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Barriers to Claiming Education Tax
Credits for Low-Income Students

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Barriers to Claiming Education Tax Credits for Low-Income Students*

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Abstract

The American Opportunity Tax Credit (AOTC) is a partially refundable tax credit of up to \$2,500 for students who pay tuition and fees or purchase books. It is widely available to postsecondary students who are enrolled at least half time, but there are two significant barriers to claiming a credit if a student is low income. First, students often lack the information needed to claim the credit. Second, students whose scholarships cover tuition and fees but not the full cost of attendance must follow a complex and counterintuitive tax calculation to determine the amount of the credit. We discuss these barriers and measure their potential effects. We estimate that 14 percent of all students, mostly low-income students attending two-year public schools, do not receive the information return used to claim an AOTC. Further, even among those students provided information returns, take-up rates for low-income students attending 2-year public schools are less than half that of middle-income students attending private schools. We conclude that a possible driver of these differences is the complex and counterintuitive process for claiming an AOTC if a student has a scholarship, such as a Pell Grant, that exceeds tuition and fees.

* This research was conducted while the authors were employees at the U.S. Department of the Treasury. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors and do not necessarily reflect the views or the official positions of the U.S. Department of the Treasury. All taxpayer data used in the research described in this paper was kept in a secured Treasury or IRS repository, and all results have been reviewed to ensure that no confidential information is disclosed. The authors thank Greg Leiserson, Bob Gillette, and Adam Cole for the careful reviews and helpful comments that we received.

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Introduction

The American Opportunity Tax Credit (AOTC) is a tax credit of up to \$2,500 for students attending college at least half-time and who pay qualified education expenses (e.g., tuition, fees, or books). Up to \$1,000 of the AOTC is refundable, meaning that it can be claimed by low-income families even if they do not have income tax liability. In calculating the credit, students must reduce the amount of education expenses they pay by the amount of any tax-free scholarships they receive. However, students who have scholarships that exceed tuition but do not cover the full cost of attendance can still claim the credit if those scholarships can be used to pay non-tuition costs of attendance, such as living expenses.¹ In this case, the student may elect to report some or all of the scholarship as taxable income for use on these expenses and claim the AOTC on the basis of the tuition, fees, and books.

Under these rules, the AOTC would appear to be generally available across all income groups and to students attending postsecondary institutions with varying levels of tuition. In fact, there are two major barriers to claiming an AOTC if a student receives a scholarship, such as a Pell grant, that exceeds tuition and fees.² As shown in the paper, low-income students are more likely to attend schools with low tuition, more likely to receive Pell grants that exceed tuition, and thus more likely than other students to have scholarships in excess of tuition. Pell grants are by far the most prevalent need-based grant available to undergraduates and can be used for many expenses related to cost of attendance.³

¹ Cost of attendance is the estimate of tuition and fees, cost of room and board (or living expenses), cost of books, supplies, transportation, loan fees, and miscellaneous expenses (including a reasonable amount for the documented cost of a personal computer), allowance for childcare or other dependent care, costs related to a disability, and reasonable costs for eligible study-abroad programs.

² Only 1.5 percent of students receive a scholarship that covers the full cost of attendance, See Kantrowitz (2019): <https://www.savingforcollege.com/article/college-scholarships-statistics>.

³ From academic year 2016-2017 to academic year 2020-2021, over 30 percent of all undergraduate students received Pell Grants. The share of need-based institutional grants offered by private non-profit 4-year schools to their own students is higher but there are many more students at public institutions. See Figure SA-15A, Ma and Pender (2021).

The first barrier is an information barrier. Low-income students are less likely to receive a Form 1098-T tuition statement (F1098-T) from the schools that they attend. Postsecondary schools generally send all enrolled students a F1098-T, but they are not required to send an F1098-T to students with scholarships in excess of tuition and fees. The F1098-T serves not only to raise awareness about the existence of education tax credits, but it is also used to fill in the tax forms used to claim the credits. As a result, students who do not receive a F1098-T are at a serious disadvantage when trying to claim an education credit.

The second barrier is a process barrier. To claim an AOTC, students with scholarships that exceed tuition and fees must make the counterintuitive choice to use at least part of their scholarship to pay for expenses that would make their scholarship taxable. Including all or part of a scholarship in income may preserve a student's ability to claim an education tax credit and may maximize the combined benefit of tax credits and scholarships. Using scholarships to pay for expenses other than tuition and fees is possible since many scholarships, like the Pell grant, may be used for any cost of attendance. Further, tuition and fees represents a small share of the total cost of attendance for full-time students, even for those attending public 2-year schools.⁴ Still, choosing to include a scholarship in income may be counterintuitive and the calculations to maximize the combined benefit of scholarships and credits, knowing how much of the scholarship to use for which type of expense, is complicated. The calculation is all the more difficult since a school may assign a scholarship to a particular expense and the student may not be aware that such an assignment is not binding with regard to claiming a tax credit.

To estimate how many and what type of students are subject to the information barrier, we link 2017 student tax data from Form 1098-T, Form 8863 Education Credits, and Form 1040 Individual Income Tax

⁴ Underlying data is from Figure CP-8 Ma and Pender (2021).

to institutional data from the Integrated Postsecondary Education Data System (IPEDS) collected by the Department of Education.⁵ Comparing the tax data to Department of Education data, we estimate that there were 25.9 million unique students attending school in the U.S. in 2017 (excluding non-resident aliens). Form 1098-T tuitions statements were sent to 22.4 million unique students and most of the 3.6 million students (14 percent of all students) missing in the tax data appear to be attending public, mostly 2-year institutions.

To estimate take up rates, we identify institutions that sent information returns to all students and use them to estimate take up rates by student income, institution level and control, and scholarship size. While the overall take up rates for education tax credits for students likely eligible for the AOTC and receiving an information return is 48 percent, the take up rate for middle- and high-income students attending private schools with scholarships less than tuition approaches 90 percent while for low-income students attending public 2-year schools with scholarships greater than tuition (but not necessarily cost of attendance) is only 20 percent. While we might expect some difference in take up rates, the magnitude of the difference suggests that taxpayers are not claiming the credits that would maximize the combined value of their scholarships and tax credits.

This paper addresses barriers faced by low-income students with scholarships when trying to claim an education tax credit. It does not address the efficacy of the tax credits themselves in inducing enrollment. Using tax data, Bulman and Hoxby (2014) find little effect of the education tax credits on enrollment. Among several explanations for this result, the authors suggest the structure of the tax

⁵ This paper studies 2017 because the necessary data was developed for 2017 as part of the previous analytic work of the Office of Tax Analysis. Advantages of using 2017 are that it follows soon after several compliance and outreach initiatives related to the education credits described in more detail below and it predates the disruptions of the pandemic. A disadvantage is that the behavior of taxpayers and institutions may have changed since then.

credits, specifically the timing of the credit and its lack of salience may negate its ability to induce enrollment. Our paper suggests that barriers to claiming a credit for low-income students, many of whom receive Pell grants and attend low-tuition schools, may also be a contributing factor to the lack of measured efficacy.

The paper proceeds in sections. Section 1 gives a legislative and administrative history for the tax credits and reporting requirements, and official efforts to address the process barrier. Section 2 describes the tax data and our merge with the IPEDs data. Section 3 compares the tax data to data from the Department of Education with the goal of estimating how many and what types of students may be missing in the tax data and therefore face a possible information barrier. Section 4 estimates education credit take up rates by income and institution level and control. The low take-up rates for low-income students attending low-tuition schools points to the continued existence, despite mitigation efforts, of a process barrier. Section 5 concludes.

