THE HAMILTON PROJECT

POLICY PROPOSAL 2017-03 | APRIL 2017

Increasing College Completion with a Federal Higher Education Matching Grant

David J. Deming

MISSION STATEMENT

The Hamilton Project seeks to advance America's promise of opportunity, prosperity, and growth.

We believe that today's increasingly competitive global economy demands public policy ideas commensurate with the challenges of the 21st Century. The Project's economic strategy reflects a judgment that long-term prosperity is best achieved by fostering economic growth and broad participation in that growth, by enhancing individual economic security, and by embracing a role for effective government in making needed public investments.

Our strategy calls for combining public investment, a secure social safety net, and fiscal discipline. In that framework, the Project puts forward innovative proposals from leading economic thinkers — based on credible evidence and experience, not ideology or doctrine — to introduce new and effective policy options into the national debate.

The Project is named after Alexander Hamilton, the nation's first Treasury Secretary, who laid the foundation for the modern American economy. Hamilton stood for sound fiscal policy, believed that broad-based opportunity for advancement would drive American economic growth, and recognized that "prudent aids and encouragements on the part of government" are necessary to enhance and guide market forces. The guiding principles of the Project remain consistent with these views.

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NOTE: This policy proposal is a proposal from the author. As emphasized in The Hamilton Project's original strategy paper, the Project was designed in part to provide a forum for leading thinkers across the nation to put forward innovative and potentially important economic policy ideas that share the Project's broad goals of promoting economic growth, broad-based participation in growth, and economic security. The author(s) are invited to express their own ideas in policy proposal, whether or not the Project's staff or advisory council agrees with the specific proposals. This policy proposal is offered in that spirit.

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Abstract

A college degree is more necessary than ever. However, with college prices rising rapidly, higher education is becoming less attainable for many. Growing public concern about college costs has led several states to propose or enact "free college" plans. Free college is politically popular, yet lower prices do not directly address the main crisis in U.S. higher education—low completion rates. Although college attendance rates have risen steadily in the United States for the past two decades, bachelor's degree attainment has not improved at all. Increasing college completion rates will require more than just cutting prices—we must also improve the quality of the education students receive, and help them to complete their program of study and earn a degree.

A growing body of evidence points to the importance of academic supports and mentoring for student persistence and degree completion. Academic supports work, but are costly, and decades of state higher education budget cuts have left public institutions with large classes taught by less-qualified instructors, and little in the way of counseling, mentoring, and other core services.

This paper proposes a 1:1 federal matching grant for per pupil spending by public institutions in states that implement free college proposals. The purpose of the proposed program is to provide states with an incentive to rein in college costs, while maintaining or increasing spending levels so that quality does not suffer. The matching grant would be restricted to the core spending categories of instruction and academic support. To ensure that federal funds are spent wisely, the matching grant includes a maintenance-of-effort provision and a rule that restricts administrative spending to its preprogram spending share. Cost estimates for the program range dramatically depending on the number of states that commit to making college tuition-free. Yet even if the program were adopted in all 50 states, the cost to the federal government would be no more than one third of current spending on federal financial aid programs.

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Chapter 1. Introduction

The listed, or "sticker," price of a four-year college education in the United States has risen faster than inflation for three consecutive decades (Ma, Pender, and Welch 2016). Understandably, the public has become much more concerned about college costs. According to a Pew survey, the share of respondents agreeing that "most people can afford to pay for college" dropped from 39 percent in 1985 to only 22 percent in 2011 (Pew Research Center 2011).

Despite the growing economic burden of paying for higher education for many families, college attendance rates have continued to rise, and the economic return to a college degree has never been higher (Autor 2014; Avery and Turner 2012).

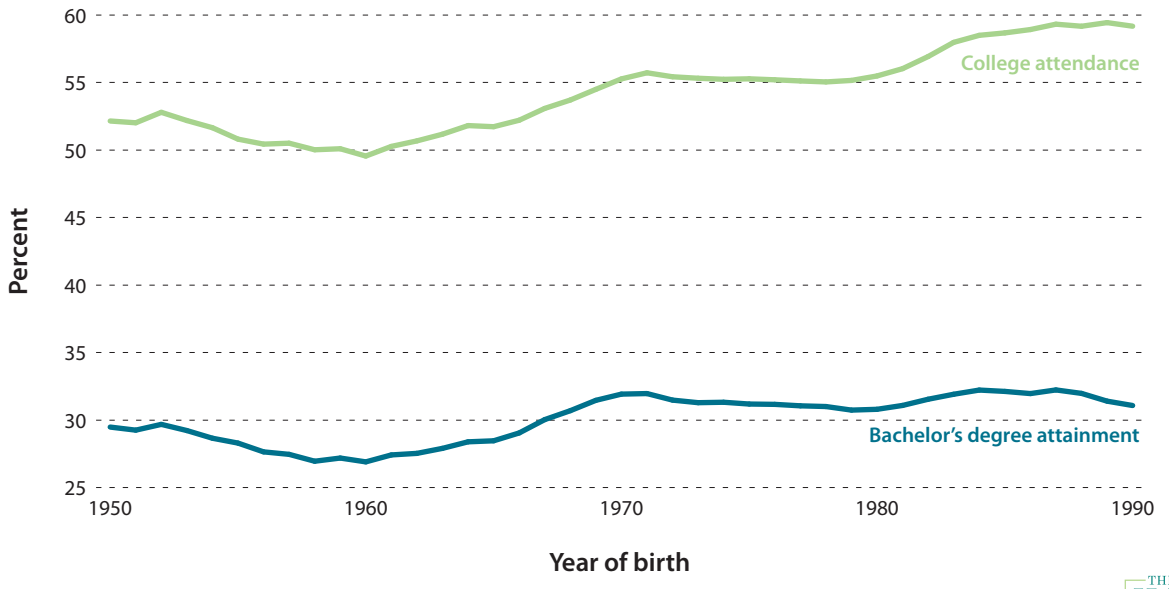
However, this has not translated into rising college degree attainment, with its associated labor market benefits. Figure 1 presents college attendance and bachelor's degree attainment rates by age 25 of successive U.S. birth cohorts from 1960 to 1990.[1] Although college attendance rates have risen steadily, bachelor's degree attainment by age 25 has been relatively flat for the past two decades.

The current approach to promoting college attainment is not working, particularly for students from low-income families. Currently only 30 percent of first-year undergraduate Pell Grant recipients complete a bachelor's degree within six years of college entry (Baum and Scott-Clayton 2013). In a cohort born between 1979 and 1982, only 9 percent of youths from the bottom quartile of the family income distribution completed a four-year college degree, compared to 54 percent of youths in the top family income quartile (Bailey and Dynarski 2011). Moreover, *growth* in college completion rates over time has been much slower for low-income families (Bailey and Dynarski 2011).

Income gaps in college completion have widened despite the fact that financial aid has become relatively *more* generous for low-income families, due primarily to the expansion of the federal Pell Grant program. Total inflation-adjusted expenditures on federal Pell Grants increased from $6.9 billion in 1980 to $30.7 billion in 2014. Need-based aid from state grant programs also increased from $374 million to $573 million over the same period (Ma, Pender, and Welch 2016).

FIGURE 1.

College Attendance and Bachelor's Degree Attainment Rates by Age 25, by Birth Cohort



Source: Census Bureau 2000–15.

Note: Figure shows share of each birth cohort that attended at least one year of college and the share that completed at least a bachelor's degree, respectively.

The pattern of rising college attendance but stagnant attainment is hard to explain if the main problem with U.S. higher education is that "sticker shock" discourages students from attempting college. Nonetheless, the sense that college is necessary—yet unaffordable—has led to increased political support for programs that reduce college costs. This includes the growing number of proposals to make college tuition-free for students meeting certain eligibility requirements. Six states have enacted "free" college plans, and they are under consideration by legislatures in another 17 states as of November 2016 (Pingel, Parker, and Sisneros 2016). Dozens of cities—ranging from Kalamazoo to Pittsburgh to New Haven—have enacted "college promise" programs that offer free college tuition to students graduating from city public high schools.

One criticism of free college plans is that they fail to ease the financial burden faced by low-income students. This is because most of these plans are designed as "last dollar" scholarships, meaning they cover unmet need only after accounting for other sources of financial aid such as the federal Pell Grant. Thus students who qualify for the Pell Grant and other need-based aid are often already attending public institutions tuition-free and paying no tuition. Chingos (2016) calculates that the benefits of free college proposals—in terms of dollars saved—are greater for higher-income families, because they attend higher-priced institutions and do not receive federal aid.

FREE COLLEGE MUST BE PAIRED WITH ACADEMIC SUPPORTS TO ENSURE THAT QUALITY DOES NOT SUFFER

How can we increase degree completion rates, particularly for low-income students? A large and growing body of evidence suggests that there is a strong causal relationship between per student spending by an institution and degree completion, particularly when the spending is wisely allocated.

