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The Role Of Family Resources In The Determination Of Child Outcomes

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THE ROLE OF FAMILY RESOURCES IN THE DETERMINATION OF CHILD OUTCOMES

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ABSTRACT

This thesis studies the role of family resources in the determination of child outcomes, specifically the degree to which family resources affect the child's years of schooling and future income. By analyzing data from the NELS (National Educational Longitudinal Study), it is found that children from families with greater financial resources typically attend school longer and earn more money than children from families with less financial resources. Child personal ability is also found to affect schooling and personal earnings.

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CHAPTER ONE

INTRODUCTION

Throughout modern civilization, parents have taken responsibility for their children's outcomes, guiding their paths so that they may succeed upon entering their chosen workforce. Numerous factors contribute to the child's earning potential, but upon closer examination, one element stands out. A quality education is the single most important determinant of labor market earnings and seems to be the most easily available policy lever.

Despite being provided for children up through at least grade 12, family resources play a significant role in a child's education. Funded primarily through property taxes, the quality of schooling varies considerably. Even in high-performing school districts, wealthier families may have the funds to provide their children with superior learning resources. For example, these households can afford items such as a computer or pay for a tutor to assist with studying. Since wealthier families often have only one parent working and providing enough income for the entire family, the other parent is available to spend more time raising their child, a responsibility that frequently falls to the mother. The combination of such financial and time advantages allows wealthier families to provide their children additional learning through the family, independent of the school itself. Evidence of this can be found in occupational following literature (David Laband and others).

Family resources are strongly positively correlated with parental human capital, which may exert an independent positive effect on child learning both inside and outside

of formal schooling. It is essential to try to control for parental human capital, but researchers typically only have access to observable measures such as education. Important unobservable components of human capital uncorrelated with (and therefore not picked up by) education is likely correlated with family resources. Family resources are also correlated with family structure. In particular, two-parent families almost always have more earnings potential, as well as time to be devoted to the children. Therefore, simple examination of child outcomes as a function of family resources is difficult.

Using National Educational Longitudinal Study (NELS) data from the 1988 panel compiled by the National Center for Educational Statistics to examine the influence of family resources on child schooling and average weekly wages, I focused on data for nearly ten thousand U.S. citizens, including their educational background, family income, and parents' level of education. I selected data from 1988, when the subjects were 14 years old and in eighth grade, through 2000, examining weekly wage and years of schooling to determine child outcomes. This paper attempts to control for influence of parental human capital using measures of educational attainment and attempts to correct for child ability in the form of reading and math test scores. Family resources are measured using 1987 family income. I also attempt to control for influence of family structure by estimating the model separately for two-parent and mother-only households.

CHAPTER TWO

THEORY

This section outlines what has become the standard supply and demand framework for education, developed by Becker and Chiswick (1966). In this model, optimal human capital investment is determined by the intersection of a demand curve, defined as the marginal return to a unit of investment, and the supply curve, defined as the marginal cost of that unit. For the this discussion, it is assumed that the sole purpose of investment in human capital is to increase one's labor market earnings.

In this case, the height of the demand curve for human capital is equal to the percentage increase in labor market earnings that result. The marginal rate of return to human capital investment is negatively related to the level for two reasons. First, the law of diminishing marginal returns applies; all other non-education inputs are fixed, and therefore additional units of human capital have a smaller percentage impact on earnings. Second, accumulation of additional units of human capital requires a delay of labor market entry, leaving fewer years in which to recoup the costs of the investment.

The supply curve of human capital illustrates the opportunity cost of resources devoted to human capital accumulation. This curve will be horizontal if the opportunity cost of resources is constant, as might be the case for families with access to perfect capital markets, and who can borrow and lend at some market-determined interest rate. However, capital markets are not perfect; for example, individuals cannot borrow against a stream of (presumably) higher future earnings. Thus, the resources available to finance human capital investment are finite, and hence likely to involve increasing opportunity costs. For example, financing a low level of human capital investment may involve sacrificing the interest on a savings account, while financing a

medical degree may require sacrificing large amounts of resources with substantially higher market rates of return. This discussion will assume that the supply curve is therefore upward sloping.

Base Case

The simplest case is one in which all individuals have identical demand and supply curves, illustrated in Figure 1. The horizontal axis depicts the quantity of human capital investment; the choice of units is not crucial, and could be measured in years or expenditures. However, because the focus of the empirical work is on years of schooling, it is therefore the most natural interpretation in the present setting. The marginal returns and costs of human capital investment, in percentage points, are measured along the vertical axis. The demand curve is labeled D and the supply curve S. The intersection of the curves occurs at E years of schooling and a marginal rate of return equal to R, and shows the equilibrium. At levels of human capital less than E, the marginal returns to additional schooling exceed the marginal costs, and hence the individual will move to the right; at levels of human capital greater than E, the marginal returns are smaller than the costs, and the individual will move to the left.

Differences in Supply

Figure 2 considers a situation in which additional family resources have no effect on the marginal return to a year of schooling, but shifts the supply curve to the right. Intuitively, families with more resources have better access to capital markets, and can borrow more funds at any given interest rate. The result is that at the old level of schooling, E, the marginal return is higher than the marginal cost, and so the individual acquires more schooling in equilibrium. The equilibrium moves from intersection P to P_1 and E_1 is the new optimal level of schooling.

Differences in Demand

Figure 3 examines the correlation between the years of schooling and children's personal ability. Child personal ability and family resources are independent. When a child have more ability, then the child has the capability to acquire more education at any given rate of return, so curve D shifts right but curve S is unaffected. As we know about it that child personal ability is independent of family resources; more family resources can only affect supply curve shifts right but curve D to be unaffected. When child ability and family resources are positive related, which means families with more resources have children with higher ability, and hence supply curves farther to the right are associated with demand curves farther to the right. The result is that the old optimal years of schooling moves from E to E_1 and P_1 is the new equilibrium. When child ability and family resources are negative related, which means families with lower resources have children with higher ability, and hence supply curves do not move are associated with demand curves farther to the right. The equilibrium moves from intersection P to P_2 and E_2 is the new optimal level of schooling. Naturally, families with lower resources, and therefore children with higher ability, have a higher marginal rate of return than those families with more resources have children with higher ability.

