The Choice of For-Profit College

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Abstract

In this paper I investigate whether students self-select into the US for-profit colleges or whether the choice of for-profit sector is accidental or due to the reasons external to the students (geographic exposure to for-profit providers, tuition pricing, or random circumstances). The main student-level data samples come from the National Education Longitudinal Study of 1988 (NELS:88) and the associated Postsecondary Education Transcript Study (PETS:2000). I estimate a multinomial logit of college choice where student's choice set is defined across four alternatives: no college, a for-profit college, a non-profit 2-year (or less-than-2-year) college, and a non-selective non-profit 4-year college. I find that students self-select into for-profit sector. Three groups of significant factors stand out. First, choice of for-profit sector is characterized by lower parental involvement in student's schooling. Second, cēterīs paribus, for-profit-bound students are more likely to display high levels of school absenteeism and to give birth as early as 10th grade. Third, the average predicted probabilities of choosing for-profit sector increase as in-state public community college tuition rises and county-specific concentration of for-profit providers grows larger.

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1 Introduction

In 2003 - 2004, about 6% of all post-secondary students enrolled in for-profit colleges in the United States (Snyder, Tan and Hoffman (2006)). Although proprietary[1] students are a minority in the national pool of the post-secondary population (see Figure 1), they received about 32% of all federal grants and borrowed up to 51% in federal loans[2] not such surprising figures given high tuition charges and almost-absent institutional financial aid at the for-profit schools.

The for-profit educational sector has grown at a spectacular pace, but it is a puzzle why these students choose for-profit colleges when cheaper education alternatives are available. There have been no studies up to date attempting to explain this phenomenon. This paper's goal is to consider the unique context surrounding the issues of proprietary students[3] and for-profit post-secondary training and to examine the estimates of the factors significant for a student's choice of for-profit college.

Using several data sources, including the National Education Longitudinal Study of 1988 (NELS:88) and the associated NELS:88/2000 Postsecondary Education Transcript Study (PETS:2000) as the main data sources, I estimate a random utility model of college choice with a multinomial logit regression. The college choice is determined as the type of the first post-secondary institution attended[4] by a student after high school.

I find that students self-select into for-profit colleges and that the choice of for-profit college is affected by community college tuition. The probability of a student choosing a for-profit college is also heavily influenced by the student's socioeconomic background and parental involvement in the student's schooling. The students with higher school absenteeism are more likely to enroll into for-profit college. Finally, concentration of for-profit colleges in the student's county is important for the choice of for-profit college.

Below, I briefly review the pertinent literature on college choice, relate the theoretical framework and estimation, elaborate on the data used for the project, report and discuss the findings. Study limitations and conclusions follow.

[1] In what follows, I use "for-profit" and "proprietary" as synonyms. There has been little work done in the field to identify any distinctions in these terms.

[2] My calculation from Knapp, Kelly-Reid and Whitmore (2005). The statistics are for the 2002 fiscal year.

[3] Most of proprietary students in the data used for this project were enrolled in sub-baccalaureate for-profit institutions, which is representative of the national proprietary student population.

[4] It is of course possible that we do not get to observe student's "true" choice of college, and student's observed enrollment does not represent student's "true" choice. In using the verbs "enroll", "attend", and "choose" I assume an observed, realized choice.

2 Literature Review

There is a rich body of work on college choice across the social science disciplines. I concentrate here on the few influential and recent economics research pieces that employed longitudinal data and modeled choice in the context of a basic random utility framework.

In their seminal work, Manski & Wise (1983) investigated college choice as a step in a series of decisions made by students and post-secondary institutions. The authors used the data from the National Longitudinal Study of the High School Class of 1972 (NLS:72) The study considered the choice of a 4-year college, a 2-year college, a vocational-technical school, work, military or homemaking.

Following the modeling in Manski & Wise (1983), Behrman, Kletzer, McPherson and Schapiro (1992) studied the decision to attend 2-year or 4-year versus no college using NLS:72. Their primary focus was to understand which family background variables directly affected the decision to attend college.

Rouse (1994) examined the college choice using National Longitudinal Survey, Youth Cohort (NLSY), the High School and Beyond (HSB) survey, and Current Population Survey (CPS). Rouse considered three student choices: starting at a 2-year college, a 4-year college or not attending college.

Kane (1994) used CPS to construct his pooled time series of students, supplementing it with student aid data from the National Postsecondary Student Aid Survey (NPSAS). The author estimated a probit of general college attendance.

Ordovensky (1995) utilized data from the High School and Beyond Survey of 1980 (HSB) to estimate a model of college enrollment with emphasis on vocational postsecondary colleges. It was one of the very few studies differentiating between vocational/trade schools, 2-year vocational, and 2-year academic colleges. Another unique feature of the study was the inclusion of tuition and proximity variables differentiated by the school types, as well as the individual institutional characteristics in the model.

DesJardins, Dundar and Hendel (1999) modeled the college application decision process with the unique institutional data merged with ACT Student Profile Questionnaire. The study estimated a logistic regression of student college application on the host of student socioeconomic and achievement characteristics. In a similar vein, Toutkoushian (2001) utilized College Board data to concentrate on the effect of parental income and student educational attainment on their initial choice

of college. In both studies, data set contained only SAT- or ACT-taking students, so the studies' results pertained to the public 4-year college-bound students only.

In addition to the economics literature, there is a large literature in education examining college choice and enrollment. In addition to the economics literature, there is a large literature in education examining college choice and enrollment. Hossler, Braxton & Coppersmith (1989) contains a comprehensives overview of education literature on college choice. A fascinating piece of qualitative research by McDonough (1997) examines college choice in the sociological/educational context.

The availability of the National Education Longitudinal Study of 1988 (NELS) made it possible to update the results of previous college choice studies and investigate college choice in more depth. Perna (2000) concentrated on the effect of race in the estimated logistic regression of student enrollment in a 4-year college. Hagy & Ordovensky-Staniec (2002) examined the college enrollment decisions of immigrant students with a multinomial logit model of enrollment choice. Jacob (2002) investigated the factors contributing to the gender gap in attendance of all types of colleges. Siegfried & Getz (2006) performed a set of descriptive analyses to discover the college choices of the children of professors. Cho (2007) examined the role of high school performance on women's enrollment in 4-year colleges and in college in general. Reynolds (2009) attempted to quantify the magnitude of selection bias in the estimates of the treatment effects of attending a 2-year college. The author restricted the student sample in NELS to the students in 2-year and less-selective 4-year institutions and estimated the probability of attending a 2-year college.

However, neither before, nor after the availability of NELS, there have been any concerted efforts to investigate the choice of for-profit college. None of the studies differentiated the students in for-profit colleges from the students at non-profit schools. This paper provides the needed research in this area.

3 Theoretical Framework and Estimation

This investigation follows many previous studies[5] in modeling college choice using a variant of the random utility model. The model assumes that once faced with the college choice, students maximize their utility, which is usually a function of their individual characteristics and of other assorted (frequently college-specific) attributes.

[5]Manski & Wise (1983), Behrman, Kletzer, McPherson and Schapiro Behrman et al. (1992), Rouse (1994), Ordovensky (1995), Eide, Brewer & Ehrenberg Eide et al. (1998) are some of the studies modeling college choice with a random utility model.

In this study, the primary differences in the specification of the model are in the definition of the choice set and the inclusion of covariates specific to the for-profit college choice. A student i has $j = 4$ alternatives to choose from no college (NC), a for-profit college (FP), a 2-year college ($2C$), and a 4-year college ($4C$)[6]. The indirect utility for the i^{th} student choosing any j college alternative is a function of individual-specific attributes ($\boldsymbol{X}$) including demographic characteristics (dem), family resources (fam), informational resources (inf), cognitive (cog) and noncognitive ($ncog$) skills, direct and opportunity costs ($cost$), exposure factors ($expo$):

$$V_i^j = \beta_{dem}^j dem_i + \beta_{fam}^j fam_i + \beta_{inf}^j inf_i + \beta_{cog}^j cog_i + \\ + \beta_{ncog}^j ncog_i + \beta_{cost}^j cost_i + \beta_{expo}^j expo_i + \varepsilon_i^j$$

The student will choose a for-profit college from the other alternatives if

$$V_i^{FP} = Max\left(V_i^{NC}, V_i^{2C}, V_i^{4C}\right)$$

In terms of the indirect utility function, the probability that a student i will choose a for-profit college is

$$\begin{aligned} P_i^{FP} &= Prob\left(V_i^{FP} > V_i^k\right) \\ &= Prob\left(\boldsymbol{X_i^{FP}\beta^{FP}} + \varepsilon_i^{FP} > \boldsymbol{X_i^k\beta^k} + \varepsilon_i^k\right) \\ &= Prob\left(\boldsymbol{\varepsilon_i^k < X_i^{FP}\beta^{FP}} + \varepsilon_i^{FP} - \boldsymbol{X_i^k\beta^k}\right) \quad \forall k \neq FP \end{aligned}$$

This probability can be estimated by maximum likelihood. A standard assumption that the error term follows the extreme value distribution produces a multinomial logit model, where individual predicted probability of for-profit college choice becomes

$$P_i^{FP} = \frac{e^{\boldsymbol{X_i^{FP}\beta^{FP}}}}{\sum_k e^{\boldsymbol{X_i^k\beta^k}}} \quad \forall k = NC,\, 2C,\, 4C$$

For identification of the model, it is necessary to normalize the vector of coefficients for one of the choice alternative to zero. In this model, I follow the convention of the college choice studies cited in the literature review and choose the "no-college" alternative as the reference alternative[7].

[6] When I use "2-year" and "4-year" college, I refer to non-profit less-than-4-year colleges and to non-profit non-selective 4-year colleges accordingly.

[7] It could be argued that choosing a 2-year college is also a reasonable choice for the reference category. In principle, it is not clear which choice margin is the closest to a likely for-profit student.

To provide a more intuitive interpretation for the logit coefficients, I calculate and report average marginal effects. First, for each observation, a marginal effect of a discrete variable x is calculated as the discrete first-difference from the base category, and a marginal effect of a continuous variable x is calculated as the derivative $\frac{\partial f(\boldsymbol{X}, \boldsymbol{\beta})}{\partial x}$. Then, the marginal effects are averaged across all observations. The resulting prediction from the average of the predictions is different from the prediction at the average of the covariates, that is, it is *not a marginal effect at the mean*. This latter effect is the expected probability of a student with some average characteristics, who, for example, might be 2/3 male and have an average of 55% of for-profit schools in the county. The average marginal effect I report is *the average of the probability among actual persons in the student sample*. In addition, for continuous variables, the average marginal effect is computed across the specified response surface. For example, I compute the effect of unemployment as the change in the predicted probability of choosing for-profit college as the county unemployment changes from 4% to 10% – the relevant range for the students in the estimating sample.

As the covariates in the effects formulas are treated as fixed and known, one should remember that in the estimating student sample, the covariates are representative of just this sample, not the entire student population. To account for this, I use the robust estimator of variance which relaxes the assumption of independence of the observations. That is, the estimator produces "correct" standard errors, even if the observations in the sample are correlated.

4 Data

Although the lack of reliable data on for-profit sector and its students has long been a complaint of researches, recently available surveys made it possible to construct a dataset that made it possible to investigate the research question. I combined the multiple data sources to obtain the working dataset that 1) features a pertinent student sample, that is, students are likely to consider for-profit college in their choice set; 2) is time-consistent with respect to the student records; and 3) introduces geographical controls on the county, rather than state level.

