colleges receive about $10 billion per year in tax subsidies, this amounts to a subsidy of approximately $3,100 for each of the 3.2 million FTE students enrolled in this sector. However, as noted, these subsidies are concentrated on a small percentage of the students in the sector. The thirty-four private institutions with endowment assets per student (including both undergraduate and graduate students) exceeding $300,000 in 2010 enrolled about 178,000 of the sector's 3.2 million FTE students—less than 6 percent. The students in the other 2,900 private institutions receive much

smaller subsidies than these lucky few. As discussed above and developed further below, it is also likely that graduate students enjoy a disproportionate share of the subsidy, and upper-division undergraduates benefit more than lower-division undergraduates.

Accounting for Differences in the Level of Students

The previous sections have compared per-student revenues and expenditures across institutions that educate very different mixes of students. In addition to important disciplinary variation, community colleges educate only lower-division undergraduates while all four-year institutions also enroll upper-division undergraduates and universities enroll master's, doctoral, and professional students as well. As a result, simple per-student comparisons exaggerate the relative lack of resources at community colleges.

The key question in determining whether more money is spent on lower-division undergraduates at universities than on community college students is the ratio of spending per upper-division undergraduate and graduate student to spending per lower-division undergraduate in universities. If advanced students benefit from a very disproportionate share, then spending on lower-division undergraduates at universities and community college students may be similar—or the latter may, as some researchers have concluded, even be higher. Unfortunately, the data necessary to establish the actual ratio are not available. So in order to gain more insight into the resources devoted to community college students relative to those in other institutions, instead of taking the common approach that assumes spending in other institutions is one-and-a-half times higher, we engage here in a hypothetical exercise.

We take the approach of asking what the ratio of spending on advanced students to spending on lower-division undergraduates would have to be for per-student expenditures on lower-division undergraduates in other sectors to be as low as they are at community colleges.[37] In other words, we start with the average costs of education at community colleges. Knowing the approximate number of students in other sectors who are at the first- and second-year level, we can estimate how much these institutions would be spending on this group if they were spending the same amount per student as community colleges spend. All of their remaining expenditures would then be devoted to advanced students, and we can calculate the implied level of spending per advanced student. If this exercise suggested that they would be spending the same amount

on students at all levels, we would conclude that this is unlikely and that in reality, they are probably spending *less* per lower-division student than community colleges are, while focusing more funding on the more advanced students. If the exercise suggested that they would be spending six times as much per advanced student as per lower-division student, we would conclude that this is also unlikely and that in reality, they are probably spending considerably *more* per lower division student than community colleges are, while still having resources left over to spend even more at the upper levels.

A simpler example may help to clarify the concept of this exercise. Suppose we were interested in estimating how much coed colleges spend on women's athletics relative to the amount spent at women's colleges, but the data would not allow a clear separation between men's and women's sports. We could easily take total expenditures on athletics at women's colleges and divide by the number of students to find expenditures per woman. In Table 7, the $500 of total athletic expenditures on 100 women equals $5 per woman.

For the coed institution, we could assume that spending on men is, for example, twice as high as spending on women, and then find out how much would be left over for the women. But if we wanted to avoid choosing a rather arbitrary number, we could instead assume that the coed institution, like the women's college, spends $5 per woman. In the simple example in Table 7, for Coed College A, this would require

TABLE 7
Example of Thought Experiment about Athletic Spending

	Women's College	*Coed College A*	*Coed College B*
Number of women	100	50	50
Number of men	0	100	100
Total athletic spending	$500	$1,500	$750
Athletic spending per student	$5	$10	$5
Athletic spending on women at $5 per	$500	$250	$250
Remaining athletic spending	$0	$1,250	$500
Implied spending per man	$0	$12.5	$5
Implied male/female ratio	—	2.5	1.0

$250 of the $1,500 athletics budget, leaving $1,250 for the 100 men—or $12.50 per man. In other words, if Coed College A spent the same amount per woman as the women's college, they would be spending 2.5 times as much per man as per woman—a ratio that is higher than might be expected or accepted. It is more likely that this college is spending more than $5 per woman and less than $12.50 per man.