Figure 1. Supply and Demand Model of Schooling

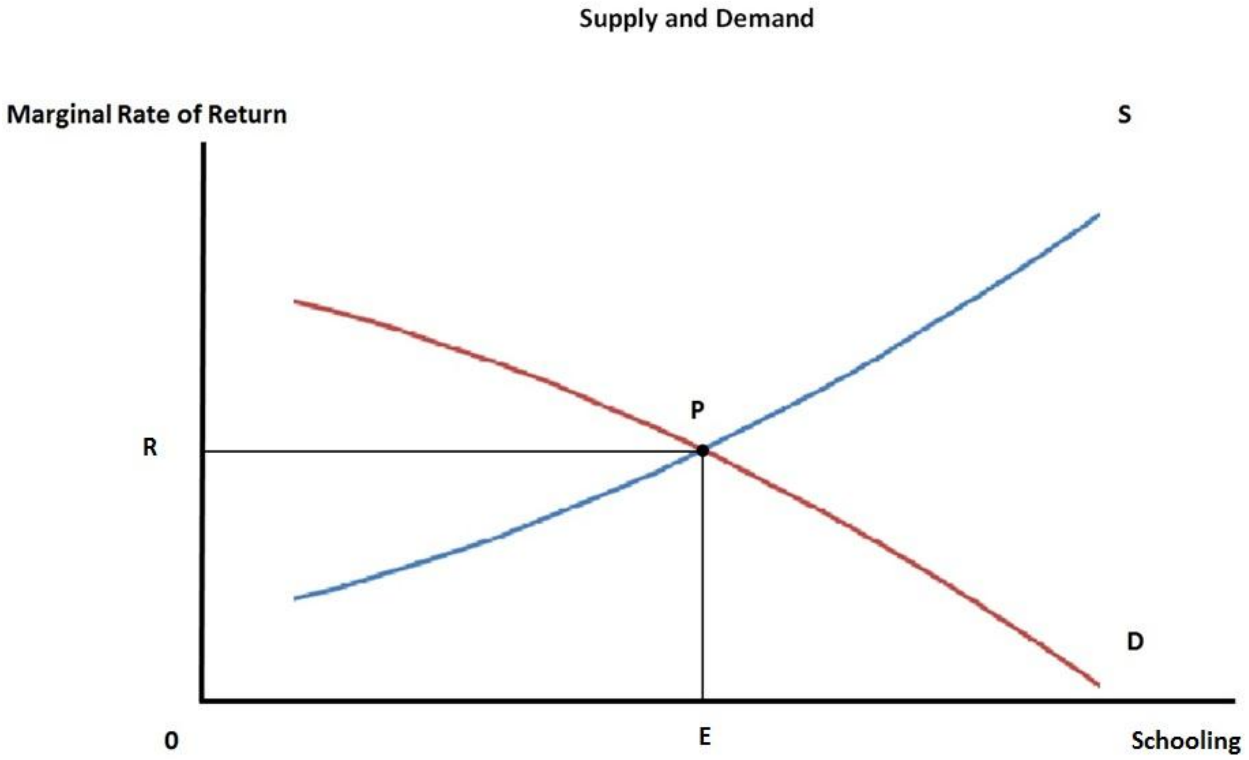


Figure 2. Effect of Increase in Family Resources on Schooling

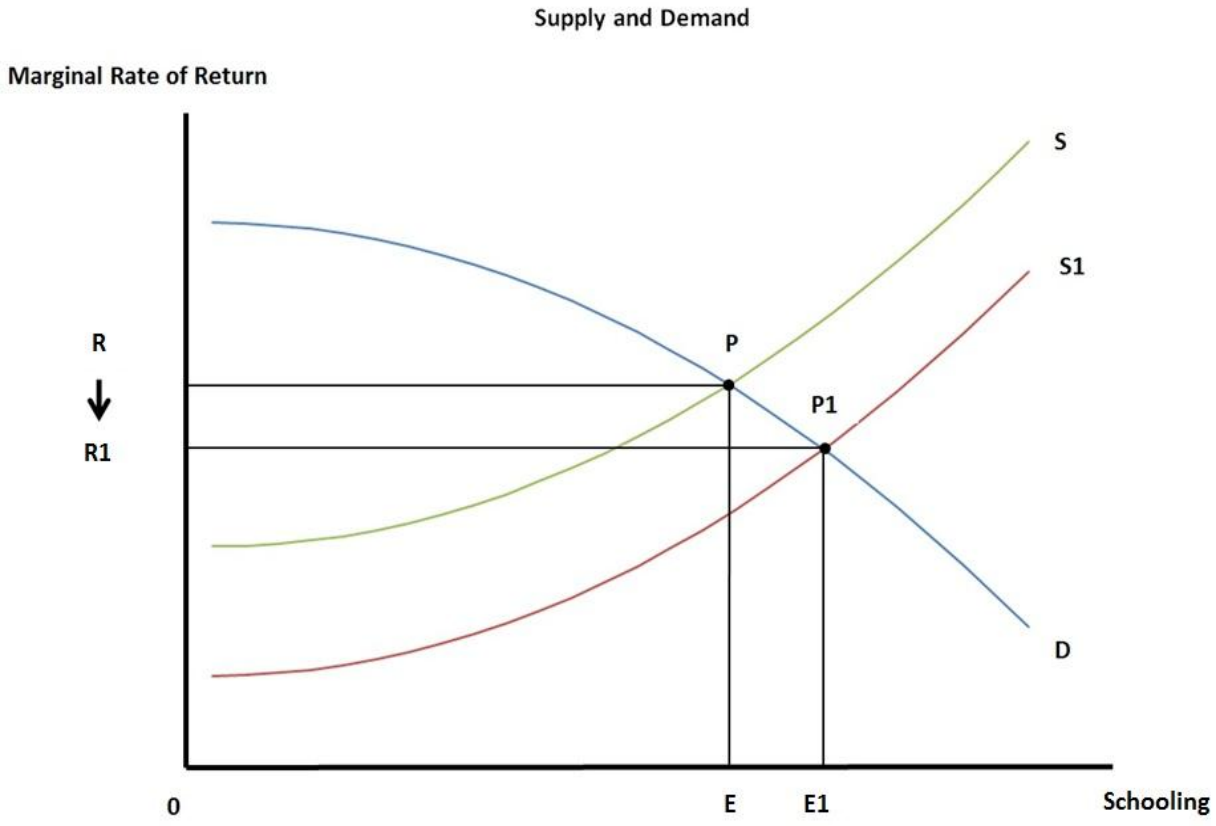
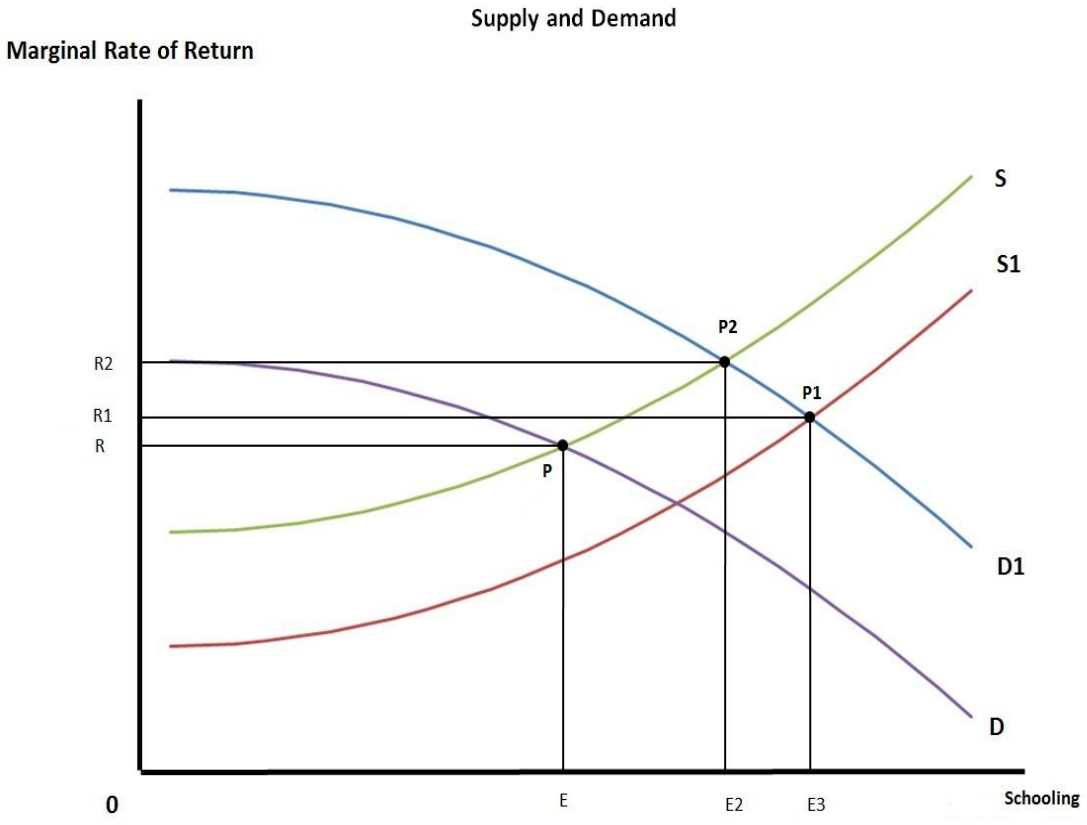


