

The Mississippi Delta: The Third World in America Why the Delta Remains Trapped in Poverty

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Introduction:

A poverty trap is a situation characterized by poverty that one wants to escape but cannot. It can refer to something as nebulous as the self-perpetuating nature of the welfare system or can be something more concrete, such as a country or a region. Most countries have their own “geographic or ethnic poverty traps.”ⁱ There are five of these “poverty clusters” in the United States: “(1) inner-city blacks, (2) rural blacks in the Mississippi Delta, (3) native Americans in the West, (4) Hispanics in the Southwest, and (5) whites in southern Kentucky.”ⁱⁱ In many ways, the economic phenomenon of regional poverty traps parallels the situation in which the world’s less developed countries (LDC’s) find themselves. While the world around them is amassing huge amounts of wealth and earning high incomes, these LDC’s cannot seem to escape their historical position as poor nations. This situation appears to parallel the relationship between the Mississippi Delta region and the rest of the United States in many ways, an observation that has also been made by others. For instance, in their paper, “The Mississippi Delta: Change or Continued Trouble,” Hyland and Timberlake assert that “the Delta is to the United States as poor countries of the Third World are to the industrialized countries of Western Europe, North America, and Japan.”

The persistence of poverty in the Mississippi Delta region is well documented by professionals in a variety of fields. This study focuses on what factors contribute to the Mississippi Delta remaining a regional poverty trap while the counties, states, and country

around it see substantially higher incomes and a higher quality of life. Using a county specific data set assembled from census records, agricultural reports, and various other sources, results show that the Delta counties' high poverty percentages exist and persist because of a complex interaction of variables and patterns. Through regression of income, poverty and educational attainment on the region's characteristics, this paper attempts to isolate the root causes of the Delta's persistent poverty and how they might be addressed.

Literature Review:

Not surprisingly, there is a wealth of information on the topic of poverty: what causes it, what will solve it, even the basic question of how to define it. Living on less than \$1 or \$2 a day is one well-accepted global standard for impoverishment. By this definition, few people, if any, in the developed world qualify. Conversely, Dr. Gertraud Pichler, President of the International Federation for Home Economics (IDHE), defines poverty globally to be "the lack of means to secure the needs of life at those relevant standards of a society which are historically applicable and typical from the social and cultural points of view." Under this definition, poverty varies from country to country. This paper will follow the U.S. Census Bureau's definition of poverty, which uses "a set of money income thresholds that vary by family size and composition to detect who is poor. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being "below the poverty level."ⁱⁱⁱ

In his report to the UN Secretary-General entitled *Investing in Development: A Practical Plan to Achieve the Millennium Development Goals*, Jeffery D. Sachs, the

director of the Millennium Project (the advisory body out of which the report came), outlines the Millennium Development Goals and ten recommendations for significantly reducing extreme poverty globally. The Millennium Development Goals are as follows: (1) “eradicate extreme poverty and hunger,” (2) “achieve universal primary education,” (3) “promote gender equality and empower women,” (4) “reduce child mortality,” (5) “improve maternal health,” (6) “combat HIV/AIDS, malaria, and other diseases,” (7) “ensure environmental sustainability,” and (8) “develop a global partnership for development.”^{iv}

While not all take the exact same form, many of these global issues are the same issues faced in the Mississippi Delta. For instance, while the kind of extreme poverty that Sachs refers to does not exist in the United States or the Delta, a poverty that is extreme relative to the rest of the county does, and the same is true for the measures of health mentioned. Additionally, many of the counties to which these goals are geared do not have primary school education available for every child, male or female, regardless of their ability to pay. Any child is allowed to attend school in the United States, and in the Mississippi Delta, so while this issue does not exist in the form outlined by the Millennium Project, the issue of the quality of the education received and the incentives to graduate high school are prevalent. The eighth goal, to “develop a global partnership for development,” has a lot to do with dealing with problems involving indebtedness to other countries, trade with other countries, and the lack of a well functioning financial system. Many of the less developed counties of the world have relatively closed economies or are subject to very high tariffs, but this is not an issue in the Mississippi Delta. Not only are the Delta’s products not subject to tariffs within the United States, but they are often subsidized by the government. Additionally, the region as a whole is not in debt, has the

same basic institutions in place as the rest of the country, and has significant aid coming into it. On an individual basis, this may not necessarily be the case. Nevertheless, the eighth goal really does not apply to the Delta in the same way that the other goals do.

Most of the recommendations made by the Millennium Project are somewhat general in nature, but the three necessities are a common thread. The countries need to have governments that are willing to implement the Millennium Project's strategies, the governments need money to implement these strategies, and the developed world has to help out by doing things like opening up trade and funding the ventures. Sachs does note later that “sometimes the problem is poor governance, marked by corruption, poor economic policy choices, and denial of human rights.”^v The rule of law, equality across groups, investment in public goods, and transparency in public administration are all stressed as necessities for a well-functioning government and the development it can bring.^{vi}

Costas Azariadis and John Stachurski, in their paper entitled “Poverty Traps,” conclude that “poor countries are not rich because they have failed to adopt the modern techniques of production which first emerged in Britain during the Industrial Revolution As a result, their economies have stagnated.”^{vii} The rich countries, on the other hand, have continued to innovate, causing the gap between rich and poor to expand more and more. Their prescription is that changes to people’s environment and incentive structure is what is necessary for growth; however, he adds that while formal norms such as government policy can be changed quickly, the informal norms that govern everyday life can be much more difficult to change.^{viii}

