

THE ECONOMIC IMPACT OF TAX-BASED FEDERAL STUDENT AID

Nicholas Turner, Office of Tax Analysis, United States Department of Treasury

IN MY DISSERTATION, I OFFER A COMPREHENSIVE analysis of tax-based federal student aid, examining how the programs affect students, institutions of higher learning, and taxpayers. The three tax-based student aid programs that I analyze—the Hope Tax Credit, the Lifetime Learning Tax Credit, and the Tuition Deduction—are designed to increase human capital accumulation and postsecondary attendance by lowering the cost of enrollment. In my first paper, *The Effect of Tax-Based Federal Student Aid on College Enrollment*, I exploit policy-induced variation in tax-based aid eligibility to estimate its causal effect on college enrollment. In my second paper, *Who Benefits from Student Aid? The Economic Incidence of Tax-Based Federal Student Aid*, I demonstrate the importance of benefit incidence analysis by showing that the intended cost reductions of tax-based federal student aid are substantially offset by institutional price increases. In my third paper, *Why Don't Taxpayers Maximize their Tax-Based Aid? Salience and Inertia in Selection of Tax-Based Federal Student Aid*, I explore why many taxpayers fail to select the single tax-based aid program that offers the largest reduction in combined state and federal tax liability.

CHAPTER 1: THE EFFECT OF TAX-BASED FEDERAL STUDENT AID ON COLLEGE ENROLLMENT

Tax-based federal student aid provides tax incentives for postsecondary enrollment for the middle class. These programs are a departure in federal student aid policy. Previously, the federal government awarded student aid largely outside the tax code and primarily targeted lower-income students. First introduced in 1998, tax-based aid has quickly become an important component of federal student aid. In the 2005-2006 academic year, approximately 8.5 million students claimed one of the tax-based aid programs, about 3.4 million more than the number that received Pell Grants (Baum and Steele, 2007). In that same year, the price tag of tax-based aid was nearly \$6 billion, roughly half the cost of Pell Grants (Baum and Steele, 2007). However, the tax-based aid programs are

tax expenditures, and their costs may grow more rapidly compared to student aid programs that require active government appropriation.

How does tax-based aid affect college enrollment? Given its targeting toward the middle-class, is tax-based aid simply a transfer to students that would have attended college in the absence of the programs? Or, does tax-based aid increase enrollment and/or the amount of education? The enactment and expansion of tax-based aid creates a convenient natural experiment for examining these questions. Policy-induced variation in tax-based aid is plausibly exogenous to unobservable determinants of college enrollment. In this paper, I exploit this source of variation to estimate the intention to treat effect of tax-based federal student aid. This is one of the first studies to examine a student aid program administered through the federal tax code. This aspect may be especially relevant to policymakers considering the adoption of an IRS-based application for federal student aid (Dynarski 2000).

Only two papers consider the enrollment effects of tax-based aid, reaching different conclusions about the effectiveness of the programs. Long (2004) examines the HTC and LLTC between 1996 and 2000 for both traditional college age students (18-24), as well as older students (25-40), using data from the October Current Population Survey. Long's (2004) results imply no enrollment effects. Her failure to find an enrollment increase could be the result of measurement error of program eligibility due to limited family income data. Recent work by LaLumia (2010) examines the enrollment effect of the tax-based aid programs between 1998 and 2006 on older students (30-49 years old) using data from the 1979 National Longitudinal Survey of Youth. Using youths who are ineligible for tax-based aid as a control group, LaLumia (2010) finds that the tax-based aid programs increase enrollment for a subset of older adult males who are eligible for tax-based aid.

I complement these papers by estimating the enrollment effect of the tax-based aid programs on the college entry decision for 18-19 years olds between 1996 and 2003 using data from the Sur-

vey of Income and Program Participation (SIPP). Unlike Long (2004) and LaLumia (2010), I do not explicitly compare youths who are eligible for tax-based aid to ineligible youths. Instead, in the baseline specification I exploit both time series and cross sectional variation in program eligibility among *eligible youths* to estimate the enrollment effects of tax-based aid. As a robustness check, I use youths who are ineligible for tax-based aid as a control group similar to LaLumia (2010) and Long (2004). The empirical results of this paper imply that tax-based aid increases full-time enrollment in the first two years of college by about 2.2 percentage points (6.7 percent). Increasing postsecondary enrollment is a goal of federal student aid (Burgdorf and Kostka, 2006), and these results suggest that tax-based aid meets this benchmark.