Contrary to popular perception, most students attend public colleges and universities that are both minimally selective and close to home. These institutions are heavily reliant on state funding, which has declined markedly in recent years. After adjusting for inflation, total state appropriations for higher education in the United States grew by less than 4 percent between 1990 and 2015 (State Higher Education Executive Officers Association [SHEEO] 2016). Over the same period, full-time equivalent (FTE) enrollment grew by 45 percent (SHEEO 2016). As a result, the same amount of funding must now serve many more students, and the quality of students' educational experiences reflects this belt-tightening. Due to budgetary restrictions, less-selective public institutions often have large classes and provide little in the way of academic counseling, mentoring, and other student supports.

A number of recent, high-quality studies find large impacts of student supports and mentoring on persistence and degree completion (Angrist, Lang, and Oreopoulos 2009; Barrow et al. 2014; Bettinger and Baker 2014; Carrell and Sacerdote 2013; Scrivener et al. 2015). Many studies have found that financial aid works best when it is well-targeted and paired with student supports (Angrist, Hudson, and Pallais 2014; Deming and Dynarski 2010; Dynarski 2003). Increased academic support should thus be a high priority for public institutions that receive additional resources.

Despite its limitations, free college has three main virtues. First, the opportunity to attend college tuition-free is transparent and easy to understand for students and parents who are worried about college costs. Second, political momentum for free college already exists, in part because rising tuition prices are highly salient to families and to legislators, and because the benefits of free college are widely shared. Third, even if it has no impact on enrollment or degree completion, free college helps relieve the financial burden felt by students and their families.

Yet free college alone will not solve America's college completion crisis. Without increased funding and higher-quality education, students will not receive the support they need and more students than ever will drop out prior to earning a degree.

A FEDERAL MATCHING GRANT FOR FREE COLLEGES

In this paper, I propose a federal matching grant for public institutions in states that implement free college plans. I outline the plan briefly here and include more detail in chapter 3. The plan calls for a 1:1 federal match on the first $5,000 of net per student spending in all public postsecondary institutions that commit to making college tuition-free for eligible students. Specifically, the federal government would pay public postsecondary institutions $1 for every $1 in state spending per full-time equivalent student, after subtracting any revenue from tuition and fees obtained from ineligible students (e.g., out-of-state enrollees). A federal matching grant would increase the return on state investment in higher education. This incentive structure has been used successfully to boost state Medicaid spending (e.g., Baicker and Staiger 2005; Kane, Orszag, and Apostolov 2005).

The matching grant program would have several important conditions. First, it would apply only to public institutions that commit to making college tuition-free for all full-time in-state students who have not previously earned a degree.

Second, the federal match would apply only when free college is truly universal. Programs that impose minimum high school grade point average (GPA) or admissions test standards would be ineligible for the federal match. The match would apply equally to two-year and four-year institutions, as long as they make college tuition-free.

Third, the federal matching grant is restricted to the core spending categories of instruction and academic support. Administration, capital maintenance, and other spending categories are not eligible for matching funds. This restriction would be enforced through a maintenance-of-effort provision that would prevent institutions from substituting spending across categories in response to the grant. Furthermore, to combat the growth of administrative spending in higher education, the program would include a provision that restricts administrative spending to its preprogram spending share. I discuss these design details further in chapter 3.

Finally, the program would include a pilot program offering higher than 1:1 match rates for investments that are proven to increase persistence and degree completion among low-income students. One example is a program that pairs targeted financial aid to low-income students with mentoring and other forms of academic support for students (Angrist, Lang, and Oreopoulos 2009; Barrow et al. 2014; Carrell and Sacerdote 2013; Clotfelter, Hemelt, and Ladd 2016; Page, Castleman, and Sahadewo 2016; Scrivener et al. 2015).

The proposed federal matching grant would have two important advantages over existing free college plans. First, the federal matching grant would disproportionately benefit low-income students who tend to enroll in less-selective institutions with lower per pupil spending. Design features such as the increasing match rate for targeted, need-based financial aid would also ensure the progressivity of the policy.

Second, the proposal would ensure that tuition-free college expands enrollment without reducing the quality of the core academic functions of instruction and academic support. The worsening condition of state higher education budgets around the country raises concerns that free college will be financed by reductions in per student spending, which would lower college completion rates (Bound, Lovenheim, and Turner 2012; Bound and Turner 2007; Deming and Walters 2017). This proposal ensures that states can commit to providing a tuition-free college education while maintaining quality and ensuring that students receive the support they need to succeed in college and in the labor market.

A FEDERAL–STATE PARTNERSHIP

The proposed matching grant provides a unique opportunity for the federal government to work with states to increase U.S. postsecondary attainment. Historically most higher education spending comes from state budgets, but this has changed rapidly in recent years. Between 2000 and 2012 per student revenue from state sources declined by 37 percent across U.S. postsecondary institutions. In comparison, federal revenue grew by 32 percent; beginning in 2011 more federal dollars than state dollars were allocated toward higher education (The Pew Charitable Trusts 2013). Nearly all of the increase in federal spending comes from need-based financial aid, student loans, and educational tax credits.

State support for higher education is in long-term structural decline for two reasons. First, state legislatures have increasingly adopted balanced budget amendments and measures (called tax and expenditure limits) that limit expenditure growth to some function of population or income growth (Archibald and Feldman 2006). Second, growth in state Medicaid spending has crowded out higher education spending (Kane, Orszag, and Apostolov 2005). Federal financial aid programs exacerbate crowd-out from Medicaid because higher education budget cuts are partially passed on as tuition increases, which are returned to low-income students as unmet federal need (Kane, Orszag, and Apostolov 2005).

In contrast, the federal government subsidizes state Medicaid through a matching grant, similar to what is proposed here. There is strong evidence that federal matching funds have increased state Medicaid spending (e.g., Baicker and Staiger 2005; Bitler and Zavodny 2014). This suggests that a federal–state partnership of the kind proposed here might stem or even reverse the long-term decline in state higher education spending. Moreover, a federal matching grant would substantially reduce the amount that students need to borrow to pay for college, thus reducing outlays for federal loans and partially defraying the cost of the matching grant program.

Chapter 2. The Challenge

THE PROBLEM IS COLLEGE COMPLETION, NOT COLLEGE ATTENDANCE

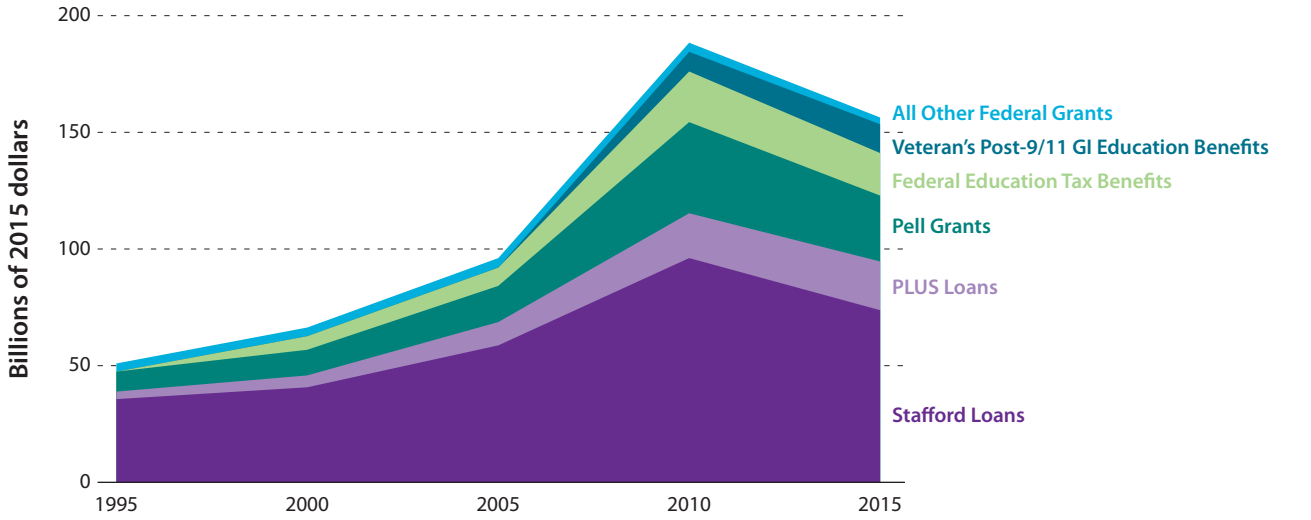
College attendance rates have risen dramatically in the United States over the past three decades. In 2015 40.5 percent of all youths ages 18–24 in the United States were enrolled in a degree-granting four-year institution, compared to only 27.8 percent in 1985 (U.S. Department of Education 2016). Yet despite rapidly rising college attendance, growth in degree attainment has been much more modest. The share of first-time, full-time, first-year students in bachelor's degree programs who attain that degree within six years grew from 55.4 to 59.6 percent between 2002 and 2014. Completion rates in two-year institutions actually declined over this same period, from 30.5 percent to 27.9 percent (U.S. Department of Education 2016). This follows a prolonged period of declining completion rates and lengthening time to degree between the 1970s and the 1990s (Bound, Lovenheim, and Turner 2010, 2012; Turner 2004).

