

Is College Financial Aid Equitable and Efficient?

Aaron S. Edlin



The Journal of Economic Perspectives, Vol. 7, No. 2 (Spring, 1993), 143-158.

Stable URL:

<http://links.jstor.org/sici?sici=0895-3309%28199321%297%3A2%3C143%3AICFAEA%3E2.0.CO%3B2-V>

The Journal of Economic Perspectives is currently published by American Economic Association.

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/about/terms.html>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/journals/aea.html>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is an independent not-for-profit organization dedicated to creating and preserving a digital archive of scholarly journals. For more information regarding JSTOR, please contact support@jstor.org.

Is College Financial Aid Equitable and Efficient?

Aaron S. Edlin

Need-based financial aid is often defended both on grounds of equity and efficiency: equity because it provides equality of opportunity, and efficiency because it encourages the formation of productive human capital (James, 1988). However, “need” is now determined in a way that is both inequitable and inefficient. An informal survey of my colleagues (who do not study financial aid) revealed no one who named the financial aid system as a substantial tax on savings. However, once this interpretation was suggested, they quickly revealed their unanimous and disturbing impression that savings are summarily confiscated from parents upon their first child’s matriculation at university. Though exaggerated, this impression is not without foundation.

Two families with identical earnings paths pay dramatically different amounts for college if one saves more than the other. Thus, while the financial aid system may contribute to vertical equity, since the poor get more aid than the rich, its horizontal inequities are substantial. Moreover, the federal rules for financial aid raise significant efficiency concerns.¹ They might conceivably distort many household decisions, including family size and the spacing of children. However, this paper will focus upon the most important incentive distorted by present policies: the incentive to save. Because saving leads to receiving less financial aid, a family’s return to saving is substantially below the social return. This may lead to families making inefficient intertemporal choices and correspondingly to an inefficient loss of capital formation.

¹The economic literature has largely neglected such concerns. Three exceptions are Carlson and Shepherd (1993), Case and McPherson (1986), and a more recent working paper by Feldstein (1992), which is discussed below.

■ Aaron S. Edlin is a doctoral student in economics and a law student, Stanford University, Stanford, California. He will be Assistant Professor of Economics, University of California, Berkeley, California, starting Fall of 1993.

This paper first explores the size of the implicit tax on savings, pointing out its potential effects, and its accompanying problems of inefficiency and unfairness. To cure these ills, I will argue that financial aid for dependent students should be based upon the best available measure of parents' permanent income from long streams of wage data. This would require Congress to change the Congressional Methodology, the federal formula for determining a family's financial need.²

The Congressional Methodology as an Implicit Tax

In 1990, at least 268 schools, ranging from the elite to the obscure, managed to meet all financial need. By my tabulation, these 268 schools together enrolled 223,870 freshmen in 1990, with approximately 150,000 of these receiving aid.³ Many other colleges and universities strive to meet as much need as possible.

If a college is to utilize federal funding in an aid package, it must use the Congressional Methodology (CM) to determine financial need. The basic process is that parents of dependent students hand over to the College Scholarship Service their tax forms and all important family financial statistics. The service applies the CM and sends the colleges what the formula estimates to be the family's ability to pay for college. The colleges also receive the underlying financial statistics, which they can check against copies of the parents' tax forms. The version of the CM described below is from *The Congressional Methodology, 1990-91*.⁴

In broad outline, the Congressional Methodology can be described as follows.

First, sum up the parents' total income, measured by gross taxable income reported to the IRS along with any tax-exempt income.

Second, subtract a number of allowances: actual federal income and social security taxes; an imputed measure of state and local taxes based upon income and state of residence; a "Standard Maintenance Allowance" meant to capture

²The Federal Congressional Needs Methodology is set out in part F of Title IV of the Higher Education Amendments of 1986 (Public Law 99-498) and the Higher Education Technical Amendments (Public Law 100-50).

³The number 268 was obtained from *Peterson's 1991 College Money Handbook*, by compiling all the schools which reported they offered aid to 100 percent of their students who had determined need and met an average of 100 percent of the need of any student aided. The number may be low because an unknown number of schools who met all need failed to report. The number also becomes much higher if either of the 100 percent figures is relaxed. The enrollment figure is inferred using the national statistic that 65 percent of students in private colleges receive aid (Digest of Education Statistics, 1990). Of course, the percentage at the Peterson schools may be somewhat different.

⁴Under bill S.1150, the Higher Education Amendments of 1992, the Congressional Methodology will change somewhat. The main change will be that home and farm equity will no longer count as a resource from which parents can pay tuition. The other significant changes are that the income cutoff, beyond which the federal government will no longer provide support even if there is need, has been raised to \$70,000.

basic living expenses; and allowances for extraordinary medical expenses, tuition for a private grade school, an allowance if both parents work, and some other matters. The result is called *Available Income*.