1. Legislative and Administrative History of the Education Tax Credits and F1098-T Reporting

As with other credits, there are two general goals in administering the education tax credits: maximizing compliance and maximizing take up. Maximizing compliance is trying to ensure that taxpayers that are not eligible do not claim the credit. Maximizing take-up is trying to ensure that eligible taxpayers do claim it. As detailed in the legislative and administrative history, these two goals can be at odds. In an effort to maximize compliance, the trend since 2012 has been to limit the number of students claiming a credit without supporting documentation, usually a F1098-T. However not all eligible students receive a F1098-T. In an effort to maximize take up, since 2014 the Internal Revenue Service (IRS) has increased outreach to students with scholarships.

A. The Education Tax Credits

The Taxpayer Relief Act of 1997 (TRA97) created the Hope Scholarship Tax Credit (HTC) and the lifetime learning tax credit (LLTC). Both credits allowed qualifying students attending eligible higher education institutions to claim education tax credits against qualifying education expenses. The HTC was a per student credit of up to \$1,500, calculated as 100 percent of the first \$1,000 of qualifying expenses and 50 percent of the next \$1,000 of qualifying expenses. The LLTC was a per return credit of up to \$2,000, calculated as 20 percent of the first \$10,000 of qualifying expenses. Only one of the credits could be claimed for a particular student although both credits could be claimed on a return if the return claimed more than one student. Qualifying expenses for both credits were limited to tuition and fees required for enrollment that were paid by the taxpayer with funds that were otherwise not excludable from taxable income. Books not required for enrollment and room and board were not qualifying expenses. Expenses paid by scholarships were not qualifying expenses. The credits were phased out for higher income taxpayers. Neither credit was refundable, effectively excluding low-income taxpayers (those without individual income tax liability) from claiming a credit.

To facilitate administration of the HTC and LLTC, TRA97 required that eligible educational institutions file a return with the Internal Revenue Service (IRS), with a copy sent to the student, reporting qualified tuition and fees and other information for each enrolled student as prescribed by regulations. This return became the Form 1098-T Tuition Statement (F1098-T). Among other items, the F1098-T reports on half-time status, student level (graduate student or not) and scholarships. The original regulations guiding the submission of the F1098-T allowed schools to choose not to file a F1098T on certain students. The exceptions were targeted at students that would likely not be eligible for an education tax credit. Schools were not required to file a F1098-T for students who were taking non-credit courses since expenses for such courses did not qualify for the credit. Likewise, schools were not required to file

a F1098-T for students who were nonresident aliens because in most cases nonresident aliens do not qualify for a credit. Finally, schools were not required to file a F1098-T for students who were unlikely to have qualifying expenses because their tuition and fees were waived, paid for by scholarships or grants, or paid by a third-party billing arrangement.

Under certain circumstances some of the students covered under the F1098-T filing exceptions would have been eligible for a credit under TRA97 law. Students with scholarships that exceed tuition and fees may choose to use a scholarship for other allowable taxable expenses (allowable under the scholarship rules), then include the scholarship in income and claim a credit against the tuition and fees expenses paid by the student. Students were originally, and are currently, still allowed to claim an education tax credit even if they do not receive a F1098-T, but changes in current law requirements, designed to increase compliance, have made it more difficult to claim an education credit without having received a F1098-T.

The American Recovery and Reinvestment Act (ARRA) of 2009 temporarily replaced the HTC with the American Opportunity Tax Credit (AOTC) for 2009 and 2010. Subsequent legislation temporarily extended the AOTC, and the Protecting Taxpayers Against Tax Hikes Act of 2015 made it a permanent replacement for the HTC credit.⁶ The AOTC is more generous than the HTC. The AOTC has a higher maximum credit amount, is partially refundable, covers more expenses, and has higher income phaseouts. The maximum AOTC is \$2,500, and up to \$1,000 of the otherwise allowable credit is refundable (may be claimed by families who have no income tax liability). Books and course materials, whether or not they are required for enrollment, are eligible expenses under the AOTC. The income

⁶ *The Tax Relief and Job Creation Act of 2010* extended the AOTC to 2011 and 2012. The American Taxpayer Relief Act of 2012 extended the AOTC through 2017.

levels at which the credits begin to phase out were raised from \$56,000 (\$112,000 for joint filers; 2017 dollars) for the LLTC and HTC to \$80,000 (\$160,000 for joint filers) for the AOTC. Partial refundability expanded the AOTC to low-income families. As a result, more families with scholarships that exceeded tuition and fees became eligible for the AOTC but claiming the credit would become more difficult.

B. Compliance Initiatives

In 2011 a Treasury Inspector General for Tax Administration (TIGTA) Report found that up to 2.1 million taxpayers received \$3.2 billion in education credits that appeared to be erroneous. The absence of a F1098-T was the main source of potentially erroneous claims in TIGTA's report.⁷ In 2012, in response to the TIGTA report findings, the IRS revised Form 8863 Education Credits (American Opportunity and Lifetime Learning Credits) to make the connection between claiming an education tax credit and receiving a F1098-T more explicit. Form 8863 is the form used by taxpayers to claim an education tax credit. As part of the change, line 22 subpart (2) of the form now asks students if they received a F1098-T, and taxpayers who check "yes" are asked to use their F1098-T to fill in line 22 subparts (3) and (4). In 2012, 17 percent fewer claims were made for an education credit without a F1098-T. Low-income students were much less likely to claim a credit without a form. The number of students claiming an education tax credit without a F1098-T on a return with Adjusted Gross Income (AGI) below \$30,000 fell by 53 percent. To the extent that a reduction in unsupported claims was reflective of an increase in compliance, this is a positive result. However, because low-income students are more likely to receive scholarship or grants in excess of tuition, they are also less likely to receive a F1098-T. Some of these students may still have been eligible for a credit.

⁷ "Recovery Act: Billions of Dollars in Education Credits Appear to be Erroneous," Treasury Inspector General for Tax Administration, September 26, 2011 Reference Number 2011-41-083.

The Protecting Americans Against Tax Hikes (PATH) of 2015 and the Trade Preferences Extension (TPE) Act of 2015 legislated stricter requirements for claiming education credits. PATH required students to include the schools Employer Identification Number (EIN) on Form 8863, when claiming an education credit. A school's EIN is provided on the F1098-T. TPE required most students to have a F1098-T to be eligible to claim the AOTC or the LLTC. The instructions for Form 8863 in 2017 included language for students who did not receive a F1098-T who might still be eligible to claim an AOTC.⁸

C. Outreach Initiatives

At the same time compliance initiatives were being implemented to reduce the number of erroneous education credit claims, the instructions on the F1098-T, Form 8863, and Publication 970 Tax Benefits for Education were enhanced in an effort to increase take-up by low-income eligible students. The U.S. Department of the Treasury also released a Fact Sheet in 2014 entitled "*Interaction of Pell Grants and Tax Credits: Students May Be Foregoing Tax Benefits by Mistake.*"⁹ The main fact all the outreach tried to convey was that students with scholarships exceeding tuition and fees might still be eligible for education credits.

There are multiple tax benefits for postsecondary education, some of which can be taken for the same student but none of which can be taken for the same expenses for the same student. The main tax benefits for postsecondary school are the two education tax credits and an exclusion for scholarship income. Excluding a scholarship from income is a simple choice. It requires no action on the part of the

⁸ The language was as follows: "If a student's educational institution isn't required to provide a Form 1098-T to the student, a taxpayer may claim one of these education benefits without a Form 1098-T if the taxpayer otherwise qualifies, can demonstrate that the taxpayer (or a dependent) was enrolled at an eligible educational institution, and can substantiate the payment of qualified tuition and related expenses."

