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THE EFFECT OF LOCAL LABOR MARKETS ON COLLEGE ENROLLMENT

By:

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ABSTRACT

A number of authors have investigated whether aggregate and/ or local labor market conditions affect college enrollment, but the results across studies are very inconsistent. There are two shortcomings in the previous studies that may explain the weak correlation between labor market opportunities and college enrollment. First, we will use the unique structure of the HS & B to construct unemployment and wage rates for new high school graduates at the SMSA level. Second, we will estimate both two and four- year college enrollment equations, allowing for a differential impact of labor market opportunities on these two types of schools. While four- year college enrollments tend to be higher during recessions, two- year college attendance decreases. Two-year college enrollments are more sensitive to labor market conditions than enrollments in four- year colleges. The results in our study do not support the findings reported in previous studies in which the authors have used aggregate level data for unemployment rate and average wage. The effect of local labor markets on college enrollment.

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I- Introduction

A number of economists have shown that college enrollment rates are negatively related to the direct costs (tuition, etc.) of higher education. It has been estimated that for many, however, the largest cost of obtaining a college education are the earnings foregone during the college years. Interestingly, the impact that changing job opportunities play on college enrollments has received far less attention in academic research. The impact of changing labor market conditions is, however, though to be quite large. College and university enrollments have fallen in the last six years in at least 75 percent of the states. The American Council of education attributed this decline, among other things, to increased job opprotunities as the economy recovers (Washington Post January 14, 1994). The issue we address in this paper is to what extent do local labor market conditions affect college enrollment rates? Do poor local labor market prospects induce more people to attend college?

A number of authors have investigated whether aggregate and/ or local labor market conditions affect college enrollment. The results across studies are, however, very inconsistent.

Blakmore and Low (1983 b) in a multinominal logit model find that postesecondary school enrollment, particularly at four- year colleges, rises with a decrease in the local unemployment, rate and an increase in the local wage rate. In a similar study, Rouse (1993) examined the determinants of college choice using NLSY and the HS & B data sets in a multinominal logit model. Her study predicts that a one percentage point decrease in the unemployment rate reduces the probability of two-year college attendance by 0.9 percentage points and increases the probability of attending a four- year college by 0.2 percentage points.

However, Venti and Wise (1982, 1983) find that the local unemployment rate is not significantly related to the rate of college application. Their findings do not support the presumption that there is some interaction between local market opportunities and the continuation of schooling. In their studies, increases in the average wage decrease college enrollment, i.e., the higher local wage rate, the less likely are high school graduates to go to college, though the effect is small. Grubb (1988) found that student demand for enrollments and completion rates in public two- year colleges are not especially sensitive to labor market conditions.

Similarly, Kane (1994), using time series state- level cross sectional data, examined the role of tuition, financial aid and local economic conditions on college entry by blacks. He included two different measures of economic conditions: the state unemployment rate and average weekly earning in manufacturing by state. Kane found little evidence that black or white college enrollment rates vary with the business cycles. On the other hand, he found a negative correlation between average weekly earnings in manufacturing and college enrollment. Kane concludes that poor local economic conditions will have two opposing effects: by lowering opportunity costs and posing difficulties for those planning to finance their education with part- time employment. Therefore, the likely effect of local labor market conditions may be ambiguous.

In this literature, there are two shortcomings that may explain the weak correlation between labor market opportunities and college enrollment. First, the variables used to measure labor market opportunities are usually aggregate level variables. For these variables to accurately reflect the opportunity costs of attending college, they should model the costs faced by a high school senior. An aggregate unemployment or wage rate calculated from a sample of all workers may not reflect the true opportunities faced by a teenager fresh out of high school. In Tables 2.1 and 2.2, we provide some evidence of how well aggregate wage and unemployment rates are correlated with wages and unemployment for young workers. The Current Population Survey (CPS) asks the one quarter of all respondents who are part of the out-going rotation sample their usual weekly wages. Using all full- time workers (those with more than 30 hours per week) from the entire outgoing rotation sample from the 1980- 1982 CPS, we calculate average weekly wages for all workers and for young workers aged 18- 24 at the state and SMSA level. We then calculate the correlation coefficient between these two series for all three years and for males and females. As the results in Table 2.1 indicate, there is a surprising low correspondence between average wages for all workers and young workers at the SMSA level. In 1982 for example, the raw correlation across SMSA's between these two series is only 0.44. Table 2.2 also shows the correlation between the unemployment rate for 18- 19 years old graduated from high school and all workers. As we can see, these two series are weakly correlated.

The second shortcoming of many studies is the failure to distinguish the differential effects labor market opportunities may have on two and four year college enrollments. It can be seen from Table 2.3 that while 32 percent of students in two- year colleges are part time students, only 6 percent of students in four- year colleges are part time. Thus those students who choose two- year colleges may be more concerned about labor market conditions, since students in a two- year college tend to combine work and schooling. Therefore we might expect two- year college entollments to be more sensitive to changes in local labor markets.

In this paper, we will address both of these shortcomings. First, we will use the unique structure of the High School and Beyond data set to construct unemployment and wage rates for new high school graduates at the SMSA levels. With these variables, we can then directly assess whether these more accurate measure of labor market opportunities have more explanatory power than traditional labor market indicators. Second, we will estimate both two and four- year college enrollment equations, allowing for a differential impact of labor market opportunities on these two types of schools.

The outline of the remainder of the paper is as follows. In section II we explain how we construct the unemployment rate and average wage in the SMSAs for teenagers. In section III we discuss the econometric model and the results are discussed in section IV. We expand the model by developing a multinominal logit model in section V and we discuss these results in section VI. We present a summary and conclusion in the final section of the paper.

II- Data Description

The data we use for this analysis is the sophomore cohort of the High School and Beyond survey. The structure of the data set is described in detail in Chapter 1. The basic research strategy for this paper will be to estimate discrete choice models of college entrance, similar to those estimated in the previous chapter, that include measures of local labor market conditions.

Local labor market conditions such as wages, unemployment rates, and employment ratio at the county, SMSA, and state level are provided for the HS & B data in the labor market indicator (LMI) data supplement to HS & B. These labor market indicators are aggregate measures for the entire population and they do not necessarily reflect the true economic opportunities faced by a recent high school graduate. To determine whether more accurate measures of wages and unemployment rates for teens are the appropriate labor market indicators to use, we must merge new values into the HS & B data. These values are available from published sources; however, because of the structure of the HS & B data set, we cannot add these values to the data set. Unfortunately, HS & B only identifies the census regions where schools are located and not the county, SMSA, or state of residence. Therefore, we needed to use a different methodology to add teenage local labor market variables to the data set.

