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Private and Public Contributions to Financing College Education

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CONGRESS OF THE UNITED STATES
CONGRESSIONAL BUDGET OFFICE

A
CBO
PAPER

JANUARY 2004

**Private and
Public
Contributions to
Financing College
Education**





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January 2004

Note

Numbers in the text and tables may not add up to totals because of rounding.



Preface

Over the past decade, the growth in the number of students attending college and sharp rises in college costs have led the Congress to supplement the financial aid provided by states, institutions, and employers. That increased federal assistance to students and their parents has taken a variety of forms, including expansion of the student loan program (to make federal loans available to middle-income families), reductions in interest rates on loans, increases in the maximum amount available in the Pell Grant program, creation of the Hope and Lifetime Learning education tax credits, and expansion of tax-advantaged vehicles for education savings. This Congressional Budget Office (CBO) paper—prepared at the request of the Senate Budget Committee—estimates how much students and families paid in college costs in the 1999-2000 academic year after accounting for all of that aid. Because a primary purpose of financial aid is to level the playing field among students and because the cost of college differs significantly for different types of institutions (for example, two-year public and four-year private schools), CBO breaks down its estimates by family income group and type of college.

Nabeel Alsalam of CBO's Health and Human Resources Division and Seth Giertz and Dennis Zimmerman of CBO's Tax Analysis Division prepared the paper under the supervision of G. Thomas Woodward, Robertson Williams, and Bruce Vavrichek. The paper benefited from comments by Ralph Smith and Paul Cullinan.

Juynne Linger and Leah Mazade edited the paper, and Christian Spoor proofread it. Maureen Costantino designed the cover and prepared the paper for publication. Lenny Skutnik produced the printed copies, and Annette Kalicki prepared the electronic versions for CBO's Web site (www.cbo.gov).

Douglas Holtz-Eakin
Director

January 2004



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Private and Public Contributions to Financing College Education

Introduction and Summary

The cost of four years of undergraduate education, including living expenses, now averages nearly \$80,000 at public colleges and over \$100,000 at many private institutions. Tuition and fees have risen steadily since 1980, fueling concern that college is becoming prohibitively expensive for many families. In two decades, tuition and fees at public universities more than doubled, from \$1,883 (in 2001 dollars) in 1980 to \$4,281 in 2001.

Because postsecondary education is highly valued in the job market, some policymakers fear that escalating college costs may impair the careers and earning potential of the nation's youth. They are particularly concerned about students from low-income families, whose college enrollment rates have traditionally been much lower than those of students from higher-income groups. In 2001, about 56 percent of 18- to 24-year-old high school graduates from low-income families enrolled in college compared with 84 percent of their counterparts from high-income families. Although enrollment rates for both groups are about 10 percentage points higher than they were in 1973, the gap between rates for the two groups has remained about the same.

Policymakers have reacted to the enrollment gap by widening access to higher education through a variety of financial aid programs and tax incentives for students and their parents. Taking those means of financing into account, this Congressional Budget Office (CBO) paper analyzes how students and their families pay for college and how college costs are allocated among the various payers—including those outside the family, such as governments and institutions. That task is complex because no single party pays the full cost of college and each party may use a variety of means to finance its share. The cost of federal loans, for example, is shared by the student borrower and the federal government. The cost of contributions by parents is effectively reduced by the federal gov-

ernment, which provides tax credits and savings incentives.

To measure and attribute such costs to the appropriate party, CBO developed a comprehensive measure of the “net price” of college (the “sticker price” minus financial aid). Previous approaches have calculated the net price as the cost of attendance minus federal, state, and institutional grants. A few studies have estimated the implicit subsidy embodied in federal student loans and deducted it from families' costs.¹ This analysis uses a more accurate method to estimate the subsidy from federal loans by accounting for the differences among the various loan types.

More important, CBO's method differentiates the net price that students pay using earnings and education loans from the net price that parents pay using earnings, savings, and loans (minus the portion offset by tax credits and the exclusion from taxation of some investment earnings). CBO also examines how the allocation of costs varies for students who attend different types of colleges (public two-year, public four-year, or private four-year schools) and for families in different income groups (less than \$30,000; \$30,000 to \$59,999; \$60,000 to \$89,999; and \$90,000 and above).

Several findings from CBO's analysis suggest that governmental and other nonfamily assistance makes up a particularly large share of financial support for students from low-income families. First, the share of education costs

1. See Michael S. McPherson and Morton Owen Shapiro, *Keeping College Affordable: Government and Educational Opportunity* (Washington, D.C.: Brookings Institution, 1991); Congressional Budget Office, *Student Aid and the Cost of Postsecondary Education* (January 1991), p. 57; and McPherson and Shapiro, *The Student Aid Game: Meeting Need and Rewarding Talent in American Higher Education* (Princeton, N.J.: Princeton University Press, 1998), p. 32.

borne by those students is as low as or lower than the share borne by students from higher-income families. Second, students from the lowest-income families on average work and borrow less while attending college than do students from the two middle-income family groups (compared with students from the highest-income group, they work and borrow slightly more). Third, the majority of students from low-income families are able to finance their college costs without exhausting the government-subsidized loans for which they are eligible. Fourth, students from the lowest-income group appear able to finance their education with only moderate support from their parents—in general, little more than the value of room and board for the half of all such students who live at home.

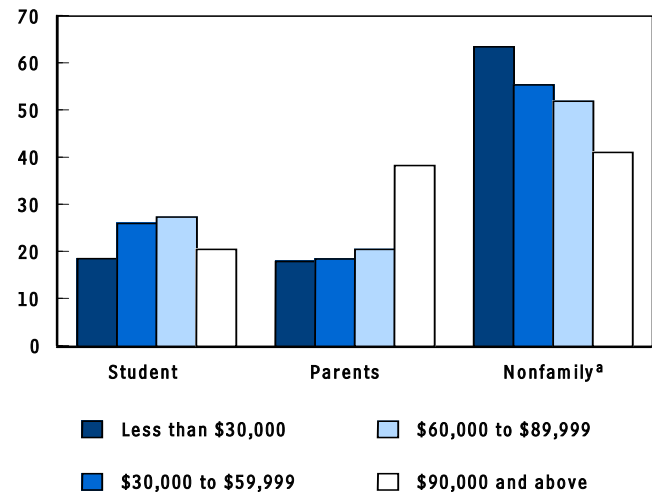
Although those results suggest that financial barriers are not a major obstacle to college attendance, they are not sufficient to rule out that possibility. CBO's analysis is based on data for people who attend college and excludes those who do not attend. It is possible that a person's decision not to attend college reflects difficulties in securing financing, such as fewer opportunities to work or the inability or unwillingness of the person's family to provide a level of support commensurate with what those who do attend college receive. Such financial constraints may indeed be a factor in the lower enrollment rates among young people from low-income families. Alternatively, those lower rates could derive from other factors, including inadequate preparation for college studies, lower expectations about the financial returns from education, lack of information about those expected returns and potential sources of support, or simply less interest in attending college.

Overall, CBO's analysis indicates that on average, first-year dependent students, regardless of family income group, bear less than 30 percent of the cost of their education (see Figure 1). Moreover, the cost burden for students from the lowest-income families is often smaller than or at least on a par with that faced by students from middle-income families. In fact, when all types of colleges are considered, students from the lowest-income group in academic year 1999-2000 paid just 19 percent of total costs (\$3,138), compared with 26 percent and 27 percent (\$5,144 and \$5,590) for students from the two middle-income groups, respectively, and 21 percent

Figure 1.

College Costs, by Payer and Family Income, Academic Year 1999-2000

(Percentage of total costs)



Source: Congressional Budget Office based on the National Center for Education Statistics' data analysis system for the 1999-2000 National Postsecondary Student Aid Study (available at www.nces.ed.gov/das/).

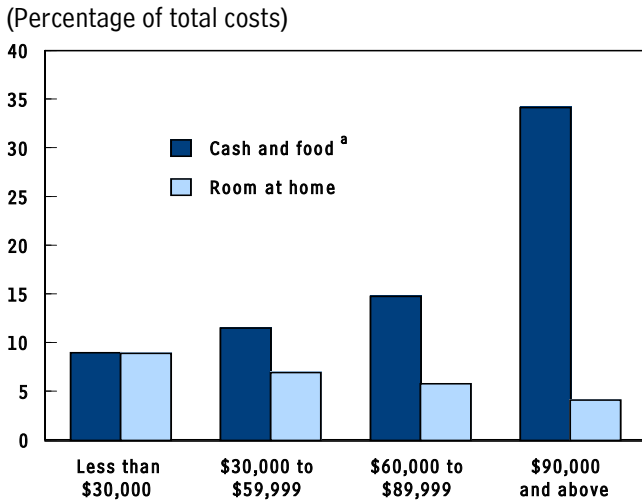
Note: Data are for full-time dependent students in their first undergraduate year. College costs cover two-year and four-year public colleges and four-year private institutions.

a. Nonfamily includes federal, state, institutional, and other payers.

(\$4,848) for students from the highest-income group. Another important finding is that first-year students from all four income groups used loans to finance similar proportions (40 percent to 45 percent) of their share of the costs. Overall, first-year students financed about 59 percent of their share of costs through their earnings. (Among the four income groups, that figure ranged from 55 percent to 60 percent.) Only for students at private four-year colleges did borrowing exceed earnings as a means of financing.

Parents bear about the same share of the expense—24 percent on average—that students do, but their contributions differ greatly by income group. In academic year 1999-2000, parents' contributions ranged from about 20 percent of costs for the lower three groups to 38 percent for the top group. About half of parents' contributions for students in the lowest-income group took the form of providing a room at home (see Figure 2).