Below, I introduce the multiple data sources used in the construction of the working dataset. Then, I describe how the main features of the working dataset (pertinent student sample, time consistency and geographical controls) have been achieved. Further, I elaborate on the working definition of "choice" adopted in the study. I conclude the Data section with the discussion of data limitations.

4.1 Working Dataset

The only available nationally-representative samples of for-profit student are delivered by the surveys conducted by the National Center for Education Statistics (NCES) of U.S. Department of Education. The most recent data from such NCES surveys, namely the National Education Longitudinal Study of 1988 (NELS) and the associated NELS:88/2000 Postsecondary Education Transcript Study (PETS), constitutes the main body of the working dataset.

NELS is a longitudinal survey of a nationally representative sample of students who were in eighth grade in 1988. The students were resurveyed through four follow-ups in 1990, 1992, 1994, and 2000. Most respondents graduated from high school in 1992. The students reported on a multitude of topics: school and home life, work, perceptions of life and aspirations. Students' interviews were complemented with surveys of students' parents, teachers and school administrators. In addition, the survey participants were subject to a battery of cognitive tests, which produced comparable scores on a range of subjects (reading, mathematics, social studies and science). PETS data was reported by institutions – secondary and post-secondary schools. The survey provided transcript data reflecting students' school experiences: dates of attendance, coursework taken and student performance.

The complementing data comes from the Common Core of Data (CCD); the Integrated Postsecondary Education Data System (IPEDS); the 2000 U.S. Census; Environmental Systems Research Institute (ESRI) geographic information systems (GIS); Local Area Unemployment Statistics (LAUS); and Bureau of Economic Analysis (BEA) regional economic accounts. CCD renders secondary school characteristics, as well as students' geographical location. IPEDS identifies postsecondary institution characteristics, as well as their geographical location, and offers information related to the geographic concentration of colleges. Census data, in combination with ESRI GIS mapping files, make it possible to compute spatial variables. LAUS data supplies unemployment information, and BEA regional economic accounts offer occupational earnings data.[8]

Because the study's goal is to identify the factors significant in students' choice of the for-profit post-secondary sector, the population of interest is the students who have either chosen proprietary schools, would have been likely to do so, or were indifferent between the choice of for-profit college and alternative options. Even though these students are varied in their observable characteristics, they are very dissimilar from the students applying to selective or highly-slective public and private 4-year schools.

[8] A detailed list of variables and their sources is available upon request.

It is possible to identify the selectivity of the true first institution attended by a student in NELS with the help of the institution selectivity variable contained in PETS. This variable is based on the selectivity cell clusters constructed by the Cooperative Institutional Research Project (CIRP). Appendix B describes this variable and the frequencies associated with it in more detail. As seen in Table 6, there are 19.5% of students in the sample who did not attend college after high school; 12.4% of students who have enrolled in highly-selective and selective colleges; and 60.9% of students who enrolled into other colleges coded as non-selective for this study.

Because ACT and SAT test scores play a decisive role in how the college selectivity measure is constructed, it is useful to observe the frequency distribution of these scores across the whole student sample. Figures 5 and 6, as well as Table 7 reveal that the score medians for the students enrolling into selective schools are appreciably higher (ACT: 25, SAT: 1,080) than those for the students enrolling in non-selective colleges (ACT: 21, SAT: 920). There is an even bigger median score difference (over 1.5 of a standard deviation) between students in highly-selective and non-selective colleges[9]. Highly-selective and selective colleges draw their students from the upper 25th percentile of ACT and SAT distributions. Although ACT and SAT scores may not fully illustrate the differences in the observable characteristics of students bound for selective vs. non-selective schools, the scores are highly correlated with students' family resources and parental background: high scorers are very likely to come from high-income families with college-educated parents. The probability of choosing a for-profit college is negligible for such students.

Reynolds (2009) investigated the impact of large dissimilarities in observable characteristics of students in 2-year and 4-year colleges on the OLS estimates of treatment effects of attending a 2-year college. He found that the resulting biases were reduced by restricting the sample to students in 2-year and less-selective 4-year institutions. Arising non-linearity of the relationship between the dissimilar characteristics and the regression outcome may present a problem for the parametric specification in my study. In this context, it is appropriate to restrict the sample to the students bound for the less-selective 4-year schools, 2-year schools[10], proprietary colleges or no post-secondary education (PSE).

Even after eliminating highly selective- and selective-school-bound students from the top of the college-going distribution, I was left with a fairly large and heterogeneous population. In princi-

[9]The quoted differences are computed for non-missing scores. The share of students with missing scores is much higher among students in non-selective schools, since many non-selective colleges (mostly 2-year non-profit schools and for-profit schools) do not require their students to take standardized college tests. It is possible, then, that had more students in non-selective colleges taken the tests, their median score would have been lower, and the quoted differences in median scores would have been even larger.

[10]When I reference "2-year schools", I refer to all non-profit schools whose programs last less than 4-years.

ple, non-selective 4-year college students may also be dissimilar from a marginal student choosing between no college and proprietary school. However, these students introduce the needed heterogeneity to the sample helping the model predictive ability. This result is similar to the one in the study by Black, Smith, Plesca and Shannon (2003) which profiled unemployment insurance claimants. In the study, the model's predictive power was best during periods of high unemployment, when claimants were many and diverse. After I performed the multinomial logit on both full and restricted sample, I found that, as expected, the model performed better on the restricted sample.

The student sample and almost all of the student-specific variables are drawn from NELS and PETS. The student sample has to be contained to students with available secondary school transcripts in PETS, as well as those who were participants in the second NELS survey follow-up of 1992 – the year when the majority of the students graduated from high school[11]. The main time-consistency complication is that even within the same school cohort, students' progress through secondary schooling at a different pace, so the graduation dates vary in the sample. Further, even if I consider the first choice of PSE for each student (which is what I do in this study), the dates of first PSE enrollment vary greatly across the students.

To resolve this time-consistency problem, I chose the strategy that takes advantage of the available data and generates the fewest possible endogeneity concerns. I matched unemployment and earnings variables drawn from LAUS and BEA series from the year when a student was 17 years old (spanning the years 1990-1996). High school variables came from the 1992 CCD file. I drew the variables related to PSE institutions (like 2-year tuition costs) from 1992 IPEDS institutional files. Geographic variables were generated from the 2000 Census and ESRI files based on the Census. As a result, I am able to control for the most variables relevant to a student's college-going decision at the point in time when a student was 17, most likely a junior or a senior in high school.

A more precise match of relevant economic and spatial data (such as unemployment, earnings, high school and college location, relative proximity variables) to each individual student's location reduces the measurement error. As a result, county-level geographical controls allow more accurate estimates of the effects of opportunity costs (such as foregone earnings) and college location on students' choice of for-profit college. The main challenge was that NCES postsecondary survey data do not contain the identifiers which are necessary for the spatial-specific match finer than the state level.

[11]For further detail on defining the estimating sample, see Appendix A.

I have overcome this challenge by linking the secondary school identifiers found in the second follow-up NELS file (NELS:92) with the school addresses from the CCD file and then matching school postal zip codes with the ESRI spatial county Census-based data with the help of GIS software. In a similar manner, I was able to map each for-profit, 2-year and non-selective 4-year school at IPEDS 1992 institutional file. Using GIS software, I constructed the variables related to the relative distances between colleges and to the concentration of colleges in a county. These are the unique variables not used in the economics literature on college choice before.

4.2 Accounting for Choice as Potential Data Limitation

A chief difficulty in defining the choice outcome comes from the fact that students, particularly those bound for for-profit schools, have been known to be very "mobile" across the set of available choices. Upon high school completion, they are more likely to delay college, and then, upon enrollment, they are more likely to stop out[12] of college, transfer, drop out and re-enter a different college.

The student sample contains 840 students (about 4% of the sample) who ever enrolled in for-profit colleges at any time after high school and before the year 2000, at which point most respondents were 26 years old. Table 3 contains information on the college choice paths of these students. The remarkable finding here is that for almost 57% of these students, for-profit college is the first choice. For about 33% of 840 students, for-profit college is the second choice, 13% the third choice, 3% the fourth choice, and the remaining 1% the fifth choice.

Sequential choice decisions are path-dependent, and it is possible to create a model explaining student choice dynamic structure. Although such model would be interesting and informative, understanding of the first college choice is necessary and useful before attempting more complex modeling. For this study, I chose to concentrate on the investigation of the first college choice.

4.3 Other Data Limitations

Although the recent releases of NCES postsecondary education surveys have delivered enhanced technical reliability, better student and institution response rates and improved sample sizes for proprietary students, certain data limitations have influenced the analysis presented in this paper. I describe these limitations below.

[12] "Stop-out" is a common term in education literature meaning leaving school for a period of time and then returning.

A fundamental limitation is that none of the NCES datasets represents the complete for-profit school universe. In fact, that universe has never been truly known because a large number of for-profit schools have chosen to opt out of the federal financial programs and do not have to report to the U.S. Department of Education. As the data reporting moved from the Higher Education General Information Surveys (HEGIS) to the Integrated Postsecondary Data Systems, the federal government started collecting information from those proprietary schools that were eligible for the Title IV programs. The resulting for-profit student population represented in NCES is actually a subset of the total proprietary student population containing only students attending Title IV-eligible for-profit institutions. Compared to US total (so far statistically unobserved) proprietary student population, students in NCES surveys feature the more favorable distribution of observable characteristics, since Title IV-eligible proprietary schools are likely to be of higher quality than their non-eligible counterparts . (Kinser, 2006)

The above "universe limitation" is exacerbated further in NELS, because the targeted respondent group in NELS is a traditional high-school cohort in certain period in time. Compared to non-profit 4-year schools (less so community colleges), for-profit schools attract a larger share of non-traditional students[13]. These students are less likely to be captured in NELS. On average, non-traditional students experience higher costs and obtain smaller life-time benefits from attending college. The lack of non-traditional student representation implies downward biases in estimates of effects of costs on for-profit college choice.

Proprietary students constitute a small (4% to 6%) share in the total PSE student population. It is not surprising then that if not over-sampled, they will amount to a miniscule sample in a nationally-representative survey. Small for-profit student sample in NELS limits the ways in which for-profit college choice can be modeled and estimated in this study. For example, even though the observable characteristics of proprietary 2-year and less-than 2-year college students are different from those of proprietary 4-year students, the small sample size does not allow me to break down these student populations into separate groups.

Even though any Title IV-eligible PSE institution is required to report some institutional data to IPEDS, it does not have to report all requested information. As a result, much of institutional data in IPEDS is missing, particularly for the schools which lack or choose not to provide resources to compile and report the data – 2-year colleges and for-profit schools. The sheer classification of for-

[13]Non-traditional is often used to describe adult or financially independent students. To be considered a financially independent student for federal aid, a student should satisfy one of the following conditions: be 25 or older; work towards a graduate degree or certificate; be married; support children or other dependents; be an orphan or a ward of the court; serve in the army or be a veteran.

profit institutions in IPEDS lacks in accuracy (Kinser, 2006): for-profit campus branches are often reported as separate institutions. It is also unclear how to measure for-profit college quality. Some often-used statistics such as student scores on standardized tests are simply unavailable because most students enrolling in for-profit schools do not have to take these tests. Other data such as instructional expenditures may be considered private. By federal regulation, for-profit colleges must report student completion rates, but not job placement statistics[14]. These are available on request, but are difficult to get and are often misreported (Loonin & Devanthéry 2005).