HS & B used a stratified sampling design where many schools from the same SMSA or county were surveyed. With this survey design, sometimes hundreds of observations for students within the same SMSA are available. In the local labor markets data added to the HS & B data, SMSA unemployment rates are reported for the years 1980, 1981, and 1982. If we multiply these three SMSA unemployment rates together, all schools in the same SMSA should have the same product. If we assume this product is an SMSA identification code, we can then identify what schools belong in the same SMSA. In later waves of HS & B, students reported whether they were in the labor market and employed for the summer of 1982 by aggregating all students within the same SMSA from the high school class of 1982, we can construct an unemployment rate for new high school graduates. Similarly, we can construct a measure of the hourly wage received by new high school graduates within the same SMSA.

To construct the local labor unemployment rate for high school graduates whose high schools are located in the same SMASs, we use the following algorithm. We start with sophomore students who graduated from high school and attended college in October 1982. Our sample is drawn from 12413 students who where sophomores in 1980 and participated in both the 1982 and 1984 follow- ups. First, we eliminated those students whose high school was not located in an SMSA. This leaves 8065 student across 165 SMSAs. Second, we create a dummy variable equal to one if the *i*th student is in the labor force and is unable to find a job. Then we delete those students who are not in the labor market and calculate the mean unemployment by SMSA. We then merge this new variable back into the original data set by the ID of SMSA. Finally, to insure precise estimates of the unemployment rate, we exclude those SMSAs with less than 50 students. We end up with 5522 sophomore students in 41 SMSAs. The average unemployment rate for teenagers in SMSAs is 8.36 percent. We used the same procedure to create local unemployment rates for 18-19 years old high school graduates using out going rotation CPS data set. The average unemployment rate for these teenagers on the SMSA level is as the same as the average unemployment rate which we have constructed based on HS & B data set, 8.31 percent. We also used this method to create average wages received by same students based on the HS & B data set. The average hourly wage is $4. 70 with a minimum of \$ 3.14.[1] One advantage of this synthetic estimate of the unemployment rate is that they are based on large sample sizes.

One can construct local labor market measures for young adults for some SMSAs using data from the Current Population Survey. However, these numbers would be based on only a few observations for most SMSAs. In contrast, data from HS & B was collected in a clustered fashion where many schools within a particular SMSA were surveyed. Therefore, we produced estimates from a large number of teenagers in a given SMSA. The largest SMSA sample size was 594 and the average size was 267.

Table 2.4 shows summary statistics (weighted)[2] for variables that we have used in this study. Some of the family characteristics require a little explanation. It should be noted that data on the family income and parents' education are missing in a significant number of cases. We suspect, however that these are missing in a nonrandom group of population. For example, average test scores are higher in populations with non missing income and education variables. Therefore, we define a set of dummy variables for the education, income and include missing data for income and parents' education as a category.[3] We also chose the highest education group and the family with income more than \$50,000 as the reference categories.

III- The Probit Model

The question we address is straightforward: Do local labor market conditions affect whether students begin college? Our outcome measure is therefore a simple indicator variable Y_i that equals 1 if student i enters college and 0 otherwise. The choice problem is described by the latent variable model,

$$(1)\ Y^*_i = X_i b + \varepsilon_i,$$

1- I deleted average wages which are less than \$2 or more than \$100.

2- Second follow up year weight.

3- Evans and Schwab, (1993) looked at a number of strategies to deal with this missing dataproblem including the estimation of a model suggested by Griliches, Hall and Hausman (1987) and finally they fell back on the approach of defining a dummy variable for missing data of the family income and parents' education.

where Y^*_i is the net benefit to a high school graduate entering college, X_i is a vector of individual characteristics, and ε_i is a normally distributed random error with zero mean and unit variance. Students will only enter college if the expected net benefits of attending college are positive, and thus the probability that we observe a student entering college is

$$(2)\ Prob\,(Y_i = 1) = Prob\,(Y^* \geq 0) = Prob\,(X_i b + \varepsilon_i \geq 0) = \Phi(X_i b)$$

where Φ (.) is the evaluation of the standard normal cdf.

We estimate different separate probit models for two and four year colleges. In each probit model, we use the set of individual and family characteristics listed in Table 2.4. These include family background variables such as parental education and family income.

To test whether teenage measures in the local labor market conditions are better measures of the opportunity cost of school, we will estimate two models, one utilizing the teen measures and one using the standard local labor market measures.

IV- The Results of Probit Model

a) Using Aggregate Level Data (all workers)

In order to examine whether the college entry models are sensitive to the different unemployment rate and average wage variables, we first utilize the aggregate SMSA unemployment rate and average hourly wages for the year 1982. We initially estimate a probit model where the dependent variable is the probability of attending either a two or a four year college. As we mentioned before, one of the most important determinants of college entry are family background variables such as parental education and family income. Therefore, we used these characteristics as explanatory variables in the probit model. Note that in the model, the dependent variable is simply whether one enters college. Table 2.5 presents the results of these estimations. The first column shows the coefficients and the second one reports the marginal effects, i.e., $Zp_j/Zx_k = b_k\phi(xb)$. As the results indicate, local labor market conditions do not affect college enrollment, i.e., none of the coefficients on unemployment rate and average wage are statistically significant.

It is possible that this model does not properly capture the opportunity cost of education. One can argue that two and four year colleges have different demand functions and the people who apply to these institutions invest differently. If true, we should estimate separate models for each type of school. Therefore we next estimate separate probit models, for two and four year colleges. The results of these two models presented in Table 2.6. As the first row of this table shows, the coefficient on the unemployment rate in a two- year college is not significant; however, it is significant and negative in a four- year college model though the effect is small. A one percent increase in unemployment rate decreases four- year collge enrollments by 0.1 percentage points. These results are consistent with the previous studies (for instance Blakmore and Low, 1983b) in the case of four- year colleges and Grubb (1988), in the case of two year college. They do not, however, support the view that the college enrollment declines as the economy recovers. As we illustrate next, the cause of theis inconsistency may be their use of aggregate unemployment rates in their models.

b) Using Teenagers Labor Force Data

Now we use the teenagers unemployment rate and the average hourly wage, i.e., the data that we construct based on the HS & B data set structure, in the two separate probit models. The results for entrants into four- year and two- year colleges are presented in Table 2.7. If we look at the first two rows of Table 2.7, we see that the unemployment rate and wage have different effects on the two type of colleges. The unemployment rate coefficient is positive and statistically significant in the four- year college model, which is in contrast to the results we found with aggregate data. The average wage coefficient is negative but not statistically significant. When the economy is performing poorly and the unemployment rate increases, four- year college enrollment also increases. This supports the hypothesis that the decline in college enrollment in recent years is attributed to increased job opportunities as the economy recovers. A one percentage point increase in the unemployment rate increases a four- year college entrance probability by 0.5 percentage points.

However the effect of local labor markets on two- year colleges differs from four- year colleges. Two year- college enrollments decline during recessions. A one percent decrease in the unemployment rate reduces a two- year college enrollment probability by one percentage point. However, it does not support the previous studies for two- year colleges in which the researchers found that the demand for enrollments in two- year colleges is not sensitive to labor market conditions.