⁹ See Office of Tax Policy (2014): <https://home.treasury.gov/system/files/131/Report-Pell-AOTC-Interaction-2014.pdf>

taxpayer, and, in many cases, a school might apply a scholarship to tuition and fees which may lead the student to believe that the scholarship cannot be used for other purposes. If the student (or his or her parent in the case of a dependent student) uses a scholarship to pay all the expenses that would otherwise be qualified expenses for the AOTC or LLTC, then the taxpayer is not eligible for an education tax credit or deduction. But often a scholarship (such as a Pell grant) may be used for expenses, such as room and board or other living expenses, that would make it includable in income. By including scholarships in income and paying tuition and fees from their own funds, taxpayers can preserve their eligibility for the education tax credits. This is true even if the school reports that the scholarship was used to pay tuition and fees. Including scholarships in income to maximize total education benefits, may be unknown, confusing, or counterintuitive to many taxpayers, creating a barrier to claims for the AOTC. The population most at risk of not making these claims, not maximizing the combination of scholarships and tax credits, are those with large scholarships and/or low tuition. Many of these students are low-income students, attending public 2-year schools.

Treasury's Fact Sheet and Publication 970 tried to clarify the way to optimize benefits with examples. In the first example in the fact sheet, a family with earned income of \$22,000 and \$4,000 of qualified tuition and fee expenses also receives a maximum Pell Grant of \$5,645. The student has living expenses in excess of \$5,645. As explained in the fact sheet, for this family, total benefits are maximized if they allocate their Pell Grant to living expenses, so that they can claim the maximum AOTC. If the family paid the entire tuition and fees with the Pell Grant, the family would not be eligible for any AOTC. If the family puts the entire Pell Grant toward living expenses, the family's tax refund is maximized, even though the Pell grant is taxable and the total amount of tax before considering the AOTC is higher. If the family uses the Pell Grant to pay living expenses, then they receive both the Pell Grant and an AOTC of \$1,155.

There is evidence that the outreach was successful. In order to claim an education tax credit while receiving scholarships that exceed tuition, fees, and books, a family would have to include scholarships in taxable income. In tax year 2015, 44,000 returns reported a total of \$325,000 in scholarships on Form 1040. By tax year 2017, after the outreach efforts were in place for a few years, the number of returns reporting taxable scholarships increased dramatically. In tax year 2017, 704,000 returns reported a total of \$2.9 billion in scholarships on Form 1040, an enormous increase in reporting of taxable scholarships over 3 years. However, as will be seen in Section 4, take up rates by low-income students attending public 2-year schools were still very low in 2017; so, while the outreach has engendered a response, there may still be eligible low-income students that are not maximizing their combined scholarship and tax benefits.

2. Tax Data

We use the universe of F1098-T forms filed for 2017 to conduct our analysis. Under the relevant regulations, all postsecondary institutions are required to file a F1098-T on all students enrolled in their institutions with the notable exceptions described above. The 2017 F1098-T provides the name and address of the student, social security number (SSN) of the student, name and address of the school, and employer identification number (EIN) of the school. The F1098-T reports student data in boxes 1 thru 10.

In 2017, schools could choose between reporting tuition and fees received (box 1) or payments billed (box 2).¹⁰ Box 5 reports scholarships or grants received by the student. Box 8 indicates if the student attends at least half time, and box 9 indicates if the student is a graduate student. Undergraduate

¹⁰ Beginning with 2018, schools are required to report payments received. Notably both payments received and payments billed are gross of scholarships or grants reported in box 5.

students enrolled on less than a half-time basis and graduate students are not generally eligible for an AOTC but may qualify for a LLTC.

There were 26.1 million F1098-Ts filed in 2017. We remove forms that only report on prior year adjustments for either expenses or scholarships, and forms that only report on insurance contract refunds. We remove these forms because they do not represent (additional) enrollments in 2017. We also remove students that are enrolled in institutions outside the 50 states. We base the study on the 24.4 million Forms 1098T that meet these criteria. We include a small number of forms with unique SSN-EINs that do not report any expenses paid or billed and we include a small number of students with invalid SSNs, erring on the side of over representing rather than underrepresenting enrolled students. The summary statistics for the TY2017 Forms are shown in Table 1.

Table 1: Summary Statistics for TY2017 Forms 1098-T1

Box Number and Description	Mean of Non-Zero Values (dollars)	Percent with Non-Zero Values
1 Payments Received	\$5,922	19%
2 Payments Billed	\$10,123	76%
3 Change in Reporting Method		4%
4 Prior year adjustment to Box 1 or Box 2	\$1,402	5%
5 Scholarship or Grants	\$7,189	53%
6 Prior year adjustment to Box 5	\$3,381	1%
7 (Blank)		
8 Check box- at least half time student		81%
9 Check box- graduate student		15%
10 Insurance contract refund		
Addendum:		
Millions of TY 2017 Forms 1098-T Filed		26.1
Millions of TY 2017 Forms 1098-T filed and used in this study		24.4
Millions of unique students represented on Forms 1098-T		22.4
Number of institutions represented on valid TY2017 Forms 1098-T		5,371

¹This table is for unique student-institution matches; students enrolled at more than one institution are included more than once. Students with invalid TINs are included. 1.7 million Forms 1098T are excluded from this table and the study in general. Excluded forms include: duplicate forms, forms that only reported insurance contract refunds or prior year scholarship adjustments, and forms filed by institutions located outside the 50 states and Washington, DC.

Most schools (over 75 percent) chose to report amounts billed rather than paid in TY2017. Eighty-one percent of the students in our study attend at least half time, and only 15 percent are graduate students. Schools reported scholarships for 53 percent of their students, with an average scholarship of \$7,189. Total scholarships reported on F1098-T are about \$92 billion, which is less than the \$136 billion in scholarships reported by the College Board for all source of grants in 2017 or \$119 billion from Federal, state, and institutional sources (most of which should be administered by the school).¹¹ This is consistent with some schools not filing a F1098-T for some students with scholarships exceeding tuition.

We link the F1098-Ts to the Integrated Postsecondary Education System (IPEDS) data on institution characteristics. IPEDSs institution identifiers are unique to IPEDS and the tax data institution identifier is the EIN of the institution. To do the match we utilize multiple methods. We are able to match 89 percent of the institutions in the F1098-T data to an institution (or system of institutions) in the IPEDS

¹¹ Table 1, Baum et. al. (2019).

data. If IPEDS reports an EIN, then we have a direct match (77 percent of institutions issuing a 1098-T). If not, or if the EIN reported does not match an EIN on the F1098-T file, we match the standardized name of the institution as reported on the F1098-T to that reported on IPEDs. We then use matches based on a Levenshtein distance of one or two in the school's name along with the state. Lastly, we match on standardized addresses. From these last three steps, we match an additional 12 percent of institutions issuing a 1098-T. The standardized name, Levenshtein, and standardized address matches are all reviewed for accuracy. The 11 percent of institutions for which we do not have an IPEDs match issue F1098-Ts for roughly half a million students in the 2017 tax data. For these half a million students we will not have institutional characteristics.

