

**Two-Year Colleges and the Transfer Function in
the State University of New York System**

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I. Introduction: The Study of Community Colleges

As originally conceived by William Rainey Harper, the first president of the University of Chicago, two-year colleges were to provide an education equivalent to the first two years at a four-year institution.¹ From a two-year college students would transfer to a four-year college, where work towards a baccalaureate degree would conclude. Thus, the intended purpose of two-year colleges' original was to create more Bachelor's-earning students by extending opportunities for entrance into higher education.

Currently, two-year colleges are not limited to such a strict "transfer function." Indeed, two-year colleges often cater to a broad range of students. Though they certainly enable students to begin college careers that eventually lead to the receipt of a baccalaureate degree, two-year colleges also teach students labor market skills through specific non-degree courses,² grant terminal (typically vocational) two-year degrees to students with no intention of earning a baccalaureate, and provide adult education. Such heterogeneous goals within student bodies make two-year colleges a fairly difficult area of research.

Nevertheless, two-year colleges are indeed the focus of study. Two general subtopics receive attention: a) two-year colleges' effect on overall educational attainment; and b) labor market payoffs to two-year colleges, both to credits earned and degrees received ("sheepskin" effects).

¹ For a good overview of the history of community colleges and a review of community-college related research, see Kane and Rouse (1999).

² Some specific labor-market oriented courses include "contract courses." These are classes, typically teaching a job-related skill, that firms or government specifically employ a college to perform for multiple employees. In the late 1980s, over 90 percent of two-year colleges provided "contract courses."

Though questions concerning transfer from community colleges have explicitly been researched, most research into two-year colleges deals with the transfer function vis-à-vis a more general approach to examining how their effect on overall educational attainment. Certain researchers have attacked two-year colleges along this line, maintaining that the increasing emphasis on non-academic vocational education actually “divert” students, even those in academic programs, from pursuing a baccalaureate degree.³ Other researchers have employed more rigorous econometric analyses comparing two-year colleges’ effects on “diverting” students from earning a four-year degree to their “democratizing” effects on students who, in the absence of community colleges, would never have attended postsecondary education. These studies will be discussed more thoroughly later in this proposal.

In studies of *returns* to two-year education, transfer students largely are used to compare the labor market benefits of academic two-year instruction to vocational (often terminal) two-year instruction.⁴ My dissertation will not deal with this line of research.

My three dissertation essays will extend the research done on two-year colleges and transfer students using a newly available Student Data File from the State University of New York (SUNY) system. The first portion of the dissertation will thoroughly examine *who* two-year college students are and how the populations of two-year colleges differ by schooling options and region. This step is necessary for my subsequent dissertation essays.

³ See, for example, Clark (1960) and Brint and Karabel (1989). Adelman (1992) dismisses these claims, writing that two-year colleges’ most persistent critics “perform hocus-pocus analyses of secondary sources” (p. 26).

⁴ See, for example, Grubb (1993 and 1995), Kane and Rouse (1995), and Leigh and Gill (1997).

The second portion of my dissertation will develop a retention model of two-year colleges and test what factors, at both the student and institution level, impact retention. Given that almost three-quarters of states fund campuses on the basis of academic performance, and also that two-year college performance is unfortunately often judged using criteria typically applied to four-year institutions (Dellow and Romano 2002), such detailed analysis of success is needed.

The third purpose of this dissertation will be to more thoroughly examine what student and institution qualities facilitate successful transfers within the SUNY system (although no campus names will ever be specifically mentioned in this piece). For example, I can research what qualities of two-year and four-year institutions impact the likelihood of a students' successful transfer. Certain institutions may have different attitudes toward transfer students: for example, one community college may only want its best students to transfer to four-year institutions while another may want any student thinking of transferring to do so. Since transfer students are heterogeneous, the differences across two-year campuses in four-year college graduation rates may reflect not necessarily *how* different campuses prepare students for transfer. I can also examine what demographic characteristics are most indicative of successful transfer, and whether there are systematic differences in how certain factors affect different demographic groups' transfer rates. Lastly, I will examine transfer students by field of study, which is often used in examinations of earnings,⁵ but has not been researched extensively with respect to gauging success of transfer.⁶ Optimal time of transfer (either in credit-hours

⁵ See, for example, Hilmer (2000).

