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Volume Author/Editor: Charles T. Clotfelter, Ronald G. Ehrenberg, Malcolm Getz, and John J. Siegfried

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Chapter Title: Implications of Recent Enrollment Trends

Chapter Author: Charles T. Clotfelter

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5 Implications of Recent Enrollment Trends

Undergraduate education is not only one of the preeminent missions of higher education, it is also one of the most important activities engaged in by young people. It influences their economic productivity, social standing, and personal growth. In this country, college places are allocated among the eligible participants through the interaction of supply and demand. Supply in this market consists of several thousand largely independent institutions, many of which are operated by state and local governments. Some of these institutions limit the size of their enrollments, but most open their doors to all applicants who can meet certain academic qualifications and pay the stated tuition. To a large extent, then, total enrollment is determined by demand.

This chapter is divided into three sections. Section 5.1 considers aggregate demand, focusing on changes that have occurred in recent years both in enrollment and in the factors that are thought to influence demand. Section 5.2 turns to the other major question motivating this part of the book, namely, the composition of demand. It examines changes in the characteristics of college students over the last two decades in light of the influences that might have been responsible for those changes. There is a brief concluding section.

5.1 Recent Changes in Aggregate Enrollments

It is not hard to see why the demand for higher education might be a subject of concern to those interested in either education or its economic consequences. The rapidly escalating costs of operating colleges and universities, which are discussed in Part III, have been passed on in the form of tuition increases, especially in private institutions, and the magnitude of these increases has raised the specter of qualified college applicants, particularly those with low incomes, being priced out of higher education altogether. At the same time, the federal student aid programs that might otherwise have

been expected to soften the blow of these cost increases were gradually pared down as a part of the larger budget tightening that occurred in the 1980s. Demand was buffeted by one further change that was especially disconcerting to college administrators, namely, the decline in the number of 18-year-olds. Remarkably, in spite of these trends, college enrollment not only held steady during the 1980s but increased.

Table 5.1 summarizes the major quantifiable changes that influenced demand for undergraduate places in the last decade, focusing specifically on changes between 1979 and 1987, or between the 1979–80 and 1987–88 school years. Row 1 shows the decline in the number of young people in the traditional 18- to 24-year-old college age group—9 percent. The number of 18-year-olds decreased even more—by 16 percent. This demographic downturn was accompanied by two other changes that reduced demand. The first of these was a dramatic transformation in the mix of student financial aid—the

Table 5.1 **Student Aid, Costs, Income, and Enrollments, 1979 and 1987 (dollar values in 1988 dollars)**

	1979	1987	Percentage Change
Number of 18–24-year-olds (1,000's)	30,048	27,336	−9
Student aid per FTE ($):			
Federal grants	1,456	708	−51
Federal loans	1,018	1,627	+60
Other	722	873	+21
Total subsidy value (loans valued at 50 percent)	2,687	2,395	−11
Tuition, fees, room and board ($):			
Public	3,108	3,960	+27
Private	7,052	10,390	+47
College earnings advantage (%):			
Men	29	50	+72
Women	37	56	+51
Mean household income ($):			
All households	36,363	38,081	+ 5
Top quintile households	75,818	83,207	+10
Undergraduate FTE enrollment (1,000's)	7,386	7,991	+ 8
Enrollment rate, 18 to 24-year-olds (%):			
Below median income	25.1	27.2	+ 8
Above median income	45.0	53.0	+16

Sources: 18- to 24-year-olds: National Center for Education Statistics; *Projections of Education Statistics to 2000* (Washington, D.C.: U.S. Government Printing Office, 1989), table A4; aid: Table 4.4; costs: Table 3.4; income: U.S. Bureau of the Census, *Current Population Survey*, Series P-60, *Money Income of Households, Families and Persons in the United States: 1987*, No. 162 (1989), table 12; earnings advantage: Table 3.1; FTE enrollment: U.S. Department of Education (1989, 177), estimated with part-time enrollments weighted one-third; enrollment rates: Table 4.3.

Note: FTE = full-time-equivalent student.

decline in federal grants and the emergence of loans as a major source of support. Owing largely to the demise of the social security education benefit, the decline in GI Bill payments, and the stagnation of other grant programs, the average value of federal grants per student contracted by half over this comparatively short period. Federal loan programs grew rapidly, but even this growth, combined with increases in other sources of student aid, was not sufficient to maintain the overall subsidy value of student aid over this period. If loans are valued at half their face value, the average amount of student aid from all sources per full-time-equivalent student declined by 11 percent. The decline in the amount of aid available to college students was even more severe than this, however, because of the rising share of federal funds going to students in proprietary schools.

