Chapter 6

Access to Elites

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STUDENTS FROM relatively low-income families are persistently underrepresented in the most selective institutions of higher education (see, for example, Bowen, Kurzweil, and Tobin 2005). This is true among the most expensive private colleges and universities as well as many selective public universities with more modest tuition charges. Because selective colleges and universities are perceived to be important stepping-stones to professional and leadership positions, the representation of students from a broad range of socioeconomic backgrounds at these institutions is a significant demonstration of commitment to opportunity and intergenerational mobility.[1] With increased public attention to the underrepresentation of low-income students at selective colleges and universities, a number of leading universities have responded with aggressive initiatives intended to increase opportunities for low-income students.

The direct costs of college have risen substantially over the past decade, particularly at selective colleges and universities, and there is little indication that this trend will abate. This reality has increased the degree of concern about the capacity of elite colleges and universities to provide opportunities for students from low- and moderate-income families. Although the direct charges at selective public universities remain well below those at private universities, the combination of decreased state support, rising costs, and the need to raise tuition prices to maintain the quality of program offerings contributes to a sense that costs may exacerbate the difficulty in enrolling low-income students at state flagship universities (see Schwartz, in chapter 7, for more on college costs). At issue is whether aggressive recruiting and generous financial aid can counteract the effects of high tuition at selective universities to increase the representation of students from the most economically disadvantaged families.

Researchers and the press have shone a brighter spotlight on the underrepresentation of low-income students at the most selective institutions. One indication of the prominence of the issue is that the most recent *U.S. News and World Report* college rankings includes a section highlighting the colleges with a particularly high representation of low-income students. Colleges and universities have responded proactively, with the most selective at the forefront of initiatives to increase the enrollment of low-income students.

A number of colleges and universities are making aggressive and visible efforts to increase the availability of need-based financial aid to increase the representation of low-income students in their entering classes. In the fall of 2005, we identified ten such efforts, many with catchy titles such as AccessUVa, Illinois Promise, and Carolina Covenant. In the course of a year, a significant number of universities announced new programs and others announced expanded offerings. Among the private universities, Harvard, Yale, Brown, and—more recently—MIT have each announced programs. There is a common theme among these efforts. In all cases, the universities are making a direct and public case that a college education is affordable to low- and moderate-income students.[2] Because these programs are so new, however, it is far too early to evaluate their effects on outcomes such as college completion.

Stating the Problem

Overall, there is clear evidence that low-income students are underrepresented in the post-secondary pipeline. Table 6.1 shows the college enrollment rates of dependent students between age eighteen and twenty-four from national data in 2003. Although the overall difference between the enrollment rate of the top two income groups (69 to 71 percent) and the bottom two (37 to 44 percent) is significant, the large difference between students from different economic circumstances in enrollment at four-year institutions is even more striking. Among college students, those in the higher income groups are appreciably more likely to enroll in four-year colleges and universities, which often provide the most direct path to gaining a degree. Overall, the gap in college enrollment between students in the highest and the bottom income quartiles narrows to about 15 percentage points when high school achievement is taken into consideration (Ellwood and Kane 2000).

Beyond aggregate gaps in college enrollment rates, students from low-income families are particularly underrepresented in the most selective colleges and universities, both private and public. Table 6.2 shows data on applications, admission, and matriculation in relation to economic circumstances of those entering college in 1995 for the nineteen selective colleges and universities in the Expanded College & Beyond database

Table 6.1 College Enrollment Rates for Dependent Individuals Ages Eighteen to Twenty-four, 2003

	Two-Year		Four-Year		Total
Family Income	Full-Time	Part-Time	Full-Time	Part-Time	Post-secondary
Total	0.10	0.03	0.31	0.03	0.55
Less than $10,000	0.04	0.02	0.14	0.01	0.37
$10,000 to $14,999	0.06	0.03	0.20	0.03	0.44
$15,000 to $19,999	0.09	0.05	0.18	0.01	0.44
$20,000 to $29,999	0.09	0.03	0.20	0.02	0.45
$30,000 to $39,999	0.11	0.02	0.24	0.04	0.50
$40,000 to $49,999	0.10	0.07	0.23	0.03	0.50
$50,000 to $74,999	0.11	0.03	0.32	0.03	0.56
$75,000 to $99,999	0.11	0.05	0.38	0.03	0.64
$100,000 to $149,999	0.13	0.03	0.44	0.05	0.71
$150,000 and over	0.10	0.02	0.47	0.03	0.69
Not reported	0.07	0.03	0.31	0.02	0.53

Source: U.S. Census Bureau (2003, table 14).
http://www.census.gov/population/socdemo/school/cps2003/tab14_06.xls.

Table 6.2 Low-Income Students at Selective Colleges and Universities, 1995 Entering Cohort

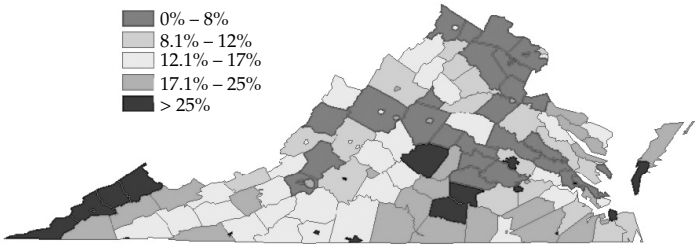
	Share Bottom Income Quartile			
	Apply	Admit	Enroll	Graduate
All expanded college and beyond	12%	9%	11%	11%
Ivy League universities	12%	8%	9%	8.2%
Public universities	12%	11%	12%	10.5%
Liberal arts colleges	11%	8%	10%	9.9%
Women's colleges	17%	13%	16%	15.5%

Source: Bowen, Kurzweil, and Tobin (2005, figure 5.1). Reprinted with permission.