Figure 2.
Parents' Share of College Costs, by Payment Type and Family Income, Academic Year 1999-2000



Source: Congressional Budget Office based on the National Center for Education Statistics' data analysis system for the 1999-2000 National Postsecondary Student Aid Study (available at www.nces.ed.gov/das/).

Note: Data are for full-time dependent students in their first undergraduate year. College costs cover two-year and four-year public colleges and four-year private institutions.

a. Net of tax benefits.

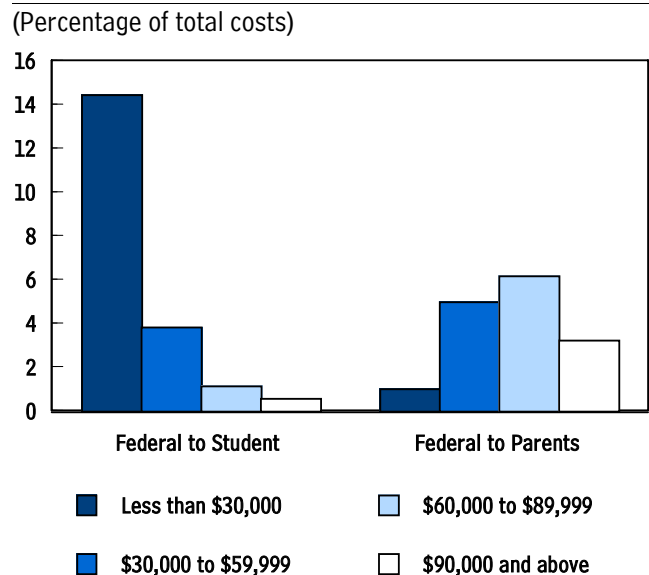
One of the largest sources of college financing is the subsidy provided by institutions in the form of tuition charges that are well below the cost of instruction. Termed a "general subsidy," it accounts for nearly one-third of college costs. At public institutions, the general subsidy is even larger—43 percent of costs in academic year 1999-2000—and is paid for by the state's taxpayers. Federal aid, in contrast, covered an average of only 9 percent (\$1,654) of total college costs during that period. Students from the lowest-income group receive the most benefit from federal aid, which in the 1999-2000 academic year accounted for 15 percent (\$2,606) of their costs (see Figure 3). For the upper-middle-income group, that number is still substantial—7 percent (\$1,485) in academic year 1999-2000—and is primarily in the form of tax credits for parents.

The support students receive reflects the choices made by students and parents. A particularly significant decision is which college to attend. Students from the lowest-income group are the most likely to choose public two-year col-

leges (see Figure 4); expenditures are substantially less for instruction at those institutions than at private four-year colleges and somewhat less than at public four-year schools. Two-year colleges often provide further savings by allowing students to live at home, and choosing an in-state public school allows students to take advantage of the substantial general subsidies those colleges provide. In contrast, students from the top income group are by far the most likely to select private colleges and among private-college students are the most likely to attend the most expensive schools.

As a result of those choices, college costs in academic year 1999-2000 ranged from an average of \$16,906 for students from the lowest-income group to \$23,558 for those from the highest-income group. The lowest-income students, therefore, had less to finance from savings, earnings, and loans and were able to pay for college with smaller contributions from their families.

Figure 3.
The Federal Share of College Costs, by Payee and Family Income, Academic Year 1999-2000



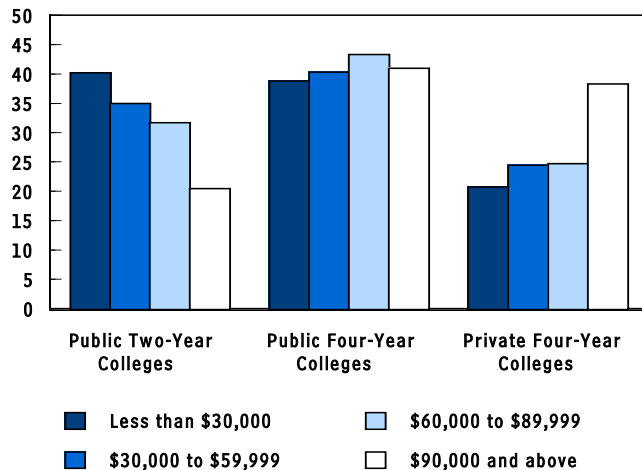
Source: Congressional Budget Office based on the National Center for Education Statistics' data analysis system for the 1999-2000 National Postsecondary Student Aid Study (available at www.nces.ed.gov/das/).

Note: Data are for full-time dependent students in their first undergraduate year. College costs cover two-year and four-year public colleges and four-year private institutions.

Figure 4.

College Enrollment, by College Type and Family Income, Academic Year 1999-2000

(Percentage of total enrollment)



Source: Congressional Budget Office based on the National Center for Education Statistics' data analysis system for the 1999-2000 National Postsecondary Student Aid Study (available at www.nces.ed.gov/das/).

Note: Data are for full-time dependent students in their first undergraduate year.

A major component of higher education represents an investment, with the returns accruing in the form of greater productivity (and income) for future workers. As such, education is a sacrifice of current consumption in exchange for a future return. One would suppose such an investment would be made whenever the returns were expected to exceed the costs. However, the final decision to pursue higher education may also be influenced by non-pecuniary factors.

The Cost of a College Education

College costs include more than just tuition.² For academic year 1999-2000, the sum per full-time student of expenditures for instruction and living expenses averaged

2. Colleges have multiple missions, which often include research and public service. Funds used for purposes other than instruction and its support are excluded from this analysis.

\$14,629 for public two-year colleges, \$19,701 for public four-year colleges, and \$27,027 for private four-year colleges (see Table 1). Expenditures differ as a result of factors such as class size and faculty's salaries and teaching loads. To analyze how college costs are allocated among the relevant parties, expenditures per student often provide a better basis than do tuition and fees, which are only loosely related to spending on instruction.

The economic cost of education includes not only what colleges spend on instruction but also what students forgo in income—what they would have earned had they not been in school. Forgone earnings are often larger than the direct costs of education, but they do not need to be financed. In contrast, living expenses do need to be financed, because they will be incurred regardless, but they do not represent an economic cost. In this analysis, the “cost of college” differs from the economic cost in that it includes living expenses but excludes forgone earnings. This study focuses, moreover, not on the cost of education as traditionally defined but rather on how education is financed.

Means of Financing College Costs

A variety of means are used to finance college costs, including earnings, savings, and borrowing (by students or parents) that receive no subsidy. But a large portion of college expenditures is financed with grants, savings, and borrowing that are subsidized by the federal or state governments, the colleges, and, to a lesser extent, employers. Eligibility for that aid is determined by various criteria.

Federal Aid

In fiscal year 2001, the federal government provided \$56 billion through various types of assistance to postsecondary students—grants, subsidized loans, tax credits, and tax-advantaged savings. Most of that total—\$33 billion—is accounted for by the loan portion of federal aid, which will be repaid in future years.

Some federal means of financing, such as Pell grants, are targeted toward students from low-income families (see Table 2 on page 6). Other means, such as the Hope and Lifetime Learning tax credits, focus assistance on middle-income families.

Table 1.**Average Cost for a Year of College, by College Type, Academic Year 1999-2000**

(Dollars per pupil)

	All Colleges	Public Two-Year	Public Four-Year	Private Four-Year
Institutions' Instructional Expenditures ^a	12,399	7,760	11,917	18,818
Living Expenses ^b				
Room and board	6,839	6,182	7,005	7,388
Books, transportation, and other	760	687	778	821
Subtotal	7,599	6,869	7,784	8,209
Total Average Cost per Pupil	19,998	14,629	19,701	27,027
Institutions' Instructional Expenditures ^a	12,399	7,760	11,917	18,818
Minus Tuition and Fees ^b	6,052	1,543	3,495	15,499
General Subsidy	6,347	6,217	8,422	3,319
Memorandum:				
Number of Students (Thousands)	1,090	355	445	290

Source: Congressional Budget Office based on National Center for Education Statistics, *Digest of Education Statistics, 2002*, Tables 343 and 345, and the National Center for Education Statistics' data analysis system for the 1999-2000 National Postsecondary Student Aid Study (available at www.nces.ed.gov/das/).

- a. Per full-time-equivalent student. Part-time students are counted as about 30 percent of a full-time student.
b. Average amount paid in their first year by dependent undergraduates who attended college full-time for the entire academic year.

Grants and Tax Credits. The Federal Pell Grant Program, established in 1972, is the major source of federal grants for students from low-income families.³ Generally, few students from families whose income is greater than \$40,000 qualify for Pell grants. Hope and Lifetime Learning tax credits are based on a student's qualified education expenses, regardless of the family's need. However, many low-income families do not benefit from the credits because they are available only to tax filers with positive federal tax liabilities and qualified tuition expenses net of federal grants. Hope and Lifetime Learning credits may be taken by independent students or by the parents of dependent students.

Stafford Loans. The Federal Stafford Loan Program offers assistance in two forms. The "subsidized" Stafford loan is

based on need, which is determined by a formula that takes into account the cost of education and a family's income. The government guarantees the loan and forgives the interest on it while a student is in college. Students who do not qualify for subsidized Stafford loans may borrow using the non-need-based, or "unsubsidized," Stafford loan.⁴ The borrowing limit for Stafford loans, subsidized and unsubsidized combined, is \$2,625 for first-year dependent students. (The limit is \$3,500 for second-year students and \$5,500 for third-year students and beyond.) Parents wanting additional funds may use PLUS loans (Parent Loans for Undergraduate Students) to finance the balance of a student's education. Those loans are also backed by the government and require only a minimal credit check.

3. Through an array of programs, the federal government also provided about \$3 billion in grants to military personnel and veterans for academic year 2002-2003. The largest of those programs is the Montgomery G.I. Bill, which provides 36 months of education assistance to eligible veterans. When combined with enlistment incentives designed to fill critical occupational specialties, the programs provide up to about \$50,000 in total assistance per person.