Although the coefficients of unemployment rate and wages are statistically significant in the two- year college model, their signs differ from the coefficient in the four- year college model. The effect of the unemployment rate on a two- year college enrollment is negative and the average wage has a positive effect on two- year college enrollments. A $1 increase in the average teen wage increases two- year college attendance probability by 0.07 percentage points. These results suggest that work and two- year college enrollment are complements. Those youths who usually enter two- year colleges need to have a part time job to defray the cost of their education or save money for future education. However, if jobs are scarce and/ or wages are low people may not be able to afford two year colleges. Particularly in the presence of borrowing constraints, the lower the wage, the less able students will be able to finance college costs only by working part- time. This behavior might be different for four- year college students since they invest differently in their education. For these students, work and college are substitutes, and hence the positive coefficient on the teen unemployment rate and the negative coefficient on the teen wage.

If we look at the coefficients on other explanatory variables, two-year college entrants are more likely to be non- black and to have lower levels of academic ability as measured by cognitive test scores. Parents' education is more important for four- year college entrants. The interpretation we can draw from these results is that families with higher education may have a higher taste for education and are therefore more willing to make human capital investments. On the other hand, parents' education may be a proxy for wealth that is not measured by current family income. The pattern of coefficients could also indicate that the parents of a two- year college student have poorer access to capital.

We also examine the effects of the local labor market on college enrollment by gender and race. These results are presented in Tables 2.9a- 10b. For all four- year college models the average wage coefficient is not statistically significant. The impact of unemployment on four- year college entrants is positive and very strong in particular for Hispanic students, Table 2.8b.

Tables 2.9a and 2.9b present the results for two- year colleges. The coefficients on the average wage in the two- year college models for male and female are significant and positive, but they are not statistically significant for black and hispanic students. The unemployment rate coefficients are statistically significant and negative. The results in Tables 2.8b and 2.9b indicate that hispanic students respond more to changes in local labor market conditions than do blacks or whites, and females are more sensitive than males, in the college attendance decision.

In the next section we consider the college entrance decision in multiple choices model. In these models, we assume high sc graduates have at least three distinct choices: not attending college, entering a two year college or attending a four- year college. These choices are, however, unordered and therefore we examine this behavior in a multivariate unordered model.

V- The Extension of the Model: Multinominal Logit

We start with the assumption that high school graduates are rational in the sense that they make choices to maximize their perceived utility. However, there are many errors in this maximization because of imperfect perception and optimization as well as the inability of the researcher to measure all the relevant variables. Following Thurstone (1927) and McFadden (1973) we assume that utility is a random function for such models. Suppose that a student faces 3 choices: enter a two- year collage, enter a four- year college, or do not enter college. We can define an underlying variable Y^*_{ij} to denote the level of indirect utility associated with the *j*th choice for individual *i*. The observed variables Y_{ij} are defined as:

$$Y_{ij} = 1 \qquad if\ Y^*_{ij} = Max(Y^*_{i1}, Y^*_{i2}, Y^*_{i3})$$
$$Y_{ij} = 0 \qquad \text{otherwise}$$

let $Y^*_{ij} = x_i b_j + \varepsilon_{ij}$, where x_i is the vector of individual- specific characteristics and ε_{ij} is a residual that captures unobserved variations in tastes and the attributes of alternatives and errors in the perception and optimization by the student. Given the specification of the utility function, the probability that ith student chooses the first option is:

$$(3) \qquad P_{i1} = Prob\ (\varepsilon_{i2} - \varepsilon_{i1} < x_i b_1 - x_i b_2\ and\ \varepsilon_{i3} - \varepsilon_{i1} < x_i b_1 - x_i b_3)$$

Similar expressions are obtained for P_{i2} and P_{i3}.

Luce (1959) proposed a model as a theory of psychological choice behavior. Its econometric analysis has been investigated by McFadden (1973, 1976) and Nerlove- Press (1973). A particular structural feature of Luce model termed as the independence of irrelevant alternatives is that the relative odds for any two alternatives are independent of the attributes, or even the availability, of any other alternative. This property is extremely useful in simplifying econometric estimation and forecasting.(1) From a practical standpoint the independence assumption implies that the error ε_{ij} are stochastically independent. For

1cFadden- Tye Train, 1977; McFadden 1977.

many choice problems where goods are similar in attributes, this can be shown to be an unreasonable assumption. In the case of college attendance, we assume that two- year colleges, four- year colleges and not attending college are different options for different persons in the sense that the unobserved variations of these three choices are independent. Therefore we assume that the residuals ε_{ij} are independently and identically distributed with the Weibul (type we extreme value) distribution whose cumulative distribution function, cdf, is:

$$F(\varepsilon_{ij} < \varepsilon) = Prob\ (\varepsilon_{ij} < \varepsilon) = exp\ (-e^{-\varepsilon})$$

and whose pdf is:

$$f(\varepsilon_{ij}) = exp\ (-\varepsilon_{ij} - e^{-\varepsilon_{ij}})$$

Then the probability that *i*th students chooses the first option (i.e., Eq.3) giben x_i equals

$$P_{i1} = Prob(Y_{i1} = 1 \mid X) = \frac{e^{x_i \beta_1}}{\sum_{j=1}^{\varepsilon} e^{x_i \beta_j}}$$

Equation (4) is an empirical specification of a multinominal logit model.

We examine the effect of local labor market on these three decisions made by high school graduates. The dependent variable in this model is "Type of College " which is defined as 0, 1, 2, if the student enters the labor market, two- year college or four- year college respectively. We can write equation (4) in forms of odds ratio such that:

$$Ln\left(\frac{P_{ij}}{P_{io}}\right) = x_i \beta_j \qquad j = 1, 2 \qquad i = 1, ..., N$$

where *i* represent individuals, N the number of observations, x_i the *i*th observation on a (1 by k) vector of explanatory variables. The vector b_j is a (k by 1) vector of parameters to be estimated, and P_{ij} is the probability the *i*th student falls in *j*th category.

From two equations in (5) plus the requirement that probabilities for every j sum to one determine the probabilities uniquely. The solutions are:

$$P_{io} = \frac{1}{1 + \sum_{j=0}^{2} e^{X_i \beta_j}}$$

$$P_{ij} = \frac{e^{X_i \beta_k}}{1 + \sum_{j=0}^{2} e^{X_i \beta_j}} \qquad j=1, 2$$

Following our results in the previous section we first utilize the aggregate level data for local labor markets in the multinominal logit model and then we use the teenage labor force data. The models where we use aggregate level data are presented in Table 2.10. Most of the coefficients are different from zero and significant, and some of them different from the single equation probit models. Note that in a multinominal logit procedure we normalized the coefficients of one choice (in this case the no- college option) equal to zero. The model implies that we can compute 2 log- odds ratios. Therefore, the coefficients in columns (1) and (3) in Table 2.10 corresponded to Ln (P_{ij}/P_{io}) in equation (5). The coefficients in this model are difficult to interpret directly. In order to interpret these coefficients more accurately we calculated the marginal effects and put them in the columns (2) and (4) in Table 2.10. The marginal effects of the regressors on the probabilities are

$$\frac{\delta P_j}{\delta X_k} = P_j [\beta_j - \sum_{j=0}^{2} P_j \beta_j].$$

This can be computed from the parameter estimates in columns (1) and (3). Note that for any particular x_k, Zp_j/Zx_k need not have the same sign as b_{jk} (Greene, 1993). The marginal effects can be though of as the change in the probability that student *i* makes the *j*th choice, due to changes in a specific characteristic of the person or explanatory variable.