The next two rows of the table show the other adverse development affecting demand during this period: the rapid increase in cost of attendance. Cost of tuition, fees, room, and board rose 27 percent in real terms at the average public institution and 47 percent at the average private one. Whether or not the increases for this particular period represent attempts by institutions to catch up with past price increases, these were the costs faced by students and their families during these years. On the basis of what can be inferred from the extensive empirical work on the demand for undergraduate places, price increases of this magnitude combined with the deterioration in the real value of student aid should have exerted a decidedly negative influence on demand over this period.

But other forces were at work pushing demand up. One of these was a dramatic turnaround in the comparative earnings of college graduates. Strong demand for college-trained workers greatly increased the college–high school earnings differential, seemingly erasing fears of only a decade before that we might be producing too many college graduates. By 1987, the average male college graduate was earning 50 percent more than comparable high school graduates; for females, the difference was 56 percent. A second trend boosting demand for college was the continued increase in personal income. The income of the average household grew in real terms by 5 percent over this period. More important, the income of households in the top 20 percent of the income distribution—those most likely to send their children to college, especially to private institutions—increased by 10 percent, reflecting the growing bifurcation occurring in the nation's income distribution.

Not only did enrollment rates increase, but total enrollments and full-time-equivalent enrollments also increased, this in the face of a falling number of young people in the traditional college age group. The continued increase in college enrollments during the last decade appears to be the result of strongly conflicting forces, with rising family incomes and dramatically improved earnings prospects as the primary explanations for the continued strong demand for college. There are, of course, a host of other, unmeasured factors that could help explain this continued strength in demand. A college degree

could be increasingly seen as a requirement for social acceptance, for example; this would be consistent with evidence that undergraduate education is a "normal" good the demand for which will continue to increase as long as real incomes rise. But for the most part the record of the last decade is remarkable for the failure of the undeniably negative forces of demography, rising costs, and shrinking grant funds to pull down the total demand for undergraduate education.

Future directions in the forces affecting demand for places are, of course, notoriously difficult to assess, as are the likely effects of implementing new public policies. If the past decade is any guide, however, it seems unlikely that the factors that have been responsible for the sustained enrollment growth of the 1980s will continue to work in the way that they have. While incomes may continue to grow in real terms, the earnings advantage of college graduates seems unlikely to continue increasing at the rate it has, if at all. The demographic projections suggest that the size of the traditional college age population will hit bottom in the mid-1990s and then recover. What happens to enrollment rates and enrollments, however, appears to depend on the two factors that have been the drag on demand during the 1980s: cost and student aid. Sustained increases in real costs will decrease demand, other things being equal. Whether they occur and whether student aid programs adjust to offset their effects remain the questions that will determine the future direction of undergraduate enrollments.

5.2 Changes in Who Goes to College

College attendance is strongly correlated with economic position. Yet, as the discussion of financial aid policy in Chapter 4 makes clear, the ability of low-income students to attend college continues to be a widely accepted measure of the effectiveness of financial aid policy in the United States. With the general increase in college costs and the decline in grants, many observers have feared that lower-income students would lose ground in college enrollment. In light of the importance of these issues for public policy, it is useful to look specifically at recent trends in the composition of college students and relative enrollment rates. This section examines both trends in enrollment by income and socioeconomic status and trends in college completion rates by race.

5.2.1 Income and Socioeconomic Status.

The last row of Table 5.1 repeats information presented in Chapter 4 on the relative enrollments of students from families above and below the median income. Demand over this recent period appears to have been stronger among households with above-average incomes. The enrollment rate for those above the median income increased by 16 percent, compared to just 8 percent for those below the median.

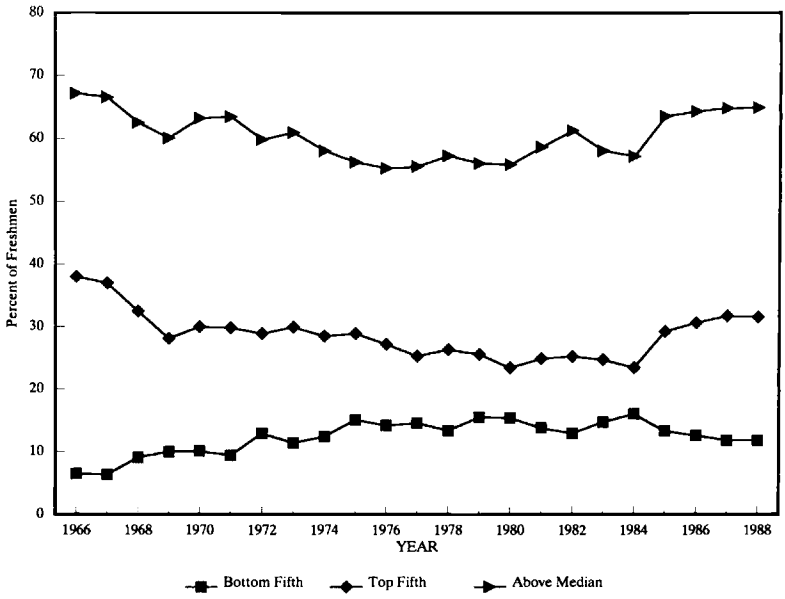

Figure 5.1 Percentage of freshmen in given income ranges, all institutions, 1966–88.
Source: Calculated from data contained in Astin et al. (selected years).

