The Distributional Consequences of Federal Assistance for Higher Education: The Intersection of Tax and Spending Programs

Leonard E. Burman
Elaine Maag
Peter Orszag
Jeffrey Rohaly
John O'Hare

Discussion Paper No. 26

August 2005

Leonard E. Burman is a senior fellow at the Urban Institute, codirector of the Tax Policy Center, and a visiting professor at Georgetown University Public Policy Institute. Elaine Maag is a research associate at the Urban Institute and the project manager for the Tax Policy Center. Peter Orszag is director of the Retirement Security Project, the Joseph A. Pechman Senior Fellow in Economic Studies at the Brookings Institution, and codirector of the Tax Policy Center. Jeffrey Rohaly is a research associate at the Urban Institute and director of tax modeling at the Tax Policy Center. John O'Hare is a consultant for the Tax Policy Center.

The authors thank Sandy Baum, William Gale, and Jon Oberg for helpful discussions along with the participants in a roundtable focused on financing higher education held at Brookings Institution on January 26, 2005. In particular, they thank Lois Rice and David Mundel for their extensive comments on various drafts of this paper that greatly improved the work. Mohammed Adeel Saleem supplied expert research assistance. Support from the Lumina Foundation for Education is gratefully acknowledged, as is support from the Department of Health and Human Services, Assistant Secretary for Planning and Evaluation (HHS/ASPE), the primary funder of the TRIM model.

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The Tax Policy Center (TPC) aims to clarify and analyze the nation's tax policy choices by providing timely and accessible facts, analyses, and commentary to policymakers, journalists, citizens and researchers. TPC's nationally recognized experts in tax, budget and social policy carry out an integrated program of research and communication on four overarching issues: fair, simple and efficient taxation; long-term implications of tax policy choices; social policy in the tax code; and state tax issues.

Support for the Center comes from the Annie E. Casey Foundation, the Brodie Price Philanthropic Fund, the Charles Stewart Mott Foundation, the Ford Foundation, the George Gund Foundation, the Lumina Foundation, the Nathan Cummings Foundation, the Open Society Institute, the Sandler Family Supporting Foundation, and others.

Publisher: The Urban Institute, 2100 M Street, N.W., Washington, DC 20037

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Summary and Prospects for Further Research

For nearly a decade, federal higher education subsidies have increasingly been delivered through the tax code rather than through direct spending programs such as grants, loan subsidies, and work study. Recent tax provisions related to higher education include the creation of the Hope and lifetime learning credits, Section 529 (college saving) plans, Coverdell accounts (education IRAs), and the deduction for higher education expenses. Apart from some fairly substantial increases in the maximum Pell Grant (particularly between academic years 1995–96 and 2002–03) and a broadening of the population receiving loan subsidies, almost all new federal resources have been provided through the tax code and directed toward students from middle- and upper-middle-income families.

Beginning with the passage of the Higher Education Act in 1965 the principal goal of federal policy was to equalize higher education opportunities through programs designed to expand the enrollment of low- and moderate-income students. Basic (now Pell) Grants enacted in 1972, along with revised support service programs, were intended as the foundation upon which all other forms of aid—federal, state, and institutional—would be built. The framers of this landmark legislation sought to raise the aspirations and academic preparation of the target populations and not only improve their college attendance rates but also provide such students with broader institutional choices and better chances of completing college. These intentions remain unfulfilled. While the college participation rates of low-income students have improved over time, the gap in attendance between them and students from the highest income quartile is still nearly 30 percentage points. Even after controlling for ability as measured by test scores, the gap remains at 22 percent (Dynarski 1999). Moreover, low- and moderate-income students are disproportionately enrolled in two-year institutions and even more heavily in short-term programs in for-profit and technical schools.

Since the passage of the Middle-Income Student Assistance Act of 1978 and the 1997 tax expenditure programs in support of higher education, federal policymakers have adopted an additional goal—namely, emphasizing and providing more resources to middle-and higher-income students and their families.

The shift in federal higher education assistance from direct expenditures toward tax expenditures and the shift in emphasis to new populations raise several concerns. For example, the shift toward subsidizing education through the tax code has thus far delivered little benefit to the lower end of the income distribution. The combination of the shifts in program types and intended beneficiaries may reduce the impact of federal support on narrowing of the college enrollment gaps between lower-income students and their middle- and higher-income counterparts.

To evaluate the impact of the current and alternative mixes of higher education tax and spending policies, it is necessary to assess who currently receives what subsidies and how the patterns of assistance would change as a result of changes in tax and expenditure programs. Key to the accuracy of this type of assessment is an ability to analyze the interactions among current programs and the impacts of combinations of potential program alternatives. Such an effort requires a different type of analysis from that typically applied to assessing alternative higher education assistance policies.

This paper describes an initial effort to build a microsimulation model that can provide detailed estimates of the distributional impacts of both tax and expenditure programs and the interdependencies of these two types of policy instruments. This new model was developed by the Urban Institute–Brookings Institution Tax Policy Center (TPC) with support from the Lumina Foundation for Education. This development effort involved creating new education modules for use in two different microsimulation models—the TPC's tax model and the Urban Institute's transfer income model (TRIM).

This paper reviews the results of using this new microsimulation model to estimate the distributional impacts and expenditure and revenue effects of major federal higher education tax and spending policies. In addition, the paper reports estimates of the effects of some prototypical policy changes as examples of the analysis that can be performed using these new models.

Distributional Impact of Pell Grants

The model estimates that the Pell Grant program is highly targeted toward lower-income families. We estimate two-fifths of the Pell program expenditures flow to students in tax units with adjusted gross income (AGI) of less than $10,000. Less than 2 percent of the total resources flow to recipients in tax units with AGI of more than $50,000. Consistent with program data, the model also indicates that approximately 60 percent of students receiving a Pell Grant are in tax units with AGI of less than $20,000.

Distributional Impact of the Hope Credit

The model projects that the distributional impact of the Hope credit is very different from that of the Pell Grant program. Only 4.1 percent of the total tax credit accrues to students in tax units with cash incomes of less than $20,000. Almost 60 percent of the tax expenditures resulting from this credit flow to students whose family cash incomes exceed $50,000, with tax units with cash incomes between $50,000 and $100,000 receiving more than half the total benefit. The share of tax units receiving some benefit from the Hope credit peaks in the $75,000–$100,000 cash income range (at 3.6 percent of such units).[1]

Distributional Impact of the Lifetime Learning Credit

As a result of expanding the definition of eligible expenses for this credit, the lifetime learning credit (LLC) now provides larger aggregate tax benefits than the Hope credit (the average credit is roughly one-third larger) and more tax units receive it (roughly 2.5 percent of tax units receive the LLC compared with 1.4 percent for the Hope). The distribution of the tax benefits from the LLC is slightly less targeted toward upper-income families than the distribution of Hope credit benefits, but still much more targeted toward these beneficiaries than the Pell Grant program. Less than 5 percent of the LLC benefit accrues to students in tax units with cash income of less than $20,000, and over 50 percent accrues to tax units with cash income above $50,000.

[1] Note that cash income includes some elements not included in AGI, such as employee contributions to tax-deferred retirement plans, TANF benefits, employer's share of payroll taxes. See footnote on table 3 for a more complete listing.

Distributional Impact of Tax Deductions for Higher Education Expenses

The tax deduction for higher education expenses is even more targeted toward higher income students than either the Hope or LLC. We estimate that the majority of the benefits from this deduction accrues to tax units with cash incomes between $100,000 and $200,000. Joint filers with income in this range are typically not eligible for the LLC or Hope, but some of them are eligible for the deduction. Lower-income households who qualify for the LLC or Hope, on the other hand, typically find it more advantageous to claim those credits, and thereby disqualify themselves from eligibility for the deduction. The percentage change in after-tax income due to the deduction is highest for tax units with cash incomes between $100,000 and $200,000; the peak in this key metric thus occurs in a substantially higher income range than for either the Hope or LLC.

Distributional Impact of Tax Deductions for Student Loan Interest Payments

The distribution of benefits from the deduction for student loan interest is similar to that of the tax credits for higher education. For example, tax units with cash income above $50,000 receive almost 60 percent of the aggregate tax benefit, the same share as the Hope. Yet more than one-fifth of the total benefit from the interest deduction is received by tax units with cash income above $100,000; this is a higher share than for either the Hope or LLC. Slightly more tax units receive the interest deduction than the LLC and Hope combined; 4 percent of all tax units claim the student loan interest deduction, compared with 2.5 percent for the LLC and 1.4 percent for the Hope. The individuals receiving a tax deduction for student loan interest payments differ fundamentally from those receiving other tax benefits because they are largely former students, rather than current students.

Distributional Impact of the Combination of Tax Provisions

In total, more than 14 million tax units receive some benefit from at least one higher education tax provision. The overall distributional patterns from the higher education tax provisions are somewhat subtle. The tax provisions provide little benefit to households at the lower end of the income distribution and are substantially less progressive than the Pell Grant, which is highly targeted toward low- and moderate-income students.

Higher education tax expenditure benefits tend to concentrate within the broad middle- and upper-middle class, from roughly $50,000 to $100,000 in cash income. Tax units in this income range receive almost 42 percent of the benefit from the various tax provisions. Roughly one-seventh of the total tax benefit flows to tax units with cash incomes of $100,000 or more. But, the tax provisions also provide little assistance to very high income students and families. Households with incomes of more than $200,000 receive only 0.2 percent of the benefits from these higher education tax provisions.

Distributional Impact of Potential Policy Alternatives

To demonstrate the utility of the microsimulation models, the models were used to estimate the distributional impacts of several potential higher education policy alternatives. One alternative involved simplifying the grant determination formula used in the Pell Grant program by replacing the complex “expected family contribution” formula

currently used with the family's or student's tax liability before credits. The model suggests that this change would improve targeting (i.e., increase the share of benefits flowing to lower income students) but would require roughly a $5 billion (44 percent) increase in program expenditures. Most of the increases in Pell support resulting from this alternative appear to flow toward older, more likely independent students rather than traditional-age, dependent students.

Several tax policy changes were also considered. In general, the benefits of higher education tax policies flowing to low- and moderate-income students would be increased if these tax credits became refundable, rather than limited by student or family tax liability. Making the credits refundable (without limiting the benefits they provide higher-income families, who have higher tax liabilities) would significantly increase the revenue losses resulting from these programs.

Overall Costs Facing Students

Students from households with AGI of less than $10,000 face massive hurdles in paying for college. After taking institutional grants, Pell Grants, and tax credits into account, these students face an average net cost of $8,935 per year of attendance. For a tax unit with AGI of $10,000 or less, that net cost is a potentially overwhelming burden, even if much of it can be financed temporarily with loans. The net cost to higher-income students is also substantial, and indeed is higher than for the lowest-income families, but higher-income families are much more likely to be able to afford the net cost without excessive difficulties.

Prospects for Future Research

This paper demonstrates the benefits of using a detailed microsimulation model to assess the distributional impacts of the complex array of tax policies and expenditure programs that assist college students and their families. These microsimulation models can now be extended to incorporate more recent information from the National Postsecondary Student Aid Study, based on the 2003–04 academic year. This information will provide guidance on how the Pell program and tax programs changed between the 1999–2000 academic year and the 2003–04 academic year—a time in which the Pell Grant program expanded significantly and potential users became more familiar with the tax credits.

A major goal of future research efforts will be to further tune the models to provide more detailed information about who stands to benefit from various policy changes. This could include in-depth analysis of how dependent (traditional-age) students and independent (primarily older) students benefit from the various tax and transfer policies. Additional policy options could also be tested to better understand the intersection of tax and spending policy for higher education.

The Distributional Consequences of Federal Assistance for Higher Education: The Intersection of Tax and Spending Programs

Since 1997, federal higher education subsidies have increasingly been delivered through the tax code rather than through traditional direct spending programs, such as grants, loans, and work study (Maag and Fitzpatrick 2004). Recent tax provisions related to higher education include the creation of the Hope and the lifetime learning credits, Section 529 (college saving) plans, Coverdell accounts (education IRAs), and the deduction for higher education expenses. Apart from increases in the maximum Pell Grant (particularly from $2,340 in academic year 1995–96 to $4,000 in academic year 2002–03) and a broadening of the population receiving loan subsidies, almost all new federal resources directed at higher education have been provided through the tax code and have been directed toward students from middle- and upper-middle-income families.

The shift in federal higher education assistance from direct spending to tax expenditures raises several concerns. First, the tax expenditures are poorly targeted to low-income families, whose enrollment rates remain substantially below those of middle- and high-income families. Even controlling for ability, as measured by test scores, the enrollment gap between high- and low-income youth is 22 percent (Dynarski 1999). The shift toward subsidizing education through the tax code, which has thus far delivered little benefit to the lower end of the income distribution, may exacerbate the gap in enrollment rates, particularly if the enrollment rates of middle- and higher-income students respond to tax system benefits and lower-income students do not receive them. Second, the proliferation of different forms of assistance for higher education leads naturally to concerns about overlapping or contradictory provisions and about the potential negative effects of increased complexity on the predictability of student assistance. The value of all the programs together may be less than the sum of their parts. Third, the future of higher education policy has become increasingly intertwined with the status of federal tax and fiscal policy. As a result, previously esoteric issues, such as the projected explosive growth of the alternative minimum tax (AMT), can now exert substantial influence on higher education policy (Burman, Gale, and Rohaly 2003).

A key step in evaluating higher education tax and spending policies, as well as developing policy alternatives, is analyzing who currently receives what subsidies and how these patterns of assistance would be altered by potential policy changes. This paper provides new estimates of the distributional and revenue effects of federal higher education tax and spending policies by family income level. For this purpose, the Tax Policy Center (TPC) has developed new education modules in two different microsimulation models—the TPC's tax model and the Urban Institute's transfer income model (TRIM). The new education modules in both models are based on a statistical match with data from the 1999–2000 National Postsecondary Student Aid Study (NPSAS:2000), as described in more detail below.

The next section of this paper describes the TPC tax model, the TRIM, and the methodology used for creating the education modules in both models. After that, the

paper presents results from using the models to analyze the revenue and distribution of existing federal tax and spending programs for higher education. Subsequent sections analyze proposed reforms and discuss the incentive effects from existing programs and proposed changes. The final section offers conclusions. Appendix 1 offers more detail on the education modules in the TRIM and the TPC tax model and appendix 2 discusses the match with the NPSAS in detail.

Description of Models

We have adapted two large-scale microsimulation models to measure the distribution of tax and direct subsidies for higher education. The first is the Transfer Income Model, version 3, of the Urban Institute (TRIM3). TRIM3 is a comprehensive microsimulation model of the tax and transfer programs affecting individuals and households. The primary dataset underlying TRIM3 is the March Current Population Survey (CPS), a nationally representative sample of the U.S. population. In this analysis, we use the version of TRIM3 based on the March 2002 CPS, which reflects data from 2001.[2] The second model is the Tax Policy Center microsimulation model (henceforth called the tax model). The current version of the model is based on data from the 1999 public-use file produced by the Statistics of Income (SOI) Division of the Internal Revenue Service (IRS). The file contains about 132,000 records with detailed information from federal individual income tax returns filed in the 1999 calendar year.[3] The tax model has two other components: a statistical routine that uses forecasts from the Congressional Budget Office, the IRS, and the Bureau of the Census to "age" or extrapolate the 1999 data to create representative samples of the filing and nonfiling populations for future years; and a detailed tax calculator that computes the regular income tax and AMT liability for each tax unit in the sample under current law and under alternative policy proposals.[4]

We added information about education expenses and student type to these models using statistical matching techniques. We then used this information to calculate Pell Grants and tax subsidies for students. The procedure involves finding the closest match between records on the CPS and NPSAS:2000 and assigning information about student status, type of educational institution attended (two-year, four-year, public, or private), and expenditures on tuition and fees to the CPS records. For the tax model, the matched CPS-NPSAS records are matched again onto the SOI data set and the results are recalibrated to match both the underlying distribution of information on the NPSAS:2000 and IRS administrative records. The procedure is described in detail in appendix 2.

Using TRIM, we model the Pell Grant based on a student's expected family contribution and eligible expenditures (as reported in the NPSAS:2000) and the program

[2] A statistical match with the 1999 public-use file produced by the Statistics of Income (SOI) Division of the Internal Revenue Service (IRS) provides information on income components not contained in the CPS, such as capital gains, to supplement the CPS data.

[3] A statistical match with the March 2000 CPS provides demographic and other information to supplement the tax data.

[4] See http://taxpolicycenter.org/commentary/model.cfm for additional details.

rules. Students who qualify for a Pell Grant of less than $200 receive no award. Students who qualify for a grant between $200 and $400 receive the minimum $400 grant. Results for the 2002–03 academic year are aligned to information derived from unpublished tabulations of Pell program data provided by the Office of Postsecondary Education, U.S. Department of Education. For the tax credits, we model usage based on the existence of eligible expenditures and the rules that apply to the credits—e.g., how they phase out over income ranges, how the Hope credit is available for only the first two years of postsecondary education, and that only one lifetime learning credit is allowed per tax return. Taxpayers are assumed to take the credits most advantageous to them (see appendix 2). The results are adjusted to match published totals in 2001, and income and expenditure amounts are inflated to 2002 levels based on estimates of "list prices" from the College Board to simulate the effect of 2002 law.

We use the tax model to simulate the effect of the tax credits, the deduction for educational expenditures, and the student loan interest deduction.[5] The procedure for the tax credits is similar to that in TRIM, but we have some data on tax returns to which we can calibrate the information. We calibrate our match so qualifying educational expenses from the NPSAS are consistent with the actual use of credits reported on the tax returns.[6] We further adjust the model so our estimates for 2001 and 2002 are consistent with tabulations published by the IRS.

We model the educational expense deduction by assuming that taxpayers who are eligible and would benefit will take that deduction instead of one of the tax credits. In general, these are taxpayers whose incomes are too high to be eligible for the full Hope or lifetime learning credit. Our model also reflects the effect of the individual alternative minimum tax (AMT) and other tax provisions on the value of tax incentives. For example, after 2005 under current law, the tax credits will generally not be allowed for taxpayers on or near the AMT threshold.[7] The above-the-line deduction for education expenses is allowed regardless of the taxpayer's AMT status. We calibrate our estimates for the deduction to those published by the IRS for 2002, the first year in which the deduction existed.

The deduction for student loan interest is more complicated. In 1999, the deduction was only allowed for five years, was limited to $1,500 a year, and had tight income restrictions. The Economic Growth and Tax Relief Reconciliation Act (EGTRRA) of 2001 eliminated the time limit and relaxed the other restrictions. We use data from the Survey of Consumer Finances (SCF) produced by the Federal Reserve Board, the best source of information about assets and liabilities, to predict interest

[5] We were not able to simulate the distributional effect of the section 529 plans because of lack of data. Although there are some data on education IRAs, very few taxpayers utilized them before the 2001 law expansions so the data are also inadequate to analyze that program.