⁶ Lee and Frank (1990) report that while intended science majors have no significantly higher likelihood of transfer to four-year colleges, taking many math and science classes increases the probability of transferring.

accumulated or time spent at two-year college) and nature of institution to which one transfers may differ by field of study.

This proposal will be organized as follows: Section II covers research describing two-year college students and research examining the impact of two-year colleges on overall educational attainment. Section III reviews some of the research explicitly dealing with transfer students, both at the student level and at the institutional level. Section IV describes the SUNY system and its Student Data File, which I will be using as my dataset. Section V lays out what questions I hope to answer through my dissertation, both in the fields of describing two-year college students and the field investigating success of SUNY transfer students.

II. Previous research on two-year colleges: composition and effects on educational attainment

The most exhaustive study detailing the plans and actions of two-year college students is Adelman (1992), which used the NLS72 to detail community college attendance patterns. Here I briefly review his findings. Table 1 shows Adelman's classification of two-year college students. Noticeably, the percentage of students who earn both a Bachelor's and Associate's degree is almost exactly the same as those who attend a two-year college, transfer before earning an Associate's, and earn a Bachelor's. Students in each of these categories roughly double the number of students who transfer after earning an Associate's degree but never earn a Bachelor's, and outnumber by about 25% the number of students who attend both two- and four-year institutions but never earn any degrees.⁷

⁷ It is not necessarily true that students attending both types of school attend two-year colleges first. Transfers who attend two-year colleges after leaving four-year colleges, i.e. "downward transfers," are a noticeable component of college students.

Adelman also shows that about 40% of all students who attend two-year colleges earn under 10 credits (“incidental” students), while 30% earn over 30 credits—the equivalent of one full-time year. Adelman notes that of two-year college students who earn no degree or certificate and never attend a four-year institution, approximately three-quarters are students who take classes with no apparent focus, while the rest appear to take classes to acquire a specific labor market skill. Associate’s degrees do not exclusively go to new high school graduates: 25.1% of those who had Associate’s degrees 12 years after high school graduation earned them over 4.5 years after their high school graduation.

Of course, two-year colleges have changed much since the members of Adelman’s dataset graduated from high school in 1972. Grubb (1991) notes that between 1972 and 1980,⁸ the demographics of two-year college enrollment changed substantially (more nonwhite students, women, and lower-income students), and attributes about 25-33% of a noticeable decrease in the transfer rate to these shifts.

A recent study of the student body of Broome Community College (BCC), a SUNY campus, shows the problems of judging two-year colleges by criteria established to estimate quality of four-year colleges (Dellow and Romano 2002). Many researchers judge the quality or success of four-year institutions by six-year graduation rates of first-time full-time freshmen. Table 2 demonstrates that this method is inappropriate for judging two-year colleges. Almost two-thirds of all BCC *degree recipients* in Spring 2000 did *not* enter BCC programs as first-time full-time students. Table 3 shows that among BCC *vocational education students*, almost two-thirds of program *entrants* are *not*

⁸ Grubb used both NLS72 and High School & Beyond to uncover trends in two-year college transfers between 1972 and 1980.

first-time full-time students. Clearly, using the success rate of first-time full-time students ignores, misinterprets, and discounts the success rates of many BCC programs. Looking more carefully at SUNY two-year colleges can hopefully better lay out the purposes of two-year colleges and why students enter two-year colleges, and perhaps create a better indication of how to judge two-year campus quality.

In terms of educational attainment, most original research (Alba and Lavin 1981, Velez 1985) found that two-year college entrants experience significantly lower levels of overall educational attainment than four-year college entrants, even when controlling for differences among students. Certain researchers such as Dougherty (1987 and 1992) explained such findings in terms of two-year campuses' lower selectivity (e.g. open admissions) and lack of on-campus student housing. More recently researchers have been determining whether this apparently negative impact on educational attainment of two-year colleges is outweighed by two-year colleges' positive educational effect on students who, in the absence of such colleges, would never have attended postsecondary school. Most research indicates that indeed this positive "democratization" effect exceeds the negative "diversion" effect (Grubb 1989, Rouse 1995 and 1998, Leigh and Gill 2000), meaning that two-year colleges on the whole increase overall educational attainment, both in terms of years of education and baccalaureates received.

