Chapter Title: College Aid

Chapter Authors: David Deming, Susan Dynarski

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College Aid

David Deming and Susan Dynarski

10.1   Introduction

College-going has risen substantially over the past forty years. In 1968, 36 percent of twenty-three-year-olds had gone to college, while by 2005, that figure had grown to 58 percent.[1] But these gains have been uneven. African Americans are about half as likely as non-Hispanic whites to earn a bachelor's degree (19 percent versus 37 percent) and Hispanics less than one-third as likely (11 percent).[2] Females are about 12 percentage points more likely than males to have attended college by age twenty-three (64 versus 52 percent), and about 7 percentage points more likely to have completed a Bachelor of Arts degree (BA) (32 versus 25 percent).

Some of these differences trace back to performance gaps in elementary school and high school. But even among those who do well on achievement tests, socioeconomic inequalities remain: 74 percent of high scorers who grew up in upper-income families complete college, compared to only 29 percent of those who grew up in low-income families (College Board 2005).

While thirty years ago a high school degree was sufficient for financial security, it is now a college degree that is the key to a middle-class lifestyle. Since the 1970s, high school dropouts and graduates have lost ground, with their real earnings dropping substantially (figures 10.1 and 10.2, from College Board [2005]). Typical earnings for a full-time, male high school graduate in 1972 were $45,000 (in constant 2003 dollars). That figure had dropped

David Deming is a doctoral candidate in public policy at Harvard University. Susan Dynarski is an associate professor of education and public policy at the University of Michigan and a research associate of the National Bureau of Economic Research.

1. Authors' calculations from the October Current Population Survey.
2. Authors' calculation of BA completion rates for twenty-five- to twenty-six-year-olds in the 2005 CPS.
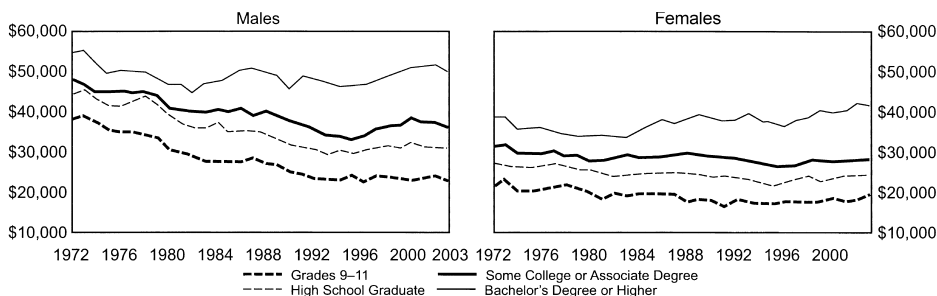
Fig. 10.1   Median annual earnings of males and females ages 25–34 by education level, 1972–2003 (constant 2003 dollars)

Sources: Figure is from College Board (2005) and is based on data from the National Center for Education Statistics (NCES), 2005a, Indicator 14 (based on U.S. Census Bureau, *Current Population Survey,* March Supplement, 1972–2003 and unpublished data).
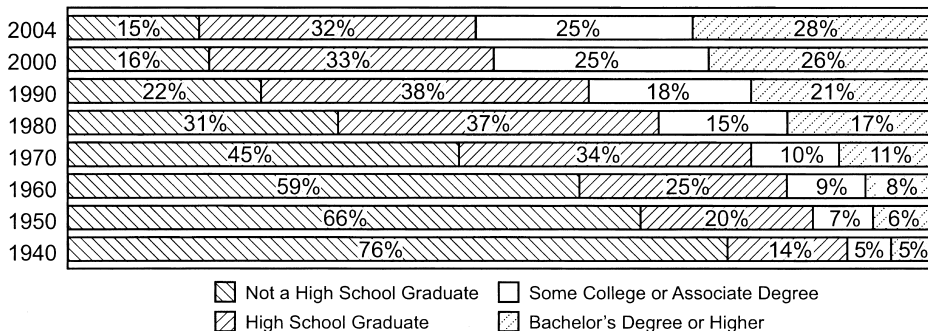
Note: Includes full-time, full-year workers.

Fig. 10.2   Years of schooling completed by people 25 and older, 1940–2004

Sources: Figure is from the College Board (2005) and is based on data from the U.S. Census Bureau, 2005, Table A-1.

Note: Percents may not sum to 100 percent due to rounding.

by a third ($30,000) by 2005.[3] By contrast, real earnings for the college-educated have held steady; among women, they have risen.

These two sets of trends—steady earnings for those with a college education, plunging earnings for those without—mean that college is increasingly important to financial well-being. In 1972, men with a bachelor's degree typically earned 22 percent more than those with a high school degree. By 2003, this return had nearly tripled, up to 60 percent.