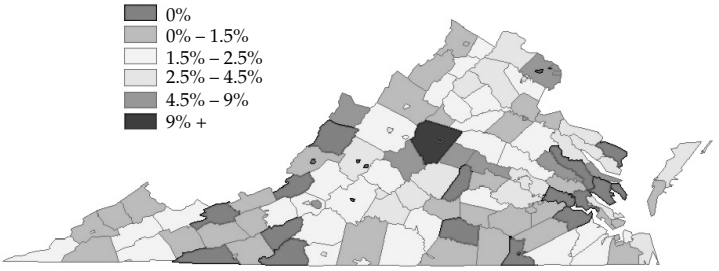
collected by the Andrew W. Mellon Foundation. Overall, fewer than 11 percent of first-year students matriculating at these institutions were from the bottom income quartile. Such results are echoed in Catherine Hill's and Gordon Winston's (2005) examination of selective private institutions, twenty-three schools among the membership of the Consortium on Financing Higher Education (COFHE). About 10 percent of matriculating students were from families with incomes less than $41,000. About 70 percent were from families with incomes exceeding $91,000. Still, within the group of selective schools, heterogeneity in the representation of low-income students is considerable. It is unambiguously the case that low-income students are much better represented at some universities than

Figure 6.1 Poverty and Enrollment at the University of Virginia by District

Panel A. Percent of Children Living Below the Poverty Line



Panel B. Percentage of Students Graduating from Public High Schools Attending the University of Virginia



Source Panel A: Census 2000 Summary File 3 (SF 3). TM-PCT052.
Source Panel B: University of Virginia Databook – IAAS (Fall 2004), Virginia Department of Education (Spring 2004).

others. Among the most highly ranked universities, about 14.1 percent of dependent students at MIT come from families with incomes less than $30,000 in the 2000–2001 school year, and of those at Harvard University about 4.4 percent do.[3]

A different (and graphic) indicator of how economic circumstances affect the likelihood of enrollment at a selective school is shown in figure 6.1 for the state of Virginia. The top panel shows the concentration of poverty by school district within the state, with poverty concentrated in the urban areas of Richmond and Norfolk and in the counties on the southern and western borders of the state. Yet, when we turn to enrollment at the University of Virginia, the distribution is reversed, with students drawn disproportionately from the affluent counties in northern Virginia. The simple correlation measure between family income and the attendance measure is 0.34.[4]

That low-income students are underrepresented at selective colleges and universities is not a new phenomenon. Yet the consequences today are magnified by the widening of the family income gap. The question is whether elite colleges and universities unintentionally contribute to the growing inequality by failing to provide enough opportunities for students from low-income families.

Hypotheses Explaining Underrepresentation

It is well established that low-income students are underrepresented in selective higher education. Yet the reasons for this underrepresentation and how public policies can narrow this gap are less clear. The research literature offers no consensus about why low-income students are underrepresented. Among the commonly cited explanations are credit constraints, information constraints, and low academic achievement in the precollege years, and the relative importance of these factors has been much debated. Whatever the answer is in aggregate, it is entirely plausible that barriers to enrollment at the most selective institutions are somewhat different than at the margin of enrollment.[5] We consider evidence related to these explanations before turning to the discussion of recent institutional initiatives designed to increase the participation of low-income students. The success of these initiatives depends in large part on how they are aligned with the causes of underrepresentation.

College Costs

College education is expensive, particularly at the nation's most selective colleges and universities. College tuition, combined with room and board expenses, places the annual sticker price of a college education well above $40,000 at selective private institutions such as Princeton and Brown University (table 6.3). Even with appreciably lower tuition charges for in-state residents, the price of college may approach $20,000 per year at state flagship institutions where on-campus residence is required. High direct college costs support a prima facie case that the most economically disadvantaged students may be squeezed out of collegiate opportunities, particularly at elite schools, by escalating college charges in the face of quite limited mechanisms for financing the full cost of college.

Yet, at the most selective colleges and universities in both the public and private sectors, the net price of college for low-income students is far less than the posted price, owing to the availability of need-based financial aid. The most highly ranked institutions generally maintain policies—by no means universal in higher education—of meeting full

Table 6.3 Cost of Attendance at Selective Public and Private Universities

School	2005–2006 (In-State)	2005–2006 (Out-of-State)
Harvard	$44,350	$44,350
Princeton	$43,385	$43,385
Yale	$43,700	$43,700
Brown	$44,530	$44,530
University of North Carolina–Chapel Hill	$14,294	$28,616
University of Virginia	$16,714	$33,769 to $34,669
University of Maryland	$19,633	$31,957
University of Michigan–Ann Arbor	$19,643	$38,031
Ohio State	$20,283	$31,506
University of Illinois at Urbana-Champaign	$19,240	$33,656

Source: Authors' tabulations.

need, which implies that an admitted student will be offered a package of grants, loans, and work-study to finance the cost of college.[6] Institutions differ markedly in the extent to which they offer financial aid in the form of grants or loans, with the most affluent offering aid packages with a higher fraction of grant aid. To be sure, in many cases, the expected payment from low-income students and families relative to income remains substantial. Catherine Hill, Gordon Winston, and Stephanie Boyd (2004) examine net college prices for students attending selective private institutions. This information replicated in table 6.4. It is clearly the case that, even before the substantial recent changes in the structure of financial aid, low-income students faced tuition charges well below the stated costs, which generally exceeded $33,000 for the 2001–2002 academic year, at private colleges and universities. Across all COFHE schools, the lowest income students, those with less than $24,000 in family income, could expect a direct cost of about $7,500, and those in the next income band, $25,000 to $41,000, could expect charges of about $8,500. At issue is how this burden of college costs affects enrollment and whether reducing the direct costs of college at these schools would substantially increase the representation of low-income students.

The public universities start with much lower tuition charges, but the availability of funds for financial aid is more constrained. Take the case of the University of Virginia, where the total cost of attendance for in-state students was estimated at $16,714 for the 2005–2006 academic year. Of this amount, $7,180 was tuition and fees (State Council on Higher Education in Virginia 2005). Because the maximum Pell Grant is $4,050 and dependent undergraduate students are limited in their borrowing from the federal government to $2,625 in the first year and $3,500 in their sec-

Table 6.4 Prices of Undergraduate Schools, 2001 to 2002

	Lower			Upper		
(Lower Bound)	Lowest 0	Middle $24,001	Middle $41,001	Middle $61,379	High $91,701	Sticker Price (Unaided)
Average net price						
COFHE schools	$7,552	$8,547	$11,557	$16,365	$23,690	$33,831
Coed colleges	$5,487	$7,280	$10,374	$15,259	$22,738	$33,403
Women's colleges	$7,863	$9,676	$13,134	$18,297	$25,663	$33,708
Ivy League universities	$8,169	$9,200	$11,893	$16,499	$23,949	$34,508
Non-Ivy universities	$7,495	$7,956	$11,238	$16,249	$23,399	$33,167
Net price/Sticker price						
COFHE schools	22%	25%	34%	48%	70%	
Coed colleges	17%	22%	31%	46%	68%	
Women's colleges	23%	29%	39%	54%	76%	
Ivy League universities	24%	27%	34%	48%	69%	
Non-Ivy universities	22%	24%	34%	49%	70%	

Source: Hill, Winston, Boyd (2005, table 2). Reprinted with permission.

ond year under the Stafford loan program, it is quite plausible that many undergraduate students with high financial need would be constrained from attending in the absence of institutional financial aid and other sources of private credit. Notably, in some states, specifically California and New York, additional means-tested grant aid is available from the state to students attending colleges and universities within the state. The Tuition Assistance Program (TAP) in New York provides up to $5,000 in additional aid and the Cal Grant program offers full tuition at a public institution or stipends over $9,000 at private in-state institutions for students meeting academic requirements. Ronald Ehrenberg (2005) suggests that these state programs may contribute to the relative success of selective institutions in New York and California in recruiting low-income students.