The problem of low college completion rates is particularly pronounced for low-income students and students of color. Among youths born between 1979 and 1982 who attended college, only 32 percent of students from the bottom 25 percent of the family income distribution completed college, compared to 68 percent of youths in the top 25 percent (Bailey and Dynarski 2011). In the 2008 college entry cohort, only 41 percent of African American students and 53 percent of Hispanic students graduated from bachelor's degree programs within six years, compared to 63 percent of whites (U.S. Department of Education 2016).

Low attainment rates are particularly worrisome because most students expect to complete their degree. Among dependent students entering any two-year or four-year degree program in 2004, 79 percent reported that they expected to earn a bachelor's degree. Yet only 52 percent of students who expect to complete a bachelor's degree actually do so within six years, and 38 percent obtain no degree at all. Making matters worse, students with four-year degree expectations but no degree borrow an average of $7,413 in student loans. Focusing only on the students within that group who borrow, the average loan burden is $14,457 (Avery and Turner 2012). For these students, college begins with high expectations but ends without a degree and with a significant loan burden.

FIGURE 2.

Trends in Federal Financial Aid by Source (in billions, constant 2015 dollars)



Sources: Data compiled from federal sources by the College Board (2016).

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Policy makers and institutions have responded to low college completion rates by increasing the generosity of financial aid. While published tuition and fees—the sticker price—grew by more than $5,000 (from $4,560 to $9,650 in 2016 dollars) at public four-year institutions between 1996 and 2016, the net price students actually paid grew much more modestly, from $2,340 to $3,770 (Ma, Pender, and Welch 2016). Although tuition and fees also increased in public two-year colleges over this period, net tuition and fees actually *decreased* from $830 in 1996 to –$500 in 2016 (Ma, Pender, and Welch 2016).

The reason in both cases is a marked increase in the generosity of federal financial aid. Figure 2 presents trends in federal financial aid between 1995 and 2015. Total real federal spending on student aid increased from $50.9 billion in 1995 to $156 billion in 2015, with a peak of $188.4 billion in 2010. Since most federal aid is means-tested, net prices for low-income youths have grown much more slowly than for their higher-income counterparts (Delisle 2016; Ma, Pender and Welch 2016). Despite this large increase in the generosity of need-based federal aid, income gaps in college attendance and completion have widened over time (Bailey and Dynarski 2011; Belley and Lochner 2007).

FINANCIAL AID: THE IMPORTANCE OF TRANSPARENCY AND TARGETING

The Pell Grant program is the cornerstone of federal need-based financial aid, but a disappointingly small share of Pell Grant recipients ever graduate with a degree. Only 44.7 percent of Pell recipients earn any postsecondary credential at all six years after college entry, and only 19.5 percent earn a bachelor's degree (Baum and Scott-Clayton 2013). Among independent students—who comprise 60 percent of all Pell recipients and for whom the Pell Grant is considered to be especially important—these rates are only 36.3 percent and 4.2 percent, respectively (Baum and Scott-Clayton 2013).

A possible explanation for the poor completion rates of Pell recipients is that they are a relatively disadvantaged group who face many other barriers to postsecondary success. One would not want to compare completion rates among low-income and higher-income students without recognizing that many other factors differ across these groups. For this reason, researchers have pursued a number of strategies to determine whether Pell Grant receipt causes gains in postsecondary attainment.

BOX 1.

Why Should the Federal Government Subsidize Higher Education?

Education is an investment: students pay up front and receive the benefits later in their lives. Although all investments are risky, a college degree is one of the best investments available to young people today (Greenstone et al. 2013). College graduates earn more than workers without college degrees, and this college earnings premium is currently higher than ever (Autor 2014). College graduates are also happier, have better health outcomes, and fare better along a wide range of other nonpecuniary dimensions (e.g., Oreopoulos and Salvanes 2011).

If college is such a good investment, why don't students finance a college education out of their own pockets? There are at least three important reasons for the government to subsidize individuals' investments in higher education. First, students and their families may not be able to self-finance college, given its often-considerable expense. In most private markets, the solution to this problem is to acquire a loan where the item itself (e.g., a house or a car) is offered as collateral in the event of default. Unlike a house, investments in education have no obvious source of collateral, which makes private lenders reluctant to offer unsecured loans. For this reason, most educational loans in the United States and many other countries are offered by the government. Borrowing constraints have become quite important in the United States in recent years, and can affect the quality of the school attended as well as the quantity of education attained (Lochner and Monge-Naranjo 2012; Sun and Yannelis 2016).

A second reason for government involvement is a lack of information about the costs and benefits of investment in higher education. Survey data consistently show that college-age youths and their parents are misinformed about the average returns to a college degree and to specific college majors (Avery and Kane 2004; Betts 1996; Grodsky and Jones 2007; Hoxby and Turner 2015; Wiswall and Zafar 2015). More broadly, students are unlikely to know with certainty whether college will benefit them until long after the investment decision is made. Thus, misperceptions about the returns to education may prevent some youths from attending college.

A final reason for government intervention in higher education is that the benefits of a more-educated populace are widely shared. Education increases civic participation and decreases crime, both of which benefit one's fellow citizens. Workers earn more when they live in cities with more college-educated workers, and plants that locate in these cities are more productive (Moretti 2004). A recent historical study found that increasing the number of universities in a country led to higher GDP growth (Valero and Van Reenen 2016).

BOX 2.

State Subsidies

State and local aid to public institutions has historically allowed them to provide a high-quality education at a sticker price that is much lower than its true cost. In 1990 inflation-adjusted net tuition (after subtracting financial aid and other grants) per full-time equivalent student (FTE) in public institutions was $2,896, and yet educational revenue per FTE totaled $11,583 (SHEEO 2016). Nearly all U.S. postsecondary institutions spend more—sometimes much more—per student than they charge in tuition. This difference, which I call the subsidy, allows colleges to provide a higher-quality education at a lower price to students. This increased quality could come in the form of smaller classes, instructors who are more qualified, or additional academic support such as tutoring or counseling services. When students receive a larger subsidy, they are getting a better postsecondary deal.

Tuition prices at public postsecondary institutions have risen steadily for the past 15 years. At the same time, state funding has fallen in per student terms, and the per student subsidy at U.S. public institutions declined by about $1,773 between 2000 and 2014. Over a longer time horizon, the change has been even more stark: in 1990 students in public postsecondary institutions received $7.26 in subsidy for every $1 paid in tuition. By 2014 that figure had fallen to $3.87, with most of the decline occurring in the past decade.

While the price of college has increased, students are getting less for their money, and public colleges and universities are becoming a worse deal for students. This decline in net spending in public postsecondary institutions coincides with falling rates of degree completion. Importantly, it has happened at the same time that federal and state financial aid programs have become much more generous, suggesting that these financial aid programs do not encourage states to maintain their subsidies to public institutions.

Overall, there is very little evidence of positive impacts of the Pell Grant program. Hansen (1983) and Kane (1996) find no impact of the introduction of Pell on college enrollment. Seftor and Turner (2002) find some evidence that Pell increases enrollment among older students, but their data do not allow study of persistence or degree completion. Bettinger (2004) finds some evidence that larger Pell awards lead to higher rates of persistence, although the results are sensitive to how the impacts are estimated. Carruthers and Welch (2015) find that recent changes in Pell eligibility had no impact on college enrollment.

The Pell Grant program is not the only federal education subsidy. Since 1997 the federal government has offered two tax credits—the Hope Scholarship Tax Credit (Hope Credit) and the Tax Credit for Lifelong Learning (TCLL)—to households that pay tuition and fees for higher education. In 2009 Congress enacted the American opportunity tax credit (AOTC), which was substantially more generous and led to a near tripling of federal expenditures on education tax benefits between 2005 and 2010. The AOTC was passed as a temporary measure in 2009 and was extended for five years in 2012, so it is currently set to expire at the end of 2017. Unlike the Hope Credit and the TCLL, the AOTC is partially refundable and so recipients with no tax liability can still receive some benefit.

Research on these federal education tax benefits tells a similar story to research on the Pell Grant program. Using administrative tax data combined with discontinuous changes in household eligibility, Bulman and Hoxby (2015) find no impact of the education tax credits on student enrollment or any other postsecondary outcome, ruling out even very small possible impacts on enrollment. Long (2004) and LaLumia (2012) also find no impact of the Hope Credit and TCLL tax credits on enrollment.

The same holds true for the small number of studies that look at loans. Dynarski (2004) finds little evidence that student loan expansions in the early 1990s increased college attendance. Dunlop (2013) and Wiederspan (2015) find no evidence that the availability of Stafford Loans in community colleges increased enrollment or degree completion.