For-profit college Title-IV eligibility offers its students access to some federal aid, such as Pell grant and Stafford student loan. NELS does not contain the detailed information on financial affairs of students or their family. Another NCES dataset specializing in financial aid data – National Post-Secondary Aid Study (NPSAS) – cannot be used for this study, because it does not contain the necessary student variables, and it is not a longitudinal survey, like NELS is.

Finally, the availability of spatial-specific occupational earnings and age-specific unemployment rates is limited. Although it is possible to map student location on even finer level, such as census-tract, or even block-specific location, it is not possible to obtain the economic data specific to this location. Age-specific unemployment rates are not available on a county level, and occupational earnings are only available for certain years.

5 Findings and Discussion

Descriptive statistics for the variables used in the regression are reported in Table 1. Table 2 contains the average marginal effects of the select discrete variables of interest (see the discussion in Estimation section on how these effects are calculated). Figures 2 - 4 graph the response in predicted probability of choosing for-profit college to the changes in local community college tuition, county unemployment, and county concentration of for-profit colleges.

5.1 Demographic Characteristics

Unsurprisingly, sex is a significant factor for the choice of proprietary college: there are disproportionably more women in the for-profit educational sector. In the estimating sample, almost 61%

[14]Completion rates are reported to the US Department of Education. In some states, for-profit colleges may be required to report job placement rates to the state departments of education; however, these rates are seldom made available to the public.

of proprietary students are female. Chung (2009) contains more detailed statistics on the female for-profit student population tabulated by the for-profit program content. The majority of for-profit female students concentrate in low-paying vocations, such as health professions, personal and culinary services, and business support – the professions, for which proprietary schools often train students.

Despite a high ratio of non-Asian minority students in proprietary schools (30.7% compared to 18.5% in 4-yr non-selective non-profit colleges), race is not a significant factor in the choice of for-profit college. In fact, being a minority student increased the chance of choosing a 4-yr non-selective non-profit college by 5%. This finding is consistent with the results Kane & Spizman (1994) have obtained from their analysis of the impact of race on an individual's educational attainment using NLS:72. The authors found that, cēterīs paribus, African-American students had a higher probability of attending college and receiving larger financial aid awards.

Non-significance of race for for-profit college choice is a useful result because proprietary schools could be thought of as the point of access for disadvantaged students (of whom many are minority students). Arguably, preponderance of non-white students in the proprietary sector can be explained by the location of for-profit colleges – they tend to cluster on the urban fringe (Grubb, 1993). In Chung (2009), I produce the nationally-representative descriptive statistics for the concentration of African-American students in two most comparable groups of students – for-profit vs. non-profit 2-year students – and tabulate these statistics by different geographic locations. Resulting tabulations indicate that even when geographical location is held fixed, the for-profit student population consistently features a higher concentration of African-Americans. Even though for-profit college location may matter (in a way that it is correlated with higher concentration of minority population)[15], alone, it does not explain for-profit college choice. Other covariates correlated with being non-white also drive the choice. I discuss them below.

5.2 Family Resources, Labor Market and Information

Family resources play an important role in student's choice decision. In fact, the obtained average effects on family income display a remarkably clear income progression: students from low-income (under $25K) families sorting into for-profit schools; students from lower-middle-income ($25K to under $35K) choosing community colleges; and students from the middle-to-high incomes (higher

[15]See the section on Exposure Variables for the further discussion of the role of location for the for-profit college choice.

than $50K) enrolling into non-profit 4-year colleges.

Another set of intuitive results pertain to students' working experiences. It is peculiar that for students who are more likely to choose proprietary colleges, working in 10th grade was not a significant factor. This result contradicts the expectation that because the students opting for proprietary schools are after a quick and gainful employment, they would be the ones to enter the labor market at the earliest opportunity. Rather, working long (over 20) hours during the school week is associated with a 8% increase in probability of choosing 2-year non-profit college. Students already "networked" into the labor market, perhaps a particular job, may see attending a community college as a "complementary", rather than primary activity. Indeed, from the descriptive analysis in Chung (2009), we know that most students in 2-year non-profit college work full-time or part-time, and that this is untrue of the students at proprietary schools. If the actual work experience early in these students' lives affords them awareness of their own opportunities in the labor market, it is possible that those students whose opportunity costs of foregoing earnings while in college are high chose to stay in the labor market *and* attend a 2-year non-profit college. Meanwhile, the negative average effect of working long hours in 10th grade on 4-year college going conveys the traditional story of a budget constraint. A middle-income, resource-rich student could allocate own time to a multitude of leisure, volunteering, college-prep – all in essence college-signaling – activities. Working more than 20 hours a week would be a high-cost, low-quality allocation for such a student.

These interpretations help the discussion of the effects of taking vocational classes in high school. Community-college and 4-year-college bound students would find little value in this activity. In contrast, students who aspire to enter the labor market right after high school would find the vocational skills valuable, and their average effect of enrolling into vocational training in high school is highly significant at 6%. It is a noteworthy finding, however, that students who are more likely to choose for-profit colleges are not likely to choose vocational training in high school. Remarkably, for the students choosing for-profit training that is almost exclusively vocational, the actual working experience, vocational skills, and the resulting direct or indirect knowledge of the labor market are all insignificant.

The final set of results related to the availability of family resources concern the effects of sibship size and mother's labor fore participation. Having three or more siblings decreases a student's probability of for-profit college choice. This is expected, because all else equal, a higher number of siblings in a family decreases "per capita" family resources. Indeed, after studying the effect of family size on access to college education, Benrman, Pollak and Taubman (1989) found that a

larger sibship size was associated with less sib schooling.

Having a working mother increases the probability of choosing for-profit college by about 2%. It should be noted that the "mother working" variable is contemporaneous with family income variable (both are measured when a student is in 10th grade), and as such its effect cannot be interpreted in terms of availability of permanent income. In this context, mother's earnings contribute to her child being financially able to enroll in for-profit college (versus no college). Another contribution of mother's working status is that of time resources she had available for her child(ren). Cēterīs paribus, a working mother would have less time to devote to her children. Even though one could instead buy quality childcare, in the case of low-income family, these opportunities are frequently not affordable. It is possible then that among the less-affluent families of proprietary students, working mothers contribute financially at the cost of spending less time with her child.

5.3 More on Information and Formation of Expectations

The latter hypothesis ties in with the results pertaining to the effects of parental involvement in their children's schooling on the choice of college. Parents' attendance of more than two school meetings in the first half of the school year (in 10th grade) decreases the probability of choosing proprietary college by 3%. Parental participation in the college-going decision decreases the probability of choosing proprietary college by 3% and increases the probability of choosing 4-year non-selective non-profit college by 4%. Further results confirm the role of parental background in determining students' college choices. Unsurprisingly, having college-educated parents is associated with a 14% increase in probability of enrolling in 4-year non-selective non-profit college.

Besides the effects emanating from high correlations between education and income levels, there are significant "informational" benefits accruing to education. Formal college education provides an individual with a necessary informational set and social skills which enable him to navigate through the bureaucracy inherent to any application or administrative process, to sort through a multitude of confusing choices, and to seek and successfully utilize new information beneficial to him. In effect, college institutional experiences reduce informational costs faced by college graduates when it's their children's turn to make schooling decisions.

Hastings, Van Weelden & Weinstein (2007) found that receiving simplified information led to significantly better public schooling choices made by low-income parents. Further, the authors were able to confirm that these improvements in choice behavior were due to lowered information costs

rather than saliency. In a random-trial experiment, Bettinger, Long, Oreopoulos & Sanbonmatsu (2009) found that providing information about and sometimes simplifying college application process generate positive effects on college enrollment for low- and moderate-income families. Dynarski & Scott-Clayton (2006) proposed a similar effect would ensue from simplifying current federal college financial aid forms. About 55% of proprietary students' parents had education beyond high school (compared to 75% of parents of students bound for 4-year non-selective non-profit colleges). It is very likely that the informational costs experienced by non-college educated parents matter greatly for their children's college choice[16].

Another feasible proxy for the presence of informational constraints is parents' nativity status – whether students' parents were foreign or US-born. All else equal, a lack of institutional and social experiences in the US puts a foreign-born parent at an informational disadvantage. Interestingly, having a foreign-born parent increased student's probability of choosing a 2-year non-profit college by 6%. An additional interpretation of these effects is that on average immigrants accumulate (and inherit) fewer assets than native-born adults, and so are more likely to experience credit constraints and less likely to contribute financially towards their children's education.

5.4 Cognitive Skills

Because higher income and higher parental education are so closely intertwined with higher accumulation of cognitive skills (Cawley, Heckman & Vytlacil 2001), it comes as no surprise that students with higher cognitive skills are more likely to choose 4-year non-selective non-profit colleges and less likely to enroll in for-profit schools. Scoring high on reading and math tests decreased a student's chances of choosing proprietary college by 3% and increased her probability of enrolling in 4-year non-selective non-profit college by 14%. Further, mathematics course-taking in high school was significant for all college choices: taking trigonometry courses and beyond was associated with a 5% decrease in probability of attending for-profit college and a 14% increase in probability of attending 4-year non-selective non-profit college. Mathematics coursework, of course, is a rather "polluted" variable – a student's decision to pursue a mathematics curriculum is contingent on her intentions to continue into college, her previous success in passing math courses, her perceived talent for math, her ability to persevere in a challenging subject (which is related to her non-cognitive skills), etc.

[16]For example, it is frequently the case that children of parents who never went to college do not differentiate well among the colleges of vastly different quality and are not aware about the details of college admission requirements. In his interviews of disadvantaged adolescent boys in Boston, sociologist David Harding noticed that children consistently viewed Harvard University and surrounding large or small public and proprietary colleges as equivalent and available educational opportunities (Harding, 2010).

So, interpretation of the effects of mathematics course-taking should be in the line of any of the aforementioned: students choosing for-profit schools lack any of these factors – plans to attend a college where standard curriculum minima have to be satisfied, a satisfactory record of mathematics performance, low cognitive or/and non-cognitive ability.

5.5 Non-Cognitive Skills

Non-cognitive skills have been found to have a profound impact on school choice – such that "psychic costs" resulting from lack in non-cognitive skills could be high enough for some students not to pursue college (Heckman, Stixrud & Urzua 2006). Even though it is not possible to identify the effects on college choice due to non-cognitive skills alone under the present framework, the coefficients on non-cognitive proxies in the regression are telling.

The availability of information on students' involvement in school-sponsored extra-curricular activities in 8th grade provides a unique way to proxy for student's motivation. In a similar spirit, Kuhn & Weinberger (2005) used data on student activities to study the effect of such non-cognitive quality as leadership on students' wages. According to Lareau (2003), children's intensive involvement in organized activities and parental engagement in children's activities generated significant advantages for these children by improving their behavioral, social and institutional skills. Deil-Amen & Rosenbaum (2003) called these skills "social know-how". In their qualitative study of students in Chicago community colleges and proprietary schools, Deil-Amen and Rosenbaum investigated how these different schools addressed students' social know-how deficiencies. The scholars found that proprietary schools were more successful in accommodating students' diverse background by "structuring out" the need "to navigate the complex college environment and its bureaucratic structures". It is not surprising, then, if students lacking in these know-how skills would self-select into proprietary schools. There was no evidence of the effect of a student's participation in extracurricular activities on the choice of proprietary school. However, the effect of extracurricular engagement on the choice of 4-year non-selective non-profit college was highly significant at 8%.

Among other variables proxying for behavioral problems, both student absenteeism and early engagement in sex were positively significant for the choice of for-profit college, and negatively significant for the choice of 4-year non-selective non-profit college. High school absenteeism increased a student's probability of enrollment in for-profit college by 3% , and having children by 10th grade increased the probability by 5%.