From the IPEDS link we can sort most students into the level and control of the institution that they attended in 2017 (e.g., public 2-year or private 4-year non-profit). This will enable us to better characterize the types of students not represented in the tax data and to estimate education credit claims by the level and control of the institution attended. In the tax data, 347 institutions (reporting on 1.6 million students) report as a mixed system of 2- and 4-year campuses. For example, the University of Hawaii campuses and Hawaii community colleges report as a system so we cannot identify whether a student is attending a 2- or 4-year program. For Table 3 below, for students at institutions that report a mixed system of 2- and 4-year campuses, we prorate the students into 2- and 4-year programs based on the respective population shares of students at other institutions. In the end, this study works with 4,279 institutions or systems of institutions.

We also link the F1098-Ts to the student's 2017 Individual Income Tax Form (F1040) (or the F1040 on which they appear if they are a dependent), as well as the 2017 Form 8863 on which they appear if they claim a credit. We use the student's F1040 if they are not a dependent and the claimer's F1040 if the

student is a dependent. These links provide us the necessary information to determine if a student was eligible to claim an education credit and if they did claim.

3. Students Without a F1098-T (Missing in the Tax Data)

As discussed in section 1, there are exceptions to the reporting requirement for the F1098-T, which means the F1098-T data alone is not representative of all students enrolled in a calendar year. In this section, we attempt to reconcile the 2017 tax data with data from the Department of Education on academic year 2016-2017, as reported in the Digest of Education Statistics (DES), to estimate how many students did not receive a F1098-T information return in 2017 and the type of institution they likely attended.

In Table 2 we start with the population of students reported in the Education data and adjust for known differences in the tax population. We start with 12-month enrollments (July 1, 2016 and ending June 30, 2017) for degree granting institutions in the 50 states and DC as reported by the Department of Education's Digest of Education Statistics (DES), which is 26.1 million students. We add nondegree students since the LLTC covers nondegree students and they are generally subject to the F1098-T reporting requirements. We then subtract an estimated 1 million non-resident aliens. Schools are not required to file a F1098-T for non-resident aliens.¹² This results in an estimated 25.4 million enrolled students who are U.S. citizens and resident aliens at all Title IV institutions over the 12-month academic year beginning July 1, 2016, and ending June 30, 2017.

¹² Non-resident aliens can, under limited circumstances, qualify for an education tax credit and can request a F1098-T but we observe very few F1098-Ts linked to non-resident alien tax forms (NRA1040s).

There are two large adjustments to get from 12-month 2016-2017 academic year estimates of enrollments to calendar year 2017 unique student enrollments. The two adjustments are largely offsetting, and both are roughly estimated. First, there are more students when measured on a calendar year basis than when measured on an academic year basis. More students continue from fall to spring of the same academic year (crossing calendar years) than continue from the spring of one academic year to the fall of another academic year (same calendar year). In 2016, Treasury used Pell grant data from the Department of Education to create an imputation of Pell Grant students for its tax model.¹³ Using the distribution patterns of Pell grant aid, we were able to observe about 11 percent more unique Pell grant students on a calendar year basis than on an academic year basis. We apply this 11 percent estimate to the population in general to add an additional 2.5 million students to the academic year estimate to arrive at a calendar year estimate. This is a rough estimate since the enrollment patterns of Pell Grant students may differ from the enrollment patterns of the entire student population.

The second large rough adjustment is for duplicate enrollments. The DES 12-month data is unique enrollments at an institution but not unique students. Students who enroll at more than one institution during an academic year are counted twice in the DES 12-month data. In the tax data, we observe 2 million students enrolled at more than one institution during a calendar year (almost all (94 percent) at exactly two institutions). We subtract 2 million students from our estimate of calendar year enrollments to arrive at unique students enrolled in a calendar year. This is a rough adjustment since there may be more students moving to different institutions in a calendar year than in an academic year.

¹³ This imputation was undertaken as part of the original College Scorecard efforts in 2016. See <https://collegescorecard.ed.gov/data/> for current College Scorecard data.

In the final accounting we estimate that the actual number of unique students enrolled at a Title IV institution located in the 50 states or Washington D.C. who are U.S. citizens or resident aliens is roughly 25.9 million in a calendar year. Given that we have 22.4 million of these students in the tax data, we estimate that roughly 3.6 million students (14 percent of the total) are missing a F1098-T and therefore not represented in the tax data on a F1098-T. This is higher than the 9 percent number reported as missing by Chetty et al. (2017) when combining tax data with the Financial Aid data from the Department of Education.¹⁴ In their study, Chetty et al. (2017) were focused on younger students (aged 19 to 22), and this may be one source of our differing estimates.

The tax data has a second source, other than the F1098-T, for identifying students. As described above, students without a F1098-T may still claim an education tax credit if they provide the EIN of their school and can document that they paid eligible expenses. For tax year 2017, 1.5 million students claimed a tax credit who did not receive a F1098-T. These students accounted for 15 percent of all claims.¹⁵ With the additional 1.5 million, the tax data on students represents about 92 percent of the estimated 25.9 million students enrolled in TY2017.

¹⁴ The 9 percent figure is given in Section B (p. 52) of the online Appendix to Chetty et. al. (2017).

¹⁵ This is a much lower percentage than the 29 percent who filed a claim without a F1098-T in 2011 before compliance initiatives were put in place. We do not use data from taxpayers who claimed an education credit without a F1098-T. We have no way of verifying that students without a F1098-T are enrolled at an eligible institution, nor do we have the institution's characteristics. We attempted to match the EINs provided by students as part of the education credit claim but found a very high degree of nonmatching which may reflect the difficulty of providing a correct EIN if it is not reported by the institution by way of a F1098-T.

**Table 2: Estimate of Students Missing in Tax Data
Reconciling Academic Year Data Collection by Department of Education with Calendar Year
Tax Data, (millions of students)**

12-month Academic Year enrollment degree granting institutions in 50 states and DC July 2016 to July 2017 (NCES table 308.1)	26.1
plus Estimate of nondegree students at Title IV institutions) (NCES table 303.2) ¹	0.4
minus Estimate of non-resident aliens 2017 (NCES Table 306.1) ¹	1.0
12-month Academic Year enrollment of U.S. citizens and resident aliens at all Title IV institutions	25.4
plus Estimate of additional unique enrollments when measured on a calendar year basis ²	2.5
minus Students enrolled in more than one institution in a calendar year ³	2.0
Estimated Unique enrollment of U.S. citizens and resident aliens enrolled in 50 states and DC at Title IV institutions during calendar year 2017	25.9
Unique enrollment in Tax Data (Form 1098-T) enrolled in 50 states and DC in TY2017 ³	22.4
Estimate of How many students are potentially missing a Form 1098-T in tax data	3.6
As a percent of estimate of students enrolled	14%
Self reporting students (students claiming an education tax credit without a F1098-T)	1.5
Estimate of How many students are not in the tax data (no F1098-T and no credit claimed)	2.1
As a percent of estimate of students enrolled	8%

¹Estimates for nondegree students (an addition) and for non-resident aliens (a subtraction) are only for Fall enrollments and will not include non-degree students or non-resident aliens who are enrolled only in spring or fall. The net difference is not expected to be large.

²Estimate is based on there being about 11 percent more Pell grant recipients in a calendar year versus an academic year.

³Estimate is based on the number of F1098-Ts for the same student enrolled in more than one institution.