VI- The Multinominal Logit Results

a) Using Aggregate Data (all workers)

As the first row of Table 2.10 shows, when we use the aggregate level data in a multinominal logit model local labor market conditions have an adverse effect on attending four-year colleges. These results are similar to those found in the single equation probit model and in fact the two marginal effects are very close (column 2 Table 2.6 and column 2 Table 2.10). Two- year college enrollment is unaffected by local labor market conditions, and this result is also the same as the single equation probit model. So by using the aggregate level data for local labor markets, we do not see counter-cyclical college enrollment, either in a single probit model or in a multinominal logit model. When we use the aggregate unemployment rate (SMSA level), higher unemployment rate induces lower enrollments in four-year colleges. There is no effect on two- year college enrollments.

b) Using Teenage Labor force Data

Let us now use the teen labor force data for lacal labor markets. To estimate this model we utilize the teen unemployment rates and wages calculated from the HS & B sample. As can be seen from Table 2.11, the unemployment rate in SMSAs can, at the margin, influence attending a four-year college, i.e, higher unemployment among teenagers can increase four-year college enrollment. This result supports the counter cyclicality of four-year college enrollments, though the effect is not large. In contrast, unemployment rates have a very strong negative effect on attendance of a two-year college (columns 2 and 4 in table 2.11). Two-year college enrollments are much more sensitive to local labor market conditions. A one percentage point decrease in the unemployment rate increases two-year college enrollment by 5 percent. Based on these results, as the economy recovers, two year-college enrollments increase, but the demand for attending four-year colleges decline.

The second row of Table 2.11 shows that an increase in the average wage in SMSAs affects attending four-year colleges negatively as we expected, since the opportunity cost of attending college decreases. The wage effect is positive on two-year college attendance. It can be argued that two-year colleges and four-year colleges are two different goods in terms of substitutability and complementarity to the labor markets. High school graduates look at two-year college as an opportunity that can be used along with a part time job. However, when the unemployment rate goes up four-year colleges applicants see that the opportunity cost of foregone earnings from entering college is low and they attend college instead of being in the labor force. We can say that the conditions in local labor markets have an effect on college going in two ways: higher unemployment rates reduce the opportunity costs of attending colleges and at the same time it causes difficulties for those to finance their education with a part time job, mostly two-year college applicants.

Substitution effect is positive for both the two- year college enrollments and four- year college enrollments. But in case of two- year college where it has an adverse effect, the income effect dominates the substitution effect and that is why we see the effect of local labor market conditions on two- year colleges has a sign opposite to that of four- year colleges.

VII- Conclusion

Utilizing teen labor force data instead of traditional (Aggregate level) labor market indicators we are able to measure labor market opportunities more accurately. These more accurate measures of labor market opportunities have more explanatory power than the traditional ones. Further by distinguishing between two and four- year college enrollment decisions, we allow for a different impact of labor market opportunities on these two types of schools. In a single equation probit model using teen unemployment rate and wages, we find that local labor market conditions affect four- year and two- year colleges in different ways. While four- year college enrollments tend to be higher during recessions, two- year college attendance decreases. Two year college enrollments are more sensitive to labor market conditions than enrollments in four- year colleges. We above consider this in a multivariate unordered model using multinominal logit specification. In this model the coefficient on the unemployment rate in the four- year college equation still has a positive effect. Enrollments in two- year colleges are inversely related to the unemployment rate. The average wage does not affect college enrollments in the single equation probit model. However in the multinominal logit model at the margin a dollar decrease in average wage increases probability of enrollment in two year-college by 2 percentage points. The results in our study do not support the findings reported in previous studies in which the authors have used aggregate level data for unemployment rate and average wage.

Note that in this paper we assumed that the unemployment rates and wages are measuring the opportunity cost of attening college or not entering the labor force, however, high school graduates may not make decisions based on their forgone of future earning. In other words, they may have no perception of discount rate in their mind. If that is the case, then the choices model which we have applied in this paper may not specify the determinates of choices correctly. This might be true for specific individuals, but it is not true in general and on average people make decisions considering opportunity cost of alternative choice.

One may argue that the cross section data can not properly explain the effect of labor market conditions on college enrollment. Therefore one should look at this issue in a time series analysis. In a time series data set in particular for this type of models we are faced with different individuals who make decisions in different years and we can not follow them through time. Thus, the college enrollments over time may perpetuate themselves or the variations wipe out.

The next question that comes in mind is the possibility that high school graduates migrate across the nation, if so, local labor market indices are not good measures for schooling cyclicality. Though education and age are very important determinants of migration but the rate of migration for 18-20 years old is the lowest rate amongst different groups of ages (exclude kids who are 0-15 years old). The other fact is that on average 75 percent of college students enroll in the same state in which they have graduated from high school, and this rate is 90 percent for two-year colleges.

Table 2.1
Person Correlation Coefficients
Average Weekly Earnings of 18- 24 Year Old workers and
Average Weekly Earnings of All Wokers
CPS Outgoing Rotation Group
Years 1980- 82

	MALE			FEMALE		
	1980	1981	1982	1980	1981	1982
STATE	0.72	0.76	0.76	0.80	0.79	0.80
SMSA	0.62	0.59	0.44	0.65	0.66	0.64

Table 2.2
Person Correlation Coefficients
Unemployment Rates of 18- 19 Year Old workers and
Unemployment Rates All Workers
CPS Outgoing Rotation Group
Years 1980- 82

	MALE			FEMALE		
	1980	1981	1982	1980	1981	1982
SMSA	0.574	0.441	0.570	0.579	0.452	0.572

Table 2.3
College Type and Student Status
HS & B Data

	Full Time Student	Part Time Student	Total
Four- Year College	1,940 (93.22%)	141 (6.78%)	2,081
Two- Year College	767 (67.82%)	364 (32.18%)	1,131
Total	2,707	505	3,212