Third, add an *Income Supplement*, based on the assets of the parents. This is calculated by summing all financial assets and home equity, subtracting an *Asset Protection Allowance*, which rises modestly with age, and then taking 12 percent of the difference (assuming it is positive).

Finally, the sum of the Income Supplement and the Available Income is called *Adjusted Available Income*. The Adjusted Available Income (AAI) is put through a table, candidly termed a "tax table," to determine the parents' ability to contribute to schooling, the *Parental Contribution*. The annual marginal tax rate used by the Congressional Methodology climbs steeply from 22 percent, if the AAI is below \$8,300, to a plateau of 47 percent when the AAI is greater than \$16,700 (the plateau is typically reached with total income of \$40,000–\$45,000). However, since the AAI reflects subtractions for state and federal taxes, the effective financial aid tax rate on gross income is lower than the tax on Adjusted Available Income itself.

The school compares the Parental Contribution, plus a student contribution of about \$3000 (if the student is without assets) to the price of a year at the school, including tuition, room, board, health insurance, book and travel expenses. Financial need is the difference between the two. If the parents have more than one child in college, the Parental Contribution is divided evenly between the children.⁵

The most straightforward tax implicit in the financial aid formula is an income tax. This tax can be significant. In fact, for a two-parent, two-child family, with one of the children in college and an income in the range of \$45,000 to \$85,000, the marginal income tax rate they face from federal, state, payroll, and *financial aid taxes* can reach 66 percent, or even higher (Edlin 1992, 1993). This tax is progressive over low and middle income levels; that is, the marginal tax rate increases with income. But at high incomes, the total tax rate goes down because the parental contribution is high enough that no aid will be received, and so the financial aid formula no longer imposes any marginal tax.

The precise rate of the financial aid tax obviously depends on a variety of factors: income, rates of federal, state, and Social Security taxes; number of children; applicable adjustments; and so on. Two qualifications must be added to this list. First, parents cannot be sure that the college their children attend will meet all need. In addition, some need may be met with loans rather than grants. McPherson and Shapiro (1991) and Feldstein (1992) estimate the value of these loans, often given at favorable terms, to be 50 and 60 cents on the dollar, respectively. I have computed that on average roughly 2/3 of aid is gift aid at the 268 schools that report in *Peterson's 1991 College Money Handbook* that

⁵To the extent that there is a penalty for having more than one child in college at once, it largely comes from the maintenance allowance falling with more children in college.

they meet all the need of all students having need. Therefore, using the figure that loans are worth 50 cents on the dollar, a dollar of aid is worth 83 cents, an estimate that will be used throughout the paper.

The financial aid tax on *income* undoubtedly does create some distortions. However, we will focus here on the financial aid tax upon asset accumulation.

This tax profoundly affects the ability and incentives of a 35-year-old parent—or even a 23-year-old parent-to-be—to make the intertemporal trade-off involved in accumulating assets before their children attend college for spending on consumption after their children complete college. In effect, the financial aid tax is a tax on post-college consumption goods that are bought with foregone pre-college consumption.

The financial aid tax on asset accumulation comes through two avenues: first, income that assets generate in the form of interest or dividends is added into AAI; second, assuming they are positive, the assets themselves are converted into the Income Supplement at a marginal asset conversion rate of 12 percent, and added to AAI. In both cases, the additional amount is taxed to determine the Parental Contribution. The precise amount of the tax will vary according to the particular characteristics of the family.

To measure the financial aid tax, consider the situation of a family which saves and invests a dollar before college, intending to spend it for consumption during retirement, or anytime after children complete college. How much does the financial aid tax affect the buying power of that dollar? The key parameters here are the amount of time that the family is subject to the financial aid tax (which in turn depends on the number and spacing of the children who attend college), and how much nominal interest the investment pays out. Table 1 offers the results of some sample calculations with these two variables, with the rows showing the duration of the financial aid tax and the columns showing the nominal annual return.⁶ The first column can be thought of as holding assets as bonds yielding 10 percent interest, and the second as holding assets in equities that pay no dividends. A particular entry in Table 1 can be read as follows: if a family, which will be subject to the financial aid tax for 8 years and which keeps its money during those years in bonds yielding 10 percent, saves \$1 before children enter college in order to buy goods after college, the

⁶Absent the aid tax, if parents invested a dollar during their children's college years, the total return would be $R^{\text{noCM}} = [1 + i(1 - f - s_r)]^{yc}$. With the aid tax, the return is $R^{\text{CM}} = [1 + i(1 - f)(1 - \text{CM}) - s_r + s_{\text{cm}}\text{CM} - .12\text{CM}]^{yc}$. The tax is therefore $t_{\text{cm}} = \frac{R^{\text{noCM}}}{R^{\text{CM}}} - 1$, where

t_{cm} = implicit tax rate on retirement consumption
 i = interest rate
 f = federal marginal tax rate
 s_r = real state tax rate
 CM = Congressional Methodology tax rate
 SCM = state tax rate assumed by the CM
 yc = years children are in college.