Table 3 tackles the issue of what types of students may be missing a F1098-T. The difficulty arriving at a count of unique students within a calendar year carries over to Table 3. To try to bound our classifications, we compare two sets of distributions of students by level and control of the institutions from the Digest of Education Statistics (DES) to three sets of distributions of students by level and control of the institution from the tax data. Each set includes a distribution of number of students and the corresponding percent distribution. Columns 1a, 1b, 2a, and 2b are from the DES, data collected by the Department of Education (ED). Columns 1a and 1b show the distribution of 2017 Fall enrollments. These enrollments will exclude students enrolled only for the spring or summer terms. Columns 2a and 2b show the 2016-2017 12-month enrollments. These columns will double count students enrolled at

more than one school. Columns 3a, 3b, 4a, 4b, 5a and 5b are different looks at the tax data. Columns 3a and 3b show unique enrollments represented on a 2017 F1098-T where students enrolled at more than one institution are sorted into the most expensive institution they attended. Columns 4a and 4b show unique enrollments represented on a 2017 F1098-T where students enrolled at more than one institution are sorted into the least expensive institution they attended. Columns 5a and 5b double count F1098-T enrollments in the tax data at more than one institution, and in this sense is most closely akin to the 12-month enrollments in Columns 2a and b.

Comparing the two most closely aligned columns, the education data in columns 2a and 2b to the tax data in columns 5a and 5b, a few things are apparent. First, students attending private institutions, both for-profit and non-profit, appear to be well represented in the tax data. The number of students represented in the tax data is higher than the number of students represented in the education data. This is what we would expect if these schools reported on all of their students. The tax data is calendar year data, and the education data is academic year data and there should be more unique students in a calendar year than an academic year (if more students start in September than January). Because private institutions generally charge much higher tuitions, the likelihood that scholarships would exceed tuition at these schools is much lower and as a result these schools may not qualify for as many exceptions to the F1098-T reporting requirements.

In contrast, public school enrollments appear to have less representation in the tax data, especially among 2-year schools. As shown in column 5a, the tax data includes about 6.9 million enrollments at public 2-year schools (28 percent of all enrollments in the tax data) compared to 8.6 million enrollments found in ED data in column 3 (33 percent of all enrollments in the education data). This is not surprising since public 2-year schools have the lowest average tuitions and are therefore the most likely to have

students who receive scholarships in excess of tuition and fees. In academic year 2016-2017, average tuition at 2-year public institutions was \$3,560 and average Pell Grant received by Pell Grant recipients was \$4,031.¹⁶

Table 3: Comparing Education and Tax Data Enrollments by Level and Control of Institution¹

Level and Control of Postsecondary Institution	Department of Education Data				Tax Data					
	NCES 2017 Fall Enrollment ²		NCES AY12 month Enrollment (July 2016 to July 2017) ³		Unique Enrollment Keep most expensive		Unique Enrollment Keep least expensive		Enrollments not Unique	
	(1a) (000)	(1b) (%)	(2a) (000)	(2b) (%)	(3a) (000)	(3b) (%)	(4a) (000)	(4b) (%)	(5a) (000)	(5b) (%)
Total	19,573	100.0	25,840	100.0	22,354	100.0	22,354	100.0	24,401	100.0
Public	14,523	74.2	19,165	74.2	15,211	68.1	15,676	70.3	16,925	69.5
Public 4-year ⁴	8,824	45.1	10,542	40.8	9,482	42.4	9,426	42.2	10,054	41.2
Public 2-year ⁴	5,699	29.1	8,622	33.4	5,729	25.6	6,250	28.0	6,871	28.2
Private not for profit	3,988	20.4	4,850	18.8	4,931	22.0	4,467	19.8	4,905	20.4
Private for profit	1,062	5.4	1,825	7.1	1,758	7.9	1,758	7.9	1,916	7.9
Unmatched					450	2.0	450	2.0	530	2.2

¹Includes about 120,000 students with invalid Taxpayer Identification Numbers.

²Digest of Education Statistics (DES) Table 304.80.

³DES Table 308.10.

⁴1.7 million students in the tax data are reported by public institutions that have both 2-year and 4-year campuses. We have prorated these students across 2- and 4-year institutions.

Table 4 shows the same summary statistics found in Table 1 (data directly from the F1098-T) sorted by institution level and control. Table 1 double counted students who attended more than one institution. In Table 4, the data reported from students enrolled at more than one institution are from the most expensive institution that they attended. In the F1098-T data, private schools have a much higher percentage of students receiving scholarships (62 percent) than public 4-year schools (52 percent) or public 2-year schools (40 percent). Notably, at public 2-year schools, average reported scholarship amounts on the F1098-T exceeds average tuition and fees. This is an indication that some schools, even with the exceptions to the reporting requirements, are reporting on all students.

¹⁶ The average tuition for a 2-year public can be found in Table 1, *Trends in College Pricing 2018*, College Board and the average Pell grant can be found in Table 1, 2017-2018 End-of-Year Pell Grant Report, Department of Education.

Table 4: Summary Statistics for TY2017 Forms 1098T by Level and Control¹

Box Number and Description	All		Private, Non-Profit		Public 4-Year		Public 2-Year		Private, For-Profit	
	Mean of Non-Zero Values	% of Non-Zero Values	Mean of Non-Zero Values	% of Non-Zero Values	Mean of Non-Zero Values	% of Non-Zero Values	Mean of Non-Zero Values	% of Non-Zero Values	Mean of Non-Zero Values	% of Non-Zero Values
1. Payments Received	\$5,819	19.1	\$10,626	7.4	\$6,501	20.0	\$1,578	15.7	\$7,640	51.8
2. Payments Billed	\$10,059	75.6	\$21,507	87.9	\$9,217	75.0	\$1,791	78.2	\$9,479	43.1
3. Change in Reporting Method		3.6		1.7		4.9		2.8		4.3
4. Prior year adjustment Box 1 or 2	\$1,378	4.7	\$3,597	2.3	\$1,480	5.2	\$552	6.0	\$1,763	3.2
5. Scholarship or Grants	\$7,186	53.4	\$13,898	62.4	\$6,417	57.1	\$2,599	39.9	\$4,486	56.8
6. Prior year adjustment to Box 5	\$3,414	1.2	\$12,951	1.1	\$1,333	1.5	\$544	0.9	\$1,170	1.2
7 (blank)										
8. Check box -at least half time student		81.6		87.3		85.6		69.3		89.7
9. Check box - graduate student		14.7		29.7		16.5		0.0		18.6
10. Insurance contract refund										
Addendum										
Number of unique students (millions)		22.4		4.9		8.6		6.0		1.9
Number of unique institutions		4,362		1,574		482		924		1,382

¹Students with invalid TINs are included in the table. For students enrolled at more than one institution, only the enrollment at the most expensive institution is included. Schools for which there was no match to the level and control are included in the total but not the detail.

4. Estimating Take-up rates for the Education Tax Credits

Estimating take-up rates for the tax credits using all the students that appear on a F-1098T could potentially bias our results since the F-1098T population does not include all students and the exclusions are not random: Students that are less likely to receive a F-1098T are more likely to have scholarships that exceed tuition. To reduce this bias, we identify institutions that send information returns to all their students and estimate take-up rates using only students that attend these institutions. Note that our take-up rates may still be biased for two reasons. One, schools that send information returns to all their students may provide other services that also increase take-up rates, and two, students that do not

receive information returns may be unaware that they might still qualify for an education credit which would also reduce their take-up rates.

Unfortunately, schools do not report to the IRS whether or not they are filing a F-1098T for all their students, so we use two basic facts to try to separate those who report on all their students (hereafter referred to as “universal reporters”) and those who do not report on all their students (hereafter referred to as “non-universal reporters”). One fact is that schools that do not universally report will not have many student reports that show scholarship amounts in excess of tuition amounts. Students who do not receive a F1098-T may request one and are told to do so in the filing instructions, so we might expect to see a small number of reports from non-universal reporters for students with scholarships greater than tuition.