In order to examine trends in the composition of students over a larger time period, data from the annual surveys of freshmen conducted by the Cooperative Institutional Research Program were analyzed. Begun in 1966, this national survey includes a series of factual and attitudinal questions, among which is parental income. Although there are obvious drawbacks to relying on college students' estimates of their parents' income, trends in this measure appear to be a useful indicator. Whatever biases exist in the responses would appear to be more or less constant over time. For better or worse, this survey offers the best source of comparable income data on college students over time.[1]

Figures 5.1–5.3 present information on the distribution of parental income for freshmen in various types of institutions for the years 1966–88. In Figure 5.1, responses for all college freshmen are summarized using the percentage of students with parental income below the twentieth percentile of family incomes for the year, above the median family income, and above the eightieth percentile of family income. Because these income levels typically did not

1. One problem in making comparisons over time may occur when the number and width of income categories in the survey are changed from one year to the next. For example, in 1985, the survey readjusted its income classes, increasing the number of possible classes above $50,000 from two to five and decreasing the number below $10,000 from four to two. If students have a tendency to favor classes in the middle at the expense of those at the extremes, this change may have had the effect of increasing the average reported income.

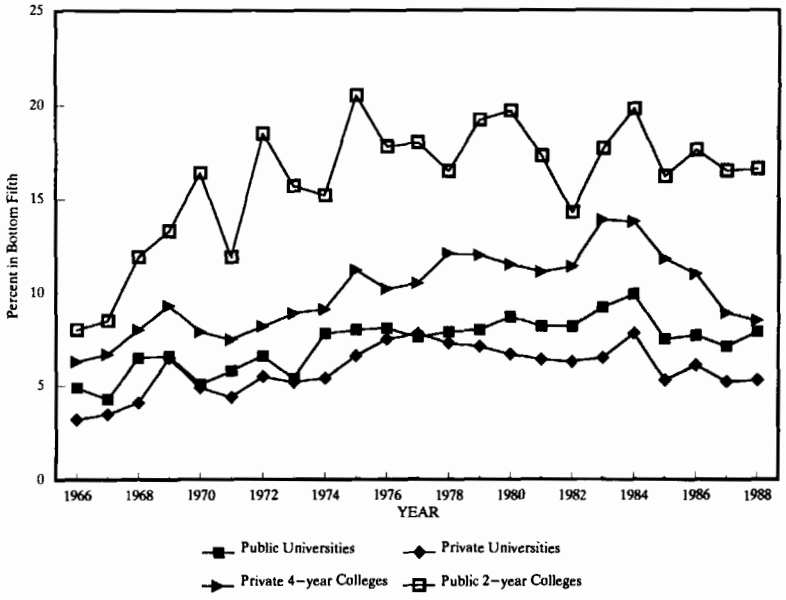

Figure 5.2 Percentage of freshmen with family income in bottom income quintile, by type of institution, 1966–88.
Source: See Figure 5.1.

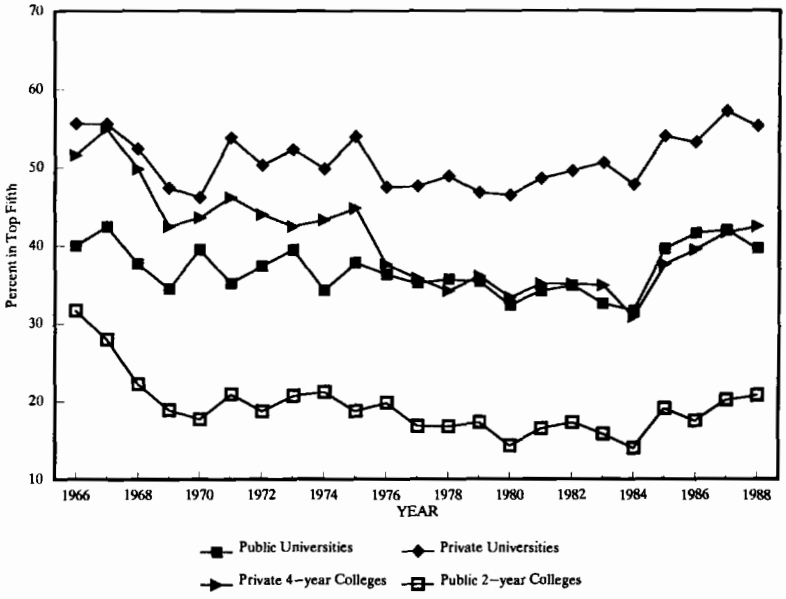

Figure 5.3 Percentage of freshmen with family income in top income quintile, by type of institution, 1966–88.
Source: See Figure 5.1.

coincide with the income-class limits used in the survey, percentages were estimated using linear interpolation. Figures 5.2 and 5.3 compare the percentage of freshmen from the bottom and top quintiles, respectively, at four types of colleges: public two-year, private universities, private nonsectarian colleges, and private universities.