Figure 3. Effect of Increase in child ability with Family Resources on Schooling



CHAPTER THREE

LITERATURE REVIEW

Daron Acemoglu and J.S. Pischke (2001), in noting the shift in wage structure since the 1970s, emphasize the differences in wage structure, family income, and children's education to estimate the effect of parental resources on children's college education. Their findings echo those of Gary S. Becker and Barry R. Chiswick's (1966), who argue that greater access to resources results in a higher supply, increasing investments for their children's education.

Acemoglu and Pischke compare skilled and unskilled workers, focusing on the influence of wage levels in determining whether the workers' children attend college. For the lower income workers, who are increasingly limited by budget constraints, the decision to send their children to college depends largely on the return investment of that education; in other words, the overall financial gain of the degree must be greater than the cost of college.

Bruce Kaufman and Julie L. Hotchkiss (2005) examine the role of education and on-the-job training as a source of earnings differentials, specifically the correlation between individuals' investment in education and the return to earnings, and the effect to which certain individuals make more of an investment in human capital than others. Their focus consists of two main parts. The first examines formal education as a type of human capital investment and shows that the difference in years of education leads to a difference in earnings. The second part discusses the various factors that motivate individuals to pursue a range in years of education.

Kaufman and Hotchkiss conclude that education is a strong personal investment for students, noting that higher levels of education lead to greater earnings. In addition, the monetary benefits relative to the costs affect individuals' decision whether or not to attend college. Human capital theory also implies that certain factors, such as costs, age, and labor

force continuity, must be taken into consideration when individuals make regarding their education.

Kaufman and Hotchkiss also explore the demand and supply for human capital, which factors the market decision into individuals' decision concerning the pursuit of higher education. In the demand curve for human capital, when human capital increases, the marginal rate of return decreases. In the supply curve for human capital, when human capital goes up, the marginal cost of funds goes up as well.

The differences in supply curves and demand curves may be attributed to separate factors. For supply curves, the driving force is opportunity, which here refers to an individual's access to funds. Those with the greatest accessibility to funds are more likely to pursue a greater level of education. The differences in demand curves, however, may be attributed to personal ability and the quality of schooling being pursued.

David L. Stevenson and David P. Baker (1987) examine the relationship between parental involvement in schooling and the child's school performance. They investigate three hypotheses: the higher the educational status of the mother, the greater the degree of parental involvement in school activities; the younger the age of the child, the greater the degree of parental involvement; and children of parents who are more involved in school activities do better in school than children with parents who are less involved. The educational status of the mother is related to the degree of parental involvement in schooling, so that parents with more education are more involved. Consequently, parental involvement is related to the child's school performance. Also, parents are more involved in school activities if the child is younger. The mother's educational level and the age of the child are stronger predictors of parental involvement in schooling for boys than for girls.

Their measure of parental involvement in schooling activities and the child's school performance are indicators drawn from the teacher questionnaire. This measure has the advantage of tapping specific parental action about the child's schooling. In their research, they find that the relationship between parental involvement, mother's education, and the child's performance are not influenced by the mother's labor force participation or the number of children in the family. Educated mothers "invest" in their child's schooling activities by being directly involved in school activities and by having frequent contact with the child's teacher. This "investment" results in better school performance among children starting at an early age. Additionally, gender seems to be important in determining parental actions in relation to schooling. This finding coincides with those of other studies on the differences in parental styles, attitudes, and actions for sons versus daughters. At the time of the study, the examination of how parents "invest in" and manage the school career of their child was a relatively new perspective in the field of child development, and its findings and conclusions underscore the importance of examining these links between families and schools.

