PRIVATE SCHOOLS IN THE SOUTH: IS IT ABOUT EDUCATION?

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PRIVATE SCHOOLS IN THE SOUTH: IS IT ABOUT EDUCATION?

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Rachel Karen Wyatt, daughter of Terry and Karen Wyatt, was born April 12, 1982, in Birmingham, Alabama. She was reared in Childersburg, Alabama, on a family farm that grew cotton and corn. She graduated from Childersburg High School in Childersburg, Alabama, in 2000. In August of 2001, she entered Auburn University and received a degree of Bachelor of Science in Agricultural Economics. She entered the Graduate School of Auburn University, in August of 2004. While fulfilling the requirements for a Master of Science degree in Agricultural Economics, she was employed as a Graduate Research Assistant in the Department of Agricultural Economics and Rural Sociology under the direction of Dr. Greg Traxler.

THESIS ABSTRACT

PRIVATE SCHOOLS IN THE SOUTH: IS IT ABOUT THE EDUCATION?

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The question of whether or not private schools provide a better education than public schools has been the study of many studies. The question is important because of the large amount of tax money that is devoted to public schools, and because of the impact that elementary and second education has on the workforce and the economy. The findings in past studies have been mixed. Some studies, such as Figlio and Stone (1999), have found that private schools provide a better education. They argue that private schools respond to competition in a way that public schools do not, and their analysis show that private school students perform at higher levels at lower expenditures per pupil,

especially in religious schools. Other studies have failed to find any effect of either private versus public school attendance or of difference in funding levels (Hanushek, 2001). A number of studies have examined the decision to attend a private school. Figlio and Stone (1999) found that the larger the fractions of minorities in the county, the more likely white students were to attend a private school. Long and Toma (1988) test many economic characteristics of the household that influence private-public school choice. The incorporate characteristics such as, household income, ethnicity, education and age of the head of the household head. In the South, issues of segregation and school quality are closely related to the formation of private schools. The two decades following Brown vs. Board of Education witnessed the founding of private academies in the majority of counties in Alabama, Mississippi and Georgia. Although officially open to all ethnic groups, these academies have resulted in the de-facto segregation of many rural areas. In some areas, the student bodies of the academies remain almost totally white, while public schools are dominantly African-American. One important consequence of this dual school system is that local school funding referendums often fail because those residents whose children attend private schools are unwilling to increase their own taxes to improve public schools. In smaller rural communities, this often results in two inadequately funded schools – one private academy with one or two hundred students dependent on tuition funding, and a public school funded with

inadequate local tax rates. In testing for the effect of private schooling, previous studies have not distinguished among the various classes of schools. We hypothesize that there are significant differences between older, more established private schools (for example a 100 year old Jesuit school), and a small southern "academy" to subvert integration. We use dummy variables to capture this difference, allowing the effect of attendance at a small academy to differ from the effect of a public school. The null hypothesis to be tested is that established private schools and the "segregation academies" have the same effect on Test Improvement and Income. If we fail to reject we will conclude that parents had the same motivation to send their children to attend southern private academies as parents who sent their children to other schools had – a better education. Rejection of the null hypothesis will lead us to conclude that there were different motivations.

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CHAPTER I

INTRODUCTION

This paper discusses the role that private schools play when parents choose a school for their children, with special reference to the South. It presents evidence to support two main questions. First, are parents sending their children to a private school based on factors other than school quality? Second, does attending a private school anywhere in the United States affect annual income? Private schools in the South have grown in importance since 1960. Because of the typically large areas covered by the school districts in the South, private schools have offered white families a means of avoiding integration particularly in counties with high minority concentrations. In those counties the rate at which whites enroll in private schools tends to rise with the percentage of students who are non-white (Ashley 2001, p. 70). This study examines the role private schools play with respect to school segregation. Therefore, do parents in the South choose to send their children to a private school based on only academic performance? As annual income increases private schools become financially feasible for more families. This is only one of the reasons why it is important to learn about patterns of private school enrollment.

The purpose of this study is to determine the factors that parents consider when choosing a school. Educational outcome in this study is examined through an analysis of standardized achievement test scores for 1988 -1992, using the average of the standardized test scores in the subject areas of reading, math, science, and history.

Annual income in this model is also represented by the students income at age 25 in 1999. The purpose of the income analysis is to demonstrate how education can affect income. Does attending a private school help increase annual income and provide resources that public schools cannot? This paper provides the supporting evidence to respond to these concepts.

General Objective

To determine whether parents choose a school for their children based on factors other than academic performance compared to the alternative that parents choose a school based on only academic performance.

CHAPTER II

LITERATURE REVIEW

There is a growing literature on the current trends in income and education. Much of the existing literature on the effect of educational attainment on income focuses on high school non-completion rates, expenditures, student teacher ratios, and the benefits of public versus private schools. School studies have compared income to high school drop out rates. Other studies have discussed the determinants of per capita income and how educational spending might affect it.

Private School Education History

a. History of school integration

One of the most significant events in Alabama education was the reversal of the "separate but equal" policy for schools for African American children in the state. "After a lengthy series of court battles to insure full status for black students in public institutions of higher education, the crucial case of *Brown vs. Board of Education* came before the United States Supreme Court" (Ashley 2001, p. 70). On May 17, 1954 the court declared that segregation must vanish. The "separate but equal" policy established by *Plessy vs. Ferguson* (1896) had officially come to a halt. Recognizing the revolutionary nature of its decision, the Court in a case the following year indicated that a gradual approach to desegregation would be acceptable. The majority of the Border States took relatively early action to carry out the Supreme Court's decision, but in

Alabama where African Americans were numerous, the decision met with much resistance. By the end of 1957 nine of the 17 Border States and the District of Columbia had begun integration of their school systems. Another five states had some integrated schools by 1961. The states mostly fell back on substitute measures or on pupil-placement laws, which assigned students to schools ostensibly on nonracial grounds (Clarke 1989, p. 270). Forced integration led to much violence. Groups of whites gathered in large numbers in some places in Alabama to prevent the integration of schools (Clarke 1989, p. 270). There were many events where the white people would torment the African American students. For example, when the state was ordered to admit Autherine Lucy, one of the first African American applicants, to the University of Alabama, some irresponsible students and townspeople of Tuscaloosa resorted to violence to prevent her from remaining at the University (Clark 1989, p. 270).

The dual system in Alabama was further dismantled by the Title VI of the 1964 Civil Rights Act, which banned discrimination in all federally aided projects and programs throughout the country (Clarke 1889, p. 271). This act was effective since virtually every school district in the U.S. received some type of federal aid. Alabama's two major universities, most of the smaller state colleges, and the larger public school systems were integrated by 1965 (Clarke 1889, p. 272). There were various Supreme Court decisions in the early 1970's, such as "*Singleton vs. Jackson Municipal Separate School District* which set forth black and white faculty requirements in desegregated schools and *Swann vs. Charlotte-Mecklenburg* which declared that student transportation must be used whenever necessary to eliminate racial isolation of students." (Clarke 1889, p. 273). However, desegregation of the schools systems in Alabama was not easy. Much

of the focus of desegregation efforts in the state was in small rural districts where resistance to desegregation was often the most determined and violent. In these rural districts, which is relatively easy to desegregate in the structural sense, were often the first to abandon the formal trappings of racially separate schools. Attention shifted to the urban school systems not only of Alabama and the South, but of the whole nation. In these systems the complexities of size, geography, transportation, and hypocrisy made school desegregation an issue, and demonstrated that resistance and violence were not peculiar to any one area of the United States.

White flight[1] has also affected education. American cities affected by white flight also witnessed growing disparities in the quality of education. Busing and desegregation orders in education have in some cases led to further, non-geographical white flight: out the public school systems, which are subject to desegregation order, and into private schools, which are not. For instance, in 1970, when a federal court ordered desegregation of the public schools in Pasadena, California, the proportion of white students in those schools reflected the proportion of whites in the community, 54 percent and 53 percent, respectively (Ashley 2001, p. 70). After desegregation began, a large number of whites in the upper and middle classes who could afford private schooling pulled their children from mixed public schools. As a result by 2004 Pasadena was home to three private schools, which educated one-third of all school-aged children in the city, and the proportion of white students in the public schools had fallen to 16 percent (Ashley 2001, p. 72).

[1] White flight is a colloquial term for the demographic trend of white people, generally but not always upper and middle class, moving from increasingly and predominately non-white areas.

b. How Private Schools developed in the South

The enforcement of school desegregation often is called 'school consolidation or reorganization.' *Brown I* and *II,* initially sought to merge or consolidate the 'state sponsored' dual school systems of the United States. The explicit mandate of *Alexander v. Holmes* (1969) to desegregate 'at once' applied to every school district in the country. The 1969 ruling bucked the 'with all deliberate speed' language of the past 15 years and said that every school district in the South would remain under court order until 'unitary status' was achieved as measured by statistical means. Through the leadership of Governor Wallace and with no shortage of public outrage in the Deep South, the shift from in practice dual systems resulted in a new dual school system characterized by the sudden emergence of exclusively white segregation academies (Ashley 2001, p. 65). The all-white schools placed less emphasis on quality education and more on maintaining racial homogeneity in all things education. For the majority of Alabama, the public schools never fully desegregated due to massive white-flight to private schools. As Clotfelter (2002) pointed out in his study of "Private Schools, Segregation, and Southern States," since 1960 "the rate at which whites enrolled in private schools tended to rise with the percentage of all students who were nonwhite, increasing sharply in counties over 60% nonwhite."

The first segregation academy appeared in Prince Edward County, Virginia in 1959. The school is still in operation and has actually been integrated by minority-group students (Ashley 2001, p. 65). The hard- fought school desegregation case in the county would serve as a last-resort model for southern communities and segregation academies that were willing to resist school desegregation by any means necessary. However,

chances are if a private school was around in Alabama before 1954 it had little to do with race… but if the school has only been around since 1954 it has everything to do with race.

John Herron's (1977) study of the growth of private schools in Alabama showed that from 1967 to 1971 approximately 50,000 white students left the public schools (Ashley 2001, p. 66). He found that there were 34 private schools operating in 1965 and 109 operating in 1970- an increase of 220.6% in a five year period. Walden and Cleveland's study of changes in Alabama's public schools also took notice of the educational "white flight," revealing that as the percentage of blacks in attendance at formerly all-white schools in district increased, the percentage of white students leaving the public schools increased correspondingly. However, when black students reached a percentage of the total enrollment over 50%- 1 out of 5 white students left (Ashley 2001, p. 67). By 1972, there were reportedly 140 segregated elementary and secondary private schools in Alabama with most enrollments below 200 students (Ashley 2001, p. 68).

Public and Private School Education

a. Benefits of private schooling

Neal's (1998) review discusses the benefits of private schooling. Neal discusses arguments about public and private school education through a literature review. This paper attempts to summarize Coleman's (1981) research and also to assess what has been learned since 1981. Although many questions remained unanswered, one result seemed to be clear. Black and Hispanic students in large cities often have the most to gain from private schooling. Neal pays close attention to the literature on Catholic school effects because Catholic schools constitute a large and relatively homogenous group of private

schools (Neal 1998, p.80). Neal examined how Coleman (1981) took on the task of evaluating the first wave of data, which collected achievement test scores for approximately 50,000 high school students who were in either their sophomore or senior year of high school. This author argued that Catholic and other private schools are more effective institutions of learning than public schools. Neal reports that Coleman's study concerned the relative educational performance of public and private schools. For example, Coleman established that in a population of students from similar backgrounds, private school students exhibit higher achievement and attainment. He also found that African American students in larger cities perform better academically in private schools. His results illustrate that urban minorities attending Catholic secondary schools experience a 26-percentage point increase in the possibility of graduating from high school. Coleman also includes race and community type in his research. Neal uses Coleman's research to expand on his own research, by estimating the effect of attending a Catholic secondary school on the probability of graduation. Neal believed that Catholic school (private school) attendance is beneficial to children and improves their academic future.

Figlio and Stone (1999) also determine that private schools provide a better education. They believe that private schools respond to competition in a way that public schools do not. They illustrate that private schools are superior to public schools in providing educational services. FS state that private school students perform at higher levels at lower expenditures per pupil, especially students in religious schools. They did find with statistical significance that private schools increase the probability that students will attend at least a two year college or some other academic institution. Figlio and

Stone's empirical results indicate that the higher the crime rate in the county, the more likely parents are to send their children to private schools. They also found that the more concentrated the public schools in the county, the more likely parents are to send their children to private schools, mainly nonreligious private schools. One important finding was that the larger the fraction of minorities in the county, the more likely that white students would be to attend a private school. Figlio and Stone's main empirical finding is that parents are responsive to the interactions between community characteristics and their own characteristics when considering a specific school for their children.