By the 20th century, the Mississippi Delta's slave-labor based plantation system had transformed into the institution of sharecropping, in which each family lives on and works a particular piece of land.^{ix} In their article, *American's Forgotten People and Places: Ending the Legacy of Poverty in the Rural South*," Allen-Smith, Wimberley, and Morris cite another study that attributes low incomes in the Mississippi Delta to the economic structure that emerged out of the plantation system, which is now characterized by the large share of the economy dominated by agricultural services and the large farm size in the Central Delta.^x Allen-Smith also offers a summary of the various variables others have looked at that are associated with poverty as causes or effects. For instance, poverty is more prevalent among minorities, children, female-headed households, those who are uneducated (or have low human capital), and those who live in rural settings.^{xi}

Restricted opportunity in the form of discrimination, patronage, and unequal education is a reason argued by authors such as Schiller and Duncan.^{xii} Allen-Smith reports that "Hyland and Timberlake indicate the public schools in many Delta counties are poorly funded . . . and that much of the disparity is due to differences in contributions at the local level."^{xiii} Another characteristic which they claims influences poverty in the Mississippi Delta, is the prevalence of a fatalistic outlook on life in the sense that "many perceive their own destiny as controlled by forces larger than themselves."^{xiv} Allen-Smith attributes fatalism to a combination of factors, such as religious beliefs, regional culture, and risk assessment.^{xv} While they do not come to any conclusion as to the cause of the legacy of poverty or how to end it, Allen-Smith, Wimberley, and Morris ultimately conclude that countries should focus on "economic infrastructure development and human capital development," as well as "the need to build sustainable communities, develop local

leadership, and change the opportunity structure.”^{xvi} Some trends with regard to religion in the U.S. are notable; for example, “40 percent of the 160 richest Americans are Jewish, although only 2 percent of the U.S. population is Jewish.”^{xvii} Unfortunately, the census does not account for religion in surveying the population, and a county level measure of the religiousness of a community was unavailable.

In Cynthia M. Duncan’s book, *World’s Apart: Why Poverty Persists in Rural America*, Duncan looks at poverty in a community in the Mississippi Delta (Dahlia) and in a community in Appalachia (Blackwell). These are two very different places with very similar issues. Duncan places the majority of the blame on corrupt political and business elites for keeping these two communities divided into a class-based system of “haves and have-nots.”^{xviii} In the Delta, the have’s are the white planter class, and in Appalachia, they are the coal industry’s elite. She sees the power of the have’s as being so absolute that political change is impossible and claims that these groups are so powerful that they can even control what industry is allowed to come into the area, preventing development from occurring. Additionally, because the elites are perceived as being so powerful, most people are scared to stand-up to them or to try and create change for fear of the repercussions, such as being “cut off from welfare, or their kids won’t be picked up by the bus, or won’t get their free lunch, or a hundred other things.”^{xix} For instance, “Blackwell residents say the coal elite blocked new industry at critical junctures in the 1960’s and 1970’s because they feared dilution of their power over labor and community affairs,”^{xx} and a Dahlia leader said that “as long as the farmers’ power structure is there, they’re not going to let industry in. They blocked it before and they’ll block it again.”^{xxi} Duncan also talks about how, in both Dahlia and Blackwell, your last name and who you know means

everything in terms of getting credit, getting a job, and other basic needs. So, while “race and class go together in Dahlia, and being black means being poor in all but a few cases,” the same problems exist for people in Blackwell who find their family name on the list of the unfavorable regardless of race.^{xxii} Patronage dictates to whom jobs will go. Duncan’s book raises some important issues, such as the ability of the elite to prevent change, corruption in local government, and patronage; however, these are very difficult, if not impossible, to account for when doing a quantitative analysis.

Thomas Kersen finds that the overall picture in the Mississippi Delta during the nineties was more positive than had been in the past. For instance, there was a reversal in the migration trends from the past’s out-migration.^{xxiii} Infant mortality, poverty, drop-out rates and teenage pregnancy all declined during the nineties, while per capita income, median household incomes and high-school graduation rates increased.^{xxiv} But, since Kersen’s paper *The Changing Delta, 1990 to 2000* is more of an examination of the conditions and not the causes, he does not give reasons for these increases. Additionally, the fact that the United States as a whole saw increased prosperity during the nineties should be acknowledged in evaluating this improvement in the Delta, and so while the improvements in the region are positive signals, they do not necessarily indicate a reversal in the historical trends of the region.

Migration is an issue that affects many developing economies, and while obtaining measurements of total migration in and out of a U.S. region is not difficult, determining which people are actually doing the migrating is more difficult. Basic economics, as well as logic, says that a person will go where they can get a job that provides the best return on his/her investment. This is important because if the people leaving the Delta are those with

education and/or skills, the brain drain phenomenon that causes many LDC's to lose their most educated citizens is likely affecting the Delta in a similar way and will continue to do so as long as educated people do not see a benefit to remaining in the Delta. "The returns to higher education are generally low in the rural sectors of most developing countries, so for rural inhabitants to reap the rewards to higher education may require moving to a metropolitan area."^{xxv} Additionally, studies have shown that when better educated people migrate, they tend to do so over longer distances; fortunately, since better education also lowers the information barriers associated with distance, they wouldn't necessarily have to migrate out.^{xxvi} Also, since there is a recognized benefit of having multiple educated people work together, if the education level of a large segment of the population increases, the brain drain could lessen.