III. Previous research of transfer students

Here is a very brief overview of research done explicitly on transfer students. Much of the research on transfer students was implicitly discussed in the last paragraph; the whole literature concerning whether community colleges decrease educational

attainment assumes that two-year college students would want to initially attend a four-year institution if possible.⁹

Hilmer (2000) notes that compared to students who originally enroll in four-year institutions, community college students who transfer to four-year institutions have lower ability (as expressed in standardized test scores), poorer high school records, and come from less financially advantageous backgrounds. He also notes that students who transfer from more selective universities to less selective four-year institutions or community colleges tend to have lower high school grades and come from more financially advantageous backgrounds.

Grubb (1991) notes that between the high school graduating classes of 1972 and 1980, the success of transfer students in promptly receiving baccalaureate degrees dropped precipitously. In NLS72, over 40 percent of students who received an academic AA degree also received a Bachelor's degree in four years; in HS&B, the number fell to just over 12 percent.¹⁰

Lee and Frank (1990) find that two-year college students most likely to transfer to a four-year college are those who had both strong family backgrounds and high school characteristics. That is, students who would perhaps perform well directly attending a four-year university do occasionally attend a two-year college first, perhaps to save money or to live comfortably at home.

Cheslock (2001) is the only work that appears to analyze transfer students from an institutional perspective. He finds that four-year schools with high freshman attrition

⁹ Although Hilmer (2001) states that two-year and four-year colleges are close substitutes for students who expect to graduate from college upon entry.

¹⁰ Grubb finds that extending the time frame does not substantially increase the percentage of transfers-with-degree who earn a BA, although it does increase the percentage of transfers-without-degree who earn one.

rates—especially selective universities—as well as schools with a high percentage of first-year students living in dorms, have transfer students comprising a larger percentage of the student body. Schools in states with a large two-year college presence have more transfer students, as do “more selective” (Barron’s ranking) public institutions. Campuses with higher tuition and higher current fund revenue (independent of tuition revenue) have fewer transfer students.

The work most relevant to my dissertation is Ehrenberg and Smith (2002),¹¹ which was intended largely as an exploration of a new methodology in determining campus effectiveness in creating successful transfer students. Using grouped data from the SUNY system,¹² and with some controls (such as distance from two-year college to four-year college and a year effect), the authors develop an ordinal ranking of two- and four-year SUNY institutions based on how well their transfer students perform at a four-year institution. Their results indicated that students transferring with an AA or AS degree had a significantly (20 percentage points) higher chance of receiving a BA or BS degree within three years than students who transferred with no degree. Those who transferred with an AAS or AOS had a 15 percentage point higher chance of having a BA in three years than students with no two-year degree. Having no degree does not simply lengthen time-to-degree: students with no degree have a significantly higher chance of having dropped out after three years than students who transfer with either an AA/AS or AAS/AOS degree.

¹¹ Smith is Christopher L. Smith, a Cornell undergraduate. “Ehrenberg and Smith” thus does not refer to the Ronald G. Ehrenberg-Robert S. Smith Labor Economics textbook.

¹² Data is grouped by two-year institution transferred *from*, four-year institution transferred *to*, and whether students received an Associate of Arts/Science (AA/AS), Associate in Applied Science/Occupational Studies (AAS/AOS), or no degree from the two-year college. AA and AS degrees are generally awarded to students in academic-oriented programs, while AAS and AOS degrees are awarded to students in vocational or career-oriented programs.

When Ehrenberg and Smith add a proxy for four-year institutional quality in their study,¹³ their ranking of four-year institutions' ability to graduate transfers has a strong positive correlation with the ranking of SUNY institutions by percentage of their student body consisting of transfer students. It appears, then, that transfer students disproportionately attend four-year schools from which they have a higher chance of graduating. Certain campuses may intentionally structure their curricula or student environment to accommodate transfer students and their particular demands. The factors that Cheslock (2001) finds correlated with high-transfer student bodies may be conscious decisions made by institutions to target transfers as a desirable type of student, perhaps because of a lower cost of educating them.

IV. Description of the SUNY System and the Student Data File

Table 4 lists the 64 institutions in the State University of New York (SUNY) system. They consist of 30 2-year colleges, 13 "university colleges" that award baccalaureate and master's degrees, 4 "university centers" that award baccalaureate, master's, doctoral, and professional degrees, 5 colleges of technology that award 2-year degrees, 5 "specialized" institutions that offer baccalaureate and advanced degrees, 2 health science centers, and 5 statutory colleges on the campuses of two different private universities.