Table 1
Effective CM Tax Rates on Post-College Consumption

		Nominal Interest	
		10%	0%
Years of CM tax	4 years	32%	21%
	6 years	52%	33%
	8 years	75%	47%
	12 years	132%	78%

Note: This table is calculated under the assumption that both the real state tax rate and the rate assumed by the Congressional Methodology are 8 percent. It is computed under the additional assumptions that the marginal federal rate is 28 percent and the stated Congressional Methodology tax rate is 47 percent. As explained in the text, the CM rate is adjusted to account for the fact that not all aid is gift aid.

financial aid tax reduces the eventual purchasing power of that \$1 by the same amount as a 75 percent sales tax on post-college goods.

Obviously, this CM tax is quite substantial, particularly when applied for a number of years. And, since formulas similar to the CM are applied at professional and graduate schools as well, this tax is of long duration for many families.

The tax rate is not the same for all assets. Because the first prong of the tax is on interest income, the effective tax rate is much lower if the parents invest during college years somewhere where the returns come in the form of capital gains (assuming, of course, that the risk-adjusted return from a no-dividend stock for example is comparable to the return from a dividend-yielding stock or an interest-bearing bond). This differential taxation gives parents a strong incentive to put their assets in stocks that pay low dividends, or other instruments that provide no income.⁷

Not all families sending children to college at schools that meet need will be subject to these taxes at the margin; as noted earlier, parents who have enough income and assets so they are deemed able to pay the full college bill face no tax at the margin (though they are paying an inframarginal tax if, when neglecting assets, they would be eligible for aid). However, quite well-off parents may still be deemed "needy" and so be taxed at the margin. How much parents can accumulate in assets before they are determined to have no need depends mainly upon income. Although the exact accumulation cutoff will vary

⁷Zero coupon bonds would not have this feature because of the Original Issue Discount (OID) rules in the Internal Revenue Code; the (OID) income implicit in the appreciation of the bonds is included in taxable income and hence in the Total Income used in the Congressional Methodology.

with the particulars of the household, here are some illustrative numbers for a family sending a child to a private college.⁸

If the parents have \$90,000 in wage income, they face no tax at the margin. Even if they hold no assets, they are deemed capable of paying the full college bill. If their second child is in college at the same time, however, these parents would have to have about \$240,000 in assets before being deemed capable of paying the full bill. If these parents had a lower income, they would have needed more assets before rising above the cutoff for financial aid. For example, if they had \$60,000 in wage income and only one child in college, they would become ineligible for aid if they also had more than \$140,000 worth of assets. With their second child in college, they would need \$350,000 worth of assets before becoming ineligible for aid.

Of course, these income and asset level cutoffs are only approximate, and depend on interest rates (for tables of estimates at various interest rates, see Edlin 1992, 1993). Because of the tax on interest, higher interest rates mean that the cutoff for financial aid at any given wage comes at a lower asset level. However, these numbers are only intended to demonstrate that most people do not have the hundreds of thousands of dollars worth of assets, or six-figure incomes, that would make the financial aid tax irrelevant at the margin.⁹ It is not surprising then that most students have financial need. In fact, 65 percent of those in private colleges and 59 percent of all full-time students are on aid (Digest of Education Statistics, 1990, table 283).

The Impact of the Asset Tax

One way to get a feel for the potential impact of the financial aid tax on asset holdings is to ask how much it reduces real returns. As a baseline, consider an investment that pays a return of 10 percent, for a family that faces an inflation rate of 5 percent, a federal tax rate of 28 percent, state rate of 8 percent, and a Congressional Methodology tax rate of 39 percent (a 47 percent CM tax rate, adjusted for the value of loans). Under these conditions, the real

⁸The family of four used in this calculation has a single wage earner, and the eldest parent is 50 years old, giving them an asset protection allowance of \$39,600, so that even with \$39,600 in assets, they have no income supplement from assets. State taxes are assumed to be 8 percent. We assume that there are no extraordinary medical expenses and that after subtracting the student's "self help" amount, the parents' maximum expected contribution is \$17,800. This roughly corresponds to a total bill of \$20,800 for tuition, room, board and expenses—a modest price today for a good private college.

⁹When considering whether parents will save enough to carry themselves beyond the tax barrier, it should be remembered that their wage income is generally higher when children go to college and the assets are taxed than it was when the assets were accumulated as savings. The question then is not whether a family that earned \$60,000 for 20 years could or would save the \$140,000 to escape marginal tax rates and accompanying distortions; rather, assuming a 3 percent real growth rate for wages, it may be whether a family whose earnings started at \$33,000 and gradually grew to \$60,000 would save so much.