In Robert Lucas's piece on "the effects of proximity and transportation on developing country population migration," he points out many of the costs associated with relocation and the fact that these costs tend to increase as the distance increases.^{xxvii} For instance, there are transportation costs, costs associated with re-establishing a residence and earnings forgone during the transition period; there is also the cost involved in looking for the job, which can either be in terms of a monetary cost, a time cost, or both.^{xxviii} Meeting these costs may be difficult since doing so will most often mean having to raise the funds before the move, something even more difficult for poor households who may not have the necessary credit.^{xxix} If one is moving away from family and friends, maintaining a line of communication in the form of visits or phone calls can also be a substantial cost. Moving away from family and friends, moving to a new city, and changing one's way of life can also exert "psychic costs" on the individual.^{xxx} As Lucas

points out, a result of these costs increasing as the distance increases, means that migrations tend to occur over short distances, which can have the effect of creating a poverty trap.^{xxxii} This occurs for a number of reasons, but one in particular is that the most capable, educated people will likely be the ones able to overcome the barriers to migration not only because they have the resources but because they are the ones most likely to benefit from going somewhere with higher paying jobs available, leaving the origin with lower wages overall.^{xxxiii} This could be a particularly poignant problem for those counties with no urban areas at all.

Those people with lower educational attainment are more likely to be unemployed or hold low paying jobs.^{xxxiii} Then, the lower income households often must have as many family members working as possible, which means that the younger generation is not able to stay in school, perpetuating the cycle because they will likely only be able to find low paying jobs as well.^{xxxiv} It is a commonly proposed solution to simply increase a school's funding. This is based on the economic principle that investment in education leads to an increase in human capital, which leads to an increase in the marginal productivity of labor, which leads to an increase in the total factor productivity, which ultimately leads to an increase in overall development and prosperity. The idea that investing money in education will cause growth is well founded in theory, but exactly where that money should go and how it should be spent is a much more complicated question.

The problem in many of the less developed countries is a lack of funds and indebtedness, but the Mississippi Delta enjoys being a part of the wealthy United States with its various economic assistance programs. While this may be a puzzling dissimilarity, it is not if viewed in the light of differences between the Delta and the rest of the county

and the differences between LDC's and the rest of the world. The Delta does get federal assistance, but so does everywhere else in the country. Additionally, revenue sources like income and property taxes are going to generate less revenue in regions like the Delta because there is less of a monetary base to begin with. Federal funds are one way to correct this discrepancy.

Family is another common theme throughout much of the development literature. Dr. Gertraud Pichler, IFHE President, states in his 2002 address entitled "The Eradication of Poverty and the 10th Anniversary of the International Year of the Family," that children in poverty are at risk developmentally because of factors including "inadequate nutrition, environmental toxins, trauma and abuse, lower quality child care, [and] parental substance abuse."^{xxxv} The result of this is that "as children grow into adolescent and adulthood, they are more likely to drop out of school, have children out of wedlock, and be unemployed."^{xxxvi} Health is an issue frequently tied to poverty because poor health, whether a short-term illness or a long-term disability, can limit an individual's ability to work and make money. As a result, limited finances will limit the individual's ability to obtain healthcare.

Natural resources have had an enormous effect on development around the world. The abundance of natural resources in a country or region has had a positive effect on the economies of some but a negative effect on the economies of others. More broadly, there are certain geographic conditions that increase the likelihood of a poverty trap developing.^{xxxvii} The Mississippi Delta actually has very few of these conditions working against it and a few working for it. For instance, while it is landlocked, it is not in the mountains, is not far from markets, and has the navigable Mississippi River. It does have

low population densities in general, but it also has consistent rainfall and nutrient rich soils, and it is reasonably well integrated into the region around it. It is somewhat susceptible to natural disasters such as floods, and the argument definitely can be made that there are artificial borders across groups. So, while the Delta does have some of the conditions that make for a likely poverty trap region, the initial conditions do not dictate that it should be anymore likely than anywhere else in the United States to have lagged behind in development.

An external influence on these regions is simply the expectations people have for them. Just as people will not invest in a country that is not expected to grow or is unstable, expectations for these areas' economies affect what investment comes in. By this logic, the fact that the Delta has been poor predicts that it will continue to be poor. Connected to this is the idea of incentives and the internal influence of institutions, both formal and informal. William Easterly concludes that "income differences are explained not by the individuals' effort to accumulate physical and human capital, but by differences in knowledge and matching opportunities."^{xxxviii} In other words, if one does not perceive any benefit to pursuing additional skills, he/she won't. Like the investors who will not come into an area where they see no opportunity for profit, people may be less willing to invest in obtaining education and skills if they see no payoff waiting. Corrupt institutions can distort incentives that reinforce the corruption.^{xxxix} Corruption can also reduce the incentives to invest in a future because it reduces payoffs and increases uncertainty.^{xl}

Race is a variable that is almost always included in poverty discussion because of the disparity in wages that exists in the United States. "Blacks earn 41 percent less whites . . . Native American earn 36 percent less than whites, Hispanics earn 31 percent less, and

Asians earn 16 percent more.”^{xli} In his study entitled *Race and Poverty in America: Public Misconceptions and the American Media*, Martin Gilens determines that U.S. media presents a distorted portrait of race and poverty that has caused the American perception of the poor as predominately black and to poverty being a predominately “black problem.”^{xlii} The percent of the black population in the Delta that is in poverty is very large; however, to undertake a responsible study of the region, this needs to be viewed as a relationship of correlation with many factors causing that correlation.

Duncan points out the problem of patronage and racism in the Mississippi Delta, factors which cannot be ignored. While the relatively small numbers of people that live in each Delta county may increase the problem of favoritism since people will tend to know each other more so than in a city, these factors cannot be blamed for all of the problems that exist, as tempting as doing so may be. Additionally, these issues exist to some degree everywhere and are not specific to either Appalachia or the Delta. The issues of corruption, racism and patronage cannot specifically be fully accounted for in this paper, but their importance and influence also cannot be ignored. They undoubtedly explain some of the remaining variance in y.