4. Those loans are referred to as unsubsidized because they accrue interest while a student is in college, even though their interest rates are effectively subsidized as a result of the government's guarantee against default. (Lenders can charge lower interest rates because their risk of losses is smaller.) A further subsidy applies in that a student can deduct interest on such loans from taxable income during the repayment period, although that benefit phases out between \$50,000 and \$65,000 of income.

Table 2.**Federal Means of Financing College Costs in Academic Year 1999-2000**

Means of Financing ^a	Recipient	Maximum	Income Limitations ^b
Grants			
Pell	Student	\$3,125	Need based; few families with income above \$40,000 benefit
SEOG	Student	\$4,000	Need based; few families with income above \$40,000 benefit
Loans ^c			
PLUS	Parent	Total costs (tuition and living expenses) minus financial aid	None
Stafford			
Subsidized	Student	\$2,625 ^d	Need based
Unsubsidized	Student	\$2,625 ^d	None
Perkins	Student	\$4,000	Need based
Tax Credits ^e			
Hope	Parent	\$1,500	\$80,000 to \$100,000 ^f
Lifetime Learning	Parent	\$1,000 ^g	\$80,000 to \$100,000 ^f
Tax-Advantaged Savings ^h			
Coverdell accounts	Parent or student	\$500 ⁱ	\$190,000 to \$220,000
"529" plans ^j	Parent or student	Varies by state ^k	None

Source: Congressional Budget Office.

Note: SEOG = Supplemental Educational Opportunity Grant; PLUS = Parent Loans for Undergraduate Students.

- a. The federal government also funds campus-based work-study programs, which offer part-time employment on the basis of need.
- b. The dollar phaseout ranges are for taxpayers filing joint returns. Phaseouts for single filers are generally half that amount.
- c. Interest on student loans can be deducted for federal tax purposes. The benefit phases out for single filers with income between \$50,000 and \$65,000.
- d. The combined maximum for both types of Stafford loans for first-year dependent students. The annual limit increases to \$3,500 for second-year students and to \$5,500 for third-year students and beyond. The aggregate limit is \$23,000 for dependent undergraduates.
- e. Deductions and credits apply only to parents with outstanding federal tax liabilities.
- f. Some parents who do not qualify for Hope or Lifetime Learning credits because of the income phaseout may qualify for a tax deduction. The deduction is less generous than the credit, and it, too, phases out with rising levels of income. (Currently, the deduction phases out completely at \$130,000.)
- g. The credit was recently increased from \$1,000 to \$2,000. Caps on deposits to preferred savings plans have also become much more liberal in the past several years.
- h. Other tax-advantaged savings vehicles, such as individual retirement accounts (IRAs), may be used for education expenses without incurring a penalty.
- i. The maximum annual contribution was increased to \$2,000 for 2002.
- j. In 2002, the Congress exempted earnings on these plans from income tax when the earnings are withdrawn before 2011 and used to pay higher education expenses.
- k. The maximum amounts are usually much higher than those for the Coverdell accounts.

Incentives for Saving. Federal and state governments offer subsidies to encourage families to save for college. Both Coverdell Education Savings Accounts and state-sponsored “529” plans exempt the earnings on college savings from taxation. However, contributions to those savings vehicles are not deductible for federal tax purposes.

Other Aid. Federal financial aid to students is also provided through a campus-based component that allows colleges’ financial aid officers to provide further assistance to selected students—usually those who are unable to cover their costs after Pell grants and other aid are taken into account. Additional assistance is provided through the Federal Perkins Loan Program and the Supplemental Educational Opportunity Grants (SEOG) program—both of which are small relative to the Pell and Stafford programs. (In dollar terms, the Pell Grant program, for example, was more than 12 times larger than the SEOG program in academic year 1999-2000.) Although Perkins loans and SEOGs provide substantial funding for some students, having an unmet need does not guarantee that a student will receive that aid.

State Aid and Endowments

Most state aid is provided through appropriations made directly to colleges, a practice that allows state schools to charge tuition that is well below their average expenditures per pupil. Through that so-called general subsidy, state appropriations finance a substantial share of instructional expenditures at public two-year and four-year colleges. Private colleges also provide a general subsidy, which in many cases is funded through a school’s endowment. However, such subsidies are much smaller relative to expenditures than are those provided by state schools. Grant and loan programs administered by the states also provide some aid directly to students. In recent years, merit-based aid, which is designed to keep good students in the state, has become increasingly popular.

A Hypothetical Example of the Impact of Federal and State Aid

A simple simulation suggests that students from low- and middle-income families could use federal and state financing to fund the majority of what it costs to educate them. Consider, for instance, a student from a low-income family who qualifies for the maximum Pell grant. In academic year 1999-2000, that hypothetical student could have funded 59 percent of total costs at the average public four-year college by using only a Pell grant and the

general subsidy; he or she could have funded up to 72 percent by adding a need-based (subsidized) Stafford loan (*see Table 3*). By comparison, a hypothetical student from a middle-income family (in which the parents were joint income tax filers earning less than \$80,000) who qualified for the maximum Hope tax credit could have defrayed about 50 percent of total costs at the average public four-year college by using the credit and the general subsidy.⁵ The student from the middle-income family would be less likely to qualify for the subsidized Stafford loan but would still be eligible for the unsubsidized loan, which could be added to those other means to finance up to 64 percent of costs.

Changes in Federal and State Aid

Over the past several years, as college tuition has risen, so has state and federal aid. For example, since the early 1990s, nearly a dozen states have added merit-based aid programs (such as Georgia’s HOPE scholarships). State appropriations have also grown (by 17 percent in real, or inflation-adjusted terms) over the period, although that support has been scaled back in very recent years as states across the country reacted to budget shortfalls. At the federal level, the maximum Pell grant has increased as well. (It grew by 8 percent in real terms over the 1990s and has continued to increase.) Moreover, new types of loans with broader eligibility have been added; interest rates have declined; and new forms of aid have been introduced, including the Hope and Lifetime Learning tax credits and tax-based incentives for saving. Limits on annual contributions to Coverdell accounts have been raised from \$500 to \$2,000 beginning in 2002, and the maximum Lifetime Learning credit has been increased from \$1,000 to \$2,000 per year beginning in 2003. Benefits from contributing to state-sponsored “529” plans have also increased.

Allocation of Financing in CBO’s Analysis

CBO used several sources to calculate the share of the expense borne by each party financing the cost of college in academic year 1999-2000. Expenditures by the colleges

5. The Hope credit can be used only for the first two years of college. The Lifetime Learning credit is not restricted to the first two years but can be used only once per tax return. Another difference between the two is that the Lifetime Learning credit’s reimbursement rate is lower than the Hope credit’s.

Table 3.

Selected Federal and State College Financing Means Available to a Prospective Student in Academic Year 1999-2000

(Dollars per pupil)

	Public Four-Year College		Public Two-Year College	
	Low-Income ^a	Middle-Income ^b	Low-Income ^a	Middle-Income ^b
Average College Costs ^c	19,701	19,701	14,629	14,629
Hope Tax Credit	0	1,500	0	1,500
Pell Grant	3,125	0	3,125	0
General Subsidy ^d	8,422	8,422	6,217	6,217
Stafford Loan ^e	2,625	2,625	2,625	2,625
Percentage Financed Using Hope Credit, Pell Grant, and General Subsidy	59	50	64	53
Percentage Financed Including Stafford Loan	72	64	82	71

Source: Congressional Budget Office.

a. Defined as eligible for the maximum Pell grant. Most families whose income was less than \$30,000 would be eligible.

b. Defined as ineligible for a Pell grant. Most families whose income was more than \$40,000 would be ineligible.

c. For all full-time, full-year dependent students at public colleges in their first undergraduate year.

d. Colleges' instructional expenditures per pupil minus tuition and fees.

e. Based on the limit for first-year students.

(the cost of instruction) were taken from the National Center for Education Statistics' Integrated Postsecondary Education Data System; data on tuition and fees, student budgets, and the amounts of most types of financing (grants, loans, students' earnings, and parents' contributions) were drawn from the center's National Postsecondary Student Aid Study (NPSAS). CBO imputed the share of costs covered by the Hope tax credit from the Internal Revenue Service's Statistics of Income database for 1999.

The NPSAS data provide details on grants and loans financed within the student financial aid system, but information on such assistance financed outside the system is less complete. The data include students' earnings during the school year and the previous summer, support from parents, and loans to students from private lenders and relatives. However, study data on parents' borrowing—a home-equity loan used for education, for example—are not comprehensive. Nonetheless, with the aid of several assumptions (detailed later), the available data are sufficient to provide a comprehensive account of how college costs are allocated.

The choice of a college has a significant impact on the cost of a student's education. In academic year 1999-2000, most (73 percent) of the nation's 1.1 million first-year, full-time dependent undergraduates attended public colleges (*see Table 4*). Of those students, almost half (44 percent) attended two-year schools. Those percentages varied with family income, however. Seventy-nine percent of students from the lowest-income families attended public colleges compared with 62 percent of students from the highest-income group. Among the public-college students from each group, 51 percent of the lowest-income students attended two-year colleges compared with 33 percent of those from the highest-income group.