Make no mistake: college costs may be a substantial factor in the underrepresentation of low-income students at the most selective colleges and universities. However, the research evidence on the direct effect of changes in net price on college enrollment or persistence at selective institutions is relatively sparse.[7]

Table 6.5 Distribution of SAT-Test Takers

	National Test-Taking Population (1 in 10 Sample)						
	Lower			Upper			
(Lower Bound)	Lowest 0	Middle $24,001	Middle $41,001	Middle $61,379	High $91,701	Total	Total Students
1600	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	30
1520	0.1%	0.2%	0.2%	0.5%	1.3%	0.5%	356
1420	0.5%	0.8%	1.4%	2.1%	4.7%	2.0%	1447
1300	1.8%	3.4%	5.3%	7.5%	11.9%	6.3%	4557
1220	2.6%	5.1%	7.0%	9.1%	12.6%	7.6%	5492
1110	8.1%	12.3%	15.6%	18.5%	21.9%	15.8%	11355
1030	9.0%	13.4%	15.0%	16.1%	14.9%	13.9%	10031
910	20.5%	23.5%	24.1%	22.6%	18.1%	21.7%	15648
830	25.3%	15.4%	14.0%	11.2%	7.9%	12.8%	9200
740	8.8%	13.7%	10.0%	7.6%	4.3%	10.1%	7242
620	15.2%	8.8%	5.4%	3.6%	1.8%	6.5%	4668
500	6.8%	2.9%	1.6%	1.0%	0.5%	2.3%	1681
400	1.4%	0.5%	0.2%	0.1%	0.1%	0.4%	308
Total students	12,117	13,665	14,084	16,000	16,149	72,015	72,015

Source: Hill and Winston (2005, tables 1, A1, and A2).

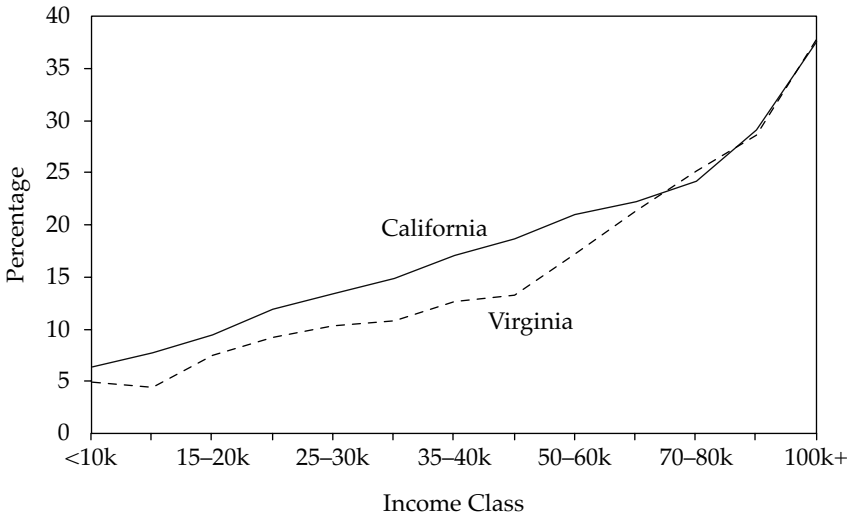
Achievement Differences

Differences between low-income students and their more affluent peers in measures of achievement start in early grades and widen through the hurdles that lead to enrollment at selective colleges. Low-income students not only are less likely to take college placement tests[8] but also tend to have lower scores on these exams. The gap is particularly marked at the top of the distribution from which elite colleges and universities are likely to draw students.

Considering the distribution of college placement test scores by family income provides a different perspective on the differences in college preparation by family income. Low-income students are dramatically underrepresented at the top tail of SAT scores (see table 6.5), and similar differences by income are apparent in ACT data. Students from families with income below $41,000 make up about 36 percent of all test-takers but only about 13 percent of those with SAT scores greater than 1,300 and only about 10 percent of those with scores over 1,520.

For public universities drawing disproportionately from the pool of state residents, variation across states in the link between test scores and income will have some effect on the pool of potential students. For example, both California and Virginia require the SAT for admission to the

Figure 6.2 Students Scoring 1200 or Better on SAT



Source: Tebbs and Turner (2005a).
Note: Tabulations from the "Test-Takers Data" covering SAT performance and responses to the Student Descriptive Questionnaire were provided by Jesse Rothstein and are limited to respondents with known race-ethnicity. See Card and Krueger (2004) for additional details about the data.

state flagship institution, but a substantially higher fraction of low-income test-takers in California exceed a score of 1200 (a plausible indicator of preparedness for university study) than their Virginia counterparts do (see figure 6.2). Thus, to some degree, the much higher representation of Pell Grant recipients at University of California institutions relative to the University of Virginia reflects differences in state demographic conditions and inequality in primary-secondary schooling, in addition to the differential effectiveness of the universities in recruiting low-income students.[9] For this reason, we regard the continued use of measures of Pell shares as indicators of how well university policies address the needs of low-income students, such as the recent ranking in the *Chronicle of Higher Education* (Fischer 2006), as misleading and counterproductive (for a detailed assessment of the problems associated with the use of the Pell share measures in policy discussions, see Tebbs and Turner 2005a; Turner 2006).

Given the scarcity of low-income students with relatively high achievement, are there initiatives at the university level that can narrow test-score gaps? What are the prospects for students with modest measured achieve-

ment who have overcome substantial economic hurdles at selective institutions? Although university policies can affect test scores only indirectly and over the long run, universities can respond to the observed gaps in the short run. In addition, if traditional measures of achievement are relatively weak indicators of performance for low-income students, universities may benefit from policies that lead to the admission of students with moderate test scores.

Information Constraints

Beyond direct constraints to financing, observers in both local and national markets have suggested that the underrepresentation of low-income students at selective colleges and universities may go beyond the tangible issues of test scores and financial aid. One potential dimension in which low-income students may differ from their more affluent peers is in the information they bring to the college application. One specific information problem is a failure to understand the benefits of college and the extent to which financial aid will reduce the burden of paying for college. Yet, in designing and evaluating an outreach program known as COACH (College Opportunity and Career Help) in the Boston public schools, the economists Tom Kane and Chris Avery found that low-income students' understanding of the benefits and costs of college did not differ systematically from more affluent peers (Avery and Kane 2004).