Data and Models Defined:

Data is county specific, a county being defined as the “primary legal subdivision of most states” by the U.S. Census.^{xliii} In evaluating Louisiana, parishes, “a type of governmental unit that is the primary legal subdivision of Louisiana, similar to a county in other states” was used instead.^{xliv} In Thomas M. Kersen’s article *The Changing Delta, 1990 to 2000*, he defines the Mississippi Delta as the Northeast region of the state of

Mississippi and made up of the eighteen Mississippi counties listed under “Mississippi Delta” in Table 1.^{xlv} In order to determine whether or not the economic issues that affect the Mississippi Delta are unique to this particular land area, I also included in my survey as controls those counties contiguous to the Delta and those counties contiguous to the contiguous counties. These are also listed in Table 1.

Table 1: Counties in Sample							
<i>Mississippi Delta:</i>		<i>Contiguous to Delta:</i>		<i>Contiguous to the Contiguous</i>			
<i>County:</i>	<i>State:</i>	<i>County:</i>	<i>State:</i>	<i>County:</i>	<i>State:</i>	<i>County:</i>	<i>State:</i>
Bolivar	Mississippi	Attala	Mississippi	Adams	Mississippi	Morehouse	Louisiana
Carroll	Mississippi	Chicot	Arkansas	Arkansas	Arkansas	Neshoba	Mississippi
Coahoma	Mississippi	Claiborne	Mississippi	Ashley	Arkansas	Poinsett	Arkansas
DeSoto	Mississippi	Crittenden	Arkansas	Benton	Mississippi	Pontotoc	Mississippi
Holmes	Mississippi	Desha	Arkansas	Calhoun	Mississippi	Rankin	Mississippi
Humphreys	Mississippi	East Carroll	Louisiana	Catahoula	Louisiana	Richland	Louisiana
Issaquena	Mississippi	Grenada	Mississippi	Choctaw	Mississippi	Scott	Mississippi
Leflore	Mississippi	Hinds	Mississippi	Concordia	Louisiana	Simpson	Mississippi
Panola	Mississippi	Lafayette	Mississippi	Copiah	Mississippi	St. Francis	Arkansas
Quitman	Mississippi	Lee	Arkansas	Cross	Arkansas	Tipton	Tennessee
Sharkley	Mississippi	Madison	Mississippi	Drew	Arkansas	Union	Mississippi
Sunflower	Mississippi	Madison	Louisiana	Fayette	Tennessee	Webster	Mississippi
Tallahatchie	Mississippi	Marshall	Mississippi	Franklin	Louisiana	West Carroll	Louisiana
Tate	Mississippi	Montgomery	Mississippi	Jefferson	Mississippi	Winston	Mississippi
Tunica	Mississippi	Phillips	Arkansas	Leake	Mississippi		
Warren	Mississippi	Shelby	Tennessee	Lincoln	Arkansas		
Washington	Mississippi	Tensas	Louisiana	Mississippi	Arkansas		
Yazoo	Mississippi	Yalobusha	Mississippi	Monroe	Arkansas		

By using a simultaneous equation model to account for the endogenous explanatory variables, per capita income and the percent of the population with at least a high school education were regressed on the applicable variables. Because the percent of the population that has graduated from high school is so consistently a strong influence on per capita income, it is used again in the second of the regressions as the dependent variable. In order to correct for the high correlation between race and single parent households, the model was run three times (see appendix for variable correlation table), once as it appears

below with 12 and 8 independent variables, once with “perfamsinglep” excluded from both equations, and once with “perblack” excluded from both equations.

$$pcinc = B_0 + B_1(perhsabove) + B_2(perfamsinglep) + B_3(perblack) + B_4(interstate) + B_5(river) + B_6(farmingdepend) + B_7(percommuteout) + B_8(popden) + B_9(pop16inlf) + B_{10}(avgfarmsize) + B_{11}(\Delta) + B_{12}(perpopu5) \quad (1a)$$

$$perhsabove = B_0 + B_1(farmingdepend) + B_2(perfamsinglep) + B_3(perblack) + B_4(pcffdis98) + B_5(pcffag98) + B_6(pcffhh98) + B_7(pcffhugl98) + B_8(pcffhu98) + B_9(expperstdt) \quad (1b)$$

This same model was the run again; however this time per capita income was replaced with the percent of the population in poverty.

$$perpov = B_0 + B_1(perhsabove) + B_2(perfamsinglep) + B_3(perblack) + B_4(interstate) + B_5(river) + B_6(farmingdepend) + B_7(percommuteout) + B_8(popden) + B_9(pop16inlf) + B_{10}(avgfarmsize) + B_{11}(\Delta) + B_{12}(perpopu5) \quad (2a)$$

$$perhsabove = B_0 + B_1(farmingdepend) + B_2(perfamsinglep) + B_3(perblack) + B_4(pcffdis98) + B_5(pcffag98) + B_6(pcffhh98) + B_7(pcffhugl98) + B_8(pcffhu98) + B_9(expperstdt) \quad (2b)$$

The definitions of all included variables are listed in Table 2.