Coed College B provides a different example. Its athletic budget is $750 and if $250 is going to women, there is $500 left over for the 100 men. The $5 per man would be exactly equal to the $5 per woman. This is also unlikely, given the nature of football and other men's sports, so we might assume that this college is actually spending less than $5 per woman—and that female athletes would enjoy more resources at the women's college.

In the spirit of this example, we have calculated what the ratio of E&R spending on advanced students to E&R spending on lower-division students would have to be if it were true that it costs the same amount to educate lower-division undergraduates in other sectors as it does at community colleges.[38] Using the E&R expenditures per FTE student figure for community colleges in 2008, along with the other sectors' shares of all students who are lower-division undergraduates, we have estimated the amount of E&R expenditures per FTE that must have gone to advanced students in those other sectors *if* it is true that the cost of educating lower-division undergraduates is equal across all sectors.[39] The results of this exercise are shown in Table 8.

These estimates suggest that if it were true that the amount community colleges spend on lower-division undergraduates is the same as the cost of educating similar students in all of the other sectors, then the cost of educating advanced students would have to be only 1.4 times as high as the cost of educating lower-division students at public master's universities, twice as high at public research universities, but almost six times as high at private research universities. The implication is that public master's universities probably spend about as much on lower-division undergraduates, private research universities certainly spend more, and the other sectors probably spend somewhat more, but the exact difference is unclear. These estimates of course ignore any impact on lower-division students of studying in the same institution with more advanced students.[40]

We have repeated the exercise for state appropriations, focusing only on public institutions. The results are shown in Table 9.

The estimates in Table 9 suggest that both public research and public bachelor's institutions receive significantly higher appropriations than

TABLE 8
Hypothetical Education and Related Expenditures per FTE Advanced Student, by Carnegie Sector, 2007–08 (in 2009 dollars)*

Carnegie Sector	*E&R Expenditures per FTE Student at CCs*	*Residual E&R Expenditures per FTE Advanced Student*	*Implied Ratio of Advanced Student to Lower-Division UG E&R Expenditures per FTE*
Public research	$9,481	$19,350	2.04
Public master's	$9,481	$13,288	1.4
Public bachelor's	$9,481	$21,148	2.23
Public associate's	$9,481	—	—
Private research	$9,481	$53,347	5.63
Private master's	$9,481	$19,478	2.05
Private bachelor's	$9,481	$30,131	3.18

*Residual E&R expenditures per FTE advanced student are calculated as follows:

$$\frac{\left(\begin{array}{c}\textit{ER Expenditures in}\\ \textit{Specified Sector}\end{array}\right) - \left(\begin{array}{c}\textit{ER Expenditures}\\ \textit{per FTE CC Student}\end{array}\right) \times \left(\begin{array}{c}\textit{FTE Lower Division UGs}\\ \textit{in Specified Sector}\end{array}\right)}{\textit{FTE Advanced Students in Specified Sector}}$$

Source: The Delta Cost Project, American Institutes for Research; U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2007–08 National Postsecondary Student Aid Study (NPSAS:08); calculations by the authors.

public associate's and public master's institutions for the education of lower-division undergraduates. The public bachelor's sector is relatively small, but it is focused on undergraduate students—and their appropriations would allow them to spend three times as much on advanced students as on lower-division students using the community college benchmark. Since 19 percent of the FTE students in public research universities are graduate students, the ratio of 2.91 does not imply as large a difference—but still suggests that there are more state funds available for lower-division undergraduates than is the case at community colleges. Public master's institutions—the most likely four-year alternative for community college students—are not so well funded and students enrolling in this sector do not appear to benefit from significantly more public funding than they would have in two-year institutions.