Figures 1a and 1b display enrollment trends for SUNY 2-year colleges, university colleges, and university centers from 1980-98. In every year, there are: a) more full-time

¹³ The proxy is percent of incoming first-time freshman who earn a Bachelor's degree in six years or less. Ehrenberg and Smith admit the imperfection of this proxy, because transfer students and direct attendees may follow very different paths, even on the same campus.

students enrolled at SUNY four-year colleges than at SUNY two-year colleges;¹⁴ and b) much more part-time students enrolled at SUNY 2-year colleges than at university colleges and centers combined. The percentage of two-year college students that attend school part-time fluctuates from a low of 48.1% in 1986 and 1987 to a high of 52.6% in 1997. For university colleges and university centers, the percentage of part-time students never falls below 68.9% (1989) and 73.5% (1992), respectively.

Figures 1a and 1b also clearly show that enrollment trends at two-year colleges are far less static than at four-year institutions. Full time enrollment at two-year colleges dipped noticeably in the late 1980s, and then rose constantly until 1993, when another dip began. Part-time enrollment leapt up in the early 1990s, subsequently settling down again. At four-year colleges, there are some slight deviations from a fairly constant-path trend.

It is questionable whether results from a study of students in SUNY's system can be considered indicative of students on a national scale. Ehrenberg and Smith (2002) show the wide disparity in states' 1996 percentage of public-institution full-time students attending a two-year institution: the numbers range from 1 percent (Alaska and South Dakota) to 72 percent (Washington state). New York's percentage of all students attending two-year colleges (58 percent) is comparable to the national average (55 percent), yet its percentage of full-time students attending 2-year colleges (55 percent) is much higher than the national average (42 percent). This stems from full-time students composing a much higher percentage of SUNY two-year college students than they do for national two-year colleges. Dellow and Romano (2001) report that New York's

¹⁴ The greatest difference in four-year full-time enrollment versus two-year full-time enrollment was in Fall 1986 (19,447), and the least difference was Fall 1992 (2,771).

percentage of two-year college students that are enrolled part-time is twenty percentage points lower than the national percentage.¹⁵

Wellman (2002) also notes some key differences between New York and other states that “rely heavily on transfer from two-year colleges as a point of access to the baccalaureate degree for low-income students.” First, New York has comparably much higher in-state tuition, especially at two-year colleges, than these other states.¹⁶ Interestingly, Figure 2 shows that, relative to four-year college tuition, tuition at SUNY two-year colleges dropped considerably between 1990 (96.6% of four-year tuition) and 1998 (65.1% of four-year tuition). This was driven largely by sharp tuition increases in 1992, 1993, and 1996 at university colleges and university centers.¹⁷ Indeed, comparing Figure 2 with Figures 1a and 1b, it seems that both part-time and full-time enrollment at two-year colleges increased in the early 1990s, when tuition hikes at four-year colleges were implemented. Thus, even though in a national context SUNY two-year colleges are rather expensive, they are far more affordable than a fairly close in-state substitute, and New York students may adjust their behavior accordingly.

Another difference between New York and other states is the relatively high percentage of New York college students who attend private postsecondary schools. Thirty-six percent of New York’s college students attend one of its 108 private institutions. These schools probably lure two-year college transfers away from public SUNY four-year institutions. This “leak” from the SUNY system may be exacerbated by

¹⁵ Dellow and Romano list the national average of two-year students enrolled part-time as 64%, and the New York average as 44%. Their source is the AACCC’s 2001 *State-by-State Profile of Community Colleges*. Noticeably, their latter number does not conform with the IPEDS numbers I downloaded from WebCASPAR.

¹⁶ Other states in her study are North Carolina and Florida (like New York, “high-performing” states), and Arkansas, New Mexico, and Texas (“low-performing” states).

¹⁷ The tuition hikes came in non-election years. New York gubernatorial elections at this time were in 1990 (victor: Mario Cuomo, Democrat) and 1994 (victor: George Pataki, Republican).

numerous partnerships between SUNY 2-year colleges and private institutions, and also by the presence of the Bundy aid program.¹⁸ Indeed, Wellman (2002) reports that 35% of all New York state transfers from two-year to four-year institutions transfer to schools unaffiliated with SUNY or the City University of New York (CUNY) system (which are themselves independent of each other).