In light of the rising importance of a college degree, policymakers have

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3. Over the same period, earnings among male high school dropouts plunged from $40,000 to $22,000.

focused on increasing college enrollment as an important tool for mitigating poverty. This chapter reviews the evidence on a key tool available to policy-makers—reducing college costs. Section 10.2 briefly outlines the policy context; section 10.3 reviews the evidence from experimental and high-quality quasi-experimental studies of college cost reduction; section 10.4 discusses the broad lessons derived from these studies and concludes.

10.2   Policy Context

Colleges, state and federal government, and private organizations spend billions to subsidize college costs. In this section, we briefly describe the major programs.

Two federal programs provide the bulk of aid to college students: the Pell Grant and the Stafford Loan. Pell Grants flow almost exclusively to families with incomes below $40,000 (Stedman 2003). During the 2004 to 2005 academic year, $13.6 billion in Pell Grants was delivered to over five million students (College Board 2005). During the same year, $55 billion in loans was delivered to undergraduates through the Stafford Loan program.

States hold down college costs by subsidizing public universities, which in turn charge lower tuition prices than their private counterparts. The vast majority of students attend public colleges, so this is an important channel through which government subsidizes college costs. In addition to charging artificially low prices to all students, states also offer scholarships to individual students. Most of these are small-scale programs, but beginning in the early 1990s, more than a dozen states established broad-based merit aid programs. These programs typically award full tuition and fees at state public universities (or in some cases, an equivalent voucher to attend a private school) to residents who maintain a minimum high school grade point average. Many require a grade point average of 3.0, not a particularly high threshold—Dynarski (2004) calculates that in 1999, 40 percent of high school seniors met this standard.

In recent years, the federal and state tax codes have also been used as a vehicle for subsidizing college costs. The Hope and Lifetime Learning tax credits and the deduction for college tuition and fees help families pay for current college costs. Parents can also claim children under twenty-four as dependents if they are enrolled in college. The federal Coverdell Education Savings Account and the state 529 savings plans help families pay for college in the future by increasing their after-tax returns on savings. With a total cost of $10.5 billion, these education tax incentives approach spending on the Pell Grant, historically the cornerstone of federal aid for college students (College Board 2005). But, as they are currently configured, these programs almost exclusively benefit upper-income families (Dynarski 2004; Dynarski and Scott-Clayton 2006a) and so are not candidate instruments for reducing poverty.

Foundations and colleges are additional sources of student aid. Programs such as the Gates Millenium Scholars, the I Have a Dream foundation, and Kalamazoo Promise fully sponsor college attendance (or "top up" the difference between government grants and estimated need) for low-income and/or minority students. Although these programs are small in scale compared to the federal and state aid programs discussed previously, they are highly visible and intended to increase college attendance, and so we will discuss them in the chapter.

We will not examine the new and widely-discussed scholarship programs of elite colleges (such as Harvard and Princeton) which offer a free ride for low-income students (Pallais and Turner 2007; Avery et al. 2006; Linsenmeier, Rosen, and Rouse 2006; Rothstein and Rouse 2007, van der Klaauw 2002). Helping low-income students make the leap from high school into *any* college is the critical task if the goal is poverty reduction, and these programs do not serve this function. The low-income student who takes up Princeton's offer of a free ride would likely have gone to Harvard (or Berkeley) had Princeton not been so generous. Convincing more nonwhite and low-income students to attend Princeton instead of Berkeley may serve important social goals, such as diversifying our political leadership (Bok and Bowen 2000), but poverty reduction is not among them.

Most evaluations of the programs we have mentioned focus on the enrollment margin. However, while enrollment has risen substantially over the past forty years, degree receipt has barely budged (Turner 2007). Thus retention and graduation of college enrollees has also become an important policy issue. We review evidence from several recent experimental evaluations that provide scholarships and services to existing college enrollees. These programs are of particular interest since they focus on marginal students, for whom retention rates are lowest.

10.3   Evidence

Economic theory (and common sense) predicts that lowering the price of college will increase attendance. While the theoretical prediction is clear, students' marginal responsiveness to additional dollars of aid is an empirical question. Answering this question is a challenge, since eligibility for subsidies is certainly not random and is likely correlated with unobserved determinants of schooling. As a result, estimates based on the cross-sectional correlation of aid with schooling are subject to multiple sources of bias.