5.6 Direct and Opportunity Costs

Across all college choice categories, students were sensitive to tuition prices. In-state tuition in community colleges was used, because it represents a readily available exogenous measure of the price for the educational opportunity available to all high-school graduates[17]. I find that an increase in community-college tuition from $1,000 to $1,400 increases the average predicted probability of attending a for-profit college by 1% (see Figure 2). Even though the absolute magnitude of this effect may seem small, it is relatively sizeable for the predicted probability of for-profit college choice that is 0.05.

There is an inverse relationship between county unemployment and for-profit college choice. An increase from 5% to 7% unemployment is associated with a 1% drop in the average predicted probability of attending a for-profit college (see Figure 3).

Local per capita earnings in two industries (retail and services) are included to control for the opportunity costs experienced by college-goers (see Appendix C for more detail). Even though Wald tests showed significance for the sets of these variables in the regression, I find no statistically significant effects of the forgone earnings on the choice probability of for-profit college.

The negative average effect on the local unemployment and the lack of significance of foregone earnings for the for-profit college choice can be interpreted in the light of the above discussion on the labor market experiences of for-profit-bound students. I find that neither working nor taking vocational training in school matters for enrolling into proprietary colleges, so it follows that neither foregone earnings nor unemployment should drive the choice. The result on community college tuition suggests that community and for-profit colleges may be substitutes.[18] However, even though for-profit students are price-sensitive on the margin, the interpretation should be certainly more complex. There is considerable heterogeneity among for-profit students, and many of them do not perceive for-profit and community colleges as substitute goods.[19]

[17] In many states, community college tuition is set by the community college systems or boards, and is comparable across contiguous counties.

[18] In fact, this is the conclusion also made by Cellini (2009) in her analysis of the effects of an increase in community college funding on the for-profit college market in California.

[19] In a qualitative study of high-school seniors transitioning to college and students in for-profit schools, sociologists Regina Deil-Amen, Ann Person, and James Rosenbaum asked about students' reasons for enrolling in for-profit colleges. A few students indicated their explicit preference for the for-profit college over a community college.

5.7 Exposure Variables

College proximity has been repeatedly used in the economics of education research (Card, 1995; Kane & Rouse, 1995). Distance to college generates geographical differences in the access to college, thereby affecting individual schooling decisions. This interpretation of proximity suggests that growing up near a college lowers the cost of higher education through decreased transportation/relocation costs. Indeed, when Card (1995) fitted a linear model of schooling determinants along with the distance to nearby college, he found some evidence that presence of a nearby college mattered, particularly for the males with lowest propensities to continue their post-secondary education.

As with any variable, there are at least a few potential factors which could make college proximity endogenous. First, a student's family may choose to live near college exactly out of their preferences for a college-town environment. College proximity may then be correlated with geographic wage premiums (Card, 1995). Second, colleges, just like firms, may choose to locate in the areas where students are more likely to enroll. Any of these factors may lead to a correlation between the regression and omitted variables' error terms and produce a biased estimate on the proximity variable.

Because the model in this study involves an individual-level optimization problem, a firm's location decision is by construct exogenous to an individual. However, an undesirable correlation of the factors affecting firm's location and student's schooling choice may be present. The factors entering a college location decision must be observable and should best characterize the features of the locations where labor market would be most receptive to its graduates. For example, for-profit colleges would be likely to locate in the areas where employment and earnings are favorable to prospective for-profit trainees. County-specific unemployment rates and earnings included in the regression control for these factors. In addition, rich information on the family background, informational costs and cognitive and non-cognitive skills control for the idiosyncratic characteristics inherent to prospective proprietary students.

Of interest is a question pertaining to the potential trade-off between quality and costs of schooling: a higher-quality college which is farther away may be preferable to a closer college of inferior quality. Black & Smith (2006) found that the average SAT score was the single most reliable signal about college quality. Unfortunately, no reliable data exists which would help to establish college quality for for-profit and community colleges, because neither type of college requires SAT for admission.

However, it is highly likely that performance on SAT is highly correlated with student's cognitive skills. The information on cognitive skills is reflected in NELS composite test scores. A look at descriptive statistics on test scores tabulated by the school choice reveals that students sort themselves into 4-yr schools, community colleges and for-profit schools in descending order with respect to students' cognitive skills. We can then reasonably assume that the quality of these schools is commensurate with the corresponding students' cognitive skills. Having assumed that the 4-yr schools are of the highest quality, I specify a relative distance between a 4-yr school and a lower-quality for-profit school as a test of whether the quality-distance trade-off matters. The higher this relative distance is (as a 4-yr college gets farther away), the costlier it would be to attend, potentially offsetting the "quality benefit".

Finally, I test the assumption that distance to college affects school choice in a non-linear fashion. I conduct several specifications checks, including entering a square distance term, as well as distance quartiles. The resulting model coefficients are robust to these changes in specification, and there is no evidence in my data supporting distance non-linearity.

I find that distance to the closest for-profit college is not significant for the choice of for-profit college. However, it is weakly and negatively associated with the choice of 4-year non-profit college. Also, the farther away the closest 4-year non-profit college is from the closest proprietary school, the less likely is a student to choose 4-year non-selective non-profit college, and more likely is he to choose a community college. This result makes sense in the light of the descriptive statistics. On average, the closest 4-year non-selective non-profit college is 0.16 miles farther away from the closest proprietary college for students who have chosen 2-year non-profit college (compared to 0.09 – almost twice as close – for students attending 4-year non-selective non-profit college). For students who work and go to school even small distances can create logistic hurdles effectively raising transportation costs of getting to and from school.

To control for the degree of students' exposure to any particular sector, I include the percentage of for-profit and 4-year non-selective non-profit colleges in the county. The reasoning behind this measure is that a higher percentage of colleges belonging to a particular sector would be correlated with more active advertising and student recruiting for this sector, as well as with a higher chance of a student's exposure to other students already enrolled in this sector. This is especially true of proprietary schools (and to some extent, 4-year non-profit colleges), which advertise most heavily. Indeed, a 10% increase in the percentage of for-profit schools was associated with a 0.6% increase in probability of choosing for-profit college.

6 Study Limitations

Several factors important to a student's college choice were not included in the model: college financial aid, choice of major/occupation and college characteristics. There is no detailed information available on financial aid offers in the datasets used. Also, the structure of financial aid packages and aid uptake rates differ across for-profit schools and non-profit 2-year and 4-year institutions. Eligible students at for-profit schools have access to federal and, in some states, to state aid but are offered virtually no institutional aid. The uptake of aid is extremely high at for-profit schools because helping students with filling out their aid applications is thoroughly integrated into proprietary schools' customer service. Student access to financial aid at a 2-year non-profit college is similar to a for-profit school in a way that students' aid packages are also likely to contain a mix of Pell grant and subsidized loans (although with very different amounts, because tuition at a 2-year non-profit college is lower). However, the customer service available to students at a 2-year non-profit college is minimal. For this reason, and also for the fact that students selecting into 2-year non-profit colleges may possess higher risk aversion towards borrowing as well as significantly lower tuition prices, students at 2-year non-profit colleges experience a fairly low aid uptake compared to that of proprietary students. 4-year institutions are more likely to integrate non-trivial amounts of institutional financial aid along with the federal and state aid in their aid packages to students. The choice to attend a 4-year non-selective non-profit institution then also results in higher aid amounts available to a student, making the amount of financial aid received an endogenous variable.

I have not entered a student's choice of major or occupation in the regression because this choice is an outcome, which could be contingent on the choice of college. It was possible, for example, that a student would choose for-profit college because she wanted to be trained in a particular occupation, just as it would be possible that a student would first choose a college and then an available major to be trained in.

The information pertaining to school quality is often missing, and when available, is of poor quality. This is an expected data problem common to community colleges and proprietary schools. Community colleges often lack resources to produce quality reporting, and for-profit colleges lack incentives to report the information they consider proprietary.

The second set of limitations relates to the model's specification. Multinomial logit probabilities exhibit the undesirable Independence from Irrelevant Alternatives (IIA) property, which implies that the probabilities of any two alternatives do not depend on other existing alternative. To

mitigate this problem to some extent, I have specified a model which is very rich in observable covariates. Also, I have conducted a Hausman test for the IIA hypothesis, which did not support the IIA property. Further, I have attempted to estimate the model with multinomial probit, which does not suffer from IIA property. The multinomial probit specification proved far too fragile to converge.

Finally, we should keep in mind that in spite of the separate controls for a student's family income, parents' education and a student's cognitive and non-cognitive skills, the true effects due to each factor alone are not possible to identify. Higher parental income is in part a function of higher education (and vice versa), and higher cognitive skills are in a part a function of higher non-cognitive skills (and vice versa), and the model employed in this paper does not capture this dynamics.

7 Conclusions and Implications

This study identifies the significant factors unique to the students in NELS who chose for-profit colleges. A majority of students who chose proprietary schools enrolled there right after high school. Their choice of for-profit college was not accidental – students self-selected into proprietary schools. Students who chose for-profit colleges possessed lower non-cognitive skills and were influenced by lower parental involvement in their schooling, as well as lower family resources. Proprietary students were sensitive to college prices and to the concentration of for-profit schools in their area. At the same time, foregone earnings were not significant for the student's choice of for-profit sector, and proprietary students were not more likely to have early labor market experiences.

Because for-profit college choice is driven by a complex host of causes related to both students and their families, if a policy were to influence for-profit college enrollments, it would have to target students at least as much as their parents. Tuition-centered incentives delivered directly to students (rather than tax-credit schemes offered to students' parents, for example) is an example of a potentially successful policy. Deregulation or regulation of the the way how for-profit colleges market and locate their schools is another effective policy venue.

Undoubtedly, we are in desperate need of quality data that can deliver adequate random samples of for-profit students representative of the entire U.S. for-profit student population. A proficient and current evaluation of for-profit training will need to account more fully for both student and school heterogeneity to formulate a competent set of policies. Present data provides neither sample numbers nor the necessary detail to accomplish this task.