Paul R. Amato and Gay (1986) explore the effects of different types and levels of family resources on the development of competence in children. They present a model linking two general classes of family resources to forms of child competence, dividing resources into "family structure resources," such as parental income, education, and occupation, and "family process resources," such as parental expectations, help, and attention.

Amato and Gay present data from a survey of children in families to assess the relative contributions of two major classes of family resources – structural resources and interpersonal process resources – to four different forms of child competence. Data from an Australian survey of children in families is used to assess the relative contributions of each class of resources to

four forms of child competence: reading ability, self-esteem, everyday skills, and social competence. Results indicate that reading ability is related to both structural resources and interpersonal process resources. Self-esteem, however, is mainly associated with interpersonal process resources. Everyday skill performance is only weakly associated with process resources, and social competence is weakly associated with both sets of resources. The study indicates that, generally, the relationships between family resources and forms of competence are stronger for younger children than for adolescents.

Eric A. Hanushek (1997 assesses the controversial relationship between school resources and student achievement. He finds that there is not a strong or consistent relationship between student performance and school resources, at least after variations in family inputs are taken into account. These results are also reconciled with meta-analytic approaches and other investigations on how school resources affect labor market outcomes, and suggest that simple resource policies hold little hope for improving student outcomes.

Mark Mather and Dia Adams (2000) show the importance of family economic resources for several different dimensions of child and adolescent wellbeing. They find that children who live in low-income families are at substantially higher risk of negative economic, educational, and health outcomes compared with children who live in more affluent families. This concentration of negative outcomes is especially pronounced for African American children, who were four times more likely than non-Hispanic white children to reside in families with incomes of less than $10,000. Furthermore, they point to the importance of tracking trends in income and poverty over time for states, local areas, and subgroups of the U.S. population. Any increases or decreases in children's access to family resources are likely to be associated with changes in other dimensions of child and family wellbeing.

Donna K. Ginther and Robert A. Pollak (2003) offer a significant contribution to this paper. They add to the growing literature describing correlations between children's educational outcomes and family structure. Although popular discussions focus on the distinction between two-parent families and single-parent families, McLanahan and Sandefur (1994) show that outcomes for stepchildren are similar to outcomes for children in single-parent families. They show that educational outcomes for both types of children in blended families –stepchildren and their half-siblings who are the joint biological children of both parents – are similar to each other and substantially worse than outcomes for children reared in traditional nuclear families.

Howard Bodenhorn (2006) identifies families as the core social institution and highlights the long-term costs of single parenthood for children. In his paper, he finds that white children residing with a single mother leave school earlier than children residing with two parents, as is the case with black children in single mother homes, who additionally begin school later. Single motherhood is therefore associated with less lifetime schooling for both races, but the consequences of living in a nontraditional home is larger for blacks. In addition, single motherhood is associated with an increased incidence of labor force participation for white youth, but not for blacks. Single parenthood imposed specific costs, in terms of foregone human capital formation, on children in the mid-nineteenth century, but the consequences of single motherhood were mitigated by social norms toward childhood education.

Janet Currie, Mark Stabile, Phongsack Manivong, and Leslie L. Roos (2008) examine how poor child health after birth affect long-term outcomes, specifically whether health at birth functions primarily as an indicator of future health or through some other mechanism, or whether poor health matters more at certain ages than at others. They address these questions using a unique data set based on public health insurance records for 50,000 children born between 1979

and 1987 in the Canadian province of Manitoba, comparing children with health conditions to their own siblings born an average of three years apart, and control for health at birth. They find that health problems, and especially mental health problems in early childhood, are significant determinants of outcomes linked to adult socioeconomic status.

Brian Jacob and Jens Ludwig (2008) consider the ability of different education policies to improve the learning outcomes of low-income children in America. Disagreements on this question stem in part from different beliefs about the problems with nation's public schools. In their view, there is some empirical support for each of the general concerns that have been raised about public schools serving high-poverty student populations. Such concerns include the need for more funding for those school inputs where additional spending is likely to pass a benefit-cost test; limited capacity of many schools to substantially improve student learning by improving the quality of instruction on their own; and the need for improved incentives for both teachers and students, in addition to increased operational flexibility. Evidence suggests that the most productive changes to existing education policies are likely to come from increased investments in early childhood education for poor children; improving the design of the federal No Child Left Behind accountability system; providing educators with incentives to adopt practices with a compelling research base while expanding efforts to develop and identify effective instructional regimes; and continued support and evaluation of a variety of public school choice options.

Eric D. Gould, Victor Lavy, and M. Daniele Paserman (2009) estimate the effect of the childhood environment on a large array of social and economic outcomes over the course of nearly 60 years for both the affected cohorts and for their children. They show that the environmental conditions faced by immigrant children do not correlate with other factors that

affect the long-term outcomes of individuals. As a result, they construct three summary measures of the childhood environment: whether the home had running water, sanitation and electricity; whether the locality of residence was in an urban environment with a good economic infrastructure. They find that children placed in a better environment are more likely to obtain higher education, marry at an older age, have fewer children, and work at age 55. The estimated effects are much more pronounced for women than for men. They also find that the next generations of children who live in a better environment grow up to have children who achieve higher educational attainment.

Amy J. Orr (2003) argues that wealth, which is an indicator of both financial and human capital, can affect academic achievement as well as help to explain the gap in black-white test scores. Analyses reveal that wealth affects achievement through its effect on the amount of cultural capital to which a child is exposed. Because blacks, on average, have substantially less wealth than whites, wealth can help to explain a portion of the racial achievement gap. The results of this study indicate that wealth has a positive effect on achievement. The findings of this study, in addition to several previous studies that have shown a significant relationship between family background and achievement, contradict the notion that opportunities to achieve are equally open to all individuals.

David N. Laband and Bernard F. Lentz (1983) examine the incidence of occupational following from father to the son. As years pass on the child of the working man learns a great deal from what he sees and hears going on around him (Marshall), which a son would grow up and take over the family business or follow in his father's footsteps. So they prove the existence of intergenerational occupational mobility and argue forcefully that following occurs voluntarily, rather than as a result of cultural barriers to exit from one's parent's occupation, or barriers to

entry into other occupations. We find that the probability of following is exceedingly small, but is more likely to be higher in those occupations characterized by low-cost transfers of job-related human and name-brand capital.