[6] In addition, a number of taxpayers appeared eligible for the credits, but did not use them in 1999. This is discussed more below.

[7] A temporary provision allows usage of the education tax credits through 2005. See appendix for discussion.

expense for those who did not report it on their tax returns, subject to the now-prevailing income and deduction limits.[8] After all these adjustments, we are able to calculate the distribution of existing tax incentives and Pell Grants and simulate changes in policy. The next section reports the results of those simulations.

Two income metrics are used throughout the paper, differing based on which model was used for estimation. Because TRIM relies on the CPS, it is more suited to analysis directed at low-income households. Therefore, we model the Pell Grant and tax credits in this model. The TPC model, on the other hand, contains a wealth of information on higher-income tax filers and is more suited to analysis of these households. We model all the tax provisions using the TPC model, but do not model the Pell Grant. The models intersect in the modeling of the Hope and LLC. The two models use different income classifiers, AGI (TRIM) and cash income (TPC model), when producing standard output tables. For the Hope and LLC, both models are aligned to IRS published totals for the tax credits to insure consistency of results between the two models. While the measures do not overlap completely, very few households would be classified as "high income" using one metric and not using the other. The same is true for low-income households. Cash income includes more income components than AGI (see footnote to table 3 for a description of cash income). The results produced are robust to the various income metrics. Low-income households generally benefit from Pell Grants, middle-income households benefit from tax credits, and higher-income households benefit from tax deductions, regardless of which income metric is used. For an example of how the two income metrics intersect, see http://taxpolicycenter.org/TaxModel/tmdb/TMTemplate .cfm?DocID=574. Future work could incorporate modeling the Pell Grant in the TPC model—with the disadvantage of having less information about participation in other transfer programs—or adjusting the results of either model so the same income metric can be used throughout the analyses.

Distributional Effects of Current Higher Education Policies

Table 1 shows the estimated FY 2003 tax expenditure and spending costs associated with major higher education policies. As the table shows, the annual tax expenditure associated with the four main higher education tax provisions—the Hope credit, the lifetime learning credit, the tuition and fees deduction, and the student loan interest deduction—is now roughly the same as the annual expenditure on the Pell Grant. In this section, we examine the distributional effects of the Pell Grant and the principal higher education tax provisions.

Pell Grants

Pell Grants were originally created in 1972. Approximately 23 percent of all undergraduates in the 1999–2000 academic year received a Pell Grant (Stedman 2003).

[8] For those who reported interest at the maximum level, we use the SCF data to predict the actual amount of interest, which we know is at least as great as the limit. For others, we use the actual amount reported on their tax returns. We calibrate our estimates to published data for 2002. (See appendix for details on the methodology.)

In the 2003–04 academic year, the total number of students receiving the grant grew by 7 percent to 5.1 million (The College Board 2004). In the same academic year, funding for the Pell Grant reached $12.7 billion and the maximum Pell Grant was $4,050 for full-time students. The maximum Pell Grant award has failed to keep pace with increases in average tuition, room, and board facing college students.

There are no formal income thresholds for the Pell Grant; instead, students are eligible if their expected family contribution (EFC) or personal contribution falls below an annually determined amount. The EFC attempts to measure the student's parents' or student's ability to pay for postsecondary expenses based on a formula that includes the student's income, assets, and tax liability; the parent's after-tax income and assets (excluding pension and housing wealth); the number of other postsecondary students in the family; and other measures of parental and/or student ability to contribute to college costs. As the cost of education increases, students from higher-income families can become eligible for need-based aid such as Pell Grants.

Both the Pell Grant Program and some tax expenditure programs provide assistance to dependent students (traditional-age students who depend on their parents for financial support) and independent students (primarily older students who depend on themselves and sometimes their spouses for support). In the Pell Grant program, independent students represented 57 percent of the recipients in 2002–03 and accounted for 55 percent of the Pell expenditures that year.

Although the program is not a true entitlement, all students who apply and meet the eligibility criteria receive an award of some amount. Actual awards per student vary based on annual appropriations and the number of eligible students. Those with the smallest EFC receive the largest awards, up to the appropriated maximum. Those with the largest EFC who still qualify for a Pell Grant of $200 to $400 receive a $400 minimum grant. To receive a Pell Grant, students or their families must file the cumbersome Free Application for Federal Student Aid. Families with no tax liability are automatically eligible to receive a Pell Grant, but they must still apply to receive a grant.

Table 2 shows the distributional impact of the Pell Grant in the 2002–03 academic year, as simulated using the TRIM model.[9] As the table shows, the Pell Grant is progressive. Two-fifths (41.4 percent) of the expenditures on the Pell flow to students in tax units with adjusted gross income (AGI) of less than $10,000. Less than 2 percent of the total flows to recipients in tax units with AGI of more than $50,000. Approximately 60 percent of students receiving a Pell are in tax units with AGI of less than $20,000. The average Pell Grant amount declines significantly as income increases. The average grant per student (as opposed to per tax unit) is $1,195 for recipients in tax units with AGI of less than $10,000; it declines to $230 for recipients in tax units with AGI between $40,000 and $50,000. Overall, almost 5 million tax units benefit from the Pell Grant; the average grant for those tax units is more than $2,000.

[9] Data were aligned to information derived from unpublished tabulations of Pell program data provided by the Office of Postsecondary Education, U.S. Department of Education.

Some tax units that appear to be very low income are composed of independent students—those who expect to receive no support from their parents, or are at least age 24, or have dependents other than a spouse. These students typically are only temporarily low-income while they are in college. Their families may be found anywhere in the distribution of incomes.

Hope and Lifetime Learning Credits

The Taxpayer Relief Act of 1997 created the Hope tax credit and the lifetime learning credit (LLC). Both are intended to subsidize the cost of attending school by allowing a portion of a student's expenses to be offset by a tax credit. The Hope credit, first available for expenses incurred in 1998, can be claimed for any student in the family for the first two years of postsecondary education. The student must be enrolled at least half-time while pursuing a recognized education credential. The credit for each student is 100 percent of the first $1,000 of qualified expenses (tuition and required fees) and 50 percent of the next $1,000 of qualified expenses up to a maximum of $1,500. The limit on expenses eligible for the Hope credit has been adjusted for inflation in increments of $100 since 2002, but no adjustment to the $1,000 threshold is expected until 2008 because inflation is expected to remain modest.

The LLC, first available for expenses paid after July 1, 1998, can be claimed for any number of years and for any qualified expenses, including those incurred by graduate and professional students and people upgrading skills or changing careers. Only one LLC may be claimed per tax return regardless of the number of students in the tax unit. Starting in 2003, the LLC equals 20 percent of expenses up to $10,000 per household. Before that, eligible expenses were capped at $5,000. A student may take advantage of only one credit in a single year. If there are multiple students in a household, some may choose to claim the Hope credit while others claim the LLC.

Both credits begin to phase out for single taxpayers with a modified AGI of $42,000 ($85,000 for married taxpayers) in 2004. The credits completely phase out once modified AGI reaches $52,000 ($105,000 for married taxpayers) in 2004. Neither the Hope credit nor the LLC is refundable, so low-income households do not benefit from them. Taxpayers cannot claim a credit for any portion of educational expenses paid with certain tax-free funds, including scholarships, Pell Grants, employer-provided educational assistance, veterans educational assistance, and withdrawals from a Coverdell account or Section 529 plan. In addition, a student's Hope credit is reduced by receipt of a Pell Grant. For example, if a student is responsible for $1,250 in tuition and fees and receives a Pell Grant of $800, the student is eligible for a tax credit of $450.

Table 3 shows the distribution of the Hope credit in 2005, as estimated using the tax model. The distribution is sharply different from that for the Pell Grant. Only 4.1 percent of the total tax credit accrues to students in tax units with cash income of less than $20,000. Almost 60 percent flows to those with cash income of $50,000 or more. Tax units with cash income of between $50,000 and $100,000 receive more than half the total benefit. The share of tax units receiving some benefit from the Hope credit peaks in

the $75,000–$100,000 cash income range (at 3.6 percent of such units); the income cap limits the receipt of the credit above that adjusted gross income level.[10]

The percentage change in after-tax income due to a tax change is a useful metric of its progressivity or regressivity. In general, a tax subsidy that decreases as a share of income is progressive, whereas one that increases is regressive. The Hope credit is regressive for people with low and modest incomes, worth nothing at the bottom, and increasing with income up to about $30,000. The percentage change in after-tax income is roughly constant for tax units with income between $30,000 and $75,000 before beginning to decline at higher income levels. Thus, above a relatively high-income threshold, the credit becomes progressive.

Table 4 shows the estimated distribution of the lifetime learning credit in 2005 based on the TPC microsimulation model. With the expansion in the expenses eligible for the credit that took effect in 2003, the LLC provides larger aggregate tax benefits than the Hope credit: 2.5 percent of tax units receive the LLC compared with 1.4 percent for the Hope, and the average tax benefit is roughly a third larger for the LLC than the Hope.

The distribution of the tax benefit from the LLC is generally less regressive than that of the Hope, but still much more regressive than the Pell Grant. Less than 5 percent of the LLC benefit accrues to students in tax units with cash income of less than $20,000, and 50 percent accrues to tax units with cash income above $50,000. The percentage change in after-tax income due to the LLC rises until a cash income range of $20,000 to $30,000, and is highest for tax units with cash income between $20,000 and $40,000.

Higher Education Expenses Deduction

The 2001 tax legislation created a temporary "above-the-line" deduction as an alternative to the Hope and lifetime learning credits.[11] In tax years 2002 and 2003, the maximum deduction was $3,000 for taxpayers with AGI of less than $65,000 ($130,000 for joint filers). In tax years 2004 and 2005, the deduction increased to a maximum of $4,000 for these taxpayers, and to $2,000 for taxpayers with AGI between $65,000 and $80,000 ($130,000 and $160,000 for joint filers). The deduction sunsets in 2005, and will be unavailable thereafter unless it is extended. Taxpayers can choose to take either the deduction or one of the credits available, but not both. In general, taxpayers with incomes too high to qualify for the tax credits claim the deduction (see appendix 2).

Table 5 shows the distribution of the higher education deduction in 2005, estimated using the tax model. Not surprisingly, the higher education deduction is even

[10] Cash income, the metric used in table 3, includes some elements not included in AGI, e.g. employee contributions to tax-deferred retirement plans, TANF benefits, employer's share of payroll taxes. See footnote on table 3 for a more complete listing.

[11] An "above the line" deduction can be taken regardless of whether a person itemizes deductions or takes the standard deduction. Certain other payments for postsecondary educational expenses are also excluded from income—an equivalent tax subsidy to a deduction. Payments by employers for education expenses up to $5,250 made through a qualified education assistance program are tax free, as are employer-provided education directly related to an employee's job. In addition, most scholarship aid is tax free.

more regressive than either the Hope or LLC, and dramatically less progressive than the Pell Grant. The majority of the benefit from the deduction accrues to tax units with cash incomes between $100,000 and $200,000. Joint filers with income in this range are typically ineligible for the LLC or Hope, but some of them are eligible for the deduction. Lower-income households that qualify for the LLC or Hope, on the other hand, typically find it more advantageous to claim those credits, and thereby disqualify themselves from eligibility for the deduction. The percentage change in after-tax income due to the deduction is highest for tax units between $100,000 and $200,000; the peak in this key metric thus occurs in a substantially higher income range than for either the Hope or LLC.

Student Loan Interest Deduction

Before the Tax Reform Act of 1986, student loan interest (like other forms of personal interest) was fully deductible for taxpayers who itemized deductions. When the 1986 act eliminated deductibility for most personal interest, student loan interest became nondeductible. In 1997, legislation partially reversed this by making required student loan interest deductible for certain low-income people for 60 months. The 2001 tax legislation liberalized the student loan interest deduction by eliminating the 60-month limit and the limit on required interest payments to allow for all interest payments—both required and voluntary—for an unlimited period.[12] These changes eliminated the complexity in determining when the 60-month period ended and what portions of paid interest were required versus voluntary payments. The 2001 tax legislation also increased the income phaseout thresholds by $10,000, expanding the benefits to somewhat higher-income taxpayers.

Table 6 shows the estimated distributional impact of the student loan interest deduction in 2005. From some perspectives, the distribution is similar to the tax credits for higher education. For example, tax units with cash income above $50,000 receive almost 60 percent of the aggregate tax benefit, the same share as the Hope. Yet more than one-fifth of the total benefit from the interest deduction is received by tax units with cash income above $100,000; this is a higher share than for either the Hope or LLC. Slightly more tax units receive the interest deduction than the LLC or Hope combined; 4 percent of all tax units claim the student loan interest deduction, compared with 2.5 percent for the LLC and 1.4 percent for the Hope. The highest recipiency rate for the interest deduction occurs between $75,000 and $100,000 in cash income, where almost 8 percent of tax units benefit. Units that receive the student loan interest deduction differ from units receiving the other tax benefits because benefits accrue to former students who have loans rather than current students and their families.

Tax Provisions Combined

Table 7 shows the combined impact in 2005 from the Hope, LLC, higher education deduction, and student loan interest deduction. In total, more than 14 million tax units—or almost 10 percent of all tax units—receive some benefit from at least one of these

[12] Voluntary interest payments are "prepaid" interest amounts that students are not required by law to pay at the time they are made.

provisions. Roughly one-seventh of the total tax benefit flows to tax units with cash income of $100,000 or more; almost 42 percent flows to tax units with cash income between $50,000 and $100,000.

The percentage change in after-tax income from the principal higher education tax provisions rises through the $30,000–$40,000 cash income range. At low incomes, the tax provisions are thus regressive. Above $40,000, however, the percentage change in after-tax income declines, mostly because of income caps on the various provisions. Based on this measure, the tax provisions are progressive over this income range.

The distributional patterns from the higher education tax provisions as a whole are thus somewhat subtle. The tax provisions provide little benefit to households at the lower end of the income distribution and are substantially less progressive than the Pell Grant, which is targeted at low- and moderate-income students. For example, the bottom third of the income distribution receives well under 10 percent of the aggregate benefit from the higher education tax provisions.

The tax provisions also provide little benefit to those with very high incomes. Households with incomes of more than $200,000 account for 2.5 percent of all tax units but receive 0.2 percent of the benefits from these tax provisions. Rather, the benefits from the higher education tax provisions tend to concentrate within the broad middle and upper-middle class, from roughly $30,000 to $100,000 in cash income. Tax units in this income range, which account for about 40 percent of all tax units, receive 58 percent of the benefit from the various higher education tax provisions.

Not shown on these tables are the benefits from Coverdell accounts and section 529 plans, both of which allow tax-free savings for educational purposes. Although the Coverdell accounts have income limits, 529 plans do not, and the contribution limits are quite high: the accounts can exceed $200,000 per student before contributions are restricted. We did not model these accounts because of insufficient data, but it is safe to assume that almost all tax benefits would accrue to those with high incomes.[13]

Our estimates of the benefits of the education provisions allow for the fact that if a certain provision did not exist, many taxpayers would still be able to benefit—although to a lesser extent—from one of the other measures. That is, if the Hope credit did not exist, many taxpayers would simply take the lifetime learning credit or the above-the-line deduction instead. Thus, our measure of the benefit of the Hope credit differs dramatically from a simple tabulation of how many taxpayers claim the credit and the amount of the credit claimed. For example, in 2005 under current law, the tax model estimates that approximately 2.1 million returns will claim the Hope credit and that the amount claimed will be approximately $2.3 billion, a much larger amount than the $1.3 billion benefit provided by the Hope credit reported in table 3. That is because, in the absence of the Hope credit, we estimate that an additional 1.7 million taxpayers would claim an additional $900 million in lifetime learning credits; the deduction for higher education expenses would be claimed by 300,000 more taxpayers and the amount

[13] See Burman et al. (2004) for a discussion of retirement savings incentives enacted as part of EGTRRA, which are likely to have similar distributional characteristics.

claimed would rise by almost $3 billion. It is unclear to what extent the official estimates reported in table 1 allow for this type of behavioral shift.

Pell Grant, LLC, and Hope

Given the starkly different distributional patterns of the Pell Grant and the higher education tax benefits, it is of interest to examine the combined impact of the Pell and the tax credits. Table 8 therefore shows the estimated overall effect of the Pell Grant, LLC, and Hope credit in 2002, using the TRIM model. (The TRIM model does not include the student loan interest deduction or the higher education expenses deduction, so those provisions are not included in table 8.) As the table indicates, the three provisions together are highly progressive. Roughly half the total benefit flows to tax units with AGI of less than $20,000, and students from these tax units represent about 36 percent of all recipients. Households with AGI of $50,000 or more receive only 12 percent of the total benefit. These overall results reflect the significant progressivity embodied in the Pell Grant, and the fact that the aggregate Pell benefit is larger than the Hope and LLC combined.

The results in table 8, however, must be treated with caution. As noted, the table excludes the most regressive principal tax provisions—the higher education expenses deduction, Coverdell accounts, and 529 plans. Furthermore, the failure of the tax provisions to provide assistance to the lower end of the income distribution is of particular concern given the challenges that lower-income households face in sending students to college. Table 9 shows the overall sources of funding for higher education by income class. Students from households with AGI of less than $10,000 face massive hurdles in paying for college. After taking institutional grants, Pell Grants, and the tax credits into account, these students face a net cost of $8,935 on average per year of attendance. For a tax unit with AGI of $10,000 or less, that net cost is a potentially overwhelming burden, even if much of it can be financed temporarily with loans. The net cost to higher-income students is also substantial, and indeed is higher than for the lowest-income families, but the higher-income families are much more likely to afford the net cost without excessive difficulties.

The results in tables 7, 8, and 9 raise a fundamental question: given the significant gaps between the enrollment rates of students from lower-income households and students from middle- and higher-income households, would the tax expenditures associated with the credits and deductions provide larger social benefits if they were better targeted at lower-income households? Many analysts have concluded they would. In the next section, we therefore explore various options to simplify the system of federal higher education assistance while expanding the assistance provided to lower-income students.

Possible Reforms to the Higher Education Provisions

In this section, we explore four possible reforms to the Pell Grant and the higher education tax credits aimed at delivering a greater share of their benefits to lower-income students and families. These four reforms are representative of a broad range of

alternatives that could be analyzed as new data become available and refined simulation models are developed.

Table 10 shows the estimated distribution of Pell Grants and the Hope and LLC under current law (2001$). Notably, many students who receive a Pell Grant file their own tax returns and are not claimed as dependents on another return. These students appear to be low-income individuals, though they may have access to other support systems, such as parents. We show the distribution of Pell Grants and the Hope and LLC under current law (2001$) for students age 23 or over—a proxy for independent students—in table A16.[14] This approximates the benefits available to independent students, who may be only temporarily low-income. Tables 11–14 show the differences between current law and the proposed option. These options illustrate alternatives that can be simulated with the models. Other variations could also be modeled.