Long and Toma (1988) discuss the main determinants of private school attendance. They establish that public school enrollment is decreasing, so therefore private school enrollment is increasing. They test many economic characteristics of the household that influence private-public school choice. LT incorporate several socioeconomic characteristics of the household that influence private-public school choice. Annual household income is expected to affect private school attendance positively. Annual income in any year is an inexact measure of "permanent" income. The authors include education and age of household head, along with homeownership, to proxy for permanent income. They hypothesize that parents with a higher education are more likely to have a higher demand for private schools. Demographic influences on the demand for private schooling are captured by including dummy variables indicating whether the household head is white or female. They also considered the influence of school choice by regional and urban locations as well as southern central city and non-southern central city using dummy variables (Long and Toma 1988, p.352). Income is highly significant in LT's model, implying that the demand for private schooling rises as

household income increases. LT also estimate how central city public schools have a higher crime rate, which allows private schools to appear to be a better alternative (Long and Toma 1988, p 353). They determined that public-private school choice is influenced by many demand factors such as income level, educational attainment, and race. Long and Toma found that the private school attendance gap between low and high-income households and between white and nonwhites were smaller in 1980 than 1970 (Long and Toma 1988, p 356).

b. Benefits of public schooling

Hanushek's (1986) study examines research on the economics of education and schooling. Hanushek discusses public school education policies. He states that total spending on elementary and secondary public schooling is currently equal to about 4 percent of the gross national product (Hanushek 1986, p.1143). One important factor in public schools is the rise in per pupil expenditures in elementary and secondary public schools. He illustrates how the student teacher ratio was greater in public schools than in private schools during the 1960s and 1980s. He also demonstrates that more than half of public school teachers in 1983 held at least a master's degree (Hanushek 1986, p.1145). Hanushek felt it was necessary to consider standardized test scores in his research. Test scores might be a better indicator of learning in the earlier grades, where the emphasis tends to be more on basic cognitive skills of reading and arithmetic than in the later grades. Hanushek establishes that more education and more experience on the part of the teacher costs. Smaller classes (more teachers per student) should not have any influence on the improvement of an individual student learning. Hanushek demonstration explained that school inputs do not have an affect on student improvement.

Flower (1988) argues that tuition tax credits would provide stronger competition within the private sector. However, Flower establishes that tuition tax credits actually decrease the quality of public education. Flower discusses how parents have a negatively sloped demand curve for educational quality. If public school quality is below standard, parents will be more likely to send their children to a private school. On the other hand, if public educational quality exceeds their standards, parents will be more likely choose a public school for their children's education (Flower 1988, p.92). He believes poor quality is due to institutional problems rather than technological problems. Flower illustrates how every child in the public school system receives the same quality, but that the parents can alter that quality by choosing to place them into a private school (Flower 1988, p.94). Flower describes how public schools are required to accept any child within that school district who wants to attend. This is an important budgetary cost of the school's quality. Flower determines that the quality of education in the public system is low because decision makers are not confronted with the private costs that correspond to the school's marginal costs.

Belfield (2002) argues that in the educational sector, "consumers" are parents/children and "suppliers" are schools/districts, so more competition should translate into higher quality schooling and enhanced educational outcomes (Belfield 2002, p.279). The research reviewed here examined competition among U.S. schools and school districts. It spans 1972 to 2002 and includes only studies with an explicit measure of competition. Belfield answers the question of what "competition" in the education sector mean. He states that an education market exists whenever parents have a "choice set" of providers. In the U.S., parents may choose between 1) public and private schools,

2) among public school districts, 3) among public schools within a given district. When there are more choices, there is more competition, but the presence of many choices does not necessarily ensure greater competition. The second question Belfield examines is "does more competition raise test scores?" In many cases, tests were higher where there was more competition (Belfield 2002, p.280). The third question discussed was whether more competition could improve education in other ways. For example, if competition motivated schools to offer a better education, students may respond by remaining enrolled or by applying to college in greater numbers. The fourth question asks about the reliability and validity of the evidence on competition. Belfield found that where school quality is low, more families choose private schools, so it appears that competition influences school quality (Belfield 2002, p.281). Overall, the evidence discussed in this study suggests that increasing competition-either intra-district or from private schools-may raise effectiveness and efficiency of public schools, and may address other educational objectives.

Chambers (1976) discusses how teachers' salaries vary across school districts and teacher characteristics. He reviews researchers' work and demonstrates that the major impact of bargaining for teachers has been on a regional rather than on a district level (Chambers 1976, p.325). Bargaining does have a substantial and significant effect on teachers' yearly wages. His focus is on the impact for individual public schools. He discusses two major concerns for school decision makers. One concern is the allocation of educational resources among the various educational inputs. The second concern is the allocation of community resources between education and all other goods and services (Chambers 1976, p. 327). Chambers found that bargaining power could affect

the allocation of resources in many ways. The greater the relative bargaining powers of the teachers' union, the greater the extent to which the constraints will confine district decision making (Chambers 1976, p. 330). As regional strength of the teachers' union increases, teachers' salaries will tend to increase in both bargaining and non-bargaining districts (Chambers 1976, p. 328). The observed salaries of school personnel employed in district *i* are written as follows: $Wi = Wi + B_1 fi + B_2$, where B_1 measures the salary differential between bargaining and non-bargaining districts (referred to as the *district effects* of bargaining); *fi* is a dichotomous dummy variable which equals one if formal negotiations occurred in district i and zero otherwise; and B_2 measures the extent to which the salaries in nonbargaining districts exceed those that would have prevailed in the absence of bargaining in the region (Chambers1976, p. 328). Collective bargaining has a positive and statistically significant impact on teachers' salaries. Teachers' salaries have increased by 5.7% and 12.2% in unified and elementary public school districts, respectively (Chambers 1976, p. 331). Chambers shows how this only occurs in public school districts and not in private schools.

c. Decisions determining the choice between public and private school attendance

A parent's goal is to find a school that will meet their child's needs. There are many differences between public and private schools. For example, public schools cannot charge tuition. Public schools are funded through federal, state, and local taxes, white private schools are funded through tuition, fundraising, donations and private grants. According to the National Association of Independent Schools, the median tuition for private day schools in the United States is close to $12,000 for grades 1 to 3, $13,000 for grades 6 to 8 and $15,000 for grades 9 to 12 (Belfield 2002, p.282). The

median tuition for boarding school is $12,000 for grades 1 to 3, $27,000 for grades 6 to 9, and $28,000 for grades 9 to 12. There are many differences between public and private schools. Admissions are a major difference between public and private schools. Public schools admit all children. By law, public schools must educate all children, including students with special requirements, whereas private schools are selective. They are not obligated to accept every child, and in many private schools admission is very competitive. The government has certain guidelines that public schools must follow. Public schools must follow all federal, state, and local laws in educating children. Such laws usually include specifics about funding, program development and curriculum. Private schools are not subject to as many state and federal regulations as public schools. Since private schools are funded independently, they are not subject to the limitations of state education budget and have more freedom in designing curriculum and instruction.

Per Capita Income vs. Education

a. Determinants of per capita income

Fullerton (2001) discusses the impact of education on per capita income. Fullerton compared the size of Texas counties to the level of per capita income in each county. He finds that low high school completion rates have a significant negative impact on per capita income in the state of Texas. Fullerton compares county dropout rates to total enrollment in each school. He finds that reducing the dropout rate to a level proportionate with the rest of the state would increase per capita income by more than $2,600 in 1990. Fullerton also states that greater public infrastructure investment to improve transportation and communication links with the rest of the state would reduce school dropout rates and increase income.

Cox (1995) compares per capita personal income to the roles of the women and their education in Kentucky. Kentucky's per capita income was about 80% of the national average in 1995. While per capita income in other Southern states, such as Georgia, and Louisiana, has increased relative to the national average, Kentucky's fell in the mid-1980s before returning to around 80% in 1995. Kentucky's average income failed to rise at a rate that would move it toward the national average. Increasing labor participation by females who have a low education level has a strong influence on the failure of earnings to rise as they take low-skill, low-paying jobs. Cox suggests that unless the educational attainment of Kentucky's adult population is improved, per capita income may not rise in the future. This suggests that one means of improving Kentucky's per capita income performance is to improve the educational attainment of its adult population.

Ferguson (1997) examines Alabama's per capita income and educational attainment in 1997. Ferguson shows that Alabama's per capita income in 1997 had fallen compared to the national average. Alabama continues to lag behind the national income average. Ferguson states that Alabama's income gap is due to the type of industries that dominate Alabama's rural industrial base. Rural Alabama is dominated by low skill, low wage industries-characteristics of a poorly educated workforce (Ferguson 1997, p.1). Alabama is in fact located in one of the fastest growing regions of the country. This suggests that the state should not continue to under-perform the nation as a whole. Ferguson's study demonstrates that educational attainment in the state has increased in the last 30 years, but has not caught up to the national average. In 1998, 78.8% of adult Alabamians had at least a high school education compared to 82.8% of the rest of the

United States (Ferguson 1997, p.2). Ferguson compares educational attainment in both rural and urban counties. He found that the average educational attainment of adults in the urban counties is significantly higher than that of the adults in rural counties. Therefore, Ferguson implies that rural counties in Alabama ignore the quality of education. He also questions why, in times of need, public tax referendums are frequently defeated in urban schools.

Rupert and Schweitzer (1996) discuss how the decision to further one's education is based on expected future financial gain. An individual must compare the expected return less the cost of that education to the net return to no further education. Economists measure the return to education using an empirical earnings function. Some specifications discussed in this article were used to measure wage differences among occupations, races, and sexes. They examine a standard empirical earnings function, concentrating on the increase in income due to more education (Rupert and Schweitzer 1996, p. 1101). Several empirical and conceptual issues were addressed in this article. One issue was how education should enter into an analytical framework, so that the return to schooling can be estimated properly (Rupert and Schweitzer 1996, p. 1102). The second issue was separating the return to education from other factors, such as experience in the workforce (1102). It was found that more people between the years of 1963 and 1993 are continuing education past the undergraduate level. RS considered a standard model relating education, experience, and earnings (1974). Their findings illustrate that the median (gross) earnings for college graduates (16 years of education) are roughly 60 percent higher than those of high school graduates (12 years of education), while high school dropouts earn about 32 percent less than individuals who have a high

school diploma (Rupert and Schweitzer 1996, p. 1107). In 1963, 42 percent of the fulltime workforce consisted of high school dropouts; by 1993, this figure had fallen to 11 percent (Rupert and Schweitzer 1996, p. 1110). The fraction of workers with only a high school diploma also declined over this period from 36 to 34 percent. The share of the workforce holding a college degree rose from 7 to 18 percent, and the fraction with some post-graduate studies shot up from 3 to nearly 9 percent (Rupert and Schweitzer 1996, p. 1110). The change in measured experience fell by about fours years, from 24.1 to 19.8. This decline in labor market experience is the result of additional education requiring time out of the labor market, since RS measure experience as age minus years of education. Even so, completing some college level courses does increase earnings by about 20 percent compared to people who only graduated from high school. Completing college or graduate school increases the return to nearly 60 percent (Rupert and Schweitzer 1996, p. 1111). In 1963, high school dropouts earned about 22 percent less than high school graduates; by 1993 they were earning about 32 percent less (Rupert and Schweitzer 1996, p. 1112). RS also concentrate on the sex and race effects. In 1963, blacks were paid roughly one-third less than whites (Rupert and Schweitzer 1996, p. 1113). By 1973, the gap had narrowed to about 20 percent, and by 1993, to about 16 percent.

Goetz and Freshwater (2001) discuss explanations of differences in economic growth rates. They use a conditional convergence growth model which has introduced the possibility of incorporating a wide set of factors as determinants of growth. They formulated a county-level empirical growth model that relates local per capita income growth to the social and institutional dimensions of a locality. GF found that investment

in human capital; accessibility and adjacency to urban areas are more beneficial for economic growth. Their empirical results indicate that, ceteris paribus, social and institutional variables explain some of the differences in convergence rates among counties in the United States. For example, ethnic diversity is associated with faster rates of economic growth, higher levels of income inequality are associated with lower growth rates, and higher levels of social capital have a positive effect on economic growth rates (Goetz and Freshwater 2001, p.144). The neoclassical growth model suggests that poorer countries and regions should grow faster than richer countries and regions, and poor countries and regions should eventually catch up based on the assumption of decreasing returns to capital (Goetz and Freshwater 2001, p.145). Convergence in most cases is slow enough that the impact is far less than expected. Convergence is conditioned by various factors such as property rights, trade barriers, transaction costs, government policies, income inequality that impedes development, weak legal and business institutions, capital market imperfections and cultural differences (Yeager 1999). This article contributes to the conceptual and empirical debate on the importance of income inequality, ethnic divisions, and social capital in stimulating local economic development in the United States. The results support the argument that ethnic diversity in a locality is conducive to economic growth, because costs associated with spatial mismatch[2] are lower in more ethnically diverse communities (Goetz and Freshwater 2001, p.146). The estimated effect of income inequality on the growth process was found to be negative and significant for U.S. counties, even after accounting for the effect of all other explanatory variables. Counties with a higher income inequality experience slower income growth.

[2] The less likely a community will become more diverse within a county.

Their results expose that the traditional county level ordinary least squares model is misspecified due to the presence of spatial dependence[3]. GF's results confirm some of the major findings of the existing convergence literature, such as the negative impact on conditional convergence and a positive impact of education. They also provide new evidence for some of the previously considered variables.