CHAPTER FOUR

DATA

For this study, I will examine the effect of family resources on the rate of return for education of offspring, using the 1988 panel of the National Educational Longitudinal Study (NELS). The data, compiled by the National Center for Educational Statistics, follows nearly 10,000 8th graders over a period of nearly two decades, through the year 2000. The findings include a wide range of information on those students' educational and education outcomes, as well as information on the educational background, family structure, and family resources while growing up.

In their seminal paper, Becker, Murphy, and Tamura (1990) modeled child human capital formation as:

$$H_{t+1} = Ah_t(bH^0 + H_t) \quad (1)$$

where H_{t+1} is the child's human capital, H^0 is the child's initial endowment of human capital, H_t is the human capital level of the child's parents, and h is the amount of time devoted by the parent to the child's schooling. The parameter A was interpreted by those authors as a technological constant, but it can easily be reinterpreted as the material resources devoted by parents to their children's education.

In absence of information on actual parental resources devoted to children's education, I will use family income as a proxy. Such information is not necessary, provided that all families devoted a constant share of total family income to children's education. Such a situation, however, is unlikely to be true. In fact, it would seem likely that families in which the parents have higher human capital stocks would tend to have higher demands for their children's education, in which case it is important to control for the influence of parental human capital lest

the estimated effects of family income capture both the direct effects of income and the indirect effects that operate through parental human capital.

Educational Attainment

Table 1 contains summary statistics on educational attainment of children and parents as of 2000.

Table 1. Summary Statistics, Educational Attainment and Years Schooling

	Child	Mother	Father
Percentage with			
Less than HS	21.81%	17%	18.1%
HS/ GED	29.51%	36.99%	31.5%
Trade after HS	7.91%	12.1%	11.2%
College after HS	7.3%	8.99%	8.2%
Finish college	29.56%	14.99%	15.7%
Master	3.2%	7.6%	8.9%
PHD	0.63%	2.3%	6.2%

Much research focuses on the relationship between labor market earnings and years of schooling. I converted the information on educational attainment into years of schooling as seen in Table 2.

Table 2. Translation of Educational Attainment into Years Schooling

	Years of Schooling
Less than HS	8, 9, 10, or 11 reported
GED	11
HS Degree	12
Some College	13
Associate Degree	14
Bachelor Degree	16
Master Degree	18
Ph. D/ Medical Degree	20

Parental Time

According to equation (1), the more time devoted by parents to their child's education leads to higher human capital accumulation for the child. Although we do not have detailed information on parental time allocation, Table 3 depicts how many parents were working in 1987, the year prior to the start of the 1988 NELS panel.

Table 3. The composition of families (1987)

How many earners in household	Percentage
One	40.23%
Two	57.91%
More than two	1.86%

Family composition	Percentage
Mother and father	70.05%
Mother and male guard	9.34%
Father and female guard	2.03%
Mother only	14.08%
Father only	2.20%
Other relatives	2.30%

In another hand, parents with income in incumbency and parents with income who are not working anymore is totally different two conditions, the income for those parents who retires cannot correctly express what capable of their work. And in this situation, there is a huge difference for the distribution of retirement salary and incumbency salary, so if including retirement salary or pension would give the regression some unnecessary estimate bias. Therefore, I directly choose the parent income data from 1987 while when they are working.

For parental income, the NELS panel provides merely the level of income of parents, but not specific income. In order to utilize a workable figure, I have used the midpoint of each level of income. All salary figures used in this paper are annual salaries.

Table 4. Means and the standard deviations of children's ability (test score) and family resources, family structure

Children's condition	Means	Standard deviation
Age	26.384	0.599
Weekly wage	599.771	476.470
NAEP score	298.934	35.641
Reading score	51.193	9.785
Math score	51.416	9.987
Reading IRT	49.851	30.048
Math IRT	61.498	25.439
Number of siblings	2.285	1.581
Children's schooling (2000)	13.369	2.431

Note: NAEP score stand for children's personal ability here.

Table 5. The situation of family

Family situation	Means	Standard deviation
Father's schooling	12.63833	1.983701
Mother's schooling	12.62061	1.88874
Family income (1987)	41.666	39.465
Number of earners contributed to family income	2.710	2.618

Note: Number of earners contributing to family income means children's other relatives do the contribution to family income, for example, grandpa or grandma; which means mostly not only their parents income as family income.

Using the sample data of parental income, I separated families into high, middle, and low-level income levels. Lower than Median level is considered low-level income family and around $21,827 is the middle-level income family, equal or higher than $35,605 is high-level income family.

I then divided each income level into three ranges: level 1 to level 6 for low-level income families; level 7 to level 10 for middle-level income families; and level 11 to level 15 for high-level income families.

Table 6. Children's Income with different level of schooling

Children's education level	High-school and below	College	Master/ Ph.D
High-level income family	$28,679	$26,525	$32,274
Middle-level income family	$23,379	$24,307	$28,085
Low- level income family	$19,641	$20,386	$33,417

Table 6 shows the specific conditions in different types of families with dollar amounts representing average annual salary. Based on these results, children in high-level income families earn more than children in low-level income family in each level of schooling. Children in low-level income families with a master degree or PhD, however, are shown to earn more on average than high-level income children with the same degree. Such an unexpected result is likely attributed to the study's sample limitations.

CHAPTER FIVE

ANALYSIS

Consider the relationship between human capital accumulation, parental inputs, resources, and child ability.

Child ability includes the various measures of test scores. We expect that the MRR schedule (marginal rate of return) lies farther to the right for children with higher levels of ability and for children whose parents are better educated. Thus, consider this regression:

$$S_c = b0 + b1 * score_{math} + b2 * score_{reading} + b3 * S_m + \mu$$

where S_c is the child's total years of schooling. b1 and b2 is the relationship between the child's personal ability and their years of schooling, with math and reading scores representing child personal ability; S_m is the years of schooling for the child's mother; and b3 is a parameter that measures how important the mother's educational level is relative to children's education.

We expect b1>0, b2>0, and b3>0. For children of two-parent families, we can estimate

$$S_c = b0 + b1 * score_{math} + b2 * score_{reading} + b3 * S_m + b4 * S_f + \mu$$

where S_f means the years of schooling of the father and b4 represents how the father's years of schooling influence the years of schooling for his children.