The means of financing used by first-year, full-time dependent undergraduates for the 1999-2000 academic year varied by type of college and family income (*see Table 5 on page 10*). The amounts financed through those means equal the total cost of the student's college education. (In general, however, the sum of the *estimated* amounts from all means of financing does not equal the estimated cost of the education. The appendix discusses

Table 4.**College Enrollment by Family Income and College Type,
Academic Year 1999-2000**

	All Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above
In Thousands of Students					
Public Four-Year Colleges	445	102	141	110	93
Private Four-Year Colleges	290	55	86	63	87
Public Two-Year Colleges	355	106	122	80	46
All Colleges	1,090	264	349	252	226
As a Percentage of All Students					
Public Four-Year Colleges	41	39	40	43	41
Private Four-Year Colleges	27	21	25	25	38
Public Two-Year Colleges	33	40	35	32	21
All Colleges	100	100	100	100	100
Memoranda:					
Percentage of Students at Public Colleges	73	79	75	75	62
Percentage of Public-College Students at Two-Year Colleges	44	51	46	42	33

Source: Congressional Budget Office based on the National Center for Education Statistics' data analysis system for the 1999-2000 National Postsecondary Student Aid Study (available at www.nces.ed.gov/das/).

Note: Data are for full-time dependent students in their first undergraduate year.

that issue and provides a table that details the adjustments CBO used to reconcile the means of financing and the education's cost.)

Each means of financing differs in how its costs are allocated among the parties. *Table 6 on page 14* indicates the share of each dollar of financing that is paid or borne by the student, his or her parents, the federal government, state governments, educational institutions, and other parties. The information about the amounts from each means, combined with the data on who bears the expense, yields the cost to each payer (the federal government, other nonfamily parties, parents, and the student) of the year of college education.

Grants

Overall, students used grants to finance an average of \$3,137 of college costs in academic year 1999-2000 (see

Table 5). Grants for the lowest-income group—about half of which came from the Pell grant program—were highest (\$4,357); grants for the highest-income group—80 percent of which came from the schools themselves—were lowest (\$2,296). The grants that students at private colleges received were substantially larger than those received by public-college students (\$7,104 compared with \$2,097 and \$1,202 at public four-year and two-year colleges, respectively) because private colleges discount tuition to many students by providing institutional grants.

A student cannot use a grant or gift that is contingent on attending college for other activities. He or she therefore incurs no cost in using the grant to pay for college, and the party that provides the grant bears its full cost (see Table 6 on page 14).

Table 5.

Means of Financing College Costs, by Family Income and College Type, Academic Year 1999-2000

(Dollars per first-year, full-time dependent student)

	All Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above
All Colleges					
Total College Costs	19,998	16,906	19,755	20,377	23,558
Minus General Subsidy ^a	6,347	5,917	6,403	6,599	6,482
Amount Students Must Finance	13,651	10,989	13,352	13,778	17,075
Means of Financing for Students					
Grants	3,137	4,357	3,217	2,506	2,296
Pell and SEOG	653	2,152	414	5	0
State	491	822	632	265	141
Institutional	1,608	1,118	1,722	1,755	1,839
Private and employer ^b	385	265	450	481	316
Loans	1,445	1,298	1,741	1,498	1,100
Subsidized Stafford and Perkins	802	1,049	1,157	558	241
Unsubsidized Stafford	349	110	284	567	483
State and institutional	81	47	87	73	122
Private	212	92	213	300	255
Earnings	2,818	1,710	3,075	3,375	2,740
While enrolled	2,939	2,595	3,216	3,349	2,436
Excess ^c	-1,226	-1,728	-1,252	-1,230	-860
Saved from summer work	1,106	843	1,111	1,256	1,165
Parents' contributions	6,251	3,624	5,319	6,399	10,940
Cash for tuition and other expenses ^c	2,888	183	1,893	3,086	7,836
Loans from relatives and friends	784	420	678	949	1,153
Board at home	1,290	1,510	1,374	1,182	975
Room at home ^d	1,290	1,510	1,374	1,182	975
Memoranda:					
Amount That Parents Finance	6,251	3,624	5,319	6,399	10,940
Means of Financing for Parents					
Savings (regular and Coverdell) and earnings	3,841	1,816	2,572	3,512	8,930
Hope tax credit	588	143	939	1,087	2
PLUS loans	533	155	433	618	1,032
Room at home ^d	1,290	1,510	1,374	1,182	975
Number of First-Year, Full-Time Dependent					
Students (Thousands)	1,090	264	349	252	226

(Continued)

Table 5.**Continued**

(Dollars per first-year, full-time dependent student)

	All Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above
Public Four-Year Colleges					
Total College Costs	19,701	17,933	19,500	20,442	21,080
Minus General Subsidy ^a	8,422	7,667	8,336	8,739	9,012
Amount Students Must Finance	11,278	10,267	11,163	11,703	12,068
Means of Financing for Students					
Grants	2,097	3,806	2,151	1,385	970
Pell and SEOG	639	2,158	446	8	0
State	511	843	661	240	238
Institutional	520	545	451	637	456
Private and employer ^b	427	260	593	499	276
Loans	1,449	1,575	1,717	1,498	849
Subsidized Stafford and Perkins	851	1,371	1,285	468	72
Unsubsidized Stafford	413	89	294	717	591
State and institutional	34	21	3	82	39
Private	152	94	136	231	147
Earnings	3,312	2,315	3,729	3,609	2,653
While enrolled	2,135	2,152	2,529	2,230	1,407
Excess ^c	0	-636	0	0	0
Saved from summer work	1,177	799	1,199	1,378	1,247
Parents' contributions	4,421	2,570	3,566	5,211	7,596
Cash for tuition and other expenses ^c	1,803	0	778	2,777	5,052
Loans from relatives and friends	677	303	624	1,025	764
Board at home	970	1,133	1,082	705	889
Room at home ^c	970	1,133	1,082	705	889
Memoranda:					
Amount That Parents Finance	4,421	2,570	3,566	5,211	7,596
Means of Financing for Parents					
Savings (regular and Coverdell) and earnings	2,384	1,160	1,146	2,609	6,174
Hope tax credit	607	147	922	1,133	2
PLUS loans	460	129	416	765	530
Room at home ^d	970	1,133	1,082	705	889
Number of First-Year, Full-Time Dependent Students (Thousands)					
	445	102	141	110	93

(Continued)

Table 5.**Continued**

(Dollars per first-year, full-time dependent student)

	All Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above
Private Four-Year Colleges					
Total College Costs	27,027	20,389	27,104	27,803	30,600
Minus General Subsidy ^a	3,319	2,503	3,328	3,414	3,757
Amount Students Must Finance	23,708	17,885	23,776	24,389	26,843
Means of Financing for Students					
Grants	7,104	8,483	8,477	7,156	4,837
Pell and SEOG	683	2,708	568	5	0
State	706	1,200	1,162	515	80
Institutional	5,096	3,996	6,129	5,819	4,253
Private and employer ^b	619	579	618	816	504
Loans	2,696	2,580	3,496	2,895	1,836
Subsidized Stafford and Perkins	1,488	1,889	2,263	1,377	550
Unsubsidized Stafford	479	341	413	631	522
State and institutional	201	83	236	152	275
Private	528	266	583	736	489
Earnings	2,870	2,584	2,840	3,614	2,455
While enrolled	1,534	1,607	1,566	1,964	1,164
Excess ^c	0	0	0	0	0
Saved from summer work	1,335	978	1,274	1,650	1,291
Parents' contributions	11,039	4,238	8,962	10,725	17,714
Cash for tuition and other expenses ^c	8,089	877	6,427	7,583	15,004
Loans from relatives and friends	1,552	1,023	1,273	1,606	2,031
Board at home	699	1,169	631	768	339
Room at home ^d	699	1,169	631	768	339
Memoranda:					
Amount That Parents Finance	11,039	4,238	8,962	10,725	17,714
Means of Financing for Parents					
Savings (regular and Coverdell) and earnings	8,396	2,414	6,105	7,517	15,252
Hope tax credit	670	245	1,146	1,319	3
PLUS loans	1,273	410	1,081	1,121	2,121
Room at home ^d	699	1,169	631	768	339
Number of First-Year, Full-Time Dependent					
Students (Thousands)	290	55	86	63	87

(Continued)

Source: Congressional Budget Office based on the National Center for Education Statistics' data analysis system for the 1999-2000 National Postsecondary Student Aid Study (NPSAS), available at www.nces.ed.gov/das/.

Note: SEOG = Supplemental Educational Opportunity Grant; PLUS=Parent Loans for Undergraduate Students.

a. Colleges' instructional expenditures per pupil minus tuition and fees.

b. NPSAS includes the education assistance provided by the Department of Veterans Affairs and the Department of Defense in this category.

Table 5.**Continued**

(Dollars per first-year, full-time dependent student)

	All Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above
Public Two-Year Colleges					
Total College Costs	14,629	14,110	14,897	14,495	15,343
Minus General Subsidy ^a	6,217	5,996	6,331	6,160	6,520
Amount Students Must Finance	8,412	8,114	8,566	8,335	8,823
Means of Financing for Students					
Grants	1,202	2,752	758	409	194
Pell and SEOG	648	1,858	269	0	0
State	290	606	227	103	60
Institutional	123	180	96	111	87
Private and employer ^b	140	108	167	195	47
Loans	417	367	538	408	225
Subsidized Stafford and Perkins	180	302	233	41	0
Unsubsidized Stafford	162	11	183	313	193
State and institutional	43	53	80	0	0
Private	31	0	42	54	32
Earnings	2,158	674	2,487	2,870	3,445
While enrolled	5,096	3,535	5,164	5,959	6,868
Excess ^c	-3,767	-3,676	-3,573	-3,870	-4,187
Saved from summer work	829	815	896	781	763
Parents' contributions	4,636	4,322	4,783	4,648	4,959
Cash for tuition and other expenses ^c	0	0	0	0	0
Loans from relatives and friends	290	221	322	333	287
Board at home	2,173	2,050	2,231	2,157	2,336
Room at home ^d	2,173	2,050	2,231	2,157	2,336
Memoranda:					
Amount That Parents Finance	4,636	4,322	4,783	4,648	4,959
Means of Financing for Parents					
Savings (regular and Coverdell) and earnings	1,948	2,138	1,740	1,622	2,621
Hope tax credit	496	86	813	843	2
PLUS loans	20	48	0	25	0
Room at home ^d	2,173	2,050	2,231	2,157	2,336
Number of First-Year, Full-Time Dependent Students (Thousands)					
	355	106	122	80	46

c. Financing can fall short of or exceed a student's budget for tuition, fees, books, room, board, and so forth. The shortfall or excess is added to or deducted from the amount that the parents contribute in cash. However, total cash contributions by parents are limited to nonnegative quantities. If the parents' cash contribution is reduced to zero, further excess is deducted from the student's earnings. Those adjustments are applied to each income group within the three types of colleges. The results are weighted by enrollment and averaged across the three school types to produce the estimates for all colleges.

d. The price of a room is assumed to be half of the budgeted room-and-board expense. Furthermore, providing a room to a student is assumed for the purpose of these calculations to have no cost to a family. Consequently, a room at home is a low-cost source of financing for half the usual room-and-board cost.