CHAPTER 2: WHO BENEFITS FROM STUDENT AID? THE ECONOMIC INCIDENCE OF TAX-BASED FEDERAL STUDENT AID

Funding for federal student aid, over \$660 billion between 1998 and 2006, is based on the assumption that students and families claiming the programs are the economic beneficiaries. The existing literature finds that student aid increases enrollment (Leslie and Brinkman, 1987; Ellwood and Kane, 2000; Dynarski 2000, 2003), but how effectively these programs do so depends on the degree to which there are offsetting price changes. Yet, the literature examining the institutional price response to student aid is limited and generally focuses on tuition effects at the school level. The use of tuition increases to appropriate the benefits of federal student aid is referred to as the Bennett Hypothesis, named after former Education Secretary William Bennett. Bridget Terry Long (2006) and Stanley Ikenberry (1997) discuss the existing work on the Bennett Hypothesis and note that there is weak empirical evidence supporting its validity.

One possible explanation for these inconclusive findings is that instead of increasing tuition, schools may appropriate the benefits of federal student aid by strategically reducing institutional grant aid. Unlike tuition increases that affect all students, the reduction of institutional aid allows schools to realize financial gains from increases in federal student aid while ensuring that no student is made worse off. The strategic use of institutional aid also avoids the highly visible and unpopular process of

increasing tuition. Long (2003) and McPherson and Shapiro (1991) are the only papers that explicitly raise this possibility. They document student aid incidence at the school level and reach different conclusions on whether external aid is a substitute for institutional aid. Yet, the use of school-level data prevents Long (2003) and McPherson and Shapiro (1991) from determining *which* students are impacted by the institutional response. The flexibility of student-level data allows me to add to this work by addressing several related questions. First, do colleges and universities selectively lower institutional grant aid *for students that benefit from tax-based aid*? Second, how do students who experience these aid declines cope? Due to a likely time delay in benefit receipt of tax-based aid, a reduction in institutional aid may cause students to borrow more in order to offset their short-term unmet need.

To estimate student-level effects, I exploit policy-induced variation in all three tax-based aid programs, using data from the National Center on Education Statistics. The analysis sample includes students enrolled at 190 four-year schools during the 1995-1996, 1999-2000 and 2003-2004 school years. I estimate the intention to treat effects of tax-based aid for students at these schools using instrumental variables to address the endogeneity of education spending and school fixed-effects to control for unobserved heterogeneity in student aid practices across institutions.

Contrary to the goal of policymakers, who sought to increase postsecondary access for eligible students by lowering the cost of enrollment, I find that the institutional price response fully counteracts the intended cost savings of tax-based aid.¹ Students appear to increase loans in response to the reduction of institutional aid, suggesting that tax-based aid falls short of an important federal aid goal to reduce student indebtedness (Burgdorf and Kostka, 2006). These results imply that students eligible for tax-based aid may not be the economic beneficiaries of the programs. To determine the ultimate incidence of tax-based aid, I consider two ways in which institutions might utilize the captured resources. One, that institutions redirect aid towards students that are ineligible for tax-based aid, or two, that institutions channel the resources into other expenditures, such as capital improvements or faculty/staff salaries. Unfortunately, these results are largely uninformative so that the incidence of tax-based aid is uncertain. However, I offer an important first step in establishing the

incidence of tax-based aid by demonstrating that eligible students and their families are not directly benefitting from tax-based aid in the manner envisioned by policymakers. Similar unintended behaviors are found to offset the intention of policies in other contexts, including public health insurance (Cutler and Gruber, 1996) and intergovernmental grants (Hines and Thaler, 1995; Gordon, 2004; Baicker and Gordon, 2006).

CHAPTER 3: WHY DON'T TAXPAYERS MAXIMIZE THEIR TAX-BASED AID? SALIENCE AND INERTIA IN SELECTION OF TAX-BASED FEDERAL STUDENT AID

Complexity in the federal tax code is likely to prevent some taxpayers from minimizing their tax liability. The literature finds substantial confusion regarding basic attributes of the tax system, such as tax rates (de Bartolome, 1995), and also key features of tax programs, such as the Earned Income Tax Credit (Chetty and Saez, 2009). Tax-based federal student aid adds an additional layer of complexity for middle class taxpayers by offering a menu of tax credits and deductions to lower the cost of postsecondary education. Taxpayers are often eligible for more than one tax-based aid program, but are restricted to one program per student each year. Many states allow the programs to reduce state taxes, compounding the difficulty of selecting the single option that minimizes combined state and federal tax liability.