Although there is little evidence that federal aid increases college attainment, evidence from other financial aid programs is more promising. Studies of need-based financial aid in California, Florida, Nebraska, and Wisconsin, among other states, have found positive impacts on enrollment and degree completion (Angrist, Hudson, and Pallais 2014; Bettinger et al. 2016; Castleman and Long 2016; Goldrick-Rab et al. 2016). Generous, well-targeted, and transparent federal aid programs that serve the children of deceased Social Security beneficiaries and combat veterans have been shown to increase college attainment (Barr 2016; Dynarski 2003). Studies of merit aid programs—which offer free or reduced in-state tuition to students meeting broad eligibility criteria—have found small positive impacts of merit aid on initial enrollment, but weaker and inconsistent impacts on college completion (Cohodes and Goodman 2014; Dynarski 2000; Fitzpatrick and Jones 2012; Scott-Clayton and Zafar 2016; Sjoquist and Winters 2012).

What explains these disparate findings? Financial aid works when it is both transparent and targeted (Deming and Dynarski 2010). Although the Pell Grant effectively targets low-income students, the administrative burden of applying for aid and establishing eligibility limits the effectiveness of the program (Dynarski and Scott-Clayton 2013). Similarly, families do not receive educational tax credits until months after making enrollment decisions, and the tax credit formulae are not well understood (Bulman and Hoxby 2015). State merit aid programs, on the other hand, are transparent but not well targeted. Most students who receive merit aid are already planning to attend college, and so the impacts on total enrollment are relatively small. Fitzpatrick and Jones (2012, ii) thus argue that "nearly all of the spending on these programs is transferred to individuals who do not alter educational or migration behavior."

Research on merit aid programs yields important lessons for free college proposals. Like merit aid, free college provides a benefit to many students who would have attended college anyway. Like free college, merit aid is popular because the benefits are near-universal and transparent. But they are also very expensive, creating a problem for state higher education budgets that are increasingly tight.

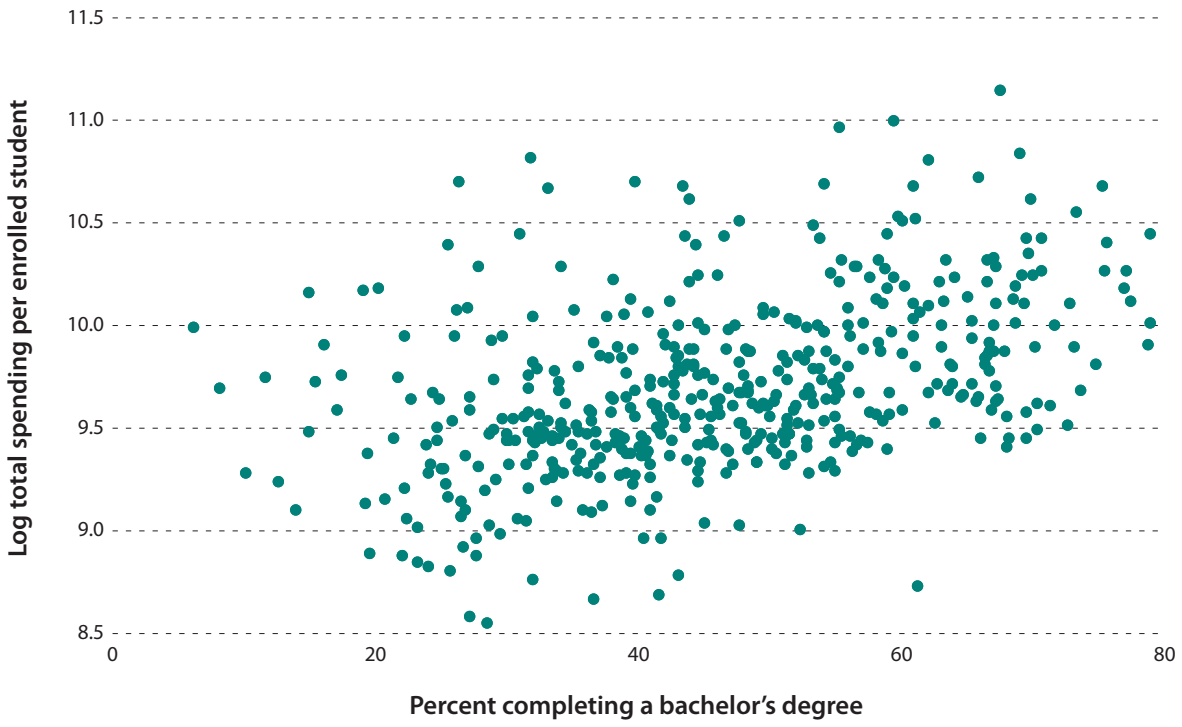
HIGHER PER STUDENT SPENDING INCREASES DEGREE COMPLETION

Given that most financial aid has been unsuccessful in raising degree completion rates, it is necessary to focus on other avenues for improving student outcomes. Figure 3 shows the relationship between per student spending and bachelor's degree completion for a sample of less-selective four-year public institutions. There is a clear positive relationship between per student spending in each college and the share of students completing a degree within six years. Later in the chapter, I discuss evidence that higher per student spending is actually causing increases in degree completion.

One possible explanation for the relationship depicted in figure 3 is that academically talented students (who are intrinsically more likely to complete college) disproportionately enter higher-quality institutions. Against this hypothesis is evidence from Bowen, Chingos, and McPherson (2009), who find wide variation in completion rates across postsecondary institutions even after adjusting for a rich set of student characteristics. However, other studies find little or no labor market return to college quality after accounting for selection (Black and Smith 2004; Dale and Krueger 2002, 2014; Long 2008).

FIGURE 3.

Bachelor's Degree Completion and Per Student Spending



Source: U.S. Department of Education 2015.

Note: The percentage of students that complete a bachelor's degree is calculated using the share of an initial entry cohort in 2008 that completes a bachelor's degree within six years. Sample is restricted to four-year public institutions, excluding the most selective universities (defined as either "Most Competitive" or "Highly Competitive" by the 2009 Barron's Profile of American Colleges and Universities).

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In thinking about the tendency of talented students to select higher-quality institutions, it is important to understand that most U.S. public institutions are open access and serve regional or local education markets. Hoxby (2009) shows that while selectivity has risen greatly among a smaller number of nationally competitive elite institutions, most institutions have become less selective over time. Moreover, the vast majority of students at nonselective institutions attend colleges close to their home. Black and Smith (2004) show that sorting on academic ability is much greater across selective institutions. Taken together, this evidence suggests that the differences in completion rates shown in figure 3 may not be overly biased by student sorting.

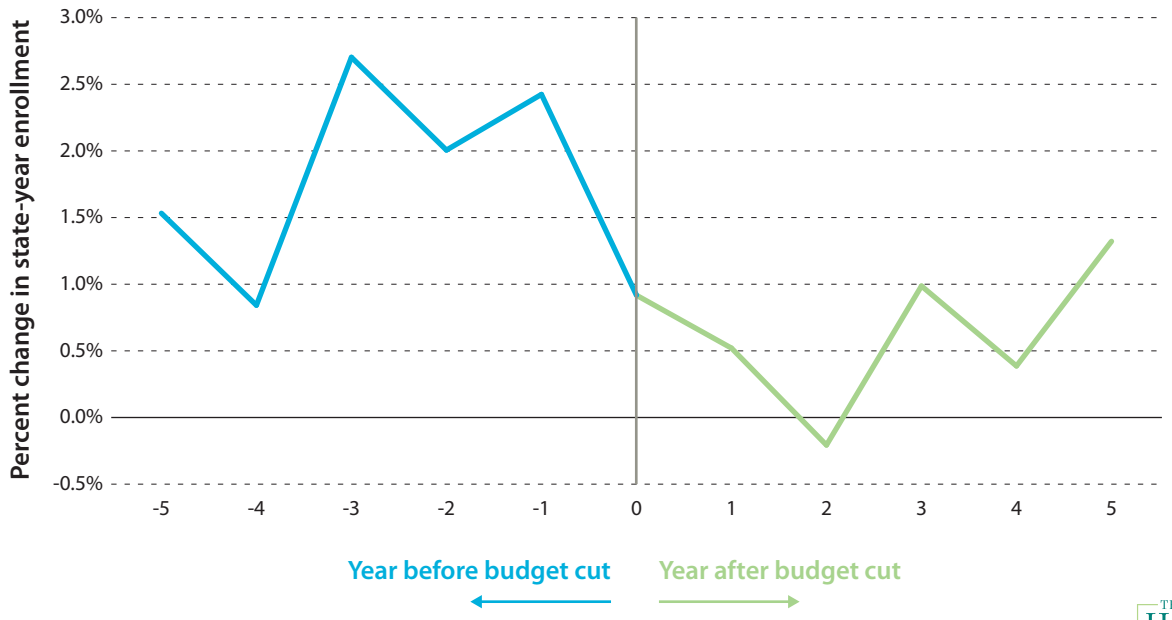
In addition, a growing body of evidence suggests that differences in college quality within less-selective institutions are strongly related to differences in degree completion. Degree attainment is lower—and takes longer—when states have larger cohorts of college students, suggesting that lower public subsidies per student negatively affect completion rates and increase time to degree (Bound, Lovenheim, and Turner 2012; Bound and Turner 2007). A number of studies find large impacts of attending higher quality (but still not very selective) colleges when admission depends on small differences around a GPA or test-based cutoff (Cohodes and Goodman 2014; Goodman, Hurwitz, and Smith 2017; Hoekstra 2009; Zimmerman 2014). In K–12 education a growing literature also finds causal impacts of spending on student outcomes (Hyman 2017; Jackson, Johnson, and Persico 2016; Lafortune, Rothstein, and Schanzenbach 2016).