TABLE 9
Hypothetical State Appropriations per FTE Advanced Student, by Carnegie Sector, 2007–08 (in 2009 dollars)*

Carnegie Sector	*State and Local Appropriations per FTE Student at CCs*	*Residual Appropriations per FTE Advanced Student*	*Implied Ratio of Advanced Student to Lower-Division UG Appropriations per FTE*
Public research	$4,209	$12,242	2.91
Public master's	$4,209	$7,895	1.88
Public bachelor's	$4,209	$12,611	3.00
Public associate's	$4,209	—	—

*Residual appropriation per FTE advanced student is calculated the same way that residual E&R expenditures per FTE advanced student are, the only difference being that appropriations are substituted for E&R expenditures in the equation.

Source: The Delta Cost Project, American Institutes for Research; U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2007–08 National Postsecondary Student Aid Study (NPSAS:08); calculations by the authors.

WHAT ARE THE RELEVANT COMPARISONS FOR DETERMINING EQUITY?

Even if we could more accurately determine how much funding is devoted to educating students in different sectors, we would need a standard for determining how much *should* be spent. This is a normative question that cannot be settled with evidence alone. However, it may be possible to construct a framework from which to approach the issue analytically. We first pose questions about what would constitute equal funding levels and then ask what considerations might affect whether equal dollars translate into equal treatment for the different students enrolled in each sector of higher education.

Defining Equal Funding

Equality could be defined in terms of average dollars spent on educating students, in terms of average *public* funding per student, or in terms of subsidies. Student outcomes are obviously a function of total resources, not of public resources alone. But unequal access to private resources may not be a feasible public policy target in higher education.

It certainly seems unfair that a small number of students coming from disproportionately affluent backgrounds enroll in private institutions with unusually ample resources. It is hard to imagine that marginal dollars spent on these students at their unusually wealthy institutions yield benefits anywhere close to what might be the case if the resources were transferred to less-advantaged students enrolled in public institutions.

Despite the fact that a portion of the subsidies that wealthy private institutions receive comes from public funding, it is not easy develop practical suggestions for reallocating these resources. These colleges and universities could surely enroll more qualified, low-income students, but even significant increases would not touch the lives of the vast majority of disadvantaged students. Alternatively, the institutions could allocate a portion of their funds to scholarship aid for local students enrolled elsewhere or to the development of programs at cash-strapped institutions in the area. These unlikely developments could have a greater impact, but would not replace broad-based public policy changes involving the allocation of public resources.

Whether or not we can precisely define how much public funding is going to each community college student in a technical occupational training program or in a general studies program and to each lower-division undergraduate, upper-division undergraduate, and graduate student in a public master's or doctoral university studying engineering or philosophy, state and local governments must make decisions about the equitable and efficient allocation of resources.

If there were equal spending on community college and four-year public college students, community college students would have to get higher subsidies, since their relatively low tuition leaves a larger gap. Low tuition (in combination with ample state and federal grant aid) is central to the mission of community colleges. As the access point to postsecondary education and with predominantly low-income students, community colleges cannot reasonably raise tuition to levels approaching those of four-year institutions. Equal subsidies to the two groups will yield lower spending at two-year institutions.

The Case for Unequal Spending and Subsidies

One idea behind the community college system as a route to a viable system of mass postsecondary education is that these institutions can educate students more cheaply than four-year institutions can. They are teaching colleges with no significant research agenda and they can rely

on faculty with lower-level credentials. Since teaching is the focus, faculty can teach more classes in this sector. Moreover, because they are generally not residential campuses, community colleges do not have to provide the array of amenities that are common in the four-year sector. While dormitories and dining halls may pay for themselves, other facilities and services for students whose lives are entirely on campus do not.

Community colleges are designed to make a part of the college experience easily accessible, both geographically and financially, to a broad range of students. Low prices and relatively low costs are parts of the strategy for making postsecondary education widely accessible. As discussed above, there are differences of opinion about whether spending on the education for lower-division undergraduates is really lower at community colleges. A very real question, however, is whether the characteristics of the student body and their academic and social needs require a different perspective on determining adequate resources.

It is almost certainly true that upper-division undergraduates—and, even more so, graduate students—require some resources not necessary for a solid beginning postsecondary education, particularly in the form of faculty skills and research context. But among beginning postsecondary students, there is an argument to be made that the typical community college student requires more resources than the typical lower-division student at, say, a public flagship university. Community college students generally come from lower-income backgrounds and have less academic preparation than their counterparts at four-year institutions.