Notable aid packages to SUNY students are the Tuition Assistance Program (TAP), whose aid totals \$600 million a year, and the \$14.6-million-per-year Aid to Part-Time Study (APTS). TAP grants up to \$5000 a year per student to New York residents attending college in New York state full-time; it almost certainly affects SUNY students' part-time/full-time attendance decision. APTS is a credit on tuition only (not fees), and is only awarded to students pursuing at least 6 credits ("half-time") in a term.

SUNY two-year students are required to take a basic skills test when entering school if they have not taken the SAT or ACT. A low score requires that a student take remedial courses.

The percentage of student body composed of transfer students is certainly not the same across SUNY four-year campuses. Table 5 shows that in Fall 1999, 20.1% of the students at the Geneseo campus were transfer students, while 74.3% of Empire State College students were transfers. On the whole, most four-year schools appear to have between 35 and 50 percent of their campuses composed of transfer students.

¹⁸ The Bundy aid program allocates state funds to private institutions on the basis of degrees awarded to New York residents. Bundy aid does not total much: institutions are given \$600 (in 2002 dollars) for each two-year degree awarded, \$1500 for each baccalaureate, \$950 for each Master's, and \$4500 for each doctorate. Since transfer students may offer four-year institutions an opportunity of receiving Bundy aid at a lower cost than graduating direct attendees from New York, private universities in New York may have an incentive to attract transfer students that comparable institutions in other states do not.

Student Data File

SUNY's Student Data File (SDF), compiled by the Office of Institutional Research and Analysis, supplied the data for my dissertation. From the Fall 1979 semester through the present, the SDF has recorded campus, program of study, credits attempted, and cumulative GPA for each student in each semester. It also tracks demographic characteristics for each student, such as date of birth, race, gender, and high school attended. Specific classes taken, despite being on the SDF, is not reported well enough to be of use to any research endeavor.¹⁹ Since Fall 2001, the SDF has expanded to include SAT and ACT scores, high school rank and GPA, and (for two-year college students only) goal of attendance. Response rates for these new categories, however, vary widely by campus and are not fully reported for any campus.

To construct my dataset, I recorded every observation for undergraduate students who could conceivably be described as "new" from the Fall semesters between 1990 and 1997, inclusively. The conceivably "new" students were first-time college students, transfer students, and returning students; that is, all students who were not attending the same campus that they did the previous semester. After recording all these observations, I retained only the first observation for each student. There were more than 806,000 students in this set, which I call the "Primary File." Data on program of study, number of classes taken, credits attempted, GPA, and campus were recorded for each student, as was demographic data.

¹⁹ In the Spring 2003 semester (presumably the most well-reported semester), under 50% of the first class attended by each student was reported in a manner consistent with instructions. Over half were either incorrectly coded with letters instead of numbers, with blank spaces, or with the number for "interdisciplinary." Institutional researchers at SUNY are working on improving the reporting of classes taken, but according to one administrator someone who wishes to use that data in a project should "come back in three years."

My next step was to use the Student Historic File, which compiles SDF information into four different datasets: the Term File (consisting of one observation for each student-term combination), the Campus File (consisting of each student-campus combination), the Degree File (each student-degree combination), and the Student File (each student). I first used the Degree File to account for every undergraduate degree awarded to a student in the Primary File between 1990 and 2003. I then acquired observations from the Term File between Spring 1980-Spring 1990, recording the last semester of attendance between 1980 and 1990 for each student in the Primary File. I will use this observation to lessen the left-censoring problem in my retention study: students who are, for example, transfer students in the Fall of 1990 who attended another SUNY campus in the spring of 1990 will be removed from the Primary File, as they are obviously not “new” students.

Lastly, I created a “Secondary File” to track, from Fall 2001 to Spring 2003, SUNY students who originally enroll at two-year colleges. Since the SDF has been tracking important high school data and student goals only for the last two years, it is worthwhile to investigate how stated goal impacts or represents student retention and, perhaps, the likelihood of transferring to a four-year college before earning a two-year degree.