A number of recent studies suggest that postsecondary resources are strongly related to degree completion. Bound, Lovenheim, and Turner (2010) show that declines in resources per student—rather than changes in the academic preparation of students—have led to declining completion rates over time. Deming and Walters (2017) study the causal impact of changes in state appropriations on student enrollment and degree completion. They find that state higher education budget cuts have a large negative impact on postsecondary attainment.

Figure 4 presents a simplified version of the results in Deming and Walters (2017) by plotting yearly enrollment growth in a state-year against all yearly state budget cuts of 15 percent or more. In the three years prior to a budget cut, enrollment growth averages between 2 and 2.5 percent per year. Enrollment growth drops to only 1 percent in the year of a budget cut, and then remains below 1 percent for four consecutive years thereafter. This suggests that state budget cuts have a large impact on subsequent enrollment. Importantly, the magnitudes of the Deming and Walters (2017) estimates line up closely with the relationship between per student spending and bachelor's degree completion rates shown in figure 3. In other words, higher per student spending causes increases in bachelor's degree completion.

FIGURE 4.

State Higher Education Budget Cuts and College Enrollment



Source: Deming and Walters 2017.

Note: Sample includes yearly budget cuts of 15 percent or more.

This finding has important policy implications. Low-income students are increasingly likely, relative to their high-income counterparts, to enter less-selective postsecondary institutions (Bailey and Dynarski 2011; Carnevale and Strohl 2010; Greenstone et al. 2013). Indeed, Hoxby (2016) shows that nearly all of the increase in college enrollment since 2000 has occurred among less-selective postsecondary institutions. Taken together, this evidence suggests that increasing spending levels in less-selective postsecondary institutions could increase overall degree completion and could help close income gaps in postsecondary attainment.

WHAT DOES INCREASED SPENDING BUY? THE IMPORTANCE OF MENTORING AND STUDENT SUPPORTS

Several recent studies have found large impacts of programs that provide counseling, tutoring, and other supports to students entering college (Angrist, Lang, and Oreopoulos 2009; Barrow et al. 2014; Bettinger and Baker 2014; Carrell and Sacerdote 2013; Clotfelter, Hemelt, and Ladd 2016; Page, Castleman, and Sahadewo 2016; Scrivener et al. 2015). One program—the CUNY Accelerated Study in Associate Programs (ASAP)—nearly doubled graduation rates by providing comprehensive academic and support service to students entering community colleges (Scrivener et al. 2015). Levin, Garcia, and Morgan (2012) calculate that the ASAP Programs easily passes a benefit-cost test despite increasing per student spending by 67 percent. The success of student support interventions can be ascribed in part to the fact that the programs replicate services provided by better-resourced colleges. According to 2013 Integrated Postsecondary Education Data System (IPEDS; U.S. Department of Education 2013) data, academic support was 10.3 percent of total spending in selective four-year public institutions, but only 8.5 percent of total spending in less-selective four-year public institutions, and only 7.1 percent in community colleges. Deming and Walters (2017) find that a 10 percent increase in state funding of nonselective public institutions leads to a 17 percent increase in spending on academic support programs. This suggests that colleges will invest in mentoring and student supports when provided with additional resources. The success of CUNY's ASAP Programs and similar programs provides important evidence that increases in spending on academic support can boost college completion.

Chapter 3. The Proposal

This paper proposes a federal matching grant for public institutions in states that implement so-called free college plans. In the upcoming reauthorization of the Higher Education Act of 1965, the U.S. Congress would commit to matching the first $5,000 of net per student spending at all public postsecondary institutions that commit to making college tuition-free for eligible students.

To see how the matching grant would work, consider a community college that spends $4,000 per student on instruction and $1,000 per student on academic support in the year prior to participating in the program. As part of a maintenance-of-effort requirement, the college must spend at least that much in each category the following year to receive matching funds. If the college maintains spending levels, it would receive $5,000 per eligible student in matching funds as part of the 1:1 match. The following year, spending on instruction and academic support must total at least $8,000 and $2,000 per student ($4,000 and $1,000 prior to receiving the 1:1 federal match) for the college to continue receiving the match. The maintenance-of-effort provision would apply to all institutions that receive matching funds, even those that already or eventually exceed the matching grant cap of $5,000 per student in core spending. This rule ensures that federal funds are allocated directly to core spending categories and not shifted around to cover nonessential spending.

ELIGIBILITY

Six states have enacted "free" college plans, and they are under consideration by legislatures in another 17 states as of November 2016 (Pingel, Parker, and Sisneros 2016). Free college plans differ somewhat across states, but at the time of this writing they have generally been restricted to community colleges. Moreover, most plans are restricted to full-time students who have not previously earned a degree. Recently, Tennessee and New York have proposed expanding their college promise plans to the four-year sector and to older, nontraditional students.

The matching grant proposed here would apply to all public, Title IV–eligible, degree-granting institutions that commit to making college tuition-free at least for full-time in-state students who have not previously earned a degree. This includes both two- and four-year institutions. If colleges offer free tuition to part-time and nontraditional students, the matching grant could apply to those students as well.

In order to receive federal matching funds, institutions must commit to providing tuition-free college to all students meeting minimal eligibility requirements. These eligibility requirements may include having earned a high school diploma or GED but no postsecondary credential. Institutions may also restrict eligibility to students enrolling full time in a degree-granting program who maintain a minimum college GPA of 2.0, like the Tennessee Promise program (Carruthers and Fox 2016). Some existing state programs have additional requirements such as mandatory community service; these conditions for continued program eligibility are allowed under the matching grant program. However, programs that restrict the offer of free tuition to students with minimum *high school* GPAs or minimum scores on college preparation exams such as the SAT or ACT, including "merit aid" programs currently offered in many states, would be ineligible for federal matching funds.

Most free college plans apply to either all two-year institutions or all institutions in a state. However, there are some exceptions. For example, the proposal by Governor Cuomo in New York State applies only to CUNY and SUNY institutions, and not to other in-state public institutions such as Cornell University. In these cases, only institutions that offer free tuition would be eligible to receive matching funds. Technical training centers and other Title IV–eligible public institutions that grant only certificates or other short-course credentials would be ineligible to receive the matching grant.

ELIGIBLE SPENDING CATEGORIES

The federal matching grant is restricted to two core categories of institutional spending: instruction and academic support. Data on institutional spending come from IPEDS, a set of surveys collected by the National Center for Education Statistics through the U.S. Department of Education. Timely and accurate completion of IPEDS surveys is already mandatory for all postsecondary institutions that are eligible to distribute federal Title IV financial aid.

IPEDS collects information on 12 different types of institutional spending. IPEDS defines "instructional spending" as "the sum of all operating expenses associated with the colleges, schools,

departments, and other instructional divisions of the institution. . . . This would include compensation for academic instruction, occupational and vocational instruction, community education, preparatory and adult basic education, and remedial and tutorial instruction conducted by the teaching faculty for the institution's students" (U.S. Department of Education n.d.).

IPEDS defines academic support spending as "the sum of all operating expenses associated with activities and services that support the institution's primary missions of instruction, research, and public service." Notably, this excludes spending on "student services," which are expenses related to "admissions, registrar activities, and activities whose primary purpose is to contribute to students' emotional and physical well-being and to their intellectual, cultural, and social development outside the context of the formal instructional program" (U.S. Department of Education n.d.).

Only academic support such as tutoring, mentoring, and counseling would be eligible for matching funds. Extracurricular activities such as intramural athletics and cultural affinity groups would therefore be ineligible. The purpose of these restrictions is to ensure that matching funds support the core instructional mission of public institutions. Administration, research, capital maintenance, and similar spending categories are not eligible for the federal match.

To ensure that the matching grant actually increases core spending on instruction and academic support, the proposal will include a maintenance-of-effort provision for each participating institution and spending category. Specifically, institutions receiving matching funds in the first year of the program are required to maintain per student spending on both instruction and academic support at preprogram, pre-match levels. Institutions must maintain or increase pre-match per student spending levels every year thereafter in order to continue receiving federal matching funds.

Some higher education observers have argued that rising tuition costs are due to administrative bloat and inefficient spending in public institutions (Ginsburg 2011; Vedder 2013). Desrochers and Hurlburt (2014) show that administration was the spending category with the biggest percentage growth in public research universities between 2001 and 2011. Denneen and Dretler (2012) apply principles of management consulting to argue that colleges should focus on the core mission of academic instruction and reduce spending on administration.