Option 1 integrates eligibility for a Pell Grant with a family's tax liability before credits. Rather than applying the current Pell Grant formula, which subtracts a student's EFC from his or her qualified costs, we instead subtract a family's tax liability before credits. This provides a different metric of a family's ability to pay. By doing this, families may receive a Pell Grant without completing the cumbersome Free Application for Federal Student Aid. In addition, under this reform, the Pell Grant phases out as the Hope and lifetime learning credits phase in, providing a smooth transition from one program to the next. This occurs because as tax liability increases, the student's Pell amount decreases—but his or her Hope or LLC makes up for this loss. Table A17 shows this policy only for students age 23 or older, again approximating the benefits received by independent students who may be only temporarily low-income.

One issue raised by this reform is that the existing system incorporates income and assets in evaluating eligibility for financial assistance; a tax-based system would instead incorporate only income in evaluating eligibility. An approach based only on income would substantially reduce or eliminate the steep implicit taxes on saving in the current system. But the absence of an asset test may make gaming more likely, since annual income is easier to manipulate than the combination of annual income and assets.

As table 11 shows, this proposal appears to raise substantially the benefits from the Pell program that would be received by low-income students, while decreasing education subsidies for higher-income students. In total, the combined expenditures on Pell, Hope, and LLC increase 29.4 percent ($22.1 billion versus $17.1 billion under current law). Table A17 suggests that essentially all the increase in Pell awards received by lower-income students would be received by independent (primarily older) students. The number of households with students who would receive benefits also rises from 10.5 million to 13.3 million.

[14] Though the targeting for the Pell Grant recipiency overall in TRIM is quite close to unpublished data from the Department of Education, there is more variance when comparing students age 23 or over to those students deemed independent by the Department of Education. Notably, TRIM finds too few Pell Grant recipients in categories of total income less than $40,000. The average Pell Grant to this group is only 82 percent of administrative totals. Differences may be due both to inconsistencies in the comparisons being made as well as variance in the ages of students and the NPSAS:2000.

Almost all the benefits accrue to families with incomes below $30,000. More students in each of the AGI classes less than $30,000 could receive a Pell Grant, but the average grant would be smaller. This is not to say that students currently receiving Pell Grants would necessarily qualify for a smaller grant. Rather, it reflects a larger number of students qualifying for grants and those newly eligible qualifying for smaller grants than those previously eligible. Students with AGI less than $10,000 could expect to receive, on average, a Pell Grant worth $102 less. On the other hand, many students who live in families with income above $30,000 would lose Pell benefits under this proposal. Increased eligibility for the Hope or LLC would offset a small amount of the loss. Currently, expenses paid with a Pell Grant are not eligible to be offset with tax credits. The relatively small number of students with high incomes who currently receive a Pell Grant would, under this proposal, receive neither a Pell Grant nor a tax credit.

Several alternatives to this option could decrease its cost. This could include lowering the maximum grant or eliminating the minimum grant (as in current law, those students who qualify for at least a $200 grant but less than $400 receive the minimum $400 grant). Either option would retain this option's key feature, which is to target benefits on lower-income students.

Option 2 integrates the Hope and LLC into a College Opportunity Tax Credit (COTC), simplifying matters for households that currently must choose between the two credits. The maximum COTC would be $2,500, and would apply to qualifying higher education expenses of up to $4,500. Unlike the Hope, the COTC would not require that the student be in the first two years of school. In this option, the Pell Program remains unchanged, operating under current law.

As table 12 shows, the COTC raises the total tax credit amount relative to the current Hope and LLC by $1.4 billion in 2002, or about 25 percent. Families with incomes between $50,000 and $75,000 benefit the most from this proposal in terms of the increase in credit. Their credit would increase $319. However, the number of people receiving the credits remains fairly consistent with the current number of recipients. The COTC proposal thus simplifies the credits for middle-income households and provides them with some additional tax benefit, but does relatively little to assist lower-income households.

This change exemplifies what would happen with most proposed expansions of the Hope and LLC. Because only people with tax liability can benefit from nonrefundable tax credits, low-income families are unlikely to see any benefit from expanded tax credits—unless they are also made refundable. This replicates the current system where grant aid primarily benefits low-income families and tax aid benefits higher-income families.

Option 3 is the same as Option 2, but the College Opportunity Tax Credit is made refundable. Thus, Option 3 expands eligibility for the COTC to lower-income tax units that do not have any income tax liability. Refundability adds substantial cost to the proposal, but mostly because it provides large increases in the benefits to lower-income households with students. Making the COTC refundable increases its costs by more than

$3.5 billion in 2002, with tax units below $10,000 in AGI receiving more than half the additional tax benefit.

Table 13 shows that making the COTC refundable dramatically changes its distributional pattern. When the COTC is not refundable (table 12), the average credit per student rises until the $50,000–$75,000 income range; when the credit is refundable (table 13), the average credit per student is much higher at lower income ranges than at higher income ranges. A refundable COTC would deliver an average credit per student of $54 to students in tax units with AGI of less than $10,000; without refundability, the average credit in this income range is $7. In addition, substantially more families with very low AGI receive the tax credit when it is refundable than when it is nonrefundable. This comparison underscores the crucial role of refundability in delivering tax benefits to lower-income households.

Option 4 provides the most expansive option, combining significant simplification of the existing tax credits with a major increase in support for lower-income students (table 14). The total cost increase relative to current law is $8.5 billion in 2002. Over one-third of this increase would flow to students from tax units with less than $10,000 in AGI, and 63 percent of the benefit would accrue to tax units with less than $20,000 in AGI. The number of tax units receiving some benefit from the higher education provisions would rise from 7.3 million to 10.1 million. A small number of high-income students who currently can receive a Pell Grant would no longer be eligible for that aid.

These reform options suggest three key points. First, substantial simplification of the tax credits is feasible. Second, refundability of tax credits is essential if low-income students are to benefit from them. Third, even when using the tax code rather than expanding the Pell Grant, refundability is very well-targeted in terms of directing additional subsidies for higher education to those who appear to need them most: the lowest-income students.

Incentive Effects

In principal, all the programs analyzed above reduce the price of attending college for several types of students (at least if we assume no reaction from higher education institutions to the existence of the subsidies). For some students, these price reductions are likely to increase college attendance. Most studies of college-going suggest that the enrollment probabilities of middle- and higher-income students are relatively unresponsive to price changes but that the college choices of these students appear to be influenced by price.

The first question is how lowering the cost affects enrollment in higher education. Many studies have examined whether aid increases enrollment.[15] The evidence generally suggests that enrollment is more sensitive to grant aid than loan aid. Some recent evidence, however, shows that loan aid can affect enrollment the same way grant aid does (Dynarski 2002).

[15] See Kane (1995), Heller (1997), and Dynarski (2002) for reviews of several studies.

Not surprisingly, most studies have found larger effects for low-income students than for higher-income students. Thomas Kane estimates that CalGrant, a program that requires students to meet income, asset, and high school grade point average thresholds, increased college enrollment among eligible students by 3 to 4 percentage points (2003). Susan Dynarski (1999) studied the effect of the Social Security Student Benefit Program, which provided grants from 1965 to 1982 to full-time college students who were dependents of Social Security beneficiaries. She found that each $1,000 of student benefits increased the college enrollment rate among those eligible by about 3.6 percentage points, and increased the number of years of schooling completed by about one year. Few, if any, studies have addressed the impact of price changes on older or independent students.

Studies consistently find that higher tuition reduces attendance. To the extent that students are able to see Pell Grants or the tax subsidies as decreasing net tuition, the subsidies should increase enrollment. These results are consistent across studies based on between-state differences in tuition and studies based on receipt of nontraditional financial aid, such as the Hope Scholarship Program in Georgia and the elimination of the Social Security Student Benefit Program (Kane 2003).

Other studies on the effects of financial aid, however, have mixed results. Some research has indicated that enrollment of low-income students did not increase disproportionately after Pell Grants were established in 1973, perhaps because these students were unaware of the program when deciding whether to apply for college (Kane 1994, 1999; McPherson, Schapiro, and Winston 1989).

There is little direct information about whether the new tax incentives increase enrollment in or the affordability of higher education. Most credit programs are new and have not been carefully analyzed. Some studies, however, question whether tax credits are an effective mechanism to increase enrollment. One analysis concluded that the educational credits were unlikely to produce significant enrollment increases because tuition increases have little effect on middle- and high-income families (whose children would attend college anyway), students who are either unprepared for or not intending to attend college, and lower-income students who cannot use the credits because they have no tax liability (Congressional Budget Office 2000). Researchers using a microsimulation model found no evidence of increased enrollment overall three years after the education tax credits were enacted, although the credits appeared to cause a slight increase in the proportion of students age 20 to 24 attending four-year institutions (Long 2003).

One key concern is that colleges and universities can undo the effects of tax or direct subsidies by raising tuition or reducing financial aid. For example, state governments and public and private college administrators and local educational officers may raise tuition in order to capture the increased resources available to students and families as a result of federal tax and expenditure programs, attenuating or possibly eliminating the expected positive effect of subsidies on enrollment (Stoll and Stedman 2002). This may be especially true of two-year institutions that enroll substantial numbers of students from Hope credit–eligible families and charge less than $2,000 a year; these institutions can increase tuition at little cost to these students or families. Raising tuition to $1,000 does nothing to the after-tax cost of college for students who can use the full

Hope credit, and increases from $1,000 to $2,000 only cost the student 50 cents for every dollar of additional tuition. However, as noted, many students who are most sensitive to the price are ineligible for the credit. We estimate that fewer than 60 percent of students were actually eligible for the tax credits in 2001. (See table A7 and appendix 1.) Nonetheless, the California Legislative Analyst's Office specifically recommended (though did not ultimately adopt) that California raise its rates for community colleges to capture the educational tax benefits (Long 2003). The Hope credit, because it represents a relatively small percentage of overall tuition at four-year private institutions and because many students enrolled in these schools are not eligible for the credit, would be less likely to stimulate tuition increases in private colleges. Overall, there is some possibility these tax credits could actually diminish enrollment, especially among some low-income households, if these institutional responses occur.

The credits also create incentives for institutions to decrease the financial aid available to students (Wolanin 2001). The Hope and lifetime learning credits could give postsecondary schools a reason to decrease institutional financial aid made available to middle-class students, because they would have additional resources available for educational expenses. (Wolanin 2001). Research on the CalGrant program showed that institutions sometimes respond to CalGrants, diminishing the effects of the grants (Kane 2003). Expanding the Hope or lifetime learning credits could provide similar justification, allowing institutions to continue shifting aid toward merit aid, which tends to favor high- and middle-income students. The student loan interest deduction may also increase the trend to finance more educational spending through borrowing, increasing the debt burden of college graduates by reducing the cost of borrowing for the taxpayer. The elimination of the 60-month limit on deductibility favors those with larger amounts of debt, and may provide incentives for undergraduates to take out more loans than they can sustain (Congressional Budget Office 2000). While many are concerned with growing levels of student indebtedness, this unintended effect may only exacerbate the problem.

Another factor that could limit any positive enrollment effect is that some eligible students do not actually use the educational credits. One analysis found that only one-third of students eligible based on income, enrollment behavior, and educational expenses claimed the credits. A survey conducted at University of California (UC) campuses found that only 29 percent of UC students claimed a credit, with 29 percent of nonclaimers at the main campus and 25 percent of nonclaimers at the extension campuses reporting they were unaware of the credit (Hoblitzell and Smith 2001). It is unclear, however, how these studies actually assessed eligibility. As noted, more than one-third of students are ineligible either because they have no tax liability, their incomes are above the cutoff for eligibility, or they have no qualifying expenses (for example, because they are fully covered by financial aid).

Our analysis suggests that 74 percent of eligible students use the Hope credit and 63 percent used the lifetime learning credit. (See table A6 and discussion in appendix 2.) In general, participation tends to rise with income, raising the concern that those most in need are least likely to participate, even when eligible. Some of the nonparticipation at the low end is probably because students can receive very little benefit because the

credits are limited by tax liability, but another factor could be that knowledge of the credits is limited among low-income parents.

In addition, there are issues with the timing of financial aid delivered through tax credits or deductions, especially for students with limited access to credit. The tax benefits are not available until after the expenses have been incurred. In some cases, this will be a year or more after the expenses were incurred. Lower-middle-income families who have little or no savings may not be able to increase educational spending based on future tax credits (even if they are eligible to receive them).

Middle-class taxpayers may also under-use the savings incentives. When GAO reported on the Education Savings Bond program in 1994, it found that few taxpayers received benefits for higher education expenses under the program. Only 6,685 tax filers in 1991 and 11,200 in 1992 used the tax exclusion for educational savings bonds. Bondholders usually hold savings bonds for 10 years before redeeming them, so the study could have been conducted too soon after the program was created to show greater effectiveness. Yet most Americans seemed uninformed about the Education Savings Bond program (U.S. General Accounting Office 1994). In addition to lack of knowledge about the savings incentives, tax incentives for expenses incurred while enrolled may cause individuals and their families to save less to meet college expenses.

Evidence suggests that those who save in Coverdell accounts and Section 529 plans are wealthier, measured in both income and net worth, and better educated than other families with children. Some evidence further suggests that families with Coverdell accounts and Section 529 plans have higher incomes, education, and wealth than those who save in retirement plans. Since such high-income families are likely to save for college even without tax incentives, it is unlikely that the Coverdell accounts or Section 529 plans change saving behavior substantially (Dynarski 2003). Moreover, given the higher average incomes of families who save in Coverdell accounts and Section 529 plans, children from these families would likely attend college regardless of these tax-preferred savings vehicles.

There are some other indirect effects of tax subsidies on the ability of students to save for college. In some ways, aid through tax subsidies can be more certain than cash subsidies such as Pell Grants, because tax expenditures are not subject to an annual review process. Although Congress can change student eligibility under the tax expenditure programs through legislation, it tends to make such changes less frequently than with spending programs. Moreover, unlike spending programs, tax programs are not subject to periodic review—though, in the case of EGTRRA provisions, they are subject to expiration. Thus, Congress does not make wholesale changes to tax programs frequently. Typically, tax expenditures continue indefinitely until Congress rescinds or amends them. This, in theory, should allow parents and students to plan for college with more certainty.

The peculiarities of the 2001 legislation, however, may undo or reduce this advantage. The entire 2001 Act is set to expire at the end of 2010, although the president has promised to make it permanent. The tax preferences for saving, in particular, are thus uncertain. Under current law, a student who will not attend college until 2011 can expect

his or her withdrawal from a 529 plan to be fully taxable, even if used solely to pay for tuition and fees. It is not clear how parents evaluate this risk, if at all.

Conclusion

Over the past decade, federal higher education support has shifted dramatically toward tax expenditures and away from direct subsidies. This paper demonstrates that very little of the new tax expenditures are targeted at lower-income students. Enrollment rates continue to be much lower for low-income students than for high-income students. Yet the tax credits are poorly designed to boost enrollment among students from lower-income families, who likely facing the greatest challenges in attending college. At the same time, the multiplicity of tax provisions has substantially increased complexity for families with students, who must choose among a large number of possible tax subsidies for higher education. Several possible changes, including integrating the Pell Grant into the tax code and combining the current Hope and lifetime learning credits into a single College Opportunity Tax Credit, could substantially simplify the system while also making it more progressive.

References

Burman, Leonard E., and Mohammed Adeel Saleem. 2004. "Income Tax Statistics for Sample Families, 2003." *Tax Notes* 413–18.

Burman, Leonard E., William G. Gale, and Jeffrey Rohaly. 2003. "Policy Watch: The Expanding Reach of the Individual Alternative Minimum Tax." *Journal of Economic Perspectives* 17(2): 173–86.

Burman, Leonard E., William G. Gale, Matthew Hall, and Peter R. Orszag. 2004. "Distributional Effects of Defined Contribution Plans and Individual Retirement Arrangements." *National Tax Journal*, September.

Duan, N. 1983. "Smearing Estimate–a Nonparametric Retransformation Method." *Journal of the American Statistical Association* 78(383): 605–10.

Congressional Budget Office. 2000. *An Economic Analysis of the Taxpayer Relief Act of 1997.* Washington, DC: Congressional Budget Office.

Dynarski, Susan. 1999. "Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion" Working Paper No. 7422. Cambridge, MA: National Bureau of Economic Research (NBER).

———. 2002. "Loans, Liquidity, and Schooling Decisions." Cambridge: Harvard University, Kennedy School of Government and NBER.

———. 2003. "Who Benefits from the Education Saving Incentives? Income, Educational Expectations and the Value of the 529 and Coverdell." Cambridge: Harvard University, Kennedy School of Government and NBER.

Heller, Donald E. 1997. "Student Price Response in Higher Education: An Update to Leslie and Brinkman." *Journal of Higher Education* 68(6): 624–59.

Hoblitzell, Barbara A., and Tiffany L. Smith. 2001. *Hope Works: Student Use of Education Tax Credits*. New Agenda Series Vol. 4, No. 2. Indianapolis: Lumina Foundation for Education.

Kane, Thomas J. 1994. "College Attendance By Blacks since 1970: The Role of College Cost, Family Background, and Returns to Education" *Journal of Political Economy* 102(5): 878–911.

———. 1995. "Rising Public College Tuition and College Entry: How Well Do Public Subsidies Promote Access to College?" Working Paper No. 5164. Cambridge, MA: NBER.

———. 1999. *The Price of Admission: Rethinking How Americans Pay for College.* Washington, DC: Brookings Institution Press.

———. 2003. "A Quasi-Experimental Estimate of the Impact of Financial Aid on College-Going." Working Paper No. 9703. Cambridge, MA: NBER.

Long, Bridget Terry. 2003. "The Impact of Federal Tax Credits for Higher Education Expenses." Working Paper No. 9553. Cambridge, MA: NBER.

Maag, Elaine, and Katie Fitzpatrick. 2004. "Federal Financial Aid for Higher Education: Programs and Prospects." Report to the Lumina Foundation. Washington, DC.

McPherson, Michael S., Morton Owen Schapiro, and Gordon C. Winston. 1989. "Recent Trends in U.S. Higher Education Costs and Prices: The Role of Government Funding." *AEA Papers and Proceedings* 79(2): 253–57.

Stedman, James B. 2003. "The Higher Education Act: Reauthorization Status and Issues." Washington, DC: Congressional Research Service.

Stoll, Adam, and James B. Stedman. 2002. "Higher Education Tax Credits and Deduction: An Overview of the Benefits and Their Relationship to Traditional Student Aid." Technical Report No. RL31129. Washington, DC: Congressional Research Service.