Table 1: Descriptive Statistics for the Multinomial Logit of For-Profit College Choice

Variables	No College	For-Profit† College	Non-Profit 2-Year‡ College	Non-Profit 4-Year College	Total
Discrete variables – weighted percentages* and counts					
Male	51.78%	39.04%	50.57%	43.36%	47.90%
	672	108	1,072	921	2,773
Non-Asian minority	27.00%	30.65%	25.63%	18.45%	23.98%
	348	115	590	408	1,461
Family income (in thousands $$)					
From 15 to less than 25	16.90%	20.66%	12.73%	9.80%	13.29%
	265	56	310	246	877
From 25 to less than 35	13.42%	10.54%	12.07%	10.70%	11.87%
	211	46	322	263	842
From 35 to less than 50	12.28%	11.15%	21.85%	20.10%	18.31%
	176	37	481	420	1,114
More than 50	9.36%	21.82%	23.27%	37.07%	24.16%
	134	52	539	706	1,431
Missing	25.44%	21.49%	19.14%	14.69%	19.41%
	224	62	386	281	953
Parental education					
Less than high school graduate	15.43%	12.73%	7.42%	3.03%	8.30%
	236	48	190	84	558
Some college	32.35%	34.41%	42.44%	39.15%	38.44%
	463	124	1,050	827	2,464
Bachelor's degree or higher	4.10%	20.64%	18.49%	36.02%	20.66%
	64	30	415	710	1,219
Missing	17.55%	14.83%	13.38%	9.93%	13.39%
	122	38	240	169	569
Student's parents foreign-born	6.77%	11.25%	10.52%	7.25%	8.60%
	130	53	362	257	802
Mother working	71.50%	84.69%	80.38%	87.19%	80.62%
	1,015	261	1,987	1,889	5,152
Single-parent family					
Parents' attendance of school meetings					
None	46.38%	45.29%	42.57%	34.86%	41.21%
	641	163	1,025	736	2,565
More than 2	6.59%	4.24%	10.23%	14.93%	10.48%
	61	18	209	320	608
Information missing	11.34%	7.30%	11.89%	6.80%	9.87%
	160	40	285	166	651

Table 1: Descriptive Statistics for the Multinomial Logit of For-Profit College Choice (Continued)

Variables	No College	For-Profit† College	Non-Profit 2-Year‡ College	Non-Profit 4-Year College	Total
College-going decision joint with parents	20.27%	21.00%	36.49%	49.89%	35.86%
	256	84	908	1,006	2,254
NELS composite test score					
40 or lower	41.97%	21.56%	24.41%	9.83%	23.91%
	432	72	407	120	1,031
45.01 to 50	14.61%	26.30%	16.08%	12.78%	15.27%
	234	63	464	294	1,055
Higher than 50	17.37%	26.60%	37.50%	66.80%	41.23%
	270	87	945	1,400	2,702
Test not completed	3.37%	2.82%	3.72%	2.36%	3.15%
	50	14	76	52	192
High school class rank (in %)					
25 and lower	19.00%	13.72%	15.70%	6.64%	13.51%
	276	54	384	136	850
25.01 to 50	16.43%	21.78%	27.55%	16.47%	20.96%
	242	86	612	344	1,284
Higher than 70	4.96%	11.45%	19.81%	44.75%	23.60%
	80	40	497	977	1,594
Missing	48.19%	32.78%	19.53%	9.14%	24.04%
	527	84	364	171	1,146
Extracurricular activities	6.10%	11.58%	16.62%	27.14%	17.09%
10 or more hours per week	103	33	418	604	1,158
Recent school absenteeism					
5 to 10 days	29.15%	21.70%	25.89%	22.27%	25.30%
	358	78	548	417	1,401
11 to 15 days	10.18%	6.72%	4.70%	2.70%	5.53%
	119	25	131	66	341
More than 15 days	10.01%	12.51%	5.11%	2.25%	5.84%
	147	30	115	46	338
Student had children in 10th grade	5.86%	6.96%	2.63%	0.55%	3.01%
	72	11	60	16	159
Work experience while in 10th grade					
Up to 20 hours a week	20.93%	32.77%	41.92%	51.67%	39.33%
	291	96	961	1,051	2,399
More than 20 hours a week	18.08%	21.82%	23.96%	16.88%	20.14%
	294	80	574	333	1,281
More than 3 high school	18.48%	14.13%	15.31%	6.62%	13.26%
vocational credits	287	60	380	149	876
Student has 3 or more siblings	40.13%	30.09%	31.22%	25.28%	31.45%
	554	106	754	586	2,000

Table 1: Descriptive Statistics for the Multinomial Logit of For-Profit College Choice (Continued)

Variables	No College	For-Profit† College	Non-Profit 2-Year‡ College	Non-Profit 4-Year College	Total
Student's birth order					
Second-born	20.45%	20.37%	28.22%	30.65%	26.63%
	323	84	694	659	1,760
Third-born	14.06%	25.17%	13.49%	11.33%	13.63%
	193	57	373	255	878
Fourth- or later-born	18.57%	13.68%	15.60%	11.72%	14.98%
	278	49	359	273	959
% minority in student's high school					
Up to 5%	21.46%	27.74%	20.09%	29.83%	23.97%
	288	64	506	614	1,472
5.01 - 20%	20.14%	16.97%	22.95%	23.43%	22.06%
	287	69	573	524	1,453
20.01 - 50%	15.46%	16.84%	20.34%	17.82%	18.14%
	228	54	503	371	1,156
More than 50%	64.69%	68.46%	68.76%	80.49%	71.47%
	944	206	1,739	1,723	4,612
Math coursework: trigonometry and beyond	3.15%	5.51%	16.29%	47.06%	22.22%
	38	26	376	1,016	1,456
Student has no standard high school diploma	39.71%	17.13%	9.63%	1.52%	14.87%
	418	44	148	23	633
Student planned to enlist in military	11.83%	5.83%	10.19%	7.92%	9.62%
	172	30	244	149	595
Student's recent binge-drinking					
Has binge-drunk	24.52%	15.96%	20.19%	17.66%	20.20%
	333	68	487	345	1,233
Information missing	6.26%	3.41%	6.55%	3.61%	5.36%
	94	21	164	75	354
Student's smoking					
Student smokes	19.22%	17.81%	18.36%	14.36%	17.27%
	284	70	451	294	1,099
Information missing	4.74%	7.93%	6.02%	4.56%	5.35%
	84	21	139	86	330
Student's illegal drug use					
Student uses illegal drugs	25.53%	17.93%	18.56%	11.92%	18.12%
	328	75	449	270	1,122
Information missing	6.24%	3.03%	6.67%	3.41%	5.31%
	99	19	155	73	346

Table 1: Descriptive Statistics for the Multinomial Logit of For-Profit College Choice (Continued)

Variables	No College	For-Profit† College	Non-Profit 2-Year‡ College	Non-Profit 4-Year College	Total
Continuous variables – means					
In-state public 2yr tuition (in $100)	13.41	13.97	11.44	14.61	13.08
Local per capita retail earnings (in $1,000)	30.41	33.50	33.10	32.11	32.15
Local per capita services earnings (in $1,000)	39.18	42.83	42.42	41.02	41.20
Local unemployment (%)	6.64	6.62	6.70	6.51	6.62
Distance to closest for-profit school (miles)	0.15	0.11	0.14	0.11	0.13
% of for-profit schools in county	50.61	55.30	52.39	51.66	51.89
Total count	1,288	309	2,312	2,092	6,001
Weighted population size	451,486	108,158	694,553	584,768	1,800,000

Notes: †: For-profit schools include all school types (less-than-2-year, 2-year, and 4-year schools).

‡ Non-profit 2-year schools also include less-than-2-year schools.

Source: U.S. Department of Education National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88/2000); U.S. Department of Education National Center for Education Statistics, NELS:88/2000 Postsecondary Education Transcript Study: 2000 (PETS:2000).

Table 2: Average Effects[§] from Multinomial Logit of For-Profit College Choice

Variables	No College	For-Profit[†] College	Non-Profit 2-Year[‡] College	Non-Profit 4-Year College
Male	0.037**	-0.022*	0.015	-0.030*
	(0.017)	(0.011)	(0.021)	(0.016)
Non-Asian minority	-0.034	0.012	-0.031	0.052**
	(0.022)	(0.012)	(0.030)	(0.024)
Family income (in thousands $$)				
From 15 to less than 25	-0.019	0.024*	0.029	-0.033
	(0.023)	(0.014)	(0.036)	(0.030)
From 25 to less than 35	-0.021	-0.004	0.031	-0.006
	(0.023)	(0.016)	(0.033)	(0.027)
From 35 to less than 50	-0.074***	-0.023	0.090**	0.007
	(0.028)	(0.019)	(0.036)	(0.026)
More than 50	-0.113***	-0.005	0.059	0.059**
	(0.027)	(0.015)	(0.037)	(0.027)
Missing	-0.047	-0.003	0.029	0.022
	(0.032)	(0.019)	(0.037)	(0.039)
Parental education				
Less than high school graduate	-0.002	0.030*	-0.003	-0.025
	(0.022)	(0.015)	(0.045)	(0.041)
Some college	-0.059***	0.004	0.012	0.043**
	(0.018)	(0.012)	(0.026)	(0.021)
Bachelor's degree or higher	-0.200***	0.036**	0.021	0.143***
	(0.030)	(0.016)	(0.035)	(0.024)
Missing	-0.022	0.007	-0.024	0.039
	(0.039)	(0.022)	(0.049)	(0.043)
Student's parents foreign-born	-0.032	0.007	0.064*	-0.040
	(0.028)	(0.016)	(0.035)	(0.026)
Mother working	0.006	0.024**	-0.006	-0.024
	(0.022)	(0.010)	(0.027)	(0.023)
Single-parent family	-0.040**	0.000	-0.015	0.054**
	(0.019)	(0.014)	(0.029)	(0.021)
Parents' attendance of school meetings				
None	0.023	0.005	0.020	-0.049***
	(0.017)	(0.011)	(0.022)	(0.016)
More than 2	-0.012	-0.031*	0.035	0.009
	(0.034)	(0.019)	(0.036)	(0.022)
Information missing	-0.003	-0.016	0.051	-0.031
	(0.033)	(0.015)	(0.038)	(0.027)
College-going decision joint with parents	-0.032*	-0.032***	0.020	0.044***
	(0.019)	(0.011)	(0.022)	(0.015)

Table 2: Average Effects[§] from Multinomial Logit of For-Profit College Choice (Continued)

Variables	No College	For-Profit[†] College	Non-Profit 2-Year[‡] College	Non-Profit 4-Year College
NELS composite test score				
40 or lower	0.034	-0.023*	-0.003	-0.008
	(0.025)	(0.013)	(0.034)	(0.029)
45.01 to 50	-0.034	0.009	-0.037	0.062***
	(0.021)	(0.014)	(0.031)	(0.023)
Higher than 50	-0.091***	-0.028**	-0.017	0.136***
	(0.021)	(0.014)	(0.028)	(0.020)
Test not completed	-0.036	-0.024	0.045	0.015
	(0.046)	(0.024)	(0.071)	(0.061)
High school class rank (in %)				
25 and lower	0.035	-0.013	0.066*	-0.089***
	(0.025)	(0.017)	(0.035)	(0.028)
25.01 to 50	-0.033	-0.007	0.098***	-0.058***
	(0.025)	(0.017)	(0.031)	(0.022)
Higher than 70	-0.074**	-0.018	0.038	0.054***
	(0.030)	(0.022)	(0.030)	(0.020)
Missing	0.012	0.015	0.014	-0.041
	(0.032)	(0.017)	(0.040)	(0.029)
Extracurricular activities	-0.090***	-0.002	0.014	0.079***
10 or more hours per week	(0.025)	(0.013)	(0.027)	(0.017)
Recent school absenteeism				
5 to 10 days	0.030	-0.005	0.001	-0.026
	(0.018)	(0.011)	(0.024)	(0.018)
11 to 15 days	0.077***	0.013	-0.004	-0.085***
	(0.022)	(0.015)	(0.033)	(0.030)
More than 15 days	0.021	0.029*	-0.003	-0.047
	(0.026)	(0.015)	(0.040)	(0.037)
Student had children in 10th grade	0.018	0.046*	0.096*	-0.161***
	(0.038)	(0.024)	(0.053)	(0.049)

Table 2: Average Effects[§] from Multinomial Logit of For-Profit College Choice (Continued)

Variables	No College	For-Profit[†] College	Non-Profit 2-Year[‡] College	Non-Profit 4-Year College
Work experience while in 10th grade				
Up to 20 hours a week	-0.061***	0.000	0.065***	-0.004
	(0.019)	(0.011)	(0.024)	(0.016)
More than 20 hours a week	-0.050**	0.009	0.079***	-0.038*
	(0.020)	(0.012)	(0.025)	(0.022)
More than 3 high school vocational credits	0.063***	0.002	0.031	-0.096***
	(0.020)	(0.011)	(0.028)	(0.024)
N	1,288	309	2,312	2,092
% of the estimated sample	25	5	39	35
Predicted probabilities	0.16	0.05	0.52	0.27

Notes: [§]: I report *average marginal effects*, not the marginal effects at the mean. For the explanation of how these affects are computed, please see the section *Theoretical Framework and Estimation*.