For these reasons, the federal matching grant would include an additional restriction on the growth of administrative spending. Public institutions receiving federal matching funds must maintain administrative spending at no more than preprogram levels, on a per student basis and as a percentage of core spending. For example, if a college is currently spending $4,000 per student on instruction, $1,000 per student on academic support, and $1,000 per student on administration, then administration represents 20 percent of core spending ($1,000 divided by $5,000 for instruction and academic support combined) and colleges must keep administrative spending at or below this percentage to continue receiving federal matching funds.

Finally, the program would establish a pilot program offering a 2:1 match rate for spending on programs that have been conclusively shown to increase degree completion among low-income students. One specific example is programs that provide financial aid—beyond just tuition and fees—along with mentoring and other academic supports. These programs have a strong track record of increasing rates of college persistence and degree completion among low-income students (Angrist, Lang, and Oreopoulos 2009; Barrow et al. 2014; Carrell and Sacerdote 2013; Clotfelter, Hemelt, and Ladd 2016; Page, Castleman, and Sahadewo 2016; Scrivener et al. 2015).

CALCULATING THE MATCH

As discussed above, all institutions that commit to providing free tuition for full-time, first-time students enrolled in degree-granting programs would be eligible to receive federal matching funds. The exact amount to be matched is calculated as follows:

1. Compute the sum of all spending in the previous fiscal year in the categories of instruction and academic support.

2. Subtract any revenue from out-of-state tuition and mandatory fees, net of scholarships from all other sources including Pell Grants, state merit aid funds, and institutional aid.[2]

3. Divide by full-time undergraduate (FTE) enrollment in the previous year.[3]

The per student spending computed in steps 1 through 3 is the amount that is eligible for matching funds. The federal government would provide a 1:1 match on this total spending amount, up to the first $5,000 per FTUG student (so up to $10,000 per FTUG in total spending on instruction and academic support).

WHICH INSTITUTIONS ARE AFFECTED?

According to 2013 IPEDS data (the most recent available), the average public, degree-granting institution spent $9,240 per FTE student on instruction and $2,157 on academic support, for a total of $11,397 (U.S. Department of Education 2013). All figures are in constant 2013 dollars and weighted by 2013 enrollment. After accounting for all sources of financial aid, net tuition and fees averaged $5,568. Thus the average amount eligible for matching funds was $5,829.

Appendix table 1 presents calculations of core spending, net tuition, and match-eligible spending by state, based on 2013

IPEDS data. The left panel presents calculations for two-year colleges, while the right panel presents calculations for four-year colleges. I compute the average amount available for the federal matching grant by capping each institution's match-eligible spending at $5,000 per FTE, and weighting the overall mean by FTUG enrollment in each institution. Because the state averages are weighted, the total federal match for each state can be obtained by multiplying the eligible match amount times FTUG enrollment.

For simplicity, I assume that matching funds are made available to all two-year or four-year institutions in the state, and that the offer of free tuition applies immediately to all full-time undergraduates enrolled in college.[4]

Match-eligible spending varies greatly by state. In some states, every institution already spends at least $5,000 per student net of tuition and fees. However, the amount of funding available for matching is considerably lower than $5,000 in most states. Colleges in Colorado, New Hampshire, and Vermont, among other states, spend very little on instruction and academic support after subtracting net tuition. In these states, students are implicitly getting a lower state subsidy for their education and thus a worse deal. Nationwide, 64 percent of two-year colleges and 56 percent of four-year colleges are currently spending below the $5,000 per student threshold. Importantly, offering free college is likely to increase total enrollment, which would mechanically lower per student spending and cause more institutions to fall below the threshold.

There is wide variation in the core academic spending categories of instruction and academic support, but the variation is much greater for net tuition. This is because tuition prices vary widely by state, but also because states differ greatly in the generosity of the financial aid that they provide.

Due to recent increases in the generosity of federal financial aid and low prices, net tuition is actually *negative* in two-year colleges in nine states. This includes a mix of states that charge very low prices, such as California, as well as poorer states, such as Mississippi and Arkansas, where most students qualify for need-based aid. Since these nine states do not currently collect any tuition revenue from students enrolled in two-year colleges, they are already providing free college,

TABLE 1.

Federal Budget Scenarios for a Matching Grant

	Two-year colleges		Four-year colleges	
	No enrollment change (1)	10% increase in enrollment (2)	No enrollment change (3)	10% increase in enrollment (4)
Only states that have already adopted				
No change in institutional spending	$839 million	$856 million	$1.3 billion	$1.4 billion
Equal state spending, but shift across schools	$882 million	$890 million	$1.6 billion	$1.8 billion
All schools spend at least $5,000	$1.0 billion	$1.1 billion	$1.8 billion	$2.0 billion
States enacted or considering				
No change in institutional spending	$6.5 billion	$6.7 billion	$11.1 billion	$11.8 billion
Equal state spending, but shift across schools	$7.0 billion	$7.1 billion	$13.1 billion	$14.2 billion
All schools spend at least $5,000	$8.2 billion	$9.0 billion	$13.8 billion	$15.2 billion
All 50 states				
No change in institutional spending	$10.2 billion	$10.6 billion	$18.9 billion	$19.9 billion
Equal state spending, but shift across schools	$10.9 billion	$11.2 billion	$22.7 billion	$24.1 billion
All schools spend at least $5,000	$12.8 billion	$14.0 billion	$26.1 billion	$28.8 billion

Notes: Table 1 estimates the cost of a Federal matching grant under different assumptions about state participation, student enrollment changes, and institutional spending responses. Columns 1 and 2 present scenarios for two-year institutions, while Columns 3 and 4 presents scenarios for four-year institutions. Columns 1 and 3 assume no enrollment change, while Columns 2 and 4 assume a 10 percent enrollment increase, which matches the impact of the Tennessee Promise on full-time freshmen enrollment in its first year. The first four rows assume that the only the 6 states that have already adopted free college choose to participate, while the next four rows include 16 more states that are actively considering free college proposals. See Appendix table 1 for details on the specific states. The "equal state spending" scenario holds total core spending constant in each state, but assumes that states shift money across institutions to maximize the number of institutions with spending under the $5,000 cap.

and the federal matching grant will not require them to forgo tuition revenue. Note that IPEDS does not collect data on student income or Pell eligibility, so net tuition is not zero for all enrolled students.

Because net tuition is already very low for community colleges in many states, the federal matching grant provides very favorable terms for them. Columns 6 and 11 in appendix table 1 compute the ratio of available federal matching funds to the cost of zeroing out net tuition revenue in each state, for two-year and four-year colleges, respectively. This gives each state's effective match rate on investment in tuition-free college, assuming that enrollment, per student spending, and net prices are all held constant. States with a higher ratio receive a better deal, and thus are more likely to commit to providing tuition-free college in exchange for federal matching funds.

In general, the federal matching grant is a better deal for two-year colleges. Averaged across all 50 states, two-year colleges would receive $4.27 in matching funds for every $1 lost in tuition revenue from lowering prices to zero. The decision to provide free tuition in the four-year sector is much more expensive, with only $0.46 of federal money available for every $1 lost in tuition revenue. This is primarily because of much higher net tuition in the four-year sector. Nonetheless, the ratio of federal funds to lost tuition revenue is greater than one in six states, including two of the most populous states (Florida and New York).

BUDGET SCENARIOS

Appendix table 1 calculates the likely impact of the federal matching grant by state and sector, holding institutional and student behavior constant. However, the purpose of offering tuition-free college is to increase postsecondary enrollment and attainment. Similarly, the purpose of the matching grant is to increase institutional spending and to induce more states to commit to free college.

Table 1 calculates the cost of the proposal for both two-year and four-year colleges, under a variety of assumptions. The assumptions are listed below.

Number of Participating States

1. Assume no new participation: the only participants are the six states that have already enacted free college proposals receive matching funds.

2. Assume participation for the 23 states that either have enacted or are actively considering free college proposals (Pingel, Parker, and Sisneros 2016).

3. Assume all 50 states participate.

Impact on Enrollment

1. Assume no change in enrollment.

2. Assume that enrollment increases by 10 percent, which matches the enrollment increase among first-time, first-year students for the initial year of the Tennessee Promise program (Carruthers and Fox 2016).[5]

Impact on Institutional Spending

1. Assume no change in spending for any institution.

2. Assume constant core spending in each state, but that states shift money across institutions to maximize the total amount of matching funds. This involves transferring resources away from colleges that are already spending over the cap.

3. Assume that all institutions increase spending up to the $5,000 limit.

The biggest determinant of program expenses is the number of states that choose to offer tuition-free college. If participation is limited to the six states that have already enacted free college plans, the total cost of the program would be only $1.1 billion for two-year colleges and $2 billion for four-year colleges, even if enrollment increases by 10 percent and participating institutions increase spending all the way up to the cap. These are relatively small amounts compared to the more than $156 billion currently spent on federal financial aid.