To explore how taxpayers select a single tax incentive from a menu of options, I consider the choice between two tax-based federal student aid programs, the Tuition Deduction and the Lifetime Learning Tax Credit. I focus on these two programs for several reasons. First, the programs have similar eligibility requirements. A taxpayer selecting the Lifetime Learning Tax Credit can always select the Tuition Deduction, and a taxpayer selecting the Tuition Deduction can usually opt for the Lifetime Learning Tax Credit. In contrast, the enrollment requirements of these programs are incongruent with the enrollment requirements of other tax-based aid programs such as the Hope Tax Credit. Second, due to data limitations, it is difficult to determine if taxpayers selecting the Hope Tax Credit make the tax minimizing selection. Third, the Lifetime Learning Tax Credit and the Tuition Deduction represent a majority of tax-based aid use, roughly 70 percent, during the analysis period.

Analyzing a nationally representative panel dataset of individual income tax returns from the Internal Revenue Service (IRS), I find that a substantial number of taxpayers do not select the program that offers the largest reduction in state and federal taxes between 2002 and 2008. Focusing on taxpayers who claim either the Tuition Deduction or the Lifetime Learning Tax Credit, roughly one out of four returns is not tax-minimizing with respect to the tax-based aid selection. On average, a non-tax-minimizing selection costs these taxpayers about \$100 per return (\$2008), 25 percent of the value of the tax-minimizing alternative. Total non-tax-minimizing claims result in \$955 million in forgone tax reductions for 9.6 million tax returns during this period. The failure to select the tax-minimizing program has important implications for policy effectiveness. While recent work (Turner, 2010; LaLumia, 2010) finds that tax-based aid increases enrollment, the failure to select the most valuable option may limit the enrollment effects of the programs and exacerbate already high student debt burdens.

In this paper, I consider several explanations for why some taxpayers fail to select the tax-minimizing program. First, I explore the possibility that taxpayers focus on more salient, or more apparent, federal tax incentives when selecting a tax-based aid program. Federal tax effects of tax-based aid are likely to be more salient compared to state tax effects. Federal tax effects are the result of an active selection by taxpayers, whereas state tax effects are passively incorporated. Focusing on more salient federal tax effects, and overlooking less salient state tax effects, will cause some taxpayers to minimize *federal taxes* rather than *combined state and federal taxes*. Consistent with this possibility, I find that taxpayers are more than twice as responsive to a reduction in federal taxes compared to a reduction in state taxes. Greater attention to federal tax effects reduces the likelihood of selecting the program that minimizes combined state and federal taxes. This result contrasts with standard characterizations of behavior that predict agents fully optimize with respect to tax incentives. The finding of salience effects is consistent with work by Chetty, et al. (2009) and Finkelstein (2009) that suggests consumers focus on more salient prices when making consumption decisions.

The second explanation for non-tax-minimizing selections that I consider is default behavior. Inertia in program selection will cause non-tax-

minimizing selections when the program that was selected in the prior year is not tax minimizing in the current year. For taxpayers claiming the programs in consecutive years, I find evidence that inertia in program selection reduces the likelihood of selecting the tax-minimizing program, relative to taxpayers who did not claim tax-based aid in the preceding year. The finding of inertia effects is consistent with previous studies that find default behavior affects participation in employee savings plans (Madrian and Shea, 2001) and impacts personal income tax withholdings (Jones, 2010).²

Acknowledgements

I feel fortunate to have received support from numerous faculty members at UCSD. In particular, I would like to thank the members of my committee. Julie Cullen is a wonderful advisor and I benefitted enormously from her helpful suggestions and willingness to review numerous drafts of my research. Nora Gordon served as a second primary advisor, and I deeply appreciate all of the time she spent helping my research efforts. I also thank Roger Gordon for his expert advice and guidance. I am also deeply grateful to Dr. Robert Tannenwald. Bob is undoubtedly the greatest boss that any aspiring economist could ever have, and I appreciate his continued guidance and support. It is because of Bob that I chose to get a doctorate in economics. I would also like to thank the National Tax Association for naming me runner up for the 2010 Outstanding Dissertation Award. I am honored to be recognized and I look forward to participating in the National Tax Association in the coming years.