A long empirical literature examines the effect of college costs on schooling decisions. Leslie and Brinkman (1988) review more than seventy of these studies.[4] With few exceptions, discussed later in this chapter, this long literature suffers from a key limitation: the response of schooling to price is

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4. Heller (1997) updates this review with studies done after Leslie and Brinkman (1988).

poorly identified. That is, the variation in schooling prices used to estimate the parameter of interest is likely to be correlated with the unobserved determinants of schooling.

More formally, the relationship between financial aid and schooling decisions can be expressed with the following equation:

(1) $$S_i = \alpha + \beta \, \text{Aid}_i + \varepsilon_i.$$

Here, S_i is some measure of an individual's schooling, such as college attendance or completed years of college, Aid_i is the amount of student aid (expressed in dollars) for which an individual is eligible, and the error term ε_i represents the unobserved determinants of schooling. If aid is uncorrelated with ε_i, then β can be interpreted as the effect of an additional dollar of aid on college attendance or completed education.

If financial aid is randomly assigned in an experimental setting, Aid_i is uncorrelated with ε_i. In nearly all nonexperimental studies, however, aid is offered to students on the basis of characteristics that independently affect the probability of college attendance. For example, the federal government uses the Pell Grant to increase the college attendance of low-income youth. If such students are relatively unlikely to attend college, perhaps because of low levels of parental education or poor secondary schooling, then estimates of β based on this source of variation in aid will be biased downward. Conversely, since many colleges use merit scholarships to attract high-achieving students, β could be biased upward if such scholarships are included in the analysis.

One can attempt to correct for this bias by controlling for observed determinants of schooling (such as parental income or academic achievement) in a vector of regressors X_i:

(2) $$S_i = \alpha + \beta \, \text{Aid}_i + \delta \, X_i + \varepsilon_i.$$

If X_i is sufficiently rich that it captures all other sources of variation in individual schooling decisions and schooling costs, then β will be unbiased. However, under plausible conditions this approach will fail, for two reasons:

- Complete data on relevant characteristics is rarely available. For example, parental wealth affects schooling decisions, both directly and through eligibility for aid, but comprehensive measures of parental (and extended family) wealth are rarely present in survey data, especially among adults who have completed their education.
- Even if all relevant variables are available, their role in the schooling decision may not be properly modeled. Theory provides little guidance as to which attributes should be held constant in estimating equation (2). This is particularly problematic because point estimates in this literature are often quite fragile, even changing sign with small changes in specification. As a practical example, the effect of income on Pell

Grant eligibility is highly nonlinear, and unless the functional form of the underlying relationship between income and schooling is perfectly specified, the resulting estimate will be biased.

10.3.1   Quasi-Experimental Studies

We now discuss analyses of natural (or quasi-) experiments, in which a discrete shift in aid policy affects one group of individuals but not others. Beginning with Hansen (1983), who examined the introduction of the Pell Grant in the early 1970s, a small but growing number of studies has used this approach to estimate the effect of schooling costs on college-going. We summarize the main results of these studies in table 10.1.

Federal Programs

Most of these studies examine the effect of grant aid. Studies that examine the Pell Grant, currently the largest source of federal grant aid, produce mixed results: Hansen (1983) and Kane (1995) found no effect of the introduction of the Pell on the college enrollment rate of low-income recent high school graduates. Seftor and Turner (2002) use a differences-in-differences framework to examine the effect of changing Pell Grant eligibility rules, and find that "nontraditional" students are about 4 percentage points more likely to attend college once they are considered eligible. Bettinger (2004) uses a regression-discontinuity approach to look at the effect of the Pell Grant on persistence using a sample of college students; his estimates are extremely sensitive to specification.

Veterans' educational benefits have historically been one of the largest sources of grant aid for college in the United States. Since children from poor families are more likely than others to enroll in the military, programs that increase veterans' education have the potential to reduce poverty. Multiple studies of the post-World War II GI Bills (Angrist 1993; Stanley 2003; Turner and Bound 2003; Bound and Turner 2003) have found these benefits to have raised schooling levels substantially.

Evaluating another federal program, Dynarski (2003) concludes that an additional $1,000 in aid increases college attendance by about 4 percentage points. She examines the elimination of the Social Security student benefit program, which paid the college costs of the children of deceased, disabled, or retired Social Security beneficiaries. Eligible students were disproportionately poor, nonwhite, and from single-parent families, so these estimates are quite relevant. Dynarski uses the death of a parent during a person's childhood as a proxy for Social Security beneficiary status, and finds that college attendance of the affected group dropped by more than a third, and schooling by two-thirds of a year.