One question that remains is whether interventions and intensive counseling designed to help students overcome the complexity of the process of applying for college and financial aid would improve outcomes for low-income students. Susan Dynarski and Judith Scott-Clayton (2006) note that the complexity of the needs analysis system poses a substantial challenge for many potential students from low-income families and posit that a radical simplification of the federal student aid application would reduce the barriers for low-income students in understanding aid eligibility. There is, however, little evidence to suggest that existing extracurricular interventions targeted on low-income youth have been systematically effective in increasing college enrollment. For example, Upward Bound, a $250 million federal program designed to motivate and prepare disadvantaged high school students for college was found to have little or no effect on student outcomes. A recent evaluation of the program by Mathematica (Myers et al. 2004) compared Upward Bound applicants who were randomly assigned to either a program or a control group. It found that Upward Bound had no effect on college enrollment, total number of college or high school credits earned, high school grades, or high school graduation in the aggregate. However, the program positively affected some of these outcomes for students who did not expect to earn a bachelor's degree before entering Upward

Bound and may have made its students more likely to enroll in four-year colleges in lieu of two-year colleges.

Another and quite different type of information constraint is associated with perceptions about fit. Students from low-income families are likely to face more uncertainty about what residential college life is about if their parents or acquaintances did not complete a four-year degree.[10] For example, recruiters for Harvard University have faced the challenge of dispelling preconceptions that the university is "a place for all rich white kids" or notions of "people all dressed up in their nice blazers and checkered sweaters" (Marcella Bombardieri, *Boston Globe,* July 16, 2005, p. A1). More generally, Paul Courant, Michael McPherson, and Alexandra Resch (2006) suggest that many students from low-income families simply "never considered the possibility that they could attend, for example, UNC–Chapel Hill or UT-Austin" (307). One question for selective universities is whether well-worn stereotypes are fact or fiction. Are students from moderate means uncomfortable in particular selective university environments? To the extent that preconceptions of low-income students are false, university policy faces an aggressive challenge in reshaping public opinion.

Policy Channels: What Can Universities Do?

To increase the enrollment of low-income students, colleges and universities can have direct effects through recruiting, admissions, financial aid, and on-campus retention efforts. Different institutions may well choose to focus on different channels—and with different policy tools.

Having identified financial constraints, achievement gaps, and information barriers as obstacles to the greater representation of low-income students, the question becomes what universities can do. Potential policy levers include increased financial aid, efforts to increase information and other outreach initiatives, and paying greater attention to family circumstances in the admission process.

New Institutional Initiatives

Over the course of the last several years, many leaders in higher education have spoken out in their determination to improve the representation of students from low-income families in selective higher education. University presidents have gone beyond the public pulpit to committing resources to new policies toward this goal.

Most prominent among these, then Harvard President Lawrence Summers delivered an address at a February 2004 meeting of the American Council on Education in which he described the "manifest inadequacy of higher education's current contribution to equality of opportunity in America" and went on to announce the new Harvard Financial Aid Ini-

tiative designed to encourage the enrollment of students from low- and moderate-income families. The announcement that students' families with incomes below $40,000 would no longer make any payments to the cost of attendance was the most visible and transparent change in the Harvard University policies. Others included expanded recruiting, a renewed emphasis on considering family circumstances in the admission process, and new efforts to deepen the pipeline of prospective students considering Harvard University.[11]

Although the Harvard initiative was in some ways the most visible and received a disproportionate amount of press attention, other universities—particularly those in the public sector—had already initiated programs to increase the representation of low-income students. In fact, Princeton was the first university to eliminate loans from the aid packages of low-income students, initially eliminating loans for low-income students in 1998 and then eliminating loans for all aid-eligible students in 2001.

Selective public universities have also launched programs to address the underrepresentation of low-income students in their classes. The University of North Carolina introduced the Carolina Covenant program in 2003 and the University of Virginia put forward an aggressive plan known as AccessUVa early in 2004. These initiatives aim to increase public information, recruiting and need-based financial aid. In the fall of 2004, representatives of the admission office at the University of Virginia engaged in unprecedented efforts to reach low-income students and encourage applications.

Between the fall of 2003 and 2005, at least ten new initiatives aimed at increasing opportunities for low-income students were launched. Tables 6.6 and 6.7 outline the dimension and timing of these initiatives for private and public universities. Nearly all of the initiatives emphasize transparency in the allocation of financial aid. The architects of these programs have been explicit in trying to frame expected college costs in plain language rather than in the jargon of financial aid administrators with terms like adjusted gross income and expected family contribution. So, Harvard University states its program in terms of covering the entire cost of attendance through grants rather than loans for families with incomes less than $40,000, while Princeton guarantees that it will meet 100 percent of need through grants not loans.

Not only do these programs have easily understood financial criteria, but students' eligibility does not depend on merit (conditional on admission). Aside from Ohio State's Land-Grant Opportunity Scholarship, the financial awards are given to any student who is admitted to the university and meets the financial criteria. This distinguishes these scholarships from older institutional scholarships such as the Longhorn Opportunity Scholarship and the Cal Opportunity Scholarship, for which only the most accomplished disadvantaged students are eligible. It also differentiates

Table 6.6 Programs to Increase Enrollment of Low-Income Students at State Flagship Universities

School	Program Name	Program Description	Date of Announcement	First Class Affected (Date of Entry)	Amount of New Money (Annually) When Fully Implemented
Harvard	None	Harvard covers the entire cost of attendance for students with family incomes below $40,000 through grants and work-study, not loans. In addition, Harvard has greatly reduced the contributions it expects from families with incomes between $40,000 and $60,000.[a]	February 2004	Fall 2004	$2 million
Princeton	None	Princeton meets 100 percent of need for all students through grants and work-study, not loans. Princeton no longer taxes home equity in the financial aid formula and has reduced the rate at which student savings are taxed from 35 to 5 percent, the tax rate on parental savings.	January 2001	Fall 2001[b]	$10.3 million (for one year, in 2003)

Yale	None	Yale covers the entire cost of attendance for students with family incomes below $45,000 through grants and work-study, not loans. In addition, Yale has approximately halved the contributions it expects from families with incomes between $45,000 and $60,000.[c]	March 2005	Fall 2005	$3 million
Brown	Sidney E. Frank Endowed Scholarship Fund	Approximately 128 of Brown's neediest students (typically those with family incomes below $30,000) will have their college costs covered by a combination of expected family contribution, grants, and work-study, not loans. This program is funded by a $100 million gift from alumnus Sidney E. Frank.[d]	September 2004	Fall 2005	$100 million total (not per year)

Source: Authors' compilations based on information available in August 2005.

[a] This is coupled with more active recruitment of low-income students, a summer academy for low-income Boston students to prepare them for college and a consideration of financial difficulty in admissions decisions.

[b] Princeton's initiatives began in 1998 with the elimination of loans for low-income new matriculants.

