RELATIVE TUITION LEVELS AND THE EDUCATIONAL FOCUS OF FIRST-TIME FULLTIME COMMUNITY COLLEGE STUDENTS

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Abstract

This paper employs a large panel dataset to determine whether potential enrollees in specific two-year college programs respond differently to tuition changes at community colleges and nearby public four-year colleges. Campus-level estimations reveal that enrollment in programs preparing students for transfer to four-year college is very responsive to two-year tuition changes and somewhat responsive to four-year tuition changes, while enrollment in occupational education programs is not significantly responsive to either two-year college or four-year college tuition changes. Student-level estimations reveal that new community college students are significantly more likely to enroll in academic (baccalaureate-oriented) programs when four-year tuition is high and two-year tuition is low, suggesting academic programs serve as a substitute for direct four-year college entry.

I. Introduction

Two-year colleges were originally designed to substitute for the first two years of a four-year baccalaureate education. Their students were to attend a community college for two years, earn an associate's degree, and then enroll at a four-year institution as the equivalent of a first-semester junior. Later, community colleges began developing variegated curricula, adding courses designed for non-traditional students who had little desire to earn a baccalaureate degree. Nowadays, community colleges offer educational opportunities to a wide swath of students, including students involved in occupationally-oriented two-year fulltime programs, workers whose employers hire community college instructors for "contract courses" teaching a particular job-related skill, and students taking a course for personal pleasure.[1]

Much of the empirical literature examining community colleges how entering two-year college students and entering four-year college students differ regarding a uniform metric of educational attainment, such as total years of education.[2] Fewer studies analyze differences between *types* of community college education, although the diversity in curriculum is a fairly critical and well-acknowledged characteristic of community colleges. Occupational education, for example, is not designed to facilitate transfer to a four-year college, and its prevalence at community colleges perhaps accounts for much of the reason Adelman (2004) finds that fewer than forty

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[1] See Kane and Rouse (1999) for a historical overview of community colleges.

[2] Early quantitative studies (e.g. Alba and Lavin 1981, Velez 1985, Dougherty 1987) showed that two-year college entrants achieved lower total levels of schooling than four-year college entrants and attributed the difference to a high-profile belief that two-year campuses caused baccalaureate-seeking students to become disinterested in education (Clark 1960, Brint and Karabel 1989). The "democratization vs. diversion" literature (Rouse 1995 and 1998, Leigh and Gill 2003) often found that two-year college students achieve lower overall levels of education than four-year direct entrants, but also that the creation of community colleges increases overall education levels.

percent of all community college entrants later attend a four-year college. Yet there remains little empirical analysis of the different types of education offered by two-year colleges and the characteristics of students, institutions, and local labor markets associated with these different types of education.[3]

This paper analyzes how changes in two-year and four-year tuition levels impact enrollment of entering community college students in "academic" programs versus enrollment in "occupational" programs. Previous research (e.g. Rouse 1994) has shown that two-year college entry and four-year college entry are substitutes: two-year enrollment increases with a two-year tuition decrease or a four-year tuition increase, and four-year enrollment increases with a two-year tuition increase or a four-year tuition decrease. But relative tuition changes may differently impact the decision to enroll in academic study and the decision to enroll in occupational study. For example, an increase in two-year college education may cause potential "academic" two-year college students to substitute towards relatively less expensive enrollment in four-year colleges, because academic programs are designed to substitute for the first years of a four-year college education. "Occupational" students, lacking the same agreeable substitute, would seemingly have a higher chance of either opting out of higher education altogether when two-year tuition increases or remaining enrolled at the two-year college.

The impact of four-year tuition increases on type of two-year education pursued by community college students is similarly unknown. Rising four-year tuition

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[3] A key exception is Leigh and Gill (2004), which studies correlations between the types of education offered by individual California community college campuses and the industrial mix of the nearby economy. Others have examined differences in labor market returns to occupational and academic community college education (Grubb 1993 and 1995).

may encourage a baccalaureate seeker to substitute away from direct four-year entry and towards less-expensive two-year academic programs. It may also encourage marginal baccalaureate seekers to shift towards occupational education, or away from higher education entirely, because a jump in four-year tuition reduces the net lifetime benefits of earning a baccalaureate.

This paper uses a large restricted database from the State University of New York (SUNY) to address the impact of tuition, both two-year and four-year, on the focus of community college enrollment. I first document that, over an eight-year period in the 1990s, an increasing share of SUNY new community college students enrolled in academic, rather than occupational, programs. Using campus-level fixed effects regressions and student-level fixed effects logit estimations, I then provide evidence that academic and occupational students determine that students oriented towards baccalaureate education treat two-year academic programs as a substitute for direct four-year college entry, whereas occupational-program students are far less responsive to prices, perhaps because of a lack of strong substitutes.

The remainder of this paper is organized as follows: Section II discusses my data set. Section III summarizes statistics and displays relevant trends in community college education. Section IV uses campus-level data to study the relationship between relative tuition and community college enrollment levels, while Section V does the same with student-level data. Section VI concludes.