Durden and Gaynor (1998) measure the costs, in reduced yearly earnings, of being black or Hispanic (Durden and Gaynor 1998, p.95). DG wanted to see if earnings differentials by gender are greater than race or ethnic-based differentials, they then argue that gender specific policy tailoring might be needed. They also demonstrate that if earnings differentials for black and Hispanic females exceed pure gender differentials, the extra gap is assumed to be the negative result of being neither white nor male. DG's model is based on standard human-capital theory, and ordinary least squares is used for the empirical model. A significant difference in earnings exists between white males and all others, but when the earnings of black and Hispanic males are adjusted for differences in labor market characteristics the total earnings differentials disappear (Durden and Gaynor 1998, p.98). This was not found to be true for white, black and Hispanic females. The total earnings difference for white or black females is nearly twice that for black males and Hispanic males are even greater. Durden and Gaynor found that white male-other group earnings gaps still exist, and that the cost of being black or Hispanic is far less than the cost of being female.

[3] A U.S. Study by Rey and Montouri (1999) illustrated how although the regional convergence phenomenon has geographical dimensions, spatial effects have largely been ignored in the literature.

Public and Private School Education

a. Public vs. Private Education

In his article Sonstelie (1982) introduces how public schools in California are not free. He implies that parents who send their children to public schools impose a cost on society as a whole, because scarce resources are employed in these schools. From a parent's perspective, public schools are free. A family may have been taxed to support those schools, but it gains no additional cost if it sends its children to a public school nor is it relieved of any of its tax burden if it enrolls its children in a private school (Sonstelie 1982, p. 794). This discrepancy between the social and private costs of public schools can lead to an inefficient distribution of students between the public and private sectors. The welfare cost of the inefficiency is defined as follows. Let a family's pubic school surplus be the maximum it is willing to pay to enroll its child in public school rather than in a private school of his or her choice (Sonstelie 1982, p.794). The private schools vary in quality, and the tuition of each reflects its quality. The alternatives are therefore a tuition-free education in the public sector, and the opportunity to buy an education of higher quality in the private sector. Sonstelie analyzes the choice between these alternatives. He views it as a derived utility, $U(x,y)$, from two sources: the quality of its child's education , y, and the income available to spend on all other goods, x (Sonstelie 1982, p. 795). He let q be the quality of the local public schools, and let w be the family's income after taxes (Sonstelie 1982, p. 795). Therefore, its utility is $U(w,q)$. The family's utility from opting for a private education is $u^* = U(w - py^*, y^*)$, where y^* represents the quality of the private school and p represents the price of education quality in the private sector (Sonstelie 1982, p. 796). For that reason, it will choose a public

education for its child if and only if $U(w,q) > u^*$. Sonstelie establishes that free public schools give rise to a welfare cost, which is the difference between the cost of educating a child in public schools of quality, and the surplus the family derives from sending its child to public schools of quality rather than private schools of its choice (Sonstelie 1982, p. 796). He believes parents will choose public schools if and only if their utility, which consists of the family's income and quality of the school, exceeds the price and quality of the private school. Parents' choice between a public and private sector education is based on the quality of the school. Sonstelie found that welfare costs in California are substantial and are due mostly to lower unit costs in the private sector. He establishes that families in California who are most apt to send their children to private schools might be expected to locate in communities where the quality of public schools is low.

Figlio and Stone (2002) discuss whether local policies can improve the competitiveness of public schools in retaining students, particularly those students most likely to opt out- white, high-achieving students from well-educated, high-income families. This paper examines the role of local policies and attributes, as they interact with individual student characteristics in determining the composition of public and private- school enrollments in particular communities (Figlio and Stone 2002, p.76). They talk about other studies that utilize data on student and family characteristics in eight New York metropolitan areas. They argue that race plays the most important role. FS data came primarily from the restricted- access version of the National Educational Longitudinal Survey, conducted by the National Census of Education Statistics of the U.S. Department of Education (Figlio and Stone 2002, p.77). Their model estimates the probability of student enrollment in a public or private school in the tenth grade using

individual student, family and community demographic and school characteristics, with a special emphasis on the interactions between individual and local policy-related variables (Figlio and Stone 2002, p.77). FS adopt a standard set of family and demographic variables: variables reflecting gender, race, Hispanic ethnicity, the student's family income, parental education, parental frequency of religious attendance, variables reflecting whether a male or female parent or guardian lives in the student's home, an indicator for parental marital status, the number of siblings, fifteen religious denomination variables, the student's eighth-grade mathematics test score, and nine Census-sub region dummies reflecting unobserved regional variations in relative probabilities of school- sector choice (Figlio and Stone 2002, p.78). FS find that local violent crime rates, school districts, concentration, and student-teacher ratios in public schools, have a powerful role in determining the composition of public and private schools-especially in retaining those students most likely to opt out of public schools (Figlio and Stone 2002, p.78). This article found that high-achieving students and students from higher income, better educated families, or families where at least one parent attends church regularly are more likely to attend a private school. They also found that the more concentrated public schools are in a county, the more likely students are to select into private schools.

Hamilton and Macauley (1991) discuss how published studies have generally used standardized test scores, or their year-to-year improvements, to measure inputs and outputs of education. Yet it has long been recognized that these indices poorly represent the product demanded by parents. HM specify an optimization model for the household facing a choice between public and private schools and derive an estimating equation that

enables them to make inferences about parameters of both education technology and demand. The key variables discussed in the model are mean household income and its standard deviation within a school jurisdiction. It was hypothesized that income dispersion plays a role in the technology for public (but not private) education. The standard deviation was included in the model to capture the nonlinear effect of (income-proxies) student's peer group on achievement. Both income measures were found to be statistically significant (Hamilton and Macauley 1991, p.283). This approach to school "output" bypasses a difficult measurement problem in investigating the technology and demand for education. The demand for education takes the following form*:* $q_d = y\alpha_1 p\alpha_2$, where income and price elasticities are represented by α_1 and α_2, respectively (Hamilton and Macauley 1991, p.283). The technology assumes slightly different forms for public and private education. HM express it as a cost function. For public schools, $p = p_0 \hat{y}^{\delta 1}\sigma^{\delta 2}$, where $\hat{y}$ is the mean income of public-school patrons and σ is the standard deviation of income (Hamilton and Macauley 1991, p.284). The private school patron is represented by $p = p_0 y^{\delta 1}$, where y is the income of the individual demander (Hamilton and Macauley 1991, p.284). The model of household choice between public and private schools allows us to infer parameter values without having to measure achievement or other dimensions of school quality. HM investigation also suggests that income and its standard deviation within a school jurisdiction are significant factors in the education production technology. Some parameters do have large effects on the cost of producing education.

Another article that discusses the choice between different types of schools is Lankford and Wyckoff (1992). They use the history of public-private school choice to empirically investigate the determinants and consequences of public-private school choice. The empirical results of this article focus on the choices made by individual families. The model specifies the examples of school inputs, school orientation and environmental inputs and how these aspects may be pertinent for families selecting among school alternatives. Other attributes of the model include school staffing levels and quality, quality of facilities, and academic standards and curriculums. LW's empirical model of how families choose among school alternatives is based upon the theoretical model and data that measure the factors hypothesized to affect school choice (Lankford and Wyckoff 1992, p.317). They posit a rational model of choice: each family of a school-age child is assumed to evaluate its restricted set of mutually exclusive school options and to select the alternative that maximizes its utility (Lankford and Wyckoff 1992, p.318). They use a set of alternatives represented by J where U_{mj}, $j = 1, 2 \ldots J$, is the utility of the *mth* household that would result if the *jth* school alternative were selected (Lankford and Wyckoff 1992, p.318). Alternative i is chosen if and only if $U_{m1} > U_{mk}$ for all $k \neq i$ (Lankford and Wyckoff 1992, p.318). The specification of U_{mj} is to be a function of school attributes the bundle of other goods and services consumed by the household and its tastes and preferences (Lankford and Wyckoff 1992, p.318). LW implied econometric specification is a random utility model, where the probability that the *mth* household selects the *ith* school alternative is $P_{m1} \approx P(U_{m1} \geq U_{mk}$, *for all* $k \neq i)$ (Lankford and Wyckoff 1992, p.318). LW felt that each attribute can affect how well a student achieves academic goals. Average scores on standardized tests and college

attendance rates for a school were considered as two potentially important alternatives for such environmental factors. However, test scores are important when deciding between public and private school education. One important factor when sending a child to a private school should be the potential for the child to flourish intellectually or emotionally in public schools.

Economic Factors that Affect Education

a. Effects of dropout rates in High School

Domazlicky (1996) measures the cost of high school non-completion in Southeast Missouri. This article introduces the counties' average rate of high school non-completion. Domazlicky proposed that there are many significant economic and social costs associated with high school non-completion. His economic model developed cost measurements of high school non-completion. His model found that for every percentage point increase in a county's high school non-completion rate, per capita income in the county falls by $52. As a result, the high level of non-completion rates in Southeast Missouri led to a loss of over $400 million in total income in the counties that were studied.

Lillard and Decicca (1988) provide evidence that suggests students are more likely to drop out when they face higher standards. This implies that individuals are more likely to drop out of high school in states with higher course graduation requirements (CGR). LD's data consist of aggregate data on dropout rates from 1980 through to 1994. In their empirical investigation they confront three potential estimation issues: omitted variables bias, the endogeneity of the policy variable of interest, CGR's, and estimation of proper variances (Lillard and Decicca 1988, p.462). Based on these issues the general

estimating equation is: Pr (dropout) = $\beta_o + \beta_1 CGR + \delta W + \varepsilon$, where CGR is the course graduation requirement, W is the expected wage and ε is a person-specific residual term (Lillard and Decicca 1988, p.462). They found that in 1989 the average annual earnings of male dropouts between the ages of 18 and 24 were $8,046 (Lillard and Decicca 1988, p.463). LD found that high school graduates earn about $11,741. LD state that individual dropout students believe they receive one more year of earnings than graduates, however, their extra earnings will be wiped out in about two years. They establish that from the point where the student drops out of school, they lose an average of $3,700 per year (Lillard and Decicca 1988, p.464). LD calculates the potential losses dropouts might suffer when graduation requirements are raised. Their main concern is to investigate whether changes in graduation requirements affect decisions to remain in school. Therefore, based on their evidence, it is implied that more people will drop out of high school if requirements are raised.

Betts and Grogger (2003) emphasize their empirical work on the effects of higher grading standards. They established that many economists focus on readily measurable inputs, such as class size. Relatively little has focused on the incentives that schools create for their students. A common finding is that higher standards may help some students at the expense of others (Betts and Grogger 2003, p.343). For example, higher standards may lead more motivated students to increase effort; they may cause others to give up as the standard moves beyond their reach. BG expands on existing empirical work in two ways: First, they analyze the effect of schools' grading standards on a number of educational outcomes (Betts and Grogger 2003, p.343). They estimate the effects of higher standards not only on test scores but also on high school graduation,

college attendance, and entry-level earnings (Betts and Grogger 2003, p.344). Secondly, they consider the consequences of higher standards. BG first use regression methods to estimate effects at different levels in achievement distribution. Then they categorize the sample by race/ethnicity to decide whether higher standards have adverse consequences for minorities. BG use data from the Cohort of High School and Beyond Survey, which provides a sample of approximately 15,000 students from 1000 different schools (Betts and Grogger 2003, p.344). They use regression methods to construct grading standards for each school. The school's grading standard is the achievement level needed for students to receive any given grade (Betts and Grogger 2003, p.334). This measures how strenuously the school grades its students, relative to an objective measure of student achievement obtained from standardized tests. For example, one school generally gives B's to students who score in the 75th percentile on the nationwide test, whereas a second school generally gives such students C's, then the later school has higher grading standards (Betts and Grogger 2003, p.334). BG construct grading standards using regression methods which demonstrate the impact on educational outcomes. Their model followed this format: $y_{ij} = \delta\acute{\alpha}_j + X_{ij}\Phi + Z_j\theta + u_{ij}$, where y_{ij} is the outcome measure for the ith student in the jth school, X_{ij} is a vector of student background characteristics, Z_j is a vector of school characteristics, and u_{ij} is a disturbance term (Betts and Grogger 2003, p.336). The terms $\theta,\delta,\Phi,$ are the parameters to be estimated, where δ gives the effect of a unit change in the grading standards on the educational outcome (Betts and Grogger 2003, p.336). BG results explain that higher grading standards do raise test scores, and they have no significant effect on educational attainment. They believe that this mystery could be due to the fact that grading standards have their greatest effect among the

students who are the most likely to graduate (Betts and Grogger 2003, p.339). Therefore, one might imagine that large effects on test scores could lead to increases in graduation rates. However, the effect of grading standards at the bottom quartile is relatively small, which may explain why they have little effect on graduation rates.

b. Effects of Educational Spending

Weiss (1970) examines the effect of schooling and learning on the level of workers' earnings. He obtained his data from *Equality of Educational Opportunity,* which measures the effect of educational attainment and various other personal characteristics on the earnings of those with twelve or fewer years of schooling (Weiss 1970, p.150). Weiss discusses the specification of the earnings functions and the significant relationship that exists between an individual's scholastic achievement and their earnings. Weiss uses an earnings function to test his hypotheses. He estimates: $Y= B_0 + B_1M + B_2A + B_3Mw + B_4W + B_5V + B_{0E}$, where the Y represents annual earnings in 1959, M is whether or not the individual is married, A represents age, Mw represents whether the individual's work place in a metropolitan area or outside a metropolitan area, V represents whether the individual is a veteran or not, and B symbolizes estimated achievement in school (Weiss 1970, p.150). Weiss uses the achievement variable in his model because he believes it is a better measure of skills or productivity than merely the number of years in school. It allows him to take account of well-documented variations in school achievement in evaluating the effect of education upon earnings. Weiss uses two different types of earnings functions. He estimates white and blacks earnings separately. He compares his estimates and establishes that the achievement of blacks is generally much lower than that of whites at every grade level