[c] Yale has also made other recent changes to its financial aid programs including allowing students to take summer school classes on financial aid and paying for a trip for international students to return home each year.

[d] Starting in fall 2002, Brown no longer required freshmen to participate in work-study and starting with the entering class of 2003, Brown's admissions have been need-blind.

Table 6.7 Programs Designed to Increase Enrollment of Low-Income Students at State Flagship Universities

State-School	Program Name	Program Description	Date of Announcement	First Class Affected (Date of Entry)	Amount of New Money (Annually) When Fully Implemented
University of North Carolina	The Carolina Covenant	UNC covers the entire cost of attendance for students with family incomes within 200 percent of the poverty line through grants and work-study, not loans. These students also receive laptops to fulfill UNC's laptop requirement and are offered enrichment opportunities such as faculty mentoring and etiquette dinners.	October 2003	Fall 2004	$13.2 million
University of Virginia	AccessUVa	UVa covers the entire cost of attendance for students with family incomes within 200 percent of the poverty line through grants, not loans or work-study. UVa caps the amount of need-based debt any student is forced to take out at 25 percent of the four-year in-state cost of attendance, providing grants to cover the rest of the student's costs. It also provides financial aid counseling to admitted students and their families.	February 2004	Fall 2004	Board of Visitors will contribute over $20 million (this number includes some financial aid resources available before program initiation)

University of Maryland	Maryland Pathways	UMd covers the entire cost of attendance for students who have no ability to pay for college as judged by the FASFA (typically those with family incomes below the poverty line) through grants and work-study. UMd caps the amount of need-based debt Maryland resident seniors can accumulate at $15,900 in four years, providing grants to cover the rest of the student's costs. It also provides all students who lose federal Pell aid because they take jobs with grants equal to the Pell Grant they would have received had they not worked.	April 2004	Fall 2004[a] (debt cap implemented in Fall 2005)	$1.6 million[b]
University of Michigan, Ann Arbor	M-Pact	UMich has replaced some loans in the financial aid packages of low and middle-income in-state students with grants. Students who qualify for a full Pell Grant receive $1,500 more in grant assistance in lieu of loans, those who are slightly more affluent receive $1,000 more, and those who barely miss Pell eligibility (typically those with family incomes between $50,000 and $70,000) receive $500 more in grant aid.	February 2005	Fall 2005	$3 million

(Table continues on p. 144)

Table 6.7 Programs Designed to Increase Enrollment of Low-Income Students at State Flagship Universities (*Continued*)

State-School	Program Name	Program Description	Date of Announcement	First Class Affected (Date of Entry)	Amount of New Money (Annually) When Fully Implemented
Ohio State	Land-Grant Opportunity Scholarship	Ohio State covers the entire cost of attendance for one student from each of Ohio's eighty-eight counties through a scholarship and work-study. Within a county, the strongest student whose family income is less than $40,000 a year will be awarded this scholarship. If there are no admitted students from a particular county whose family income is below $40,000, the scholarship will be awarded to a student in another county who qualifies.	January 2005	Fall 2005	$1.5 million
University of Illinois at Urbana-Champaign	Illinois Promise	UIUC covers the entire cost of attendance of in-state students whose family income is at or below the poverty line and whose expected family contribution is zero as determined by the FASFA through grants and work-study.	December 2004	Fall 2005	$280,000 (first year, not including federal and state costs)

Source: Authors' compilations based on information available in fall 2005.
[a] Maryland's online magazine *Outlook Online* says the program's first eligible class entered in Fall 2004 as does *Black Issues in Higher Education,* whereas the financial aid website says the program started in the fall of 2005.
[b] As some of these funds are diverted from other financial aid efforts, this number does not measure the total increase in financial aid funds available.

these programs from statewide financial aid programs such as New York's Higher Education Opportunity Program (1969) and Educational Opportunity Program (1967) and California's Cal Grant (1955) which are also conditioned on ability.[12]

That Harvard, Princeton, Yale, and Brown have adjusted their financial aid packages in similar ways is not a coincidence. Competition pushes these institutions to make very similar offers of financial aid, as they compete for many of the same students. Among these institutions, Yale University is the late entrant to this competition, making its announcement of full grant aid for low-income students in early 2005. Opportunity costs drove the reluctance of Yale to eliminate loans entirely. Speaking on financial aid issues in February 2005, Yale University President Richard Levin notes, "It's a question of how much you can afford to do and what the opportunity cost is of doing it. We have a lot more good ideas around here than we have money." (quoted in Sadeghi 2005)

Beyond changes in financial aid, it is much more difficult to observe how these universities are adjusting recruitment and admissions. Although President Summers was forthright in calling for greater attention to low-income students in the admission process, the characterization of how the disposition of low-income students in the admission process changed must wait for more data. College and university leaders have long promoted the rhetoric of paying special attention to economic circumstances in college admissions, but the data tell a different story.[13] Conditional on measured academic achievement, low-income students are no more likely to be admitted to selective colleges and universities than their high-income peers (Bowen, Kurzweil, and Tobin 2005).

Turning to the initiatives at public universities (table 6.7), one can see a number of parallels with the private programs. Both sets of institutions have aimed to present a clear message with respect to financial aid, but the actual degree of generosity varies by university. Scale, combined with initial endowment, generates a notable difference between the initiatives of public and private universities. The two most generous public university initiatives, the Carolina Covenant and AccessUVa, are similar to the programs at private universities. The Carolina Covenant meets full demonstrated need for students with family incomes within 200 percent of the poverty line, which was $37,700 for a family of four in the 2005–2006 school year, through scholarships, grants, and work study. AccessUVa meets these students' financial needs through grants and scholarships alone.[14] Yet many of the state programs are far less generous. The University of Illinois's Illinois Promise, for example, only eliminates loans for students with family incomes under the poverty line. Public university initiatives show more variation, with programs like M-Pact at Michigan focusing more on increasing the generosity of aid to a range of low-income students rather than eliminating loan burdens entirely.[15]

The total cost of an incremental change in financial aid will inherently have a much larger budgetary impact at institutions like Ohio State or the University of Michigan that have many students and relatively small endowments than at schools with fewer students and larger endowments like Harvard and Princeton. What is more, the number of inframarginal students—those who would choose to attend the university without additional aid—is likely greater at public universities. To illustrate this point, the first-year class at the University of Michigan enrolled 5,961 students in the fall of 2004 and at Harvard enrolled 1,646. Suppose that both institutions plan to use an increase in grant aid of $3,000 per low-income student to increase the enrollment rate of low-income students. The program will be much more expensive at the University of Michigan for several reasons:

- With the same share of low-income students matriculating at Michigan and Harvard, the increase in the aid bill for current students will be more than 3.6 times larger at Michigan than at Harvard. (That is, 7 percent of students aid-eligible at both institutions would imply additional aid commitments of $1,251,810 at Michigan and $345,660 at Harvard.)
- The actual share of aid-eligible students is already higher at Michigan than at Harvard. For example, 7 percent of Harvard undergraduates receive Pell Grants versus 13 percent at Michigan. This would push the increment in the financial aid bills associated with a $3,000 increase in grant aid at Michigan to $2,324,790.