II.   Data

The Student Data File (SDF) of SUNY records term-by-term information for students enrolled in each of SUNY's 64 campuses. For each semester it records

students' demographic information (race, gender, and date of birth), campus, two-digit

field-of-study, enrollment status (full- or part-time), number of credits attempted,

number of classes taken, credits accumulated in previous semesters, and higher

education history. Recently it has begun recording student's high school performance,

SAT/ACT scores, and goal of attendance.[4]

This paper analyzes students who registered as a first-time fulltime student[5] at

one of 27 SUNY community colleges in a fall semester between 1990 and 1997.[6]

Limiting the study to first-time fulltime students is fairly common, and sometimes

criticized because "first-time fulltime" does not account for all "new" students in a

given fall semester (Dellow and Romano 2002).[7] I remove from my analysis

community college students who enroll in certificate programs or who earn

certificates. This eliminates 3.25% of first-time fulltime students.

I classify community college students into either "academic" or "occupational"

programs when possible. Students enrolled in a program for which the ultimate award

is an Associate of Arts (AA) or Associate of Science (AS) degree are "academic"

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[4] SUNY records goal of attendance for community college students only. Its very existence as a variable, and its restriction to two-year college students, reaffirms that institutional researchers understand the necessity of studying the diversity of purpose of two-year college attendance.

[5] Students are classified by the SDF as either "fulltime" or "part-time." Another variable records student "higher education history": whether a student is a first-time, transfer, continuing, or returning student. This paper discusses only students who record themselves as both fulltime and first-time in a fall semester, and have never before been enrolled in SUNY.

[6] There are 30 campuses in SUNY classified as community colleges. One, the Fashion Institute of Technology (FIT) in Manhattan, is for institutional funding reasons labeled a community college despite offering baccalaureate and advanced degrees. It is removed from the analysis, as are 2 other community colleges for which I lack data over the full 1990-1997 time period.

[7] Before limiting the analysis to first-time fulltime students, I tried to create a more general category of "new" students, which included both part-time students new to higher education and students who had previously enrolled in college, but had taken at least three semesters off before re-enrolling. First-time fulltime students are approximately 43.8% of these "new" students.

students, i.e. students presumed to be preparing for transfer to a four-year college.[8]

Students enrolled in a program where the ultimate award is either an Associate of

Applied Sciences (AAS) or Associate of Occupational Science (AOS) degree are

"occupational" students, presumed to be preparing for immediate labor market entry.

Approximately 2.57% of first-time fulltime community college students in the dataset

do not report a specific program of study.

Yearly tuition levels are available via the Integrated Postsecondary Education

Data System (IPEDS), which is available via WebCASPAR. I assign each student

tuition values for 1) the actual community college attended and 2) nearest four-year

college to the community college.   Fees, which vary between two-year and four-year

campuses, are integrated into the IPEDS tuition variable. I do not possess data on

individual students' financial aid packages or financial aid eligibility status.[9]

Monthly county-level unemployment and annual county-level wage data are

available via the Bureau of Labor Statistics.[10] Population of locale is weighted by

values taken from the 1990 and 2000 national censuses: for example, the 1991

population of the city of Rochester is 90% of the 1990 population plus 10% of the

2000 population. New York State is divided into "cities" and "towns": towns can

contain villages, which are smaller versions of "cities." I use the mailing address for

each campus to determine whether it is located in a city or a village; those that are

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[8] Though there are some exceptions, students who transfer to a SUNY four-year college with either an
AA or AS degree are usually awarded first-semester junior status.

[9] Financial aid has been shown to affect enrollment decisions of college freshmen. See, for example,
Avery and Hoxby (2003) and Dynarski (2000). For an analysis of financial aid among community
college students, see Romano and Millard (2005).

[10] Betts and MacFarland (1995) find a positive relationship between unemployment rate and two-year
college enrollment. Hilmer (1997) finds that poorer students are able to use community college as a
strategic path towards baccalaureate receipt; since county income appears to be a solid proxy for wealth
of surrounding area, it is a valuable control.

located in or near neither are assigned the population of the surrounding town. Two campuses are located in Census Designated Places, and are assigned populations accordingly.

III.   Summarizing Statistics

Figure 1 shows the size of entering first-time fulltime SUNY community college cohorts from 1990-1997. Table 1 shows summary statistics for the same group of people. The mean first-time fulltime student is almost twenty years old. Slightly over half are female. Of those who record race—approximately 3.5 percent do not—one in twelve is black, one in twenty Latin, and one in fifty Asian.[11]

County-level real weekly wage, in 2002 dollars, averages $639, ranging from under $480 to almost $860. Unemployment rate varies from under 3 percent to almost 11 percent, averaging just over 5 percent. The average locale contains almost seventy thousand people, the difference ranging from under 2,000 to over 300,000. The average first-time fulltime student attends a community college campus less than 20 miles from the nearest four-year campus, the distance ranging from zero miles to almost seventy miles.[12]

High school data exists for fewer than ten percent of all observations, but this still totals over fourteen thousand data points.[13] The average student attends a two-year college 17 miles from his high school. Eighty-seven percent of all SUNY first-time fulltime community college students are New York State natives attending the

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[11] New York State's two public systems of higher education have substantially different shares of nonwhite students. The City University of New York, in Spring 2005, described its student body as 31% African-American, 26% Hispanic, and 14% Asian.

[12] Distances are calculated by zip codes. Campuses that are zero miles apart share the same zip code.

[13] Students with no high school reported are assigned a "missing high school" dummy value of 1. Distance to college has been used as an instrument for college attendance (Card 1995) and may be correlated with program of enrollment and outcome of attendance.

two-year college closest to their high schools, and over twenty-eight percent "skip over" a nearby four-year college to attend community college.[14]

Table 2 displays the campus-by-campus share of Fall 1997 first-time fulltime students that enrolled in AA/AS (academic) programs. There is substantial between-campus variation in prevalence of occupational programs: one had almost 90% of its new students enroll in academic programs that year, and others had fewer than 50% of their students do so. These sizable between-campus differences require the use of fixed effects estimations utilizing campus dummy variables.