(Weiss 1970, p.154). However, it is important to understand that this low achievement level is positively related to the generally low earnings of blacks. Weiss finds that from an average year of school, a black gains only 0.5 to 0.8 units of achievement (Weiss 1970, p.155). He also found that the employment variable, which is estimated in the black earnings function, accounts for all the explained variance for blacks. This aspect establishes that lower black levels of earnings cannot be completely explained by their lower achievement. Two of Weiss's hypotheses tested in this study (a regular and significant relationship exists between scholastic achievement and earnings and achievement explained more of the variance in earnings than does the number of years in school) were only substantiated for whites (Weiss 1970, p.159). However, for blacks only one out of four age groups considered demonstrated that years of schooling or achievement is positively related to earnings. Not surprisingly, a black has lower earnings than a white with the same years of schooling. This suggests that the solution to black poverty is outside the classroom

Ribich and Murphy (1975) discuss the effectiveness of schools producing learning and other beneficial outcomes. They find that extra educational spending does lead to greater lifetime income, but that the income gain is less than the amount of the extra spending required to induce it. RM decide to estimate their model using the human-capital approach and the production function approach. Through their models they try to explain the monetary earnings of individuals. They propose that individuals' earnings are in large part determined by his or her ability, aptitude, and achievement, the time spent in formal or informal educational training, the cost and quality of that schooling and training, the socioeconomic status of the parents, and the socioeconomic status of

"others" closely associated with during the "formative years" (Ribich and Murphy 1975, p.58). RM considers these variables to be the "supply side" variables. By testing their models they hope to explore the possibility that this lack of influence on test score performance does not necessarily mean that increased expenditure yields no long-run benefits whatsoever (Ribich and Murphy 1975, p.59). RM demonstrate that expenditures per student are positively related to test scores in the ninth grade, years of schooling completed, and lifetime income (Ribich and Murphy 1975, p.64). Therefore, test scores are positively related to years of schooling completed and to lifetime income. RM's study establishes that more spending on educational attainment does give rise to increased earnings mainly through the indirect effect of increased educational attainment, except in those subgroups where sample bias and the range of spending variability is small (Ribich and Murphy 1975, p.74). Their results suggest that the emphasis of past studies on the test scores in the evaluation of schooling changes is inappropriate. Even when the test score changes associated with a schooling change are negative, the measured long-term effects on important aspects such as school continuance and on lifetime income may be sufficient to validate undertaking the change anyway.

Bowels and Levin (1968) discuss how per-pupil expenditures and school facilities show very little relation to student achievement levels, and the effect of a student's peers on his achievement level is more important than any other school influence. Their paper scrutinizes the data and the statistical analysis on which these findings are based. It is suggested that because of poor measurement of school resources, inadequate control of social background, and inappropriate statistical techniques used in the presence of interdependence among the independent variables, many of the findings of the report are

not supported (Bowels and Levin 1968, p.4). For example, the survey revealed a significant amount of segregation in the North as well as in the South, relatively minor differences in the measured characteristics of schools attended by different racial and ethnic groups, and very great differences in the achievement levels of racial and ethnic groups throughout the county (Bowels and Levin 1968, p.4). BL confine their attention to that section of the study that examines the relation of school and student characteristics to scholastic achievement. They found that most of the conventional measures of school resources – per-student instructional expenditures, facilities, pupil-teacher ratio, and curriculum – accounted for very little of the variance in achievement scores of students. BL use linear regression to relate achievement to student background and school characteristics is the linear regression model (Bowels and Levin 1968, p.6). Their model illustrates that school inputs and the social background and attitude characteristics of the students and their peers can be used to predict current school outcomes, as measured by achievement scores. This model implies that a student's achievement level is merely the sum of the independent effects of each school resource and background variable, plus a constant (Bowels and Levin 1968, p.9). BL attempted to show from a previous study that both the measurement of the student was inadequate, and that the statistical techniques were inappropriate. The study they examined stimulated a great deal of thought and new research efforts to uncover the largely unknown and complex relationships among family, school, and community influences on one hand, and educational outcomes on the other (Bowels and Levin 1968, p.10). BL study did not provide answers to their questions; it did bring them closer to being able to use large scale research efforts as a basis for making intelligent policy decisions for our schools.

Rhine's (1989) main purpose in her study is to investigate whether or not performance differences exist between students in a mandated and non-mandated[4] environment. For several decades, economic educators have attempted to identify factors that influence a student's performance in economics. Several Studies suggest that learning economics, as measured by performance, is enhanced by various attributes such as maturity, ability, effort, and curriculum preferences (Rhine 1989, p. 231). Socioeconomic factors such as family income and parental occupation also appear to have an important impact on a student's ability to understand economics. The evidence in this article suggests that being male may have a positive effect on the initial level of performance (for-example, a pre-test) but little, if any, effect on final performance (a post-test score). Student performance is analyzed through a descriptive model of learning which is defined as $L = f[HC, Q, E, M]$ where L= learning, HC = vector of human capital characteristics, Q = vector of teacher quality characteristics, E = environment factor(s), and M = state mandate (Rhine 1989, p. 232). According to the model, learning is dependent upon various human capital characteristics, the quality of instruction, the learning environment, and the presence of a state mandate. For example, some human capital traits are aptitude, and personal characteristics include sex and race. The overall number of years of experience of the teacher is included in the vector Q. Environmental factors (E) include the size and location of the school district. The hypothesis tests whether or not performance differences exist between students in mandated and non-mandated environment. Rhine emphasizes that when estimating a student's performance it is important to control for a student's initial level of aptitude. Students with a higher

[4] Definition: To make mandatory, as by law; decree or require.

aptitude for economics are expected to perform better than students with a lower aptitude (Rhine 1989, p. 233). Since student aptitude is unobservable, a two-stage least square (2SLS) technique is used to avoid simultaneous equations bias. Using pre-test and post-test performance as the students' aptitude and performance measures, a two step system is specified as Pre test = $\alpha_0 + \alpha_1 X + \mu_1$ and Performance = $\beta_0 + \beta_1 X' + \beta_2 PRETEST + \beta_3 M + \mu_2$, the vectors of human capital, teacher quality, and environmental characteristics are represented by *X* and *X*' (Rhine 1989, p. 233). Rhine's results suggest that structural differences in performance do exist between students in a mandated and non-mandated environment.

Hanushek (2004) states that the starting point of his debate has been an empirical finding-that resource for schools do not appear closely related to student performance. He establishes that data on school resources and student performance have been available for a substantial period of time. He found that there has been a dramatic increase in the resources for schools between 1960 and 2000. Pupil-teacher ratios have fallen by a third; the proportion of teachers with a master's degree has more than doubled; average teacher experience has grown to new highs; and real spending per pupil has more than tripled over the 1960-2000 period (Hanushek 2004, p. 157). These patterns in resources would be expected to lead to improvements in student performance, but Hanushek illustrates that this is not the case. The data used do suggest that some aspects of family have changed in ways that would generally be thought to be unfavorable to student learning: an increase in family poverty (until the early 1990s), a larger proportion of children from single parent families, and more children from non-English speaking families (Hanushek 2004, p.158). The summary of the basic evidence is straightforward. Significant

differences in the performance of schools exist. These differences, however, are not easily captured by simple measures of resources. A surprisingly large proportion of these studies even suggest that added funds actually lower achievement (Hanushek 2004, p.159). It seems hard to imagine that adding additional resources actually depressed student performance very frequently. The model of student performance was considered as: $O_i = F_i T_i E_i$, where O is the student performance, F is family input, T is teacher input, and E is school expenditure. This relationship would in fact recognize the dual role played by teachers. The impact of resources is complicated – involving interactions with various inputs that are not observed or are not understood. Hanushek illustrates in his calculations that teacher quality essentially determines the efficiency with which resources are converted into student achievement.

c. Differences in student performance between race

Hanushek (2001) discusses how human-capital differences have provided a common explanation for racial earnings differences, although for data reasons most attention has focused just on differences in school quantity and has left out quality considerations. Trends in the cognitive achievement scores compiled by the National Assessment of Educational Progress (NAEP) provide consistent quality data since roughly 1970 for a representative sample of students across mathematics, reading, and science (Hanushek 2001, p. 24). Hanushek suggests that three major systematic factors offer clear possibilities for explaining the changes in black-white performance on the NAEP tests. Over the past three decades two major governmental interventions with significant racial dimensions have had enormous effects on school operations: legal actions to promote school desegregation and legislative and legal actions to change the

level and distribution of school funding (Hanushek 2001, p. 24). David Grissmer et al. (1998) point to added resources focused on blacks, a result of spending increases and more equalized spending across districts. Michael Cook and William Evans (2000), on the other hand, find that narrowing of NAEP scores between blacks and whites cannot be any simple reflection of school funding levels, since three-quarters of the gap lies within schools. Thus, if resources were a prime factor behind the narrowing of test-score differences by race, it must be the case either that minorities are more sensitive to resource differences than white students or that resources are narrowly targeted to blacks within schools (Hanushek 2001, p. 24). Hanushek believes that simple cross-state educational production-function estimation tends to confuse the different state policy environments with the effects of resources, but test-score-gain models reduce this problem. Hanushek found that within-state variations in spending could have an impact if more equalized spending tends to favor black students. Hanushek's estimates have considered whether any of the governmental or family factors individually could explain the magnitude and pattern of black-white achievement gaps. Neither the level nor the distribution of school spending appears to provide much explanation for gaps. School spending levels show little consistent impact with any indication of differential impact on blacks being small. Direct analyses of the effects of spending equalization on performance similarly show little impact. On the other hand, governmental intervention through integration programs appears potentially more important. The pattern of integration and preliminary estimates of the magnitude of effects suggest that this by itself could explain both the narrowing and the subsequent leveling off of gains. Hanushek finds there are two facets to the estimated impact of both integration and

parental education. The evidence suggests that blacks are more sensitive than whites to each of these factors (Hanushek 2001, p. 26). Furthermore, the patterns of change in the factors (more integrated schools and improvements in parental education) have both favored blacks.

Economics Factors that Effect Per Capita Income

a. Education and Per Capita Income

Patrinos (1997) examines the earnings gap between indigenous and non indigenous people in Guatemala. There is a gap in earnings between the two groups. He demonstrates that the gap is due to a difference in characteristics of ethnic groups that are also segregated by occupation and industry. They have differential access to resources, power and regional centers, which includes metropolitan Guatemala. The Guatemalan household survey used in this article identifies indigenous people the language spoken. Ethnic group affiliation is determined on the basis of language. Ethnicity has had a dramatic impact on schooling, earnings, and returns to schooling. It has been shown that in the United States, for example, Hispanics do better or worse depending on where in Latin America they are from (Patrinos 1997, p. 810). The socioeconomic performance of workers not only depends on the skills of their own parents but also on the abilities and skills of the ethnic groups. The question of ethnicity is examined in terms of schooling attainment and the returns to schooling. Patrinos tests the hypothesis that higher levels of schooling correspond to higher returns to schooling. In addition to estimating the returns to schooling as derived from earnings functions, the results are also used to estimate the extent of ethnic group discrimination (Patrinos 1997, p. 812). The empirical findings demonstrate a high return to schooling. The data used include both household-level

information and individual-level information. The information was collected in urban areas. The model consists of two equations, or earning functions, which are fitted for employed members of the economically dominant group (nonindigenous) and employed members of the marginal group (indigenous): $LnY_n = b_n X_n + u_n$ and $LnY_i = b_i X_i + u_i$, where subscripts *n* and *i* represent nonindigenous and indigenous workers; *Y* symbolizes labor market earnings; *X* represents measured productivity-determining characteristics of the workers, such as education and experience (Patinos 1997, p.813). The results reveal that higher levels of schooling correspond to higher returns to schooling within each ethnic group. Schooling levels are lower for indigenous groups, especially for the Quiche, but the rates of return to schooling are higher for indigenous groups with high levels of schooling than for less schooled groups.

Greene and Hoffnar (1994) report three principal findings in their article. First the authors found that both central city and suburban Hispanics earn significantly less than white male residents of the suburbs (Greene and Hoffnar 1994, p.127). Secondly, the results demonstrate that while central city residence lowers the earnings of both white and Hispanic men, the impact is more pronounced for Hispanics. Third, this study did not find any evidence that suburban Hispanics learn more than central city Hispanics. GH believe that these results may imply that "race rather than space" may play a more important role in contributing to the white-Hispanic earnings differential among males. They debate the impact that residential location has on earnings determination and whether the effect of residential location on earnings varies across different demographic groups. GH use a standard approach to assess the impact of residential location. They use a log earnings equation: $Y_i = X_i ß + \varepsilon_{i1}$. The X_i is a vector of characteristics believed

to influence earnings, ß is a vector of parameters to be estimated and ε is a stochastic error term (Greene and Hoffnar 1994, p.148). However, a sample selection problem did occur, because earnings information was only available for those individuals who participate in the labor force (Greene and Hoffnar 1994, p 148). Therefore, GH considered an indicator variable, S_i, defined in such a manner that individual earnings are only observed if $S_i > 0$ (Greene and Hoffnar 1994, p 148). Let S_i be modeled as a binary process: $S_i = Z_i \alpha + \varepsilon_{i2,}$ where Zi and α respectively, represent the determinants of labor-force participation and the parameters to be estimated (Greene and Hoffnar 1994, p 148).