[†]: For-profit schools include all school types (less-than-2-year, 2-year, and 4-year schools).

[‡] Non-profit 2-year schools also include less-than-2-year schools.

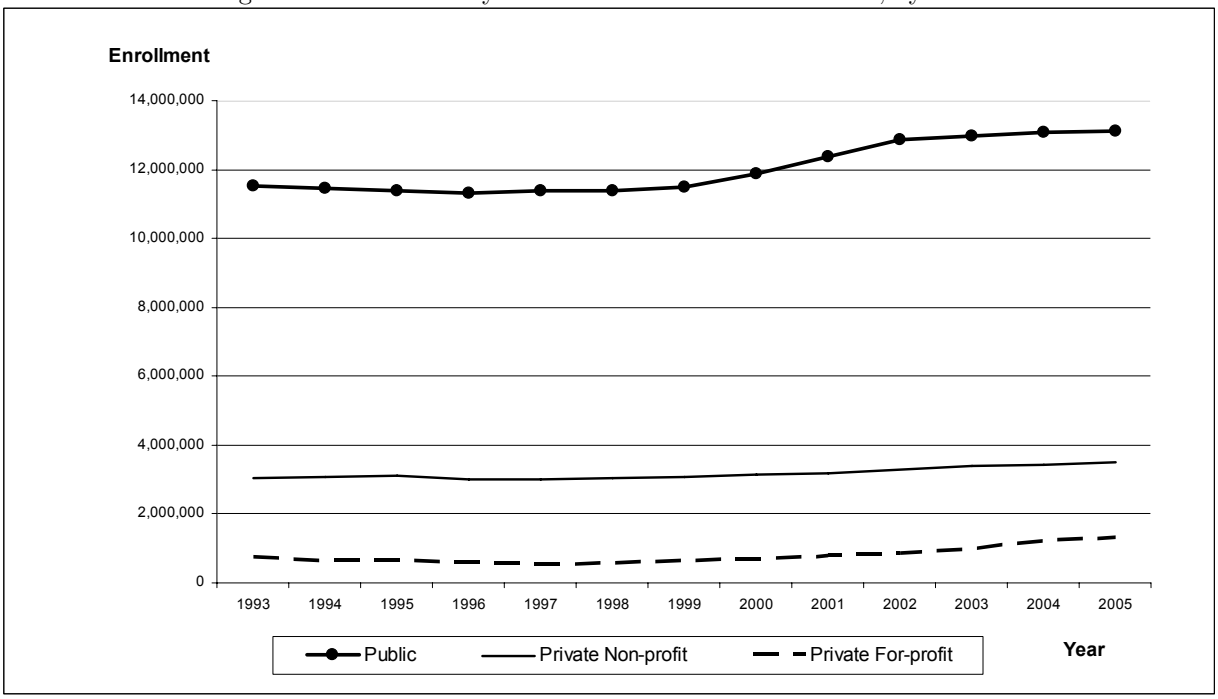
* p<0.1, ** p<0.05, *** p<0.01. Base category - No College.

Reference groups: female; White and Asian; family income - less than $15K; parental education - high school graduate; US-born parents; mother not working; not a single-parent family; parents attended up to 2 school meetings; college-going decision made alone; NELS composite score 41 to 45; high school class rank 51% to 70%; spent less than 10 hours on extracurricular activities; recent school absence fewer than 5 days; student did not have children; student did not work; 3 high school vocational credits or fewer.

Also included in the regression: dummy for 3 or more siblings; student's birth order; % minority in student's high school; math coursework beyond trigonometry dummy; no high school diploma dummy; plan to enlist in military dummy; recent binge drinking; smoking; illegal drug use; in-state public 2yr tuition; local per capita retail and service earnings; local unemployment; county % of for-profit schools; closest non-profit non-selective 4-year college dummy.

Source: U.S. Department of Education National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88/2000); U.S. Department of Education National Center for Education Statistics, NELS:88/2000 Postsecondary Education Transcript Study: 2000 (PETS:2000).

Figure 1: Postsecondary Enrollment in the United States, by Sector



Source: Author's tabulation from the Digest of Education Statistics 1995-2006, National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

Figure 2:

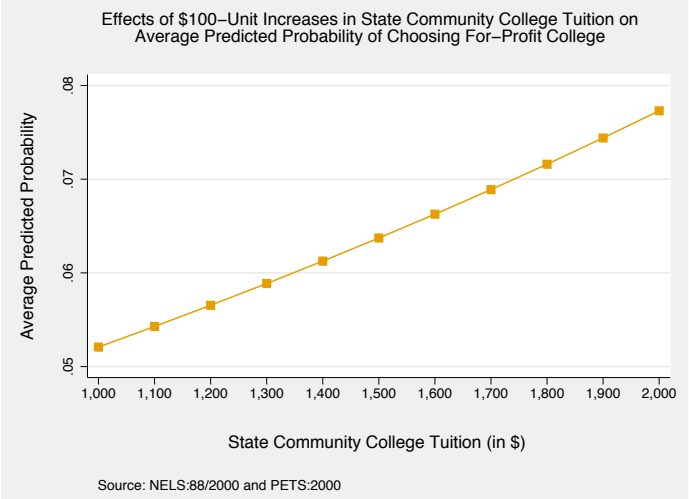


Figure 3:

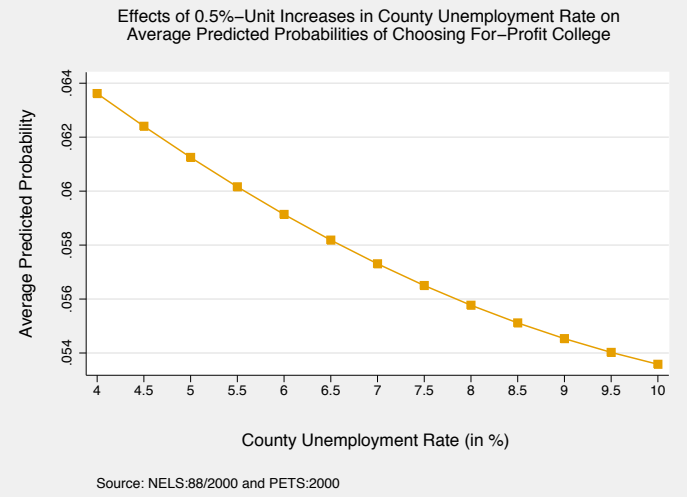
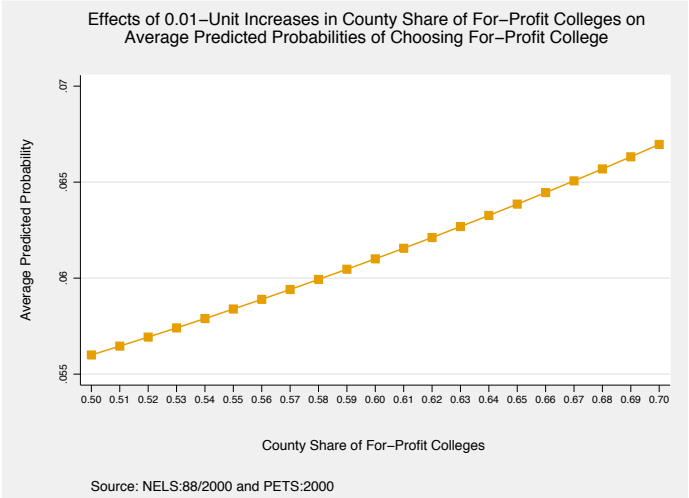


Figure 4:



Appendices

A Defining the Sample and Coding of the School Choice

The full dataset which resulted from merge of NELS with PETS data contained 12,144 individual student records. PETS variable *hstrnfl* was used to identify 10,310 students for whom high-school transcripts were collected. Another PETS variable *refselct* helped classify selectivity of the "true first institution" attended by a student. "Highly selective" or "selective" institutions were coded as selective; and the rest of the institutions in the "non-selective", "open-door", "unrated" and "unknown" categories were coded as non-selective[20].

As explained in the body of Data section, there were a total of 840 students who enrolled into for-profit college. Table 3 captures some of the pathways describing where these students come from.

Table 3: Pathways into For-Profit College

School type previous to for-profit college enrollment	Order of college enrollment choice				
	1st	2nd	3rd	4th	5th
	% students choosing different school type (within each choice order)				
Private for-profit	57%	11%	10%	7%	0%
Non-profit less-than-4-year		56%	48%	41%	75%
Non-profit 4-year or above		32%	42%	48%	25%
Unknown		0%	0%	4%	0%
% of students entering for-profit college as their Nth choice	57%	33%	13%	3%	1%

Source: Postsecondary Education Transcript Study (PETS:2000).

From the table, we find out that for about 57% (477 students)[21] , for-profit college is the first post-secondary institution; for 33% (275 students) second; for 13% (109 students) third. Out of the 275 students from whom for-profit college is the second choice, 56% (155 students) come to proprietary school from non-profit 2-year colleges. Another 32% (89 students) come from non-profit 4-year schools.

The school choice variable was coded from several variables on PETS file: *inpets* – an indicator variable of student participation in the post-secondary transcript sample; *reflevlcont* – a variable

[20] For more information on this selectivity indicator in PETS, please refer to Appendix B: Selectivity.

[21] From the 840 students who have ever-enrolled into proprietary colleges, 56 students enrolled into for-profit college more than once.

defining the level (less-than two-year, two-year, four-year) and control (public, private, for-profit) for the student's "true first institution" after high school graduation; *refinst* – variable describing the type of the "true first institution" (according to the old Carnegie classification).

Out of 10,310 students, 2,007 (19.5%) students had no claim of post-secondary education (PSE); 1,282 (12.4%) enrolled in highly selective and selective institutions; 6,695 (64.9%) ended up in non-selective schools. There were 416 (4%) students who chose for-profit schools. The resulting coded categories are contained in Table 4, and 326 (3.2%) students for whom the school choice was not coded are listed in Table 5.

Table 4: Coded School Choice

Coded School Choice	Frequency	Percent
No PSE	2,007	19.5
Proprietary less-then-2-yr school	207	2.0
Proprietary 2-yr school	163	1.6
Proprietary 4-yr school	46	0.4
Non-proprietary less-then-2-yr school	56	0.5
Non-proprietary 2-yr school	3,049	29.6
Non-proprietary non-selective 4-yr school	3,174	30.8
Highly selective and selective school	1,282	12.4
Excluded	326	3.2
Total	10,310	100.0

Source: Postsecondary Education Transcript Study (PETS:2000).

Table 5: Excluded School Choices

Type of True First Institution	Participation in the Transcript Sample PSE Claim: Transcripts Requested	Transcripts Not Requested	Total
No records validate PSE†	124	95	219
Indeterminable	60	0	60
Central Office of CC District	4	0	4
Theological Seminary/Bible College	3	0	3
Medical School	2	0	2
Health Sciences Center	1	0	1
Specialized: Technology	1	0	1
Specialized: Business	2	0	2
Specialized: Art/Music Conservatory	2	0	2
Specialized: Other	1	0	1
Hospital School	10	0	10
Less-than-2-yr Art/Music School	1	0	1
Job Corps, Occupational Center	5	0	5
Foreign Institution	1	4	5
Unknown	10	0	10
Total	227	99	326

Note: † NELSSTAT=7-9.