Table 2: Variable Name Key	
Variable Name	Description
Avgfarmsize	Average Farm Size (acres)
Delta	In Mississippi Delta (1=is; 0=is not)
expperstdt	Current Expenditure Per Student
farmingdepend	Farming-dependent County
interstate	U.S. Interstate (1=has; 0=does not have)
pcffag98	Federal Funding: Agriculture Department (Per Capita; 1998)
pcffdis98	Federal Funding: Social Security Disability Insurance (Per Capita; 1998)
pcffhh98	Federal Funding: Health and Human Services Department (Per Capita; 1998)
pcffhu98	Federal Funding: Housing and Urban Development Department (Per Capita; 1998)
pcffhugl98	Federal Funding: Housing and Urban Development Department - Guaranteed/Insured Loans (Per Capita; 1998)
pcinc	Per Capita Income
perblack	Percent of Population Black or African American
percommuteout	Percent of Workers Commuting Out of County of Residence
perfamsinglep	Percent of Families Headed by a Single Parent
perhsabove	Percent of Population Over 25 Years With at Least a High School Education

perpopu5	Percent of Population Under 5 Years
perpov	Percent of Population in Poverty
pop16inlf	Percent of Population 16 Years & Over In Labor Force
Popden	Population Density (Persons Per Square Mile)
River	Mississippi River (1=touches; 0=does not touch)

The first equation regresses per capita income (pcinc) on the twelve independent variables of perhsabove, perfamsinglep, perblack, interstate, river, farmingdepend, percommuteout, popden, pop16inlf, avgfarmsize, Delta, and perpopu5. The variable “pcinc” is a measure of per capita income as reported by the U.S. Census Bureau.¹ The variable “perpov” is a measure of the percent of the population in poverty as reported by the U.S. Census Bureau and defined previously. Hence, there is no dollar amount that automatically makes a family impoverished. It depends on the number of persons in the household and their ages.^{xlvi} Poverty thresholds are listed by the size of the family unit and the number of children in Table 3.

Table 3										
Poverty Thresholds in 2000, by Size of Family and Number of Related Children Under 18 Years (Dollars)										
Size of family unit	Weighted average thresholds	Related children under 18 years								
		None	One	Two	Three	Four	Five	Six	Seven	Eight or more
One person (unrelated individual)	8,794									
Under 65 Years	8,959	8,959								
65 Years and over	8,259	8,259								
Two persons	11,239									
Householder under 65 years	11,590	11,531	11,869							
Householder 65 years and over	10,419	10,409	11,824							
Three persons	13,738	13,470	13,861	13,874						
Four persons	17,603	17,761	18,052	17,463	17,524					
Five persons	20,819	21,419	21,731	21,065	20,550	20,236				
Six persons	23,528	24,636	24,734	24,224	23,736	23,009	22,579			
Seven persons	26,754	28,347	28,524	27,914	27,489	26,696	25,772	24,758		
Eight persons	29,701	31,704	31,984	31,408	30,904	30,188	29,279	28,334	28,093	
Nine persons or more	35,060	38,138	38,322	37,813	37,385	36,682	35,716	34,841	34,625	33,291

Source: U. S. Bureau of the Census, Current Population Survey

¹ Total income is defined by the U.S. Census Bureau as the “sum of the amounts reported separately for wages, salary, commissions, bonuses, or tips; self-employment income from own nonfarm or farm businesses, including proprietorships and partnerships; interest, dividends, net rental income, royalty income, or income from estates and trusts; Social Security or Railroad Retirement income; Supplemental Security Income (SSI); any public assistance or welfare payments from the state or local welfare office; retirement, survivor, or disability pensions; and any other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support, or alimony.” (U.S. Census Bureau. 2000 <<http://www.census.gov>>.)

The variable “perhsabove” is a measure of the percent of the population 25 years of age and over that has at least a high school education. It was generated by summing the U.S. Census Bureau’s counts of the population 25 and over with a high school diploma or equivalency, some college, an associate degree, a bachelor's degree, a master's degree, a professional school degree, or a doctorate degree, and then dividing by the total population 25 years of age and over and multiplying by 100.^{xlvi} The variable “perblack” is a measure of the percent of the population that is black, and was generated by dividing the county’s total Black or African-American population, as reported by the U.S. Census Bureau, by the county’s total population, as reported by the U.S. Census Bureau, and multiplying by 100.^{xlvi} The U.S. Census Bureau defines one’s race classification as “a self-identification data item in which respondents choose the race or races with which they most closely identify.”^{xlix} The variable “interstate” is a dummy variable indicating whether or not there is an U.S. interstate route that passes through the county, with a 1 indicating that at least one such interstate does and 0 indicating that no interstate passes through any portion of the county. The variable “river” is a dummy variable indicating whether or not the county touches the Mississippi River, with a 1 indicating that the county touches the river and 0 indicating that it does not. Both the river and interstate variables are based on a 2005 Road Atlas.¹ The variables “percommuteout,” “popden,” “perfamsinglep,” and “farmingdepend,” were obtained from the U.S. Department of Agriculture Economic Research Service, which “developed these data series from analysis of the 1990 and 2000 Census conducted by the U.S. Census Bureau.”^{li} The variable “percommuteout” is a measure of the percent of workers commuting out of their county of residence for work. The variable “popden” is a measure

of population density, or the persons per square mile. The variable “perfamsinglep” is a measure of the percent of families headed by a single parent. ERS classified each county’s economy as being primarily of one of six types: farming dependent, mining-dependent, manufacturing-dependent, federal and state government dependent, service-dependent, or nonspecialized.^{lii} The one ultimately included in the regression was farming-dependent, “farmingdepend,” and is done so in order to capture that effect that being a primarily agricultural county has on a county’s economy and development. The variable “pop16inlf” is a measure of the percent of the population 16 years and over that is in labor force as reported by the U.S. Census Bureau.² The variable “avgfarmsize” is a measure of the average farm size in a county as reported by the National Agricultural Statistics Service 2002 Census of Agriculture.^{liii} The variable “Delta” is a dummy variable indicating whether or not the county is part of the Mississippi Delta region as defined by Thomas M. Kersen’s article *The Changing Delta, 1990 to 2000*.^{liv} A 1 indicates that the county falls within the Mississippi Delta, and a 0 indicates that it does not, as is the case with the contiguous and noncontiguous counties. The variable “perpopu18” is a measure of the percent of the population under the age of 18 and was generated by taking the sum of the county’s population under 18, dividing by the county’s total population and multiplying by 100.^{lv}