A particularly important point is that spending on inframarginal students—those expected to attend without additional aid—will be higher at the institution with relatively high pre-program enrollment of low-income students. Scale, combined with the status quo representation of low-income students, will have a large effect on the cost of the new initiatives that target the aid margin. Public universities are in general much larger in scale at the undergraduate level than their private counterparts, which increases the cost of any innovation in financial aid. Even among the public universities the disparity in the size of investments is wide, with the University of North Carolina spending over eight times as much as the University of Maryland and Ohio State. The University of Virginia spends even more than the University of North Carolina–Chapel Hill (see table 6.7).

With the exception of the University of Virginia, the public university initiatives are distinguished by a focus on increasing opportunities for in-state low-income students. (Approximately 30 percent of students admitted to the University of Virginia under the AccessUVa banner are from out of state, which is roughly consistent with the overall undergraduate representation of out-of-state students.) The Land Grant Opportunity Scholarship program at Ohio State University takes this further, provid-

ing one grant to a resident of each of Ohio's eighty-eight counties based on need and academic achievement.

One potential virtue of the emergence of somewhat different initiatives is that variation in policies and outreach may help sharpen public understanding of how to reduce barriers to collegiate attainment for low-income students.

Assessing the New Access Initiatives

One of the most striking features of the aggressive efforts to increase the representation of low-income students is the extent to which the programs are propelled by strong beliefs about needed change and considerable determination. Several colleges and universities have been aggressive in proclaiming the initial success of their access initiatives in the press, but few have developed long-run strategies for evaluation. Two exceptions appear to be Harvard and Princeton, where independent research teams have requested data and are evaluating the effects of policy changes.[16]

Evidence in the Press

University press offices tend to be unequivocal in their convictions about the success of the new initiatives to increase access. Both Harvard University and the University of Virginia have been aggressive in proclaiming the gains brought about by the new access initiatives, even before the students recruited under these programs started classes.

A July 16, 2005, article in the *Boston Globe* announced that the access initiative introduced by Harvard University had led to an increase of 21 percent in the expected representation of students with incomes less than $60,000 (Marcella Bombardieri, "Elite Colleges Go After Low-Income Recruits," p. A1). New and aggressive recruiting efforts were credited for the change at Harvard, including contacting about 12,000 students identified as potential low-income recruits and expanded outreach by admissions staff.[17]

At the University of Virginia, the lead article in the June 17 internal faculty staff publication *Inside UVA* trumpeted the increase in the expected matriculation of students with family incomes below 200 percent of the poverty line (Dan Heuchert, "The Plan's Working," 2005). There is no question that the basic result holds. The number of students from low-income families accepting offers to matriculate at the University of Virginia increased significantly—by more than 50 percent. Focusing on students from families with incomes less than 200 percent of the poverty line, the change is dramatic. Although only 133 students, a mere 4.3 percent of the first-year class, were in this income range in 2004, 200 first-year students from families with incomes less than 200 percent of the poverty line matriculated in the fall of 2005.[18]

Table 6.8 Changes in Admissions Patterns at the University of Virginia from 2004 to 2005

	Applications	Admit Rate	Matriculation Rate
<200 percent poverty	11%	6%	28%
All other	6%	–3%	2%
Difference in change	5%	9%	26%

Source: Authors' compilations.

What is less clear from the evidence is the mechanism generating this change. Without diminishing the accomplishment of substantial changes in expected matriculation in the first year of these initiatives, evaluation of components of the program is critical to assess the return on marginal dollars. Press accounts and materials describing the program emphasize the role of outreach and increasing the number of applications from low-income students in generating this change at the University of Virginia. Comparing applications and admissions by family income for the fall of 2004 and of 2005 shows that it is at the margin of applications where changes were the smallest relative to admission rates and matriculation conditional on admission.[19] Table 6.8 presents September 2005 data from the University of Virginia Office of Institutional Assessment and the relative changes from the fall of 2004 to the fall of 2005.

At the University of Virginia as well as at the University of North Carolina, the changes in the socioeconomic composition of the recent entering classes following from the AccessUVa and Carolina Covenant initiatives have been impressive. Although such changes are a noteworthy first step, the real effects of selective university admission will only be realized through course completion and graduation, which is too early to assess.

The promotion of personal stories combined with evidence of changes in the admissions profile may serve to encourage low-income potential students in future cohorts to apply to the University of Virginia. Press coverage celebrating the initial accomplishments under AccessUVa can be a powerful agent in spreading the word about the availability of opportunities for low-income students at the University of Virginia. Such coverage may be a very efficient mechanism to diminish informational barriers that inhibit low-income students from applying to and enrolling at the University of Virginia.

Still, measures of initial enrollment available at the early stages of AccessUVa or the Harvard Financial Aid Initiative are incomplete indicators of the extent to which these initiatives will change the longer-term underrepresentation of low-income students among graduates of selective colleges and universities. To evaluate fully the impact of these programs, universities will need to monitor persistence, academic performance, and graduation.[20]

Universities mounting ambitious access programs must separate the objectives of promotion and evaluation. For private and public universities alike, increasing the visibility of aid and outreach programs is one of the objectives. Providing information that the door to selective higher education is open to low-income students is, in fact, an important component of the treatment aspect of these new initiatives. Whether most universities will go beyond "the message" to evaluate these initiatives is an open question. The case for evaluation is compelling because so little is known about how the policies on the table affect outcomes at selective universities. In an environment of scarce resources, universities need to weigh alternatives.

Challenges in Evaluation

Any critique of the absence of comprehensive strategies for the evaluation of the newly initiated college access programs must also acknowledge the magnitude of the challenge. Evaluating these initiatives is inherently difficult because of the complexity of the reform process in many cases. A number of colleges and universities are not simply adjusting one piece of the process but rather simultaneously changing multiple levers affecting collegiate participation, including both recruitment efforts and financial aid policies.[21] Yet the evaluation of these efforts is certainly not impossible and there would seem to be a range of experimental and nonexperimental strategies that colleges and universities could use to gain a clear understanding of which pieces of the initiatives have the highest returns.