SUNY permits each community college campus leeway in setting its tuition level, determining only a yearly ceiling over which tuition cannot be set. In contrast, four-year campus tuition is centrally determined, and though fees fluctuate by campus, combined tuition and fees values vary little between campuses in any one year.[15] Figure 2 shows the increase over the course of the 1990s of SUNY two-year and four-year tuition.[16] Four-year tuition rose at a much more disjointed pace—it rose before the 1995 school year, for example, but remained flat for two years after that—presumably due to its centralized structure and politically loaded nature. Figure 2 also shows that the share of SUNY first-time fulltime community college students in AA/AS programs increased substantially over 1990-1997, jumping from under 60 percent to almost 70 percent.

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[14] A student is said to "skip over" a four-year college if she attends community college even though there is a four-year college as accessible from her high school. If the closest four-year college is no more than 10 miles further than the distance between her high school and community college, this dummy variable is equal to 1. It is zero otherwise.

[15] Regressing each student's four year tuition value on a vector of year dummy variables results in an adjusted R^2 of .9773. The same estimation using two-year tuition as the dependent variable results in an adjusted R^2 of .6662.

[16] The annual means are weighted by size of incoming fulltime community college cohorts.

IV. Campus-Level Estimations

All estimations in this paper include campus dummy variables. Table 3 Panel A displays results of estimations in which the log of first-time fulltime students in an entering SUNY community college cohort is the dependent variable. Each entering class, by campus and year, is treated as a separate observation, totaling 216 observations in all. Two-year and four-year tuition are controlled for linearly.

Column 1 of Table 3 Panel A shows that two-year tuition is negatively correlated, and four-year tuition positively correlated, with size of entering cohort. This reaffirms the findings of Rouse (1994) that potential four-year entrants substitute towards relatively less expensive community college education when the relative price of four-year college increases. Adding county-level controls for unemployment, real wage, and population (Column 2) reduces both tuition coefficients, but both remain significant, showing that a $100 increase in two-year tuition is associated with a 2.6% decline in size of entering cohort, while a $100 increase in four-year tuition increases entering community college cohort size by 0.6%. In Columns 3 and 4, which respectively include a linear and quadratic time trend, the coefficient on two-year college tuition increases slightly. The coefficient on four-year college education, however, becomes small and insignificant. Including year dummies rather than a time trend—which essentially isolates the fees portion of the tuition and fees combination, because four-year tuition is centrally determined and invariant between-campus in any given year—causes the two-year coefficient to remain relatively constant but the positive four-year tuition coefficient to increase substantially and become significant,

perhaps capturing an aversion among students to enrolling in four-year campuses with large unpublicized fees.

Panels B and C of Table 3 show the results of fixed effects estimations on, respectively, logs of first-time fulltime academic (AA/AS program) cohort size and first-time fulltime occupational (AAS/AOS) cohort size. Two year tuition is negatively correlated with entering AA/AS cohort size in all five columns of Panel B. Its coefficient intensifies when time controls—whether a linear or quadratic time trend, or year dummies—are added, suggesting that a $100 increase in tuition causes approximately a 3.8% decline in size of academic-program entering cohort. In columns 1, 2, and 5, coefficients on four-year tuition are significant and roughly twice as large as their Panel A counterparts. When linear or quadratic time trends are included, significance falls below 10%, but the coefficients are over twice as large as their full-cohort analogs.

Estimations on the log size of occupational cohorts (Panel C) differ strongly from those on the log size of academic cohorts. When controlling for county-level variables, two-year tuition is never significantly correlated with AAS/AOS cohort size. Its t-statistic is never greater in absolute value than 0.74. Four-year tuition is insignificant when including any controls for time; it is significant and strongly negative when controlling for county characteristics but omitting a time trend, perhaps capturing the largely downward trend in occupational enrollment in the 1990s.

Other variables in the Panels B and C estimations also yield interesting coefficients. Unemployment rate, found by Betts and MacFarland (1995) to be positively correlated with community college enrollment, is significant and positive in

all five AAS/AOS program estimations. It is significant in the AA/AS estimations
when including a linear or quadratic time trend. Real wage is positively correlated
with AAS/AOS enrollment, but not with AA/AS enrollment. Additionally, the
estimations explain a higher proportion of the variation in AA/AS enrollment than
they do of AAS/AOS enrollment.

In general, then, it appears that potential academic-program community college
students avoid community college enrollment when two-year tuition increases, and
substitute towards two-year AA/AS programs when four-year tuition increases,
although not as strongly and not always with significance. These trends in coefficients
provide some evidence supporting a theory stating that two-year academic programs
are substitutes for four-year direct entry. These campus-level estimations, however,
do not present significant relationships between enrollment decisions of potential
occupational students and either two-year or four-year tuition changes.

V.   Student-Level Estimations

Table 4 shows the marginal effects of logit estimations using as a population
all first-time fulltime students enrolled from 1990 to 1997 at one of 27 SUNY
community colleges. The dependent variable is "1" if a first-time fulltime student
enrolls in an AA/AS program and a 0 if not. Exogenous variables again include two-
year and four-year tuition, campus characteristics, and labor market characteristics,
and campus dummies. Individual demographic and high school characteristics are
also included on the right-hand-side. Marginal effects are computed at the mean
AAS/AOS student, thus demonstrating the impact a change in an exogenous variable

has on the probability of the mean AAS/AOS student having instead enrolled in an AA/AS program.