If all 50 states enact free college plans, program costs would range between $10 billion and $14 billion for two-year colleges and between $19 billion and $29 billion for four-year colleges. These are very large amounts, but still only a modest share of total federal spending on postsecondary education.

Figure 2 shows that federal spending on grants and tax-based aid (excluding loans and interest rate deductions) was $61.7 billion in 2015. It is worth noting that tuition-free college would substantially reduce the amount that students need to borrow to pay for college. This would reduce outlays for federal loans and partially defray the cost of the matching grant program.

One option is to pay for some or all of the program by cutting or drastically reducing federal education tax credits, which totaled $18.2 billion in 2015. Bulman and Hoxby (2015) and other evidence cited above suggests that tax credits have no impact on college enrollment, degree completion, or other outcomes. Dynarski (2016) estimates that after accounting for other tax benefits such as the student loan interest rate deduction, total spending on education tax benefits in 2015 was closer to $30 billion. Eliminating education tax benefits and reducing federal outlays on student loans would pay for most of the cost of the federal matching grant program, even under the most optimistic scenarios for state, institution, and student participation.

Chapter 4. Questions and Concerns

1. Will the matching grant be a big enough incentive for states to increase spending?

One possible concern is that the matching grant provides an insufficient incentive for states to increase spending on higher education. Appendix table 1 shows that most institutions have current core spending that falls below the $5,000 maximum. The program provides a strong incentive for these institutions to increase spending on instruction and academic support. Moreover, even states where most institutions are already at the $5,000 maximum face a strong incentive to offer tuition-free college, so that they can receive matching funds. Thus almost all institutions face some incentive to change their current prices or spending levels.

One way to understand the likely impact of a matching grant for higher education is to study the impact of federal matching funds for Medicaid. Baicker and Staiger (2005) and Bitler and Zavodny (2014) find that states respond strongly to the offer of matching funds for Medicaid spending. Kane, Orszag, and Apostolov (2005) find that federal matching funds for Medicaid have actually crowded out higher education spending over the past two decades. This is because the current structure of federal financial aid spending acts as a negative subsidy to states. Financial aid is based on students' demonstrated need, which is partly a function of tuition prices. When states cut funding, institutions sometimes raise prices because they know that federal aid will make up some of the difference.

By contrast, the matching grant would give states a strong incentive to increase the subsidies they provide to public institutions.

2. Are you concerned that colleges will just reallocate resources to capture the funds, without changing anything that they do?

Put differently, how do we know that colleges will spend federal matching funds in a way that improves student outcomes?

An important feature of the program is that the match is restricted to the first $5,000 of core spending, ensuring that the federal government gets the biggest bang for its buck. The program has the biggest marginal impact on community colleges and less-selective four-year colleges, where budgets are tightest and degree completion rates are lowest. Evidence from other settings suggests that providing additional resources is most effective for institutions with low levels of baseline spending. Looking to K–12 education, Cascio, Gordon, and Reber (2013) show that the federal Title I program (that provides supplementary funding to K–12 schools that serve poor children) increased school spending by $0.46 on every $1 in the average school district in southern states, but nearly 1 to 1 in districts with low baseline revenue.

In addition, the match is calculated based on spending on instruction and academic support only. This means that colleges can receive more matching funds by reallocating resources from nonessential to essential spending categories. This is particularly important when tight state budgets make overall spending increases unrealistic. Institutions in states that are unable to increase higher education spending have a strong incentive to cut the budget for administrators and increase spending on core academic functions.

Of course, institutions may still be able to reclassify spending without actually altering its allocation. For example, to the extent that a college or university can reclassify its administrative expenses as academic support, it would increase its federal match without making any changes to its activities. For this reason, some increased monitoring of institutional reporting is probably necessary. However, it is worth noting that timely and accurate reporting of financial data by category is mandatory for all institutions that receive Title IV funding under the Higher Education Act, and the Office of Federal Student Aid issues warnings and fines to institutions that fail to comply. Thus better monitoring of financial reporting could be accomplished simply through more rigorous enforcement of existing regulations.

3. How does the federal matching grant program help low-income students?

As mentioned in chapter 3, the program would establish a pilot offering a 2:1 match rate for spending on academic support and financial aid programs that increase degree completion among low-income students.

Additionally, the strong correlation between parental income and college selectivity means that the institutions most affected by a matching grant program disproportionately

serve low-income students. Colleges with more low-income students tend to have lower levels of baseline spending, and they also have lower net tuition. As shown in appendix table 1, colleges with low net tuition face more-favorable terms (because the impact of lost tuition revenue is smaller) and are thus more likely to implement the program. Most importantly, the federal matching grant would ensure that the colleges disproportionately attended by low-income students receive supplementary funding that allows them to increase quality and provide needed academic supports to low-income and first-generation students.

4. What implications does this have for higher education accountability?

The matching grant program could easily exist within a more robust system of federal accountability for U.S. postsecondary institutions. In fact, the matching grant structure potentially improves the ability of the federal government to provide rewards and sanctions to institutions based on performance metrics. Existing federal regulations such as the Gainful Employment Rule or the 90/10 Rule hold eligibility to distribute Title IV financial aid (e.g., Pell Grants and Stafford Loans) as the main threat for violating accountability standards. Withholding Title IV funds is effectively a death sentence for many institutions, however, and so sanctions are infrequently used.

In contrast, a matching grant provides much more flexibility, because the match rate could adjust in response to performance incentives. For example, the 1:1 match rate could increase to 1.25:1 for institutions that show high risk-adjusted on-time graduation rates. The match rate could move up or down depending on the share of low-income students that are able to attend college debt free. There are many possibilities, and adjusting match rates based on performance is much more flexible than withholding eligibility to distribute federal aid.

5. What would be the impact of a federal matching grant program on state higher education budgets?

One additional benefit of a federal matching grant is its potential stabilizing impact on state higher education budgets. As the largest source of discretionary spending, higher education is often referred to as the "balance wheel" of state budgets (Delaney and Doyle 2011). The existence of a federal matching grant would blunt legislators' incentives to enact deep budget cuts to higher education during recessions. In particular, the maintenance of effort requirement would discourage policy makers from cutting per pupil spending.

Chapter 5. Conclusion

A college degree is increasingly necessary for economic success. Yet tuition prices have risen rapidly, making college affordability the subject of growing public concern. In this climate, the political popularity of free college is obvious. Yet we have paid too little attention to the main crisis in U.S. higher education – low completion rates. Research points to the importance of instructional quality, academic supports and mentoring for student success in college. Yet decades of state higher education budget cuts have left public institutions with large classes taught by less-qualified instructors, and little in the way of counseling, mentoring and other core services.

This paper proposes a federal matching grant for per pupil spending in states that commit to supporting free tuition for in-state students attending public institutions. The federal matching grant would help public colleges maintain or even increase spending levels, so that quality does not suffer when more students take up the offer of "free" college. The matching grant would be restricted to core spending categories such as instruction and academic support, and it includes design features such as a maintenance of effort provision and a restriction on the growth of administrative spending. Both of these features provide colleges with a strong incentive to focus on improving the quality of their core mission, while reigning in unnecessary costs.

More broadly, the matching grant helps expand access to higher education while also ensuring that students obtain a high quality education and earn a degree. Since college is more important than ever, a federal-state partnership is necessary to finance the cost of equipping a future generation with the skills to succeed in the labor market of the future.

Chapter 6. Appendix

APPENDIX TABLE 1.