Averett and Burton (1996) examine gender differences in the decision of whether or not to attend college. These authors demonstrate how the decade of the 1980s saw a sharp rise in the already well-documented wage premium available to college graduates. This paper illustrates the role of the college wage premium and how it affects the probability of attending college and identifies any gender based variations. AB demonstrate how the probability of a wage gap could be the result of differences in how men and women perceive and value the pecuniary and non-pecuniary rewards of higher education. The percentage of female high school graduates who choose to attend at least some college rose steadily over the period of investigation while the percentage of males making this same decision has remained largely constant. AB show how college attendance rates for males and females have converged. They suggest that it is possible that there have been significant changes in the value women place on the indirect benefits associated with a college education or that the absolute value of these benefits has increased. AB also believe that it is possible that women are now better able to translate educational attainment into greater earnings and that this has motivated the increase in

college attendance. A third explanation is that the costs associated with educational attainment have risen more slowly for women than for men. Finally, AB found that the relative long-term shift in the college attendance rates of men and women may be associated with the way each group has come to value the earnings premium associated with college attendance. Their primary aim in this article is to capture and analyze gender variations in schooling decisions using a human capital model.

The majority of their data were obtained from the National Longitudinal Survey of Youth (Averett and Burton 1996, p.38). They are primarily interested in how expected future earnings influence the decision to attend college. They drew their initial sample from the 1981 interview year when the respondents were aged 16 to 23 years (Averett and Burton 1996, p. 39). AB's dependent variable equals one if the respondent attended some college and zero otherwise (Averett and Burton 1996, p. 39). AB based their assumption of individual utility maximization, the probabilities that an individual *i* will choose a high school education, H or a college education, C, was expressed as: Pr (H) = Pr ($U_{IH} \geq U_{IC}$), Pr (C) = Pr ($U_{IH} \leq U_{IC}$) where U is the present value of the anticipated stream of utility associated with some particular level of education (Averett and Burton 1996, p. 40). This can be expressed as a "structural probit" model. The model is: $C = \Gamma'Z + \alpha(y_c - y_H) - \varepsilon$, $I = 1$ if $C>0$ and $I = 0$ otherwise. The decision to attend college serves as a dependent variable in this equation. This is modeled as a function of family background characteristics, by vector Z, and the earnings differentials between high school and college graduates, ($y_c - y_H$) (Averett and Burton 1996, p.40). The family background variables capture differences in financial constraints (number of siblings, race and ethnicity) and tastes (parental occupation, access to library cards, magazines and

newspapers when growing up, religion and region of residence in adolescence) (Averett and Burton 1996, p.40). Their analysis revealed that those who attend college have better educated parents and fewer and more educated siblings (Averett and Burton 1996, p.41). The authors established that the behavior is consistent with the comparative advantage hypothesis for both the men and women who choose not to attend college.

Tamura (2001) considered whether human capital convergence could occur in a world in which poor parents, with lower levels of human capital, must finance their children's accumulation of human capital out of their own resources. If teacher quality is more important for human capital formation than individual instruction, poor families will converge to the level of rich families. Tamuras considered the role of convergence in formal schooling in the convergence of incomes per capita. The model shows that if teacher quality is more important for human capital accumulation than individual instruction, human capital convergence will occur between school districts. Tamura discussed that because wealthy parents can afford to purchase more and higher quality school inputs, it is possible that children from poorer families are destined to lag their wealthier counterparts in human capital accumulation. Tamura found that the productivity of formal schooling in producing human capital depends on two inputs: quality and class size (Tamura 2001, p.110). Tamura found that human capital convergence across school districts will occur if teacher quality is relatively more important than class size in the production of human capital (Tamura 2001, p.111). The model proposes that an individual's life consists of two periods: youth and adulthood.

Tamura felt that youth spend their time acquiring human capital[5]. A parent cares about his or her consumption as an adult and the human capital of his or her child (Tamura 2001, p.112). These preferences are demonstrated in this model. In Tamura's model all parents within a school district have identical preferences and identical human capital levels. He explains that teachers can be hired from any district and they can teach in a district different from the one that they reside in (Tamura 2001, p.113). Therefore, only two school districts were considered in Tamura's model. He let Q_{iT} be the average teacher human capital in district i relative to average parental human capital in i, that is, Q_{iT} = average human capital of school district i teachers divided by average human capital of school district i parent, which is represented by: $E\{\hat{h}_{iT}\}/ E\{h_{iT}$ (Tamura 2001, p.115). He also let C_{iT} be the class size in school district i, that is, C_{iT} = number of students in school districts i divided by the number of teachers in the school district *i* (Tamura 2001, p.115). He uses Q_{IT} and C_{IT} to explain the next generations' level of human capital, using a Cobb-Douglas specification. The model shows that human capital convergence between poor, low-human capital districts is possible even when the quality of education that children receive is determined solely by the parents' resources.

All studies recognized in the literature review demonstrate the effects of education on earnings in some form. For example, Ferguson states how education does affect per capita income in certain counties of the state of Alabama. His model uses some of the same variables as the model in this paper. The comparison of variables is strongly related and he demonstrates the significance of educational expenditure as well. On the other hand, Hanushek discusses the importance of public education and how it is more

[5] Human capital is a set of skills which an employee acquires on the job, through training and experience, and which will increase that employee's value in the marketplace.

beneficial than private schooling. Nevertheless, Figlio and Stone both illustrate the importance of private education and how it is more beneficial to children than public education. Theses studies examine the advantages and disadvantages of public and private education and how education is beneficial to the community as a whole. Each study emphasizes the importance of education not only in Alabama but worldwide.

CHAPTER III

MODEL AND VARIABLE ANALYSIS

Three equations are examined to demonstrate the importance of student performance on school quality, the factors that affect parental decisions to send their child to a private school? How does education affect annual income? Does going to a private school affect annual income?

Income distribution has been a topic of persistent interest in economics. In recent years, motivated by the availability of new data sets and advances in the theory of economic growth and development, there has been renewed interest in understanding the determinants and dynamics of income distribution. The literature emphasizes education as one of the major factors affecting the degree of income inequality. Some studies show that with more education people will have higher wages. It would seem to follow naturally that if more individuals are educated, average income should rise. For instance, the human capital income distribution model that has been demonstrated in previous works implies that the distribution of earnings (or income) is determined by the level and distribution of schooling across the population (Durden and Gaynor 1998, p.95). However, it has been found that for a given distribution of education, an increase in average schooling has an ambiguous effect on income distribution (Durden and Gaynor 1998, p.95).

I will be estimating equations modeling student performance, income, and school choice. Estimation of performance and income will be done using a production function. The school performance model is the following:

1. Student Performance Model Description: Linear model

Conceptual Model:

Performance = f (Private, South, Z_1)

The student performance conceptual model follows the existing literature including relevant exogenous variables, where Z_1 is the vector of variables (assumed to be exogenous) that influence student performance. The dependent variable is the change in test scores between two years, 1992 and 1988. Many factors affect student performance; family effects, socio-economic effects, school characteristics, and personal attributes are considered to be the most important categories of factors to include. The empirical student performance model is:

Empirical Model:

$$POSIM = \beta_0 + \beta_1 CATH + \beta_2 OTHREL + \beta_3 SUBUR + \beta_4 RURAL + \beta_5 ASIANPI + \beta_6 AMERIN + \beta_7 HISPAN + \beta_8 BLACK + \beta_9 PCTLUN + \beta_{10} SALHIGh + \beta_{11} STRATIO + \beta_{12} MTHS + \beta_{13} MTHS0 + \beta_{14} TENROLL + \beta_{15} THIRTF + \beta_{16} HUND + \beta_{17} TEN + \beta_{18} PSOUTH + \beta_{19} PNORTH + \beta_{20} MALE + \beta_{21\text{-}69} DVSTATES$$

Variables:

Student Performance Variables: (Dependent Variable)

1. **Test 88**: Average 8th grade test scores for Reading, Mathematics, Sciences, History, and Social Sciences for 1988.

2. **Test 92**: Averages 12th grade test scores for Reading, Mathematics, Sciences, History, and Social Sciences for 1992.

The dependent variable will be the differences in the test scores: Var. Test 92- Var. Test 88

Family Effects Variables:

1. **MOMSCH**: Education of respondent's mother
(MTHS (more than high school), MLTHS (less than high school)

2. **FATHSCH**: Education of respondent's father
(MTHS (more than high school), LTHS (less than high school)

Family Effects Variables Cont:

3. **FAMINC**: Household income of the respondent
(TEN (less than 10,000 dollars per year, THIRTF between 10,000 and 34,999 dollars per year, and HUND is between 35,000 and 99,999 dollars per year)

Socio-Economics Variables:

1. **SCHTYPE**: Dummy variable for Private, Catholic, Private Non-religious, Non-accredited, public schools as the base category.
(PUB, CATH, PRIVNON, PRIV, NACRED)

2. **DVSTATES**: Dummy variables for each state.
(DVAL, DVGA, DVMS, etc…)

3. **URBN3**: The schools location in an environmental characteristic
(URBAN, SUBUR, RURAL)

School Quality Variables:

1. **TENROLL**: Total student enrollment of the school.

2. **STRATIO**: Average student-teacher ratio for the school.

3. **SALHIGH**: Represents the highest salary paid to teachers at the school.

4. **PCTLUN**: The Percent of students at the school on free or price reduced school lunch.

Personal Attributes Variables:

1. **RACE**: Represents the Race of the student.
   (ASIANIL, AMERIN, WHITE, BLACK, HISPAN)

2. **SEX**: The gender of the respondent/student.
   (MALE or FEMALE)

The school choice model is the following:

2. The School choice Model Description: Multinomial Logit

Conceptual Model:

Private = g (Z_2, South)

The school choice conceptual model demonstrates the important factors that influence a parent to send their child to a private school. The relevant variables follow the literature on the important factors that affect private school attendance, where the vector Z_2 is the vector of the variables (assumed to be exogenous) that influence school choice. The exogenous variables include family effects, school characteristics, personal attributes and community effects. The dependent variable is a categorical variable including all five school types. The individual variables and the empirical model is:

Empirical Model:

$$ORDER = \beta_0 + \beta_1 FEMALE + \beta_2 ASIANPI + \beta_3 AMERIN + \beta_4 HISPAN + \beta_5 BLACK + \beta_6 URBAN + \beta_7 SUBUR + \beta_8 NORTHE + \beta_9 MIDW + \beta_{10} SOUTH + \beta_{11} STRATIO + \beta_{12} MTHS + \beta_{13} MLTHS + \beta_{14} TEN + \beta_{15} THIRTF + \beta_{16} HUND$$

Variables:

Private School Attendance: (Dependent Variable)

1. **ORDER**: School type
   (PUBLIC, CATH, OTHREL, PRIV, NACRED)

Family Effects Variables:

1. **MOMSCH**: Represents the respondent's mother's education.
   (LTHS, MTHS0)

Family Effects Variables Cont.:

2. **FATHSCH**: Represents the respondent's father's education. (LTHS, MTHS)

3. **FAMINC**: Household income of the respondent. (TEN (less than 10,000 dollars per year, THIRTF between 10,000 and 34,999 dollars per year, and HUND is between 35,000 and 99,999 dollars per year)

School Characteristics:

1. **STRATIO**: Average student-teacher ratio for the school.

2. **Test 92**: Average of 12^{th} grade test scores in tests of Reading, Mathematics, Sciences,History, and Social Sciences for year 1992.

3. **SALHIGH**: Represents the Highest salary paid to teachers at the school.

Personal Attributes:

1. **RACE**: Represents the Race of the student. (ASIANPI, AMERIN, WHITE, BLACK, HISPAN)

2. **SEX**: The gender of the respondent/student. (MALE or FEMALE)

Community Effects:

1. **URBN3**: Represents the schools location as an environmental characteristic. (URBAN, SUBUR, RURAL)

2. **REGON**: Represents the schools geographic location. (NORTHE, MIDW, SOUTH, WEST)

The earnings model is as follows:

3. Earnings Model Description: linear model.

Conceptual Model:

Income = h (Private, Performance, South, Z_3)

The earnings conceptual model determines the effect of standardized test scores and school choice on income, where Z_3 is the vector of variables (assumed to be exogenous) that influence the student's income at age 25. These variables represent the

best factors that influence personal income. The list of relevant variables and empirical model is as follows:

Empirical Model:
$AINCOME = \beta_0 + \beta_1 MALE + \beta_2 CATH + \beta_3 OTHREL + \beta_4 ASIANPI + \beta_5 AMERIN + B_6 HISPAN + \beta_7 BLACK + \beta_8 RACECUR + \beta_9 NORTHE + \beta_{10} MIDW + \beta_{11} SOUTH + \beta_{12} GRDDEG + \beta_{13} UNDDEG + \beta_{14} TEST\ 92 + \beta_{15} PNORTH + \beta_{16} PSOUTH$

Variables:

Income Variable: (Dependent Variable)

1. **AINCOME**: Respondent's annual income in 1999. (divided by a thousand)

Student Performance Variable:

1. **UNDGPA**: Respondents undergraduate GPA.