A second fact is that if a school is universally reporting we would expect the tax data to have more students, because it covers a full calendar year whereas IPEDS reports only Fall enrollments. Figure 1 shows a histogram of institutions aligned by the share of Calendar year 2017 enrollments represented by the F1098-T relative to Fall 2017 IPEDs enrollments.¹⁷ In the histogram, institutions at “100” have enrollments represented in the 2017 tax data that are equal to 2017 Fall enrollments in the IPEDs data. Institutions to the left of 100 in Figure 2 have enrollments counts that are lower in the tax data relative to the education data and institutions to the right of 100 have enrollments that are higher in the tax data. As shown in Figure 1, most students are at schools where the reporting in the tax data exceeds the IPEDs Fall enrollments. This suggests that many schools are reporting on all their students. This is similar to the finding by Chetty et al. (2017) in their work with the College Scorecard.

¹⁷ In the figure only, we have excluded students at schools where total enrollment is less than 200 and capped the share at 200 to ease illustration.

In the tables that follow, we will assume all schools reporting enrollments (unique F1098-Ts) in the tax data of less than 100 percent of Fall enrollments in IPEDs are not universally reporting and all schools reporting more than 115 percent are universally reporting. This will err on the side of identifying a school as not universally reporting even if they are universally reporting but have no net additional students from spring and fall enrollments. For schools between 100 and 115 percent, we will assume that those filing 5 percent of their reports for student with scholarships in excess of tuition are universally reporting. This results in 1,656 institutions being deemed universal and 865 institutions being deemed not universal.¹⁸

¹⁸ There were 3.5 million students with scholarships in excess of tuition for whom there are F1098-Ts filed in 2017; 85 percent of them were at universal schools under our preferred assignment. We tested the sensitivity of our assignment by both lowering the threshold for automatic universal reporting to 110 percent and including any institution as universal between 100 and 110 if the institution filed at least 1 percent of their reports for students with scholarships greater than tuition and fees. The assignment of universal and not universal were not sensitive to the values that we chose. The alternative assignment would shift 3 percent of schools and 2 percent of students into the universal bin but moved very few students with full tuition and fee scholarships (less than 0.3 percent).

Figure 1: Distribution of Institutions by Share of 2017 Enrollment Represented in Tax Data Relative to IPED Fall Enrollment

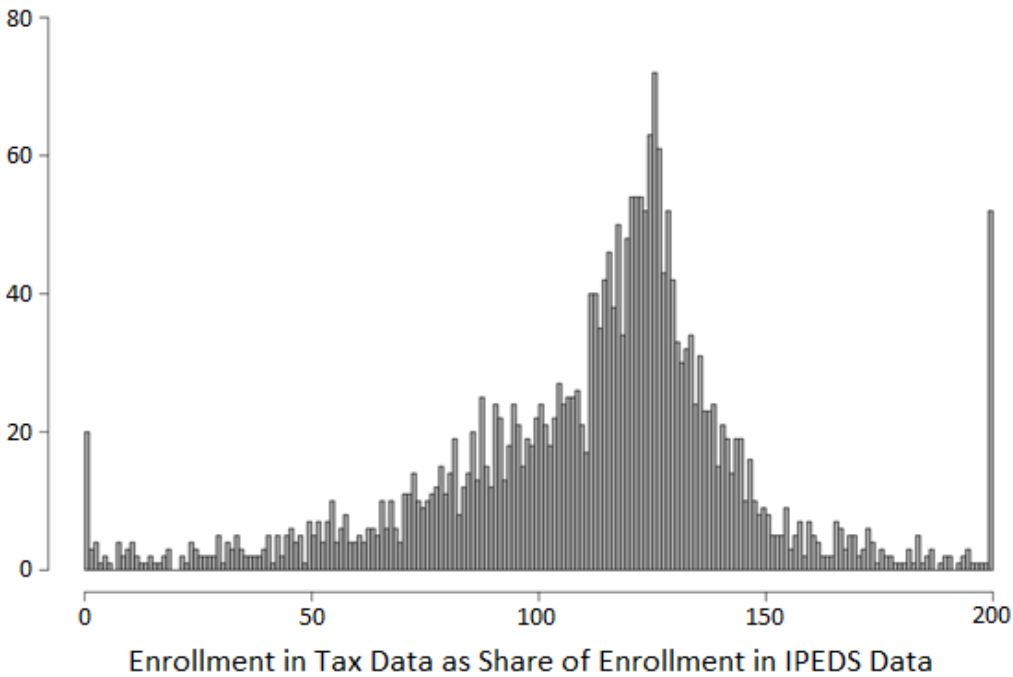


Table 5 shows the number of institutions and number of students by level and control for the universal schools and not universal schools as well as other characteristics reported by IPEDs. Using our estimation method, 75 percent of private non-profit and 75 percent of private for-profit schools file a F1098-T for all their students while only 65 percent of public 4-year schools and only 52 percent of 2-year public schools file a F1098-T for all their students. The characteristics of universal versus non-universal reporters are similar in most other measures in IPEDS by level and control. There are no obvious differences in institutional characteristics that might bias our take-up rate estimates. Importantly, as reported by IPEDS (not the tax data), the average cost of attendance, percent of undergraduates with scholarships and grants, and average scholarships are similar across universal and non-universal reporters.

Table 5: Undergraduate Institution Characteristics (IPEDS) by Whether or not they Universally Report in Tax Data¹

Reporter Type	All	Private Non-Profit	Public 4-Year	Public 2-Year	Private For-Profit
Universal Reporter					
Number of institutions	2,927	1,104	306	483	1,020
Fall undergraduate enrollment (millions)	8.2	2.0	3.4	2.3	0.5
Average fall undergraduate enrollment	2,813	1,793	11,161	4,786	497.0
Average undergraduate cost of attendance (COA) (in-state) ²	\$36,863	\$43,807	\$23,214	\$15,238	\$35,987
(Standard deviation average COA)	(\$15,202)	(\$12,832)	(\$4,589)	(\$2,936)	(\$10,365)
% of undergraduates with scholarships/grants	79%	81%	81%	77%	78%
Average undergraduate scholarships or grants ³	\$8,720	\$14,878	\$7,350	\$4,727	\$4,388
Average Pell Grants	\$3,922	\$3,719	\$4,150	\$4,222	\$3,940
Not Universal Reporter					
Number of institutions	1,352	374	168	441	344
Fall undergraduate enrollment (millions)	4.5	0.7	1.5	2.0	0.1
Average fall undergraduate enrollment	3,399	1,907	9,331	4,588	377
Average undergraduate cost of attendance (COA) in-state ²	\$32,025	\$42,040	\$21,155	\$14,396	\$41,117
(Standard deviation average COA)	(\$18,368)	(\$18,378)	(\$3,796)	(\$3,365)	(\$15,015)
% of undergraduates with scholarships/grants	73%	66%	79%	79%	71%
Average undergraduate scholarships or grants ³	\$7,447	\$13,755	\$6,688	\$4,825	\$4,324
Average Pell Grants	\$3,868	\$3,347	\$4,239	\$4,297	\$3,742

¹Universal institutions are those that either have reported scholarships in excess of tuition and fees for more than 5 percent of their reported enrollments in the tax data or have reported enrollments in the tax data that are at least 15 percent higher than the 2017 Fall enrollments as reported on IPEDs.