Table 2.4
Summary Statistic
HS & B Sample Weighted Mean and Standard Deviation

	Four- Year (34 percent of students)		Two- Year (18 percent of students)		No College	
Variables	Mean	Std	Mean	Std	Mean	Std
Age 17	0.02	0.12	0.005	0.06	0.01	0.11
Age 18	0.80	0.37	0.77	0.41	0.66	0.51
Age 19	0.17	0.35	0.21	0.39	0.28	0.48
Female	0.53	0.49	0.54	0.48	0.49	0.53
Black	0.11	0.30	0.09	0.28	0.17	0.41
Hispanic	0.05	0.21	0.08	0.27	0.09	0.31
Other Race	0.04	0.18	0.04	0.18	0.04	0.21
Public School	0.79	0.36	0.89	0.30	0.93	0.26
Catholic School	0.14	0.31	0.09	0.27	0.04	0.22
Family Income Miss	0.08	0.26	0.12	0.31	0.23	0.45
FamInc ≤ $7, 999	0.03	0.15	0.03	0.17	0.07	0.26
$8,000 ≤ FamInc ≤ $14,999	0.07	0.23	0.10	0.29	0.13	0.36
$15.000 ≤ FamInc ≤ $19,999	0.08	0.25	0.11	0.31	0.12	0.35
$20.000 ≤ FamInc ≤ $24,999	0.11	0.29	0.13	0.32	0.11	0.34
$25.000 ≤ FamInc ≤ $29,999	0.14	0.31	0.13	0.33	0.11	0.33
$30.000 ≤ FamInc ≤ $39,999	0.17	0.34	0.18	0.37	0.11	0.33
$40.000 ≤ FamInc ≤ $49,999	0.12	0.29	0.08	0.27	0.05	0.23
FamInc ≥ $50,000	0.17	0.35	0.11	0.30	0.06	0.24
Single Father	0.02	0.11	0.03	0.17	0.02	0.16
Single Mother	0.15	0.32	0.13	0.32	0.15	0.38
No Parents	0.02	0.13	0.04	0.19	0.08	0.29
Par Ecuc Missing	0.71	0.41	0.72	0.43	0.68	0.49
Par Educ HS Dropouts	0.04	0.17	0.05	0.21	0.11	0.33
Par Educ HS Diploma	0.11	0.28	0.14	0.33	0.16	0.39
Par Educ Voc School	0.009	0.09	0.009	0.01	0.01	0.12
Par Educ Some College	0.03	0.17	0.03	0.17	0.01	0.11
Par Educ BS Degree	0.05	0.22	0.02	0.16	0.01	0.12
Senior Test Score	53.09	16.13	46.05	17.18	41.05	18.39
Senior Test Missing	0.07	0.24	0.11	0.30	0.13	0.35
Teens Unemployment Rate in SMSA As	8.34	6.17	7.64	6.32	8.83	7.87
Teens Wage in SMSA As	4.67	0.67	4.73	0.72	4.67	0.84

Reference categories are:
Age ≥ 20, FamInc ≥ $50,000, White, Par Educ > BS, Live with both parents.

Table 2.5
Probit Estimates
College Enrollment Equation

Independent Variables	Coeff(t)	Marg.Eff(t)
Unemp. Rate SMSA Level, 82 (all workers)	-0.002 (0.17)	-0.0006 (0.17)
Wage SMSA Level, 82 (Manufg) (all workers)	-0.01 (1.02)	-0.005 (1.02)
Age 17	0.17 (0.39)	0.07 (0.94)
Age 18	0.36 (2.95)	0.15 (2.95)
Age 19	0.20 (1.62)	0.08 (1.61)
Female	0.17 (4.38)	0.06 (4.40)
Black	0.27 (4.88)	0.10 (4.90)
Hispanic	0.16 (3.10)	0.06 (3.11)
Other Race	0.53 (6.99)	0.21 (7.02)
Catholic School	0.32 (7.92)	0.13 (8.14)
Private School	0.34 (2.89)	0.14 (2.90)
Family Income Miss	-0.77 (9.78)	-0.31 (9.78)
FamInc ≤ \$7, 999	-0.37 (3.62)	-0.14 (3.78)
\$8,000 ≤ FamInc ≤ \$14,999	-0.14 (4.82)	-0.16 (4.82)
\$15,000 ≤ FamInc ≤ \$19,999	-0.35 (4.17)	-0.14 (4.20)
\$20,000 ≤ FamInc ≤ \$24,999	-0.21 (2.610	-0.08 (2.42)
\$25,000 ≤ FamInc ≤ \$29,999	-0.35 (4.29)	-0.3 (4.14)
\$30,000 ≤ FamInc ≤ \$39,999	-0.24 (3.02)	-0.09 (3.44)
\$40,000 ≤ FamInc ≤ \$49,999	-0.06 (0.64)	-0.02 (0.68)
Single Father	-0.11 (0.90)	-0.05 (0.91)
Single Mother	-0.06 (1.13)	-0.02 (1.13)
No Parents	-0.35 (3.88)	-0.14 (3.48)
Par Ecuc Missing	-0.17 (1.17)	-0.07 (1.18)
Par Educ HS Dropouts	-0.46 (2.920)	-0.18 (2.91)
Par Educ HS Diploma	-0.31 (2.09)	-0.13 (2.83)
Par Educ Voc School	-0.23 (1.09)	-0.09 (1.05)
Par Educ Some College	0.14 (0.79)	0.06 (0.79)
Par Educ BS Degree	0.33 (1.820)	0.14 (1.70)
Senior Test Score	0.06 (22.86)	0.02 (23.07)
Senior Test Missing	2.81 (19.00)	1.12 (19.20)
Intercept	-2.83 (10.80)	-1.12 (10.23)
-2 Log Max Likelihood	7578.90	
Number of obs	5522	

Reference categories are: Age ≥ 20, FamInc ≥ \$50,000, White, Par Educ > BS, Live with both parents.