2. **TEST 92** – Represents students average test scores for the twelfth grade in subjects, reading, mathematics, science, History/citizenship/geography

School Type Variables:

1. **SCHTYPE**: Represents Private, Catholic, Private Non-Religious, Non-Accredited, and Public Schools. (PUB, CATH, OTHREL, PRIV, NACRED)

2. **URBN3**: Represents schools environmental characteristics. (URBAN, SURBUR, RURAL)

Personal Characteristics Variables:

1. **RACE**: Represents the race of the respondent (ASIANIL, AMERIN, WHITE, BLACK, HISPAN)

2. **SEX**: Represents the sex of the respondent (MALE or FEMALE)

Education Variable:

1. **RHDEG**: Represents the respondents' highest degree earned. (NODEG, UNDDEG, GRDDEG)

Location Variables:

1. **RACECUR**: Represents the percent of people in their current neighborhood who were of the same race.

2. **REGION**: Represents the schools geographic location. (NORTHE, MIDW, SOUTH, WEST)

Equations 1-3 make plain the model's recursive structure. It is also clear that *South* affects a student's earning capacity directly via income equation and indirectly via student performance and school choice equations. Specifically, taking the derivative of the income equation with respect to *South* holding all other things constant yields:

$$\delta Inc/\delta South=(\delta Inc/\delta South)\big|_{dperformance\ =\ dchoice\ =\ 0} +$$

$$(\delta Inc/\delta Choice)(\delta Choice/\delta South) +$$

$$(\delta Inc/\delta Peformance)(\delta Performance/\delta Choice)(\delta Choice/\delta South)$$

Or,

4. $\delta Inc/\delta South = (\delta h/\delta South) + (\delta h/\delta Choice)(\delta f/\delta South) +$

$$(\delta h/\delta Performance)(\delta g/\delta Choice)(\delta f/\delta South)$$

The first term in equation 4 represents the direct effect of *South* on student earnings, the second and third terms represent the indirect effects. The indirect effects depend on whether the *South* effects estimated in equations 1-3 are significant and, if so, their signs and magnitudes are determined. In particular, if South in equation 1 is not significant, indirect effects vanish and equation 4 reduces to $\delta Inc/\delta South = (\delta h/\delta South)$.

Dataset

The data set used for estimation comes from the National Educational Longitudinal Study of 1988, 1992 and 2000 (NELS 88, 92, 00). In these studies, a nationally representative sample of eighth graders was first surveyed in the spring of 1988. Later, a sample of these respondents was resurveyed through four follow-ups in 1990, 1992, 1994 and 2000 respectively. This dataset provides a rich amount of information by surveying not only the students, but also their parents, teachers, and the school administrators at the high school level.

Relevant data are used from the base year, the second follow-up and the fourth follow-up surveys. Student performance at the high school level is measured by the average of the standardized NELS test scores (expressed as a percentile rank) at the twelfth grade minus and the scores in the eighth grade, to capture change in performance (POSIM). In the dataset, there are test scores on four subjects: reading, mathematics, science and history/citizenship/geography. Standardized, the test scores at the four subjects have almost the same means and standard deviation. Consequently, POSIM takes the average of the available standardized test scores on the four subjects for each student to prevent collinearity and to minimize missing data problems. When fewer than four scores are reported, the average of reported scores is used.

The multinomial logit model of school choice examines the school which each individual attended (ORDER). This is a categorical variable representing public, catholic, other religious private, non-religious private and non-accredited schools. This multinomial logit model is used to explain why parents send their children to a non-public school. The income model is measured by the individuals' income in year 1999,

which is at age 25 for most students (AINCOME). This variable ranges from a zero income to a 500,000-dollar income. This model estimates the impact of education on annual income.

Following the literature, the variables include student's gender (MALE, FEMALE), race/ethnicity (ASIANPI, AMERIN, HISPAN, BLACK, WHITE), parental highest education levels (FATHSCH and MOMSCH), total family income (FAMINC), student-teacher ratio (STRATIO), and percent of students on free or reduced lunch (PCTLUN), total school enrollment (TENROLL) and student's own educational achievement (RHDEG).

Summary Statistics

Out of a total of 12,144 observations in the dataset, 5,600 observations lack data on student performance measurements at the high school level (POSIM); approximately 2,600 or more observations have missing data on one or more of the exogenous variables, namely, PCTLUN and SALHIGH; yet another 900 observations miss information on the instruments STRATIO and TENROLL. As discussed in Xuejuan (2004), observations with missing dependent variables do not contribute to estimation efficiency; I drop the 5,600 observations from the sample for this specific model. The actual sample used for estimation has 6,544 observations, or 53.9% of the original dataset.

The school choice and income estimations are a different story. Out of 12,144 observations, only 3,815 lack data on income at age 25 (AINCOME), and only 1,738 observations lack data on the school choice at the high school level (ORDER). The variables, UNDGPA and RACECUR, from the income estimation together have about 3,100 observations that have missing information. The variable STRATIO has

approximately 900 observations missing data, affecting the school choice model. The actual sample used for the income model is about 69.1% of the original dataset, and about 68.5% for the school choice measurements. The summary statistics are reported in Table 2.

As can be seen, 47.6% of the students are male; 7.0% Asian/Pacific islander, 1.3% American Indian, 13.4% Hispanic, 9.65% Black; and 68.4% White. About 68.4% of the students' fathers have more than a high school degree and about 72% of the mothers also have more than a high school degree. About 30% of the students did not have a college degree by the age of 25. On family income about 38.3% have between 10,000 and 34,999 dollars and about 33.2% between 35,000 and 99,999 dollars. Student's annual income averaged $27,400 in 1999. Attendance was 84.3% in public schools, 5.86% catholic, 3.5% private, and 2.1% other religious private schools. About 27% of the high schools are in urban areas, 39% are suburban and 30% are in rural areas; and average total school enrollment is approximately 656 students. In the eighth grade, the average student scored at the 51.4 percentile in his standardized test and the twelfth grade the average student scored 51.2; and on average there is a -.54 of decline in test scores between the years 1988 and 1992. Seven years after high school, about 31.7% students had completed a Bachelor's degree and about 11.2% had obtained some type of graduate degree.

Table 2 Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Male	.4761	.4995	0	1
Female	.5238	.4995	0	1
Asianpi	.0703	.2557	0	1
Amerin	.0131	.1140	0	1
Hispan	.1335	.3401	0	1
White	.6842	.4648	0	1
Black	.0965	.2954	0	1
Public	.8429	.3638	0	1
Cath	.0586	.2349	0	1
Othrel	.0211	.1439	0	1
Priv	.0351	.1839	0	1
Urban	.2733	.4456	0	1
Subur	.3862	.4869	0	1
Rural	.3023	.4593	0	1
Northe	.1838	.3873	0	1
Midw	.2590	.4381	0	1
South	.3259	.4687	0	1
West	.1934	.3950	0	1
Pctlun	20.4113	20.8984	0	100
Salhigh	42051.61	9264.22	12000	78000
Stratio	17.7271	5.1269	5	50
Test 92	5120.76	894.0281	2935	6977.7
Test 88	5140.58	894.8566	3232	7545.5
Nodeg (res. Ed)	.3023	.4593	0	1
Unddeg	.3177	.4656	0	1
Grddeg	.1116	.3149	0	1
Mths (father)	.6839	.4649	0	1
Lths (father)	.1521	.3592	0	1
Mths0 (mother)	.7204	.4488	0	1
Mlths (mother)	.1479	.3550	0	1
Tenroll	656.501	374.0995	6	3940
Ten (faminc)	.0917	.2885	0	1
Thirtf	.3833	.4862	0	1
Hund	.3318	.4709	0	1
Mhund	.0453	.2079	0	1
Posim	-54.6412	464.9783	-3001	2875.5
Pnorth	.0236	.1519	0	1
Psouth	.0115	.1064	0	1
Undgpa	2.6406	.8502	0	4
Aincome	27.38	22.44	0	500
Raceor	64.1951	31.8785	0	100
Racecur	75.0222	30.6496	0	100

CHAPTER IV

MODEL RESULTS

Variables

The student performance estimation contains variables measuring the type of high school, namely whether the high school is public, private, catholic, or other religious private, the community in which the high school is located (URBAN, SUBUR, and RURAL), the school average student/teacher ratio (STRATO), the average total student enrollment (TENROLL), the highest salary paid to teachers (SALHIGH), to emphasize the importance of the teacher's education, and the percentage of students in the high school that are on free or price reduced school lunch (PCTLUN).

The quality of high school is hypothesized to influence a parents' choice. Parents may choose a high school based on their housing location or they clearly choose a private school. Endogeneity of the variables may be a problem. The first variable to study is the choice between a public and a private school (ORDER). There are different types of private schools, but when parents are choosing a school quality for their child, the academic performance is not the only factor considered in the decision. Other factors include religious reasons, location of school, extracurricular activities, percentage of minority students, etc. Class size is measured as the average number of students per teacher in the school (STRATIO). Endogeneity occurs with this variable when a particular student is placed into a class for a certain reason. For instance, a child may be placed into a smaller class based on his or her lack of ability. The student/ teacher ratio is

not correlated with the school choice variable making endogeneity less likely a problem. Lastly, the high school community (URBAN, SUBUR, and RURAL) can be a factor in the endogeneity problem. It is expected that an average suburban high school provides a better school quality than an average rural or urban high school. But for the parents it is more than likely better to choose a school within a certain location than to choose a school from all three categories (URBAN, SURBUR, RURAL), which reduces the endogeneity problem. Therefore, endogeneity does not appear to be a problem. The correlation matrix does not reveal any variables with a correlation above 0.5000.

Tests for Models

The student performance model and the income model were tested for heteroskedasticity and specification error. Autocorrelation was not tested in these models, because time series analysis was not conducted. The Breusch-Pagan/Cook – Weisberg test was used to test for heteroskedsticity. The null hypothesis states that the regression analysis portrays homoskedasticity and the alternative is that it does have heteroskedasticity. The student performance model Chi-square was equal to 12.55, rejecting the null hypothesis suggests in that this model does reveal a heteroskedasticity problem. The income model heteroskedasticity test shows that the Chi-square was equal to 954.35. The probability of the function being greater than the chi-square is nearly zero. This implies that the income model does have a heteroskedasticity problem. Therefore, we reject the null hypothesis. To correct for heteroskedasticty, weights from the sampling data were used.

The Ramsey RESET test was used to test for specification error. The null hypothesis states that the model does not have specification error and the alternative is that is does have specification error. This test was used for both the student performance and income model. The income model specification error test shows that F test statistic of 8.60, compared to a critical value of 1.62 at the 5% level. Therefore, we reject the null hypothesis. The student performance model specification error test demonstrates that the F test statistic of 1.30, so we fail to reject the null hypothesis.

The student performance model contains the state dummy variables to capture the school quality effects from each individual state. I performed an F-test to determine whether or not it is important to include the state dummy variables. The null hypothesis states that the state characteristics are jointly equal to zero and the alternative states that the individual state dummy variables are not jointly equal to zero. The F-test statistic is calculated as follows:

F-test = R^2 (full model) - R^2 (reduced model)/ (1-R^2) * (n-k)/J

n= number of observations, k= degrees of freedom and j= number of restrictions

F-test = (0.0408 – 0.0158)/ (1-0.0408) * (6508-69)/49

F-test = 0.0260 * 131.408 = 3.42

Critical F (49, 6000) = 1.50

F > critical F, therefore we reject the null hypothesis.

The purpose of this f-test is to demonstrate the importance of the individual state. The characteristic of each individual state is an important factor in student performance.

School Choice Estimation

A multinomial logit model was used for the school choice estimation. A linear model was used for the other two models. The multinomial logit model was applied to examine the reason why students attend a private school. This model emphasizes the factors that parents consider when choosing a private school.

Table 3 reports the school choice estimation results. The dependent variable (ORDER) is a categorized instrument sorted by types of high schools. The base school type is represented by public schools (number 0). The existing literature was used as a guide in choosing the exogenous variables for this estimation (Hanushek 2004). These variables include: Sex of student (FEMALE), race/ethnicity (HISPAN, BLACK, ASIANPI, and AMERIN), the region of the United States (NORTHE, MIDW, SOUTH) and the community of the school (URBAN and SUBUR), the composite of the student/teacher ratio (STRATIO), mother's and father's educational attainment (MTHS, MLTHS) and family income (TEN, THIRTF, and HUND). Table 1 shows definition of variables.