While loans are the dominant form of federal aid today, we unfortunately know little about how they affect behavior. Reyes (1995) examines the effect of relative changes in loan eligibility across income groups in the early

eighties, and concludes that loan access increases attendance and completed schooling. Dynarski (2005) addresses this question using variation in loan eligibility induced by the Higher Education Amendments of 1992, which removed home equity from the set of assets taxed by the federal aid formula. She finds a small effect of loan eligibility on college attendance and a larger effect on the choice of college.

State Programs

Subsidized public tuitions, which vary considerably by state, are one of the largest sources of education subsidies. Estimates based on cross-sectional variation in tuition may be biased, since states with a preference for education may have both low tuition prices and high college attendance rates. The solution of Kane (1995) is to use state fixed effects; his identifying assumption is that within-state changes in tuition prices are uncorrelated with changes in a state's taste for college. He concludes that a $1,000 drop in public tuition produces about a 4 percentage point increase in college attendance rates of recent high school graduates.

Several studies have used the introduction of state merit scholarship programs as a source of variation in schooling costs. Dynarski (2000) and Cornwell, Mustard, and Sridhar (2006) conclude that the Georgia HOPE scholarship increases college attendance by 4 to 6 percentage points per $1,000 in grant aid. Dynarski (2004) finds that a dozen states' scholarship programs have had similar, but slightly smaller effects, and that their positive effects on college attendance are greater for nonwhites. Kane (2003) uses a regression discontinuity approach to examine the CalGrant, and finds substantial impacts on college entry for students who had already applied for financial aid. Abraham and Clark (2006) and Kane (2007) evaluate the DC Tuition Assistance Grant program, which allowed DC residents to pay in-state tuition at public schools across the country. They find that the fraction of DC residents that attended Maryland and Virginia schools more than doubled, and estimate an impact on overall enrollment of 3 to 4 percentage points per $1,000 of effective tuition reduction. Goodman (2008) examines a program in Massachusetts that assigns aid on the basis of a standardized test score, and finds that the scholarship induced 6 percent of winners to switch from private to public four-year colleges. He also finds that low-income (and low test score) students are more price sensitive. However, there was no impact on overall enrollment.

Dynarski (2008) finds that the Georgia and Arkansas merit scholarship programs have also increased degree completion, by around 3 to 4 percentage points. She estimates that the scholarships increases persistence by 5 to 11 percent for those who would have entered college anyway. This suggests that the positive effect of lower cost on retention outweighs any negative effect of enrolling marginally weaker students who are less likely to persist.

Finally, a recent paper by Scott-Clayton (2009) examines the impact

Table 10.1   Summary of studies

Study	Sample	Intervention/method	Financial award	Evaluation design	Outcomes	Effects
			Experimental studies			
STAR—Canada (Angrist et al. 2009)	~1,600 entering freshman at a public university in Canada, satellite campus	3 treatment groups— 1) peer advising and organized study group; 2) a merit scholarship for above-avg. grades; 3) both	Yes—$5,000 for a 3.0 avg., $1,000 for a 2.3 avg.	Randomized experiment	Grades, retention	Largest effect for combined group: 0.1–0.2 SD increase in grades; 4–5 percentage point decrease in probation. No effect on retention for any group. Weak/ no effects for groups 1 and 2; no effect for males in any group.
Opening Doors— New York (Bloom and Sommo 2005; Scrivener et al. 2008)	~750 Community College Attendees, mixed races, mostly immigrant	Learning Communities— organized cohort of entering students into same classes; improved counseling and monitoring; instructors work together	No—(except textbook voucher)	Randomized experiment	Credits taken and earned; pass rate and GPA; retention	8 percentage points less likely to withdraw and 10 point increase in pass rate; cumulative impact of 2.4 credits and 0.1 semesters; 5 percentage point increase in enrollment post-program.
Opening Doors— Louisiana (Brock and Richburg-Hayes 2006)	~500 Community college attendees, mostly female and African American	Financial aid; improved counseling and monitoring	Yes—$1,000 per semester for half-time enrollment and 2.0 GPA	Randomized experiment	Credits taken and earned; pass rate and GPA; retention	7 percentage points less likely to withdraw and 12 point increase in pass rate; cumulative increase of 3.3 credits and 0.3 semesters; 11 percentage point increase in post-program enrollment.
Opening Doors— Ohio (Scrivener and Au 2007; Scrivener and Pih 2007)	~1,000 community college attendees, mostly female and mixed race	Multiple mandatory meetings with counselors; aid award given for attendance	Yes—$150 per semester	Randomized experiment	Credits taken and earned; pass rate and GPA; retention	No effect on withdrawal or pass rate; cumulative increase of 0.8/1.0 credits and 0.1/0.2 semesters; 5.6/10.5 percentage point increase in post-program enrollment.