V. Plans for Dissertation

My dissertation has three broad goals. The first is to clearly outline who exactly two-year college students are. The Secondary File, discussed above, will help show how stated goals affect or reflect retention, how goals change over time (do they signify greater or less enthusiasm towards higher education?), and how high school records

impact the decision to attend a two-year college. The Primary File will better show the various long-term attendance patterns of community college students, and how they differ from patterns of four-year college students. Issues of attendance pattern that can be studied include consistency of enrollment, part-time/full-time enrollment decisions, and decisions to enroll in particular programs.

This comprehensive description of two-year students is necessary for the second purpose of my dissertation, which is to better understand determinants of success within two-year colleges. John Porter, the SUNY Assistant Provost for Institutional Research and Analysis, mentioned on August 6, 2002 that there is a pressing need for a developed version of a two-year college retention model. Different student, economic, or institutional characteristics have different impacts on students' willingness or ability to stay enrolled in a two-year institution. The Student Data File thoroughly tracks students' progress through the SUNY system, granting us access to many of these characteristics.

Many pre-existing studies of retention have cut some corners that my dissertation, hopefully, can better take into account. For example, certain two-year colleges, presumably, have a higher percentage of incidental students than do others.²⁰ Previous researchers (Adelman 1998) have ignored such students in their work, saying that two-year colleges cannot be held responsible for the academic non-performance of students who show no interest in secondary education. But if schools do indeed have different rates of incidental students, it is desirable to understand why. Certainly, some factors affecting incidental enrollment may be exogenous to the school's environment or

²⁰ The national percentage of incidental students is quite high. Kane and Rouse (1995) show that in the NLS72, 40% of two-year college students who never attended a four-year college (about 89% of two-year college students don't attend a four-year college) dropped out before earning a semester's worth of credits (15 credits).

curriculum. For example, I would hypothesize that a two-year college's rate of incidental students is inversely correlated with the average distance of its new students' high schools to the campus. Schools located in urban areas may attract a large number of students with very low expected benefits of postsecondary education; the low non-tuition costs of attendance permit such "testing the waters." By contrast, schools located in rural environments may attract students from distant towns, whose willingness to incur greater non-tuition costs of enrollment indicates that their expected benefits of enrollment are, on average, higher than those of students who live near the campus.²¹

There are, of course, obstacles to creating two-year student retention model. The largest problem may come from the assumption that retention at a two-year school, manifested in credits received and culminating in Associate's degree receipt, is inherently something of value. Accumulation of massive amounts of credits may indicate that a student has no focus, or that the counselors at the college are unwilling to provide him/her with sufficient academic advice. Students in certain disciplines may want to accumulate as few credits as possible before transferring to a four-year institution, to take better advantage of a richer learning environment (e.g. better laboratories) or wider curriculum. Even dropping out after earning very few credits may not be bad for two-year colleges or students, because students with uncertainty with respect to their marginal benefits of education may, while enrolled, discover that the benefits of continued

²¹ Researchers have found distance to nearest college inversely correlated with educational attainment: see Card (1993 and 1995) and Rouse (1995). Note that my hypothesis does not strictly contradict these economists, who find that college-age people living near colleges have higher chances of going to school and getting a degree. My hypothesis states that *of those students who attend* a two-year college, those students who live close to the campus are more likely to be incidental students, *ceteris paribus*. Card (1993 and 1995) theorizes that students whose decision to attend a postsecondary institution is marginally affected by proximity to college would receive higher returns to education than the average student, because their educational attainment is limited not by low expected benefits but by financial constraints. Along the same line, students living close to a university would have low non-tuition costs of attendance, and thus on the average would have low expected benefits to additional education.

enrollment are lower than the costs. As Comay et al. (1973) and Kane and Rouse (1995) note, these students' *ex ante* return to college may exceed costs of attendance, and thus enrollment may be a wise decision even if *ex post* college is not a good fit for them.

Perhaps, instead of running a regression with "credits" or "time in school" as the dependent variable to investigate retention in two-year colleges, I could create a classification of outcomes ("incidental," "non-incidental non-degree, apparently unfocused," "early transfer to four-year," "receives AA, doesn't transfer," "receives AA, transfers") and run a multinomial logit model to compare how certain student and institutional factors influence outcomes.²² An alternative is a two-stage selection-corrected model, in which the first stage is a binomial variable equal to 0 if the student is an incidental attendee and 1 if otherwise, and the second equation's dependent variable is credits acquired. Careful analysis of student attendance patterns, and a clear description of what students would be considered part of the relevant population (for example, older students who take a contract course probably would not be considered members of the population), must precede such an analysis.

