



The Impact of Education Tax Benefits on College Completion

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ABSTRACT

This paper uses a nationally representative sample from the 2004–09 Beginning Postsecondary Students (BPS) survey to examine the effect of education tax benefits on college completion. The paper employs a propensity score matching approach to correct for differences between eligible and ineligible students. Results suggest that tax benefits increase the likelihood of completing a college degree by 8 percentage points. The effect of tax benefits is largest for students who attended private and four-year institutions.

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1. Introduction

Beginning in the late 1990s, the U.S. federal government adopted a new form of student financial aid: education tax benefits. Since that time, there have been sharp increases in spending on these benefits and the total number of recipients. Between 1997 and 2013, total federal spending on education tax benefits increased from \$2.2 to \$17.8 billion (a factor of 8.0, in 2013 dollars). During the same period, the number of recipients grew from 2 to 12 million, 38% higher than the number of Pell Grant recipients, the primary federal aid program (The College Board, 2013).

The vast expansion of education tax benefits has attracted little scholarly attention. Relatively few studies have examined the enrollment effects of tax benefits and these studies have reached different conclusions (Bulman & Hoxby, 2015; LaLumia, 2012; Long, 2004; Turner, 2011a). Except for LaLumia (2012), no study has investigated the effect of tax benefits on college completion. Concerns about college completion, among both policy makers and

academics, have grown over the last few years. The substantial growth in enrollment rate over the last four decades has not been accompanied by a comparable increase in completion rate. Data from the U.S. Department of Education shows that among full-time students who were enrolled for the first time in 4-year institution in 2005, only 38.6% completed their degree within 4 years; 54.3% have finished within 5 years; and 58.3% have finished within 6 years. According to OECD (2013), the U.S. has one of the highest dropout rates among all industrialized countries. More than 40% of U.S. students in postsecondary education stop short of a degree, compared to less than 25% in France, Japan, Denmark, and Finland.

Although there is a growing literature on the impact of federal aid on college completion (Bettinger, 2004; Bound, Lovenheim, & Turner, 2010; Castleman & Long, 2013; Dynarski, 2003), most of this research is based on programs that are different from education tax benefits (Long, 2004). More specifically, the generalizability of findings from existing research to education tax benefits is limited because of both the unique structure of tax benefits and the characteristics of students receiving these benefits. Students who receive tax benefits are different from the typical recipients of federal aid. Unlike traditional aid programs

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that mainly target students from low-income families, education tax benefits focus on students from middle and high-income households (Dynarski, 2007; Dynarski & Scott-Clayton, 2006a, 2006b). For instance, in 2011, more than 80% of Pell grant recipients came from families with adjusted gross income of \$50,000 or less compared with 48% of students who received education tax credits and only 12% of those who received tuition deduction.

Furthermore, education tax benefits require a different set of eligibility criteria compared to other aid programs. Traditional federal aid programs require students to apply for aid by completing the Free Application for Federal Student Aid (FAFSA). Student eligibility for aid is then determined based on the information provided in FAFSA. In contrast, individuals who claim education tax benefits are subject to different eligibility criteria based on factors such as income bracket, marginal tax rate, filing status, and tax liability. Further, there is a “time gap” between paying education expenses and receiving the tax benefits. Unlike traditional aid programs that provide funding for students at the time of attending college, education tax benefits are not realized until several months after enrollment, when filing tax returns.

Due to this unique structure of education tax benefits, its impact on college outcomes is ambiguous. On the one hand, standard human capital theory predicts that education tax benefits will increase the likelihood of completing a college degree. Individuals decide to attend college if the present value of benefits resulting from obtaining a college degree is greater than the cost of attending college (including foregone earnings). Since education tax benefits reduce the price of higher education, it may encourage more students to obtain a college degree, especially those who are income constrained.

On the other hand, education tax benefits are not randomly assigned to recipients. Rather, these tax benefits are received mainly by students from middle and upper-income families who may have completed their college degree regardless of receiving tax benefits. Because of this selection problem, the causal impact of tax benefits on college outcomes could be contaminated by unobservable differences between recipients and non-recipients of tax benefits. These differences may include individual characteristics such as taste for education, motivation, ability, and other cognitive and non-cognitive skills.

This paper examines the impact of education tax benefits on college completion using a restricted-use dataset from the 2004–09 Beginning Postsecondary Students (BPS) survey. The paper employs a Propensity Score Matching (PSM) procedure to correct for the endogeneity of education tax benefits. While PSM doesn't entirely eliminate bias resulting from unobserved differences between eligible and ineligible students, it has two main advantages over other non-experimental approaches. First, the PSM estimator is less susceptible to misspecification bias since it doesn't impose any restrictions on the functional form of the outcomes equation. Second, and most importantly, PSM focuses attention on the covariate balance between the treatment and the control groups by requiring a sufficient overlap in the distribution of propensity scores among eligible and ineligible students. In short, PSM pro-

vides a comparison group of ineligible students that is as similar as possible, in terms of observable characteristics, to the treatment group of eligible students.

Empirical results suggest that education tax benefits increase college completion, within 6 years of initial enrollment, by 8 percentage points. Results also show that a one hundred dollar increase in the amount of tax benefits increases completion by 0.3 percentage points. These findings, however, vary by students and institutional characteristics. In particular, the evidence suggests that education tax benefits increase the completion gap between students attending private four-year institutions and other less-affluent students.

The paper contributes to the prior literature in two main ways. First, it is one of the few papers that examine the effects of education tax benefits on college outcomes. Second, the paper employs a very rich data set that allows for better measurement of eligibility to education tax benefits than does prior research. In particular, the BPS data includes, among other things, detailed information on student/parent Adjusted Gross Income (AGI), education expenses, sources of financial aid, enrollments status, degree level, and program of study.

The remainder of the paper is organized as follows. Section 2 describes eligibility requirements for education tax benefits and reviews the literature on student responses to these tax benefits. Section 3 presents the data and provides descriptive statistics for the sample. Section 4 introduces the empirical strategy and discusses the main findings. In Section 5, I employ several robustness checks, and in Section 6, I analyze the heterogeneous effects of education tax benefits. Discussion and conclusion are introduced in Section 7.

2. Federal education tax benefits

2.1. Eligibility requirements

The 1997 Tax Relief Act created two education tax credits: the Hope Tax Credit (HTC)¹ and the Lifetime Learning Tax Credit (LLTC). Tuition and Fees Deduction (TD) was introduced as part of the 2001 Economic Growth and Tax Relief Reconciliation Act. The three tax benefits are intended to cover student education expenses such as tuition and fees, in addition to any other expenses that are necessary for college enrollment.

Table 1 summarizes eligibility requirements for each type of the three tax benefits for tax years 2003 through 2006, which are used to assign eligibility for tax benefits in the analysis. In 2003, the HTC was available to single and joint filers with a modified Adjusted Gross Income (AGI) of \$51,000 or less and \$103,000 or less, respectively. To be

¹ In 2009, the HTC was modified replaced by the American Opportunity Tax Credit (AOTC). Four major changes were introduced to the HTC. First, the maximum tax credit per student increased from \$1500 under the HTC to \$2500 under the AOTC (100% of the first \$2000 of education expenses and 25% of the next \$2000). Second, the AOTC increased the income eligibility for single filers from \$50,000 to 90,000 and from \$100,000 to \$180,000 for joint filers. Third, the AOTC can be claimed for four years of postsecondary education instead of two years under the HTC. Fourth, unlike the HTC which was non-refundable, 40% of the AOTC is refundable.

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