The College Board. 2002. *Trends in Student Aid 2002*. Washington, DC: College Entrance Examination Board.

———. 2004. *Trends in Student Aid 2004*. Washington, DC: College Entrance Examination Board.

U.S. General Accounting Office. 1994. "College Savings Issues." GAO/HEHS-95-16R. Washington, DC: U.S. General Accounting Office.

Wolanin, Thomas R. 2001. *Rhetoric and Reality: Effects and Consequences of the HOPE Scholarship.* The New Millennium Project Working Paper. Washington, DC: The Institution for Higher Education Policy.

Appendix 1. Description of TRIM3 and TPC Microsimulation Model

This appendix describes the two models used to do the microsimulations—the Urban Institute's Transfer Income Model (TRIM3) and the Tax Policy Center Microsimulation Model.

TRIM3

The TRIM3 model—the Transfer Income Model, version 3—is a comprehensive microsimulation model of the major tax, transfer, and health programs affecting the U.S. population. Using the Current Population Survey (CPS) as its starting point, the model creates an annual "baseline" database with simulation results for SSI, TANF, food stamps, public and subsidized housing, Medicaid, SCHIP, CCDF-funded child care subsidies, payroll taxes, and federal income taxes. Simulations of employer-sponsored health insurance are run periodically, and a model of child support income is in development.

The baseline simulations augment the CPS data with information not collected in the survey—such as a family's income tax liability and whether the family is eligible for various programs—and correct for underreporting of transfer program benefits in the CPS data. Each simulation is able to "pass" its results to subsequent simulations, creating an internally-consistent set of estimates. The resulting baseline database provides a detailed picture of current participation in government programs and current tax liabilities, allowing analysis of individual programs as well as comprehensive analysis of family incomes. The baseline database also provides a comparison point for simulations of hypothetical or proposed changes to these programs.

The simulations of SSI, TANF, food stamps, Medicaid, SCHIP, and CCDF-funded child care subsidies all include very detailed modeling of program eligibility under each year's actual rules, including variations for different types of individuals or families, and variations by state (such as state-level variation in earned income disregards and income tests in the TANF program). For the programs that provide a cash or cash-like benefit—SSI, TANF, and food stamps—potential benefits are also calculated for all eligible individuals and families. One transfer program simulation—public and subsidized housing—takes as given the CPS-reported data on whether a household lives in such housing, but performs a detailed calculation of the value of the subsidy and the household's required rental payment.

In the baseline simulations of SSI, TANF, food stamps, and Medicaid, program beneficiaries are selected from among those determined eligible for benefits. Eligible families and individuals that report receiving the benefit in the CPS interview are automatically included in the simulated caseload, and additional eligible units are selected as necessary in order to match the size and key characteristics of the actual program caseload. Participation procedures are being developed for the SCHIP simulation, and may be added for child care subsidies.

Federal income taxes are also simulated under the detailed rules in effect in the year simulated, including the rules for deductions, exemptions, tax credits, and so on.

Key simulation results are compared to IRS targets. TRIM3 captures the correct number of returns owing taxes, but the amount of tax falls short of IRS targets, in part because high-income taxpayers are not fully represented. The estimated amount of Earned Income Tax Credit also falls short of targets, as is seen in other microsimulation models of income taxes.

Some information is added to the CPS to facilitate the simulations. In particular, immigrant legal status is imputed to noncitizens so rules restricting their eligibility for transfer benefits can be modeled. Further, some information needed to model income taxes—capital gains income, deductible IRA contributions, and itemized deductions—is statistically matched from IRS data.

The Tax Policy Center Microsimulation Model

The Tax Policy Center (TPC) developed a large-scale microsimulation model of the U.S. federal income tax system to produce revenue and distribution estimates. The model is similar to those used by the Congressional Budget Office (CBO), the Joint Committee on Taxation (JCT), and the Treasury's Office of Tax Analysis (OTA). The model consists of three components: a database of tax returns from 1999 supplemented with demographic information, a statistical routine that "ages" or extrapolates the data to create a representative sample of filers and non-filers for future years, and a detailed tax calculator and set of incidence assumptions that computes tax liability and tax burdens for filers under current law and alternative proposals.

Data

The tax model uses two data sources: the 1999 public-use file (PUF) produced by the Statistics of Income (SOI) Division of the Internal Revenue Service (IRS), and the March 2000 CPS. The PUF contains 132,108 income tax records with detailed information from federal individual income tax returns filed in the 1999 calendar year. It provides key data on the level and sources of income and deductions, income tax liability, marginal tax rates, and use of particular credits, but it excludes most information about education expenses and student status, as well as demographic information such as age.

Additional information is mapped onto the PUF through a constrained statistical match with the March 2000 Current Population Survey of the U.S. Census Bureau. The statistical match provides important information not reported on tax returns, including measures of earnings for head and spouse separately, their ages, the ages of their children, and transfer payments. The statistical match also generates a sample of individuals who do not file income tax returns (non-filers). By combining the dataset of filers with the dataset of estimated non-filers from the CPS, we are able to carry out distributional analysis on the entire population rather than just the subset that files individual income tax returns.

Aging and Extrapolation Process

For the years from 2000 to 2014, we "age" the data based on forecasts and projections for the growth in various types of income from the CBO, the growth in the number of tax returns from the IRS, and the demographic composition of the population from the

Bureau of the Census. We use actual 2000 and 2001 data when available. A two-step process produces a representative sample of the filing and non-filing population in years beyond 1999. First, the dollar amounts for income, adjustments, deductions, and credits on each record are inflated by their appropriate per capita forecasted growth rates. For the major income sources such as wages, capital gains, and various types of nonwage income such as interest, dividends, Social Security benefits, and others, we have specific forecasts for per capita growth. Most other items are assumed to grow at CBO's projected per capita personal income growth rate. In the second stage of the extrapolation process, the weights on each record are adjusted using a linear programming algorithm to ensure the major income items, adjustments, and deductions match aggregate targets. For years beyond 1999 we do not target distributions for any item; wages and salaries, for example, grow at the same per capita rate regardless of income.

Tax Calculator

Based on the extrapolated data set, we simulate policy options using a detailed tax calculator that captures most features of the federal individual income tax system, including the alternative minimum tax (AMT). The model reflects the major income tax legislation enacted through 2003, including the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA), the Job Creation and Worker Assistance Act of 2002, and EGTRRA.

The model incorporates most major provisions of EGTRRA and JGTRRA, including the 10 percent tax bracket, and the changes in marginal tax rates, credits for children and for dependent care, itemized deduction limitations, personal exemption phaseouts, the AMT, and the marriage penalty provisions, which increased the standard deduction, 15 percent bracket, and earned income tax credit for married couples. It also includes JGTRRA's changes to the taxation of dividends and capital gains. The model assumes the payer bears the burden of the individual income tax, the employee bears the burden of both the employer and employee shares of payroll taxes, the decedent bears the burden of the estate tax, and recipients of capital income bear the burden of corporate income taxes.

Appendix 2. Matching the 1999–2000 National Postsecondary Student Aid Study with TRIM and the Tax Model

This appendix describes the methodology used to perform two distinct but related statistical matches as well as the post-match calibration process. Both matches involved combining person-level information from the 2000 National Postsecondary Student Aid Study (NPSAS) with the March Current Population Survey (CPS). In the first match, education variables were added to CPS person records to facilitate simulation modeling in TRIM. In the second match, a similar set of person-level education variables was added to individual tax return records to support modeling within the Urban–Brookings Tax Policy Center's (TPC) microsimulation tax model. The two models are described in appendix 1.

We relied on unconstrained statistical matching to combine information from the NPSAS and the CPS. For each match, person records from the CPS were the Host file and student records from the NPSAS comprised the Donor file. In unconstrained matching, all records in the Host file are represented in the final matched dataset whereas some records in the Donor file might not be used. In addition, sample weights from the Host file are usually retained in the final matched file.

Before matching, a partition of the Host and Donor files is constructed across a number of variables important to the researcher (i.e., "blocking variables") and the actual matching is done within each member of the partition. In the present matches, we partitioned each dataset according to gender, age group, and income class for a total of 88 cells. Next, a distance function is constructed from additional variables on both files to help ensure a record selected from the Donor file is "close" to a corresponding record on the Host file before a match is enforced. In unconstrained matching, it is especially important to compare summary statistics on selected variables from the matched file (e.g., means and variances) with their values on the Donor file to check that no unintended bias was introduced in the matching process.

In the remainder of this appendix, we briefly describe the data files, describe the partitioning scheme we implemented, explain the methodology we rely on and the modifications that were necessary to accommodate both modeling platforms (TRIM and the TPC tax model), and describe the post-match adjustments done to calibrate our estimates to published aggregates.

Description of Input Data Files

Statistical matching works best when both input files represent the same population. Unfortunately, the CPS and NPSAS samples differ in significant respects. The CPS is a sample of the civilian, noninstitutional population of the United States and NPSAS is a sample of (postsecondary) students enrolled in institutions in the United States during the 1999–2000 school year. In addition, the TPC model relies on tax return information from the 1999 public-use file (PUF) produced by the IRS as its main data source to which CPS data are added through constrained statistical matching.

In constrained statistical matching, each record in the Host and Donor files is represented in a combined match file. This is usually accomplished by "record-splitting"—that is, splitting a single record into two or more records to enable a one-to-one match between records in the two datasets. Before adjustment, this procedure ensures the weighted means and variances of key analysis variables are preserved in the matched file. However, sample weights on the Donor file must usually be scaled up or down to match population totals on the Host file. This is necessary for constrained statistical matching, but will generally alter the means and variances. We discuss this point further when we discuss the TPC match below. A short comparison of all three relevant files follows.

Here is a brief summary of the salient characteristics of the three datasets.

Current Population Survey

- Probability sample of the civilian, noninstitutional population in the United States
- Data structure is hierarchical with information on households, families, and persons
- Contains a wealth of information on the income, demographics, and labor force participation of individuals
- Contains very little information on educational assistance and no information on educational spending
- Sample size for the most recent file is approximately 60,000 households with demographic detail on more than 200,000 people residing in the sampled households
- Region, state, and MSA indicators are present on the file, but the sample is not statistically representative for smaller states and MSAs
- High school and college students are only identified if they are between the ages of 16 and 24
- For college students who live away from home, CPS interviewers are instructed to include information on these students in the parent's household

Public-Use File

- Stratified random sample of tax returns filed in a particular year (the TPC model currently uses data from 1999)
- Strata are defined to ensure the oversampling of high-income taxpayers
- Sample size for the most recent year is approximately 132,000 tax returns
- No direct information is available on the student status of any individual taxpayer or dependent
- Limited information is available on Hope and lifetime learning tax credits claimed on each tax return
- Individuals combined on a tax return may reside in different households and, conversely, a single household may have two or more separate tax return filers (unlike the CPS, where the household is the sampling unit)

- State indicators are generally available only for those with adjusted gross income less than $200,000, and the samples in small states are too small for valid statistical inference (even on the unrestricted file)

NPSAS

- Nationally representative sample of postsecondary students
- Includes undergraduates, graduates, first-year professional students, and students attending two- and four-year institutions
- Includes students with and without financial aid
- Includes only limited information on the parents of the students
- Most recent year data are available is for students enrolled between July 1, 1999, and June 30, 2000
- NPSAS 2000 sample size is 61,767 students; weighted population is about 19.2 million
- Stratified random sample with a complex sample design
- Principal analysis file contains over 600 variables
- Institutional information is available for about 1,000 colleges and universities

Creating the Match Datasets

The match process basically involves creating a matrix (or partition) of characteristics and sorting all the records in each dataset into unique cells within the matrix. Then each record is matched with the record within the same partition in the other dataset that is the closest match.

Partitioning the Input Files

Before matching, we form a partition (i.e., a collection of mutually exclusive and exhaustive subsets) in both the CPS and NPSAS according to the following variables:

- *Gender*: Male and female (2 categories)
- *Age group*: 18 and under, age 19, age 20, age 21, age 22, age 23, age 24, ages 25 to 29, ages 30 to 39, ages 40 to 49, ages 50 and above (11 categories).
- *Family income class*: Less than $20,000, $20,000 to $50,000, $50,000 to $100,000, and $100,000 and above (4 categories).

This partitioning scheme results in 88 (2 x 11 x 4) distinct cells in each file and matching is only allowed within identical cells. For example, a 21-year-old female whose family income is over $100,000 in the CPS will be matched with a 21-year-old female with family income over $100,000 in the NPSAS.

Matching the Data

Because NPSAS variables will be used to model education tax credits on two modeling platforms, we need to use slightly different procedures to select records for matching. TRIM relies on the CPS as its principal input data source and the hierarchical (i.e., household, family, and person records) data structure is maintained. As such, a person-level match that attaches NPSAS education information to CPS persons makes

calculating the credit straightforward for TRIM tax units by relying on the relational data structure of TRIM.

In contrast, the TPC model uses the tax return as the unit of analysis and student-level information must be aggregated and attached to the family's tax return. This is complicated somewhat because of the record-splitting done as part of the statistical match between the SOI and the CPS that forms the basic production file for the TPC model: CPS persons that are "split" between Statistics of Income (SOI) Division tax returns will be different persons for purposes of this match. Of course, these individuals will have identical CPS characteristics but will have different tax characteristics. These tax characteristics will play an important part in the match.

TRIM Match

Once we partition person records from both files into each of the 88 subsets, we begin matching within each group by first determining whether a CPS record is a (postsecondary) student. This is done separately for two groups of individuals. For individuals under 25 years old, the CPS contains a variable (A-HSCOL) that indicates whether the person is currently attending high school, college, or university. College and university students are identified and processed through the matching algorithm to obtain a NPSAS donor record.

An older CPS individual is identified as a student if either of the following criteria is met:

- A person is over 24 and has indicated that the reason he or she was not working in the previous week was because he or she was in school; or
- A person has indicated that s/he is the recipient of educational assistance.

This procedure does not yield enough students on the match dataset (assuming NPSAS data are correct). Thus, for all other CPS individuals 25 years old or older, we imputed student status based on a randomized assignment within each of the 88 categories. First, the probability of being a student given the gender, age, and family income class of each CPS person was calculated as the ratio of the number of NPSAS students in a particular group to the number of CPS individuals in the group. This probability was then compared against a uniformly distributed (pseudo-) random number and the individual was classified as a student if the random number was less than the calculated probability.

Once student status was imputed, then a donor record was selected randomly from the pool of NPSAS records in the appropriate category. This record was then checked to see if it matched the CPS record on full-time/part-time student status and whether the NPSAS record contained missing data on certain key variables that would limit its usefulness for tax policy modeling. If the NPSAS record passed both these tests, it was selected as the donor record for the CPS individual. Otherwise, the process was repeated until a qualified donor was found.

After all CPS records were assigned a student status and matched to a NPSAS record based on that assignment, we compared summary statistics from both the final matched data set and the original NPSAS file to validate the match.

TPC Tax Model Match

Because of the fundamentally different data structure of the TPC model, we had to modify the above matching approach. We still perform a person-level unconstrained match with the CPS as the Host file, in the same manner as the TRIM match, but certain additional constraints in this methodology were necessary.

First, our sample of Host records was no longer made up of the original CPS person records as in the TRIM match because these persons may have been "split" across two or more tax returns. As a result, our modified pool of host records consisted of approximately 320,000 CPS "tax persons".

Second, to ensure the information on tax returns in the TPC model matched the characteristics of the students, every return that claimed a Hope or lifetime learning credit was assigned (at least) one NPSAS student record. This constraint created some initial inconsistencies in the matching because student status was not controlled for in the original PUF-CPS match that serves as the database for the TPC tax model. Specifically, the ages of dependents in tax units that claimed the Hope or LLC were not necessarily consistent with the eligibility criteria for students; all dependents could be under 16 years old, for example. To ensure tax model returns claiming either the Hope or LLC had an eligible student as a dependent, we randomly assigned student status to these dependents and adjusted their imputed age.

Third, some dependent filers (as identified by the tax model record) were matched to CPS student records in the PUF-CPS match. For purposes of attaching student information to tax returns, we did not allow NPSAS matches to dependent filer returns.

Fourth, by forcing all tax model records with a Hope or LLC to be matched with a NPSAS student record along with requiring that dependent filers not be assigned a NPSAS record, our calculated probabilities of being a student needed to be modified to account for these constraints.

Fifth, to be consistent with the TRIM match, we eliminated NPSAS records with missing data on key analysis variables.

After constructing a matched CPS-NPSAS dataset for use in the TPC model, we compared summary statistics (e.g., means and standard errors) from the match file with the original NPSAS data to validate the match.

Post-Match Adjustment. To ensure the distribution of students in the tax model closely resembles that in the original NPSAS data—along several dimensions that we deem important for our analysis—we perform some adjustments on the matched file.

After the initial match, the overall number and distribution by income of students in the tax model closely resembles that in the original NPSAS (see table A1).[16] Qualifying educational expenses, however, are overstated in the tax model by more than 20 percent—about $55 billion in the TPC model compared with $45.5 billion in the NPSAS data.[17] An important cause of this discrepancy is that the matched file did not align well with the NPSAS along one important dimension: the type of institution attended by students. The matched file overestimates the number of private school students and underestimates the number of students attending public two-year institutions. Since typical tuition and fees are much lower for the latter category, this has the effect of raising the aggregate amount of tuition in the tax model, making it significantly greater than in the original NPSAS data (see table A2).

To correct this problem, some records that were originally classified as private school students in the matched file are randomly reassigned as two-year public institution students; this reassignment is calibrated to match the NPSAS totals within each income class. Those records chosen for reassignment are then given a value for qualifying expenses drawn from a lognormal distribution with the mean and variance of the actual amount of expenses for public two-year students in their income class. Other variables are adjusted accordingly.[18] After these adjustments, the distribution of students by institution type and income matches the NPSAS distribution closely (see tables A3 and A4). Aggregate qualifying expenses and average expenses per student differ only by about 3.5 percent.

Modeling Issues. We model four education-related tax benefits in the TPC microsimulation tax model: the Hope credit, the lifetime learning credit, and the above-the-line deductions for education expenses and student loan interest. Only the former two are modeled in the TRIM. The most recent final data that the Statistics of Income Division of the IRS has released and to which each model can be calibrated is for the 2001 calendar year. The deduction for education expenses and the expansion of the deduction for student loan interest were not effective until the 2002 calendar year, for which SOI has released only preliminary data. We calibrate our model results for the deductions to match these 2002 preliminary data.[19]

We first determine, for each student on a tax model record, whether he or she is eligible for the Hope credit. We apply three eligibility tests. First, the student must not

[16] The measure of income used here is from the NPSAS data. This comparison simply looks at the weighted counts of the number of students by income using first, the original NPSAS records and weights, and second, the NPSAS records chosen for matching with tax model records, using the appropriate tax model weight.