Now let's add family resources to these two regressions:

$$S_c = b0 + b1 * score_{math} + b2 * score_{reading} + b3 * S_m + b4 * Y_p + \mu$$

Two-parent families:

$$S_c = b0 + b1 * score_{math} + b2 * score_{reading} + b3 * S_m + b4 * S_f + b5 * Y_p + \mu$$

where Y_p stands for the family income. We expect b4>0 in the first equation and b5>0 in the second, and from these equations we can examine the correlation between family resources and children's years of schooling.

We also have information on the number of siblings. Presumably, the fewer number of siblings leads to a amount of resources for the child in question. One way to factor in this variable is to add an interaction term. For two-parent families:

$$S_c = b0 + b1 * score_{math} + b2 * score_{reading} + b3 * S_m + b4 * S_f + b5 * Y_p$$

$$+b6 * N_s \ + b7 * (Y_p * N_s) + \mu$$

where N_s is the number of siblings in the family.

Take the derivative with respect to Family Income and get:

b5 + b7*Number of Siblings

We expect b5>0 and b7<0. That is, another dollar of income should have a smaller effect, the larger the number of siblings. The same type of analysis can be done for the equation that includes only the mother's education:

$$S_c = b0 + b1 * score_{math} + b2 * score_{reading} + b3 * S_m + b4 * Y_p + b5 * N_s$$

$$+b6 * (Y_p * N_s) + \mu$$

To compare the two conditions of two-parent families and only mother families, see Tables 7 and 8.

Table 7 depicts regression of two-parent families with respect to child years of schooling. The figures 0.10429 and 0.0296 in the first column represent the coefficient of math scores and reading scores, or how child ability affects their years of schooling. As each math and reading score increases by one unit, the years of schooling go up by 0.10429 and 0.0296, respectively. Factoring in mother schooling, we can see the coefficient of mother schooling is 0.1923, which

means that when mother schooling increases by one year, child schooling increases by 0.1923 years. Also, the effect from math score decrease less but the effect of read score goes up since considering mother's year of schooling. In looking at father schooling, the coefficient of father schooling is 0.1403, which means that when father schooling increases by one year, child schooling increases by 0.1403 years. At the same time, influence of mother schooling decrease less and basically the effect of child ability stay constant. Considering family income as a constraint factor, as seen in Table 7, there is almost the same effect except the effect of math score goes down a little. 0.0058 is the coefficient of family income, which is the result after family income, is taken into account. As long as family income goes up one thousand dollars, child schooling goes up 0.0058 year. Thus, only father's influence goes down by little with others showing minimal change.

Another important element is the number of siblings in a family. When family add one more kid, both children's schooling decrease 0.07852 year. At the same time, except the influence of mother schooling decrease a little, other effect is constant. Last, the coefficient of number of siblings and family income is $-5.17 * 10^{-8}$, which means that when the influence of family income to number of siblings increases by one unit, child schooling decreases by $5.17 * 10^{-8}$ years. The addition of this new factor does not change any other's effect on child schooling. Table 8 is the result of regression of mother-only family with respect to child years of schooling.

Tables 9 and 10 show the regression of log weekly wage for two-parent families and mother-only families separately. First, the coefficient of father schooling is 0.0025 and the coefficient of mother schooling is 0.018, meaning that when father and mother schooling go up one year, their child weekly wage will goes up 0.25% and 1.8%. 0.002 is the coefficient of

family income, meaning that when family income increases one thousand dollars, child weekly wage increases by 0.2%. The coefficient of number of siblings is -0.01397, meaning that when a family adds one more child, their weekly wage goes down by 1.4%. However, reading score is negative effect for child weekly wage, but math score is positive effect here.

From all of the regressions and tables, it is clear that child personal ability helps them get more years of education, but reading score is less relevant to their weekly wage. Both father schooling and mother schooling gives their child an opportunity to earn higher education and income levels, as does greater family income. Conversely, the greater number of children in one family results in a negative effect on child education and income.

Table 7. Regression of schooling of child , Two-Parent Families

	1	2	3	4	5	6	7
Math score	0.10429	0.09496	0.0909	0.0874	0.085533	0.086181	0.086182
	(0.00395)	(0.00395)	(0.00396)	(0.0043)	(0.004243)	(0.004243)	(0.004244)
Read score	0.0296	0.2619	0.0244	0.0245	0.023856	0.022698	0.022697
	(0.00396)	(0.00391)	(0.00388)	(0.0042)	(0.004164)	(0.004172)	(0.004172)
Constant	6.8441	5.0784	4.6096	4.776	5.134164	5.514052	5.510279
	(0.1547)	(0.20777)	(0.2138)	(0.2302)	(0.236716)	(0.254389)	(0.25862)
Mother schooling		0.1923	0.1112	0.1052	0.091234	0.081418	0.081433
		(0.0154)	(0.01815)	(0.0193)	(0.019391)	(0.019523)	(0.019526)
Father schooling			0.1403	0.1485	0.126145	0.121903	0.121856
			(0.01689)	(0.0181)	(0.018436)	(0.018466)	(0.018477)
Family income					0.005808	0.005639	0.005753
					(0.000956)	(0.000957)	(0.001693)
Number of siblings						-0.07852	-0.07675
						(0.019597)	(0.029292)
sib*income							-0.0000000517
							(0.000000636)
F-statistic	1059.32	782.18	612.67	506.52	416.25	349.04	299.1
R-square	0.318	0.3406	0.3505	0.3381	0.344	0.346	0.346
Observations	4547	4547	4547	3972	3972	3961	3961

Table 8. Regression of schooling of child , mother only

	1	2	3	4	5	6
Math score	0.106904	0.094965	0.086433	0.09089	0.086578	0.086554
	(0.003422)	(0.003441)	(0.003704)	(0.003717)	(0.003698)	(0.003698)
Read score	0.028569	0.02527	0.024989	0.026307	0.023984	0.024022
	(0.003478)	(0.003417)	(0.003655)	(0.00369)	(0.003655)	(0.003655)
Constant	6.777919	4.959502	5.66003	5.136857	6.090364	6.062546
	(0.132945	(0.17426)	(0.192594)	(0.187966)	(0.207077)	(0.210281)
Mother schooling		0.204283	0.162477	0.203369	0.148601	0.148481
		(0.012987)	(0.014251)	(0.013851)	(0.014448)	(0.014449)
Family income			0.007377		0.007261	0.008036
			(0.0007)		(0.000698)	(0.001234)
Number of siblings					-0.09414	-0.08206
					(0.016642)	(0.022985)
sib*income						-0.000000352
						(0.000000462)
F-statistic	1497.58	1120.38	731.18	919.25	592.21	493.57
R-square	0.3248	0.3507	0.3494	0.3361	0.3531	0.3532
Observations	6228	6228	5452	5452	5430	3430