These graphs suggest that, in terms of income, college students became more representative of the population from 1966 to 1984, with some reversion occurring since then. Figure 5.1 shows that the percentage of all freshmen from the bottom quintile rose from 1966 to 1975, remained fairly constant until 1984, and then fell after 1984. The percentage of students from the top quintile shows more or less the opposite pattern. In line with these trends, the percentage of freshmen from families above the median fell until about 1980 and has increased since 1984.

Figures 5.2 and 5.3 show that the portion of students from the lowest quintile generally rose for all four groups of institutions up until 1984. The increase is especially steep for public two-year institutions during the decade of their greatest growth, at the beginning of the period shown. At least until 1984, all these types of colleges appeared to become more open to students from low-income families. Turning to the high end of the income distribution, Figure 5.3 gives a graphic illustration of the concentration of relatively affluent students in universities and private four-year colleges: freshmen from the top quintile account for at least 40 percent of the total in all three types of institutions, in contrast to the much lower share among community college freshmen. As to trend, there is little change in the high-income share over the period among students in public and private universities, but this share tended to fall in private four-year and public two-year colleges, at least through 1984. Since 1984, however, the figures suggest that there has been an increase in the proportion of high-income students entering college.

It is evident that the year 1984 marked a turning point in several of the series shown in Figures 5.1–5.3. Trends through 1984 suggest that the income status of college freshmen was becoming more representative of the population, but this impression is reversed if one looks at the years since 1984. One explanation, of course, is that this reversal reflects a change in the survey or sample. While there is no evidence to suggest that the sample changed significantly between 1984 and 1985, there was a change in the survey questionnaire that might account for the noticeable increase in the family incomes reported by freshmen, particularly in light of the possibility that many freshmen may not have a good idea of their parents' income. In 1985, the income categories were significantly revised, resulting in fewer categories at the lower end of the income scale and more at the upper end.[2] If, say, freshmen unsure of their

2. The number of income classes below $15,000 was reduced from six to three, and the number above $40,000 was increased from three to six. The median income of the 14 categories listed rose from $20,000 to $35,000, by far the largest increase in any revision of the survey from 1966 to 1988. (Median income increased from $12,500 in 1969, to $16,250 in 1970, to $20,000 in 1979, and to $35,000 in 1985.)

family's income tended to mark answers close to the middle of the categories available, this change in the survey questionnaire could have resulted in an increase in the percentage of students indicating high family incomes.

In order to test for this possibility and more generally to provide another check on these income figures, I looked at changes in father's education, another measure of social class that should be correlated to family income but that is known with considerable certainty and is not subject to the category effect noted above. It is possible to calculate from the survey the proportion of freshmen whose fathers had completed college. Of course, education levels in the population have been rising over time, so looking only at the proportion of freshmen with college-educated fathers would not give any information on the relative social standing of college students. To be revealing, this proportion must be compared to that of the population at large. A convenient measure of relative social standing by this metric is the ratio of the odds of a man being college educated to the odds of a freshmen having a college-educated father. This ratio can be interpreted as the relative college enrollment rate of children of non-college-educated fathers, compared to the enrollment rate of those with college-educated fathers.[3] A change in this relative enrollment rate would have much the same implication as a change in the relative income position of college graduates—namely, a change in the relative social and economic standing of college students.

Table 5.2 shows this relative enrollment rate for all college freshmen and for freshmen at two-year colleges and private and public universities, along with the corresponding percentages of fathers of freshmen who were college graduates and the percentage of men 25 and older who had finished four years of college. The general increase in educational attainment in the male population and among fathers of freshmen over the period is quite evident. The relative enrollment rate of children of non-college graduates implied by these figures tended to fall over the period. For all freshmen, for example, the college enrollment rate for the children of non-college graduates in 1966 was 47 percent that of the children of college graduates. Mirroring the patterns of the income distributions shown above, this relative enrollment rate rose to 50 percent in 1984 and then fell to 43 percent. The changes shown for public and private universities more clearly indicate an increase in exclusivity. Only in

3. Let P be the proportion of men 25 and older in the population who are college graduates (defined here as those with four or more years of college). Let E be the college enrollment rate for those with fathers who are college graduates, let rE be the rate for those whose fathers did not finish college. Let X be the proportion of college freshmen whose fathers are college graduates. If N is the total number of young people who might otherwise be college freshmen, there are EPN freshmen whose fathers finished college and $rE(1 - P)N$ freshmen whose fathers did not. Therefore,

$$X = EPN/[rE(1 - P)N + EPN].$$

Rearranging terms yields an expression for the relative enrollment rate for those whose fathers are not college graduates:

$$r = [P/(1 - P)]/[X/(1 - X)].$$

Table 5.2 **One Measure of the Social Class of College Freshmen, Selected Types of Institutions, Selected Years**