Column 1 coefficients—from an estimation including only the two tuition variables in the estimation—show that students are significantly more likely to enroll in an academic program when four-year tuition increases. Two-year tuition, however, is insignificantly correlated with probability of AA/AS enrollment.[17] Adding controls for labor market conditions, population changes of surrounding areas, demographics, and high school distance (Column 2) intensifies the coefficient on four-year tuition and makes significantly negative the coefficient on two-year tuition, indicating that two-year academic programs and four-year direct entry are better substitutes than are two-year occupational programs and four-year direct entry. Adding controls for time, whether a linear time trend (Column 3), a quadratic time trend (Column 4), or dummy variables for year of entry (Column 5), increase the intensity of the two-year coefficient and decrease the intensity of the four-year tuition coefficient. All coefficients on two-year tuition in Columns 2-5 are significantly negative, and all coefficients on four-year tuition are significantly positive. Table 5, which shows results of identical estimations on the population of first-time fulltime students excluding those who had not officially registered in either an academic or occupational program, produces the same signs and significance on all ten tuition coefficients from Table 5.[18]

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[17] The coefficient on two-year tuition is significant and positive when omitting campus dummies, suggesting that campuses with larger academic programs also charge higher tuition levels.

[18] Appendix Table A1 shows results from estimations on the probability of not listing a program as a function of various tuition, demographic, and county-level variables. At least one tuition variables is correlated in all four estimations, but non-program status seems most strongly correlated with older

VI.   Conclusion

The results of this paper are explained by a model in which two-year academic programs are a strong substitute for direct entry into four-year college. Holding campus constant, entering academic-program cohorts are smaller when two-year tuition increases and larger when four-year tuition increases, while occupational-program cohorts show no regular responses to either two-year or four-year tuition changes. Individual first-time fulltime students are significantly less likely to enroll in academic programs when two-year tuition increases and significantly more likely to enroll in academic programs when four-year tuition increases, again suggesting that AA/AS programs are used as substitutes for four-year education.

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students, nonwhite students, and students who register in periods of high unemployment. When regressions analogous to those in Table 3 were estimated on the log population of not-in-program students, neither tuition variable is ever significant.

References

Adelman, C. (2004). *Principal Indicators of Student Academic Histories in Postsecondary Education, 1972-2000*. Washington, DC: US Department of Education, Institute of Education Sciences.

Alba, R. D. and Lavin, D. E. (1981). "Community Colleges and Tracking in Higher Education." *Sociology of Education 54* (4), 223-237.

Avery, C. N. and Hoxby, C. M. (2003). "Do and Should Financial Aid Packages Affect Students' College Choices?" NBER Working Paper No 9482.

Betts, J. R. and McFarland, L. L. (1995). "Safe Port in a Storm: The Impact of Labor Market Conditions on Community College Enrollments." *Journal of Human Resources 30* (4), 741-765.

Brint, S. and Karabel, J. (1989). *The Diverted Dream: Community Colleges and the Promise of Educational Opportunity in America, 1900-1985*. New York: Oxford University Press, 1989.

Card, D. (1995). "Using Geographic Variation in College Proximity to Estimate the Return to Schooling" in L. N. Christofides, E. K. Grant, and R. Swidinsky, *Aspects of Labour Market Behavior: Essays in Honor of John Vanderkamp* (pp. 201-222). Toronto: University of Toronto Press.

Clark, B. R. (1960). "The Cooling-Out Function in Higher Education." *American Journal of Sociology 65* (6) , 569-576.

Dougherty, K. (1987). The Effects of Community Colleges: Aid or Hindrance to Socioeconomic Attainment? *Sociology of Education 60* (2), 86-103.

Dynarski, S. (2000). "Hope for Whom? Financial Aid for the Middle Class and Its Impact on College Attendance." *National Tax Journal* 53:3, 629-62.

Grubb, W. N. (1993). "The Varied Returns to Postsecondary Education: New Evidence from the Class of 1972." *The Journal of Human Resources 28* (2), 365-382.

Grubb, W. N. (1995). "The Varied Returns to Postsecondary Education: New Evidence from the Class of 1972: Response to Comment." *The Journal of Human Resources 30* (12) , 222-228.

Hilmer, M. J. (1997). "Does Community College Attendance Provide a Strategic Path to a Higher Quality Education?" *Economics of Education Review 16* (1) , 59-68.

Leigh, D. E. and Gill, A. M. (2003). "Do community colleges really divert students from earning bachelor's degrees?" *Economics of Education Review 22* (1), 23-30.

Leigh, D. E. and Gill, A. M. (2004). "Evaluating Academic Programs in California's Community Colleges." Public Policy Institute of California.

Romano, R. M and Millard, T. (2005). "If Community College Students are So Poor, Why do only 16.9% of Them Receive Pell Grants?" Working Paper.

Rouse, C. E. (1994). "What to Do After High School: The Two-Year Versus Four-Year College Enrollment Decision." In R.G. Ehrenberg, *Choices and Consequences: Contemporary Policy Issues in Higher Education*. Ithaca, NY: ILR Press.

Rouse, C. E. (1995). "Democratization or Diversion: The Effect of Community Colleges on Educational Attainment." *Journal of Business & Economic Statistics 13* (2), April 1995, 217-224.