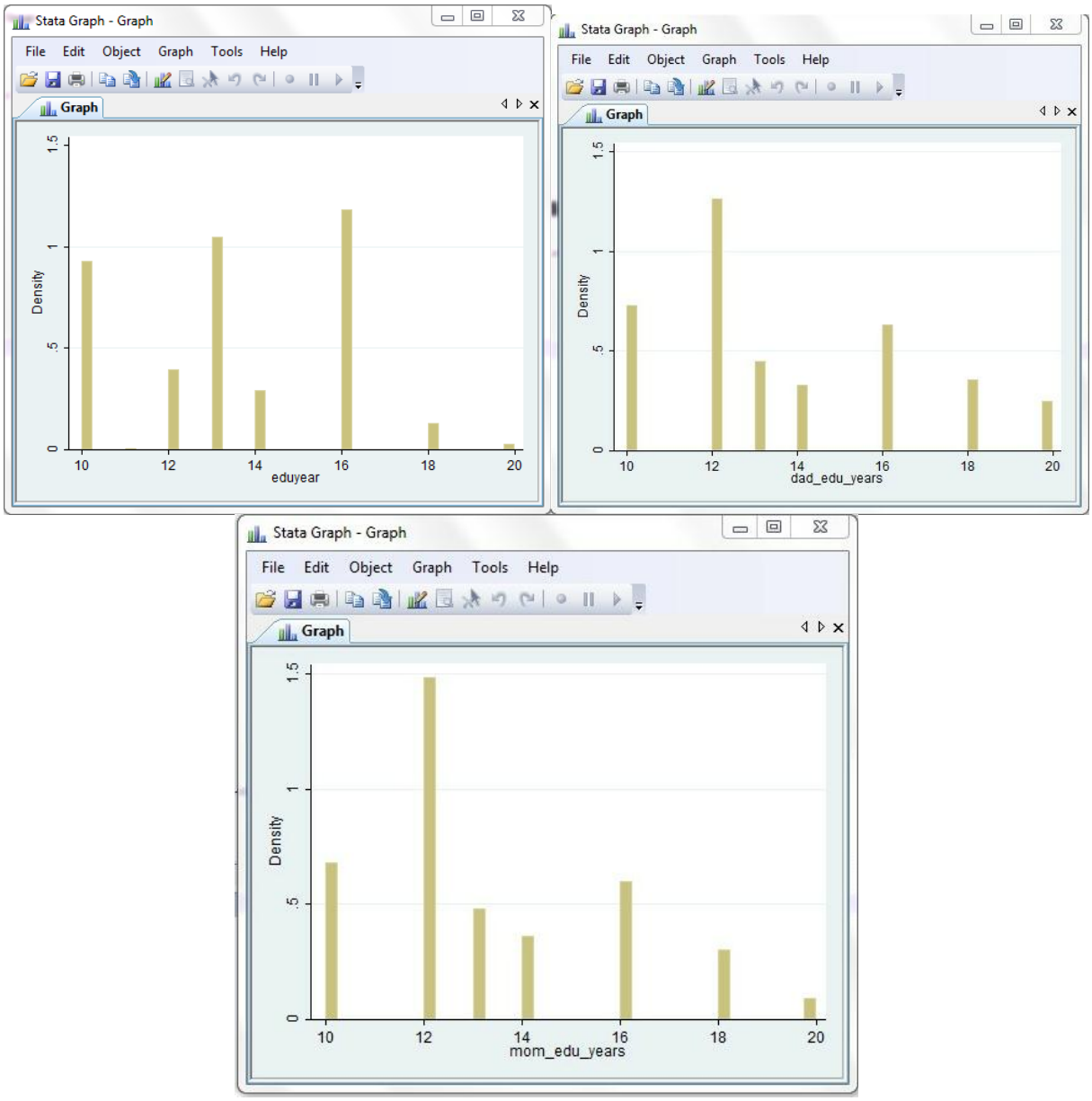
Table 9. Log Weekly Wage Regressions, Two-Parent Families

Family Income ($000s)	0.001988	0.001075	0.001647	0.001075
	(0.000324)	(0.00056)	(0.00032)	(0.00056)
Number of Siblings	-0.01397	-0.0282	-0.0093	-0.0282
	(0.006625)	(0.00979)	(0.00653)	(0.00979)
Siblings* Family Income		$4.19 * 10^{-7}$		$4.19 * 10^{-7}$
		$(2.13 * 10^{-7})$		$(2.13 * 10^{-7})$
Years of Schooling (Child)			0.056725	
			(0.005247)	
Mother Schooling	0.0118	0.01167	0.006824	0.01167
	(0.0066)	(0.00659)	(0.006505)	(0.00659)
Father Schooling	0.0025	0.002893	-0.00365	0.002893
	(0.0063)	(0.00625)	(0.00618)	(0.00625)
Math Score	0.0163	0.01632	0.0115	0.01632
	(0.0014)	(0.00143)	(0.00148)	(0.00143)
Read Score	-0.0075	-0.00746	-0.00878	-0.00746
	(0.0014)	(0.00141)	(0.00139)	(0.00141)
Constant	5.525061	5.55433	5.204747	5.55433
	(0.086289)	(0.08752)	(0.0899)	(0.08752)
R-Square	0.0742	0.0752	0.1036	0.0752
F-Statistic	47.62	41.4	58.84	41.4
Observations	3573	3573	3573	3573