Budget Scenarios for a Matching Grant

		Two-Year Colleges					Four-Year Colleges				
State	Legislation Status (1)	Eligible Spending (2)	Net Tuition (3)	Eligible Match (4)	FTUG enrollment (5)	Match to Cost Ratio (6)	Eligible Spending (7)	Net Tuition (8)	Eligible Match (9)	FTUG enrollment (10)	Match to Cost Ratio (11)
Alaska		12,971	2,003	5,000	439	2.50	15,208	4,827	5,000	12,449	1.04
Alabama		5,379	663	4,109	44,340	6.20	14,657	10,617	1,833	102,921	0.17
Arkansas		4,901	-564	4,523	28,920		10,578	3,219	5,000	62,789	1.55
Arizona	considered	4,005	226	3,612	65,296	15.99	15,368	11,732	3,057	97,690	0.26
California	pending	4,267	-783	4,450	454,664		17,799	7,293	4,454	501,451	0.61
Colorado		4,538	3,056	1,357	32,760	0.44	14,589	12,472	571	108,852	0.05
Connecticut		7,236	1,539	4,930	20,020	3.20	21,674	10,244	4,772	44,579	0.47
Delaware	enacted	8,105	3,755	4,350	6,010	1.16	12,882	7,354	5,000	20,087	0.68
Florida		4,587	371	3,677	49,556	9.92	9,334	3,045	4,386	346,378	1.44
Georgia		5,018	421	4,037	55,369	9.58	9,306	6,876	2,395	185,440	0.35
Hawaii	considered	10,339	311	5,000	571	16.08	12,200	5,050	5,000	27,892	0.99
Iowa		5,435	1,768	3,605	46,309	2.04	19,021	11,625	5,000	53,527	0.43
Idaho		4,605	554	3,642	11,241	6.57	10,131	5,623	3,850	30,866	0.68
Illinois	pending	4,934	1,073	3,735	134,010	3.48	24,358	11,003	4,855	128,941	0.44
Indiana	considered	4,071	-195	4,266	37,969		16,693	11,489	3,622	145,522	0.32
Kansas		5,356	809	4,266	35,581	5.28	14,814	8,318	4,485	63,053	0.54
Kentucky	enacted	4,156	-107	4,176	38,643		14,530	8,286	3,915	81,167	0.47
Louisiana		4,046	301	3,562	34,938	11.83	10,919	5,700	3,291	93,374	0.58
Massachusetts	pending	5,810	2,243	3,471	43,128	1.55	13,441	10,903	2,526	78,062	0.23
Maryland	considered	6,842	2,564	3,916	41,604	1.53	15,254	10,351	2,704	91,551	0.26
Maine		5,052	144	4,130	7,974	28.62	11,839	7,929	3,901	18,707	0.49
Michigan		5,930	1,448	4,250	84,141	2.93	17,662	13,964	2,176	193,677	0.16
Minnesota	enacted	6,122	2,545	3,549	57,581	1.39	16,615	10,088	3,070	85,212	0.30
Missouri	considered	4,680	507	4,004	52,716	7.90	11,874	7,365	4,085	94,947	0.55
Mississippi	considered	5,171	-1,481	4,964	56,974		12,896	5,622	4,726	56,151	0.84
Montana		6,975	177	4,986	4,827	28.24	10,088	7,003	2,919	27,623	0.42
North Carolina	considered	6,430	-919	5,000	105,187		17,364	5,790	4,933	154,488	0.85
North Dakota	considered	8,914	2,349	4,676	3,252	1.99	14,003	8,176	3,918	27,979	0.48
Nebraska		6,288	615	4,943	18,019	8.03	15,519	6,771	4,836	38,267	0.71
New Hampshire		5,484	5,009	474	5,235	0.09	13,392	14,126	0	22,374	0.00

Appendix Table 1. Budget Scenarios for a Matching Grant *(continued)*

		Two-Year Colleges					Four-Year Colleges				
State	Legislation Status (1)	Eligible Spending (2)	Net Tuition (3)	Eligible Match (4)	FTUG enrollment (5)	Match to Cost Ratio (6)	Eligible Spending (7)	Net Tuition (8)	Eligible Match (9)	FTUG enrollment (10)	Match to Cost Ratio (11)
New Jersey	pending	4,425	2,355	2,070	90,010	0.88	17,272	12,984	2,851	109,310	0.22
New Mexico		4,664	-995	4,928	24,619		10,696	2,392	5,000	42,805	2.09
Nevada		4,954	730	4,225	2,856	5.79	12,113	5,090	4,652	41,326	0.91
New York	pending	5,698	1,383	4,172	100,945	3.02	11,730	3,919	4,978	328,346	1.27
Ohio		5,689	1,534	3,809	78,978	2.48	14,846	11,680	1,935	213,755	0.17
Oklahoma	considered	6,963	-95	4,601	33,075		13,415	5,812	4,563	79,084	0.79
Oregon	enacted	6,323	1,134	4,527	48,339	3.99	13,883	10,420	2,716	64,502	0.26
Pennsylvania		5,743	2,551	2,993	55,138	1.17	9,910	7,698	2,139	211,037	0.28
Rhode Island	enacted	5,218	2,043	3,175	5,857	1.55	11,246	11,138	108	17,456	0.01
South Carolina		5,180	705	4,318	45,969	6.13	16,030	12,385	1,315	79,218	0.11
South Dakota		6,108	3,759	1,701	4,990	0.45	9,933	6,054	3,074	21,061	0.51
Tennessee	enacted	4,902	388	4,236	49,530	10.93	14,813	5,780	4,727	97,106	0.82
Texas	considered	4,441	279	3,934	227,720	14.10	15,703	6,843	4,027	376,281	0.59
Utah		5,198	1,765	3,276	11,433	1.86	10,038	4,783	3,541	75,392	0.74
Virginia		4,645	1,707	2,877	67,748	1.69	16,247	10,974	4,076	147,254	0.37
Vermont		5,677	4,104	1,573	1,045	0.38	18,260	18,976	0	15,221	0.00
Washington	considered	6,305	884	4,456	74,309	5.04	18,836	10,119	3,819	115,956	0.38
Wisconsin		10,744	643	5,000	30,056	7.78	10,101	6,893	2,990	137,655	0.43
West Virginia	considered	4,328	-220	4,156	11,812		11,688	7,501	3,611	50,714	0.48
Wyoming		7,797	408	5,000	9,523	12.26	19,788	2,491	5,000	8,311	2.01
National		**5,159**	**941**	**4,021**	**2,551,226**	**4.27**	**14,511**	**8,069**	**3,695**	**5,229,809**	**0.46**

Notes: All data are based on the 2013 Integrated Postsecondary Education Data System (IPEDS) and are in constant 2013 dollars. Columns 2 through 5 report information for two-year institutions only. Information in Column 1 on state status of free college legislation is current as of November 2016, and taken from the Education Commission of the States (Pingel, Parker, and Sisneros 2016). Column 2 reports average enrollment-weighted spending per full-time equivalent (FTE) student on instruction and student support. Column 3 reports average revenue from tuition and fees, after subtracting all sources of Federal, state, local and institutional aid. Column 4 is the average amount eligible for the matching grant, which is calculated by taking the difference between Column 2 and Column 3 for each institution, with an institution-specific maximum cap of $5,000. Column 5 reports total full-time undergraduate (FTUG) enrollment in each state and sector in 2013. Column 6 is the ratio of Column 4 to Column 3. Columns 7 through 11 repeat the pattern of Columns 2 through 6, but for four-year institutions.

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Endnotes

1. Data are from the decennial Census and 2001-2015 American Community Survey. Attainment rates in older cohorts may be biased upward if mortality is correlated with educational attainment.
2. The matching grant would be available only to states that commit to making college tuition-free, at least for in-state students who enroll full time and who have not previously earned a degree. However, some institutions might still have revenues from tuition and fees, for three reasons. First, some colleges charge substantial fees on top of tuition. Second, some colleges enroll out-of-state students and charge them higher tuition prices. Third, some free college proposals exclude part-time students or students enrolled in nondegree programs. Although the matching grant would still be available to colleges that have some fee-paying, out-of-state, and/or part-time students, the match would apply to total spending per FTE student, *net of tuition and fee revenue*. This ensures that colleges actually use the match to increase student supports, rather than simply shifting the cost burden from eligible to ineligible students.
3. Although many institutions might restrict eligibility to full-time undergraduate (FTUG) students, it is generally not possible to distinguish spending on eligible and ineligible students in the data. Classes will always have a mix of full-time and part-time students, and academic support services are hard to divide in this way. Therefore, I use FTE enrollment when calculating per student spending to determine the eligible spending level. However, I calculate the total amount disbursed by multiplying this eligible amount times the number of FTUG students (not FTE students).
4. Tighter eligibility requirements—such as restricting to newly enrolled students in recent high school graduation cohorts—would lower the cost of the program. IPEDS data do not allow for separation of students by graduation cohort.
5. In the scenarios where all institutions spend up to the $5,000 cap, a 10 percent increase in enrollment increases program costs by exactly 10 percent. The increase is somewhat less when institutions are below the cap. Thus, it is straightforward to project costs when assuming larger enrollment increases.

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Highlights

David J. Deming of Harvard University proposes a federal matching grant for public institutions that implement free college proposals in order to increase graduation rates at community colleges and universities.

The Proposal

Establish a 1:1 federal matching grant for institutions that implement free college plans. In its reauthorization of the Higher Education Act of 1965, Congress would commit to matching the first $5,000 of net per student spending at all public postsecondary institutions that make college tuition-free for eligible students.

Restrict the grant to spending on instruction and academic support services. There is substantial evidence that increased spending on these categories improves academic quality and raises completion rates. The matching grant also caps spending on administration as a share of spending per full-time student.

Provide the grant to eligible institutions. Deming's proposal would apply to all public, financial aid–eligible, degree-granting institutions that commit to making college tuition-free for at least full-time in-state students who meet certain minimal eligibility requirements.

Establish a 2:1 match rate for competitive pilot programs that increase degree completion among low-income students. For example, innovative programs that combine financial aid with mentoring and other academic supports would be eligible.

Benefits

This proposal helps to rein in the rising cost of attending college while ensuring that a greater share of scarce state funds is spent on programs that have been shown to increase college completion rates. Enhancements in educational quality would particularly benefit students from low-income families, who are more likely to attend two-year and less-selective four-year institutions where current spending on instruction and academic supports is relatively low. Furthermore, even under optimistic assumptions about participation in the matching grant, the cost to the federal government would be no more than one third of current spending on federal financial aid programs.

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