Table 2.6
Probit Estimates
Two- Year and Four- Year College Enrollment

	Four-Year College		Two-Year College	
Independent Variables	Coeff(t)	Marg.Eff(t)	Coeff(t)	Marg.Eff(t)
Unemp Rate SMSA 82 (all worker)	-0.006 (1.66)	-0.001 (1.66)	0.01 (1.05)	0.003 (1.05)
Wage SMSA Level,82 (Manufg) (all workers)	0.009 (2.63)	0.002 (2.63)	-0.03 (1.90)	-0.009 (1.95)
Age 17	0.47 (2.23)	0.12 (2.14)	0.05 (0.27)	0.01 (2.34)
Age 18	0.51 (3.00)	0.13 (2.79)	0.20 (1.75)	0.06 (1.67)
Age 19	0.43 (2.48)	0.11 (2.37)	0.05 (0.38)	0.03 (0.88)
Female	0.14 (3.57)	0.04 (3.50)	0.07 (2.08)	0.02 (2.02)
Black	0.57 (10.47)	0.15 (6.89)	-0.36 (6.80)	-0.12 (5.49)
Hispanic	0.04 (0.67)	0.01 (0.67)	0.10 (2.02)	0.04 (2.33)
Other Race	0.55 (7.14)	0.14 (5.61)	0.01 (1.85)	0.03 (1.90)
Catholic School	0.42 (10.30)	0.11 (6.55)	0.002 (0.05)	0.000 (0.00)
Private School	0.65 (5.66)	0.17 (4.66)	-0.39 (3.34)	-0.12 (3.26)
Family Income Miss	-0.55 (6.94)	-0.14 (5.29)	-0.29 (4.00)	-0.09 (3.79)
FamInc ≤ $7, 999	-0.18 (1.69)	-0.05 (1.67)	-0.17 (1.78)	-0.05 (1.80)
$8,000 ≤ FamInc ≤ $14,999	-0.32 (3.76)	-0.08 (3.49)	-0.05 (0.74)	-0.02 (0.70)
$15.000 ≤ FamInc ≤ $19,999	-0.36 (4.33)	-0.09 (4.52)	0.04 (0.48)	0.01 (0.47)
$20.000 ≤ FamInc ≤ $24,999	-0.37 (4.50)	-0.09 (3.99)	0.11 (1.61)	0.03 (1.60)
$25.000 ≤ FamInc ≤ $29,999	-0.29 (3.69)	-0.07 (3.38)	-0.03 (0.47)	-0.01 (0.45)
$30.000 ≤ FamInc ≤ $39,999	-0.27 (3.62)	-0.07 (3.30)	0.08 (3.26)	0.03 (1.18)
$40.000 ≤ FamInc ≤ $49.999	-0.06 (0.74)	-0.02 (0.73)	0.02 (0.18)	0.004 (0.16)
Single Father	-0.25 (1.86)	-0.07 (1.18)	0.16 (3.21)	0.05 (1.50)
Single Mother	0.01 (0.23)	0.003 (0.25)	-0.04 (3.36)	-0.01 (0.68)
No Parents	-0.15 (1.55)	-0.06 (1.51)	-0.29 (3.19)	-0.09 (3.32)
Par Ecuc Missing	-0.23 (1.83)	-0.07 (1.77)	0.18 (3.23)	-0.05 (1.36)
Par Educ HS Dropouts	-0.43 (2.90)	-0.11 (2.69)	0.02 (3.40)	0.005 (0.11)
Par Educ HS Diploma	-0.31 (2.28)	-0.08 (2.17)	0.17 (3.20)	0.05 (1.25)
Par Educ Voc School	-0.35 (1.63)	-0.09 (1.59)	0.24 (3.19)	0.07 (1.24)
Par Educ Some College	-0.09 (0.53)	-0.02 (0.63)	0.23 (3.20)	0.07 (1.28)
Par Educ BS Degree	0.19 (1.14)	0.04 (1.19)	0.16 (1.00)	0.05 (1.00)
Senior Test Score	0.07 (26.97)	0.02 (8.50)	-0.006 (3.00)	-0.002 (3.00)
Senior Test Missing	3.71 (22.37)	0.97 (7.99)	-0.33 (2.37)	-0.10 (2.37)
Intercept	-4.84 (16.51)	-1.26 (7.52)	-0.12 (2.64)	-0.04 (2.62)
-2 Log Max Likelihood	5607.60		5273.68	
Number of obs	5522		5522	

Reference categories are: Age ≥ 20, FamInc ≥ $50,000, White, Par Educ > BS, Live with both parents.

Table 2.7
Probit Model Estimates
College Enrollment

Model	Four-Year College		Two-Year College	
Independent Variables	Coeff(t)	Marg.Effects(t)	Coeff(t)	Marg.Effects(t)
Teens Unemp Rate in SMSA As	1.94 (4.04)	0.51 (3.64)	-3.53 (6.79)	-1.15 (5.75)
Teens Av. Ho Wage in SMSA As	-0.04 (1.00)	-0.012 (1.00)	0.20 (5.00)	0.07 (6.00)
Age 17	0.45 (2.14)	0.12 (2.40)	0.01 (0.05)	-0.006 (0.10)
Age 18	0.51 (3.00)	0.13 (3.25)	0.20 (1.54)	0.06 (1.50)
Age 19	0.43 (2.52)	0.11 (2.75)	0.05 (.38)	0.02 (0.50)
Female	0.14 (3.5)	0.03 (1.00)	0.06 (1.50)	0.02 (2.00)
Black	0.57 (11.40)	0.15 (7.50)	-0.35 (5.83)	-0.11 (5.00)
Hispanic	0.05 (1.00)	-0.15 (7.05)	0.08 (1.60)	0.03 (1.50)
Other Race	0.56 (7.00)	-0.06 (2.00)	-0.01 (0.14)	-0.006 (0.20)
Catholic School	0.44 (11.00)	0.11 (5.50)	-0.09 (0.04)	-0.03 (3.00)
Private School	0.68 (6.18)	0.17 (4.25)	-0.52 (0.14)	-0.17 (3.40)
Family Income Miss	-0.56 (7.00)	-0.15 (5.00)	-0.32 (4.00)	-0.10 (3.33)
FamInc ≤ $7, 999	-0.21 (2.10)	-0.06 (2.00)	-0.11 (1.00)	-0.04 (1.00)
$8,000 ≤ FamInc ≤ $14,999	-0.34 (3.77)	-0.09 (4.50)	0.003 (0.03)	0.0009 (0.00)
$15.000 ≤ FamInc ≤ $19,999	-0.38 (4.75)	-0.10 (5.00)	0.11 (1.37)	0.04 (0.13)
$20.000 ≤ FamInc ≤ $24,999	-0.39 (4.87)	-0.10 (5.00)	0.27 (3.38)	0.09 (3.00)
$25.000 ≤ FamInc ≤ $29,999	-0.31 (3.87)	-0.08 (4.00)	0.04 (0.50)	0.01 (0.66)
$30.000 ≤ FamInc ≤ $39,999	-0.28 (4.00)	-0.07 (3.50)	0.12 (1.50)	0.04 (1.33)
$40.000 ≤ FamInc ≤ $49,999	-0.07 (0.87)	-0.02 (1.00)	0.03 (0.33)	0.009 (0.30)
Single Father	-0.24 (1.85)	-0.06 (1.50)	0.11 (0.78)	0.03 (0.75)
Single Mother	0.01 (0.20)	0.003 (0.30)	-0.07 (1.16)	-0.02 (1.00)
No Parents	-0.16 (1.77)	-0.04 (1.33)	-0.29 (2.9)	-0.09 (3.00)
Par Ecuc Missing	-0.25 (1.92)	-0.06 (1.50)	0.19 (1.26)	0.06 (1.80)
Par Educ HS Dropouts	-0.45 (3.00)	-0.12 (3.00)	-0.001 (0.00)	-0.0006(0.00)
Par Educ HS Diploma	-0.33 (2.36)	-0.09 (2.25)	0.15 (1.00)	0.05 (1.00)
Par Educ Voc School	0.36 (1.71)	-0.09 (1.50)	0.22 (1.83)	0.07 (1.00)
Par Educ Some College	-0.08 (0.47)	0.02 (1.25)	0.15 (0.79)	0.05 (0.83)
Par Educ BS Degree	0.18 (1.12)	0.05 (1.25)	0.20 (1.11)	0.06 (1.00)
Senior Test Score	0.07 (35.00)	0.02 (10.00)	-0.01 (5.00)	-0.004 (4.44)
Senior Test Missing	3.73 (23.31)	0.98 (8.17)	-0.62 (4.13)	-0.20 (3.33)
Intercept	-4.63 (13.23)	-1.21 (7.12)	-1.20 (3.63)	-0.40 (3.64)
Max Likelihood	-2765.75	...	-2606.17	...
Number of obs	5522	...	5522	...