Source: Postsecondary Education Transcript Study (PETS:2000).

B Selectivity

PETS variable refselct helped classify selectivity of the "true first institution" attended by a student. Institutional selectivity was based on the same broad measure used in the previous two National Center for Education Statistics (NCES) surveys from the National Education Longitudinal Studies (NELS) program: High School and Beyond (HS&B) and National Longitudinal Study of the High School Class of 1972 (NLS-72). According to the variable select description the Data Analysis System (DAS) for PETS, the main sources for the measure were "the selectivity cell clusters of the Cooperative Institutional Research Project (CIRP) of 1992, collapsed into three bands for 4-year institutions. To be sure, there are degrees of selectivity within the vast category of "Non-Selective," but select is a very general measure. Open door institutions are, by and large, community colleges, and AVTIs (Area Vocational – Technical Institute). Those judged "unratable" include free-standing graduate schools and professional schools, theological seminaries, and specialized sub-baccalaureate occupational schools."[22]

Table 6 shows the distribution of students on the working file by the selectivity of the first true institution attended.

Table 6: Selectivity of First True School Attended

Selectivity	Frequency	Percent
No claim to PSE	2,007	19.5
Missing, indeterminable	748	7.3
Highly selective	309	3.0
Selective	973	9.4
Non-selective	3,105	30.1
Open-door	2,948	28.6
Unrated	214	2.1
Unknown institution	6	0.1
Total	10,310	100.0

Source: Postsecondary Education Transcript Study (PETS:2000).

To provide a point of reference for the selectivity measure, Table 7 lists ACT and SAT median scores for students on the working file for whom the scores were available. Figures 5 and 6 feature the distribution of Non-Missing SAT and ACT scores in the student sample.

For the regression analysis in the paper, "highly selective" or "selective" institutions were coded as selective; and the rest of the institutions in the "non-selective", "open-door", "unrated" and "unknown" categories were coded as non-selective. Table 8 lists highly selective schools attended

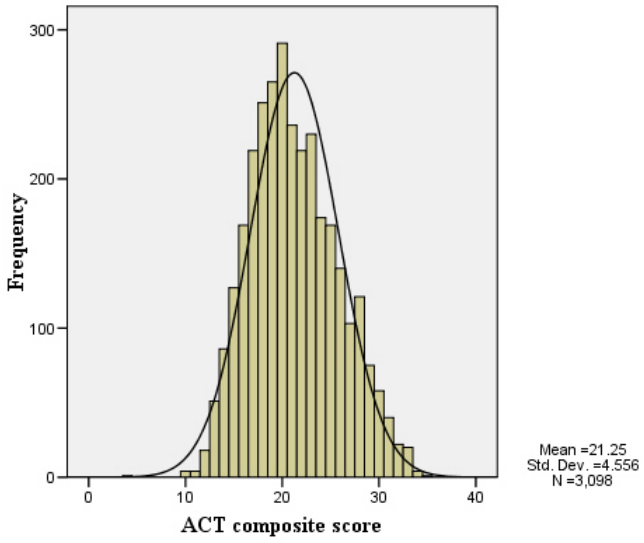
[22]See description for the variable select on the Data Analysis System (DAS) for PETS.

Table 7: Median Student Non-MIssing ACT and SAT Scores, by Selectivity of First Chosen School

Statistic	**Postsecondary school selectivity**			
	Highly selective	Selective	Non-selective	All
ACT median	29	25	21	21
ACT st. dev.	3.57	3.83	4.17	4.56
N	69	416	1,556	3,098
SAT median	1,270	1,080	920	930
SAT st. dev.	137.69	165.75	180.20	216.44
N	283	738	1,633	3,872

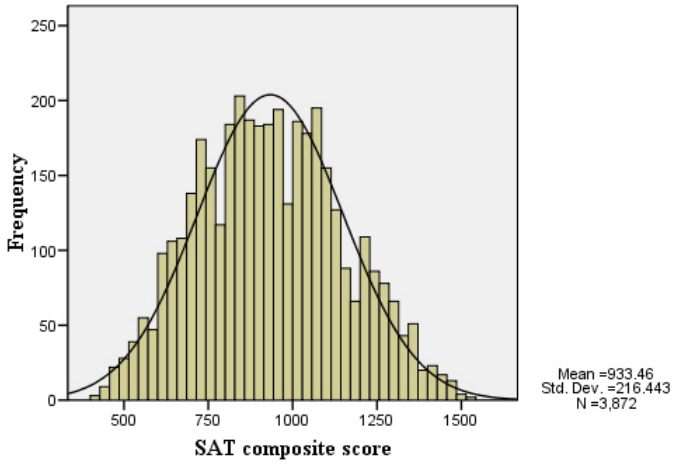
Source: Postsecondary Education Transcript Study (PETS:2000).

Figure 5: Distribution of Non-Missing ACT Composite Scores for Students in NELS:88 - PETS:2000



Source: Postsecondary Education Transcript Study (PETS: 2000).

Figure 6: Distribution of Non-Missing SAT Composite Scores for Students in NELS:88 - PETS:2000



Source: Postsecondary Education Transcript Study (PETS: 2000).

by the students in the sample; Table 9 does the same for selective schools; and Table 10 contains for-profit schools.

Table 8: A List of Highly Selective Schools Attended by Students in the Sample

UNIV CALIF-BERKELEY	JOHNS HOPKINS UNIV
UNIV CALIF-LOS ANGELES	SMITH COLL
HARVARD UNIV	UNITED STATES MILITARY ACAD
UNIV PENN	WILLIAMS COLL
UNIV VIRGINIA-MAIN CAMPUS	AMHERST COLL
NORTHWESTERN UNIV	CARNEGIE MELLON UNIV
CORNELL UN-NY STATE	MACALESTER COLL
UNIV CALIF-SAN DIEGO	RICE UNIV
YALE UNIV	BARNARD COLL
DUKE UNIV	BROWN UNIV
UNIV NOTRE DAME	WASHINGTON UNIV
PRINCETON UNIV	WESLEYAN UNIV
DARTMOUTH COLL	POMONA COLL
COLUMBIA UNIV	US AIR FORCE ACAD
STANFORD UNIV	COOPER UNION
MASSACHUSETTS INSTIT TECH	HARVEY MUDD COLL
UNITED STATES NAVAL ACAD	HAVERFORD COLL
TUFTS UNIV	SWARTHMORE COLL
UNIV CHICAGO	THE JUILLIARD SCHOOL
GEORGETOWN UNIV	WELLESLEY COLL

Source: Postsecondary Education Transcript Study (PETS:2000).

Table 9: A list of Selective Schools Attended by Students in the Sample

UNIV WISCONSIN-MADISON	BUCKNELL UNIV
UNIV MISSOURI-COLUMBIA	CARLETON COLL
UNIV FLORIDA	COLBY COLL
UNIV ILLINOIS AT URBANA	GEORGE WASHINGTON UNIV
PURDUE UNIV-MAIN CAMPUS	HAMILTON COLL
INDIANA UNIV-BLOOMINGTON	HOBART WILLIAM SMITH COLLS
TEXAS A & M UNIV	ILLINOIS WESLEYAN UNIV
VIRGINIA POLYTECHNIC INSTIT	KENYON COLL
UNIV N CAROLINA-CHAPEL HILL	LEHIGH UNIV
OHIO STATE UNIV-MAIN CAMPUS	PEPPERDINE UNIV
UNIV CALIF-IRVINE	RENSSELAER POLYTECHNIC INSTIT
UNIV MICHIGAN-ANN ARBOR	SAINT MARYS COLL
BOSTON UNIV	UNIV CALIF-RIVERSIDE
THE UNIV TEXAS AT AUSTIN	VASSAR COLL
AUBURN UNIV MAIN CAMPUS	BATES COLL
RUTGERS UNIV-NEW BRUNSWICK	BOWDOIN COLL
UNIV CALIF-SANTA BARBARA	DAVIDSON COLL
GA INSTIT TECH-MAIN CAMPUS	DEPAUW UNIV
BRIGHAM YOUNG UNIV	DICKINSON COLL
CLEMSON UNIV	GOUCHER COLL
UNIV CALIF-DAVIS	MOUNT HOLYOKE COLL
IOWA STATE UNIV	OBERLIN COLL
UNIV ARIZONA	SUNY AT ALBANY
UNIV COLORADO AT BOULDER	SUNY AT STONY BROOK

Table 9: A list of Selective Schools Attended by Students in the Sample (Continued)

ARIZONA STATE UNIV-MAIN CAMP	UNION COLL
MIAMI UNIV-OXFORD	UNIV MIAMI
OHIO UNIV-MAIN CAMPUS	UNIV MISSOURI-ROLLA
UNIV IOWA	UNIV OREGON
UNIV VERMONT	ALBION COLL
CAL POLY-POMONA	BABSON COLL
FLORIDA STATE UNIV	BELOIT COLL
UNIV CALIF-SANTA CRUZ	EARLHAM COLL
UNIV WASHINGTON	ECKERD COLL
PENN STATE UNIV-MAIN CAMPUS	ELON COLL
UNIV SOUTHERN CALIF	EMBRY-RIDDLE AERONAUTL UNIV
NEW YORK UNIV	FRANKLIN AND MARSHALL COLL
SUNY AT BUFFALO	HAMPSHIRE COLL
SUNY AT BINGHAMTON	ILLINOIS INSTIT TECH
UNIV MINNESOTA-TWIN CITIES	MISSISSIPPI UNIV FOR WOMEN
YESHIVA UNIV	NEW JERSEY INSTIT TECH
BOSTON COLL	THE BOSTON CONSERVATORY
MICHIGAN TECHNOLOGICAL UNIV	THE COLL NEW JERSEY
MIDDLEBURY COLL	TRINITY COLL
TULANE UNIV LOUISIANA	AZUSA PACIFIC UNIV
UNIV ROCHESTER	BARD COLL
VANDERBILT UNIV	BERKLEE COLL MUSIC
AMERICAN UNIV	BRYN MAWR COLL
HOWARD UNIV	CAL POLY-SAN LUIS OBISPO
UNIV ARKANSAS-FAYETTEVILLE	COLORADO SCHOOL MINES
UNIV MARYLAND-COLL PARK	CONNECTICUT COLL
COLL WILLIAM AND MARY	DENISON UNIV
EMORY UNIV	HOOD COLL
MARY WASHINGTON COLL	KALAMAZOO COLL
N CAROLINA STATE U AT RALEIGH	RHODE ISLAND SCHOOL DESIGN
SYRACUSE UNIV	ROLLINS COLL
WAKE FOREST UNIV	SAINT MARYS COLL MARYLAND
CASE WESTERN RESERVE UNIV	SARAH LAWRENCE COLL
COLGATE UNIV	SCHOOL ART INSTIT CHICAGO
COLORADO COLL	SPELMAN COLL
OCCIDENTAL COLL	TEXAS WOMAN'S UNIV
BRANDEIS UNIV	US COAST GUARD ACAD
	WORCESTER POLYTECHNIC INSTIT

Source: Postsecondary Education Transcript Study (PETS:2000).