²Average cost in-state is calculated using only institutions that reported values

³Average scholarship and grant amounts are only calculated for students receiving scholarships.

Table 6 shows the distribution of income for undergraduate students attending a universal school who have a valid SSN¹⁹ by level and control of the institution. The top bank show all students and the lower banks separate dependent students and non-dependent students. We are focusing on undergraduate students because only students in the first four years of postsecondary school are eligible for an AOTC and we are limiting our discussion to universal schools so that our tables are not biased by students who do not receive a F1098-T, most of whom attend 2-year schools and are lower income. The tax definition

¹⁹ Less than 200,000 students had invalid SSNs (SSNs that cannot be found in the Social Security Administration's master file). Students without valid SSNs are not included in the table because they cannot be matched to a F1040. Students with valid SSNs that are not found on a F1040 are assumed to be low-income nonfilers.

of dependency is being used in Table 6 (as opposed to the dependency definition that is used by the Department of Education for the purpose of determining federal financial aid). For dependent students, the adjusted gross income (AGI) shown is the AGI of the return on which the dependent was claimed (referred to as parents' income). For non-dependent students, the AGI in the table is the AGI on the student-taxpayer's own return. Nonfilers (less than 5 percent of all students) are included in the table under the lowest income tax bracket and included with non-dependents.²⁰

Table 6: Distribution of Student Income by Level, Control and Dependency Status for Undergraduate Students Enrolled in Schools that Universally Report¹

2017 AGI / Level and Control ²	All		Private, Non-Profit		Public 4-Year		Public 2-Year		Private, For Profit	
	(000)	(%)	(000)	(%)	(000)	(%)	(000)	(%)	(000)	(%)
All Students										
\$0 to \$25K	4,709	34	748	27	1,755	31	1,294	40	616	46
\$25K to \$50K	2,789	20	503	18	1,010	18	756	23	342	26
\$50K to \$100K	2,746	20	603	22	1,098	20	630	20	242	18
\$100K to \$200K	2,430	18	593	21	1,144	20	429	13	107	8
Over \$200K	1,104	8	337	12	574	10	114	4	20	1
Total	13,779	100	2,784	100	5,582	100	3,223	100	1,327	100
Dependent students										
\$0 to \$25K	876	12	157	9	379	11	231	15	66	18
\$25K to \$50K	1,290	17	238	14	550	16	334	22	95	26
\$50K to \$100K	2,042	27	438	26	883	26	472	31	114	31
\$100K to \$200K	2,208	30	532	31	1,074	31	382	25	71	20
Over \$200K	1,067	14	326	19	560	16	106	7	16	4
Total	7,483	100	1,692	100	3,446	100	1,525	100	362	100
Not dependent students										
\$0 to \$25K	3,834	61	590	54	1,376	64	1,064	63	550	57
\$25K to \$50K	1,499	24	266	24	460	22	422	25	247	26
\$50K to \$100K	704	11	165	15	215	10	158	9	128	13
\$100K to \$200K	223	4	61	6	70	3	47	3	36	4
Over \$200K	37	1	10	1	14	1	7	0	4	0
Total	6,296	100	1,092	100	2,135	100	1,698	100	965	100

¹Public schools reporting as a system that does not differentiate between 2- and 4-year campuses are not shown separately but are included in the total. Nonfilers are included in the table in the lowest income class and are classified as not dependent. The 2017 filing thresholds were \$10,400 for single filers under age 65 and \$20,800 for joint filers under age 65.

²Income for tax dependent students is the income on the return on which they appear/

²⁰In general, parents of dependent students are much more likely to file even if they are low-income because of the EITC.

Some observations from Table 6. In general, the income of parents of dependent students is much higher than the income of nondependent students and the tax filing population as a whole. Fourteen percent of dependent undergraduate students come from families with AGI over \$200,000. In contrast, less than 1 percent of nondependent undergraduate students and only about 5 percent of all tax filers had AGI of \$200,000 or more in 2017.²¹ Only 29 percent of dependent undergraduate students came from families with income under \$50,000 compared to 85 percent of non-dependent students. The highest income distribution shown in Table 6 is for dependent students attending private 4-year non-profit institutions; 19 percent with income over \$200,000. The lowest income distribution is for non-dependent students attending public 2-year institutions; 57 percent with income under \$25,000.

Table 7 shows the percent of all undergraduate students receiving an education credit (AOTC or LLC) by income and by level and control of school for universal reporters. This table is for all undergraduate students attending a school with universal reporting, not just those eligible for a credit. It gives a sense of the coverage of the education credits independent of the law governing the credits. Forty-five percent of all undergraduate students attending universal schools received an education credit. The credits cover a greater share of students enrolled at private schools, both for-profit (49 percent) and non-profit (49 percent) than students enrolled at public schools, especially public 2-year schools where only 38 percent of students received an education credit. Even within the same income groups the coverage is higher for middle-income students attending private institutions (65 percent) than middle-income families attending public 2-year schools (48 percent). Some of the difference in the coverage rates may be due to the tax law governing eligibility for the credits.

²¹ Statistics of Income, Table 1.1. TY 2017 Individual Income Tax Publication 1304. Table 1.1 includes 9.6 million dependent filers (see Table 1.7) but excluding dependents does not affect the result. 95 percent of all tax returns and 95 percent on nondependent tax returns had AGI under \$200,000 in 2017.

Table 7: Education Credit Claim Rates by Student Income and Institution Level and Control¹

2017 AGI / Level and Control	All		Private, Non-Profit		Public 4-Year		Public 2-Year		Private, For-Profit	
	Students (000)	Claim Rate (%)	Students (000)	Claim Rate (%)	Students (000)	Claim Rate (%)	Students (000)	Claim Rate (%)	Students (000)	Claim Rate (%)
\$0 to \$25K	5,373	37	1,016	40	2,075	39	1,289	31	668	44
\$25K to \$50K	3,370	54	746	62	1,259	55	752	43	415	57
\$50K to \$100K	3,424	57	905	61	1,363	59	627	48	336	55
\$100K to \$200K	2,921	48	817	48	1,336	51	426	43	167	40
Over \$200K	1,253	1	410	1	635	1	113	1	31	1
Total	16,341	44	3,894	47	6,669	45	3,208	38	1,618	48

¹ The table is for undergraduate students attending schools that universally report (provide a F1098-T to all enrolled students). It shows LLTC or AOTC claims divided by undergraduate student enrollments regardless of student eligibility for either credit. Schools that do not separately report 2-year versus 4-year programs are included in the total but not the detail.

Table 8 considers take up rates for AOTC eligible students to find out if the limiting factor on credit coverage is a matter of law or a matter of differential take up by otherwise eligible students. To be eligible for the AOTC, a student must be in the first 4 years of postsecondary school and may not have received the AOTC for more than 4 years. We proxy this requirement by limiting the table to students aged 18 to 21. In addition, students must be enrolled at least half-time and have income below the phaseout range. We apply these limits using income from the F1040 and half-time status from the F1098-T.