A second difficulty is that what economists call partial equilibrium results may differ appreciably from general equilibrium results. The effects of changes in policies at one university—holding policies at other universities essentially constant—are likely to be very different than the results we will observe if all universities change policies. When one college increases the generosity of its aid or makes efforts to increase its reach in underserved areas, its numbers of high achieving low-income students will likely rise appreciably. Yet this is rarely the end of the story—increases in aid by Princeton are likely to be followed by increases in aid from Harvard and Yale, just as those at the University of Virginia induce increases at other selective colleges in Virginia.[22]

That colleges and universities are increasing the level of competition in enrolling high achieving, low-income students certainly benefits this group of students in the short run. An important policy question is whether the overall effects of these initiatives when put in place by a number of colleges and universities will be to reshuffle a fixed pool of students among relatively selective institutions or, instead, will increase the overall representation of low-income students at the nation's most selective colleges and universities. This question cannot be answered empirically yet, but the likely change in the distribution of students among collegiate institutions

in response to increases in need-based financial aid at a number of colleges and universities has been explored (Pallais and Turner 2006).

Differences in Outcomes: The Challenge for Public Universities

Selective public universities face some of the toughest challenges in improving outcomes for low-income students. The sources of this challenge are multifold. First, public universities have an obligation to serve their within-state constituency and face considerable pressure from state legislators to recruit a substantial share of students from in state. Second, it is state colleges and universities that may face the greatest competition from selective private institutions as the latter seek to increase opportunities on their own campuses for low-income students. Finally, relative to selective private universities, the challenges faced by state flagship universities are exacerbated by more limited financial aid resources and larger initial cohorts.

Moreover, it is the students now attending state flagship universities who are most likely to be lured to the elite private institutions with more generous aid offers. In discussing the access initiative at Harvard University, Caroline Hoxby notes that "in the short term, we have to face the fact that these kids who get into Harvard would not otherwise be going to a community college, they may be going to the University of Michigan's honors program."[23] Hoxby goes on to suggest the possibility of substantial long-term benefits if the reach of these programs is strong enough to convey the message that "as long as you do well you can go to any school you like" (Marcella Bombardieri, "Elite Colleges Go After Low-Income Recruits," *The Boston Globe,* July 16, 2005, p. A1).

We also need to recognize that public universities are unique in their commitment to serve relatively confined geographic areas. Both benefits and hardships are associated with efforts to increase enrollment and completion of well-qualified low-income students. The benefits are tied to the observation that the returns to outreach and campus contact are likely to be much greater in a confined local area. It is simply much easier for the University of Michigan or the University of Virginia to make direct appeals to students within the state using media and direct outreach than it is for a private university to target a national audience.

Yet, though national scale may be a disadvantage in outreach, it is also an advantage when universities use the margin of admissions decisions to increase advantages for low-income students. Searching within a state, the pool of low-income students across all potential measures of pre-collegiate achievement is smaller than it is in aggregate. Thus, if a national university and a state university, with an expectation of admitting a disproportionate number of in-state students, starting from similar admissions standards, both seek to increase the number of low-income students admitted by the same number, the state university will be

required to make much larger changes in admissions criteria than the national university. The intuition follows from the observation that the number of students at any test score in the national distribution is greater than the number of students in the state distributions (for a more detailed example and discussion of this point, see Pallais and Turner 2006). It follows that, to achieve the same increase in the representation of low-income students, the state university will be required to admit students at greater risk of struggling academically.

Conclusion

The tools of program evaluation that economists (and other social scientists) have developed over the last quarter century should be more aggressively employed as selective colleges and universities tackle the vexing challenge of increasing the enrollment and attainment of young people from economically disadvantaged backgrounds. Outreach programs and financial aid initiatives are simply too expensive in both direct costs and the alternative uses of university resources to rely on testimonials and committed beliefs in forming and implementing policies.

For researchers and policy makers, an important objective is to identify programs and strategies that work and hold the potential for replication across institutions. Colleges and universities have the opportunity to increase long-term opportunities for low-income students through multiple channels—recruitment, admission, and financial aid, in addition to strategies promoting persistence within the college years. Universities differ in circumstances, strengths, and weaknesses. Where some private universities lag in the enrollment of low-income students other (often public) universities find challenges at the margin of college completion. There are many opportunities for universities to learn from the successes and setbacks of their peers in improving opportunities for low-income students. At the same time, there should be no one-size-fits-all policy—universities differ in both circumstances and objectives.

Competition among colleges and universities is a powerful force and is surely at work in prompting institutions to devote increased financial aid to low-income students. What merits a watchful eye at this juncture is whether this competition among institutions to increase opportunities for low-income students expands the total range of opportunities. The risk is that institutions will devote more effort to recruiting among the existing pool—essentially a zero sum game among institutions competing for a group of high-achieving students already likely to attend selective schools.[24] Because the returns to many outreach programs and efforts to improve the preparation of high school students are not limited to specific institutions, the social returns to strategies that encourage collective action among universities are likely to be high.

A nagging question in the consideration of the underrepresentation of low-income students at selective colleges and universities concerns how much change can be brought about by college and university policies. There is no doubt that, at current levels of low-income participation, there is room for substantial improvement. Yet the largest challenges persist at the level of preparation, where gaps between low-income students and their more affluent peers in college preparation, as measured by standardized test scores, are both sizable and persistent. University efforts will not close these gaps in the short run; a question for the future is whether the promise of opportunities afforded by current university initiatives will prove powerful enough to contribute to narrowing the achievement gaps between low- and high-income students at the high school level.

Endnotes

1. Note that beyond the equity arguments for increasing the representation of low-income students there are significant efficiency arguments. Universities have a vested interest in promoting the development of extraordinary talent—those potentially capable of breakthroughs and innovations in the sciences or the arts. To the extent that low-income students with high capacity are underrepresented in the traditional application pool, it is in the best interest of colleges and universities to develop alternative strategies to identify and enroll students with substantial expected benefits from college who are from socioeconomically disadvantaged circumstances (see Bowen, Kurzweil, and Tobin 2005, 161–62).
2. These are by no means the only policies that help low-income students beyond traditional need-based aid. Several programs giving additional financial aid to disadvantaged students, such as the Longhorn Opportunity Scholarship program at the University of Texas at Austin (1999) and the Cal Grant program in California have been in place for several years. Yet the new programs highlighted in this chapter are a distinct breed. Unlike previous initiatives, they were implemented with the explicit goal of increasing the attendance of low-income students, have eligibility requirements phrased in terms of dollars of family income instead of complex financial aid formulas, and are awarded to all low-income students at the university, not just those judged to be particularly meritorious.
3. Data are assembled by The Institute for College Access and Success (see http://www.economicdiversity.org).
4. Of the 126 districts with more than fifty high school seniors, sixteen had no students represented in the class entering the University of Virginia in the fall of 2004. The ninetieth percentile district sent three times as many students (per 100) as the median school district. An extraordinary outlier is the Thomas Jefferson High School for Science and Technology (TJHSST), a highly selective magnet program located in Northern Virginia. Of the 412 students in the 2005 senior class, 263 (64 percent) applied to the University of Virginia and 226 were admitted. Less than 1 percent of students at this high school are eligible for free and reduced price lunch (Tebbs and Turner 2005b).