	% of Males 25 and Over with Four or More Years College	% of College Freshment Whose Fathers Completed College			
		All Institutions	All Two-Year	Universities	
				Public	Private
1968	13.3	24.5	13.3	30.9	44.8
		(47)	(100)	(34)	(19)
1972	15.4	[a]	[a]	[a]	[a]
1976	18.6	33.4	23.5	45	55.9
		(46)	(75)	(28)	(18)
1980	20.8	35.5	24.1	47	60.8
		(48)	(83)	(30)	(17)
1984	22.9	37.2	25.1	49.1	65.3
		(50)	(89)	(31)	(16)
1988	24.0	42.5	29.1	54.7	69.9
		(43)	(77)	(26)	(14)

Source: U.S. Bureau of the Census, *Current Population Reports*, Series P-20, *Educational Attainment in the U.S.: March 1981 and 1986*, No. 428 (1988), table 12; U.S. Department of Education (1989, table 9); and Astin et al. (selected years).

Note: Relative college enrollment rates for children of non-college graduates are in parentheses.

[a]Not available.

the case of public two-year colleges do these relative enrollment rates appear not to correspond to the income figures shown above. Figure 5.4 shows the relative enrollment rates for four-year institutions for all the years for which data were available. There are declines evident in all three series after 1983 and a longer decline in private universities before that.

The evidence on income and parental education presented here suggests no dramatic transformation in the relative economic and social standing of college students. In the main, college students have been and continue to be relatively affluent and to come from families with above-average educational attainment. But there have been subtle changes over time. During the late 1960s and early 1970s, there were increases in the proportion of freshmen from lower-income families, especially in the two-year public colleges. However, there appears to have been something of a reversal in the most recent decade, with college enrollment among those in the bottom part of the income distribution slipping relative to those at the top.

5.2.2 Trends in College-Completion Rates

Although there has been a great deal of discussion about recent trends in college enrollment rates, particularly regarding the declines in rates for minorities since 1976, relatively little attention has been paid to trends in the rates at which enrollees progress toward completion of degree requirements. As emphasized above, the rate of attainment depends not only on the rate of

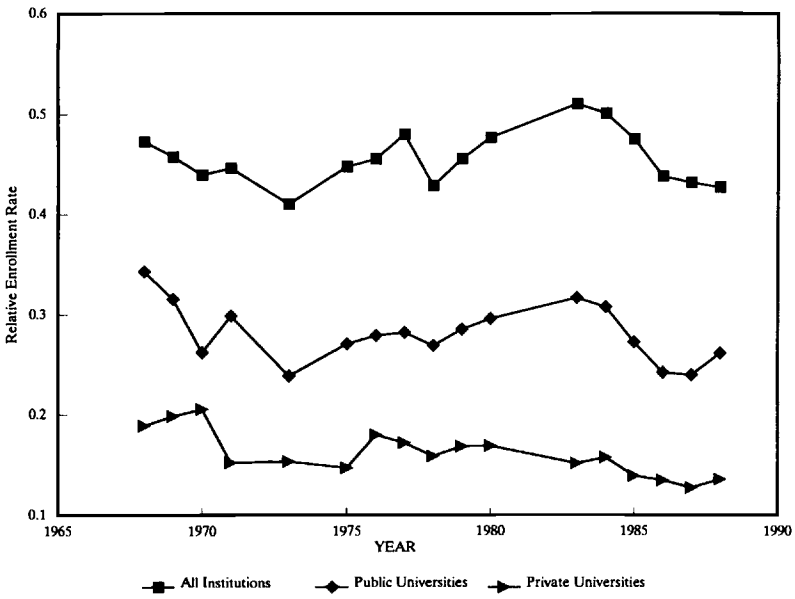

Figure 5.4 Relative college enrollment rates: those without vs. those with college-educated fathers, by type of institution, 1966–88.
Source: See notes to Table 5.2.

enrollment but also on the rate of completion for those who have enrolled. In particular, as Table 2.15 above shows, a large portion of the observed racial differences in college attainment can be attributed to differences in the rates of progression for those who have enrolled. In trying to understand the components of recent changes in attainment, therefore, it is important to look beyond enrollment rates and examine trends in college completion.