The final eligibility criteria are that students pay qualified expenses (tuition, fees, or books) net of scholarships. Table 8 does not limit eligibility to students with qualified expenses since students can act to preserve eligibility if they have scholarships that could be used for tuition and fees. As discussed in Section 1C, the IRS outreach was specifically targeted at scholarship recipients; explaining through tip boxes and examples that if they included their scholarships in income (used them for living expenses, childcare, or other non-excludable expenses) then they could preserve their eligibility for the AOTC. The only stipulation is that scholarships by their terms must be allowed to be used for expenses other than

tuition and fees. The most prevalent scholarships for low-income students are Pell grants and supplementary Educational Opportunity Grants (SEOGs), both of which may be used for living expenses. According to the College Board, in academic year 2015-2016, the average total cost for dependent students attending a 2-year public college was \$15,820, the average tuition at a 2-year public college (in district) was \$3,660, and the average grant aid received was \$6,490.²² On average these students receive grant aid greater than tuition and fees but much less than the total cost of attendance. Only 1.5 percent of students receive a scholarship that covers the full cost of attendance.²³ These figures suggest that most public 2-year college students may be eligible for the AOTC. The difficulty is in conveying to students that they would be better-off, pay less net tax or increase their refund, by including some of their scholarships in income.

²² Data from Figures 3 and Figure 11, Baum et.al (2019).

²³ Kantrowski (2019)

Table 8: AOTC Take-Up Rates for 18- to 21-year-old Eligible Students who Received a F1098-T¹

2017 AGI / Level and Control	All Eligible 18- to 21-year-old Students				Students with Scholarship < Tuition and Fees				Students with Scholarships >= Tuition and Fees			
	Take Up	Count	With AOTC	No AOTC	Take Up	Count	With AOTC	No AOTC	Take Up	Count	With AOTC	No AOTC
	(%)	(000)	(000)	(000)	(%)	(000)	(000)	(000)	(%)	(000)	(000)	(000)
All Institutions												
nonfiler	0	91	0	91	0	58	0	58	0	33	0	33
\$0 to \$25K	43	940	409	531	58	547	315	233	24	392	94	299
\$25K to \$50K	52	589	308	280	71	330	233	97	29	258	75	183
\$50K to \$100K	70	795	556	239	80	616	493	122	35	179	63	117
\$100K to \$200K	80	803	641	161	85	723	611	112	38	80	30	50
Total	60	3,217	1,914	1,303	73	2,274	1,653	622	28	943	262	681
Private Not for Profit, 4 Year												
nonfiler	0	18	0	18	0	15	0	15	0	4	0	4
\$0 to \$25K	54	140	75	65	60	112	67	45	29	28	8	20
\$25K to \$50K	68	102	69	33	76	81	61	19	36	22	8	14
\$50K to \$100K	79	165	130	35	85	142	120	22	42	22	9	13
\$100K to \$200K	84	178	150	28	88	164	144	20	43	14	6	8
Total	70	604	424	180	76	514	393	121	35	90	32	59
Public, 4 Year												
nonfiler	0	37	0	37	0	23	0	23	0	14	0	14
\$0 to \$25K	44	394	174	220	59	211	124	87	27	183	50	133
\$25K to \$50K	53	271	143	128	73	138	100	38	32	133	43	90
\$50K to \$100K	70	383	268	115	81	285	232	53	37	98	36	61
\$100K to \$200K	80	425	340	85	85	377	321	56	39	48	19	30
Total	61	1,510	925	586	75	1,034	777	257	31	477	148	329
Public, 2 Year												
nonfiler	0	22	0	22	0	11	0	11	11	11	0	11
\$0 to \$25K	35	274	97	177	54	125	67	58	20	148	29	119
\$25K to \$50K	40	148	60	88	62	65	40	24	23	84	19	64
\$50K to \$100K	60	165	100	66	73	119	87	32	28	46	13	33
\$100K to \$200K	73	122	89	33	77	110	85	25	32	12	4	8
Total	47	732	345	387	65	430	280	151	22	302	66	236
Private For Profit												
nonfiler	0	7	0	7	0	6	0	6	0	1	0	1
\$0 to \$25K	53	67	35	32	56	62	34	27	21	6	1	4
\$25K to \$50K	60	28	17	11	63	26	17	10	23	2	0	2
\$50K to \$100K	71	22	16	6	73	21	15	6	31	1	0	1
\$100K to \$200K	78	13	10	3	79	13	10	3	29	0	0	0
Total	57	138	79	59	60	128	77	52	21	10	2	8

¹The table only includes students aged 18 to 21 with income below the thresholds for claiming an AOTC and enrolled at least half-time at a school that sent an F1098-T to all their students.

As seen in Table 8, the overall take-up rate for the AOTC among eligible 18- to 21-year-old students who receive a F1098T is 60 percent. It is generally higher for students attending private, not-for-profit, 4-year institutions (70 percent) than for students attending public 4-year school (61 percent) or public 2-year school (47 percent). It is also generally higher for higher income families; 80 percent for families with \$100,000 to \$160,00 but 43 percent for filing families with less than \$25,000 of AGI. The highest take-up rates (without regard to scholarship levels, first column) are for the highest-income students attending private 4-year schools, at 84 percent. The lowest take up rates (without considering scholarship levels, first column) are for low-income students attending public 2-year schools, only 35 percent.

Scholarship levels make a very large difference. Although some students with scholarships are taking an AOTC, many are not. More outreach may be necessary to increase take-up rates among scholarship recipients. Take up rates approach 90 percent for high-income, 4-year private school students with scholarships less than tuition and fees but are only 20 percent for low-income students 2-year public school students with scholarships greater than tuition and fees. Tuition and fees represent only a small portion of the total cost of attendance for 2-year public school students. These costs can be covered by Pell grants and doing so would allow many of these students to also receive an AOTC. Some students with scholarships greater than tuition and fees are not optimizing their allocation of scholarships between taxable and nontaxable sources. This is not surprising given the complex nature of the required calculations.

Lower take-up rates for students with scholarships exceeding tuition and fees is not just a low-income issue. Families across the income spectrum generally have lower AOTC take-up rates if they have scholarships that exceed tuition and fees. Private 4-year college take up rates for the AOTC are 76 percent for students with scholarships less than tuition and fees but only 35 percent for student with

scholarships greater than tuition and fees. Public 4-year college take up rates for the AOTC are 75 percent for students with scholarships less than tuition and fees but only 31 percent for student with scholarships greater than tuition and fees. However, over 80 percent of the students with scholarships greater than tuition and fees attend public schools and over 70 percent have income under \$50,000. Therefore, the burden of this barrier falls disproportionately on public school students, especially those who are lower income.

5. Conclusion

Education tax credits can be an important part of a student's financial aid package, potentially enabling them to attend postsecondary school or stay in school. In this study we have estimated that 44 percent of students who receive an information return claim an education credit (AOTC or LLC) and 60 percent of AOTC-eligible 18- to 21-year-olds claim a credit, but the take-up rates for the AOTC are very different by institution level and control, and by student income. Specifically, we find that low-income students attending public 2-year schools have much lower take-up rates for the AOTC (35 percent) than middle-income students attending private 4-year schools (79 percent).

We identify a specific set of institutional barriers that likely contributes to these differences affecting students who receive scholarships in excess of tuition and fees. First, schools are not required to send the relevant information return, a Form 1098-T, to these students, which means students may lack the information needed to claim the credit. Second, these students must follow a counter-intuitive process for claiming an AOTC in which they elect to report a portion of their scholarship as taxable income.

Low-income public-school students are much more likely to receive scholarships that exceed tuition and fees. But tuition and fees only represent a small part of the cost of attending college. Students can

optimize how they pay for all the cost of attending college and receive scholarships and an AOTC but the method for preserving eligibility for the AOTC is confusing and may be creating barriers. As described in this paper, the IRS has tried to both ensure compliance as well as reach out to low-income students that may be foregoing credits for which they are eligible. But these efforts may not be enough.

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