Table 6.**Allocation of College Expense Among Payers, by Means of Financing**

(Dollar share)

Means of Financing	Total	Student	Family	Government		Institution	Other Parties
				Federal	State		
Students							
Grants							
Pell and SEOG	1.00	0		1.00			
State	1.00	0			1.00		
Institutional	1.00	0				1.00	
Private and employer	1.00	0					1.00
Loans							
Subsidized Stafford and Perkins	1.00	0.74		0.26			
Unsubsidized Stafford	1.00	0.89		0.11			
State and Institutional	1.00	0.89		0.04	0.07		
Private	1.00	0.94		0.06			
Earnings	1.00	1.00					
Parents' contributions							
Cash for tuition and other expenses	1.00	0	1.00				
Loans from relatives and friends	1.00	1.00					
Board at home	1.00	0	1.00				
Room at home	0	0	0				
Parents							
Savings and earnings							
Regular savings and earnings	1.00	0	1.00				
Coverdell savings	1.00	0	0.96 to 0.82	0.04 to 0.18			
Hope tax credit	1.00	0	0.05 ^a	0.95			
PLUS loans	1.00	0	1.03	-0.03			
Room at home	0	0	0				
Memorandum:							
Selected Means of Financing for Institutions							
Tuition revenue	1.00	1.00					
State appropriations	1.00	0			1.00		
Endowment	1.00	0				1.00	

Source: Congressional Budget Office.

Note: SEOG = Supplemental Educational Opportunity Grant; PLUS=Parent Loans for Undergraduate Students.

a. This small cost reflects the delay between paying tuition and receiving the credit.

Table 7.**Percentage of College Students Living at Home, by Family Income and College Type, Academic Year 1999-2000**

	All Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above
Public Four-Year Colleges	28	35	31	20	24
Private Four-Year Colleges	19	36	17	21	9
Public Two-Year Colleges	70	69	71	70	71
All Colleges	39	49	42	36	28

Source: Congressional Budget Office study based on the National Center for Education Statistics' data analysis system for the 1999-2000 National Postsecondary Student Aid Study (available at www.nces.ed.gov/das/).

Note: Data are for full-time dependent students in their first undergraduate year.

Students' Earnings

On average, full-time dependent students reported saving \$1,106 from summer earnings to use toward their first year of college (see Table 5). They also earned an average of \$2,939 during the academic year. Because earnings can be saved or spent on other things, the student bears the full cost of using earnings to pay for college.⁶

Parents' Contributions

In academic year 1999-2000, parents financed an average of 31 percent of their children's college education—that is, \$6,251 for full-time, first-year dependent students (see Table 5). Not surprisingly, CBO's analysis shows that parents' contributions increase as family income rises. Because those contributions are financed through a combination of earnings, savings, loans, tax subsidies, and in-kind support, determining who bears the burden of their cost is a complicated task.

Living at home is an implicit form of financing for students and their families. A student who chose to live at home and attend a nearby college in the 1999-2000 academic year avoided the expense of a dormitory—\$3,419 on average. CBO adjusted the data for the 39 percent of first-year, full-time dependent undergraduates who re-

ported living at home (see Table 7); it then assigned that contribution an average value of \$2,580 per student.⁷

To calculate that figure, CBO made several assumptions. It judged that in general, parents incurred no expense for providing students with a room at home because if the student chose to live in a dormitory or apartment, the family would not have used the room for other purposes. But parents do incur expense for providing board. Food bought to serve at home costs approximately the same amount as food purchased to serve on campus, and board on campus is half of the budgeted room-and-board charge (the amount that the college tells students to expect to pay). CBO thus assumed that parents whose students lived at home bore 50 percent of the expense of room and board as estimated by colleges and included in the cost of education.

In addition to room and board, parents contributed \$2,888 toward tuition and nontuition expenses. CBO considered that contribution a gift to the student to be used only for college and for which the student incurred no expense.⁸ But parents did not bear the contribution's full cost because they also received financial assistance.

6. A small federally funded work-study program subsidizes jobs that colleges create for students (generally, a college must pay at least 25 percent of a student's earnings). However, CBO assumed in its analysis that students were paid no more than they could have earned in another part-time job. Consequently, the activity—in many cases a community service or family literacy program—received the financial benefit of the subsidy.

7. Among the different kinds of colleges, budgeted nontuition expenses averaged \$7,599. CBO assumed that 90 percent of those expenses were for room and board and that the remaining 10 percent covered books, transportation, and miscellaneous personal expenses. To estimate the value of living at home, CBO multiplied the budgeted expense for room and board by the proportion of students living at home (39 percent on average). It then averaged those results across colleges to produce the estimated value of this type of parental contribution—\$2,580.

CBO estimated that in 1999, Hope tax credits were \$588 on average; they were larger for middle-income families. The credits reduce the federal government's revenue, and the parents' share of the cost is near zero.

In academic year 1999-2000, parents also financed an average of \$533 of their contribution with PLUS loans. Those federally backed loans require only a minimal credit check, and they are inexpensive compared with other noncollateralized borrowing. Nevertheless, the family essentially bears the full expense of PLUS loans.

CBO assumed that the remainder—\$3,841—of parents' average contribution to college costs was financed through a combination of tax-advantaged savings (such as Coverdell accounts) and other savings and earnings that carried no tax advantage. About half of parents' contributions that were not covered by tax credits or PLUS loans were financed with regular income or savings, CBO assumed, and about half came from tax-advantaged savings.⁹

Parents bear the full cost of any contribution they finance with regular savings; they forgo \$1 of spending on other activities for every \$1 they use to pay for their child's college education. But the same contribution required to produce \$1 of regular savings produces more than \$1 of Coverdell savings because earnings in Coverdell accounts accumulate tax-free. Because their tax rates are lower, parents from the lowest-income group receive a smaller tax advantage than higher-income parents do. Thus, they bear 96 percent of the expense for their Coverdell-financed contribution, whereas the proportion borne by parents from the highest-income group is 82 percent.¹⁰ The remaining share is financed by the federal government.

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8. If that assumption is inaccurate and students do give up something—perhaps some inheritance—when they receive contributions from their parents, the division of the cost between students and their parents will be affected but not the cost to the family as a whole.
9. That latter percentage is probably much larger than the share that parents are currently financing using such tax-advantaged savings vehicles, which are quite new. CBO based its assumption on its belief that more and more parents would probably begin to use them. Nevertheless, that assumption is an optimistic one about parents' future savings behavior. A more conservative estimate would slightly reduce the size of federal subsidies to parents.

Loans from relatives and friends are included in the category of parents' contributions (see Table 5). CBO assumed that students would repay those loans (which averaged \$784) in full and bear their entire cost. However, there is no information on the extent to which gifts and loans are repaid within families. Some of the loans may be forgiven. It is also possible that by receiving contributions from their parents for tuition, some students will forgo other types of parental gifts.

Loans

The 39 percent of first-year, full-time dependent undergraduates who borrowed money for college in academic year 1999-2000 incurred an average debt of less than \$3,000. Overall, students borrowed \$1,445 on average, a bit more than 7 percent of total education costs (see Table 5). Eighty percent of that borrowing was guaranteed by the federal government; students borrowed relatively little from colleges and private entities. Students from the two middle-income groups borrowed somewhat more than did those from the other groups. Yet the subsidized Stafford loans were larger for the two lower-income groups (\$1,049 and \$1,157) than for the two higher-income ones (\$558 and \$241).

Allocating the shares of the expense of loans to students and government is even more complex than allocating the shares of the expense of parents' contributions. The share of a loan dollar that a student bears depends on the terms of the loan (which determine the amount required to repay it) and the discount rate (which affects the value of those payments in current dollars). Those factors are encompassed in the annual percentage rate (APR), a standardized method of reporting the cost of loans with different terms that takes into account the fees paid at origination, the method of compounding interest, and repayment schedules.¹¹ In the case of student loans, the APR also accounts for interest rates that differ depending

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10. Under the assumptions that a regular savings account paid 8 percent interest before taxes and a saver took 10 years to accumulate savings, this type of tax-advantaged account would pay the equivalent of 8.8 percent to 11.4 percent before taxes, depending on the saver's marginal income tax rate (the rate on the last dollar of income).
11. The APR is the interest rate that equates the present value of payments on the loan to the amount disbursed. (The present value is a single number that expresses a flow of current and future income or payments in terms of an equivalent lump sum received or paid today.)

on whether the student is still enrolled or is out of college and repaying the loan. The APR used in CBO's analysis accounts as well for the tax deductibility of interest payments.