According to Table 3, the base categories for dichotomous variables are the white, male, rural, the western states, the student's father and mother with less than a high school education, and annual family income of more than 100,000 dollars. Family background such as father's educational level (more than high school), is a very important factor for a child attending a catholic school. Only the father's educational levels shows a significant effect on catholic school enrollment. Family income of below 100,000 dollars shows a negative impact on catholic school attendance. This portrays that families with a high level of income will be more likely to send their child to a

private school. This estimation demonstrates that a black female living in a rural area has a smaller possibility to attend a catholic school than a white male living in an urban or suburban area. The community and location of the school play important roles when deciding on a school for a child. All regions of the United States show a significant effect on catholic school enrollment when compared to the omitted region, west. The variable student/teacher ratio (STRATIO) demonstrates the school quality. This variable reveals a positive significant effect. This suggests the higher the number of students per teacher for the school. Therefore, the higher the possibility a child is to attend a catholic school.

Table 1 Definition of the Variables

MALE	Gender of student 1 male, 0 female
FEMALE	Gender of student 1female, 0 male
ASIANPI	Whether student is Asian/Pacific Islander, 1yes, 0 no
AMERIN	Whether student is American Indian, 1yes, 0 no
HISPAN	Whether student is Hispanic, 1 yes, 0 no
BLACK	Whether student is Black 1 yes, 0 no
WHITE	Whether student is White 1 yes, 0 no
URBAN	Whether student's high school is central city, 1yes, 0 no
SUBURBAN	Whether student's high school is suburban area, 1yes, 0 no
RURAL	Whether student's high school is rural area, 1 yes, 0 no
PUBLIC (ORDER)	Whether student's high school is public, 1yes, 0 no
CATH	Whether student's high school is catholic, 1 yes, 0 no
OTHREL	Whether student's high school is other religious private, 1 yes, 0 no
PRIV	Whether students high school is a private (non-religious), 1yes, 0 no
PCTLUN	Percentage of students on free or reduced price lunch in high School
TENROLL	Total number of students in the high school
SALHIGH	The highest salary paid to teacher's in the high school
TEST 88	Standardized test scores in the eighth grade, average among reading, mathematics, science, and history/citizenship/geography
TEST 92	Standardized test scores at the twelfth grade, average among reading, math, science, and history/citizenship/geography

Table 1 Continue

POSIM	$12^{th} - 9^{th}$ grade average standardized test scores which captures the positive improvement between two times
STRATIO	Composite student/teacher ratio in high school
UNDGPA	The undergraduate GPA of each student
UNDDEG	Whether the student graduated from college by the year 2000, 1 yes, 0 no
GRDDEG	Whether the student completed a master's or higher degree by the year 2000, 1 yes 0 no
NODEG	Whether the student graduated from high school by the year 2000, 1 yes, 0 no
ANICOME	The annual income (thousand dollars) of student at age 25, 1999
RACECUR	Students estimate of what percent of people in their current Neighborhoods of the same race as they are
NORTHE	Whether student's high school is located in the Northeast region Of the United States, 1 yes, 0 no
MIDW	Whether student's high school is located in the Midwest region of the United States, 1 yes, 0 no
SOUTH	Whether student's high school is located in the Southern region of the United States, 1 yes, and 0 no
MTHS (FATHSCH)	Whether the student's father continued beyond high school, 1 yes, 0 no
LTHS	Whether the student's father graduated from high school, 1 yes, 0 no
MTHS0 (MOMSCH)	Whether the student's mother continued education beyond high school, 1 yes, 0 no
MLTHS	Whether the student's mother graduated from high school, 1 yes, 0 no
TEN (FAMINC)	The total family income is less than 10,000 dollars, year 1988, 1 yes, 0 no
THIRTF	The total family income is between 10,000 and 34,999 dollars, year 1988, 1 yes, 0 no
HUND	The total family income is between 35,000 and 100,000 dollars, year 1988, 1 yes, 0 no
PSOUTH	Whether the students who attended private school are from Alabama, Georgia, Mississippi, Louisiana, and Tennessee, 1 yes, 0 no
PNORTH	Whether the students who attended private schools were from states other than southern states, 1 yes, 0 no
DVSTATES	The states in which the students were located in year 1992, 1 yes, 0 no (i.e. dval, dvar, dvaz, dvga, dvpa, dvms, dvla, dvtn)

Table 3 School Choice Model Estimation Results

Dependent Variable		Whole Sample	
ORDER	Coef.	T-stat	P-value
Catholic School			
Gender			
Female student	-.3914	-2.50	0.012
School Quality			
Student teacher ratio	.1805	10.94	0.000
Race			
Asian Pacific Islander	.1205	0.39	0.697
American Indian	.2675	0.33	0.741
Hispanic	-.1624	-0.70	0.487
Black	-.8006	-2.47	0.014
Community			
Urban area	21.0700	44.84	0.000
Suburban area	18.8298	35.83	0.000
Region of the US			
Northeast	1.9428	8.14	0.000
Midwest	1.6978	7.83	0.000
South	1.2498	5.15	0.000
Parents Education			
Father (more than HS)	.5039	2.35	0.019
Mother (more than HS)	.0443	0.17	0.861
Family Income			
10,000 or less	-1.8705	-5.18	0.000
10,000 - 34,999	-.9357	-5.18	0.000
35,000- 99,999	-.2338	-1.16	0.244
Constant	-27.1465	-	-
Private Other Religious			
Female	.4313	1.57	0.117
School Quality			
Student Teacher ratio	.0776	2.71	0.007
Race			
Asian Pacific Islander	-.7250	-1.76	0.078
American Indian	2.5210	2.89	0.004
Hispanic	-1.6812	-4.12	0.000
Black	-1.9633	-2.11	0.035
Community			
Urban area	1.9202	4.20	0.000
Suburban area	.8999	2.07	0.039
Region of US			
Northeast	.7729	1.64	0.101
Midwest	-.2386	-0.68	0.499
South	.8513	2.410	0.016

Table 3 Continue

Dependent Variable	Whole Sample		
ORDER	Coef.	T-stat	P-value
Parent Education			
Father (more than HS)	.5018	1.18	0.236
Mother (more than HS)	.9721	2.34	0.019
Family Income			
9,999 or less	-33.8295	-86.95	0.000
10,000 – 34,999	-1.0329	-2.60	0.009
35,000 – 99,999	-.3992	-1.25	0.212
Constant	-7.5495	-6.93	0.000
Private Non-religious			
Female	-.3206	-1.20	0.229
School quality			
Student teacher ratio	-.1801	-2.00	0.046
Race			
Asian Pacific Islander	.0535	0.18	0.856
American Indian	-38.9859	-128.70	0.000
Hispanic	-2.0466	-4.06	0.000
Black	-1.6581	-2.36	0.018
Community			
Urban area	1.7867	6.16	0.000
Suburban area	-.1738	-0.78	0.436
Region of US			
Northeast	.4942	0.76	0.447
Midwest	-.3602	-0.81	0.420
South	1.3079	2.61	0.009
Parents Education			
Father (more than HS)	1.4832	5.13	0.000
Mother (more than HS)	.9082	3.49	0.000
Family Income			
9,999 or less	-2.6247	-3.39	0.000
10,000 – 34,999	-2.2547	-8.48	0.000
35,000 – 99,999	-.9899	- 4.62	0.000
Constant	-3.2052	-1.72	0.085
Non-Accredited			
Female	-.0090	-0.01	0.990
School Quality			
Student teacher ratio	.1278	1.49	0.137
Race			
Asian Pacific Islander	-.4928	-0.64	0.523
American Indian	-38.8133	-82.20	0.000
Hispanic	.5240	0.55	0.579

Table 3 Continue

Dependent Variable	Whole Sample		
ORDER	Coef.	T-stat	P-value
Black	-2.2570	-2.09	0.037
Community			
Urban area	1.1264	1.65	0.098
Suburban area	.5145	0.66	0.509
Region of US			
Northeast	2.4198	1.75	0.079
Midwest	.6122	0.80	0.427
South	1.6029	1.80	0.072
Parents education			
Father (more than HS)	.9300	1.54	0.123
Mother (less than HS)	.8399	1.25	0.213
Family Income			
9,999 or less	-.7276	-0.61	0.545
10,000 – 34,999	.7288	0.77	0.441
35,000 – 99,999	.1540	0.30	0.762
Constant	- 11.2488	-3.37	0.001

Outcome order =0 (public schools) is the comparison group
Number of Obs. = 10406
R-Squared= 0.2838

Next, is the evaluation of attendance of other religious private schools. In this estimation Hispanic (HISPAN), Asian Pacific Islander (ASIANPI), and Black (BLACK) students show a negative effect and American Indian (AMERIN) students demonstrate a positive effect on religious private school attendance. A female student living in a urban (inner city) or suburban area has a higher probability of attending a religious private school, compared to a male living in a rural area. The southern region of the United States (SOUTH) is the only region variable that demonstrates a positive and significant effect. Family income between 34,500 and 99,999 dollars demonstrate a higher possibility of sending their child to a religious private school. A family with an annual income of 100,000 dollars or more shows no significance. A mother's educational attainment of more than high school reveals a positive and significant effect. The education of the parent is an important factor in choosing a school type. The school

quality variable, student/teacher ratio, illustrates a positive and significant effect on student attending a religious private school.

The third school type is the private school without any religious affiliation. This demonstrates American Indian (AMERIN), Hispanics (HISPAN), and African Americans students (BLACK), are less likely to attend a non-religious private school, compared to white students. A student living in an inner city (urban) area and located in the southern part of the United States has a higher probability of attending a non-religious private school, compared to the rural area and other regions of the United States. Family income has the same outcome as demonstrated previously. However, the student/teacher ratio variable shows a negative significant effect. The father's and mother's education level has a positive effect.

The last school analysis is the non-accredited schools. This analysis reveals that American Indian, Asian Pacific Islander, and African American students all demonstrate a significant negative effect on non-accredited school attendance, compared to white students. A student living in a suburban area and in the northeast or southern region of the United States has a lower probability of attending a non-accredited school. The school quality variable, student/teacher ratio reveals no significance on non-accredited school attendance. Neither parent's educational level portrays any significant effect. However, the family income variables demonstrate positive effects, except for the less than 9,999 dollar range, however they are not significant.

Student Performance Model Results

Table 4 and 4a report the regression analysis results. In Table 4 the dependent variable (POSIM) is the average standardized test score in all four subject areas for 1992 (twlelfth grade) minus test scores from the year 1988 (eighth grade). This variable demonstrates the change in standardized test scores between two time periods. Following the existing literature, the exogenous variables include: sex of student (MALE), race/ethnicity (ASIANPI, AMERIN, HISPAN, and BLACK), school types (CATH, OTHREL, PRIV, and NACRED), the community of the school (SUBUR and RURAL), the percentage of students on free or price reduced school lunch (PCTLUN), highest salary paid to teachers (SALHIGH), school wide student/teacher ratio (STRATIO), mother and father's educational attainment (MTHS and MTHS0), total student enrollment (TENROLL), family income (TEN, THIRTF, and HUND), the state that the school is located (DVSTATES, DVAL, DVMS, etc.) and whether the private school is located in the southern and northern states (PSOUTH and PNORTH). In table 4a, instead of including the private schools located in the southern and northern states I included the private school type. This will illustrate the important factors that effect school quality in the private schools in the southern states and explain if parents are sending their children to private schools for other than academic reasons.

According to Table 4, male students have a significant positive increase of .51 percentile in performance, when compared to females. The only significant race variable is Asian Pacific Islander and they show a positive increase of .90 percentile. Catholic schools are the only significant variable of the school type. Catholic schools demonstrate a 1.16% increase in performance. The total enrollment variable shows a .0006% positive

impact on the dependent variable. This explains that the larger the school the higher the improvement on test scores, which illustrates those bigger schools provide more resources for the students. The schools in Louisiana have a 1.85% positive improvement on test scores. The schools in Alabama, California, Connecticut, Kentucky, Montana, Oklahoma, Pennsylvania, Tennessee, Texas, and Utah all have a significantly negative effect on test scores. Private schools in the southern and northern states show a positive impact on test scores, but neither is significant.

Table 4a shows the student performance estimation with the private school variable (PRIV), instead of the variables that include the private schools located in the southern and northern states (PSOUTH and PNORTH). In this analysis the two coefficients PSOUTH and PNORTH were tested to see if they were equal.

H_o: $\beta_{19} = \beta_{20}$

H_a: $\beta_{19} \neq \beta_{20}$

The F-test is as follows:

F-Test statistic = 0.30

F (1, 6437) = 3.84

Probability of F > 0.30 = 0.5853

$F > F_c$

Therefore, we fail to reject the null hypothesis that the coefficients of PSOUTH and PNORTH are not equal to one another. Both models show that on average private schools, except for catholic, do not provide any better or any worse of an education than public schools.