Rouse, C. E. (1998) "Do Two-Year Colleges Increase Overall Educational Attainment? Evidence From the States." *Journal of Policy Analysis and Management*, 17 (4), 595-620.

Velez, W. (1985). "Finishing College: The Effects of College Type." *Sociology of Education 58* (3), 191-200.

Figure 1
First-Time Fulltime Enrollment in SUNY Community Colleges, 1990-1997

Figure 2
Trends in SUNY Tuition and Enrollment, Fall 1990-Fall 1997
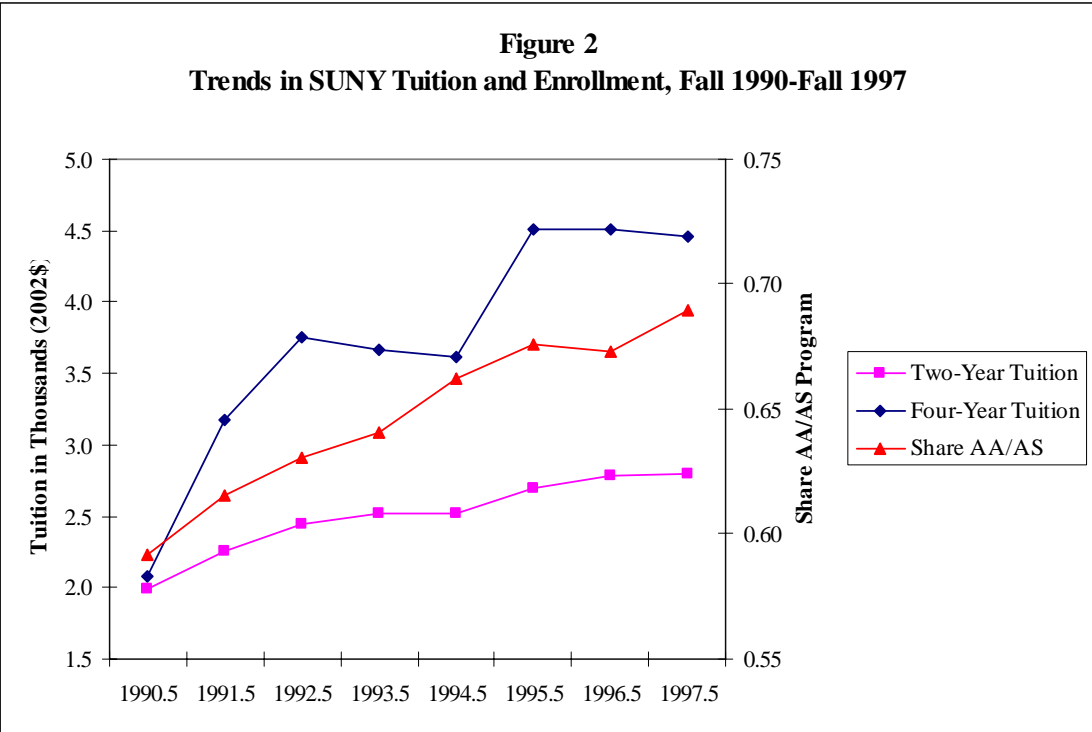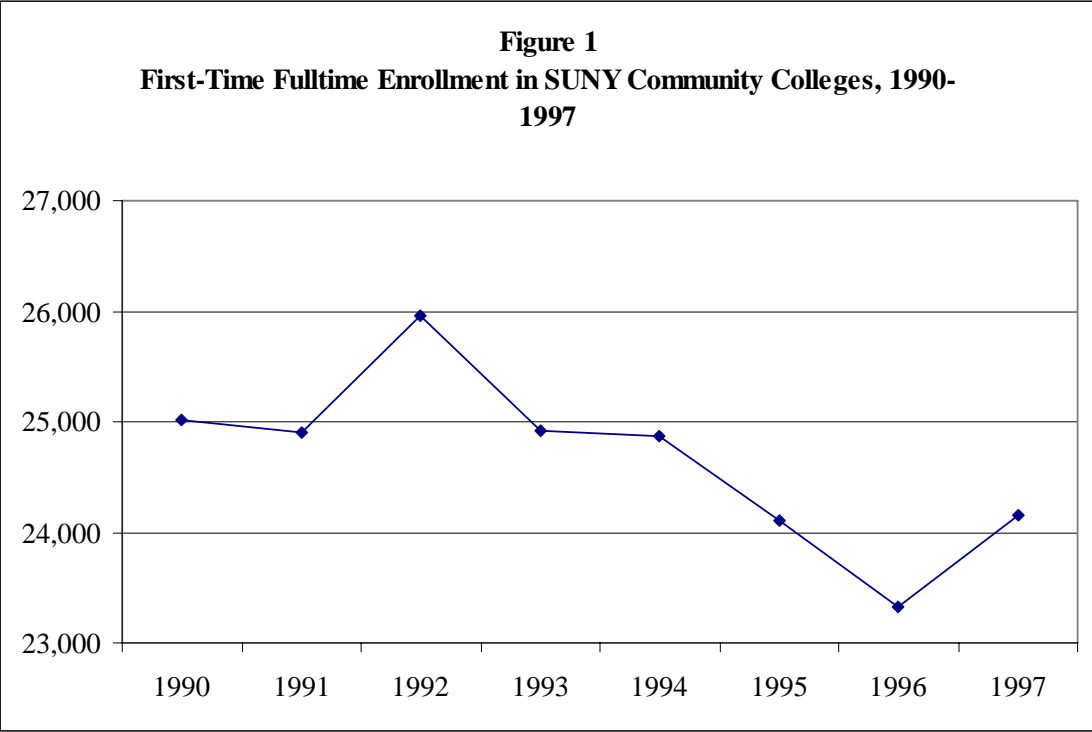
Table 1
Summary Statistics, SUNY First-Time Fulltime Community College Students