By using published Census data on college enrollment, it is possible to follow successive cohorts of high school graduates to examine their enrollment behavior and their college completion rates. Table 5.3 examines four loosely defined cohorts, each comprising three successive years' high school graduates, broken down by race and sex. The percentage of each cohort of graduates who were enrolled in college or the percentage who had completed four years of college are given for three points: one to three years after graduation, five to seven years, and 8–10 years. For example, the table shows that 27.4 percent of white males who had graduated in the years 1970–72 had completed four years of college by 1977 (five to seven years after graduation); by 1980 (8–10 years after graduation), 30.4 percent of the cohort had finished four years. When the data are grouped in this way, differences between cohorts over time can be distinguished from differences within the same cohort over time.

Looking first at white males, there is little trend in the enrollment rate one

Table 5.3 **College Enrollment and Four-Year Completion Rates by Race for Four Cohorts of High School Graduates**

Race, Cohort, % Enrolled in College, and % Who Had Completed Four or More Years of College	Years after Graduation					
	Male			Female		
	1–3	5–7	8–10	1–3	5–7	8–10
White:						
Classes of 1970–72:						
% enrolled	41.7	19.4	10.8	32.9	14.5	9.0
% 4+	.6	27.4	30.4	.5	23.8	26.5
Classes of 1975–77:						
% enrolled	39.3	17.5	9.8	35.0	13.6	9.9
% 4+	.5	25.3	27.3	.8	21.5	25.9
Classes of 1979–81:						
% enrolled	43.6	15.8	[a]	40.6	14.0	[a]
% 4+	.9	22.5	[a]	.8	25.4	[a]
Classes of 1983–85:						
% enrolled	43.2	[a]	[a]	42.4	[a]	[a]
% 4+	1.1	[a]	[a]	.8	[a]	[a]
Black:						
Classes of 1970–72:						
% enrolled	37.5	21.1	14.5	26.8	15.8	7.9
% 4+	.5	12.0	18.9	.4	16.7	17.2
Classes of 1975–77:						
% enrolled	34.9	16.3	7.7	34.7	16.0	11.3
% 4+	.6	11.1	14.3	.5	13.8	16.9
Classes of 1979–81:						
% enrolled	33.1	15.8	[a]	34.6	13.7	[a]
% 4+	1.0	11.6	[a]	.8	10.5	[a]
Classes of 1983–85:						
% enrolled	33.4	[a]	[a]	34.2	[a]	[a]
% 4+	.4	[a]	[a]	1.1	[a]	[a]

Source: U.S. Bureau of the Census, *Current Population Reports*, Series P-20, *School Enrollment—Social and Economic Characteristics of Students: October 1973*, No. 272; *October 1977*, No. 333; *October 1978*, No. 346; *October 1981 and 1980*, No. 400; *October 1982*, No. 408; *October 1985 and 1984*, No. 426; and *October 1986*, No. 429 (1988)—tables entitled "Year of High School Graduation for Persons 16 to 34 Years Old by Educational Attainment, Enrollment Status, Sex, and Race."

Note. Each report gives data on enrollment and completion rates for cohorts graduating in years (t denotes the year of the report) (*a*) t, (*b*) $t - 1$ to $t - 3$, and (*c*) $t - 4$ and three cohorts graduating in years $t - 5$ and before with ages (*d*) under 26, (*e*) 26–28, and (*f*) 29–34. If high school graduates are assumed to be 18 in the October following the year of their high school graduation, the last three cohorts correspond to the following years: (*d*) $t - 5$ to $t - 7$, (*e*) $t - 8$ to $t - 10$, and (*f*) $t - 11$ to $t - 16$. Cohorts *b*, *d*, and *e* all comprise three years' worth of graduates and thus can be compared over time. For example, the graduating classes of 1970–72 appear as group *b* in the 1973 report, group *d* in 1977, and group *e* in 1980. Illustrative approximate standard errors for the following estimates for males are given below for the classes of 1979–81. For the percentage enrolled one to three years after graduation, they are 1.2 (for the estimate of 43.6) for whites and 3.4 (for 33.1) for blacks. For the percentage with four or more years five to seven years after graduation, they are 1.0 (22.5) for whites and 2.2 (11.6) for blacks. For an explanation of these approximations, see app. C in the 1986 *Current Population Reports*, Series P-20, noted above.

[a]Not available.

to three years after high school, but there is a decline at five to seven years. Completion rates appear to decline over time, with the percentage having finished after five to seven years dropping from 27 to 23 from the first to the third cohorts. White females show a positive trend in one- to three-year enrollment rates, rising from 33 to 42 percent of high school graduates. While enrollment rates for white males were almost always higher than they were for white females, the completion rate for females overtook and surpassed that for males in the 1979–81 cohort.