5. Moreover, the majority of potential college students are at neither of these extremes. Rather, students in the middle are deliberating between community college enrollment and attendance at modestly selective four-year institutions. The constraints faced by these students may differ appreciably from those faced by students deciding whether to enroll in college at all, and those deciding between a state flagship and an Ivy League university.
6. One survey reported that only about 100 of nearly 1,500 colleges surveyed were able to meet 100 percent of their students' need through the combination of grants, scholarships, loans and work-study awards (Wong 2005). Since many of those institutions able to meet full need are likely to be relatively small private colleges and universities, the proportion of all college students attending institutions where full need is met is likely to be yet smaller.
7. We would expect individual enrollment response to be much greater at the margin of credit constraints (when students are unable to borrow to finance college) than at the margin where the composition of the aid package is shifted from grants to loans. Moreover, we would expect the institution-specific change in enrollment to be much more sensitive than the change measured over a set of institutions with similar, competitive aid policies.
8. Data from the National Educational Longitudinal Study representing eighth graders in 1988 show that 34.2 percent of high school graduates from the bottom quartile of the family income distribution took the SAT relative to about 70.1 percent from the top quartile.
9. Two margins matter in determining the pool of relatively high-achieving low-income students within states. The first measure is the extent to which there are differences in expectations about test scores given economic circumstances (such as the Virginia-California comparison discussed in the text). Concentrations of poverty also differ across states, which may lead to a relatively higher fraction of low-income students. In the comparison of California to Virginia, one difference between the states is that the fraction of people living below the poverty line is higher in California (with an overall poverty rate of 12.9 percent) than it is in Virginia (9.3 percent), with this difference even larger among the college-age population.
10. Writing in the *Chronicle of Higher Education,* Edward Ayers and Nichole Hurd (2005) note: "In many states, however, students and their parents believe that their flagship university is beyond their financial and academic reach. The rhetoric about 'excellence' and 'selectivity' is understood to mean 'exclusivity.' And there is truth to that suspicion. The drive to excellence may be preventing some of our best public institutions from fulfilling their public role" (B12).
11. Christopher Avery and his colleagues (2004) outline Harvard's efforts to increase applications from students from low to moderate income families. Among the tools expanded and added were increased school visits, letters from the admissions office, and outreach from current and former students. In March of 2006 the program was adjusted such that families with incomes between $40,000 and $60,000 would also not be required to contribute to the cost of Harvard attendance beginning the following fall.
12. The Longhorn Opportunity Scholarship and Cal Opportunity Scholarship base eligibility on attendance at high schools classified as disadvantaged, with the California program also requiring individual financial need for eligibility.

13. Quoted in an article in *The Chronicle of Higher Education*, William Bowen notes "College presidents say, 'Yes, we want to give a special boost to the miner's daughter.' I'm sure they believe in good faith that they are giving a boost to the miner's daughter. But, in fact, when you look at the data, as we have, it is simply not true" (Gose 2005, B5)
14. When the Carolina Covenant and AccessUVa were announced, only students within 150 percent of the poverty line were eligible. They both increased their generosity starting with the cohort entering college in 2005.
15. The M-Pact program was shaped by a working group established by the provost to examine the most efficient use of additional financial aid dollars. The group concluded that reducing loan burdens (and net price) was important for low-income students, but that there was little evidence to support a proposition that reducing loan burdens to zero for a small number of students would be a better policy than increased grants for a broader set of low-income students. It should also be noted that at the University of Michigan, administrators are concerned with addressing the somewhat higher attrition rates of low-income students in addition to expanding enrollment opportunities.
16. Administrators at the University of Illinois (Illinois Promise) and the University of Michigan (M-PACT) acknowledge that there is no plan or research design as yet in place to evaluate these programs. Still, there are several researcher-initiated efforts. Chris Avery and Caroline Hoxby are working with data from the admissions, financial aid, and matriculation files at Harvard University. Cecilia Rouse and Jesse Rothstein are pursuing related questions with data from Princeton University.
17. In addition, campus visits for low-income students (approximately 230) were paid for by Harvard and the application fee was waived for more than 2,300 students.
18. However, the number of low-income transfer students matriculating actually decreased somewhat from seventy-nine to sixty-five, out of a total transfer pool of 535 students.
19. One point to note is that these data differ substantially from those based on early (May) tabulations and discussed in Jeffrey Tebbs and Sarah Turner (2005b) with the number of (expected) low-income matriculating students increasing from 172 to 200. Nearly all of the "gain" over the summer occurred on the matriculation margin (the transition from admission offer to enrollment). The numbers presented include out-of-state students as well as in-state students, whereas the analysis in Tebbs and Turner (2005b) focused on in-state prospective students. Among the low-income students enrolling in the fall of 2005, slightly more than 30 percent are from out of state, which is nearly identical to the out-of-state share among students in other income ranges. It is likely that the relative change in low-income students from out of state at the University of Virginia exceeded the change for in-state students in part because the decline in net price with the AccessUVa program would have been the largest for this group.
20. In addition to reducing the net cost of college for low-income students, the Carolina Covenant provides continuing academic and social support for Covenant Scholars while enrolled to help them succeed at UNC and graduate. The program matches students with volunteer faculty mentors and hosts events to help the scholars adjust more comfortably to campus.

21. The University of Michigan appears to be an exception, as the primary parameter changed is the generosity of financial aid. Because the changes in generosity are largely formulaic, several clear tests of the effects of aid on enrollment and persistence present themselves.
22. Most notably, the College of William and Mary in Virginia introduced Gateway William and Mary in August of 2005. As the first major policy initiative of new president Gene Nichol, the program promises a debt free undergraduate education for students from families with incomes less than $40,000. See: www.wm.edu/gateway/. The next month, Virginia Polytechnic Institute unveiled Funds for the Future, its initiative to reduce unmet need for low-income students and protect them against tuition increases (See www.finaid.vt.edu/types_of_aid/grants/FFTF.php).
23. In particular, Catherine Hill and Gordon Winston (2005) find that, conditional on SAT and ACT scores, low-income students are less likely than their higher-income peers to attend selective private universities. If this is because they are more likely to attend elite public institutions, then increases in financial aid at private colleges could potentially induce large substitution effects. Amanda Pallais and Sarah Turner (2006) discuss how much of the initial effect of the programs of private universities can be attributed to these substitution effects.
24. Low-income students are made unambiguously better off by the expansion of financial aid; less certain is whether increasing financial aid increases the total number of low-income students enrolling at selective institutions and improves their completion outcomes.

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