² The U.S. Census Bureau defines the labor force as including “all people classified in the civilian labor force, plus members of the U.S. Armed Forces . . . The Civilian Labor Force consists of people classified as employed or unemployed.” Being “employed includes all civilians 16 years old and over who were either (1) ‘at work’ -- those who did any work at all during the reference week as paid employees, worked in their own business or profession, worked on their own farm, or worked 15 hours or more as unpaid workers on a family farm or in a family business; or (2) were ‘with a job but not at work’ -- those who did not work during the reference week but had jobs or businesses from which they were temporarily absent due to illness, bad weather, industrial dispute, vacation, or other personal reasons.” Those classified as unemployed are “all civilians 16 years old and over [who] (1) were neither ‘at work’ nor ‘with a job but not at work’ during the reference week, and (2) were actively looking for work during the last 4 weeks, and (3) were available to accept a job.” (*U.S. Census Bureau*. 2000)

The second equations regress the percentage of people who have at least a high school education (“perhsabove”) on the independent variables of farmingdepend, perfamsinglep, perblack, pcffdis98, pcffag98, pcffhh98, pcffhu98, pcffhugl98, and expperstdt.³ The U.S. Census Bureau’s Consolidated Federal Funds Report, a “presentation of Federal Government expenditures or obligations in state, county, and sub-county areas of the United States,” was the source of the federal funding data.^{lvi} Since federal funding is often determined by poverty levels, funding in the year 1998 was chosen instead of 2000 in order to lag the variables and show the effect funding actually has. The variable “expperstdt” is a measure of the current expenditure per student and was obtained through School Profiles provided by the National Center for Education Statistics and applies to the 1999-2000 school year.^{lvii} The counties of Issaquena and Sharkey shared one combined school district.^{lviii} The summary statistics for all variables are listed in Table 4.

Table 4: Variable Summary Statistics					
Variable	Obs	Mean	Std. Dev.	Min	Max
avgfarmsize	68	571.26	408.03	148.00	2,053.00
Delta	68	0.26	0.44	0	1
Expperstdt	68	5,259.71	571.03	3,932.00	6,886.00
farmingdepend	68	0.18	0.38	0	1
Interstate	68	0.44	0.50	0	1
pcffag98	68	730.28	559.49	87.03	2,909.44
pcffdis98	68	256.65	62.92	132.14	415.43
pcffhh98	68	1,622.32	450.17	526.91	2,652.11
pcffhu98	68	81.12	66.44	0.00	354.32
pcffhugl98	68	559.61	1,915.76	0.00	12,790.07
Pcinc	68	13,911.74	2,747.98	9,629.00	23,469.00
Perblack	68	44.12%	18.74%	7.13%	86.49%
percommuteout	68	34.92%	16.64%	5.00%	76.00%

³ The variable “pcffdis98” is a measure of the per capita federal expenditure associated with Social Security Disability Insurance in 1998. The variable “pcffag98” is a measure of the per capita federal funds from the Agriculture Department in 1998. The variable “pcffhh98” is a measure of the per capita federal funds from the Health and Human Services Department in 1998. The variables “pcffhu98” and “pcffhugl98” are measures of the per capita federal funding from the Housing and Urban Development Department and the amount of “guaranteed/insured loans” per capita from the Housing and Urban Development Department respectively in 1998.

perfamsinglep	68	33.34%	8.62%	20.00%	51.00%
perhsabove	68	66.06%	6.71%	53.72%	83.01%
perpopu5	68	7.17%	0.73%	5.40%	8.94%
Perpov	68	24.98%	7.84%	7.11%	41.13%
pop16inlf	68	55.00%	6.05%	42.00%	70.00%
Popden	68	63.82	145.61	5.51	1,189.00
River	68	0.32	0.47	0	1

The results of regressions (1a') and (1b') are reported in Table 5.

Table 5: Influences on per capita income & educational attainment				
Equation	Obs	R-sq		
Perhsabove	68	0.614		
Pcinc	68	0.902		
	Coef.	Std. Err.	z	P> z
Perhsabove				
Farmingdepend	-0.981	1.549	-0.63	0.527
Perblack	0.024	0.098	0.24	0.808
Perfamsinglep	-0.344	0.224	-1.54	0.125
pcffdis98	-0.029	0.009	-3.24	0.001
pcffag98	-0.005	0.001	-3.87	0.000
pcffhh98	-0.004	0.001	-3.18	0.001
pcffhugl98	0.000	0.000	0.36	0.717
pcffhu98	0.040	0.010	3.97	0.000
Expperstdt	0.001	0.001	1.17	0.242
Constant	85.203	6.177	13.79	0.000
Pcinc				
Perhsabove	204.405	59.058	3.46	0.001
Perfamsinglep	-121.982	72.012	-1.69	0.090
Perblack	30.510	30.006	1.02	0.309
Interstate	-90.433	251.459	-0.36	0.719
River	-357.774	335.069	-1.07	0.286
Farmingdepend	207.426	317.629	0.65	0.514
Percommuteout	3.898	9.349	0.42	0.677
Popden	2.693	0.913	2.95	0.003
pop16inlf	175.358	55.246	3.17	0.002
Avgfarmsize	0.081	0.408	0.20	0.842
Delta	116.136	310.218	0.37	0.708
perpopu5	69.460	233.517	0.30	0.766
Constant	-7,279.639	3,218.987	-2.26	0.024