1990-1997, Fall Semesters

	Obs	Mean	Std Dev	Min	Max
Real Two-Year Tuition (2002$, $1000s)	197,258	2.496	0.315	1.765	3.404
Real Four-Year Tuition (2002$, $1000s)	197,258	3.708	0.780	2.036	4.861
Academic (AA/AS) Program	197,258	0.629	0.483	0	1
Occupational (AAS/AOS) Program	197,258	0.343	0.475	0	1
No Program Stated	197,258	0.028	0.165	0	1
Age	196,837	19.9	4.9	15	95
Female	197,258	0.502	0.500	0	1
Missing Race Dummy	197,258	0.036	0.186	0	1
Black	190,169	0.087	0.282	0	1
Hispanic	190,169	0.053	0.224	0	1
Asian	190,169	0.020	0.139	0	1
Native American	190,169	0.006	0.075	0	1
Nonresident Alien	190,169	0.004	0.065	0	1
Real Weekly Wage (2002$)	197,258	640.71	91.28	475.43	859.42
Unemployment Rate	197,258	5.5	1.4	2.3	9.8
Credits Accumulated	197,258	2.3	5.1	0	105
Population of Locale (1000s)	197,258	71.15	93.5216	1.855	328.123
Missing High School Dummy	197,258	0.927	0.260	0	1
Miles from High School to Two-Year Campus	14,442	17.1	29.2	0	390.4
Dummy, Student Attended Two-Year Campus Nearest to High School	14,442	0.870	0.336	0	1
Dummy, Student Bypassed Four-Year Campus	14,442	0.285	0.451	0	1
Entering Fulltime Cohort Size (Thousands)	197,258	1.541	1.001	0.152	3.594

Table 2
Share of Fall 1997 First-Time Fulltime Community College Students in AA/AS Programs, by SUNY Campus

Omitting Students Who Have No Program Registered

Campus	Share AA/AS
Ulster County	0.895
Nassau	0.839
Adirondack	0.784
Monroe	0.777
Suffolk County	0.769
Rockland	0.753
Jefferson	0.748
Columbia-Greene	0.741
Orange County	0.710
Fulton-Montgomery	0.688
Broome	0.684
North Country	0.676
Clinton	0.661
Genesee	0.657
Niagara County	0.648
Westchester	0.646
Cayuga County	0.638
Jamestown	0.619
Dutchess	0.610
Erie	0.608
Finger Lakes	0.589
Hudson Valley	0.577
Onondaga	0.576
Tompkins Cortland	0.563
Corning	0.532
Mohawk Valley	0.502
Sullivan	0.500
Herkimer County	0.498
Schenectady County	0.423
TOTAL	**0.682**

Table 3
Estimations, Dependent Variable: Log Size of First-Time Fulltime Cohort

t-statistics included
2002 Dollars

Panel A: All Students

	1	2	3	4	5
Real Community College Tuition ($1000s)	-0.2661	-0.2182	-0.2507	-0.2522	-0.2553
	-4.74*	-3.55*	-3.77*	-3.74*	-3.77*
Real Four-Year College Tuition ($1000s)	0.0573	0.0386	0.0169	0.0157	0.1758
	2.80*	1.79*	0.61	0.55	1.99*
Real Weekly Wage		0.0484	0.0521	0.0530	0.0254
		1.00	1.08	1.09	0.51
Unemployment Rate		0.0170	0.0235	0.0231	0.0124
		2.66*	2.87*	2.64*	1.09
Locale Population (1000s)		-0.0011	-0.0014	-0.0014	-0.0002
		-0.29	-0.36	-0.36	-0.05
Time Trend			0.0120	0.0145	
			1.27	0.76	
Time Trend Squared				-0.0003	
				-0.15	
Campus Controls	Yes	Yes	Yes	Yes	Yes
Observations	216	216	216	216	216
Adjusted R-squared	0.9834	0.9838	0.9839	0.9838	0.9841
Time Control	None	None	Linear	Quadratic	Dummies

Panel B: AA/AS Program Students

	1	2	3	4	5
Real Community College Tuition ($1000s)	-0.2702	-0.2706	-0.3732	-0.3685	-0.3680
	-3.67*	-3.30*	-4.30*	-4.19*	-4.23*
Real Four-Year College Tuition ($1000s)	0.1185	0.1131	0.0446	0.0481	0.3523
	4.42*	3.94*	1.24	1.29	3.10*
Real Weekly Wage		0.0201	0.0316	0.0289	-0.0115
		0.31	0.50	0.45	-0.18
Unemployment Rate		0.0082	0.0288	0.0302	0.0127
		0.96	2.70*	2.65*	0.87
Locale Population (1000s)		-0.0052	-0.0061	-0.0060	-0.0035
		-1.01	-1.20	-1.18	-0.69
Time Trend			0.0379	0.0302	
			3.07*	1.22	
Time Trend Squared				0.0009	
				0.36	
Campus Controls	Yes	Yes	Yes	Yes	Yes
Observations	216	216	216	216	216
Adjusted R-squared	0.9750	0.9749	0.9760	0.9759	0.9770
Time Control	None	None	Linear	Quadratic	Dummies