Because of their socioeconomic and academic backgrounds, community college students are likely to need more remedial courses and to be more dependent on student support services in order to succeed in their studies than are lower-division students enrolled in four-year institutions. These circumstances compound the need for additional resources resulting from the fact that community college students are more likely to be engaged in vocational training in technical fields than are students at four-year institutions.

The low-income backgrounds of most community college students raise the question of whether equitable postsecondary funding requires compensation for inadequate access to resources earlier in life. The resources devoted to elementary and secondary education vary dramatically across school districts, but it is not possible to make general statements about the spending on low-income versus affluent students. In 2005–06, when average spending per student in the United States was $9,501, the average for high-poverty districts was $10,318—slightly lower than the $10,440

in low-poverty districts, but higher than the $8,731 to $9,070 in districts with intermediate levels of poverty.[41] In other words, generalizations about the resources devoted to the education of students before they arrive on college campuses are not likely to be accurate. That said, there is considerable evidence that the out-of-school resources, including enrichment spending by families in addition to community resources, are highly unequal and have grown more so over time.[42] It is hard to argue that "equal" treatment does not involve some level of compensatory funding.

The idea that low-income students need more resources in order to achieve outcomes approaching those of more affluent students has a long history in discussions of elementary and secondary school funding. There is widespread agreement that students for whom resources outside of the school environment are most limited and for whom other sources of enrichment are scarcest are most vulnerable to inadequately resourced schools.[43]

But there is no consensus that any amount of money would be able to close the gaps—or about how far additional money would go in narrowing those gaps. Even if there were a consensus with regard to K–12 education, it is not clear that the conclusions would transfer to postsecondary education.

The goals for high school outcomes are fairly standard across students. High school graduates should be college- and career-ready. Common core standards will make this consistency even clearer. But the range of outcomes sought by postsecondary students is much wider. Many community college students seek short-term certificates or other forms of job training. Some seek to transfer to four-year institutions. It is more expensive to train people for technical occupations than to teach a general liberal arts curriculum on the way to a bachelor's degree. But it is more expensive to have sophisticated science labs for advanced students than to teach people basic mathematics.

In addition to considering the equity implications of funding differences for public two-year and four-year students, it is important to examine efficiency considerations. What are the marginal benefits—to the individuals and to society—of additional investments in college students in different sectors? Could more resources devoted to community colleges improve credential attainment among students with disappointingly low completion rates? Should we focus resources on the students most likely to complete high-level STEM degrees or on those who will struggle to be productive members of the labor force if not provided with a stronger support system?

Aside from the rather obvious issue discussed above of the low marginal benefit of the extraordinary resources focused on a very small minority of students in the most elite institutions, these comparisons are difficult to make. It may be more constructive to focus on the adequacy of funding for community colleges and their students, rather than just on the distribution of the funding within higher education. Particularly in the current environment of diminished funding for education, it seems clear that at least at the federal level, there are public expenditures other than those on public flagship universities that would be better sources of increased revenues for community colleges. State budgets are more constrained, but there is no reason to focus only on the choices within the domain of education. The urgency of the problem is made more visible by cutbacks in course offerings and the resulting flight of students to the for-profit sector. A well-funded and strengthened two-year public college system is important for stemming the tide of students into expensive programs and institutions that too often leave them with unsustainable levels of debt, in addition to putting the nation's goal of a more educated, better-trained workforce into reach.

CONCLUSION

A definitive discussion of the adequacy of community college funding relative to other sectors of higher education would require a more nuanced data collection system allowing for the breakdown of expenditures across programs and years of study. Without these data, it is not possible to reliably compare the resources devoted to community college students to those devoted to similar students in other sectors. That said, some indicators point to problematic circumstances.