The patterns for blacks contrast with those of whites in several respects. Although the smaller sizes for blacks result in substantially more variability (standard errors for these estimates are on the order of 2–3.5 percentage points), it seems clear that there are important differences in both the levels and the trends in these rates. For black males, the differences are the most striking. Estimates of all three of the college enrollment rates fell for the first three cohorts, although this decline is only about the size of the standard error in the one- to three-year case. Especially noticeable is the fall in the 8–10 year enrollment rate from 14.5 percent in the first cohort to 7.7 in the second. For black females, there are two contradictory trends: an increase in the one- to three-year enrollment rate between the first and second cohorts and a decline in the completion rate at five to seven years, which may be erased at 8–10 years. These figures are consistent with a gap between the educational attainment of black males and females.[4] When viewed in conjunction with the widely cited enrollment rates such as those in Table 2.7 above, information such as this yields a much cloudier picture of black progress. Whereas, on the basis of the historically high enrollment rates for blacks, the mid-1970s might otherwise be viewed as the time of greatest achievement, the figures here cast doubt on the subsequent success of those enrollees in completing bachelor's degrees. Increases in enrollment were apparently not matched by increases in the number of graduates.

In order to examine these puzzling trends more closely, Table 5.4 presents information on enrollment and progress toward completion by year. In this table, progress is measured by the percentage of roughly three high school graduating classes to complete a certain number of years of college five to seven years after high school.[5] Information is given for whites and blacks for the year 1973–86. The columns marked "(4)" in the table give the proportion of high school graduates who had completed four years of college five to seven years following their graduation from high school. Also shown are three components of this probability: in the columns marked "(1)" the probability that a member of these cohorts would have finished a year of college; in the columns marked "(2)," the probability of finishing two years having com-

4. See, e.g., Lee A. Daniels, "Experts Foresee a Social Gap between Sexes among Blacks," *New York Times*, 5 February 1989, p. 5.

5. More precisely, each cohort is composed of those who had graduated from high school at least five years before and were under 26 years old. For those who graduated from high school at age 18, this would imply the inclusion of 23- to 25-year-olds.

Table 5.4 **Completion Probabilities for One, Two, and Four Years of College, Five to Seven Years after High School Graduation, 1973–86, by Race**

	White				Black			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
1973	.507	.807	.615	.252	.401	.735	.437	.132
1974	.521	.807	.614	.258	.397	.751	.570	.170
1975	.534	.793	.621	.263	.401	.752	.492	.149
1976	.544	.788	.616	.264	.458	.725	.494	.164
1977	.537	.791	.600	.255	.411	.688	.514	.146
1978	.525	.795	.582	.243	.446	.766	.467	.160
1979	.509	.807	.581	.239	.445	.731	.470	.153
1980	.491	.811	.572	.228	.435	.748	.455	.148
1981	.496	.818	.582	.236	.445	.756	.437	.147
1982	.500	.811	.575	.233	.466	.701	.387	.127
1983	.500	.819	.595	.244	.443	.723	.380	.122
1984	.497	.810	.569	.229	.432	.736	.400	.127
1985	.511	.811	.582	.241	.395	.745	.352	.104
1986	.509	.817	.579	.241	.445	.763	.322	.110

Source: U.S. Bureau of the Census, *Current Population Reports*, Series P-20, *School Enrollment—Social and Economic Characteristics of Students: October 1973*, No. 272; *October 1974*, No. 286; *October 1975*, No. 303; *October 1976*, No. 319; *October 1977*, No. 333; *October 1978*, No. 346; *October 1979*, No. 360; *October 1981 and 1980*, No. 400; *October 1982*, No. 408; *October 1983*, No. 413; *October 1985 and 1984*, No. 426; *October 1986*, No. 429 (1988); and *October 1988 and 1987*, No. 443 (1990)—tables entitled "Year of High School Graduation for Persons 16 to 34 Years Old by Educational Attainment, Enrollment Status, Sex, and Race."

Note: Figures are for those who graduated five or more years before the sample date and are under 26 years old. Columns contain the following information: (1) probability of completing one year of college; (2) probability of completing two years having completed one; (3) probability of completing four years having completed two; and (4) probability of completing four years, i.e., (1) × (2) × (3).

pleted one year; and in the columns marked "(3)," the probability of finishing four years having completed two. The product of the last three is, by definition, equal to the probability of completing four years. By thus splitting up the completion rate, it is possible to examine trends in the components of college attainment.

The one-year completion rates show that, for most years during this period, a majority of white high school graduates had finished at least one year of college five to seven years after finishing high school; the rates among blacks were somewhat less. There is little trend in this rate among whites, but there is some improvement in the rate for blacks beginning in 1976. Once students had completed one year, the chances of completing a second year were quite good, roughly 80 percent for whites and 75 percent for blacks. There is a slight upward trend in this rate for whites but no trend for blacks.

The most striking change shown in the table is in the conditional probability of completing four years having finished two. While there is a slight decline in the rate for whites, that for blacks shows a marked decline. Comparing the

average conditional probabilities for the first three and the last three years shown, the rate for whites declined from 0.62 to 0.58, or 6 percent. Over the same period, the average rates for blacks dropped from 0.50 to 0.36, or 28 percent. This decline signals a significant deterioration in educational attainment by blacks. Precisely why it has occurred is not clear from these figures, of course. The decline could be the result of higher dropout rates or merely a lengthening of the time to degree, manifested, for example, in an increasing tendency to study part-time.