Table 3 (continued)

Panel C: AAS/AOS Program Students

	1	2	3	4	5
Real Community College Tuition ($1000s)	-0.2164	-0.0848	-0.0285	-0.0052	0.0084
	-2.02*	-0.74	-0.23	-0.04	0.07
Real Four-Year College Tuition ($1000s)	-0.0504	-0.0986	-0.0610	-0.0433	-0.0759
	-1.29	-2.47*	-1.20	-0.82	-0.46
Real Weekly Wage ($100s)		0.2371	0.2307	0.2167	0.2118
		2.65*	2.58*	2.41*	2.27*
Unemployment Rate		0.0410	0.0297	0.0366	0.0500
		3.48*	1.96*	2.27*	2.34*
Locale Population (1000s)		-0.0016	-0.0011	-0.0007	-0.0010
		-0.22	-0.15	-0.10	-0.13
Time Trend			-0.0208	-0.0591	
			-1.19	-1.69*	
Time Trend Squared				0.0044	
				1.26	
Campus Controls	Yes	Yes	Yes	Yes	Yes
Observations	None	216	216	216	216
Adjusted R-squared	0.9431	0.9477	0.9478	0.9480	0.9471
Time Control	None	None	Linear	Quadratic	Dummies

Table 4
Marginal Effects of Logit Estimations, where Dependent Variable is 1 if First-Time
Fulltime Student Enrolled in AA/AS Program, 0 Otherwise

t-statistics included
2002 Dollars

	1	2	3	4	5
Real Community College	0.0138	-0.0307	-0.0658	-0.0683	-0.0733
Tuition ($1000s)	1.38	-2.72*	-5.42*	-5.60*	-5.79*
Real Four-Year College	0.0337	0.0449	0.0192	0.0164	0.0332
Tuition ($1000s)	9.25*	11.58*	3.79*	3.15*	1.81*
Real Weekly Wage ($100s)		-0.0254	-0.0231	-0.0183	-0.0322
		-2.49*	-2.27*	-1.76*	-2.94*
Unemployment Rate		-0.0073	0.0008	-0.0006	-0.0095
		-6.64*	0.55	-0.36	-4.27*
Locale Population (1000s)		-0.0014	-0.0018	-0.0019	-0.0018
		-2.61*	-3.44*	-3.52*	-3.15*
Age		-0.0261	-0.0261	-0.0262	-0.0263
		-19.63*	-19.61*	-19.64*	-19.71*
Age Squared		0.0003	0.0003	0.0003	0.0003
		13.99*	13.97*	14.00*	14.05*
Female		0.0276	0.0277	0.0278	0.0278
		11.86*	11.90*	11.91*	11.94*
Black		0.0108	0.0105	0.0105	0.0105
		2.49*	2.42*	2.41*	2.43*
Hispanic		0.0010	0.0001	0.0001	0.0002
		0.19	0.03	0.01	0.04
Asian		0.0159	0.0157	0.0155	0.0157
		1.84*	1.82*	1.80*	1.82*
Native American		0.0022	0.0021	0.0022	0.0026
		0.14	0.14	0.14	0.17
Nonresident Alien		0.0784	0.0771	0.0769	0.0779
		4.49*	4.40*	4.39*	4.45*
Missing Race		0.0250	0.0249	0.0249	0.0249
		3.88*	3.86*	3.86*	3.85*
Credits Accumulated		0.0009	0.0009	0.0009	0.0010
		2.98*	3.23*	3.23*	3.35*
Distance from HS to		-0.0048	-0.0047	-0.0047	-0.0046
CC, in Tens		-2.66*	-2.59*	-2.60*	-2.55*
Dummy, Closest CC to HS		0.0288	0.0289	0.0290	0.0296
		1.80*	1.81*	1.82*	1.85*
Dummy, Skipped over		-0.0264	-0.0254	-0.0258	-0.0259
4YR to Attend CC		-2.52*	-2.42*	-2.46*	-2.47*
Missing HS		-0.0452	-0.0427	-0.0433	-0.0421
		-2.80*	-2.64*	-2.67*	-2.59*
Time Trend - Linear			0.0137	0.0201	
			7.89*	5.91*	

Table 4 (continued)

	1	2	3	4	5
Time squared				-0.0008	
				-2.18*	
Obs	197,258	196,837	196,837	196,837	196,837
Adjusted R-squared	0.0439	0.0509	0.0512	0.0512	0.0513
Time	None	None	Linear	Quadratic	Dummies

Table 5
Marginal Effects of Logit Estimations, Dependent Variable is 1 if First-Time Fulltime Student Enrolled in AA/AS Program, 0 if Enrolled in AAS/AOS Program