(1a')

$$\text{pcinc} = -7,279.639 + 204.405(\text{perhsabove}) - 121.982(\text{perfamsinglep}) + 30.510(\text{perblack}) - 90.433(\text{interstate}) - 357.774(\text{river}) + 207.426(\text{farmingdepend}) + 3.898(\text{percommuteout}) + 2.693(\text{popden}) +$$

$$175.358(\text{pop16inlf}) + 0.081(\text{avgfarmsize}) + 116.136(\text{Delta}) + 69.460(\text{perpopu5})$$

Percent of the population that has graduated from high school is positive and significant with respect to per capita income; given a 1 percentage point increase in the population that has graduated from high school, per capita income is expected to increase by \$204.405. Percent of families headed by a single parent is negative and significant with respect to per capita income; given a 1 percentage point increase in the families headed by a single parent, per capita income is expected to decrease by \$121.982. Percent of the population that is black is positive and insignificant with respect to per capita income. Interstate and river are both negative and insignificant with respect to per capita income. Farming-dependent and percent of workers commuting out of county of residence are both positive and insignificant with respect to per capita income. Population density is positive and significant with respect to per capita income; given an additional person per square mile, per capita income is expected to increase by \$2.693. Percent of the population 16 years and over in the labor force is positive and significant with respect to per capita income; given a 1 percentage point increase in the population 16 years and over in the labor force, per capita income is expected to increase by \$175.358. Average farm size, Delta, and percent of the population under 5 are all positive and insignificant with respect to per capita income.

(1b')

$$\begin{aligned} \text{perhsabove} = & 85.203 - 0.981(\text{farmingdepend}) + 0.024(\text{perblack}) - \\ & 0.344(\text{perfamsinglep}) - 0.029(\text{pcffdis98}) - 0.005(\text{pcffag98}) - \\ & 0.004(\text{pcffhh98}) + 0.000(\text{pcffhugl98}) + 0.040(\text{pcffhu98}) + 0.001(\text{expperstdt}) \end{aligned}$$

Farming-dependent is negative and insignificant with respect to percent of the population that has graduated from high school. Percent of the population that is black is

positive and insignificant with respect to percent of the population that has graduated from high school. Percent of families headed by a single parent is negative and insignificant with respect to percent of the population that has graduated from high school. Social Security Disability Insurance is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Social Security Disability Insurance funding, the percent of the population that has graduated from high school is expected to decrease by 0.029 percentage points. Agriculture Department is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Agriculture Department funding, the percent of the population that has graduated from high school is expected to decrease by 0.005 percentage points. Health and Human Services Department is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Health and Human Services Department funding, the percent of the population that has graduated from high school is expected to decrease by 0.004 percentage points. Housing and Urban Development's Guaranteed/Insured Loans is neutral and insignificant with respect to percent of the population that has graduated from high school. Housing and Urban Development is positive and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Health and Human Services Department funding, the percent of the population that has graduated from high school is expected to increase by 0.040 percentage point. Total expenditure per student is positive and insignificant with respect to percent of the population that has graduated from high school. The results of regressions (3a) and (3b) are reported in Table 6.

Table 6: Influences on per capita income & educational attainment (without race variable)				
Equation	Obs	R-sq		
Perhsabove	68	0.614		
Pcinc	68	0.900		
	Coef.	Std. Err.	Z	P> z
Perhsabove				
Farmingdepend	-0.917	1.523	-0.60	0.547
Perfamsinglep	-0.292	0.076	-3.84	0.000
Pcffdis98	-0.029	0.009	-3.26	0.001
pcffag98	-0.005	0.001	-3.86	0.000
pcffhh98	-0.005	0.001	-3.25	0.001
pcffhugl98	0.000	0.000	0.36	0.715
pcffhu98	0.039	0.010	3.95	0.000
Expperstdt	0.001	0.001	1.16	0.246
Constant	84.720	5.816	14.57	0.000
Pcinc				
Perhsabove	218.044	54.056	4.03	0.000
Perfamsinglep	-51.684	22.761	-2.27	0.023
Interstate	-90.398	254.382	-0.36	0.722
River	-371.970	336.640	-1.10	0.269
Farmingdepend	258.059	315.307	0.82	0.413
Percommuteout	8.224	8.027	1.02	0.306
Popden	2.657	0.921	2.89	0.004
pop16inlf	161.561	50.462	3.20	0.001
Avgfarmsize	0.054	0.416	0.13	0.897
Delta	104.199	314.577	0.33	0.740
perpopu5	14.686	240.295	0.06	0.951
Constant	-8,160.924	2,931.365	-2.78	0.005

(3a)

$$\begin{aligned}
 \text{pcinc} = & -8,160.924 + 218.044(\text{perhsabove}) + -51.684(\text{perfamsinglep}) + - \\
 & 90.398(\text{interstate}) + -371.970(\text{river}) + 258.059(\text{farmingdepend}) + \\
 & 8.224(\text{percommuteout}) + 2.657(\text{popden}) + 161.561(\text{pop16inlf}) + \\
 & 0.054(\text{avgfarmsize}) + 104.199(\text{Delta}) + 14.686(\text{perpopu5})
 \end{aligned}$$