Table 4 Student Performance Model Estimation Results
(Including variables psouth and pnorth)

Dependent variable	(percentile)	Whole sample	
POSIM	Coeff.	T-Stat	P-Value
Private schoolsIn the South			
Psouth	.7016	0.93	0.350
Pnorth	.0526	0.05	0.957
Male Student	.5123	2.47	0.014
Race			
Asian Pacific Islander	.9009	2.83	0.005
American Indian	-.5118	-0.67	0.505
Hispanic	.6207	1.34	0.181
Black	-.7481	-1.10	0.270
School Type			
Catholic	1.1662	2.56	0.011
Other Religious	.4173	0.84	0.402
Community			
Suburban area	.1296	0.36	0.721
Rural area	-.0457	-0.12	0.907
School Quality			
Percent Lunch	.0063	1.15	0.249
Highest Salary Paid	.0000	1.51	0.131
Student teacher ratio	.0237	1.14	0.256
Tenroll	.0006	1.70	0.090
Parent Education			
Father (more than HS)	.3126	1.09	0.276
Mother (less than HS)	.1818	0.49	0.627
Family Income			
10,000-34,999	.1318	0.37	0.714
35,000 – 99,999	.3121	1.02	0.307
9,999 or less	.3726	0.84	0.399
State Variables			
West			
WA	-.2937	-0.43	0.669
OR	.2338	0.25	0.801
CA	-1.4318	-2.46	0.014
MT	1.4373	0.83	0.409
ID	.2591	0.30	0.761
NV	-1.7935	-0.82	0.411
UT	-2.0831	-2.47	0.014
AZ	-.7588	-0.68	0.495
WY	-1.3811	-1.11	0.265
CO	-81.2477	-1.01	0.314
NM	-.3273	-0.40	0.687
HI	.4529	0.50	0.618

Table 4 Continue

Dependent variable		Whole sample	
POSIM	Coeff.	T-Stat	P-Value
Mid-West			
ND	.3157	0.36	0.717
SD	-.8894	-1.00	0.319
NE	-.4593	-0.58	0.559
KS	-.0429	-0.05	0.958
OK	-2.3653	-1.98	0.048
TX	-1.8183	-1.74	0.081
MI	-.563105	-0.83	0.406
IA	-2.003924	-2.45	0.014
MO	-1.322634	-2.04	0.041
IL	-1.553015	-2.44	0.015
WI	-1.035938	-1.59	0.111
MN	.010651	0.01	0.988
Northeast			
KY	- 2.2922	-3.23	0.001
VA	-.7576	-1.05	0.293
OH	-.9825	-1.62	0.106
PA	-1.4403	-2.32	0.020
NY	-.3779	-0.58	0.562
WV	-1.2888	-1.49	0.136
MD	.1229	0.17	0.866
DE	- 1.3720	-1.18	0.236
DC	.5288	0.55	0.584
NJ	-1.1048	-1.38	0.169
CT	-1.7169	-1.96	0.050
RI	-1.1065	-1.07	0.284
MA	-.4193	-0.56	0.576
VT	2.1605	1.36	0.173
NH	-.6639	-0.74	0.459
ME	-.1215	-0.06	0.950
IN	-1.8818	-2.75	0.006
South			
AL	-1.2004	-1.78	0.075
AR	.0765	0.10	0.920
FL	-.7070	-1.08	0.280
GA	.2566	0.35	0.729
LA	1.8591	1.84	0.066
MS	-.5535	-0.71	0.480
NC	-.2761	-0.24	0.808
SC	-.0745	-0.10	0.923
TN	-1.4950	-2.15	0.031
Constant	-2.4165	-2.01	0.044
R-squared- 0.0408		Number of Obs. - 6508	

Table 4a Student Performance Model estimation Results (with variable Priv)

Dependent Variable		Whole Sample	
POSIM	Coef.	T-stat	P-value
School Type			
Private	.2320	0.31	0.756
Catholic	1.1675	2.56	0.011
Other religious	.4185	0.84	0.401
Gender			
Male	.5121	2.47	0.014
Race			
Asian Pacific Islander	.9005	2.83	0.005
American Indian	-.5081	- 0.66	0.508
Hispanic	.6234	1.35	0.179
Black	-.7533	- 1.11	0.265
Community			
Suburban area	.1289	0.36	0.722
Rural area	-.0444	- 0.11	0.909
School Quality			
Total enrollment	.0006	1.70	0.089
Percent Lunch	.0062	1.14	0.256
Highest salary paid	.0000	1.51	0.131
Student/teacher ratio	.0236	1.13	0.257
Parent Education			
Father (more than HS)	.3115	1.09	0.277
Mother (less than HS)	.1815	0.49	0.627
Family Income			
9,999 or less	.3770	0.85	0.393
10,000 – 34,999	.1352	0.37	0.708
35,000 – 99,999	.3149	1.03	0.302
State Variables			
West			
WA	-.2790	-0.41	0.684
OR	.2480	0.27	0.789
CA	-1.4190	- 2.44	0.015
MT	1.4516	0.84	0.403
ID	.2725	0.32	0.749
NV	-1.7797	-0.82	0.414
UT	-2.0681	-2.45	0.014
AZ	-.7448	0.67	0.503
WY	-1.3786	-1.11	0.267
CO	-.80102	-1.00	0.320
NM	-.3136	-0.39	0.700
HI	.4660	0.51	0.607
Mid- West			
ND	.3286	0.38	0.705
SD	-.8737	-0.98	0.326

Table 4a Continue

Dependent Variable		Whole Sample	
POSIM	Coef.	T-stat	P-value
Mid-West			
NE	-.4448	-0.57	0.570
KS	-.0295	-0.04	0.971
OK	-2.3506	-1.97	0.049
TX	-1.8183	-1.74	0.081
MI	-.5479	-0.81	0.410
IA	-1.9898	-2.44	0.015
MO	-1.3088	-2.03	0.042
IL	-1.5400	-2.42	0.015
WI	-1.0215	-1.58	0.115
Northeast			
KY	-2.2767	-3.22	0.001
VA	-.7435	-1.04	0 .300
IN	-1.8674	-2.73	0.006
MN	.0251	0.03	0.973
OH	-.9692	-1.60	0.109
PA	-1.4266	-2.30	0.021
NY	-.3645	-0.56	0.575
WV	-1.2748	-1.48	0.140
MD	.1383	0.19	0.849
DE	-1.3561	-1.17	0.241
DC	.5472	0.57	0.568
NJ	-1.0907	-1.36	0.174
CT	-1.7060	-1.95	0.052
RI	-1.0919	-1.06	0.290
MA	-.4152	0.55	0.579
VT	2.1747	1.37	0.170
NH	-.6882	-0.77	0.440
ME	-.1080	-0.06	0.955
South			
AL	-1.1941	-1.76	0.078
AR	.0905	0.12	0.905
FL	-.6950	-1.06	0.287
GA	.3289	0.45	0.650
LA	1.8786	1.87	0.062
MS	-.4244	-0.56	0.574
NC	-.2620	-0.23	0.818
SC	-.0578	-0.08	0.940
TN	-1.4664	-2.13	0.033
Constant	-2.4296	-2.03	0.043
Number of Obs = 6508			
R-squared = 0.0407			

Income Model Estimation

Table 5 and 5a report the regression analysis results. In table 5 the dependent variable (AINCOME) is the annual income in thousands of the student at about age 25 for the year 1999. The exogenous variables for this model are as follows: gender of student (MALE), school types (CATH and OTHREL), the race/ethnicity of the student (ASIANPI, AMERIN, HISPAN, and BLACK), percentage of the population in the students current neighborhood with the same race as they (RACECUR), region of the United States that the school is located (NORTHE, MIDW and SOUTH), highest degree earned by the student, either undergraduate or graduate degree (UNDDEG and GRDDEG), student performance measured by standardized test scores for year 2000, twelfth grade (TEST 92), and dummy variables for private schools located in the southern and northern states (PSOUTH and PNORTH). In table 5a, instead of the TEST 92 variable the undergraduate GPA of the student is included (UNDGPA).

According to table 5, if a student attends a catholic school it will raise income by 3,200 dollars per year, but if a student attends a private school located in a northern state it will decrease the income by 700 dollars, but this is not a statistically significant effect. This estimation establishes that males have approximately a 7,800 dollars higher income than females. If a student is an Asian Pacific Islander or Hispanic it decreases income by about 2,500 dollars, but if the student is Black then it decreases the income by approximately 3,000 dollars. A student who chooses to start a career in the south decreases income by approximately 2,100 dollars. A student that has obtained an undergraduate degree or graduate degree increases income by about 3,600 dollars. This implies that additional education can be an important factor in raising income. A student

who did well on the standardized test scores in the twelfth grade raises income by 25 dollars a year. On the other hand, this estimation demonstrates that attending a private school does not affect income. The PSOUTH variable was not significant, but has a coefficient of 1,200.

Table 5a demonstrates the income model including the variable UNDGPA and excluding TEST 92. This table evaluates the importance of post-secondary education on annual income. A student who graduates from college can increase income by about 4,800 dollars, but if you graduate with a master's or higher you can increase income by 5,700 dollars. The undergraduate GPA variable did not show any significance on annual income. Theses tables illustrate that attending a private school can not increase or decrease your income anymore than attending a public school. However, the catholic school has been the only school that has show significant and positive effects on income.

Table 5 Income model Estimation results (with variables Test 92, Psouth and Pnorth)

Dependent Variable	Whole Sample		
AINCOME	Coef.	T-stat	P-value
Private schools in South			
Pnorth	-.7147	-0.11	0.911
Psouth	1.2658	0.63	0.531
Student Performance			
Test 92	.0025	5.66	0.000
School type			
Catholic	3.2852	2.02	0.043
Other religious	-.9611	-0.51	0.609
Gender			
Male student	7.8985	12.37	0.000
Race			
Asian Pacific Islander	-2.7717	-1.91	0.056
American Indian	-3.6682	-1.48	0.139
Hispanic	-2.1160	-2.11	0.035
Black	-3.3046	-3.47	0.001
Regions of the US			
Northeast	-1.7482	-0.61	0.543
Midwest	-1.1608	-1.01	0.313
South	-2.1333	-1.90	0.058

Table 5 Continue

Dependent Variable		Whole Sample	
AINCOME	Coef.	T-stat	P-value
Personal Attributes			
Obtained Grad Degree	3.6501	3.69	0.000
Undergraduate Degree	3.7594	5.01	0.000
Current Race in area	-.0190	-1.51	0.131
Constant	13.0088	4.65	0.000
Number of Obs. = 8321			
R-squared = 0.0721			
F(17, 8303) = 28.47			

Table 5a Income Model Estimation Results
(with variables Psouth, Pnorth, and Undgpa)

Dependent Variable		Whole Sample	
AINCOME	Coef.	T-stat	P-value
Student Performance			
Undergraduate GPA	-.3679	-0.87	0.382
Private Schools in South			
Pnorth	2.1346	1.12	0.262
Psouth	1.2620	0.22	0.828
Gender			
Male student	7.3927	11.87	0.000
School type			
Catholic	3.8587	2.61	0.009
Other religious	-.8213	-0.46	0.645
Race			
Asian Pacific Islander	-1.1622	-0.64	0.520
American Indian	-10.3411	-3.89	0.000
Hispanic	-2.5589	-2.36	0.018
Black	-3.8432	-4.23	0.000
Regions of the US			
Northeast	-.4315	-0.39	0.700
Midwest	-.8605	-0.84	0.401
South	-1.8476	-1.80	0.072
Personal Attributes			
Current Race in area	-.0104	-0.84	0.400
Obtained Grad. Degree	5.7158	6.19	0.000
Undergraduate Degree	4.8021	6.33	0.000
Constant	29.0076	16.17	0.000
Number of Obs. = 7777		F (17, 7759) = 15.14	
R-squared = 0.0491			

CHAPTER VI

SUMMARY AND CONCLUSION

This paper proposes three individual models to identify school choice, student performance, and annual income of a cohort of students. The school choice model tested factors thought to influence a parent's choice of a school for their child. The student performance model examines the impact of variables on standardized test scores. The income model equation tests the effects of the student's education (UNDGPA) and student performance (TEST 92) to determine its influences on annual income.

In the school choice model, the p-values of the relative variables generally resulted with the expected signs and magnitudes. The mother's and father's education plays an important role in the child attending a non-public school, as expected. The gender and race/ethnicity of the student explained why students attended certain schools. For example, a Hispanic male student that lives in an urban or suburban area located in the Northeast, Midwest or South of the United States will be more likely to attend a catholic school. The location of the school plays an important role which follows the existing literature.

In the student performance model there were few significant explanatory variables, possibly due to missing data information. The significant variables in this model did represent the gender and race/ethnicity of the student, school type, and the total enrollment of the school. In the results an Asian Pacific Islander male student attending a large school system is expected to have a greater improvement on standardized test

scores between two time periods. These results explain that larger schools provide more resources, therefore students in theses schools have a higher improvement on standardized test scores. Private school attendance was not significant in this estimation.

The income model shows many significant variables. This model demonstrates that white males make more money than females, and that other races will have a lower income. The location of the student does affect income; if a student lives in the south it will decrease annual income, possibly because the cost of living is lower than in the northern part of the United States. A student's educational attainment plays a critical role in annual income. Achieving an undergraduate or graduate degree can increase annual income. The only school type that was significant was the catholic school. The private schools in the south or north do not show any significant effect on annual income.

These results explained many factors that affect income, student performance and school choice attendance. But primarily school choice is a parental choice and they choose schools based on many factors besides academic performance. However, these parents who are choosing private schools are not necessarily providing their child with a better education, because on average a private school does not provide a better education than private schools. The improvement of education is the main goal. The improvement of education cannot only better Alabama, but also better the United States' financial strength, health and technology.

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