[17] Based on NPSAS variable NETCST9, which is equal to total tuition and fees less grants.

[18] For example, if the student chosen for re-assignment was past his or her second year of study, the relevant variable for year of enrolment was also reassigned based on the aggregate distribution of first- and second-year students in public two-year schools.

[19] The preliminary data provides a less-detailed breakdown by adjusted gross income (AGI) class of the number of claimants and the amount claimed than does the final data.

have completed the first two years of postsecondary education before the tax year in question.[20] Second, the student must have been enrolled at least half time for one academic period during the tax year.[21] Finally, the student's program must lead to a degree, certificate, or other recognized educational credential.[22] Because of data limitations, we are unable to impose the requirement that a student not have a felony drug conviction.

Since a student can be eligible for both the Hope and lifetime learning credits, we assume the tax unit takes the credit that provides the largest possible tax benefit. In 2001, the Hope provides a 100 percent credit on the first $1,000 of qualifying expenses and a 50 percent credit on the next $1,000 resulting in a maximum credit of $1,500 per student. The lifetime learning credit provides a 20 percent credit on up to $5,000 of qualifying expenses for all students in the tax unit. That is, the Hope is on a per student basis; the lifetime learning credit is on a tax return basis. So in 2001, as long as a student is eligible for the Hope credit, it is more beneficial to claim the Hope than the lifetime learning credit. This is not true after 2002, when the maximum expenses for the lifetime learning credit increase from $5,000 to $10,000, resulting in an increase in the maximum possible credit from $1,000 to $2,000. After 2002, a student with more than $7,500 in qualifying expenses is eligible for a larger lifetime learning credit than a Hope credit.[23] The choice set becomes more complicated when there is more than one student with eligible education expenses. Consider a family in 2003 that is in the 15 percent tax bracket with two students eligible for both the Hope and lifetime learning credits, one with $8,000 of eligible expenses and one with $9,000 of eligible expenses. Since the Hope credit is on a per student basis, if they both claimed the Hope, each student would be eligible for the maximum $1,500 credit for a total credit of $3,000. If they instead both took the lifetime learning credit, then—because the limit is on a tax return basis—the maximum amount of expenses that could be claimed for both students is $10,000, providing a total credit of $2,000. The optimal situation in this case is for the student with the larger expenses to claim the lifetime learning credit, providing 20 percent of $9,000, or $1,800, and the other student to claim the Hope credit of $1,500, providing a total of $3,300. The tax model assumes the family would make that choice.

After 2001, however, a tax unit's choice set is further complicated by the introduction of the above-the-line deduction for education expenses (only modeled in the TPC tax model). The qualifying expenses of any given student can only be used for one of the three tax benefits: the Hope credit, the lifetime learning credit, or the deduction. The taxpayer must therefore determine which of the three possibilities provides the

[20] The student must be identified as an undergraduate by NPSAS variable STYPELST and a first- or second-year undergraduate by variable UGLVL1.

[21] We require a student not to be classified as "less than half-time" by NPSAS variable ATTNPTRN.

[22] We require the student to be identified as pursuing an associate or bachelor's degree, or an undergraduate certificate or "other formal award" by NPSAS variable BENLADEG.

[23] Note that the parameters for the Hope credit are indexed for inflation – in $100 increments – whereas the maximum expenses eligible for the lifetime learning credit are not indexed. The first adjustment to the maximum Hope credit is expected in the 2008 calendar year.

greatest tax benefit. For the 2002 and 2003 calendar years, a taxpayer can deduct up $3,000 of qualifying expenses provided the taxpayer's AGI does not exceed $130,000 for married couples or $65,000 for others.[24] For 2004 and 2005, the maximum deduction is $4,000 for those taxpayers with AGI less than $130,000 for married couples ($65,000 otherwise) and $2,000 for taxpayers with AGI up to $160,000 for married couples ($80,000 otherwise). Taxpayers with AGI greater than those limits are not eligible for the deduction. The choice for higher-income individuals who do not qualify for either the Hope or lifetime learning credits—which in 2002 were completely phased out for married filing joint taxpayers with AGI of 102,000 ($51,000 for others)—is therefore simple since they are eligible only for the deduction. Other taxpayers must compare the value of the credits to the value of the deduction. Unlike the credits, the value of the deduction will depend on the taxpayer's statutory marginal tax rate.[25] Consider a student in 2002 with $2,000 of education expenses who is not eligible for the Hope credit. If the statutory marginal tax rate is 15 percent for that student, the lifetime learning credit provides a greater benefit: 20 percent of $2,000, or $400. But if the student were in the 25 percent bracket, the deduction is more valuable; it would reduce taxes by 25 percent of $2,000, or $500. But if the student had $10,000 of expenses, the lifetime learning credit would be more valuable (20 percent of $10,000 is $2,000—considerably more than 25 percent of $3,000, or $750).

One final complication involves the alternative minimum tax (AMT). Under current law after 2005, the Hope and lifetime learning credits are subject to an AMT limitation. Specifically, the credits cannot be used to reduce tax liability below the level of the taxpayer's tentative AMT.[26] Legislation was enacted in 2004 that extended a temporary provision allowing the use of personal credits against the AMT through 2005, and our estimates reflect this. The above-the-line deduction may be used to reduce both regular tax and AMT liability. Note, however, that because statutory marginal tax rates are different (often higher) under the AMT than under the regular income tax, the value of the deduction can differ depending on whether a taxpayer is on the AMT. The TPC model has a detailed AMT calculator and takes into account the interaction of the credits and deduction with the AMT.

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[24] Like the lifetime learning credit, the above-the-line deduction is on a tax return basis. The $3,000 maximum applies to the total expenses of all students for which it is claimed.

[25] We make a simplifying assumption that the tax benefit from the deduction is the tax unit's statutory marginal tax rate (under either the regular tax or AMT, whichever is appropriate) multiplied by the amount of the deduction. It can be more complicated than this in certain situations. Since the deduction changes AGI, it can change the value of tax provisions that phase in or out depending on AGI. (See Burman and Saleem 2003.)

[26] For example, suppose that a taxpayer has $5,000 in regular income tax liability before credits and otherwise qualifies for a $1,500 Hope credit. Suppose that the taxpayer's tentative AMT is $4,500 so that he or she does not actually owe AMT liability (which is the difference, if positive, between tentative AMT and tax calculated under the regular income tax). This taxpayer, however, is only allowed to claim $500 of the Hope credit bringing his or her liability down to $4,500. The remaining $1,000 of unused Hope is a component of what are commonly referred to as "lost credits." Effectively, the credits are disallowed for AMT purposes, although the lost credits are not technically part of AMT liability.

In all cases, we assume the tax unit determines the benefits from the various possible combinations of credit and deduction choices for the students in the unit and then claims the credit or deduction that results in the largest tax benefit.

2001 Calibration. We first use the TPC tax model and TRIM to estimate the distribution and aggregate number of claimants and amount claimed for both the Hope and lifetime learning credits in 2001. We compare summary statistics with similar tables produced by the Statistics of Income Division of the IRS (see table A5).[27] This implicit assumption of 100 percent participation for the credits leads us to overstate the number of claimants by more than 50 percent. The amount claimed is overstated by only 14 percent. This is consistent with the reasonable behavioral assumption that those with small amounts of education expenses—and who therefore qualify for a relatively small Hope or lifetime learning credit—are less likely to claim the credit. Therefore, in order to match the IRS data, we apply adjustment factors that make it less likely for those with small amounts of education expenses to claim the credits. The adjustment factors vary by broad AGI class. Since the lifetime learning credit is less generous than the Hope credit for a given amount of education expenses, we use factors that assume the likelihood of claiming the Hope is higher than the likelihood of claiming the lifetime learning credit at any particular level of expenses. In the TRIM, we adjust a person's probability of taking an education credit based on his or her likely benefit and broad AGI class such that people receiving an LLC are equally likely to claim the credit as people receiving the same size Hope credit.

The adjustment factors we use result in implied overall participation rates of 74 percent for the Hope credit and 63 percent for the lifetime learning credit (see table A6). With the exception of those at the very low end of the income scale, the participation rates tend to rise with income. Others have concluded that participation is much lower, but that is because they overestimate the size of the population eligible for the credits. In fact, only about 59 percent of students are actually eligible for the credit (see table A7). There are three primary reasons for a student to be ineligible for the credits: (1) not having positive qualifying expenses after grants are taken into account, (2) being in a tax unit that does not have positive income tax liability and therefore cannot claim the nonrefundable credits, and (3) being in a tax unit that has adjusted gross income (AGI) too high to qualify for the credits.

After applying the adjustment factors, the aggregate and distributional figures for the number and amount of credits match the 2001 SOI actual data within a reasonable level of tolerance. The model's results for aggregate number of claimants, amount claimed, and average credits are all within three percent of the actual values in the SOI data (see table A8; similar table available for TRIM results on request).

2002 Calibration. For 2002, we do not change the adjustment factors for the Hope and lifetime learning credits that allow us to hit the 2001 actual data published by SOI (see table A9). We do, however, need to apply factors in the TPC tax model that allow us to hit the distribution of the above-the-line deduction for education expenses that was

[27] SOI does not publish detailed breakdowns for the Hope and lifetime learning credits separately.

first allowed in 2002. Before applying any adjustment factors, we overestimate the number of returns claiming the deduction by about 74 percent and the amount claimed by only 5 percent (table A10). Again, this is consistent with the notion that individuals with relatively few qualifying expenses do not actually claim the deduction to which they are entitled. To account for this, we apply adjustment factors that vary by AGI and by the amount of qualifying education expenses. Table A11 compares the TPC model's distribution by AGI of the number of returns claiming the deduction and the amount claimed to SOI data after the adjustment factors are applied.

Modeling the Deduction for Student Loan Interest. The public-use file (PUF) that is the primary data source for the TPC model contains data on the deduction for student loan interest in 1999. For 1999, the maximum allowable deduction was $1,500. The Taxpayer Relief Act of 1997 (TRA) that created the deduction set forth a schedule for increases in the allowable maximum to $2,000 in 2000 and $2,500 in 2001 and thereafter. Therefore one modeling issue is the fact that records in the tax model database that report the 1999 limit of $1,500 are likely censored observations. When modeling the increased limits, we need to estimate the actual student loan interest of records that were at the 1999 maximum.

The Economic Growth and Taxpayer Relief Reconciliation Act of 2001 (EGTRRA) made more people eligible for the student loan interest deduction. Before EGTRRA, only interest paid within the first 60 months after the start of required interest payments is allowed for the deduction. EGTRRA eliminated the 60-month limit. Second, EGTRRA increased the income levels eligible for the deduction. Before 2002, the interest deduction was phased out for individuals with AGI between $40,000 and $55,000 ($60,000 and $75,000 for married couples filing a joint return). EGTRRA increased the phaseout range to $50,000 to $65,000 ($100,000 to $130,000 for joint returns).[28]

Since the tax model database does not contain information on student loan interest for individuals who could not claim the deduction in 1999—including those who were past the 60-month limit, or who had AGI greater than $55,000 ($75,000 for a married couple)—we need to estimate a value of student loan interest for these individuals.

To impute student loan interest to the individual tax model records, we begin with a pooled dataset consisting of the 1998 and 2001 Survey of Consumer Finances (SCF) produced by the U.S. Federal Reserve Board. The SCF asks detailed questions about the outstanding amount of the respondent's education loans, the interest rate charged, and the date that loans were taken out. Using this information, we calculate the amount of student loan interest for each record in the SCF, and construct a dummy variable for whether the individual is within the 60-month limitation. We simplify the calculation of student loan interest by taking the balance on each outstanding loan and multiplying it by the rate of interest for that loan, as quoted by the respondent. In order to construct the 60-month limitation variable, we assume an individual graduates one year after the last student loan was taken out.

[28] Before EGTRRA, only required interest payments were deductible; EGTRRA extended this to voluntary payments of interest. Because of data limitations, we are unable to capture this aspect of the legislation. All EGTRRA provisions sunset at the end of 2010.

Estimation and Imputation Using the SCF. We impute student loan interest in two steps: (1) Does the household have a student loan on which it is paying interest? and (2) For those with student loan interest, what is the level? We use probit maximum likelihood to estimate the probability of having student loan interest, and ordinary least squares to estimate the amount. The procedure is similar to the Heckman two-step estimator, but without the Mills ratio correction in the second stage. This may yield biased coefficient estimates in the second stage, but that is not relevant here because we have no interest in the point estimates. All we care about is producing the best fit, conditional on the explanatory variables.[29]

We estimate the probability of having student loan interest using probit maximum likelihood. We assume that interest is observed if and only if $X_1\beta_1 + \varepsilon_1 > 0$, where ε_1 is assumed to be a standard normal random variable (mean 0, variance 1). Conditional on having student loan interest, we estimate the amount of the item as a function of a similar set of variables. Using ordinary least squares, we estimate an equation of the form $\ln(i) = X_2\beta_2 + \varepsilon_2$, where ε_2 is assumed to be normal with mean 0 and variance σ^2.

The list of exogenous variables for the probit/regression is designed to be an exhaustive set of relevant variables that exist on both the SCF and the tax model dataset. These variables include number of dependents, age (included as 10-year bracket dummies), income (as defined for purposes of the SCF), and the following components of income: income from a farm or business, tax-exempt interest income, taxable interest income, rental income from schedule E, pension income, taxable dividends, and realized capital gains (all defined as the natural logarithm of the income item plus one). We also include dummies for zero values of all income items; dummies for negative overall income, negative income from a business or farm, and negative capital income; and interactions between the negative income dummies and the appropriate negative income amount (defined as the natural logarithm of the absolute value of the income item plus one). In addition we include dummies for whether the individual itemizes deductions on his or her federal tax return, and whether certain federal tax schedules are filed (C for business income, E for rental income, and F for farm income). To allow the relation between student loan interest and the explanatory variables to differ by marital status, we run separate probits and OLS regressions for married couples and for unmarried individuals.[30]

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[29] Also, as a practical matter, there is little basis for excluding any of the right-hand side variables in either the first or second stages. In consequence, identification of a coefficient on the Mills ratio would rely solely on the nonlinearity of the Mills ratio function and the accuracy of the assumption of normally distributed error terms—an assumption that would be of highly questionable validity for a finite sample.

[30] The SCF is a household-based survey that records only total income and wealth items for all individuals in the "primary economic unit" (PEU); it does not attribute shares of those amounts to individuals within the PEU. This provides a slight complication for those PEUs that consist of two unmarried individuals living together (with or without other financially interdependent members of the PEU). These individuals will show up in the income tax file as two single tax returns but will show up in the SCF as one unit. We assume that an unmarried couple living together with shared finances behaves like a married couple and thus include them in the married category when running the probits and regressions.

It is not appropriate in the SCF to simply run regressions or probits on the entire dataset because of its approach to missing variables. The SCF imputes missing values for a number of fields. To reflect the variance introduced by that process, the SCF database includes five replicates of each observation. Missing values are drawn randomly for each replicate from the estimated probability distribution of the imputed value, whereas nonmissing values are simply repeated. We estimate coefficients by computing each estimate separately for each sample replicate and then averaging the coefficient estimates.

There are several different cases to consider when imputing student loan interest onto the tax model dataset. Consider first a record whose reported AGI in 1999 is greater than the end of the phaseout range for the deduction and thus contains no information on student loan interest. In this case, we proceed in two steps:

Step One: Predict whether the tax unit has student loan interest.

- Using the coefficients from the probit estimation (β_1) and values of explanatory variables in the tax model database, calculate $X_1*\beta_1$.
- Calculate the threshold probability, $z = F^{-1}(X_1*\beta_1)$, where F is the cumulative standard normal probability distribution.
- Draw a uniform random number, p, between 0 and 1.
- If $z < p$, then assign a nonzero value for student loan interest.
- Adjust the predicted probabilities so the number of individuals in the tax model reporting student loan interest more closely matches the figure in the SCF for this income class.[31] We employ separate adjustment factors for married and unmarried records.

Step Two: For those tax units with $z < p$, estimate the amount of student loan interest.

- Using the coefficients from the level equation (β_2) and values for explanatory variables in the tax model database, calculate the fitted values, $X_2\beta_2$
- Calculate the expected value for interest, i. In the limit, $E[i] = \exp(X_2\beta_2+\sigma^2/2)$, where σ is the estimated standard error for the level regression. However, in finite samples, $\exp(X_2\beta_2+\sigma^2/2)$ can be a biased estimator, and the biases can be large if the errors are in fact nonnormal. We follow Duan (1983) and instead use a robust empirical "smearing adjustment" to match the sample means of predicted values with the sample mean of the actual SCF data.[32] The adjustment basically amounts to multiplying $\exp(X_2\beta_2)$ by a constant chosen to align the sample means. Again, as with the probability adjustments, we employ separate factors by marital status to hit the sample means for both married and unmarried individuals.

[31] Again, the tax model groups individuals into tax units; the SCF groups individuals into primary economic units (PEU). As described above, there are more tax units than PEUs. Therefore, we cannot calibrate the number of tax units with student loan interest to the absolute number of PEUs with interest. Instead, we make an ad hoc adjustment allowing for the higher number of tax units.

[32] We match the distribution for those with incomes greater than the end of the phaseout range for the deduction.

Next, consider records in the tax model database that report a positive value for student loan interest in 1999. These are individuals whose AGI is less than the end of the phaseout range and who are within the 60-month limitation in place in that year. For these records, we assume student loan interest is equal to the deduction claimed except in cases where the maximum for 1999 ($1,500) is reported. In that case, we calculate a fitted value for student loan interest using the coefficients from the regression described above. We then perform an adjustment that ensures this fitted value is at least equal to the $1,500 statutory limit. Technically, this is the mean of a truncated distribution with a lower bound of $1,500. Its expected value is

$$E[i|i > 1500] = \exp(X_2\beta_2+\sigma^2/2)[1-\Phi((\ln 1500-X_2\beta_2-\sigma^2)/\sigma)]/ [1-\Phi((\ln 1500-X_2\beta_2)/\sigma)].$$

(See the appendix to Burman et al. 2004 for a discussion.)