Table 2
Effective Yearly Real Return to Assets Under The CM

		Years of financial aid tax	
		4	8
Years before college of savings	20	.16%	-.68%
	10	-.68%	-1.8%
	5	-1.8%	-3.0%

Note: As described in the text, the real after-tax return ignoring the financial aid tax is 1.3 percent. The table assumes an inflation rate π of 5 percent, a federal tax rate f of 28 percent, both real state rate s_r and CM assumed state rate s_{CM} of 8 percent, and a CM rate of 39 percent that is adjusted for loans. It provides the geometric average yearly real return to savings at a nominal interest rate i of 10 percent as a function of the number of years that children will be in college, yc , and the number of years before college that the assets are set aside, yb . The yearly nominal return for the yb years before college when there is no CM tax is given by $i_{noCM} = 1 + i(1 - f - s_r)$. The yearly nominal return during yc years of college when the Congressional Methodology tax bracket CM is in force are $i_{cm} = 1 + i(1 - f)(1 - CM) - is_r + is_{cm}CM - .12CM$. These imply an average yearly real after-everything return $r_{avg \text{ real}}$ given implicitly by $(1 + r_{avg \text{ real}})(yc + yb) = [i_{cm}^{yc} i_{noCM}^{yb}] / (1 + \pi)^{yc+yb}$.

annual after-tax rate of return on the investment, ignoring the financial aid asset tax, would be 1.3 percent.

Table 2 shows the real after-tax rate of return on assets with the financial aid tax included. The rows show how many years before college the investment was made, while the columns tell how many years the financial aid tax is imposed. The change in yearly real return is substantial. Consider a dollar set aside for retirement 20 years before children begin college; instead of earning a real after-tax return of 1.3 percent per year for the following 24 to 28 years, its real annual return will average 0.16 percent if the financial aid tax is paid for four years, and -.68 percent if paid for eight. The drop is much larger for savings that occur five or ten years before the children start school, though of course it is felt for fewer years.

It does not require a very large interest elasticity of saving for this fall in return to induce the large change in savings; for example, a fall from 1.3 percent to .16 percent is a yearly fall in return of 88 percent. Were individual savings elasticities as high as Boskin's (1978) aggregate estimate of .4, the fall in return would induce a 35 percent decrease in savings; if savings among this group are 6.5 percent of income with the financial aid tax in place, then they would be 10 percent of income without it. Of course, there are a variety of difficulties with this back-of-the-envelope calculation. Savings elasticities are open to great controversy; many argue Boskin's elasticity estimate is high.¹⁰ Moreover, estimates like Boskin's at best offer *aggregate* savings elasticities,

¹⁰Such econometric estimates of interest elasticities might as easily be low, however, if as Summers (1983) suggests, they conflate transient changes in the interest rate with long-lasting changes like those provided by the financial aid tax.

which can be expected to differ significantly from those of parents at any given stage of the life cycle. They also give us short-run savings responses rather than long-run changes in asset holdings.

These observations argue for a simulation approach, which can consider each cohort separately and follow savings behavior through the life cycle to estimate the long-run effect on asset holdings. While simulation results will depend upon the specification of the utility function, and on various other assumptions, they may be useful for estimating a reasonable range of behavior.

Following Summers (1981) and Evans (1983), Edlin (1992, 1993) uses a standard model of homothetic utility with constant relative risk aversion.¹¹ People work from age 20–65, earning constant wages; at age 65 they retire and have no wage income for the remaining 20 years of their lives. At age 50 they send their first child to a 4-year college and at age 52 they send their second; each of the children finish their studies in 4 years so the financial aid tax bites for 6 years. Finally, this family faces the same inflation and tax rates as in the previous example. Edlin (1992, 1993) computes steady state aggregate asset holdings, solving for and summing the holdings of each cohort.

Begin by considering the situation where the impact of the CM tax on the steady-state asset holdings is likely to be the least: all assets are held as equities that do not pay dividends, but appreciate at 8 percent per year. Moreover, assume that the utility function embodies a very low rate of intertemporal substitution, well below the typical empirical estimates, so that families have little desire to shift income from the present to the future in response to changes in rates of return.¹² Even under these conditions, the simulation results argue that the steady state level of aggregate assets would fall by 24 percent. The decline in steady state asset holdings becomes significantly larger if one assumes that appreciation rates are lower, or that the family holds bonds paying comparable returns, or has more realistic (higher) rates of intertemporal substitution.

In fact, the simulation results show that for families that hold bonds and hence have high rates of intertemporal substitution, the financial aid tax can actually motivate them to give up savings altogether, and go into debt!¹³ If the simulation is adjusted to take into account more realistic features like a path of growing wages, or the existence of Social Security, the fall in asset accumulation simply grows larger.