In calculating the APR for its analysis, CBO assumed that first-year undergraduate students would be in college for three years in all and take 10 years to repay their loans (the standard repayment option) once they left college. The value of the interest they could deduct was based on the average marginal tax rate of taxpayers ages 25 to 34; CBO assumed that it would apply equally to students from different family income groups because students, not parents, repay the loans.¹² The interest rate on federal student loans is linked to the interest rate (the bond-equivalent yield) on three-month Treasury bills. That rate, although less than 1.0 percent in January 2004, has averaged 4.6 percent over the 1984-2003 period and is forecast by CBO to rise to 4.9 percent in 2008 and beyond. The calculations in this paper are based on a rate of 4.75 percent.

The interest rate on private education loans is usually tied to the so-called prime rate—the rate that banks charge their best corporate customers. Over the past 15 years, that rate has been about 3.14 percentage points higher than the rate on three-month Treasury bills. However, CBO based its calculations on a rate that was 3.25 percentage points higher—which would yield a prime rate of 8.0 percent. On the basis of the assumptions noted above, CBO estimated that the APRs on student loans would be 4.0 percent on subsidized Stafford loans (well below the estimated prime rate and the government's cost of borrowing) and 7.0 percent on unsubsidized Stafford loans (also below the estimated prime rate). Recently, student borrowers who have a cosigner with excellent credit have been able to obtain private student loans, not backed by the government, at an interest rate equaling the prime rate. Because interest on those loans is deductible, their APR will also be below the prime rate.

To a student, the value of a federal loan, which is available without a credit check, is the difference between the APR on the federal loan and the APR on the best available alternative. An optimistic (low) estimate of the cost of the best alternative is the APR on private loans to students who have cosigners with excellent credit. Recently,

12. The average marginal tax rate of taxpayers between the ages of 25 and 34 in 1999 was 19 percent.

those loans carried the equivalent of the prime rate assumed in this analysis (8.0 percent). If that rate was used as the benchmark for the best alternative to borrowing from the federal government, the value of subsidized Stafford loans with an APR of 4.0 percent would be 4.0 percentage points lower than the prime rate; the value of unsubsidized Stafford loans with an APR of 7 percent would be 1 percentage point lower than the prime rate.

The choice of an APR of 8.0 percent has little impact on the shares of college costs that are paid by students and parents. It does, however, understate the value of the subsidy that government loan programs provide to groups with poor credit—especially if one believes that students will turn to the private borrowing market in the absence of government-guaranteed loans.¹³

To express loan costs in dollars, the future flow of payments from the borrower is discounted to current dollars by using a discount rate of 8.0 percent (the rate at which borrowers can exchange future dollars for current dollars in the private market). The present value of those future payments represents the cost to the borrower. That value can be compared or combined with similar measures of the cost of other means of financing. Under that approach, a private loan of \$1 that had no fees, an interest rate of 8 percent, and nondeductible interest payments would cost the borrower \$1; that is, the borrower would bear 100 percent of the cost of the loan and the lender would bear none of it. The cost of such private-loan financing would be comparable to the cost of using earnings and non-tax-advantaged savings (\$1 per dollar of earnings or savings used to finance college costs).

When the government provides loans at interest rates that are below those in the private market, the present value of future payments is less than the amount borrowed. That difference in costs is borne by the federal government. For example, consider a case in which inter-

13. As the risk of default rises, lenders generally offer less favorable transaction terms. The federal guarantee on student loans shifts that risk from the lender to the government. Thus, with guaranteed loans, the lender will offer the same terms independent of the borrower's perceived creditworthiness, although the implicit subsidy from loan guarantees declines with one's credit rating. Some analysts hypothesize that people with income of less than \$30,000 find it more difficult (or costly) to borrow than do those with higher income. CBO's examination of the data from a sample of first-year students who took private cosigned loans did not bear out that hypothesis, although limitations in the data set precluded CBO from conclusively rejecting it.

est on a loan is tax-deductible, as it is for private education loans, and the borrower's marginal income tax bracket is 19 percent. The borrower's share of each dollar of expense is \$0.94, the federal government's share is \$0.06, and the lender's share is zero (see Table 6).¹⁴ For a subsidized Stafford loan, the student's and the federal government's shares are 74 percent and 26 percent, respectively; comparable shares for unsubsidized Stafford loans are 89 percent and 11 percent.

CBO's Method for Estimating the Allocation of College Costs

CBO combined the means of financing (shown in Table 5) with the distribution of costs for each means (shown in Table 6) to determine the amount and share of expenses that each party—students, parents, governments, institutions, or others—contributes to financing the cost of a college education. The amount that a particular party bears is the number of dollars of a means (grant, loan, earnings, or parents' contribution) that a student uses multiplied by the share of those dollars paid by the party, summed over all means. The party's share of the expense is that amount divided by the total college costs for the academic year (see Tables 8 through 11). Determining the family's share of costs simply requires summing the student's and parents' shares.

A simple hypothetical example might clarify the methodology. Suppose college costs are \$10,000, and the student uses a \$3,000 federal grant, a \$2,000 subsidized Stafford loan, and \$5,000 of earnings to finance them. The grant costs the student nothing ($\$3,000 \times 0$); the loan costs the student \$1,480 ($\$2,000 \times 0.74$); and the earnings cost \$5,000 ($\$5,000 \times 1.00$). The total expense borne by the student is \$6,480, or 65 percent of total costs ($\$6,480 / \$10,000$). The grant costs the federal government \$3,000

($\$3,000 \times 1.00$), and the loan costs \$520 ($\$2,000 \times 0.26$). The federal government's total expense is \$3,520, or 35 percent of costs.

As mentioned earlier, results from CBO's analysis are based on students who were enrolled in college in academic year 1999-2000 and cannot necessarily be generalized to individuals who did not enroll. For example, some young people may have chosen not to enroll because of opportunities for financing that were less favorable than those for people who did attend. Furthermore, even among people who attended college, their choice of a particular school (or college type) might have been influenced by their specific financing situation. For example, suppose that among students who attended college, those whose parents were willing to make large contributions to their children's college costs chose private colleges, and students expecting smaller contributions chose public schools. If that was true, the costs that a student would have faced at a school other than the one chosen might not be reflected in the data. That caveat does not apply as much to federal financial aid—which was available on equal terms to most potential students in similar circumstances—as it does to parents' contributions and students' opportunities for work.

CBO's Findings: How College Costs Are Allocated

How the costs of a college education are allocated depends on a student's means of financing and how the burden of expense for each means is divided among the various parties. The cost of a year of college (including living expenses) in academic year 1999-2000 was \$19,998. Families bore about half of that expense (\$9,504), the federal government effectively defrayed 9 percent, and others (primarily state governments) covered 43 percent. Those shares varied by family income, but for every income group and every college type, the student's share was less than 30 percent of total costs.

Although families (parents and students) overall bore about half of college costs, among income groups their share ranged from 37 percent (\$6,173) for the lowest group to 59 percent (\$13,879) for the highest (see Table 8). As family income rose, parents accounted for a larger share. Students' shares of costs differed less among income groups than parents' did. Students from the lowest-income group bore the smallest share—19 percent—

14. The \$1.00 loan with an 8 percent interest rate grows to \$1.26 by the end of the borrower's three years in college. The borrower repays that loan with 10 equal payments of \$0.19. When the payments are discounted to the time when the loan was taken (using a discount rate of 8 percent), the total cost is \$1.00. If the interest payments on the loan are deductible, that cost is reduced. In particular, the first payment of \$0.19 is \$0.09 of principal and \$0.10 of interest. If a marginal tax rate of 19 percent is applied to the interest, the interest cost net of tax savings is about \$0.08, or a savings of \$0.02 compared with the loan with nondeductible interest. The process is repeated for each of the 10 payments, but the amount of interest declines as the principal is repaid. If the principal payments and net interest costs are discounted to the time when the loan was taken, the total cost is found to be \$0.94.

Table 8.**Average College Costs and Their Allocation to Payers, by Family Income and College Type, Academic Year 1999-2000**

	Cost (Dollars per pupil)					Dollar Share of Total Cost of Education				
	All				All					
	Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above	Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above
All Colleges										
Total Average Costs	19,998	16,906	19,755	20,377	23,558	1.00	1.00	1.00	1.00	1.00
Nonfamily	10,493	10,733	10,953	10,592	9,678	0.52	0.63	0.55	0.52	0.41
Parents	4,723	3,035	3,658	4,194	9,031	0.24	0.18	0.19	0.21	0.38
Student	4,781	3,138	5,144	5,590	4,848	0.24	0.19	0.26	0.27	0.21
Public Four-Year Colleges										
Total Average Costs	19,701	17,933	19,500	20,442	21,080	1.00	1.00	1.00	1.00	1.00
Nonfamily	11,483	12,001	11,767	11,579	10,609	0.58	0.67	0.60	0.57	0.50
Parents	3,055	2,107	2,032	2,954	6,302	0.16	0.12	0.10	0.14	0.30
Student	5,162	3,826	5,701	5,909	4,169	0.26	0.21	0.29	0.29	0.20
Private Four-Year Colleges										
Total Average Costs	27,027	20,389	27,104	27,803	30,600	1.00	1.00	1.00	1.00	1.00
Nonfamily	11,948	11,802	13,793	12,789	10,130	0.44	0.58	0.51	0.46	0.33
Parents	8,449	2,945	6,387	7,384	14,405	0.31	0.14	0.24	0.27	0.47
Student	6,629	5,641	6,924	7,631	6,064	0.25	0.28	0.26	0.27	0.20
Public Two-Year Colleges										
Total Average Costs	14,629	14,110	14,897	14,495	15,343	1.00	1.00	1.00	1.00	1.00
Nonfamily	8,063	8,957	8,024	7,531	6,970	0.55	0.63	0.54	0.52	0.45
Parents	3,772	3,976	3,617	3,401	4,439	0.26	0.28	0.24	0.23	0.29
Student	2,794	1,177	3,256	3,563	3,933	0.19	0.08	0.22	0.25	0.26

Source: Congressional Budget Office based on the National Center for Education Statistics' data analysis system for the 1999-2000 National Postsecondary Student Aid (available at www.nces.ed.gov/das/).