The third part of this paper will extend preexisting work on transfer students by tackling the problem from a micro-based approach. Although possessing useful conclusions and methodology, Ehrenberg and Smith were limited by their grouped-data approach. Not only did they not have the extensive micro-level demographic and field-of-study data that the Student Data File allows, but their OLS methodology was unweighted, permitting groups of several dozen transfer students (presumably) to be granted equal weight to those of a mere few. They also could not account for selection

²² With the complicated role two-year colleges play in preparing students for four-year colleges, for the labor force, etc, an ordered probit model would make little sense in this respect.

effects in terms of *which* students at a two-year college made the transfer to a four-year college, and when specifically the transfer took place. (Though they could control for whether the student had received a two-year degree or not, they could not control for credits accumulated or semesters enrolled at two-year college.)

Nevertheless, the Ehrenberg and Smith paper provides an excellent point from which my dissertation can extend. A few questions I am interested in researching include:

What is the optimal time of transfer? It is fair to assume that juniors at four-year colleges, or students who have transferred to a four-year college from a two-year college, have one specific goal: earning a baccalaureate. Given that, we can say that from a student's perspective the "optimal transfer time" is best defined as the time in switching from a two-year college to a four-year college that maximizes expected net economic benefits. That is, one should choose to transfer at a time that maximizes the difference between expected lifetime earnings and the costs of attending college. Since many analyses of returns to credits and degrees received indicate that the labor market rewards both degrees and credits received at postsecondary institutions (e.g. see Kane and Rouse 1995), it is probable that earning a four-year degree yields higher lifetime gross earnings, *ceteris paribus*, than dropping out of a four-year institution. Since time of transfer may affect probability of graduation, time spent until graduation, and quality of destination institution attended,²³ it may affect lifetime earnings.

²³ Whether quality of institution matters when examining lifetime earnings is heavily debated. See Brewer, Eide, and Ehrenberg (1999) for an example of research insisting it does matter, and Dale and Krueger (1999). Hilmer (1997) shows that students who transfer to a four-year college from a two-year college attend a higher quality four-year institution than they would have had they enrolled in a four-year institution directly out of high school.

The most effective means of minimizing the costs of a baccalaureate degree may seem obvious: spend as long as you can at the traditionally less expensive two-year college before transferring to a four-year college. However, two-year credits and four-year credits may not be perfect substitutes in the SUNY system, and transfer students with Associate's degrees may take longer to complete four-year degrees than earlier transfers. An early transfer from a two-year institution may minimize costs by more quickly immersing a student in an intensive learning atmosphere, thereby decreasing unnecessary credit accumulation.

Does field of study affect likelihood of transfer, success of transfer, or optimal transfer time? Table 6 shows that within SUNY, substantial variation in acquiring a baccalaureate degree exists along two margins: field of study, and status before beginning the third year of college.²⁴ (Unfortunately, it does not show the number of students in each category—given that there are zero Agriculture and Forestry students with a AAS-AOS degree who did not receive a bachelor's degree after six years of higher education, I cannot imagine the number of students in that field being particularly high.) Transfer students with an AA degree in education have fairly high graduation rates and low dropout rates compared to architecture and biology AS degree holders. Along the other margin: though architecture students fresh from receiving an AA degree have nearly a 33-percentage point lower chance of earning a BA than architecture students who were “rising juniors” (new juniors who, at the end of the previous year, were sophomores at the four-year institution), engineering and applied science transfer students actually have a higher probability of six-year graduation than “rising juniors.”

²⁴ This data, obtained from the SUNY Office of Institutional Research, probably combines initial four-year attendees and early (pre-AA/AS or AAS/AOS) transfers from two-year campuses under the distinction “Rising Juniors.” I am not sure of this, however.

More rigorous multinomial estimation examining whether certain student or institution characteristics affect outcomes for transfer students differently by field of study is warranted. This can be done through separate regression equations for each field of study.