¹¹The utility from some consumption stream is given by

$$U(C_1, C_2, \dots) = \sum \frac{C_t^{1-\gamma}}{(1-\gamma)(1+\rho)^t}.$$

¹²A careful study by Hansen and Singleton (1983) places γ , the inverse of the elasticity of substitution, between 0 and 2. In the simulation, I considered much lower elasticities of substitution (γ as high as 4).

¹³Though for those with higher incomes so that negative assets do not lower the college bill, assets would not be driven negative.

These various estimates certainly paint a picture in which the financial aid process can dramatically alter the aggregate assets held by those who at some point in their lives will send (or have sent) children to college. In a recent NBER working paper, Feldstein (1992) provides empirical support for this view. He attempts to isolate the reduced asset holdings which result from the financial aid tax for parents ages 40 to 50 with children about to be college age. Even though this group included families whose children did not necessarily plan to attend college, let alone a college that would meet all need, Feldstein found that parents' asset holdings were reduced by approximately 50 percent as a result of the CM asset tax.

Given the penalty for saving, one may well ask, "Why do many of today's parents bring substantial assets to the college gate?" This may reflect a substantial learning lag for parents to become aware of the way the system works.¹⁴ However, when today's students plan their family finances, it is difficult to believe they will make the same mistakes their parents did. In other words, despite Feldstein's (1992) conclusion that we can already observe families holding substantially less in assets because of the CM tax, I believe that the calculations given here probably represent not so much a gain in savings to be realized, as a reduction in savings by the next generation to be averted.

It is impossible to say with precision how large an asset reduction the current system points us toward, but consider the following rough estimate. Consider the families who send children to the 268 schools in the Peterson data set that met all the need of all of those who had need. Approximately 150,000 freshman were awarded aid from these colleges in 1990. Assuming that these children have one similar sibling enrolled in these schools, they represent 75,000 families.¹⁵ Posit that on average they were to reduce their total asset holdings by \$20,000 (including home equity), measured the year their children begin college. Then total assets of these families would be \$1.5 billion lower. But one needs to consider not only the reductions in asset holdings by all parents who are sending their children to those colleges, but also of those who have sent their children to these colleges in the past.¹⁶ Multiplying this number by 20-fold is not unreasonable to account for all these cohorts. The reduction in total asset holdings caused by just these 268 colleges could easily amount to \$30 billion.

¹⁴This "lag" is no doubt exacerbated by advice books on paying for college which strongly advocate saving for college expenses (see, e.g., Dennis, 1990).

¹⁵Presumably these 75,000 families did not *know* their children would attend these schools, but instead thought that their children *might* attend these schools. It is not clear whether the effect upon asset holdings of n pairs of parents each of whom has a $1/n$ probability of facing the tax is larger or smaller than one pair that surely faces it.

¹⁶Even though parents who have low asset holdings after sending their children to college could be expected to try to build up their assets before retirement by saving more than they otherwise would, we would not expect this to fully compensate for foregone savings, and would expect them to hold lower assets throughout their lives.

This estimate is conservative. After all, if children attending these colleges come from families with only one child, the estimate should be higher, since more families should be included. Moreover, this calculation doesn't include families whose children attend schools where some fraction of students receive some assistance. In 1986, 58.6 percent of the 7 million full-time college students received aid (47.4 percent received federal aid), so the number of people affected by some financial aid tax on assets is perhaps 20 times the number attending the Peterson schools that met all need. The potential asset reductions may be quite large. Not large enough to affect the overall economy dramatically, but certainly large enough to warrant attention as a significant microeconomic issue.

Strategies for Parents

Given the magnitude of these wealth taxes, parents may well try to avoid them. Avoidance behaviors naturally come at some cost, however, so they are properly viewed as distortions.

The most obvious way to avoid the tax is to not send children to college, or to send them to cheaper colleges. Of course, for many parents, cheaper colleges will merely mean less aid; nonetheless, since financial aid cannot go negative, this strategy is surely sensible for some.

Parents can lower the financial aid tax without sacrificing education by placing assets in equities that pay few dividends. Because appreciation of stock is not taxed, such stock can lower the tax rate considerably.¹⁷ Of course, this method of avoiding the financial aid tax comes at a cost—it may mean more risk, risk for which the family is not fully compensated by the market, since the family holds more of this sort of equity than it would in an optimal portfolio absent the tax.

Parents may also save for their retirement in Individual Retirement Accounts or company pension plans. Such assets are not requested by the Financial Aid Form (FAF) that parents must fill out (though yearly contributions are reported as income). In fact, people who expect their children to go to college might be apt to have larger pension plans relative to their incomes. However, pensions do have substantial penalties for early withdrawal, and restrictions upon contributions. Also, many may view pensions as paying low returns and prefer to use their assets in their own enterprise.