Table 10. Log Weekly Wage Regressions, Mother Only

Family Income	0.001583	0.000908	0.001155	0.000466
	(0.000239)	(0.000417)	(0.000237)	(0.000412)
Number of Siblings	-0.02059	-0.03115	-0.01497	-0.02574
	(0.005649)	(0.007779)	(0.00557)	(0.007658)
Siblings*Family Income		$3.1 * 10^{-7}$		$3.16 * 10^{-7}$
		$(1.57 * 10^{-7})$		$(1.54 * 10^{-7})$
Years of Schooling (child)			0.059067	0.059095
			(0.004527)	(0.004526)
Mother Schooling	0.015526	0.01559	0.006745	0.006806
	(0.004918)	(0.004917)	(0.004882)	(0.00488)
Math Score	0.016541	0.016586	0.011465	0.011509
	(0.00126)	(0.00126)	(0.001298)	(0.001298)
Read Score	-0.00664	-0.00669	-0.00806	-0.00811
	(0.001244)	(0.001244)	(0.001228)	(0.001228)
Constant	5.480235	5.504571	5.118735	5.143386
	(0.070737)	(0.071782)	(0.074859)	(0.075795)
F-Statistic	86.2	72.52	102.69	88.68
R-Square	0.0811	0.0818	0.112	0.1128
Observations	4890	4890	4890	4890

Table 11. The histograms of years of education distributions for child, dad, and mom



CHAPTER SIX

CONCLUSION

Economists have long studied the myriad aspects of parent-child relationships. However, few papers discuss the impact of parental income on children's years of schooling and future income. Such oversight is likely due to a focus on child attainment instead of the function of intergenerational transmission.

The role of family resources (specifically income) in the determination of child outcomes is the chief issue discussed in this paper. Parents may improve their children's outcomes in numerous ways, including provision for tutors to improve study habits, a healthy lifestyle to encourage better learning, connections for potential employment, and bringing their children into the family business.

The assumption of this thesis examines five factors that affect child outcomes: schooling of parents (if the child has two parents); family income; number of siblings; the significance of family income to siblings; and the child's own ability. In order to demonstrate the assumption, data from nearly 10,000 students was analyzed, including their parents' level of education and number of siblings. As expected, these factors indeed play a major role in children's outcomes, suggesting that intergenerational transmission does exist and that family resources indeed influence their children's years of schooling and future income.

At the same time, the influence comes from parents is one of the perfect examples to explore. In this way, we can finally find out that family resources play a very important role in child not only in how many year of schooling they can acquire, but also in child future income. From the analysis all above, it is clear that both parents' level of education have a positive

correlation with child schooling, especially in two-parent families where more family resources for the child result in a more frequent pursuit of higher education.

Exploring the intergeneration transmission function is useful for both theory and reality. Imagine if society held children entirely responsible for their outcome. In such a world, parents would abstain from increasing children outcomes, blaming children with lower outcomes for a lack of work ethic, which hardly seems fair. Instead, parents realize the significance of their role in increasing child outcome and develop solutions to help their own children acquire the highest outcome possible as allowed by their current condition.

In addition, we mentioned about the policy by government to support education affairs by loan above. There are some weakness leading to the highly violation. Not each one could gain enough money to pay back when they are just graduating, and limited by time within 10 month after graduating, even interest lower for student loan than others, still have few people can't afford it. To improve this condition, first, we can give more time for students to pay back. Second, increasing the rate of return to education is more effective way, especially for those who come from low-level income family.

Admittedly, there are several key aspects that may influence child outcome that could not be analyzed with the data at hand. Two such aspects are proximity to schools and general neighborhood conditions. But one thing for sure is that if families with lower resources couldn't afford the expenditure if they want to move to a better place since the bad living environment. Therefore, we cannot ignore the influence of parents to children's outcome as many aspects.

References

1. Gary S. Becker and Barry R. Chiswick, Education and the Distribution of Earnings, The American Economic Review, Vol.56, No.1/2 (Mar.1, 1966), pp.358-369
2. Daron Acemoglu, J.S. Pischke, Changes in the wage structure, family income, and children's education, European Economic Review, 45 (2001), pp.890-903
3. Bruce Kaufman and Julie L. Hotchkiss, the economics of labor market, South-Western College Pub; 7 edition (July 19, 2005), pp.326-351
4. Saul D. Hoffman and Susan L. Averett, Women and the Economy: Family, work, and pay, 2010 by Pearson Education, 2 edition, pp.508-517
5. David L. Stevenson and David P. Baker, The Family-School Relation and the Child's School Performance, Child Development, Vol. 58, No. 5, Special Issue on Schools and Development (Oct.,1987), pp. 1348-1357
6. Paul R. Amato and Gay, Family Resources and the Development of Child Competence, Journal of Marriage and Family, Vol. 48, No. 1 (Feb., 1986), pp. 47-56 Published
7. Eric A. Hanushek, Assessing the Effects of School Resources on Student Performance: An Update, Educational Evaluation and Policy Analysis, Vol. 19, No. 2 (Summer, 1997), pp. 141-164Published
8. Mark Mather and Dia Adams, Population Reference Bureau, The Risk of Negative Child Outcomes in Low-Income Families, A kid count/PRB report on census 2000, pp.1-19
9. Donna K. Ginther and Robert A. Pollak, Does family structure affect children's educational outcomes, national bureau of economic research, April 2003 NBER Working Paper No. 9628, April 2003JEL No. J1

10. Howard Bodenhorn, Single parenthood and childhood outcomes in the mid-nineteenth century urban south, national bureau of economic research, NBER Working Paper No. 12056, February 2006, JEL No. I2, J1, N3
11. Janet Currie, Mark Stabile, Phongsack Manivong, and Leslie L. Roos, Child Health and Young Adult Outcomes, national bureau of economic research, NBER Working Paper No. 14482, November 2008, JEL No. I1
12. Brian Jacob and Jens Ludwig, Improving Educational Outcomes for Poor Children, national bureau of economic research, NBER Working Paper No. 14550, December 2008, JEL No. I20
13. Eric D. Gould, Victor Lavy, and M. Daniele Paserman, Sixty Years after the Magic Carpet Ride: The Long-Run Effect of the Early Childhood Environment on Social and Economic Outcomes, national bureau of economic research, NBER Working Paper No. 14884, April 2009, Revised June 2009, JEL No. F22, J13, J24
14. Amy J. Orr, Black-White Differences in Achievement: The Importance of Wealth, Sociology of Education, Vol. 76, No. 4 (Oct., 2003), pp. 281-304 Published
15. David N. Laband and Bernard F. Lentz (1983). Like Father, like Son: Toward an Economic Theory of Occupational Following, Southern Economic Journal, Vol. 50, No. 2 (Oct., 1983), pp. 474-493