We cannot state definitively how educational expenditures per community college student compare to expenditures on lower-division students at four-year public colleges, although it appears that research universities do spend more educating their lower-division students. In any case, it is clear that expenditures have risen more rapidly at public research universities than in the sectors that educate more vulnerable student populations. Over the twenty years from 1989 to 2009, education and related expenditures per FTE student increased 23 percent in real terms at public research universities, 19 percent at public master's universities, 35 percent at public bachelor's colleges, and 17 percent at community colleges. There has been no increase at community colleges over the most recent decade.

State and local appropriations have actually been much more stable for community colleges than for public four-year colleges. Revenues per FTE community college student from this source were 3 percent higher in 2009 than in 1989, while there were declines of 20 percent at public research and 26 percent at public master's universities. Net tuition revenue has grown rapidly to compensate in these sectors, but that is not a viable strategy for community colleges.

It may be more constructive to focus on whether adequate resources are being devoted to the postsecondary education of disadvantaged students rather than on the comparison of the public funds—or the total amount of funding—devoted to educating students in different types of colleges. However, the lack of consensus on defining adequate funding in the K–12 education context provides a window into the even more difficult task in the realm of higher education. Because there is a consensus that students should not have to make a financial contribution to their own elementary/secondary education, only a total figure is needed—not a breakdown of that figure between the social and private responsibilities. In addition, the desired outcomes of postsecondary education are much more varied than those for K–12.

In other words, discussions of whether or not public funding of community colleges is adequate are likely to remain value-based debates for the foreseeable future. Improving the analytical framework for these debates is perhaps the most promising step for increasing the likelihood of moving public priorities in the direction of assuring educational opportunity. This effort requires several components:

1. *Better data.* National data should allow better separation of institutional expenditures on educating students at different levels of study (lower-level undergraduate, upper-level undergraduate, and graduate) and in different programs of study.
2. *Defining efficiency considerations.* Attempts to measure the social impact of increased levels of postsecondary educational attainment are widespread. Research on the differential impact of education at different types of institutions, in different programs, and for students with different characteristics and levels of preparation is less developed. Determining where society should put its marginal resources requires making hard choices among desirable goals and productive investments.

   The public discourse currently reflects strong differences of opinion. On one hand, many people believe we are under-investing

in at-risk students who have the potential to reap large benefits and make significant contributions if they are provided with strong postsecondary opportunities. Others contend that we are wasting resources by subsidizing students to enroll in colleges where they have little chance of earning credentials.

We need more evidence about the potential for alternative allocations of resources and alternative institutional structures to influence outcomes for at-risk students. We must also examine more carefully the return on investments in different types of students in different courses of study and in different types of institutions. The issue of at what stage of life additional investment is most productive is very relevant to this discussion.

3. *Defining equity considerations.* In addition to focusing on the loss of productivity and increased need for social support systems resulting from under-investment in the postsecondary education of disadvantaged students, we should strengthen the equity arguments underlying concerns about community college students and those enrolled in other institutions struggling to provide educational opportunity to lower-income, less-prepared students.

   Pointing to the unsatisfactory outcomes of community college students would not be a sufficient argument, even if we could assert with confidence that more public resources are targeted at more privileged students. Better use of limited resources by both institutions and the students themselves surely has some potential to improve outcomes.

   Perhaps the strongest equity argument for assuring that students from low-income backgrounds receive larger public subsidies than others do is the scarcity of private resources available to them. The question need not be just whether low-income students need more resources. There is a large and growing gap between the expenditures that middle- and upper-income families and communities devote to their young people and the resources available to those from low-income backgrounds. Compensating for these differences becomes more challenging the later in life the efforts are made.

There is broad consensus that our economy will require an increasing number of workers with postsecondary credentials, including many certificates and associate degrees. Establishing a secure middle-class standard of living without any postsecondary experience is very difficult. And many of the students who enroll in community colleges do

not emerge with credentials. Additional resources, more effective use of those resources, and better guidance and support for students in both public two-year colleges and public four-year colleges serving disadvantaged and under-prepared students are surely necessary.