Finally, shortly before their children begin school, parents could change their assets into durables like rugs, art or jewelry that may be reasonable stores of value, but that need not be reported on the Financial Aid Form.

¹⁷ My sample calculations show reductions ranging from 11 to 54 percentage points. The key variables are the length of time the family is subject to the financial aid tax, and the gap in nominal return between an asset that pays interest, and one that pays capital gains.

Strategies for Colleges

Colleges have limited flexibility under the Congressional Methodology. They can exercise "professional judgement" in deviating from it when individual circumstances warrant, but these deviations are not supposed to be systematic. Colleges are not free to come up with their own need determination formulas, and must guard against federal audit to ensure they are upholding the Congressional Methodology as they dole out federal funds. In particular, a college cannot use federal funds in aid packages that more than meet the need of students.

However, colleges do have flexibility in the way they meet need. They can control the percentage of their own aid that is given in the form of grants as opposed to loans. And a college could benefit by creatively using this limited power to control the value of its aid.

Consider what a college might do if it were allowed to control its aid freely. It could offer high savers somewhat more aid. Low savers could be given less than they are at the moment. The high savers who already chose to attend this college would save on tuition and the high savers who previously chose to attend other, now more expensive, colleges would switch their choice to attend this innovative one. Low savers would tend to go to the college's competitors, finding this college pricey. Even though aid packages would have to be sweetened to attract high savers, the college could nonetheless take in more revenues. The trick is simply that high savers would still be paying much more for college than did the old low savers they replace. This scheme would work splendidly if the college's education were a perfect substitute for its competitors, since then an extra dollar in an aid offer would induce all the high savers to attend the innovative college.¹⁸

The innovative college would not need to sacrifice its diversity goals to implement such a policy. Consider a college which seeks some particular mix of students from what might be termed socio-permanent income classes, that is, classes of students who have similar geographical, religious, and racial characteristics, and whose parents are from similar professions (or otherwise have similar permanent income). There is presently substantial diversity in asset holdings in any such class of students. As a result, the tuition currently paid by the families of any class varies a good deal in practice, with the high savers making the highest payments. On the other hand, the college could charge all within a socio-permanent income class a uniform out-of-pocket tuition slightly less than it currently charges the high savers in that group. Since the college increases its average charge per student in any given group, the college will increase its revenues, provided it uses its admissions office to maintain the

¹⁸In practice when universities are imperfect substitutes, the policy might not work as well: to induce them to switch universities, some high savers could conceivably need to be offered even better deals than the low savers are currently offered.

distribution of students among the groups (and provided enough extra high savers matriculate to balance low savers who flee). Thus, by catering to the high savers in each socio-permanent income class, the college can raise its revenues, meet its diversity needs, and make college more affordable to the families of these students.

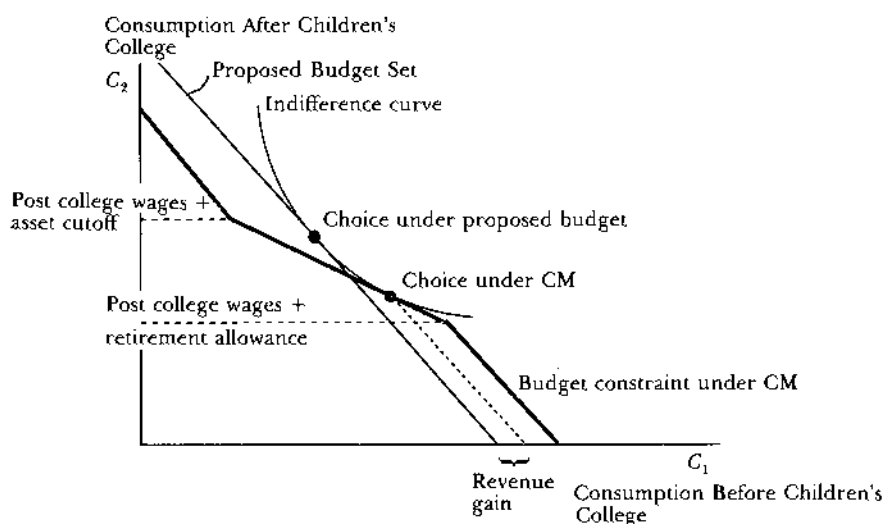
As we have pointed out, however, a college is not entirely free to control the value of its aid packages; it must follow the Congressional Methodology to utilize federal funds. Moreover, a college would only benefit itself at the expense of its competitors by utilizing what flexibility it has effectively to steal its competitors' "good" customers (high savers) and shunt off to them its own "bad" ones. Once its competitors react with similar policies, all colleges will potentially be worse off from the bidding war for high savers. This observation may have been a motivating factor in the Overlap Group of colleges, which was recently sued for antitrust violations for colluding in putting together aid packages. (For details of the case, see Carlson and Shepherd, 1993; Putka, 1989; Depalma, 1991.) The extent to which colleges and universities might act upon their incentives to woo high savers remains an open question.