			Quasi-experimental studies			
Introduction of Pell Grant Program (Hansen 1983; Kane 1995)	October Current Population Survey; 1970–1977	Compare enrollment of eligible to noneligible population, before and after 1973 when the Pell Grant was established	Yes—maximum of $3,544 in 1991 dollars	Differences-in-differences	College enrollment and type	No effect
Change/discontinuity in Pell Grant eligibility (Seftor and Turner 2002; Bettinger 2004)	October Current Population Survey; 1969–1977 and 1984–1990—"nontraditional" older students only	Same as Kane (1995), plus a before/after comparison when independent student definition changed; Student Aid Index that determines eligibility is estimated directly from data	Yes—maximum of $3,544 in 1991 dollars	Differences-in-differences	Enrollment	~1.5 percentage point increase for initial Pell introduction; ~4 percentage points for 2nd change.
Tuition changes (Kane 1995)	CPS; NLSY-79; High School and Beyond	Between and within-state variation in public subsidization of college	Changes in tuition sticker price	State fixed effects	Enrollment	~4 percentage points per $1,000 drop in tuition.
Expansion of Stafford Loan eligibility (Reyes 1995; Dynarski 2005)	October CPS 1984–2000 and the Survey of Income and Program Participation (SIPP) 1986–1996	Before/after 1992 legal change—home equity no longer taxed in the federal student aid formula	Yes—reduced expected contribution by $2,400 for family with median equity	Differences-in-differences	Enrollment	5.1 percentage points per $1,000 of loan subsidy in the CPS; imprecise/no effect in SIPP; Reyes: 1.5 percentage points per $1,000.
GI Bill (Angrist 1993; Stanley 2003; Bound and Turner 2003; Turner and Bound 2003)	Survey of Occupational Change in a Generation, 1973; U.S. Census	Compare enrollment of military enlistees before/during/after eligibility periods	Yes—fully subsidized college attendance plus living stipend	Between/with-in cohorts	Total years of educational attainment	~0.25 years of education, or a 5–6 percentage point increase in attendance due to Korean War and World War II GI Bills.
Social Security Student Benefits (Dynarski 2003)	National Longitudinal Survey of Youth–1979	Elimination of the program in 1981—compared those with deceased father before and after	Yes—average annual payment was $6,700 in 1980 dollars	Differences-in-differences	Enrollment	3.6 percentage points per $1,000 of grant aid.

Table 10.1 (continued)

Study	Sample	Intervention/method	Financial award	Evaluation design	Outcomes	Effects
State Merit Aid Programs—Georgia HOPE scholarship (Dynarski 2000; Cornwell, Mustard, and Sridhar 2006)	CPS and Integrated Postsecondary Education Data System (IPEDS) 1988–1997	Before/after institution of a statewide merit (3.0 GPA minimum) scholarship in 1993	Yes—tuition and required fees at public institutions in GA	Differences-in-differences	Enrollment; college choice	4–6 percentage points per $1,000 of grant aid; increase in enrollment in GA schools.
State Merit Aid Program—CAL Grant (Kane 2003)	Administrative Data from California and the National Student Clearinghouse	Discontinuous changes in the eligibility formula for CAL Grants	Yes—tuition and required fees at public institutions or a private school grant of ~9,000	Regression discontinuity	Enrollment	3–4 percentage point increase (among those who applied for financial aid) for those eligible for CAL Grant A.
State Merit Aid Program—Adams Scholarship (Goodman 2008)	Administrative Data from Massachusetts Department of Education	Discontinuous change in eligibility based on test score cutoff; before/after institution of merit aid program	Yes—tuition waiver at MA public schools; ~$1,575 per year at 4 yrs.	Regression discontinuity; differences-in-differences	Enrollment	6% of winners switched from private to public four-year colleges; no impact on overall enrollment.
DC Tuition Assistance Grant (Kane 2004; Abraham and Clark 2006)	IPEDS; Department of Ed. FAFSA data; DCTAG administrative records; SAT data	Allowed DC residents to attend public schools in other states and pay in-state tuition	Yes—difference between out- and in-state tuition (up to $10,000)	Differences-in-differences	Enrollment; college location and type	~3–4 percentage point increase per $1,000 effective tuition reduction; fraction of DC residents at MA and VA colleges more than doubled.