Whether or not funding formulas disadvantage community college students, it is clear that the shift away from a public priority on providing quality postsecondary educational opportunities to all who can benefit has a disproportionate impact on students without access to private resources to compensate for the loss of public investment. Students enrolling in community colleges and broad access four-year public institutions need better academic preparation and better-resourced institutions. Both their futures and the future of our economy and our society depend on our success in finding better ways to support their preparation for productive and financially secure lives.

NOTES

1. "About Community Colleges: Historical Information," American Association of Community Colleges, accessed August 4, 2012, http://www.aacc.nche.edu/aboutcc/history/Pages/default.aspx.

2. Truman Commission, *Higher Education for American Democracy.* Quoted in Philo Hutcheson, "The Truman Commission's Vision of the Future," *Thought and Action* (Fall 2007): 107–15.

3. Thomas D. Snyder and Sally A. Dillow, *Digest of Education Statistics 2011* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 2012), table 199.

4. Ibid., table 207.

5. Ibid., table 238.

6. U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, Advance Release of Selected 2012 Digest Tables, table 201.5.

7. Snyder and Dillow, *Digest of Education Statistics 2011,* table 203.

8. U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2007–08 National Postsecondary Student Aid Survey (NPSAS:08). Figures generated using the NCES's online Data Analysis System (DAS).

9. Ibid.

10. U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS): Completions Component. Figures generated using the NCES's online IPEDS Data Center.

11. Snyder and Dillow, *Digest of Education Statistics 2011*, table 296.

12. Anthony P. Carnevale, Stephen J. Rose, and Andrew R. Hanson, *Certificates: Gateway to Gainful Employment and College Degrees* (Washington, D.C.: Georgetown University Center on Education and the Workforce, 2012).

13. Don Hossler, Doug Shapiro, Afet Dundar, Mary Ziskin, Jin Chen, Desiree Zerquera, and Vasti Torres, *Transfer and Mobility: A National View of Pre-Degree Student Movement in Postsecondary Institutions* (Herndon, Va.: National Student Clearinghouse Research Center, 2012).

14. Kevin Dougherty, *The Contradictory College: The Conflicting Origins, Impacts, and Futures of the Community College* (Albany, N.Y.: State University of New York Press, 1994).

15. Synder and Dillow, *Digest of Education Statistics 2011*, table 226.

16. Sandy Baum and Jennifer Ma, "Trends in College Pricing 2012." The College Board, 2012.

17. Snyder and Dillow, *Digest of Education Statistics 2011,* table 226; Baum and Ma, "Trends in College Pricing 2012."

18. Michael Middaugh, Rosalina Graham, and Abdus Shait, *A Study of Higher Education Instructional Expenditures: The Delaware Study of Instructional Costs and Productivity*, NCES 2003-161 (Washington, D.C.: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, June 2003).

19. Richard M. Romano, Regina Losinger, and Tim Millard, "Measuring the Cost of a College Degree: A Case Study of a SUNY Community College," Cornell University ILR School, August 18, 2010.

20. David Breneman and Susan Nelson, *Financing Community Colleges: An Economic Perspective* (Washington, D.C.: The Brookings Institution, 1981); Estelle James, "Product Mix and Cost Disaggregation: A Reinterpretation of the Economics of Higher Education," *Journal of Human Resources* 13, no. 2 (Spring 1978): 157–86; June O'Neill, *Resource Use in Higher Education* (New York, N.Y.: Carnegie Commission on Higher Education, 1971); Cecilia E. Rouse, "Do Two-Year Colleges Increase Overall Educational Attainment? Evidence from the States," *Journal of Policy Analysis and Management* 17, no. 4 (1998): 595–620.

21. Richard Romano and Yenni M. Djajalaksana, "Using the Community College to Control College Costs: How Much Cheaper Is It?" Cornell University ILR School, 2010.

22. In the Delta Cost Project data, the "education share" of expenditures on academic support, institutional support, and operations and maintenance is calculated by taking the share of expenditures on instruction and student services in expenditures on instruction, student services, research, and public service, and then multiplying that fraction by spending on academic support, institutional support, and operations and maintenance.