Notes

- ¹ Note that this result is not necessarily incongruent with the enrollment results found in Chapter One. One possible explanation for this pair of results is the different samples. I find the enrollment effects using a sample that includes enrollment at both two-year and four-year schools, while the institutional aid decrease are found using a sample of four-year schools. I explore this possibility, as well as two additional explanations, in Chapter One.
- ² I also consider the possibility that the opportunity cost of time is a barrier to tax minimization. Intuitively, high opportunity cost taxpayers may not invest the time required for tax-minimization. While I find that taxpayers are responsive to the financial gain from tax

minimization, I am unable to determine if high opportunity cost taxpayers are less responsive compared to low opportunity cost taxpayers. As a result, the role of opportunity costs on tax minimization is unclear.

References

- Baicker, Katherine and Nora Gordon. The Effect of State and Local Finance Reform on Total Local Resources. *Journal of Public Economics* 90 (2006): 1519-1534.
- Baum, Sandy and Patricia Steele. *Trends in Student Aid*. The College Board, 2007.
- Burgdorf, Barry and Kent Kostka. Eliminating Complexity and Inconsistency in Federal Financial Aid Programs For Higher Education Students: Towards a More Strategic Approach. *A National Dialogue: The Secretary of Education's Commission on the Future of Higher Education*, 2006.
- Chetty, Raj, Adam Looney, and Kory Kroft. Saliency and Taxation: Theory and Evidence. *The American Economic Review* 99 (2009): 1145-1178.
- Chetty, Raj and Emmanuel Saez. Teaching the Tax Code: Earnings Responses to an Experiment with EITC Recipients. Cambridge, MA: National Bureau of Economic Research, 2009. NBER Working Paper No. 14836.
- Cutler, David and Jonathan Gruber. Does Public Insurance Crowd Out Private Insurance? *Quarterly Journal of Economics* 111 (1996): 391-403.
- de Bartolome, Charles. Which Tax Rate Do People Use: Average or Marginal? *Journal of Public Economics* 56 (1995): 79-96.
- Dynarski, Susan. Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion. *American Economic Review* 93 (2003): 279-288.
- Hope for Whom? Financial Aid for the Middle-class and Its Impact On College Attendance. *National Tax Journal* 53 (2000): 629-662.
- Ellwood, David and Thomas Kane. Who is Getting a College Education? Family Background and the Growing Gaps in Enrollment. In Sheldon Danziger and Jane Waldfogel, eds. *Securing the Future: Investing in Children from Birth to College*. New York, NY: Russell Sage Foundation, 2000, pp. 54-77.
- Finkelstein, Amy. E-Z Tax: Tax Saliency and Tax Rates. *Quarterly Journal of Economics* 124 (2009): 969-1010.
- Gordon, Nora. Do Federal Grants Boost School Spending? Evidence from Title I. *Journal of Public Economics* 88 (2004): 1771-1792.
- Hines, James and Richard Thaler. The Flypaper Effect. *The Journal of Economic Perspectives* 9 (2000): 217-226.
- Ikenberry, Stanley. Testimony Presented to House Ways and Means Committee by Stanley O. Ikenberry, President, American Council on Education, 1997.

- Jones, Damon. Inertia and Overwithholding: Explaining the Prevalence of Income Tax Refunds. Cambridge, MA: National Bureau of Economic Research, 2010. NBER Working Paper No. 15963.
- LaLumia, Sara. Tax Preferences for Higher Education and Adult College Enrollment. Unpublished Working Paper, 2010.
- Leslie, Larry and Paul, Brinkman. Student Price Response in Higher Education. *Journal of Higher Education* 58 (1987): 181-204.
- Long, Bridget Terry.
College Tuition Pricing and Federal Student Aid: Is There a Connection? Testimony before the U.S. Senate Committee on Finance, 2006.
The Impact of Federal Tax Credits for Higher Education. In *Caroline M. Hoxby, ed. College Choices: The Economics of Which College, When College, and How to Pay For It*. Chicago, IL: University of Chicago Press, 2004, pp. 101-168.
- The Connection between Government Aid and College Pricing. *Journal of Student Aid* 33 (2003): 1045-1066.
- Madrian, Brigitte and Dennis Shea. The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior. *Quarterly Journal of Economics* 116 (2001): 1149-1187.
- McPherson, Michael and Morten Shapiro. *Keeping College Affordable, Government and Educational Opportunity*. Washington, DC: Brookings Institution Press, 1991.
- Turner, Nicholas. The Effect of Tax-Based Federal Aid on College Enrollment. San Diego, CA: University of California San Diego, 2010. Working Paper No. 2009-01.