The data presented in this section suggest a growing gap in the enrollment and completion rates of students in the upper and lower portions of the income distribution. The evidence on this is by no means unambiguous, nor is the shift of monumental proportions, but it is perceptible. Such a trend would be consistent with the hypothesis that rising tuitions and falling grant funds have differentially discouraged low-income and minority students from enrolling and remaining in college. It could also be explained to some extent by the strong income growth among the affluent. If it continues to be observed, this trend certainly poses important questions for public policy. Exactly what the access and choice objectives imply for relative enrollment rates is a political determination, but this apparent change in outcomes could add to the current interest in reevaluating student aid programs. At the same time, it has been pointed out that not all the observed trends are necessarily undesirable. For example, an increase in a given group's dropout rate could be the natural consequence of an increase in its rate of college entry, with some of the new entrants simply making the economically efficient choice not to pursue college.[6] However, to the extent that recent trends have arisen because low-income students are facing more imposing financial barriers to college attendance, the implications for policy may be quite different.

5.3 Questions for Research

As is evident from the discussion in this part, research on the demand for college has left a number of important questions unanswered. In concluding, it is appropriate to mention some of these. There are at least three sets of questions that call for further research. The first set can be thought of as basic questions of fact. For example, evidence has been presented above that there has been a divergence in enrollment rates for those above and below the middle of the income scale, but the evidence would have to be judged as circumstantial at best and needing further confirmation. To the extent that this is the case, however, it seems important to investigate how these changes are being felt by type of institution. Are the differences in economic status between public and private institutions growing? Is there a tendency for high-

6. According to Manski (1989), enrollment can be seen as a decision to experiment with college, and for some people dropping out may be the optimal decision. Reducing the number of dropouts is therefore not necessarily an improvement.

aptitude students to become more concentrated in a relatively small number of selective institutions?[7]

There are other questions that relate simply to the interpretation of published data. For example, Census data on school enrollment exclude those on active military duty. Since minority groups are overrepresented in the military and the military itself probably represents the major source of financial support for college training among those enlisted, the exclusion of this group may bias the statistics on college enrollment by race. Another widely recognized problem of interpretation relates to those students who, for the purpose of financial aid calculations, elect to be treated as independent of their families. The portion of students in this group has been growing over time, and this trend may confound statistics on financial aid in ways not now recognized. One other example has to do with interpretating the finding that a declining percentage of those who enroll in college are completing within five to seven years after their high school graduation. One possibility is that college students are simply taking longer to complete their degrees, not only by enrolling part-time, but also by taking more courses. Such a tendency not only would explain the observed drop in completion rates but may also have contributed to some of the increases in enrollment rates.

A second set of unanswered questions has to do with explaining the demand for undergraduate places. One clear need is to build on the existing economic models of demand that incorporate economic returns to college as well as price and income effects. During the 1980s, there were significant changes in several factors thought to be important in demand, including the college earnings advantage, college costs, and the composition of financial aid. It would be interesting to see how well such models account for the differences in college enrollment between men and women during the 1980s. They might also be used to explain the observed trends in college completion. In extending the research on demand, it seems important to pay more attention to the distribution of demand by type of institution. Changes in the aggregate enrollment rate are felt differently in four-year institutions than in two-year colleges, and so on. The substitutability among types of college has been reflected in models of individual choice, but the implications for aggregate enrollments have not been put together. One illustration of the importance of such interactions is the possibility of perverse effects from changes in federal student aid programs. It is possible, for example, that cuts in aid to middle-class students could induce such students to switch from private to public colleges, taking places that would otherwise have been occupied by low-income students.[8]

A third set of questions bridges the gap between demand and supply. How

7. For an examination of the latter question, see Cook and Frank (1991).

8. This possibility is suggested by Thomas Mortenson's assessment of changes he observed in Illinois in the 1980s. An accompanying feature was an increase in the admissions standards in public institutions, presumably brought about by the increase in applications from able students (McPherson 1988a, 14).

do colleges and universities respond to changes in demand and in public policy affecting demand? Several avenues of action are open to institutions, including admissions standards, recruitment, efforts to prevent students from dropping out, and, for private institutions, price changes. The question of how the selective institutions, who are facing excess demand for their places, set their prices has been discussed, but the process is not well understood. It appears at least that these institutions are not acting like profit maximizers in this regard. Institutional behavior not related to price has received little systematic study. Yet it may be quite important in determining who graduates, who enrolls, and who applies to college, and to what kind of college. It is evident that questions of this sort will provide an interesting and important research agenda on the demand for higher education.

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