Finally, we need to account for the fact that individuals with AGI less than the end of the phaseout threshold might not have reported student loan interest in the 1999 PUF for two reasons: (1) they are past the 60-month limitation; or (2) they are within the 60-month limitation but did not take the deduction to which they are entitled. In this case, we use coefficients from a multinomial logit with three possibilities: (1) no student loan interest; (2) student loan interest and within the 60-month limit; and (3) student loan interest but outside the 60-month limit.[33] Using a random number draw, a record is assigned to one of the three classes. If a record is assigned to class two or three, we then estimate an amount of student loan interest using the coefficients from the level regression described above. Adjustment factors are applied by income class to closely match the SCF distribution of the number of individuals with student loan interest and the total amount reported. The overall distribution of student loan interest as calculated for the SCF is compared to the imputed distribution on the tax model in table A12.[34]

2001 and 2002 Calibration of Student Loan Interest Deduction. The expansion of the student loan interest deduction enacted by EGTRRA did not take place until the 2002 tax year. Thus the only adjustments we make for 2001 are to assume that some individuals who did not claim a deduction to which they were entitled in 1999 do take the deduction in 2001. That is, we assume that some of the records that we imputed to be within the 60-month limitation, and to have student loan interest, take the deduction in 2001. We apply a take-up rate for these individuals to hit the published distribution for the deduction in 2001 (table A13).

Modeling the Pell Grant

We estimate Pell Grant usage using only the TRIM. We calculate a student's potential Pell Grant based on his or her expected family contribution (as found in the NPSAS), applying the rules of the Pell Grant program. Because the data from the NPSAS

[33] The explanatory variables are the same as those described above for the probit estimation.

[34] Again, by design, there are more tax units reporting student loan interest in the TPC model than there are PEUs reporting interest in the SCF. See note 30.

represented participation in 1999–2000, adjustments in weights were made to the TRIM results to more closely match the 2002 distribution, as provided by the Department of Education (table A15).

Table 1
Federal Expenditures on Higher Education, FY 2003

Program	$ Billions
Tax credits	
Hope credit	4.5
Lifetime learning credit	2.9
Tuition and fees deduction	2.9
Student loan interest deduction	0.8
Coverdell savings accounts	0.1
Section 529 plans	0.3
Education savings bonds	0.4
Total	11.8
Spending programs	
Pell Grants	11.4
Supplemental Education Opportunity Grant	0.8
Work-study	1.0
Perkins Loans	0.2
Family Education Loan	2.7
Direct loans[a]	4.1
Total	20.1

Source: Budget of the United States, 2004, Analytical Perspectives, Table 6-5.

[a] The 2003 figure is positive because of a $4.6 billion upward reestimate largely attributable to revised interest rate estimates for prior cohorts. See U.S. Department of Education (2003b).

Table 2

Current-Law Distribution of Pell Grant by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total (billions of dollars)	Percent of total	Average ($)	Average per student ($)	Average for units with Pell Grant	Number receiving benefits (thousands)	Percent of recipients
Less than 10	4,754	41.4	136	1,195	2,847	1,670	34.7
10-20	3,118	27.1	152	884	2,518	1,238	25.7
20-30	2,414	21.0	131	781	2,293	1,053	21.9
30-40	750	6.5	53	389	1,472	509	10.6
40-50	303	2.6	29	230	1,377	220	4.6
50-75	120	1.0	7	61	1,155	104	2.2
75-100	9	0.1	1	8	1,889	5	0.1
100-200	3	0.0	0	5	2,837	1	0.0
200-500	4	0.0	2	22	2,025	2	0.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	11,487	100.0	82	641	2,388	4,811	100.0

Source: Urban Institute Transfer Income Model, version 3 (TRIM3).

Note: All variables are in 2001 dollars.

[a] Tax units with negative AGI are excluded from the lowest income class but are included in the totals.

Table 3

Tax Benefits of the Hope Credit by Cash Income Class, 2005

Cash income class (thousands of 2003 dollars)[a]	Tax Units[b]			Benefit as percent of after-tax income[c]	Percent of total tax benefits	Average tax benefit ($)
	Number (thousands)	Percent of total	Percent with tax benefit			
Less than 10	20,301	14.0	0.0	0.00	0.0	0
10-20	26,357	18.1	0.5	0.01	4.1	2
20-30	20,537	14.1	1.0	0.03	10.2	6
30-40	15,633	10.8	1.7	0.04	13.6	11
40-50	11,543	7.9	2.3	0.03	12.4	13
50-75	20,112	13.8	2.8	0.04	31.9	20
75-100	11,773	8.1	3.6	0.03	23.5	25
100-200	14,039	9.7	1.2	0.00	4.3	4
200-500	3,588	2.5	0.1	0.00	0.1	0
500-1,000	593	0.4	0.0	0.00	0.0	0
More than 1,000	284	0.2	0.0	0.00	0.0	0
All	145,321	100.0	1.4	0.02	100.0	9

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5).

Notes: Calendar year. Benefits of the Hope credit are measured as the difference between current law without the Hope credit and current law including the Hope credit.

[a] Tax units with negative cash income are excluded from the lowest income class but are included in the totals. Cash income includes wages and salaries, employee contribution to tax-deferred retirement savings plans, business income or loss, farm income or loss, Schedule E income or loss, interest income, dividends, realized net capital gains, total Social Security benefits received, unemployment compensation, energy assistance, Temporary Assistance for Needy Families (TANF), worker's compensation, veterans benefits, supplemental security income (SSI), child support, disability benefits, taxable IRA distributions, total pension income, alimony received, and other income including foreign earned income. Cash income also includes imputed corporate income tax liability and the employer's share of payroll taxes in order to put the measure on a pretax basis.

[b] Includes both filing and non-filing units. Tax units that are dependents of other taxpayers are excluded from the analysis.

[c] After-tax income is cash income less individual income tax, net of refundable credits; corporate income tax; payroll taxes (Social Security and Medicare); and estate tax.

Table 4

Tax Benefits of the Lifetime Learning Credit by Cash Income Class, 2005

Cash income class (thousands of 2003 dollars)[a]	Tax Units[b]			Benefit as percent of after-tax income[c]	Percent of total tax benefits	Average tax benefit ($)
	Number (thousands)	Percent of total	Percent with tax benefit			
Less than 10	20,301	14.0	0.0	0.00	0.0	0
10-20	26,357	18.1	1.4	0.02	4.6	3
20-30	20,537	14.1	2.7	0.06	15.0	13
30-40	15,633	10.8	3.4	0.06	15.7	18
40-50	11,543	7.9	3.9	0.05	12.9	20
50-75	20,112	13.8	4.4	0.04	24.6	22
75-100	11,773	8.1	6.0	0.05	23.4	35
100-200	14,039	9.7	1.1	0.00	3.8	5
200-500	3,588	2.5	0.1	0.00	0.0	0
500-1,000	593	0.4	0.0	0.00	0.0	0
More than 1,000	284	0.2	0.0	0.00	0.0	0
All	145,321	100.0	2.5	0.03	100.0	12

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5).

Notes: Calendar year. Benefits of the lifetime learning credit are measured as the difference between current law without the lifetime learning credit and current law including the lifetime learning credit.

[a] Tax units with negative cash income are excluded from the lowest income class but are included in the totals. For a definition of cash income, see the notes to table 3.

[b] Includes both filing and non-filing units. Tax units that are dependents of other taxpayers are excluded from the analysis.

[c] After-tax income is cash income less individual income tax, net of refundable credits; corporate income tax; payroll taxes (Social Security and Medicare); and estate tax.

Table 5

Tax Benefits of the Deduction for Higher Education Expenses by Cash Income Class, 2005

Cash income class (thousands of 2003 dollars)[a]	Tax Units[b]			Benefit as percent of after-tax income[c]	Percent of total tax benefits	Average tax benefit ($)
	Number (thousands)	Percent of total	Percent with tax benefit			
Less than 10	20,301	14.0	0.1	0.00	0.0	0
10-20	26,357	18.1	1.0	0.01	3.1	1
20-30	20,537	14.1	1.7	0.01	6.9	3
30-40	15,633	10.8	1.5	0.01	5.2	3
40-50	11,543	7.9	2.0	0.01	4.6	4
50-75	20,112	13.8	3.1	0.02	18.9	10
75-100	11,773	8.1	3.7	0.01	8.2	7
100-200	14,039	9.7	7.9	0.04	51.8	38
200-500	3,588	2.5	0.5	0.00	1.1	3
500-1,000	593	0.4	0.5	0.00	0.3	5
More than 1,000	284	0.2	0.0	0.00	0.0	0
All	145,321	100.0	2.3	0.01	100.0	7

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5).

Notes: Calendar year. Benefits of the deduction for higher education expenses are measured as the difference between current law without the deduction for higher education expenses and current law including the deduction for higher education expenses.

[a] Tax units with negative cash income are excluded from the lowest income class but are included in the totals. For a definition of cash income, see the notes to table 3.

[b] Includes both filing and non-filing units. Tax units that are dependents of other taxpayers are excluded from the analysis.

[c] After-tax income is cash income less individual income tax, net of refundable credits; corporate income tax; payroll taxes (Social Security and Medicare); and estate tax.

Table 6

Tax Benefits of the Student Loan Interest Deduction by Cash Income Class, 2005

Cash income class (thousands of 2003 dollars)[a]	Tax Units[b]			Benefit as percent of after-tax income[c]	Percent of total tax benefits	Average tax benefit ($)
	Number (thousands)	Percent of total	Percent with tax benefit			
Less than 10	20,301	14.0	0.3	0.00	0.3	0
10-20	26,357	18.1	1.4	0.01	2.3	1
20-30	20,537	14.1	3.5	0.02	8.9	4
30-40	15,633	10.8	5.7	0.03	14.2	8
40-50	11,543	7.9	6.5	0.03	14.6	12
50-75	20,112	13.8	6.4	0.02	20.2	9
75-100	11,773	8.1	7.8	0.02	18.2	14
100-200	14,039	9.7	5.2	0.01	21.3	14
200-500	3,588	2.5	0.3	0.00	0.1	0
500-1,000	593	0.4	0.0	0.00	0.0	0
More than 1,000	284	0.2	0.0	0.00	0.0	0
All	145,321	100.0	4.0	0.01	100.0	6

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5).

Notes: Calendar year. Benefits of the student loan interest deduction are measured as the difference between current law without the student loan interest deduction and current law including the student loan interest deduction.

[a] Tax units with negative cash income are excluded from the lowest income class but are included in the totals. For a definition of cash income, see the notes to table 3.

[b] Includes both filing and non-filing units. Tax units that are dependents of other taxpayers are excluded from the analysis.

[c] After-tax income is cash income less individual income tax, net of refundable credits; corporate income tax; payroll taxes (Social Security and Medicare); and estate tax.

Table 7

Combined Tax Benefits of Lifetime Learning Credit, Hope Credit, Higher Education Expenses Deduction, and Student Loan Interest Deduction by Cash Income Class, 2005

Cash income class (thousands of 2003 dollars)[a]	Tax Units[b]			Benefit as percent of after-tax income[c]	Percent of total tax benefits	Average tax benefit ($)
	Number (thousands)	Percent of total	Percent with tax benefit			
Less than 10	20,301	14.0	1.0	0.0	0.1	1
10-20	26,357	18.1	5.3	0.1	5.7	18
20-30	20,537	14.1	9.4	0.2	13.0	53
30-40	15,633	10.8	12.3	0.2	13.6	73
40-50	11,543	7.9	13.8	0.2	12.2	88
50-75	20,112	13.8	15.0	0.2	23.5	97
75-100	11,773	8.1	17.7	0.2	18.4	131
100-200	14,039	9.7	14.0	0.1	13.3	79
200-500	3,588	2.5	0.9	0.0	0.2	5
500-1,000	593	0.4	0.6	0.0	0.0	5
More than 1,000	284	0.2	0.0	0.0	0.0	0
All	145,321	100.0	9.7	0.1	100.0	57

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5).

Notes: Calendar year. Benefits are measured as the difference in current law without the lifetime learning credit, Hope credit, deduction for higher education expenses and student loan interest deduction and current law including the LLC, Hope, deduction for higher education expenses, and student loan interest deduction.

[a] Tax units with negative cash income are excluded from the lowest income class but are included in the totals. For a definition of cash income, see the notes to table 3.

[b] Includes both filing and non-filing units. Tax units that are dependents of other taxpayers are excluded from the analysis.

[c] After-tax income is cash income less individual income tax, net of refundable credits; corporate income tax; payroll taxes (Social Security and Medicare); and estate tax.

Table 8

Distribution of Pell Grant, Hope and Lifetime Learning Credit by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total (billions of dollars)	Percent of total	Average ($)	Average per student ($)	Average for units with aid	Number receiving benefits (thousands)	Percent of recipients
Less than 10	4,784	28.0	137	1,202	2,660	1,798	17.0
10-20	3,741	21.9	183	1,061	1,865	2,005	18.9
20-30	3,640	21.3	197	1,177	1,804	2,017	19.0
30-40	1,760	10.3	124	914	1,313	1,340	12.6
40-50	1,020	6.0	99	775	1,031	989	9.3
50-75	1,588	9.3	88	805	1,002	1,586	15.0
75-100	549	3.2	51	484	645	850	8.0
100-200	4	0.0	0	5	2,837	1	0.0
200-500	4	0.0	2	21	2,025	2	0.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	17,101	100.0	122	954	1,613	10,599	100.0

Source: Urban Institute Transfer Income Model, version 3 (TRIM3).

Note: All variables are in 2001 dollars.

[a] Tax units with negative AGI are excluded from the lowest income class but are included in the totals.

Table 9

Current-Law Distribution of Tuition Expenses and Sources of Funding by AGI Class, 2002

AGI class (thousands of dollars)a	Average cost of attendance ($)	Tuition Expenses		Institution Grants		Pell Grants		Hope and Lifetime Learning Credits		Total Aid[b]		Paid by Household[c]	
		Average ($)	Percent of cost covered	Average ($)	Percent of cost covered	Average ($)	Percent of cost covered	Average ($)	Percent of cost covered	Average ($)	Percent of cost covered	Average ($)	Percent of cost covered
Less than 10	11,563	4,457	38.5	1,426	12.3	1,195	10.3	7	0.1	2,628	22.7	8,935	77.3
10-20	10,553	3,814	36.1	1,031	9.8	884	8.4	177	1.7	2,092	19.8	8,461	80.2
20-30	9,487	3,324	35.0	973	10.3	781	8.2	397	4.2	2,151	22.7	7,336	77.3
30-40	9,685	3,280	33.9	1,011	10.4	389	4.0	524	5.4	1,924	19.9	7,761	80.1
40-50	10,269	3,617	35.2	1,245	12.1	230	2.2	545	5.3	2,020	19.7	8,249	80.3
50-75	11,024	4,214	38.2	1,277	11.6	61	0.6	744	6.7	2,082	18.9	8,942	81.1
75-100	11,318	4,352	38.4	1,339	11.8	8	0.1	476	4.2	1,823	16.1	9,495	83.9
100-200	14,671	6,683	45.6	1,541	10.5	5	0.0	0	0.0	1,546	10.5	13,125	89.5
200-500	15,994	7,476	46.7	1,416	8.9	22	0.1	0	0.0	1,438	9.0	14,556	91.0
500-1,000	18,440	10,145	55.0	2,094	11.4	0	0.0	0	0.0	2,094	11.4	16,346	88.6
More than 1,000	7,546	3,498	46.4	0	0.0	0	0.0	0	0.0	0	0.0	7,546	100.0
All	10,909	4,094	37.5	1,213	11.1	641	5.9	313	2.9	2,167	19.9	8,742	80.1

Source: Urban Institute Transfer Income Model, version 3 (TRIM3).

Note: All variables are in 2001 dollars.

[a] Tax units with negative AGI are excluded from the lowest income class but are included in the totals. Only tax units with positive tuition expenses are included in this analysis.

[b] Total aid is the sum of institution grants, Pell Grants, Hope credit, and lifetime learning credit.

[c] Household contribution is the tuition net of total aid.

Table 10

Current-Law Distribution of Pell Grant by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total (billions of dollars)	Percent of total	Average ($)	Average per student ($)	Average for units with Pell Grant	Number receiving benefits (thousands)	Percent of total
Less than 10	4,754	41.4	136	1,195	2,847	1,670	34.7
10-20	3,118	27.1	152	884	2,518	1,238	25.7
20-30	2,414	21.0	131	781	2,293	1,053	21.9
30-40	750	6.5	53	389	1,472	509	10.6
40-50	303	2.6	29	230	1,377	220	4.6
50-75	120	1.0	7	61	1,155	104	2.2
75-100	9	0.1	1	8	1,889	5	0.1
100-200	3	0.0	0	5	2,837	1	0.0
200-500	4	0.0	2	22	2,025	2	0.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	11,487	100.0	82	641	2,388	4,811	100.0

Current-Law Distribution of Hope and Lifetime Learning Credits by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total (billions of dollars)	Percent of total	Average ($)	Average per student ($)	Average for units with tax credits	Number receiving benefits (thousands)	Percent of recipients
Less than 10	30	0.5	1	7	164	180	2.4
10-20	623	11.1	30	177	568	1,096	14.9
20-30	1,226	21.8	66	397	807	1,520	20.6
30-40	1,010	18.0	71	524	842	1,199	16.3
40-50	718	12.8	70	545	747	960	13.0
50-75	1,468	26.1	82	744	937	1,567	21.3
75-100	539	9.6	51	476	635	850	11.5
100-200	0	0.0	0	0	0	0	0.0
200-500	0	0.0	0	0	0	0	0.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	5,614	100.0	40	313	761	7,372	100.0

Current-Law Distribution of Pell Grant, Hope Credit, and Lifetime Learning Credit by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total (billions of dollars)	Percent of total	Average ($)	Average per student ($)	Average for Units with Pell Grant or tax credits	Number receiving benefits (thousands)	Percent of recipients
Less than 10	4,784	28.0	137	1,202	2,660	1,799	17.0
10-20	3,741	21.9	183	1,061	1,865	2,005	18.9
20-30	3,640	21.3	197	1,177	1,804	2,017	19.0
30-40	1,760	10.3	124	914	1,313	1,340	12.6
40-50	1,021	6.0	99	775	1,031	989	9.3
50-75	1,588	9.3	88	805	1,002	1,586	15.0
75-100	548	3.2	51	484	645	850	8.0
100-200	3	0.0	0	5	2,837	1	0.0
200-500	4	0.0	2	22	2,025	2	0.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	17,101	100.0	122	954	1,613	10,599	100.0

Source: Urban Institute Transfer Income Model, version 3 (TRIM3).

Note: All variables are in 2001 dollars.

[a] Tax units with negative AGI are excluded from the lowest income class but are included in the totals.