Program (citation)	Data	Source of variation	Description	Method	Outcomes	Findings
State Merit Aid Program—multiple/ other (Dynarski 2004; Dynarski 2008; Scott-Clayton 2009)	Current Population Survey; WV State Administrative Data	Merit Aid programs in GA and other states— before/after creation of each program; West Virginia PROMISE scholarship	Varies—usually tuition and fees at a state public school or equivalent voucher for private	Differences-in-differences; regression discontinuity	Enrollment; college type; completion	~5–7 average percentage point increase in enrollment due to state programs; shift away from two-year and toward four-year schools; ~3–4 percentage point increase in degree completion (6 percentage point increase in on-time graduation for PROMISE recipients—linked to credit requirements).
Effect of school aid on yield rate (van der Klaauw 2002; Linsenmeier, Rosen, and Rouse 2006)	Administrative data from anonymous colleges, 1989–1993 and 1998	Discontinuous changes in the formula for aid allocation: before/after shift from loan/grant mix to grants only	Merit grants for students of higher ability ~$2,000 on average; full tuition	Regression discontinuity; differences-in-differences	Enrollment	~4 percentage points per $1,000 in grant aid; no impact on enrollment overall, but 8–10 percentage points for minorities.
Gates Millenium Scholars (DesJardins and McCall 2007)	National Opinion Research Center survey of program participants	Discontinuous change in eligibility based on an application cut score	"Tops up" diff. between need-based aid and price of college	Regression discontinuity	Retention; loan debt; hours worked	No impact on retention; 60% less debt; 35% fewer hours worked.

of the PROMISE scholarship, a merit aid program in West Virginia. The PROMISE scholarship was similar to other state merit programs in its initial eligibility requirements and the amount of aid it offered. But it was unique in requiring students to complete at least thirty credits per year in order to keep their scholarships, a rate which would put them on track to graduate in four years. She finds that PROMISE increased eventual graduation rates by almost 4 percentage points, while the percentage of students graduating on time increased by about 7 percentage points from a baseline of just 27 percent. The impacts on year-by-year credit completion were concentrated around the annual renewal threshold in the freshman through junior years, but disappeared in the senior year when students were still receiving their scholarships but no longer faced any renewal requirements (scholarships could not be renewed for a fifth year in any case). This finding suggests that a combination of cost reduction and performance incentives may have a greater impact than financial aid alone.

Other Programs

DesJardins and McCall (2007) study the impact of the Gates Millenium Scholarship (GMS) using a regression discontinuity design. The GMS tops up the difference between need-based grants and unmet financial need for eligible minority applicants. Scholars are selected on the basis of high school record and a scored application process, which generates discontinuous changes in the probability of receiving an award. Although the evaluation is still ongoing, they find weak impacts on overall retention but strong evidence of decreased loan debt and work hours.

Table 10.1 summarizes the findings from the quasi-experimental studies discussed earlier. The studies in this table are those that we consider as estimating causal impacts of the effect of schooling costs on schooling decisions. The best estimates suggest that eligibility for $1,000 of subsidy increases college attendance rates by roughly 4 percentage points. Aid eligibility also appears to increase completed schooling and shift students from community colleges toward four-year schools.

10.3.2   Experimental Evaluations

One straightforward way to assess the causal impact of financial aid on college enrollment and persistence is to randomly allocate scarce scholarship funds to an eligible population. Several experimental studies have examined the effect of scholarships when they are combined with mentoring or other services. A key unresolved question in these studies is the extent to which services, and the cost of providing them, are more effective than the scholarships.

Most randomized trials in higher education examine the effect of aid or services on grades, credit accumulation and/or persistence past the first year, *conditional on enrollment.* The reasons for this are largely practical—school-

based interventions are more administratively feasible than tracking high school students to their chosen colleges around the country. To our knowledge, only one randomized trial looks directly at the enrollment margin.

Upward Bound

Upward Bound is a federal and nationwide program that provides comprehensive precollege services to participants, including supplemental college preparatory coursework in math, science, and English; tutoring; counseling; and activities such as attendance at museums and plays. Mathematica Policy Research conducted a randomized trial of Upward Bound from 1992 to 1994, following participants for several years. They found weak impacts of Upward Bound on performance in high school courses (Myers and Schirm 1999.) A more recent evaluation finds no statistically significant impact on college enrollment (Myers et al. 2004) though there is some evidence of substitution from two- to four-year colleges.[5] There is no impact on total college credits earned.[6] See the chapter by Long (chap. 9 in this volume) for more detail on the administration and evaluation of Upward Bound.

Experimental Effects of College Persistence Programs

About 20 percent of students who enroll at a four-year college leave within one year. About 40 percent fail to obtain a degree within six years (College Board 2005.) Attrition is even higher at nonselective schools, where the majority of students commute from home and work part- or full-time. Since these students are more weakly attached to their institutions, policies have focused on creating a stronger connection with the college experience via more extensive mentoring, counseling, and collaborative "learning communities" (Bloom and Sommo 2005). Two randomized trials have evaluated the effect of such programs; we discuss them in the sections that follow.