A Social Strategy: Change the Congressional Methodology

Many of the problems of the financial aid system result from an underlying problem: the fact that the Congressional Methodology prices college based upon present ability to pay, rather than based on some measure of permanent income. To understand how using permanent income would reduce these problems, consider Figure 1. The heavy kinked line in Figure 1 is a budget set

Figure 1

Financial Aid and Permanent Income



for some parents, representing possible before and after college expenditure combinations, given the current financial aid system. The indifference curve reflects these parents' preferences over expenditure combinations, given prevailing prices for goods during those periods.¹⁹ The years of consumption during college do not appear on the diagram so that the budget set may be represented in two dimensions (both consumption and college choice are held fixed in the cross-section depicted).

The upper left-hand segment of the budget constraint reflects the possibility that these parents accumulate so many assets by the time they enter the financial aid process that they must pay the full cost of college. The lower right-hand segment of the budget constraint depicts the possibility they enter the financial aid process with less in assets than the asset protection allowance, in which case parents generally get no more aid for further asset reductions. The slope of both the upper and lower portions of the budget constraint are given by the rate of interest. Therefore, in either case, the decision to save before college is not distorted on the margin by the existence of need-based financial aid.

The middle segment of the budget constraint shows the situation of interest, where parents get aid which will decrease if they accumulate more assets. As a result, the slope is flatter than the other two segments, and a reduction in current consumption brings a smaller increase in future consumption. The point of tangency between this middle segment and the indifference curve gives the choice of pre-college and post-college consumption for parents who end up paying the asset accumulation tax at the margin.

The fact that some parents end up on the flat portion betrays an inefficiency; all parties can be made better off. The parents depicted by the indifference curve receive less than the market rate of interest, so their private rate of intertemporal substitution is not the same as the social rate. They would be willing to save more if they were offered a higher rate of return for extra savings, and those seeking capital would be happy to pay these parents higher rates than they now receive. The problem is that the financial aid formula insists upon interceding, taking much of what the capital markets will pay, and preventing the trade.

In contrast, suppose the parents were presented with a budget constraint sloped like the rate of interest as the "proposed budget set" in Figure 1. Then, the parents would choose some point reflecting more savings and more consumption deferred until after college. The parents would be just as well off as with their existing consumption bundle, but purchasing the new consumption bundle would require less present value of expenditure. This means that without hurting parents, the colleges could potentially collect more revenue as

¹⁹It should be noted that such quasi-concave indifference curves may be rigorously derived with no separability assumptions from preferences over goods. Just maximize utility subject to post-college and pre-college expenditure levels, and quasi-concavity of the resulting value function in expenditure space follows from quasi-concavity of the underlying utility function in goods space.

depicted in Figure 1. The potential improvement would be still larger if we could draw in consumption during college years. This improvement is what a pricing system based on permanent income aims to accomplish. If parents' permanent income could be determined, the Congressional Methodology could be redesigned to present parents with a budget constraint like that proposed in the figure.

In practice, one way to approximate permanent income would be to construct an estimate from five, ten, or even twenty years of wage data; the more years used in the formula, the better. These figures might be made available by the IRS or the Social Security Administration. Aid would be awarded according to the estimate of permanent income. College costs would continue to be low for students whose parents are poor because they have low earnings, but those who are "poor" because they lived high on the hog would face high costs. This financial aid plan means that parents face no penalty for saving, since there is no financial aid tax on asset accumulation. Their marginal rate of substitution between early and late consumption will accurately reflect society's productive tradeoffs. Parents will choose to save more, and as a result, colleges and universities can command more revenue while still leaving parents better off.

Moreover, such a system provides more horizontal equity. Two families with the same earnings path are treated the same, regardless of savings patterns or preferences. Equity is also increased between those who have uneven incomes and those who have steady incomes, whether the unevenness results naturally or is manufactured to avoid the current tax.

Of course, a permanent income approach is open to various complaints. For example, providing many years of tax records might be considered invasive. But parents already must provide detailed records; all this asks is that they provide more of the same. In addition, parents who would like to save more, but are constrained by the financial aid tax, might welcome the opportunity to provide more records, if that means removing the penalty for saving.

A second objection is that some students would be unable to attend because their parents did not save. However, this failure of horizontal equity across students is not peculiar to this proposed system. Under the proposed system, children whose parents are low savers are unlucky to be born in a family of spenders. Under the existing system, children whose parents are savers but will not relinquish their accumulated savings for their children's education are equally unlucky. In either case, if parents are unwilling to pay for a child's education, the child may be out of luck. Such children may be helped somewhat by better access to market rate loans, but under almost any system of financial aid other than free education, those whose parents won't pay are unavoidably disadvantaged by that fact.