Reference categories are: Age ≥ 20, FamInc ≥ $50,000, White, Par Educ > BS, Live with both parents.

Table 2.8a
Probit Estimates
Four- Year College Enrollment Models
by Gender
t Ratios in the parentheses

Model	Female		Male	
Independent Variables	Coeff(t)	Marg. Eff	Coeff(t)	Marg. Eff
Teens Av. Ho Wage in SMSA As	-0.053	-0.01	-0.05	-0.02
	(0.79)	(0.80)	(0.71)	(0.71)
Teens Unemp Rate in SMSA As	2.05	0.74	1.81	0.57
	(3.10)	(3.05)	(2.55)	(2.38)
...	...	...	...	...
...	...	...	...	...
Max Likelihood		-1481.18		-1288.15
Number of obs		2875		2647

Table 2.8b
Probit Estimates
Four- Year College Enrollment Models
by Race
t Ratios in the parentheses

Model	Black		Non- Black	Hispanic
Independent Variables	Coeff(t)	Marg. Eff	Coeff(t)	Coeff (t)
Teens Av. Ho Wage in SMSA As	-0.10	0.04	-0.04	0.04
	(0.83)	(0.86)	(1.02)	(0.26)
Teens Unemp Rate in SMSA As	2.16	0.81	1.95	5.64
	(1.69)	(1.66)	(3.75)	(4.00)
...	...	...	...	...
...	...	...	...	...
Max Likelihood		-560.85	-223.71	-519.45
Number of obs		1071	4451	1162

Note: Reference categories are:
Age ≥ 20, FamInc ≥ $50,000, White, Par Educ ≥ BS, Live with both parents. Other independent variables are the same as in Table 2.3.

Table 2.9a
Probit Estimates
Two- Year College Enrollment Models
by Gender
t Ratios are in the parentheses

Model	Female		Male	
Independent Variables	Coeff(t)	Marg. Eff	Coeff(t)	Marg. Eff
Teens Av. Ho Wage in SMSA As	0.25	0.09	0.17	0.04
	(4.16)	(4.50)	(2.83)	(2.33)
Teens Unemp Rate in SMSA As	-4.19	1.53	-3.04	0.89
	(5.90)	(5.46)	(4.00)	(3.37)
...	...	...	...	...
...	...	...	...	...
Max Likelihood		-1388.95		-1202.39
Number of obs		2875		2647

Table 2.9b
Probit Estimates
Two- Year College Enrollment Models
by Race
t Ratios in the parentheses

Model	Black		Non- Black	Hispanic
Independent Variables	Coeff(t)	Marg. Eff	Coeff(t)	Coef(t)
Teens Av. Ho Wage in SMSA As	0.21	0.20	0.21	0.14
	(1.50)	(1.53)	(2.25)	(1.16)
Teens Unemp Rate in SMSA As	-2.23	-0.20	-3.77	-10.96
	(1.38)	(1.40)	(6.86)	(7.31)
...	...	...	...	...
...	...	...	...	...
Max Likelihood		-368.91	-2223.5	-573.08
Number of obs		1071	4451	1162

Note: Reference categories are:

Age ≥ 20, FamInc ≥ $50,000, White, Par Educ ≥ BS, Live with both parents. Other independent variables are the same as in Table 2.3.

Table 2.10
Multinominal Logit Estimates
Two- Year College, Four- Year College and No College Models

Model	Outcomes: Four-Year College		Outcomes: Two-Year College	
Independent Variables	Ln[P2t/P0t)]* (1)	Marg** (t) (2)	Ln[P1t/P0t)]* (3)	Marg** (t) (4)
Unemp.Rate SMSA Level,82 (all workers)	-0.01 (1.78)	-0.001 (2.32)	0.02 (1.31)	0.003 (1.07)
Wage SMSA Level,82 (Manufg) (all workers)	-0.09 (3.35)	-0.01 (2.92)	-0.56 (1.83)	-0.02 (2.42)
Age 17	-1.06 (3.04)	-0.25 (3.30)	0.07 (0.44)	0.96 (1.26)
Age 18	-0.77 (3.22)	-0.23 (4.46)	0.70 (2.20)	0.18 (3.50)
Age 19	-1.06 (4.30)	-0.27 (5.13)	0.41 (1.29)	0.15 (2.98)
Female	0.28 (3.70)	0.04 (2.79)	0.25 (3.06)	0.02 (1.59)
Black	0.76 (7.11)	0.19 (8.45)	-0.22 (1.70)	-0.09 (4.77)
Hispanic	0.09 (0.83)	-0.04 (1.88)	0.27 (2.57)	0.06 (3.26)
Other Race	0.99 (6.21)	0.18 (5.58)	0.57 (3.37)	0.02 (0.75)
Catholic School	0.82 (9.97)	0.17 (10.03)	0.19 (2.04)	-0.32 (2.13)
Private School	1.05 (4.54)	0.26 (5.65)	-0.32 (1.01)	-0.14 (2.78)
Family Income Miss	-1.81 (11.09)	-0.30 (8.65)	-1.37 (7.46)	-0.09 (2.94)
FamInc ≤ $7, 999	-0.95 (4.36)	-0.16 (5.82)	-0.63 (2.69)	-0.03 (0.91)
$8,000 ≤ FamInc ≤ $14,999	-1.11 (6.44)	-0.20 (5.82)	-0.62 (3.26)	-0.02 (0.65)
$15.000 ≤ FamInc ≤ $19,999	-0.99 (5.75)	-0.19 (5.54)	-0.43 (2.30)	-0.003 (0.46)
$20.000 ≤ FamInc ≤ $24,999	-1.02 (6.00)	-0.21 (6.38)	-0.23 (1.29)	0.04 (1.44)
$25.000 ≤ FamInc ≤ $29,999	-0.99 (6.15)	-0.18 (5.67)	-0.56 (3.09)	-0.04 (1.80)
$30.000 ≤ FamInc ≤ $39,999	-0.92 (5.82)	-0.18 (5.91)	-0.35 (1.98)	-0.02 (0.67)
$40.000 ≤ FamInc ≤ $49,999	-0.45 (2.40)	-0.08 (2.27)	-0.26 (1.21)	-0.03 (0.47)
Single Father	-0.67 (2.44)	-0.15 (2.21)	-0.04 (0.12)	-0.09 (1.12)
Single Mother	-0.13 (1.16)	-0.01 (0.57)	0.20 (1.64)	0.02 (1.24)
No Parents	-0.80 (4.08)	-0.11 (2.72)	-0.77 (3.68)	-0.07 (1.94)
Par Ecuc Missing	-3.20 (10.32)	-0.70 (10.43)	-1.96 (4.79)	-0.04 (0.77)
Par Educ HS Dropouts	-4.25 (10.94)	-0.77 (10.85)	-2.43 (5.63)	-0.08 (1.27)
Par Educ HS Diploma	-4.09 (10.86)	-0.75 (10.97)	-2.20 (3.38)	-0.06 (0.89)
Par Educ Voc School	-3.77 (7.72)	-0.71 (7.36)	-1.78 (3.38)	-0.009 (1.62)
Par Educ Some College	-2.99 (6.87)	-0.56 (6.90)	-1.49 (3.04)	-0.01 (0.95)
Par Educ BS Degree	-2.72 (6.34)	-0.51 (6.49)	-1.31 (2.71)	-0.01 (0.84)
Senior Test Score	0.11 (21.32)	0.02 (19.48)	0.04 (6.53)	-0.003 (2.71)
Senior Test Missing	5.19 (16.98)	1.06 (15.74)	1.58 (5.10)	-0.14 (2.50)
Max Likelihood		-4316.14		
Number of obs		5522		