23. The total revenue figure displayed in Table 4 and Figure 5 includes tuition revenue net of institutional grants, state and local appropriations, state and local grants and contracts, and federal revenue net of Pell grants. To facilitate comparisons

across institutional sectors, private gifts, investment returns, and endowment earnings, as well as revenues from auxiliary, hospitals, and other independent operations, have been omitted.

24. Revenues from auxiliary enterprises, hospitals, and other independent operations and from private gifts, grants, contracts, investment returns, and endowment earnings are excluded. The first group is approximately self-supporting and fluctuations in the second group make it difficult to evaluate the shares of other revenue sources when they are included.

25. Snyder and Dillow, *Digest of Education Statistics 2011*, table 261. Note that these ratios include both upper-division and lower-division undergraduates at public four-year institutions, where introductory level classes tend to be larger than upper-level classes.

26. Ibid., table 267.

27. Ibid., table 265.

28. Gordon Winston, "Subsidies, Hierarchy and Peers: The Awkward Economics of Higher Education," *Journal of Economic Perspectives* 12, no. 1 (Winter 1999): 13–36.

29. These universities were Harvard, Yale, Princeton, Stanford, MIT, Columbia, Northwestern, Penn, University of Chicago, Notre Dame, Duke, Emory, and Washington University.

30. National Association of College and University Business Officers, *NACUBO-Commonfund Endowment Study 2011* (Washington, D.C.: National Association of College and University Business Officers, 2011).

31. Baum and Ma, "Trends in College Pricing 2011," The College Board, 2011.

32. Jane G. Gravelle, "Tax Issues and University Endowments," Congressional Research Service, August 20, 2007.

33. Baum and Ma "Trends in College Pricing 2012."

34. National Association of College and University Business Officers and Commonfund Institute Study of Endowments, January 2012, available online at http://www.nacubo.org/Documents/research/2011_NCSE_Public_Tables_Avg_One_Three_Five_and_Ten_Year_Returns_Final_January_13_2012.pdf.

35. The nine are University of Michigan–Ann Arbor, University of Virginia–Charlottesville, University of Texas–Austin, University of Minnesota–Twin Cities, University of Pittsburgh, University of North Carolina–Chapel Hill, Ohio State University, University of Washington–Seattle, and Purdue University.

36. Office of Management and Budget, *Fiscal Year 2013 Analytical Perspectives: Budget of the U. S. Government* (Washington, D.C.: U.S. Government Printing Offices, 2012).

37. From here on, the term "advanced students" is used to refer to upper-division undergraduates, graduate students, and first-professional students.

38. Because we are unable to separate spending on graduate students from spending on undergraduates, we make the obviously inaccurate simplifying assumption that average spending on upper-division undergraduates is the same as spending on

graduate students. Since research universities have relatively more graduate students than master's universities, the ratios generated for that sector will over-estimate the amount they would be spending on advanced undergraduates.

39. According to data from the most recent National Postsecondary Student Aid Study (NPSAS:08), 92 percent of the students at community colleges were first- or second-year undergraduates in 2007–08. Assuming all of the students are in this category is not far from the reality.

40. It is also important to note that the ratio of graduate to undergraduate students differs markedly across sectors. We are unable to control for this difference because of the absence of data on the breakdown of upper- and lower-division undergraduates. In 2008–09, 44 percent of students in the private research universities were graduate students, compared to 30 percent in private master's, 23 percent in public research universities, and 15 percent in public master's universities (Delta Cost Project, www.deltacostproject.com).

41. Susan Aud et al., *The Condition of Education 2012,* NCES 2012-045 (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, May 2012).

42. Greg Duncan and Richard Murnane, "Introduction," in *Wither Opportunity,* ed. Greg Duncan and Richard Murnane (New York: Russell Sage Foundation and Chicago: Spencer Foundation, 2012).

43. Alan B. Krueger, Eric A. Hanushek, and Jennifer King Rice, The Class Size Debate (Washington, D.C.: Economic Policy Institute, 2012); Frederick Mosteller, "The Tennessee Study of Class Size in the Early School Grade" *The Future of Children 5*, no. 2 (Summer/Fall 1995).