Student Achievement and Retention Project

The Student Achievement and Retention Project (STAR) was a large-scale randomized trial launched in 2005 at the urban campus of a major Canadian public university (Angrist, Lang, and Oreopoulos 2009). Participants in the STAR experiment are similar to students at nonselective universities in the United States. About 80 percent of the sample lived with their parents and

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5. The treatment group was 5 to 6 percentage points *more* likely to have attended a four-year college, and 3 to 5 percentage points *less* likely to have attended a two-year college than the control group.

6. The evaluation does report much larger results for students with low (versus high) "educational expectations." Among students who did not expect to earn a bachelor's degree, the treatment group was about 20 percentage points more likely to attend a four-year college than the control group, although the overall enrollment effect was still not significant. However, since this evaluation does not actually measure degree receipt, this result is difficult to interpret. Other results by subgroup are available in Myers et al (2004).

commuted to school, and the majority planned to work part-time while enrolled. Many of the students were first- or second-generation immigrants.

Incoming freshman were randomly assigned to one of four groups. The first was offered enhanced services, in the form of peer advising and organized study groups. The second was offered a financial incentive of $5,000 to complete a full course load with a grade point average of 3.0 or higher (the payment was $1,000 for a GPA of at least 2.3). A third group was offered both services and a financial incentive, while a fourth group formed a control group and was offered the college's typical services.

Overall, the effect of STAR was modest. The largest impacts were found for the group offered both services and a financial incentive. First-year grade point average increased between 0.1 and 0.2 standard deviations, and the combined group was about 5 percentage points less likely to be placed on academic probation. Significant effects of STAR were driven entirely by female participants—there was no effect of the program on males in any group. There was also no effect of the program for the services or scholarship-only groups.

Opening Doors

Opening Doors is a large-scale randomized trial at six community colleges in four states run by MDRC. Preliminary results are currently available for five of the six sites. The interventions varied by site, but were some combination of "learning communities" (in which entering students take blocks of classes together and are offered extra tutoring); supplementary financial aid; and enhanced student services (extra counseling and monitoring).

The first Opening Doors evaluation occurred at Kingsborough Community College in Brooklyn, New York in the fall of 2003 (Bloom and Sommo 2005). The intervention targeted approximately 750 entering freshman, who were ethnically and racially diverse; many were recent immigrants who needed training in remedial English. Treatment group members were placed in learning communities of about twenty-five students each and received textbook vouchers.

Three semesters after the program at Kingsborough Community College, the treatment group was 5.6 percentage points more likely to be enrolled in any college (Scrivener et al. 2008). Treatment group members earned an average of 2.4 more credits and were in school about 0.1 more semesters. They were more likely to attempt and pass standardized reading and writing assessments. The effect sizes for these various assessments were around 0.1 standard deviations (SDs), but were closer to 0.2 SDs for students whose initial English skills were worse at baseline.[7]

A second set of Opening Doors demonstrations took place in northern Ohio (Scrivener and Au 2007; Scrivener and Pih 2007.) Students were given

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7. For more detail on the assessments and subgroup effect sizes, see Scrivener et al (2008).

regular appointments with an Opening Doors counselor and given a $150 per semester scholarship if they attended these meetings. Results were weak. There was no increase in credits attempted or earned in the initial semester, nor any impact on pass rate or grade point average. However, there was an effect on retention of 5 to 10 percentage points and a small effect on earned credits.

Two Opening Doors demonstrations also took place at community colleges in New Orleans in 2004 (Brock and Ritchburg-Hayes 2006.) The treatment group was offered $1,000 per semester for half-time enrollment and a C average. First year impacts were substantial. Opening Doors participants were about 9 percentage points more likely to be enrolled full-time, and earned on average 1.1 additional credits in the first semester. They were about 12 percentage points more likely to pass and about 7 percentage points less likely to withdraw from an attempted course. These effects persisted into the second and third semesters. The treatment group was about 18 percentage points more likely to remain enrolled into the second semester and about 11 percentage points more likely to enroll for a third semester. The pass rate for enrolled courses also remained significantly higher, and there was some evidence of small grade point average increases as well. The cumulative effect of the program was a large and statistically significant increase of 3.3 credits earned, and an average gain of 0.3 semesters worth of enrollment.

Overall, the results from Opening Doors are very encouraging. While cost estimates were unavailable in MDRC's preliminary report, the financial incentives offered were modest and the cost of providing services was likely to be relatively low as well (especially to the extent that they were integrated into the colleges' existing programs). Opening Doors had effects that were at least as large as the state merit aid programs reviewed earlier. Still, sample sizes in the evaluations were relatively small, and caution is warranted until the results can be scaled up and replicated. Further research is needed on these promising programs.