Note: Data are for full-time dependent students in their first undergraduate year.

compared with shares as high as 27 percent for the upper-middle-income group. Students' shares of costs also varied by college type. At public two-year colleges, students from the lowest-income group paid by far the smallest share—8 percent—of the expense. At four-year public colleges, their share was 21 percent, much lower than the 29 percent share that students from the two middle-income groups paid. At private four-year colleges, students from the lowest-income group bore 28 percent of the cost of their education, which is on a par with (although slightly higher than) the share for the two middle-income groups.

In addition to contributions from parents, two other factors were primarily responsible for the small shares of

costs borne by students and the relatively small disparity in those shares among income groups. (For all colleges, the range of students' shares spanned 8 percentage points; just 2 percentage points separated the top and bottom groups). The first factor was aid provided by the federal government. The second was choices by students that affected their costs, including selecting colleges on the basis both of tuition and of inexpensive financing options (such as living at home rather than in a dormitory or apartment) that are often tied to the choice of a college. For example, lower-income students, who do not receive nearly as much from parents as do students from more affluent families, are less likely to choose private four-year institutions and more likely to select two-year public col-

Table 9.

Average College Costs Financed by Nonfamily Parties, by Family Income and College Type, Academic Year 1999-2000

	Total Nonfamily Cost (Dollars per pupil)					Dollar Share of Total Cost of Education				
	All					All				
	Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above	Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above
All Colleges										
Total Average Nonfamily Costs	10,493	10,733	10,953	10,592	9,678	0.52	0.63	0.55	0.52	0.41
Federal (To student)	910	2,437	754	229	131	0.05	0.14	0.04	0.01	0.01
Federal (To parents)	744	169	983	1,256	756	0.04	0.01	0.05	0.06	0.03
Institution, state, and private	2,492	2,211	2,813	2,509	2,309	0.12	0.13	0.14	0.12	0.10
General subsidy ^a	6,347	5,917	6,403	6,599	6,482	0.32	0.35	0.32	0.32	0.28
Public Four-Year Colleges										
Total Average Nonfamily Costs	11,483	12,001	11,767	11,579	10,609	0.58	0.67	0.60	0.57	0.50
Federal (To student)	911	2,523	815	222	93	0.05	0.14	0.04	0.01	0.00
Federal (To parents)	688	160	910	1,232	529	0.03	0.01	0.05	0.06	0.03
Institution, state, and private	1,462	1,651	1,706	1,385	975	0.07	0.09	0.09	0.07	0.05
General subsidy ^a	8,422	7,667	8,336	8,739	9,012	0.43	0.43	0.43	0.43	0.43
Private Four-Year Colleges										
Total Average Nonfamily Costs	11,948	11,802	13,793	12,789	10,130	0.44	0.58	0.51	0.46	0.33
Federal (To student)	1,148	3,244	1,228	472	228	0.04	0.16	0.05	0.02	0.01
Federal (To parents)	1,038	270	1,302	1,735	1,277	0.04	0.01	0.05	0.06	0.04
Institution, state, and private	6,444	5,785	7,935	7,168	4,867	0.24	0.28	0.29	0.26	0.16
General subsidy ^a	3,319	2,503	3,328	3,414	3,757	0.12	0.12	0.12	0.12	0.12
Public Two-Year Colleges										
Total Average Nonfamily Costs	8,063	8,957	8,024	7,531	6,970	0.55	0.63	0.54	0.52	0.45
Federal (To student)	714	1,936	351	49	23	0.05	0.14	0.02	0	0
Federal (To parents)	574	125	844	914	233	0.04	0.01	0.06	0.06	0.02
Institution, state, and private	558	899	499	409	194	0.04	0.06	0.03	0.03	0.01
General subsidy ^a	6,217	5,996	6,331	6,160	6,520	0.42	0.42	0.42	0.42	0.42

Source: Congressional Budget Office based on the National Center for Education Statistics' data analysis system for the 1999-2000 National Postsecondary Student Aid (available at www.nces.ed.gov/das/).

Note: Data are for full-time dependent students in their first undergraduate year.

a. Colleges' instructional expenditures per pupil minus tuition and fees.

leges (usually close to home) and less expensive four-year public colleges (see Tables 1 and 4). Such choices both lower the tuition they must finance and allow them to live at home, thus eliminating most nontuition expenses.

Federal Support

Through its assistance to and tax benefits for both students and parents, the federal government overall accounted for about 9 percent (\$1,654) of the cost of a year of college in academic year 1999-2000, but that figure varied by family income group, from 15 percent (\$2,606) for the lowest to 4 percent (\$887) for the highest (see *Table 9*). Of the average amount of federal aid—\$2,437—provided to students from the lowest-income group, \$2,152 was in the form of Pell grants, which alone paid for 13 percent of the cost of education for that group. By contrast, the federal aid received by high-income students was in the form of loans; in that case, only a fraction of each dollar borrowed represented a subsidy. In addition to receiving Pell grants, 38 percent of students from the lowest-income group borrowed through the Stafford program, although many students from that group (62 percent) did not take such loans. Nevertheless, most (81 percent) of those who took loans borrowed up to the program's limit.

For the bottom income group, federal aid was primarily targeted toward students, effectively reimbursing them for 14 percent (\$2,437) of their costs, compared with only 1 percent reimbursement for students from the upper-middle- and highest-income groups (see *Table 9*). For the lowest-income students, that aid partially offset the differential of 20 percentage points in parents' contributions between their group and the top income group; it more than offset the differences of 1 and 3 percentage points in parents' contributions between the lowest-income group and the lower- and upper-middle-income groups, respectively (see *Table 10*).

For the two middle-income groups, most federal aid was directed toward parents. Upper-middle-income parents received on average nearly 7.5 times the aid that parents in the lowest-income group received (\$1,256 versus \$169). The bulk of the federal government's aid to parents came from the Hope tax credit (\$1,087 of the average amount of \$1,256 for upper-middle-income parents, for example).

Choices That Reduce the Cost of College

College costs differ greatly among schools, and the choice of institution can have a large impact not only on the overall expense but also on the shares of costs borne by the student and his or her family. For example, the cost of a year of education (that is, the cost of instruction plus living expenses) for a first-year undergraduate in academic year 1999-2000 was, on average, \$6,652 greater for the top family income group than for the bottom group (\$23,558 versus \$16,906); in addition, the amount of the family's share of the cost for the two groups ranged from \$13,879 down to \$6,173. Three patterns help account for those differences.

First, students from low-income families are more likely to attend public colleges and within that category are more likely to attend two-year rather than four-year schools. Public colleges are less expensive than private colleges because tuition is far lower (see *Table 1*). Furthermore, public two-year schools are less expensive than public four-year colleges and have the added appeal that they are typically near a student's home, making it practical for the student to live there. Consequently, the average cost of a year of college education for low-income students is reduced by choosing less expensive types of schools, especially public two-year colleges.

Because public colleges are heavily subsidized through appropriations from the states, they charge tuition that is well below their costs for providing instruction. At public four-year colleges in the 1999-2000 academic year, that ability to charge tuition lower than the actual cost of instruction amounted to a general subsidy of \$8,422, or 43 percent, of the total cost per student (see the second panel of *Table 9*) compared with a subsidy of just 12 percent at private colleges.¹⁵

15. In addition, colleges (particularly private ones) subsidize individual students through institutional grants, which are, in effect, discounts to the listed tuition charge. States also have grant programs—many of them merit-based aid—that are increasingly used to encourage good students to attend college in-state. Taken together, nonfederal grants provided students with an average of \$2,484, or 12 percent of costs, in academic year 1999-2000. Unlike federal grants, nonfederal grants on the whole were not strongly targeted toward low-income students. Nevertheless, in the 1999-2000 academic year, grants and loans from states, institutions, and other parties financed 13 percent to 14 percent of costs for students from the lowest- and lower-middle-income groups versus 10 percent for students from the highest-income group—a small differential of only 3 or 4 percentage points.

Table 10.**Average Contributions by Parents to College Costs, by Family Income and College Type, Academic Year 1999-2000**

	Total Parents' Cost (Dollars per pupil)					Dollar Share of Total Cost of Education				
	All					All				
	Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above	Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above
All Colleges										
Total Average Parents' Costs	4,723	3,035	3,658	4,194	9,031	0.24	0.18	0.19	0.21	0.38
Cash and food at home	4,177	1,693	3,267	4,268	8,812	0.21	0.10	0.17	0.21	0.37
Federal tax advantages	-744	-169	-983	-1,256	-756	-0.04	-0.01	-0.05	-0.06	-0.03
Room at home	1,290	1,510	1,374	1,182	975	0.06	0.09	0.07	0.06	0.04
Public Four-Year Colleges										
Total Average Parents' Costs	3,055	2,107	2,032	2,954	6,302	0.16	0.12	0.10	0.14	0.30
Cash and food at home	2,773	1,133	1,860	3,481	5,942	0.14	0.06	0.10	0.17	0.28
Federal tax advantages	-688	-160	-910	-1,232	-529	-0.03	-0.01	-0.05	-0.06	-0.03
Room at home	970	1,133	1,082	705	889	0.05	0.06	0.06	0.03	0.04
Private Four-Year Colleges										
Total Average Parents' Costs	8,449	2,945	6,387	7,384	14,405	0.31	0.14	0.24	0.27	0.47
Cash and food at home	8,788	2,046	7,058	8,351	15,344	0.33	0.10	0.26	0.30	0.50
Federal tax advantages	-1,038	-270	-1,302	-1,735	-1,277	-0.04	-0.01	-0.05	-0.06	-0.04
Room at home	699	1,169	631	768	339	0.03	0.06	0.02	0.03	0.01
Public Two-Year Colleges										
Total Average Parents' Costs	3,772	3,976	3,617	3,401	4,439	0.26	0.28	0.24	0.23	0.29
Cash and food at home	2,173	2,050	2,231	2,157	2,336	0.15	0.15	0.15	0.15	0.15
Federal tax advantages	-574	-125	-844	-914	-233	-0.04	-0.01	-0.06	-0.06	-0.02
Room at home	2,173	2,050	2,231	2,157	2,336	0.15	0.15	0.15	0.15	0.15

Source: Congressional Budget Office study based on the National Center for Education Statistics' data analysis system for the 1999-2000 National Postsecondary Student Aid (available at www.nces.ed.gov/das/).