Table 7 shows the numbers of credit hours upon graduation, and percent of credit hours received at community college, along the margins of field of study and pre-junior year status. In most disciplines, students with a two-year degree have much higher total credit hours at graduation than rising juniors. John Porter said, in Spring 2002, that the median AA/AS or AAS/AOS recipient has a credit total similar to that of median four-year direct college attendees upon graduation, but that there is a group of transfer students “in the tail” with huge numbers of credits that drive up the transfer students’ averages. An analysis of these “tail” students, to see how their university experiences differ from those of graduates with normal credit hour totals, should be pursued. Quantile regression is one way to do this.

Is there a difference between two-year college students who transfer to University Centers and those who transfer to University Colleges? University Centers, being more research-oriented, are perhaps more desirable destinations for transfer students majoring in hard sciences than are University Colleges. If optimal time of transfer differs by subject field, it may also differ by SUNY classification of destination institution.

Distinguishing destination schools need not only be done on the University Center/University College margin. Schools may attract different levels of transfer students based on their academic reputations in specific fields. Purchase College, a

respected arts school, may attract an entirely different type of transfer student than other institutions. A Purchase student may have a more concrete educational plan than, for example, a transfer student who attends a four-year with no distinct academic reputation. Generally speaking, certain transfers from two-year colleges may “fit” better at certain destination schools. It is preferable to take these considerations into account when studying transfer rates.

Do those four-year schools identified in Ehrenberg and Smith as being effective for transfer students often receive transfers with more academic-friendly backgrounds, e.g. better high school and/or college academic records? Testing for the quality of a school by controlling for its six-year graduation rate of incoming freshmen may mask different admissions standards for transfer students and freshmen, as Ehrenberg and Smith admit. Academic record of transfer students must be taken into account. A related question is, could optimal time of transfer differ by quality of destination institution? Four-year campuses with reputations as being good schools may attract transfers early in their academic careers; thus, transfer students at these schools may be more comparable to direct attendees, given the amount of time they have spent on the four-year campus, than transfer students at other schools.

More generally, academic background differences between a campus’ transfer students and its direct attendees are worthy of investigation. Since all students, even those entering two-year colleges, are required to take the ACT, SAT, or test of remedial requirements, there are some indications of academic ability upon SUNY entry that I can access. The Student Data File also has information on high school record, and perhaps

can be linked to the Basic Educational Data System for information on high school quality.

Within four-year schools, do different fields of study attract and graduate transfer students at different rates? A high rate of transfer students may not, per se, indicate a hospitable environment towards transfer students. Rather it may indicate that a university emphasizes or specializes in fields of study that happen to have high rates of transfer students. Also worth studying is whether transfer students do better in fields of study when, at their campus, they are surrounded by a disproportionately high number of transfer students. Using the concept of exposure rates (Clotfelter 1998), we can see whether, both within campus/across field and within field/across campuses, transfer students do better when surrounded by other transfer students.

How do SUNY two-year colleges compare with each other in *producing* transfer students to four-year campuses? Ehrenberg and Smith judge two-year colleges on how their students do after they transfer to four-year SUNY colleges, but as mentioned earlier two-year colleges may affect the quality of their transfers. Studying this phenomenon could permit me to account for the selection bias of students who do transfer when examining four-year graduation rates of transfer students.

There are some limitations on the SUNY Student Data File that hinder the ability to study transfer patterns. For one, it does not follow students transferring either to private institutions or public out-of-state institutions. Wellman (2002) says that one-third of all transfer activity in New York state involves out-of-state activity. Additionally, 35 percent of all transfers from public two-year colleges to four-year colleges had non-SUNY/CUNY schools as destinations. There may be some systematic differences

between students who transfer to non-SUNY four-year colleges and those that do; though we can see how such students differ at time of transfer, we cannot follow students outside of the SUNY system. This perhaps can be rectified through linking the Student Data File with the U.S. Department of Education's National Student Loan Data System, which if nothing else could tell us the destinations of SUNY two-year college students who transferred to four-year institutions. I could then understand the typical quality of destination institutions for outside-of-SUNY transfer students.

IV. Conclusion

This proposal serves not only as a general description of what I hope to do with my dissertation, but also as a request for data from the SUNY Office for Institutional Research. Hopefully, using this data will increase understanding of the role two-year colleges play in academia and in promoting higher education among the American populace, especially with respect to supporting students who wish to transfer from public two-year colleges to public four-year colleges.

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