A third objection is that some families fail to save not from thriftlessness, but because of non-discretionary expenses like high medical bills. A new formula could, however, certainly make allowances for such cases.

A final objection is that even 20 years of wage data is an imperfect measure of permanent income. True enough. But if it is conceded that permanent income is what is relevant to equitable and efficient aid determination, then surely the present formula which makes no effort to determine permanent income is not the best approach.

Basing aid upon estimates of permanent income from wage histories is of course problematic. For one thing, once a new aid formula is set, people may adjust to it, changing the underlying relationships. In other words, no formula will *really* be permanent income based pricing; in practice, any need formula will act as another tax that can distort behavior. However, a tax on wages will at least not distort savings behavior. And, raising a given amount of tuition revenue with small taxes on many years' wages should create less of a distortion in labor supply than with large taxes on a few years' wages.

In short, none of these objections are particularly compelling.

Awarding financial aid on the basis of some estimate of permanent income offers the promise of removing horizontal inequities between families and also distortions that already do, or someday will, significantly reduce asset accumulation by parents intending to send children to college. The debate should begin on how best to reform the Congressional Methodology and with it the financial aid system.

■ *Thanks for helpful comments are due to Andy Dick, Jon Paul, John Shoven, Carl Shapiro, Joe Stiglitz, and Timothy Taylor. For funding, I am pleased to thank the National Science Foundation, and both the John M. Olin Program in Law and Economics, and the Center for Economic Policy Research at Stanford University.*

References

- Boskin, Michael J.**, "Taxation, Saving, and the Rate of Interest," *Journal of Political Economy*, Part 2, April 1978, 86:2, S3-27.
- Carlson, Donald R., and George B. Shepherd**, "Cartel on Campus: The Economics and Law of Academic Institutions' Financial Aid Price-Fixing," *Oregon Law Review*, forthcoming 1993.
- Case, Karl E., and Michael S. McPherson**, "Does Need-Based Aid Discourage Saving for College." New York: College Entrance Examination Board, 1986.
- Dennis, Marguerite J.**, *Keys to Financing a College Education*. New York: Barron's, 1990.
- DePalma, Anthony**, "Ivy Universities Deny Price-Fixing but Agree to Avoid It in the Future," *New York Times*, May 23, 1991, p. A1.
- Edlin, Aaron S.**, "Financing Higher Education: Inequitable and Inefficient? The worst of all Possible Worlds," CEPR working paper, Stanford University, 1992.
- Edlin, Aaron S.**, "Is College Financial Aid Equitable and Efficient." In Edlin, Aaron S., *Aspects of the Efficient Recovery of Fixed Costs*, doctoral dissertation, Stanford University, 1993.
- Evans, Owen J.**, "Tax Policy, the Interest Elasticity of Saving, and Capital Accumulation: Numerical Analysis of Theoretical Models," *American Economic Review*, June 1983, 73:3, 398-410.
- Feldstein, Martin**, "College Scholarship Rules and Private Saving," NBER Working Paper, #4032, 1992.
- Gillespie, D. A., and N. Carlson**, *Trends in Student Aid: 1963-1983*. Washington Office of the College Board, 1983.
- Hansen, Lars Peter, and Kenneth J. Singleton**, "Stochastic Consumption, Risk Aversion, and the Temporal Behavior of Asset Returns," *Journal of Political Economy*, April 1983, 91:2, 249-65.
- James, Estelle**, "Student Aid and College Attendance: Where are we now and where do we go from here?" *Economic Education Review*, 1988, 7:1, 1-13.
- McPherson, Michael S., and Morton Owen Schapiro**, *Keeping College Affordable: Government and Educational Opportunity*. Washington, D.C.: The Brookings Institution, 1991.
- Peterson's 1991 College Money Handbook**. Princeton: Peterson, 1991.
- Putka, Gary**, "Do Colleges Collude on Financial Aid?" *Wall Street Journal*, May 2 1989.
- Summers, Larry**, "Capital Taxation and Accumulation in a Life Cycle Growth Model," *American Economic Review*, September 1981, 71:4, 533-44.
- Summers, Larry**, "Tax Policy, the Rate of Return and Savings," unpublished paper, Harvard University, December 1981.
- Summers, Larry**, "The After-Tax Rate of Return Affects Private Savings," *American Economic Review Papers and Proceedings*, 1983, 74, 249-53.
- US Dept. of Education: Office of Education Research and Improvement**, *Digest of Educational Statistics*. U.S. Government Printing Office, 1990.
- US Dept. of Education: Office of Student Financial Assistance**. *Congressional Methodology*, 1990.