Table 11

Reform Option 1: Integrate Pell Eligibility with Tax Liability

Distribution of Pell Grant by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total change (millions of dollars)	Percent change total	Average change ($)	Average change per student ($)	Average change for units with Pell Grant	Change in number receiving benefits (thousands)	Change in percent of recipients
Less than 10	4,370	91.9	124	1,098	-102	1,654	99.0
10-20	2,127	68.2	104	604	-639	1,554	125.5
20-30	-531	-22.0	-29	-172	-1,045	455	43.2
30-40	-543	-72.4	-38	-281	-671	-250	-49.1
40-50	-281	-92.7	-27	-213	-695	-187	-85.0
50-75	-119	-99.2	-7	-60	-240	-103	-99.0
75-100	-9	-100.0	-1	-8	-1,889	-5	-100.0
100-200	-3	-100.0	0	-5	-2,837	-1	-100.0
200-500	-4	-100.0	-2	-22	-2,025	-2	-100.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	5,021	43.7	36	280	-307	3,120	64.9

Distribution of Hope and Lifetime Learning Credits by AGI Class, 2002

					Average Change for Units with Tax Credits		
AGI class (thousands of dollars)[a]	Total change (millions of dollars)	Percent change total	Average change ($)	Average change per student ($)	Average change for units with tax credits	Change in number receiving benefits (thousands)	Change in percent of recipients
Less than 10	-1	-1.7	0	0	0	-4	-2.2
10-20	-3	-0.5	0	-2	1	-7	-0.6
20-30	4	0.3	0	1	3	0	0.0
30-40	3	0.3	0	2	3	0	0.0
40-50	1	0.1	0	1	2	0	0.0
50-75	3	0.2	0	2	-1	5	0.3
75-100	0	0.0	0	0	0	0	0.0
100-200	0	0.0	0	0	0	0	0.0
200-500	0	0.0	0	0	0	0	0.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	8	0.1	0	1	2	-7	-0.1

Distribution of Pell Grant, Hope Credit, and Lifetime Learning Credit by AGI Class, 2002

					Average Change for Units with Pell Grant or Tax Credits		
AGI class (thousands of dollars)[a]	Total change (millions of dollars)	Percent change total	Average change ($)	Average change per student ($)	Average change for units with Pell Grant or tax credits	Change in number receiving benefits (thousands)	Change in percent of recipients
Less than 10	4,370	91.3	124	1,098	65	1,559	86.7
10-20	2,124	56.8	103	602	102	976	48.7
20-30	-527	-14.5	-28	-170	-441	267	13.2
30-40	-540	-30.7	-38	-280	-337	-90	-6.7
40-50	-280	-27.4	-27	-212	-261	-26	-2.6
50-75	-116	-7.3	-6	-58	-66	-14	-0.9
75-100	-9	-1.6	0	-8	-10	0	0.0
100-200	-3	-100.0	0	-5	-2,837	-1	-100.0
200-500	-4	-100.0	-2	-22	-2,025	-2	-100.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	5,029	29.4	36	281	54	2,673	25.2

Source: Urban Institute Transfer Income Model, version 3 (TRIM3).

Note: All variables are in 2001 dollars.

[a] Tax units with negative AGI are excluded from the lowest income class but are included in the totals.

Table 12

Reform Option 2: Expand Hope and Lifetime Learning Credits

Distribution of Hope and Lifetime Learning Credits by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total change (millions of dollars)	Percent change total	Average change ($)	Average change per student ($)	Average change for units with tax credits	Change in number receiving benefits (thousands)	Change in percent of recipients
					Average Change for Units with Tax Credits		
Less than 10	0	0.0	0	0	0	0	0.0
10-20	35	5.6	2	10	32	0	0.0
20-30	247	20.1	13	80	163	0	0.0
30-40	235	23.3	17	123	196	0	0.0
40-50	219	30.5	21	167	229	0	0.0
50-75	500	34.1	28	254	319	0	0.0
75-100	174	32.3	16	153	199	5	0.6
100-200	0	0.0	0	0	0	0	0.0
200-500	0	0.0	0	0	0	0	0.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	1,410	25.1	10	79	191	5	0.1

Distribution of Pell Grant, Hope Credit, and Lifetime Learning Credit by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total change (millions of dollars)	Percent change total	Average change ($)	Average change per student ($)	Average change for units with tax credits or Pell Grant	Change in number receiving benefits (thousands)	Change in percent of recipients
					Average Change for Units with Pell Grant or Tax Credits		
Less than 10	0	0.0	0	0	0	0	0.0
10-20	35	0.9	1	10	18	0	0.0
20-30	247	6.8	14	80	123	0	0.0
30-40	235	13.4	17	122	175	0	0.0
40-50	219	21.4	21	167	222	0	0.0
50-75	500	31.5	29	254	315	0	0.0
75-100	174	31.8	17	153	199	5	0.6
100-200	0	0.0	0	0	0	0	0.0
200-500	0	0.0	0	0	0	0	0.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	1,410	8.2	10	79	133	5	0.0

Source: Urban Institute Transfer Income Model, version 3 (TRIM3).

Note: All variables are in 2001 dollars.

[a] Tax units with negative AGI are excluded from the lowest income class but are included in the totals.

Table 13

Reform Option 3: Expand and Make Hope and Lifetime Learning Credits Refundable

Distribution of Hope and Lifetime Learning Credits by AGI Class, 2002

					Average Change for Units with Tax Credits		
AGI class (thousands of dollars)[a]	Total change (millions of dollars)	Percent change total	Average change ($)	Average change per student ($)	Average change for units with tax credits	Change in number receiving benefits (thousands)	Change in percent of recipients
Less than 10	183	618.6	5	47	1,017	0	0.0
10-20	869	139.5	43	246	766	23	2.1
20-30	963	78.5	53	311	582	56	3.7
30-40	500	49.5	36	260	406	10	0.8
40-50	287	40.0	27	218	299	0	0.0
50-75	532	36.2	29	270	339	0	0.0
75-100	174	32.3	16	153	199	5	0.6
100-200	0	0.0	0	0	0	0	0.0
200-500	0	0.0	0	0	0	0	0.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	3,507	62.5	25	196	461	93	1.3

Distribution of Pell Grant, Hope Credit, and Lifetime Learning Credit by AGI Class, 2002

					Average Change for Units with Pell Grant or Tax Credits		
AGI class (thousands of dollars)[a]	Total change (millions of dollars)	Percent change total	Average change ($)	Average change per student ($)	Average change for units with Pell Grant or tax credits	Change in number receiving benefits (thousands)	Change in percent of recipients
Less than 10	183	3.8	5	47	101	0	0.0
10-20	869	23.2	42	246	429	11	0.5
20-30	963	26.5	53	312	440	34	1.7
30-40	500	28.4	36	259	360	10	0.7
40-50	287	28.1	27	218	290	0	0.0
50-75	532	33.5	30	270	333	-1	-0.1
75-100	174	31.8	17	153	200	5	0.6
100-200	0	0.0	0	0	0	0	0.0
200-500	0	0.0	0	0	0	0	0.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	3,507	20.5	25	196	321	58	0.5

Source: Urban Institute Transfer Income Model, version 3 (TRIM3).

Note: All variables are in 2001 dollars.

[a] Tax units with negative AGI are excluded from the lowest income class but are included in the totals.

Table 14

Reform Option 4: Expand Hope and LLC, Make Refundable, and Integrate Pell Eligibility with Tax Liability

Distribution of Pell Grant by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total change (millions of dollars)	Percent change total	Average change ($)	Average change per student ($)	Average change for units with Pell Grant	Change in number receiving benefits (thousands)	Change in percent of recipients
Less than 10	4,370	91.9	124	1,098	-102	1,654	99.0
10-20	2,127	68.2	104	604	-639	1,554	125.5
20-30	-531	-22.0	-29	-172	-1,045	455	43.2
30-40	-543	-72.4	-38	-281	-671	-250	-49.1
40-50	-281	-92.7	-27	-213	-695	-187	-85.0
50-75	-119	-99.2	-7	-60	-240	-103	-99.0
75-100	-9	-100.0	-1	-8	-1,889	-5	-100.0
100-200	-3	0.0	0	-5	-2,837	-1	-100.0
200-500	-4	0.0	-2	-22	-2,025	-2	-100.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	5,021	43.7	36	280	-307	3,120	64.9

Distribution of Hope and Lifetime Learning Credits by AGI Class, 2002

					Average Change for Units with Tax Credits		
AGI class (thousands of dollars)[a]	Total change (millions of dollars)	Percent change total	Average change ($)	Average change per student ($)	Average change for units with tax credits	Change in number receiving benefits (thousands)	Change in percent of recipients
Less than 10	180	2.3	5	46	1,024	-4	-2.2
10-20	863	16.3	43	244	768	17	1.6
20-30	970	24.0	53	313	586	56	3.7
30-40	509	16.6	36	265	414	10	0.8
40-50	288	11.0	28	219	301	0	0.0
50-75	536	21.9	30	272	338	0	0.0
75-100	174	7.8	16	153	220	5	0.6
100-200	0	0.0	0	0	0	0	0.0
200-500	0	0.0	0	0	0	0	0.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	3,519	100.0	25	196	463	88	1.2

Distribution of Pell Grant, Hope Credit, and Lifetime Learning Credit by AGI Class, 2002

					Average Change for Units with Pell Grant or Tax Credits		
AGI class (thousands of dollars)[a]	Total change (millions of dollars)	Percent change total	Average change ($)	Average change per student ($)	Average change for units with Pell Grant or tax credits	Change in number receiving benefits (thousands)	Change in percent of recipients
Less than 10	4,550	36.4	129	1,144	119	1,559	86.7
10-20	2,990	26.3	146	848	391	984	49.1
20-30	439	15.9	24	142	-25	276	13.7
30-40	-34	6.7	-2	-17	59	-82	-6.1
40-50	7	4.0	1	6	37	-26	-2.6
50-75	417	7.8	24	212	274	-15	-0.9
75-100	165	2.8	16	145	189	5	0.6
100-200	-3	0.0	0	-5	-2,837	-1	-100.0
200-500	-4	0.0	-2	-22	-2,025	-2	-100.0
500-1,000	0	0.0	0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0	0.0
All	8,540	100.0	60	476	316	2,702	25.5

Source: Urban Institute Transfer Income Model, version 3 (TRIM3).

Note: All variables are in 2001 dollars.

[a] Tax units with negative AGI are excluded from the lowest income class but are included in the totals.

Table A1

Distribution of Students and Education Expenses in the NPSAS and TPC Model before Adjustment for Institution Type

Total income (thousands of $)[a]	Number of Students (thousands)		Education Expenses ($ millions)		Average Expenses Per Student ($)	
	NPSAS	TPC Model	NPSAS	TPC Model	NPSAS	TPC Model
No income	213	183	599	513	2,812	2,801
1-5	1,185	1,031	3,204	2,981	2,704	2,890
5-10	1,302	1,186	2,767	3,173	2,126	2,675
10-15	1,348	1,178	2,744	3,219	2,035	2,733
15-20	1,356	1,118	2,659	2,624	1,961	2,348
20-25	1,310	1,326	2,270	3,141	1,734	2,368
25-30	1,277	1,309	2,181	2,866	1,708	2,189
30-40	2,116	2,062	3,975	5,076	1,878	2,461
40-50	1,860	1,898	3,917	5,452	2,106	2,872
50-75	3,493	4,128	8,153	11,307	2,334	2,739
75-100	1,954	2,082	5,691	6,984	2,913	3,355
100-200	1,616	1,497	6,529	6,787	4,039	4,535
200 and more	168	173	856	940	5,090	5,424
All	19,197	19,171	45,547	55,063	2,373	2,872

Sources: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5) and NPSAS.

Note: Education expenses refers to NPSAS variable NETCST9, which is equal to total tuition and fees minus grants.

[a] Income refers to NPSAS variable CINCOME, which is total income in calendar year 1998 for independent students and parents of dependent students.

Table A2

Distribution of Students by Institution Type and Income in the NPSAS and TPC Model before Adjustment for Institution Type

Total income (thousands of $)[a]	Four-Year Public School				Two-Year Public School				Private School			
	Number of Students (thousands)		Education Expenses ($ millions)[b]		Number of Students (thousands)		Education Expenses ($ millions)		Number of Students (thousands)		Education Expenses ($ millions)	
	NPSAS	TPC Model	NPSAS	TPC Model	NPSAS	TPC Model	NPSAS	TPC Model	NPSAS	TPC Model	NPSAS	TPC Model
No income	88	72	166	159	66	40	12	13	59	71	421	341
1-5	416	297	894	474	406	208	139	87	363	526	2,170	2,420
5-10	482	381	822	692	489	286	139	98	331	519	1,805	2,383
10-15	476	380	854	641	557	347	175	190	315	451	1,714	2,388
15-20	449	371	793	770	585	348	207	201	322	398	1,659	1,654
20-25	419	386	644	674	600	488	232	321	291	451	1,394	2,146
25-30	423	444	610	784	585	429	229	245	269	437	1,342	1,837
30-40	713	656	1,226	1,230	960	703	431	341	443	703	2,317	3,504
40-50	676	641	1,275	1,311	790	619	391	428	394	638	2,250	3,713
50-75	1,285	1,630	2,855	3,488	1,425	1,217	822	992	782	1,280	4,474	6,826
75-100	793	848	2,024	2,157	681	610	389	626	480	623	3,277	4,201
100-200	675	587	2,044	1,728	494	380	263	259	448	530	4,220	4,800
200 and more	71	67	210	151	44	37	25	19	54	70	622	770
All	6,966	6,762	14,417	14,258	7,681	5,713	3,454	3,820	4,550	6,697	27,666	36,984

Sources: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5) and NPSAS

[a] Income refers to NPSAS variable CINCOME, which is total income in calendar year 1998 for independent students and parents of dependent students

[b] Education expenses refers to NPSAS variable NETCST9, which is total tuition and fees minus grants

Table A3

Distribution of Students by Institution Type and Income in the NPSAS and TPC Model after Adjustment for Institution Type

Total income (thousands of $)[a]	Four-Year Public School				Two-Year Public School				Private School			
	Number of Students (thousands)		Education Expenses ($ millions)[b]		Number of Students (thousands)		Education Expenses ($ millions)		Number of Students (thousands)		Education Expenses ($ millions)	
	NPSAS	TPC Model	NPSAS	TPC Model	NPSAS	TPC Model	NPSAS	TPC Model	NPSAS	TPC Model	NPSAS	TPC Model
No income	88	72	166	159	66	54	12	14	59	57	421	287
1-5	416	297	894	474	406	348	139	112	363	386	2,170	1,670
5-10	482	381	822	692	489	499	139	167	331	305	1,805	1,250
10-15	476	380	854	641	557	531	175	261	315	267	1,714	1,198
15-20	449	371	793	770	585	527	207	260	322	219	1,659	918
20-25	419	386	644	674	600	620	232	380	291	320	1,394	1,459
25-30	423	444	610	784	585	599	229	308	269	267	1,342	1,170
30-40	713	656	1,226	1,230	960	921	431	447	443	484	2,317	2,384
40-50	676	641	1,275	1,311	790	857	391	557	394	399	2,250	2,459
50-75	1,285	1,630	2,855	3,488	1,425	1,660	822	1,207	782	837	4,474	4,381
75-100	793	848	2,024	2,157	681	791	389	737	480	443	3,277	3,078
100-200	675	587	2,044	1,728	494	462	263	309	448	448	4,220	4,044
200 and more	71	67	210	151	44	57	25	28	54	49	622	607
All	6,966	6,762	14,417	14,258	7,681	7,928	3,454	4,786	4,550	4,482	27,666	24,904

Sources: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5) and NPSAS

[a] Income refers to NPSAS variable CINCOME, which is total income in calendar year 1998 for independent students and parents of dependent students

[b] Education expenses refers to NPSAS variable NETCST9, which is total tuition and fees minus grants

Table A4

Distribution of Students and Education Expenses in the NPSAS and TPC Model After Adjustment for Institution Type

Total income (thousands of $)[a]	Number of Students (thousands)		Education Expenses ($ millions)		Average Expenses Per Student ($)	
	NPSAS	TPC Model	NPSAS	TPC Model	NPSAS	TPC Model
No income	213	183	599	459	2,812	2,508
1-5	1,185	1,031	3,204	2,256	2,704	2,188
5-10	1,302	1,186	2,767	2,108	2,126	1,778
10-15	1,348	1,178	2,744	2,100	2,035	1,783
15-20	1,356	1,118	2,659	1,947	1,961	1,742
20-25	1,310	1,326	2,270	2,513	1,734	1,895
25-30	1,277	1,309	2,181	2,262	1,708	1,727
30-40	2,116	2,062	3,975	4,061	1,878	1,969
40-50	1,860	1,898	3,917	4,326	2,106	2,279
50-75	3,493	4,128	8,153	9,075	2,334	2,199
75-100	1,954	2,082	5,691	5,972	2,913	2,869
100-200	1,616	1,497	6,529	6,082	4,039	4,063
200 and more	168	173	856	787	5,090	4,540
All	19,197	19,171	45,547	43,949	2,373	2,292

Sources: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5) and NPSAS.

Note: Education expenses refers to NPSAS variable NETCST9, which is equal to total tuition and fees minus grants.

[a] Income refers to NPSAS variable CINCOME, which is total income in calendar year 1998 for independent students and parents of dependent students.

Table A5
Comparison of TPC Model and IRS Data for Education Credits, 2001
before Applying Adjustment Factors

AGI class (thousands of current $)	Number of Returns			Amount (thousands of current $)			Average Credits (current $)		
	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference
No AGI	72	289	301.4	74	131	77.7	1,028	455	-55.7
1-5	0	6	0.0	0	0	0.0	0	22	0.0
5-10	209,818	313,432	49.4	38,683	28,868	-25.4	184	92	-50.1
10-15	496,493	920,345	85.4	263,232	268,723	2.1	530	292	-44.9
15-20	689,221	1,233,002	78.9	458,952	540,995	17.9	666	439	-34.1
20-25	574,379	1,124,645	95.8	411,932	577,037	40.1	717	513	-28.5
25-30	619,536	1,088,940	75.8	484,983	621,237	28.1	783	570	-27.2
30-40	1,021,832	1,808,329	77.0	774,128	1,002,620	29.5	758	554	-26.9
40-50	877,993	1,332,189	51.7	590,677	692,372	17.2	673	520	-22.7
50-75	1,587,740	2,010,550	26.6	1,439,934	1,499,041	4.1	907	746	-17.7
75-100	1,135,469	1,255,644	10.6	693,658	631,579	-8.9	611	503	-17.7
100-200	0	0	0.0	0	0	0.0	0	0	0.0
200 and more	0	0	0.0	0	0	0.0	0	0	0.0
All	7,212,554	11,087,371	53.7	5,156,254	5,862,603	13.7	715	529	-26.0

Sources: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5) and NPSAS.
Notes: Calendar year. Includes the Hope and lifetime learning credits.