Several themes emerge from these experimental evaluations. First, the effect of aid appears to be greater than that of services. Interventions that offered services alone generally had weak impacts, whereas aid typically generated positive effects on enrollment and persistence. Second, aid has a larger impact when combined with services. In the STAR experiment, the only sustained gains were found in the treatment group that combined aid and services. The impact of Opening Doors (which combined aid and services) was proportionally larger than quasi-experimental estimates of aid alone from the studies reviewed in section 10.3.1.

10.4   Discussion

The effects of the financial aid programs we have discussed appear to depend critically on the form taken by the intervention. Program design

matters. In particular, there appears to be an important trade-off between targeting and program effectiveness. Highly-targeted programs such as the Pell focus their dollars on poorer students, but impose substantial paperwork burdens in order to identify the neediest. If targeted students are deterred by administrative hurdles, these programs will not work as well as intended. This is consistent with the pattern in table 10.1, in which the Pell and Stafford have small to zero effects while simpler, less-targeted programs have substantial effects.

The paperwork requirements of the federal, need-based aid programs are high. For the typical household, the aid application (the Free Application for Federal Student Aid, or FAFSA) is longer and more complicated than the federal tax return. The aid process is also highly uncertain, with definitive information about freshman-year aid not revealed until the spring of the senior year in high school (Dynarski and Scott-Clayton 2006b). This process may be particularly daunting for low-income families. Parents in these families have typically not gone to college themselves, so cannot draw from their own experiences to help their children. Low-income high school students have few guidance counselors to guide them through the process. They are unlikely to have Internet access at home and frequently speak English as a second language. As a result, need-based aid—which requires gathering extensive information about income and expenses—may have a smaller effect on this population than less-targeted forms of subsidy with fewer application requirements and lower transaction costs.

By contrast, Georgia's HOPE scholarship requires only that high school students maintain a 3.0 GPA in order to have their tuition and fees paid at any public college in Georgia. High schools proactively send transcript data to the state in order to identify scholarship winners. For most students, the HOPE application consists of a half page of basic biographical information. High school students are knowledgeable about HOPE. More than 70 percent of Georgia high school freshmen surveyed were able to name the program without prompting; and, when asked to list some requirements of HOPE, 59 percent volunteered that a high school GPA of 3.0 is necessary (Bugler and Henry 1998). The compliance costs of the Social Security student benefit program were also minimal.

Promising recent evidence on the benefits of simplification comes from a randomized trial of assisted Free Application for Federal Student Aid (FAFSA) completion conducted in partnership with H&R Block, an accounting firm that provides tax preparation assistance (Bettinger et al. 2009). Tax professionals prepopulated the FAFSA with income and asset information and assisted families with completion and filing of the form. The treatment group was also provided with an immediate estimate of aid eligibility and information about local postsecondary options and costs. Early results from the program suggest that assistance increased college

enrollment substantially, both for recent high school graduates and for older, independent students with no college experience (Bettinger et al. 2009). The results suggest that simplification may be a highly cost-effective way to improve college access. In contrast, there was no effect for a second treatment group that received only information, with no assistance. This implies that compliance costs, rather than lack of information, may be the more important barrier. The results suggest that increases in educational attainment could be achieved at virtually no cost by making existing aid programs simpler and more transparent.

In sum, the best evidence for effective financial aid on educational attainment comes from simple, broad-based programs. Given that many students in these programs would have gone to college anyway, the benefits of simplicity versus targeting are an empirical question. The evidence suggests that even broad-based programs may pass a social cost-benefit test. Dynarski (2008) estimates that state merit aid programs in Georgia and Arkansas pass a cost-benefit test if the return to schooling is between 5 and 9 percent. This is on the low end of instrumental variable rates of return to schooling, and is well below the rate of return estimated for recent cohorts (Angrist and Krueger 1991; Kane and Rouse 1995; Oreopoulos 2007). Thus it appears that even with a low effective increase in enrollment due to subsidization of inframarginal students, a simple, broad-based aid program can increase social welfare.

Students who enter college but drop out without a degree are an important target for those who wish to increase educational attainment. Dropout rates are especially high at community colleges, where poor students are concentrated. Interventions that increase persistence in community colleges are therefore a sensible focus if the goal is to increase the educational attainment of the poor. The Opening Doors demonstration projects provide strong evidence that pairing financial incentives with support services can increase college persistence among low-income students attending community colleges. Testing the efficacy of these programs at scale is an important next step for researchers.

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