t-statistics included
2002 Dollars

	1	2	3	4	5
Real Community College	-0.0005	-0.0397	-0.0721	-0.0777	-0.0780
Tuition ($1000s)	-0.05	-3.45*	-5.84*	-6.27*	-6.08*
Real Four-Year College	0.0384	0.0492	0.0255	0.0187	0.0356
Tuition ($1000s)	10.42*	12.45*	4.95*	3.51*	1.94*
Real Weekly Wage		-0.0432	-0.0411	-0.0294	-0.0349
($100s)		-4.21*	-4.00*	-2.80*	-3.16*
Unemployment Rate		-0.0072	0.0002	-0.0032	-0.0090
		-6.56*	0.14	-1.92*	-4.00*
Locale Population (1000s)		-0.0007	-0.0012	-0.0013	-0.0010
		-1.37	-2.16*	-2.35*	-1.84*
Age		-0.0245	-0.0245	-0.0246	-0.0247
		-17.70*	-17.68*	-17.76*	-17.81*
Age Squared		0.0003	0.0003	0.0003	0.0003
		12.93*	12.91*	12.98*	13.01*
Female		0.0289	0.0290	0.0291	0.0291
		12.27*	12.31*	12.33*	12.35*
Black		0.0217	0.0215	0.0215	0.0215
		4.95*	4.89*	4.89*	4.89*
Hispanic		0.0128	0.0119	0.0117	0.0118
		2.27*	2.12*	2.08*	2.10*
Asian		0.0612	0.0609	0.0607	0.0607
		6.94*	6.91*	6.88*	6.88*
Native American		-0.0018	-0.0018	-0.0016	-0.0013
		-0.12	-0.12	-0.10	-0.08
Nonresident Alien		0.0872	0.0860	0.0855	0.0863
		5.01*	4.92*	4.89*	4.94*
Missing Race		0.0491	0.0489	0.0490	0.0490
		7.54*	7.52*	7.53*	7.53*
Credits Accumulated		0.0009	0.0010	0.0010	0.0010
		3.00*	3.22*	3.22*	3.24*
Distance from HS to		-0.0054	-0.0053	-0.0053	-0.0053
CC, in Tens		-3.01*	-2.95*	-2.96*	-2.94*
Dummy, Closest CC to HS		0.0207	0.0208	0.0212	0.0217
		1.29	1.30	1.32	1.35
Dummy, Skipped over		-0.0251	-0.0242	-0.0252	-0.0254
4YR to Attend CC		-2.38*	-2.29*	-2.39*	-2.41*
Missing HS		-0.0487	-0.0463	-0.0477	-0.0469
		-3.05*	-2.90*	-2.99*	-2.93*
Time Trend - Linear			0.0127	0.0281	
			7.20*	8.17*	

Table 5 (continued)

Time squared				-0.0019	
				-5.23*	
Obs	191,706	191,340	191,340	191,340	191,340
Adjusted R-squared	0.0446	0.0508	0.0510	0.0511	0.0512
Time	None	None	Linear	Quadratic	Dummies

Table A1
Marginal Effects of Logit Estimations, Dependent Variable is 1 if First-Time Fulltime Student Not Enrolled in Program, 0 Otherwise[1]

t-statistics included
2002 Dollars

	1	2	3	4
Real Community College	-0.0024	-0.0018	-0.0044	0.0008
Tuition ($1000s)	-1.92*	-1.28	-3.14*	0.55
Real Four-Year College	0.0020	0.0024	0.0010	-0.0051
Tuition ($1000s)	4.56*	4.15*	1.79*	-1.92*
Real Weekly Wage	-0.0112	-0.0111	-0.0069	-0.0024
($100s)	-7.89*	-7.84*	-4.88*	-1.59
Unemployment Rate	0.0008	0.0008	0.0008	0.0008
	9.54*	9.55*	9.34*	8.91*
Locale Population, in	0.0002	0.0001	-0.0016	-0.0002
Thousands	1.43	0.23	-6.34*	-0.51
Age	0.0014	0.0014	0.0013	0.0013
	10.92*	10.91*	10.61*	10.71*
Age Squared	0.0000	0.0000	0.0000	0.0000
	-7.51*	-7.50*	-7.21*	-7.29*
Female	-0.0001	-0.0001	-0.0001	-0.0001
	-0.47	-0.48	-0.42	-0.54
Black	0.0038	0.0038	0.0037	0.0036
	6.84*	6.84*	6.82*	6.80*
Hispanic	0.0051	0.0051	0.0050	0.0048
	6.62*	6.63*	6.58*	6.54*
Asian	0.0161	0.0161	0.0156	0.0154
	9.81*	9.81*	9.67*	9.73*
Native American	-0.0025	-0.0025	-0.0024	-0.0024
	-1.67*	-1.66*	-1.60	-1.63
Nonresident Alien	0.0033	0.0033	0.0030	0.0028
	1.31	1.31	1.23	1.18
Missing Race	0.0110	0.0110	0.0106	0.0105
	9.22*	9.22*	9.02*	9.11*
Credits Accumulated	0.0000	0.0000	0.0000	0.0000
	-0.20	-0.27	-0.09	-1.62
Distance from HS to	-0.0009	-0.0009	-0.0008	-0.0008
CC, in Tens	-1.86*	-1.87*	-1.85*	-1.89*
Dummy, Closest CC to HS	-0.0050	-0.0050	-0.0048	-0.0048
	-3.20*	-3.20*	-3.19*	-3.18*
Dummy, Skipped over	-0.0009	-0.0009	-0.0011	-0.0011
4YR to Attend CC	-0.60	-0.62	-0.72	-0.77
Missing HS	-0.0047	-0.0047	-0.0053	-0.0052
	-1.12	-1.13	-1.23	-1.24
Time Trend - Linear	0.0015	0.0018	0.0023	0.0021
	0.85	1.02	1.32	1.15

Table A1 (continued)

Time squared			-0.0007	
			-13.21*	
Obs	193,388	193,388	193,388	193,388
Adjusted R-squared	0.2032	0.2032	0.2073	0.2096
Time	None	Linear	Quadratic	Dummies

[1] Note: One campus has no students who are not registered in either an academic or occupational program. All observations from this campus are removed from these estimations.