Note: Data are for full-time dependent students in their first undergraduate year.

Second, within the categories of colleges, students from the lowest-income families are more likely to attend those that charge less tuition. That tendency holds for all types of colleges but is most pronounced for private four-year institutions: in the 1999-2000 academic year students from families in the lowest-income group attended private colleges with costs averaging \$20,389 compared with costs averaging \$30,600 for the highest-income group. The choice of lower-tuition schools is also likely to be reflected in the lower amounts and smaller shares of costs paid by parents in the lowest-income group relative to those paid by parents in other income groups.

Third, students from families in the lowest-income group are more likely than students from higher-income groups to live at home. During academic year 1999-2000, almost half of students from the lowest-income group lived at home compared with just over a quarter of students in the highest-income group (see Table 7). Living at home reduces the share paid by low-income parents relative to what it would have been had the parents paid for the student to live away from home in a dormitory or apartment. In addition, residing with one's family is closely tied to the choice of a college. Students who attend public two-year colleges are much more likely to live at home than are students who attend any other type of college.

Table 11.**Average College Costs Paid by Students, by Family Income and College Type, Academic Year 1999-2000**

	Total Students' Cost (Dollars per pupil)					Dollar Share of Total Cost of Education				
	All Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above	All Income Groups	Less than \$30,000	\$30,000 to \$59,999	\$60,000 to \$89,999	\$90,000 and Above
All Colleges										
Total Average Students' Costs	4,781	3,138	5,144	5,590	4,848	0.24	0.19	0.26	0.27	0.21
Earnings	2,818	1,710	3,075	3,375	2,740	0.14	0.10	0.16	0.17	0.12
Loan repayments	1,963	1,428	2,069	2,215	2,109	0.10	0.08	0.10	0.11	0.09
Public Four-Year Colleges										
Total Average Students' Costs	5,162	3,826	5,701	5,909	4,169	0.26	0.21	0.29	0.29	0.20
Earnings	3,312	2,315	3,729	3,609	2,653	0.17	0.13	0.19	0.18	0.13
Loan repayments	1,851	1,511	1,972	2,301	1,516	0.09	0.08	0.10	0.11	0.07
Private Four-Year Colleges										
Total Average Students' Costs	6,629	5,641	6,924	7,631	6,064	0.25	0.28	0.26	0.27	0.20
Earnings	2,870	2,584	2,840	3,614	2,455	0.11	0.13	0.10	0.13	0.08
Loan repayments	3,760	3,057	4,084	4,017	3,609	0.14	0.15	0.15	0.14	0.12
Public Two-Year Colleges										
Total Average Students' Costs	2,794	1,177	3,256	3,563	3,933	0.19	0.08	0.22	0.25	0.26
Earnings	2,158	674	2,487	2,870	3,445	0.15	0.05	0.17	0.20	0.22
Loan repayments	636	503	769	693	488	0.04	0.04	0.05	0.05	0.03

Source: Congressional Budget Office study based on the National Center for Education Statistics' data analysis system for the 1999-2000 National Postsecondary Student Aid (available at www.nces.ed.gov/das/).

Note: Data are for full-time dependent students in their first undergraduate year.

Parents' Share of Costs

In academic year 1999-2000, parents' share of college costs averaged 24 percent generally, but among income groups it ranged from about 38 percent for the highest to about 20 percent for the other three. The contribution of 38 percent by the highest-income parents was primarily the result of their 47 percent share of costs at private four-year colleges. (The willingness of parents from that income group to make such large contributions to their children's college costs may explain why those students attend private four-year schools at a much higher rate than do students from any other group.) Among students at private four-year schools, parents in the lowest-income group contributed the smallest share of costs, but among students at public two-year colleges, parents in the lowest-income group contributed a somewhat larger share than parents in the two middle-income groups (see Table 10).

The finding that parents' contributions generally increase with family income in part reflects the design of the federal government's policy on student financial aid, which provides more support to students who are likely to receive less from their parents. That policy increases the so-called expected family contribution (EFC) for families with greater income and assets. In turn, those with a larger EFC are eligible for less federal aid.

Yet the value of parents' contributions as determined from the 1999-2000 data probably overstates the cost that parents actually bear because some of that support is in the form of in-kind assistance. In particular, parents are assumed to provide a room cost-free for their children who live at home while attending college. However, CBO assumed in its analysis that the value of that room equaled the cost of a dorm room. The share of costs borne by parents when the value of a room at home was

excluded varied from 34 percent for the top group to between 9 percent and 15 percent for the other three.

Despite contributing a smaller amount to college costs than middle- or upper-income parents did, parents in the lowest-income group contributed a larger percentage of their income. Such families contributed 17 percent of their income (which included the value of a room at home) to support their students at public four-year colleges; by contrast, the highest-income families contrib-

uted just 7 percent. If the value of a room at home is excluded, the lowest-income families contributed 9 percent of their income versus 6 percent for the highest-income families. Middle-income families who benefited from Hope tax credits contributed even less. Thus, the lowest-income parents may be bearing a slightly larger burden relative to their income than that borne by higher-income parents.



Appendix: Reconciling Means of Financing with Tuition and Nontuition Expenditures

The sum of all means of college financing must equal the total cost of college. Because rough measures are the best that are available for some means of financing and because the cost of college itself (which takes into account many factors in addition to tuition) is only an estimate, two steps are necessary to equate total financing with total costs. First, average contributions by parents, which are based on qualitative data, are adjusted until equality is reached (*see Table A-1*). Generally, at four-year colleges, parents' contributions to lower-income students are reduced and contributions to higher-income students are increased. Second, at public two-year colleges in particular, even after average parents' contributions are reduced to zero, the reported means of financing still exceed budgeted expenditures. In those cases, the amount of students' earnings that are used to pay college costs is reduced (*see Table A-1*).

Data on the means of financing come from the 1999-2000 National Postsecondary Student Aid Study (NPSAS) and are gathered from records kept by the colleges' financial aid offices and from self-reports by students during a telephone survey. The aid offices' records provide precise information on federal, state, and institu-

tional grants and loans. Student-reported data (on earnings and parents' contributions) are often less precise and cannot be checked against administrative data. Some information on parents' contributions, for example, is qualitative. The study asks students, "How much of your tuition did your parents pay? (1) All, (2) Part, or (3) None." For those answering "part," an estimated parents' contribution of 50 percent of full tuition is assumed. Clearly, such a measure of parental support is imprecise and results in over- or underestimates of actual financing.

Even if the NPSAS estimates on the means of financing were 100 percent accurate for individual students, the sum of those means might still be greater or less than what the college expects students to budget for tuition and nontuition expenses. The colleges provide data on the estimated budgets for those expenses, but the actual amounts vary. Some students may keep a car or live off-campus in a relatively expensive apartment. Other students may live less expensively than the budgeted room and board estimated by the college.

Table A-1.**Adjustments to Reported Parents' Contributions and Students' Earnings**

(Dollars per pupil)

Family Income	Average Budgeted Tuition and Nontuition Expenses	Estimated Parent Contributions for Tuition and Nontuition Expenses	Estimated Student Earnings	Estimated Financing Minus Budgeted Expenses	Amount Deducted From or Added to Parent Contributions	Amount Deducted From or Added to Student Earnings
Public Four-Year Colleges						
All Income Groups	11,278	1,809	3,312	6	-6	0
Less than \$30,000	10,267	1,044	2,951	1,680	-1,044	-636
\$30,000 to \$59,999	11,163	1,518	3,729	740	-740	0
\$60,000 to \$89,999	11,703	2,016	3,609	-761	761	0
\$90,000 and above	12,068	2,995	2,653	-2,057	2,057	0
Private Four-Year Colleges						
All Income Groups	23,708	7,991	2,870	-98	98	0
Less than \$30,000	17,885	3,253	2,584	2,376	-2,376	0
\$30,000 to \$59,999	23,776	7,130	2,840	704	-704	0
\$60,000 to \$89,999	24,389	9,234	3,614	1,650	-1,650	0
\$90,000 and above	26,843	11,757	2,455	-3,248	3,248	0
Public Two-Year Colleges						
All Income Groups	8,412	654	5,925	4,421	-654	-3,767
Less than \$30,000	8,114	440	4,350	4,116	-440	-3,676
\$30,000 to \$59,999	8,566	668	6,060	4,241	-668	-3,573
\$60,000 to \$89,999	8,335	818	6,740	4,688	-818	-3,870
\$90,000 and above	8,823	793	7,631	4,980	-793	-4,187

Source: Congressional Budget Office study based on National Center for Education Statistics, *Digest of Education Statistics, 2002*, Tables 343 and 345, and the National Center for Education Statistics' data analysis system for the 1999-2000 National Postsecondary Student Aid Study (available at www.nces.ed.gov/das/).

Note: CBO adjusted parents' contributions and students' earnings to equate total estimated financing with average budgeted expenses. Data are for full-time dependent students in their first undergraduate year.