Table A6
Implied Participation Rates for Education Credits, 2001

AGI class (thousands of current $)	Hope Credit: Number of Students			Lifetime Learning: Number of Students			Total: Number of Students[a]		
	Eligible	Participating	Participation rate	Eligible	Participating	Participation rate	Eligible	Participating	Participation rate
No AGI	73	61	83.6	222	107	48.2	295	168	56.9
1-5	0	0	0.0	6	0	0.0	6	0	0.0
5-10	40,371	15,240	37.7	274,583	207,475	75.6	314,954	222,715	70.7
10-15	210,107	90,448	43.0	711,441	470,795	66.2	921,548	561,243	60.9
15-20	385,126	240,645	62.5	862,738	479,965	55.6	1,247,864	720,610	57.7
20-25	332,740	183,337	55.1	813,748	464,086	57.0	1,146,488	647,423	56.5
25-30	365,648	237,612	65.0	756,144	407,247	53.9	1,121,792	644,859	57.5
30-40	599,461	380,068	63.4	1,270,945	673,346	53.0	1,870,406	1,053,414	56.3
40-50	531,272	431,579	81.2	893,318	523,361	58.6	1,424,590	954,940	67.0
50-75	857,629	773,134	90.1	1,355,655	996,954	73.5	2,213,284	1,770,088	80.0
75-100	532,054	491,116	92.3	835,398	647,741	77.5	1,367,452	1,138,857	83.3
100-200	0	0	0.0	0	0	0.0	0	0	0.0
200-500	0	0	0.0	0	0	0.0	0	0	0.0
500-1,000	0	0	0.0	0	0	0.0	0	0	0.0
1,000 or more	0	0	0.0	0	0	0.0	0	0	0.0
All	3,854,481	2,843,240	73.8	7,774,200	4,871,077	62.7	11,628,681	7,714,317	66.3

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5).
Note: Calendar year.

[a] Includes both the Hope and lifetime learning credits.

Table A7
Eligibility Rates for Education Credits, 2001

AGI class (thousands of current $)	Number of Students		
	All	Eligible for credits[a]	Eligibility rate
No AGI	127,891	295	0.2
1-5	1,714,016	6	0.0
5-10	1,561,653	314,954	20.2
10-15	1,820,806	921,548	50.6
15-20	1,872,254	1,247,864	66.7
20-25	1,529,738	1,146,488	74.9
25-30	1,434,509	1,121,792	78.2
30-40	2,320,610	1,870,406	80.6
40-50	1,703,180	1,424,590	83.6
50-75	2,971,981	2,213,284	74.5
75-100	1,728,262	1,367,452	79.1
100-200	794,313	0	0.0
200-500	150,149	0	0.0
500-1,000	29,319	0	0.0
1,000 or more	14,621	0	0.0
All	19,773,302	11,628,681	58.8

Source: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5).
Note: Calendar year.
[a] Student must have positive qualifying expenses and meet other requirements for the credits, sufficient tax liability before credits to receive a positive amount of credit, and AGI not greater than the end of the phaseout range for the credits.

Table A8
Comparison of TPC Model and IRS Data for Education Credits, 2001
after Applying Adjustment Factors

AGI class (thousands of current $)	Number of Returns			Amount (thousands of current $)			Average Credits (current $)		
	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference
No AGI	72	161	123.6	74	120	62.5	1,028	747	-27.3
1-5	0	0	0.0	0	0	0.0	0	0	0.0
5-10	209,818	222,715	6.1	38,683	23,446	-39.4	184	105	-42.9
10-15	496,493	561,244	13.0	263,232	210,224	-20.1	530	375	-29.4
15-20	689,221	715,615	3.8	458,952	462,714	0.8	666	647	-2.9
20-25	574,379	644,163	12.1	411,932	484,098	17.5	717	752	4.8
25-30	619,536	636,588	2.8	484,983	538,672	11.1	783	846	8.1
30-40	1,021,832	1,037,431	1.5	774,128	859,618	11.0	758	829	9.4
40-50	877,993	906,541	3.3	590,677	645,200	9.2	673	712	5.8
50-75	1,587,740	1,618,958	2.0	1,439,934	1,452,140	0.8	907	897	-1.1
75-100	1,135,469	1,045,468	-7.9	693,658	616,694	-11.1	611	590	-3.4
100-200	0	0	0.0	0	0	0.0	0	0	0.0
200 and more	0	0	0.0	0	0	0.0	0	0	0.0
All	7,212,554	7,388,884	2.4	5,156,254	5,292,927	2.7	715	716	0.2

Sources: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5) and IRS Table 3.3, 2001.
Notes: Calendar year. Includes the Hope and lifetime learning credits.

Table A9
Comparison of TPC Model and IRS Preliminary Data for Education Credits, 2002

AGI class (thousands of current $)	Number of Returns			Amount (thousands of current $)			Average Credits (current $)		
	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference
Less than 15	617,248	457,267	-25.9	214,187	181,642	-15.2	347	397	14.5
15-30	1,764,834	1,870,528	6.0	1,164,864	1,455,958	25.0	660	778	17.9
30-50	1,873,657	1,701,284	-9.2	1,471,505	1,481,504	0.7	785	871	10.9
50-100	2,253,877	2,062,555	-8.5	2,082,285	1,960,170	-5.9	924	950	2.9
100-200	19,716	0	-100.0	701	0	-100.0	36	0	-100.0
More than 200	0	0	0.0	0	0	0.0	0	0	0.0
All	6,529,334	6,091,744	-6.7	4,933,542	5,079,381	3.0	756	834	10.4

Sources: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5) and IRS Table 1, 2002.
Notes: Calendar year. Includes the Hope and lifetime learning credits.

Table A10
Comparison of TPC Model and IRS Preliminary Data for Education Expenses Deduction before Any Adjustments, 2002

AGI class (thousands of current $)	Number of Returns			Amount (thousands of current $)			Average Deduction (current $)		
	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference
Less than 15	537,026	973,142	81.2	1,000,973	1,419,677	41.8	1,864	1,459	-21.7
15-30	496,370	1,594,761	221.3	765,628	1,088,554	42.2	1,542	683	-55.7
30-50	570,431	1,544,077	170.7	834,208	1,277,641	53.2	1,462	827	-43.4
50-100	1,286,283	1,621,241	26.0	2,335,676	2,237,396	-4.2	1,816	1,380	-24.0
100-200	583,029	316,801	-45.7	1,288,296	504,332	-60.9	2,210	1,592	-28.0
More than 200	0	0	0.0	0	0	0.0	0	0	0.0
All	3,473,139	6,050,226	74.2	6,224,780	6,527,792	4.9	1,792	1,079	-39.8

Sources: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5) and IRS Table 1, 2002.
Note: Calendar year.

Table A11
Comparison of TPC Model and IRS Preliminary Data for Education Expenses Deduction after Adjustment, 2002

AGI class (thousands of current $)	Number of Returns			Amount (thousands of current $)			Average Deduction (current $)		
	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference
Less than 15	537,026	649,942	21.0	1,000,973	1,295,519	29.4	1,864	1,993	6.9
15-30	496,370	573,447	15.5	765,628	795,297	3.9	1,542	1,387	-10.1
30-50	570,431	564,184	-1.1	834,208	948,642	13.7	1,462	1,681	15.0
50-100	1,286,283	1,438,911	11.9	2,335,676	2,222,920	-4.8	1,816	1,545	-14.9
100-200	583,029	316,422	-45.7	1,288,296	504,315	-60.9	2,210	1,594	-27.9
More than 200	0	0	0.0	0	0	0.0	0	0	0.0
All	3,473,139	3,543,032	2.0	6,224,780	5,766,841	-7.4	1,792	1,628	-9.2

Sources: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5) and IRS Table 1, 2002.
Note: Calendar year.

Table A12
Distribution of Student Loan Interest in the SCF and TPC Model, 2001

Income class[a]	Number (thousands)		Amount ($ millions)		Average ($)	
	SCF	TPC	SCF	TPC	SCF	TPC
Lowest quintile	1,319	1,505	898	1,015	681	674
Second quintile	1,903	2,109	1,786	1,986	939	942
Middle quintile	2,616	3,040	2,823	3,259	1,079	1,072
Fourth quintile	2,622	2,582	2,705	2,449	1,032	949
Next 10 percent	1,146	1,857	1,512	2,230	1,320	1,201
Next 5 percent	637	668	635	671	997	1,004
Next 4 percent	330	324	818	480	2,478	1,481
Top 1 percent	72	33	438	154	6,106	4,727
All	10,674	12,191	11,631	12,361	1,090	1,014

Sources: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5) and authors' calculations based on 1998 and 2001 SCF.

[a] Income as reported in the SCF.

Table A13
Comparison of TPC Model and IRS Data for Student Loan Interest Deduction, 2001

AGI class (thousands of current $)	Number of Returns			Amount (thousands of current $)			Average Deduction (current $)		
	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference
No income	13,944	47,845	243.1	14,282	29,704	108.0	1,024	621	-39.4
1-5	51,201	58,296	13.9	30,099	32,520	8.0	588	558	-5.1
5-10	156,413	166,619	6.5	82,408	82,406	0.0	527	495	-6.1
10-15	247,457	263,206	6.4	122,233	99,331	-18.7	494	377	-23.6
15-20	359,547	339,541	-5.6	197,183	211,325	7.2	548	622	13.5
20-25	380,846	361,331	-5.1	230,313	265,413	15.2	605	735	21.5
25-30	516,068	442,933	-14.2	367,707	340,128	-7.5	713	768	7.8
30-40	887,751	847,307	-4.6	651,930	644,578	-1.1	734	761	3.6
40-50	701,909	575,380	-18.0	465,102	389,395	-16.3	663	677	2.1
50-75	1,090,531	1,104,418	1.3	550,475	587,651	6.8	505	532	5.4
75-100	0	0	0.0	0	0	0.0	0.0	0.0	0.0
100-200	0	0	0.0	0	0	0.0	0.0	0.0	0.0
200-500	0	0	0.0	0	0	0.0	0.0	0.0	0.0
500-1,000	0	0	0.0	0	0	0.0	0.0	0.0	0.0
More than 1,000	0	0	0.0	0	0	0.0	0.0	0.0	0.0
All	4,405,667	4,206,875	-4.5	2,711,733	2,682,449	-1.1	616	638	3.6

Sources: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5) and IRS Table 1, 2001.
Note: Calendar year.

Table A14
Comparison of TPC Model and IRS Preliminary Data for Student Loan Interest Deduction, 2002

AGI class (thousands of current $)	Number of Returns			Amount (thousands of current $)			Average Deduction (current $)		
	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference	IRS	TPC	Percentage difference
Less than 15	557,354	625,576	12.2	260,841	278,819	6.9	468	446	-4.8
15-30	1,410,290	1,426,929	1.2	877,799	999,259	13.8	622	700	12.5
30-50	1,962,081	1,622,441	-17.3	1,372,403	1,303,042	-5.1	699	803	14.8
50-100	2,355,660	2,246,686	-4.6	1,756,917	1,781,461	1.4	746	793	6.3
100-200	394,341	317,125	-19.6	215,308	165,894	-23.0	546	523	-4.2
More than 200	0	0	0.0	0	0	0.0	0	0	0.0
All	6,679,730	6,328,922	-5.3	4,483,269	4,575,309	2.1	671	723	7.7

Sources: Urban-Brookings Tax Policy Center Microsimulation Model (version 0304-5) and IRS Table 1, 2001.
Note: Calendar year.

Table A15
Comparison of TRIM Model and Pell Program Data

Total income category	Target: All Students 2002			TRIM Results after Match			Ratio of TRIM to Target			Cumulative Distribution			
	Recipients	Amount (dollars)	Average (dollars)	Recipients	Amount (dollars)	Average (dollars)	Recipients	Amount	Average	Target Recipients	Target Amount	TRIM Recipients	TRIM Amount
Less than $10,000	1,484,513	4,215,251,864	2,839	1,490,501	4,254,979,083	2,855	1.00	1.01	1.01	0.31	0.36	0.31	0.37
$10,000 to $19,999	1,280,443	3,305,897,608	2,582	1,262,640	3,199,615,703	2,534	0.99	0.97	0.98	0.58	0.65	0.57	0.65
$20,000 to $29,999	1,051,806	2,562,521,072	2,436	1,048,976	2,398,053,813	2,286	1.00	0.94	0.94	0.80	0.87	0.79	0.86
$30,000 to $39,999	569,621	1,041,808,525	1,829	604,344	1,092,206,912	1,807	1.06	1.05	0.99	0.92	0.96	0.92	0.95
$40,000 to $49,999	272,034	367,086,115	1,349	264,158	371,752,895	1,407	0.97	1.01	1.04	0.98	0.99	0.97	0.99
$50,000 to $74,999	108,725	119,720,563	1,101	108,493	125,934,915	1,161	1.00	1.05	1.05	1.00	1.00	0.99	1.00
$75,000 to $99,999	2,164	2,760,574	1,276	20,943	27,322,816	1,305	9.68	9.90	1.02	1.00	1.00	1.00	1.00
$100,000 to $199,999	331	801,445	2,424	1,440	3,633,951	2,524	4.36	4.53	1.04	1.00	1.00	1.00	1.00
$200,000 to $499,999	19	48,682	2,577	2,217	4,489,324	2,025	117.36	92.22	0.79	1.00	1.00	1.00	1.00
$500,000 and more	5	12,207	2,326	0	0	0	0.00	0.00	0.00	1.00	1.00	1.00	1.00
Total	4,769,660	11,615,908,654	2,435	4,810,909	11,487,399,397	2,388	1.01	0.99	0.98				

Sources: Targets derived from unpublished tabulations of Pell program data provided by the Office of Postsecondary Education, U.S. Department of Education
TRIM results output from TRIM3 model.

Table A16
Students Age 23 or Over
Current-Law Distribution of Pell Grant by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total (billions of dollars)	Percent of total	Average per student ($)	Average for units with Pell Grant	Number receiving benefits (thousands)	Percent of total
Less than 10	1,300	34.4	767	2,323	560	28.7
10-20	1,396	36.9	775	2,251	620	31.8
20-30	542	14.3	327	1,511	359	18.4
30-40	318	8.4	240	1,152	276	14.1
40-50	128	3.4	137	1,258	102	5.2
50-75	39	1.0	31	1,563	25	1.3
75-100	3	0.1	4	1,615	2	0.1
100-200	1	0.0	2	1,853	0	0.0
200-500	2	0.0	19	2,025	1	0.1
500-1,000	0	0.0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0.0
All	3,783	100.0	378	1,916	1,951	100.0

Current-Law Distribution of Hope and Lifetime Learning Credits by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total (billions of dollars)	Percent of total	Average per student ($)	Average for units with tax credits	Number receiving benefits (thousands)	Percent of recipients
Less than 10	9	0.3	5	159	55	1.3
10-20	237	8.7	131	526	450	10.7
20-30	525	19.3	322	705	759	18.0
30-40	579	21.3	437	732	791	18.7
40-50	388	14.3	415	595	652	15.5
50-75	729	26.9	573	723	1,009	23.9
75-100	238	8.8	331	475	502	11.9
100-200	0	0.0	0	0	0	0.0
200-500	0	0.0	0	0	0	0.0
500-1,000	0	0.0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0.0
All	2,715	100.0	274	644	4,219	100.0

Current-Law Distribution of Pell Grant, Hope Credit, and Lifetime Learning Credit by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total (billions of dollars)	Percent of total	Average per student ($)	Average for units with Pell Grant or tax credits	Number receiving benefits (thousands)	Percent of recipients
Less than 10	1,309	20.1	772	2,163	605	10.9
10-20	1,633	25.1	906	1,717	951	17.1
20-30	1,067	16.4	649	115	933	16.8
30-40	897	13.8	677	1,311	871	15.7
40-50	516	7.9	552	1,029	669	12.1
50-75	768	11.8	604	772	1,011	18.2
75-100	241	3.7	335	760	502	9.0
100-200	1	0.0	2	1,853	0	0.0
200-500	2	0.0	19	2,025	1	0.0
500-1,000	0	0.0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0.0
All	6,498	100.0	652	1,163	5,550	100.0

Source: Urban Institute Transfer Income Model, version 3 (TRIM3).
Note: All variables are in 2001 dollars.
[a] Tax units with negative AGI are excluded from the lowest income class but are included in the totals.

Table A17

Reform Option 1: Integrate Pell Eligiblity with Tax Liability; Students Age 23 or Over

Distribution of Pell Grant by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total (billions of dollars)	Percent of total	Average per student ($)	Average for units with Pell Grant	Number receiving benefits (thousands)	Percent of recipients
Less than 10	2,412	45.5	1,423	2,180	1,106	35.7
10-20	2,100	39.6	1,166	1,691	1,242	40.1
20-30	641	12.1	386	1,113	575	18.6
30-40	109	2.1	82	828	131	4.2
40-50	18	0.3	19	683	26	0.8
50-75	1	0.0	1	915	1	0.0
75-100	0	0.0	0	0	0	0.0
100-200	0	0.0	0	0	0	0.0
200-500	0	0.0	0	0	0	0.0
500-1,000	0	0.0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0.0
All	5,303	100.0	536	1,713	3,096	100.0

Distribution of Hope and Lifetime Learning Credits by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total (billions of dollars)	Percent of total	Average per student ($)	Average for units with credits	Number receiving benefits (thousands)	Percent of recipients
Less than 10	9	0.3	5	159	56	1.3
10-20	236	8.7	131	526	448	10.6
20-30	538	19.8	324	708	759	18.0
30-40	578	21.3	436	731	791	18.8
40-50	389	14.3	416	596	652	15.5
50-75	731	26.9	574	725	1,008	23.9
75-100	238	8.8	331	475	502	11.9
100-200	0	0.0	0	0	0	0.0
200-500	0	0.0	0	0	0	0.0
500-1,000	0	0.0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0.0
All	2,718	100.0	275	645	4,217	100.0

Distribution of Pell Grant, Hope Credit, and Lifetime Learning Credit by AGI Class, 2002

AGI class (thousands of dollars)[a]	Total (billions of dollars)	Percent of total	Average per student ($)	Average for units with aid	Number receiving benefits (thousands)	Percent of recipients
Less than 10	2,421	30.2	1,428	2,122	1,141	17.2
10-20	2,336	29.1	1,297	1,679	1,392	21.0
20-30	1,179	14.7	710	1,083	1,088	16.4
30-40	687	8.6	518	835	822	12.4
40-50	407	5.1	435	621	655	9.9
50-75	732	9.1	575	726	1,009	15.2
75-100	238	3.0	331	475	502	7.6
100-200	0	0.0	0	0	0	0.0
200-500	0	0.0	0	0	0	0.0
500-1,000	0	0.0	0	0	0	0.0
More than 1,000	0	0.0	0	0	0	0.0
All	8,021	100.0	811	1,212	6,621	100.0

Source: Urban Institute Transfer Income Model, version 3 (TRIM3).

Note: All variables are in 2001 dollars.

[a] Tax units with negative AGI are excluded from the lowest income class but are included in the totals.

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