*- P1t= Pr (tth Student Attends Two- Year College), P2t= Pr (tth Student Attends Four- YearCollega).

**- Marginal Effects in MNL model equals to Pj (bj - b·)Where b· = Σ^2_0 pj bj. Neither the signnor the magnitude of Marginal effects need bear any relationship to the coefficients (Greene, 1993). Reference categories are: Age ≥ 20, FamInc ≥ $50,000, White, Par Educ > BS. Live with both parents.

Table 2.11
Multinominal Logit Estimates
Two- Year College, Four- Year College and No College Models

Model	Outcomes			
	Four-Year College		Two-Year College	
Independent Variables	Ln[P2t/P0t)] (1)	Marg*(t) (2)	Ln[P1t/P0t)] (3)	Marg* (t) (4)
Teens Unemp Rate in SMSAs	-0.33 (1.63)	0.15 (2.40)	-3.17 (5.15)	-0.51 (5.18)
Teens Average Wage in SMSAs	-0.23 (4.74)	-0.05 (5.47)	0.40 (0.85)	0.02 (3.23)
Age 17	-0.71 (2.23)	-0.17 (2.71)	0.28 (0.71)	0.09 (1.57)
Age 18	-0.52 (2.45)	0.16 (3.60)	0.64 (2.46)	0.14 (3.48)
Age 19	-0.75 (3.45)	-0.19 (4.12)	0.31 (1.17)	0.11 (2.50)
Female	0.32 (4.19)	0.05 (3.93)	0.26 (3.66)	0.02 (1.87)
Black	0.84 (8.98)	0.19 (9.89)	-0.10 (0.86)	-0.08 (4.23)
Hispanic	0.09 (10.2)	-0.007 (0.36)	0.40 (4.34)	0.06 (4.21)
Other Race	0.82 (5.97)	0.14 (5.11)	0.57 (4.00)	0.04 (1.73)
Catholic School	0.81 (10.89)	0.16 (10.32)	0.33 (3.92)	-0.01 (0.16)
Private School	1.09 (5.56)	0.25 (6.64)	-0.19 (0.68)	-0.11 (2.63)
Family Income Miss	-1.86 (13.12)	-0.31 (10.59)	-1.35 (8.57)	-0.09 (3.54)
FamInc ≤ $7, 999	-1.16 (6.05)	-0.20 (5.19)	-0.72 (3.50)	-0.04 (1.20)
$8,000 ≤ FamInc ≤ $14,999	-1.20 (8.08)	-0.21 (7.25)	-0.71 (4.32)	-0.04 (1.37)
$15.000 ≤ FamInc ≤ $19,999	-1.07 (7.29)	0.020 (6.95)	-0.50 (3.10)	-0.09 (0.35)
$20.000 ≤ FamInc ≤ $24.999	-1.09 (7.55)	-0.21 (7.47)	-0.42 (2.72)	0.005 (1.20)
$25.000 ≤ FamInc ≤ $29,999	-0.92 (6.64)	-0.16 (5.83)	-0.65 (4.14)	-0.04 (1.90)
$30.000 ≤ FamInc ≤ $39,999	-0.82 (6.01)	0.09 (3.06)	-0.38 (2.45)	-0.005 (0.24)
$40.000 ≤ FamInc ≤ $49.999	-0.54 (3.39)	-0.13 (3.48)	-0.37 (2.03)	-0.02 (0.92)
Single Father	-0.67 (2.88)	-0.15 (3.12)	0.09 (0.04)	0.05 (1.45)
Single Mother	-0.65 (0.68)	-0.003 (0.14)	-0.16 (1.52)	-0.03 (1.35)
No Parents	-0.85 (5.07)	-0.13 (3.48)	-0.84 (4.62)	-0.08 (2.64)
Par Ecuc Missing	-4.08 (11.94)	-0.70 (11.36)	-2.80 (7.77)	-0.18 (3.56)
Par Educ HS Dropouts	-4.71 (13.02)	-0.81 (11.92)	-3.23 (8.55)	-0.21 (3.70)
Par Educ HS Diploma	-4.47 (12.82)	-0.78 (12.11)	-2.97 (8.07)	-0.18 (3.41)
Par Educ Voc School	-4.14 (9.37)	-0.73 (8.67)	-2.63 (5.74)	-0.15 (2.23)
Par Educ Some College	-3.63 (9.11)	-0.62 (8.62)	-2.47 (5.77)	-0.16 (2.63)
Par Educ BS Degree	-2.98 (7.53)	-0.51 (7.19)	-2.12 (4.97)	-0.15 (2.52)
Senior Test Score	0.11 (25.71)	0.02 (22.85)	0.04 (8.19)	-0.002 (2.09)
Senior Test Missing	5.48 (20.86)	1.09 (18.91)	1.74 (6.57)	-0.09 (2.01)
Max Likelihood			-4316.14	
Number of obs			5522	

*- Marginal Effects in MNL model equals to $P_j (b_j - b^{\cdot})$ Where $b^{\cdot} = \sum^{2} p_j b_j$. Neither the sign nor the magnitude of Marginal effects need bear any relationship to those of the coefficients (Greene. 1993). Reference categories are: Age ≥ 20, FamInc ≥ $50,000. White, Par Educ > BS, Live with both parents.

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