Table 10: A list of For-Profit Schools Attended by Students in the Sample

DEVRY INSTIT TECH	GLENDALE CAREER COLL
ITT TECH INSTIT	GOLDEN STATE BUSINESS COLL
UNIVERSAL TECH INSTIT INC	HAIR ACAD INC-NEW CARROLLTON
LINCOLN TECH INSTIT	HALLMARK INSTIT TECH
BERKELEY COLL	HELICOPTER ADVENTURES INC
HAGERSTOWN BUSINESS COLL	HENRIS SCHOOL HAIR DESIGN
BRYANT & STRATTON BUS INSTIT	HESSER COLL

Table 10: A list of For-Profit Schools Attended by Students in the Sample (Continued)

CAREER POINT BUSINESS SCHOOL
DUFFS BUSINESS INSTIT
ECPI COLL TECH
EDUCATION AMERICA-TAMPA TECH
NASHVILLE AUTO DIESEL COLL
PENN INSTIT CULINARY ARTS
SAWYER SCHOOL
SOUTHWESTERN COLL BUSINESS
AL COLLINS GRAPHIC DESIGN SCH
AMERICAN COMMERCIAL COLL
BROOKSTONE COLL
CONCORDE CAREER INSTIT
CORINTHIAN SCHOOLS INC
DEAN INSTIT TECH
DENVER INSTIT TECH
DEVRY INSTIT
DEVRY INSTIT TECH-POMONA
FASHION INST DESG & MERCH-LA
INTERNATIONAL BUSINESS COLL
INTERNATIONAL FINE ARTS COLL
KERR BUSINESS COLL
MASTERS INSTIT
MICHIGAN COLL BEAUTY
MICROCOMPUTER TECH INSTIT
NEWPORT BUSINESS INSTIT
PIMA MEDICAL INSTIT
PITTSBURGH TECH INSTIT
SAN JOAQUIN VALLEY COLL
SAWYER COLL-MERRILLVILLE
SIERRA ACAD AERONAUT TECH INS
SOUTH HILLS SCHL BUS AND TECH
SOUTH TEX VO-TECH BROWNSVILLE
SOUTH TEXAS VO-TECH INSTIT
SOUTHEAST COLL TECH
SPENCERIAN COLL
TOLEDO ACAD BEAUTY CULTURE
WESTCHESTER BUSINESS INSTIT
WESTERN TECH INSTIT
WILMA BOYD CAREER SCHOOLS INC
WYOMING TECH INSTIT
YORK TECH INSTIT
ACAD ART COLL
ACAD BEAUTY CULTURE
ACAD COURT REPORTING
ADRIAN BEAUTY ACAD INC
ADVANCED INSTIT HAIR DESIGN
ADVANCED TECH INSTIT
AL-MED ACAD
ALLENTOWN BUSINESS SCHOOL
ALPHA BEAUTY SCHOOL-ASHEVILLE
AMERICAN INSTIT COMMERCE
HUNTINGTON JUNIOR COLL
ICS INTL CORRESPONDENCE SCHLS
INDIANA BUSINESS COLL
INTERACTIVE LEARNING SYSTEMS
INTERNAT INSTIT HAIR DESIGN
INTERNATIONAL BEAUTY SCHOOL 5
INTL ACAD MERCHANDISING & DES
ITT EDUC SERVS SYSTEM OFFICE
JERRYS SCHOOL HAIRSTYLING
KATHARINE GIBBS SCHOOL
KENTUCKY COLL BUSINESS
KINGS COLL
LAB INSTIT MERCHANDISING
LAUREL BUSINESS INSTIT
LAWTON SCHOOL
LEARNING INSTIT BEAUTY SCI
LONG MEDICAL INSTIT
MBTI BUSINESS TRAINING INSTIT
MED-ASSIST SCHOOL HAWAII INC
MEDICAL CAREER CENTER
MEDIX SCHOOLS
MIAMI-JACOBS COLL
MICHIGAN INSTIT AERONAUTICS
MID-STATE COLL
MIDSTATE COLL
MILDRED ELLEY SCHOOL INC
MINNEAPOLIS BUSINESS COLL INC
MISS WADES FASHION MERCHANDIS
MODEL COLL HAIR DESIGN
MONROE COLL-NEW ROCHELLE
MONTEREY INSTIT TOUCH
MTI BUSINESS COLL
MTI BUSINESS COLL INC
MUNDUS INSTIT
MUSICIANS INSTIT
NAT EDUC CNTR-SPARTAN SCHOOL
NATIONAL AMERICAN UNIV
NATIONAL SCHOOL TECH INC
NEW CASTLE SCHOOL TRADES
NEW YORK RESTAURANT SCHOOL
NORTHWEST EDUCATIONAL CENTER
NOVA INSTIT HEALTH TECH
OHIO CENTER FOR BROADCASTING
OHIO INSTIT PHOTOGR AND TECH
OMNI TECH SCHOOL
OPELOUSAS SCHOOL COSMETOL INC
PARISIAN BEAUTY SCHOOL
PATRICIA STEVENS COLL
PENN COMMERCIAL INC
PIONEER PACIFIC COLL
PPI HEALTH CAREERS SCHOOL

Table 10: A list of For-Profit Schools Attended by Students in the Sample (Continued)

AMERICAN TRADES INSTIT
ANDON COLL
APEX TECH SCHOOL
ART INSTIT DALLAS
ART INSTIT MINNESOTA
ART INSTIT PITTSBURGH
ART INSTIT SEATTLE
ASSOCIATED TECH COLL
ATI-CAREER TRAINING CENTER
ATI CAREER TRAINING CENTER
BAUDER COLL
BEL-REA INSTIT ANIMAL TECH
BERDAN INSTIT
BERKELEY COLL NEW YORK CITY
BRADFORD SCHOOL
BRIARWOOD COLL
BRICK COMPUTER SCI INSTIT
BROOKS COLL
BRYMAN COLL-CORINTHIAN SCHOOL
BUSINESS INSTIT PA-TITUSVILLE
BUSINESS TRAINING INSTIT
CALIF BUSINESS INSTIT
CAMELOT CAREER COLL
CAREER ACAD
CAREER BLAZERS LEARNING CNTR
CAREER CENTERS TEXAS EL PASO
CAREER COLL NORTHERN NEVADA
CAREER TRAINING SPECIALISTS
CAROUSEL BEAUTY COLL
CENTRAL PENN BUSINESS SCHOOL
CHARLES ACAD BEAUTY CULTURE
CHARTER COLL
CHEEKS INTL ACAD BEAUTY CULT
CHUBB INSTIT-KEYSTONE SCHOOL
CHURCHMAN BUSINESS SCHOOL
COLL COSMETOL
COLL HAIR DESIGN
COLUMBIA JUNIOR COLL BUSINESS
COSMETOL TRAINING CENTER
DE MARGE COLL NORTH
DELTA BEAUTY COLL
DENVER AUTO AND DIESEL COLL
DIESEL TRUCK DRIVERS TRA SCHL
DOVER TECH SCHOOL
DRAUGHONS JUNIOR COLL
DUVARDOS ACAD HAIR DESIGN
E Q SCHOOL HAIR DESIGN
ECPI COLL TECH-CHARLOTTE
EMERY AVIATION COLL
ERIE BUSINESS CENTER-SOUTH
EXECUTIVE SECRETARIAL SCHOOL
PROFESS TRUCK DRIVE TRAIN SCH
RASMUSSEN COLL-MANKATO
RETS ELECTRONIC INST
RETS MEDICAL AND BUS INSTIT
ROB ROY ACAD
ROSS MEDICAL EDUCATION CENTER
SAINT JOSEPH BEAUTY UNIVER
SAN ANTONIO COLL MED/DEN ASST
SANFORD BROWN INSTIT
SANTA BARBARA BUSINESS COLL
SAWYER COLL-HAMMOND
SCHOOL ADVERTISING ART INC
SCHOOL VISUAL ARTS
SCOTT COLL COSMETOL
SIERRA VALLEY BUSINESS COLL
SKADRON COLL
SOUTH TEXAS VOC TECH INSTIT
SOUTHEASTERN BUS COLL-LORAIN
SPECS HOWARD SCHL BROADCAST
ST CLOUD REGENCY BEAUTY ACAD
STAR TECH INSTIT-ALLENTOWN
STAR TECH INSTIT-WILKES-BARRE
STAR TECH INSTIT
STAUTZENBERGER COLL
STEVENS-HENAGER COLL BUSINESS
STRATTON COLL
STRAYER COLL-TAKOMA PK CAMPUS
SUPERIOR SCHOOL HAIRSTYLING
SW FLORIDA COLL BUSINESS
SW INST MERCHANDISING & DESIG
TECH CAREER INSTITS
TECH COLL ALAMANCE
TECH TRADES INSTIT
TESST TECH INSTIT
TEXAS SCHOOL BUS-SOUTHWEST
TEXAS SCHOOL BUSINESS INC
THE ART CENTER
THE CITTONE INSTIT
THE PLAZA SCHOOL TECH
THOMPSON INSTIT
TIDEWATER TECH
TRINITY BUSINESS SCHOOL
UNIV PHOENIX-UTAH CAMPUS
UTAH CAREER COLL
VALLEY COLL TECH
VATTEROTT COLL
VITOUSEK REAL ESTATE SCHOOL
WATTERSON COLL
WEBSTER COLL INC
WEST TENNESSEE BUSINESS COLL
WESTERN BUSINESS COLL

Table 10: A list of For-Profit Schools Attended by Students in the Sample (Continued)

FASHION INST DSGN & MERCH	WESTERN TRUCK SCHOOL
FINAL TOUCH BEAUTY SCHOOL	WICHITA BUSINESS COLL
GIBBS COLL	XENON INTL SCHOOL HAIR DESIGN

Source: Postsecondary Education Transcript Study (PETS:2000).

C Coding Earnings

Per capita earnings have been included in the regression as a measure of opportunity costs experienced by college goers. It was necessary to determine which industry earnings would be a relevant margin for the students bound for non-selective institutions.

Because the unobserved counterfactual would be hypothetical employment after high school (instead of enrolling in college), it was logical to consider where the students who did not choose college were employed. There were 2,007 people who had no claim of PSE on file; frequencies on their top occupations in 1994 (2 years since high school graduation for most), as well as top industries they were engaged in are listed in Tables 11 and 12

Because retail and services topped the lists, the final regression contained those industries. Additionally, construction and manufacturing earnings were coded and entered. Wald tests did not show any significance for either sets or categories of these two industries.

Table 11: Top Jobs/Occupations Longest Held by College Non-Goers in 1994 in NELS:88/2000

Job/Occupation Longest Held	**N**	**Percent**
Legitimate skip/ nonrespondent	459	22.9
Service	317	15.8
Laborer	270	13.5
Skilled operative	147	7.3
Craftsmen	132	6.6
Clerical-financial	128	6.4
Sales	125	6.2
Clerical-other	110	5.5
Manager/administration - retail	64	3.2
Clerical-secretarial	56	2.8
Missing	55	2.7
Farmer/farm manager	45	2.2
Managing-administration-other	24	1.2
Military	19	0.9

Source: National Education Longitudinal Study of 1988 (NELS:88/2000).

Table 12: Top Types of Business/Industry Chosen by College Non-Goers in 1994 in NELS:88/2000

Type of Business/Industry	**N**	**Percent**
Retail trade	601	29.9
Legitimate skip/ nonrespondent	459	22.9
Construction	124	6.2
Manufacturing – durable	120	6
Professional, related services	119	5.9
Business& repair	101	5
Manufacturing–non-durable	95	4.7
Agriculture, forestry, fishing	58	2.9
Missing	56	2.8
Personal services	51	2.5
Military	50	2.5
Transportation, communication, utilities	48	2.4
Entertainment	41	2
Wholesale trade	36	1.8

Source: National Education Longitudinal Study of 1988 (NELS:88/2000).

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