Percent of the population that has graduated from high school is positive and significant with respect to per capita income; given a 1 percentage point increase in the population that has graduated from high school, per capita income is expected to increase by \$218.044. Percent of families headed by a single parent is negative and significant with respect to per capita income; given a 1 percentage point increase in the families headed by

a single parent, per capita income is expected to decrease by \$51.684. Interstate and river both are negative and insignificant with respect to per capita income. Farming-dependent and percent of workers commuting out of county of residence are both positive and insignificant with respect to per capita income. Population density is positive and significant with respect to per capita income; given an additional person per square mile, per capita income is expected to increase by \$2.657. Percent of the population 16 years and over in the labor force is positive and significant with respect to per capita income; given a 1 percentage point increase in the population 16 years and over in the labor force, per capita income is expected to increase by \$161.561. Average farm size, Delta, and percent of the population under 5 are all positive and insignificant with respect to per capita income.

(3b)

$$\text{perhsabove} = 84.720 - 0.917(\text{farmingdepend}) - 0.292(\text{perfamsinglep}) - 0.029(\text{pcffdis98}) - 0.005(\text{pcffag98}) - 0.005(\text{pcffhh98}) + 0.039(\text{pcffhu98}) + 0.000(\text{pcffhugl98}) + 0.001(\text{expperstdt})$$

Farming-dependent is negative and insignificant with respect to percent of the population that has graduated from high school. Percent of families headed by a single parent is negative and significant with respect to the percent of the population that has graduated from high school; given a 1 percentage point increase in the percent of families headed by a single parent, the percent of the population that has graduated from high school is expected to decrease by 0.292 percentage points. Social Security Disability Insurance is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Social Security Disability Insurance funding, the percent of the population that has graduated from high school is expected to decrease by 0.029 percentage points. Agriculture Department is negative and

significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Agriculture Department funding, the percent of the population that has graduated from high school is expected to decrease by 0.005 percentage points. Health and Human Services Department is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Health and Human Services Department funding, the percent of the population that has graduated from high school is expected to decrease by 0.005 percentage points. Housing and Urban Development's Guaranteed/Insured Loans is neutral and insignificant with respect to percent of the population that has graduated from high school. Housing and Urban Development is positive and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Housing and Urban Development funding, the percent of the population that has graduated from high school is expected to increase by 0.039 percentage points. Total expenditure per student is positive and insignificant with respect to percent of the population that has graduated from high school. The results of regressions (4a) and (4b) are reported in Table 7.

Table 7: Influences on per capita income & educational attainment (without single parent family variable)				
Equation	Obs	R-sq		
perhsabove	68	0.601		
Pcinc	68	0.896		
	Coef.	Std. Err.	Z	P> z
perhsabove				
farmingdepend	-0.609	1.554	-0.39	0.695
Perblack	-0.117	0.034	-3.45	0.001
pcffdis98	-0.029	0.009	-3.29	0.001
pcffag98	-0.005	0.001	-3.86	0.000
pcffhh98	-0.005	0.001	-3.51	0.000
pcffhugl98	0.000	0.000	0.46	0.648
pcffhu98	0.036	0.010	3.62	0.000

Expperstdt	0.001	0.001	1.11	0.268
Constant	81.458	5.744	14.18	0.000
Pcinc				
perhsabove	226.703	56.239	4.03	0.000
Perblack	-16.054	9.708	-1.65	0.098
Interstate	-90.724	259.356	-0.35	0.726
River	-420.198	338.739	-1.24	0.215
farmingdepend	299.038	320.693	0.93	0.351
percommuteout	11.808	8.015	1.47	0.141
Popden	2.520	0.931	2.71	0.007
pop16inlf	163.861	55.253	2.97	0.003
avgfarmsize	0.027	0.425	0.06	0.949
Delta	-2.849	320.434	-0.01	0.993
perpopu5	-80.275	241.944	-0.33	0.740
Constant	-9,258.088	2,846.803	-3.25	0.001

(4a)

$$\begin{aligned}
 pcinc = & -9,258.088 + 226.703(\text{perhsabove}) - 16.054(\text{perblack}) - \\
 & 90.724(\text{interstate}) - 420.198(\text{river}) + 299.038(\text{farmingdepend}) + \\
 & 11.808(\text{percommuteout}) + 2.520(\text{popden}) + 163.861(\text{pop16inlf}) + \\
 & 0.027(\text{avgfarmsize}) - 2.849(\text{Delta}) - 80.275(\text{perpopu5})
 \end{aligned}$$

Percent of the population that has graduated from high school is positive and significant with respect to per capita income; given a 1 percentage point increase in the population that has graduated from high school, per capita income is expected to increase by \$226.703. Percent of the population that is black is negative and significant with respect to per capita income; given a 1 percentage point increase in the percent of the population that is black, per capita income is expected to decrease by \$16.054. Interstate and river are both negative and insignificant with respect to per capita income. Farming-dependent and percent of workers commuting out of county of residence are both positive and insignificant with respect to per capita income. Population density is positive and significant with respect to per capita income; given an additional person per square mile, per capita income is expected to increase by \$2.520. Percent of the population 16 years and over in the labor force is positive and significant with respect to per capita income; given a 1 percentage point increase in the population 16 years and over in the labor force,

per capita income is expected to increase by \$163.861. Average farm size is positive and insignificant with respect to per capita income. Delta and the percent of the population under 5 are negative and insignificant with respect to per capita income.

$$\text{perhsabove} = 81.458 - 0.609(\text{farmingdepend}) - 0.117(\text{perblack}) - 0.029(\text{pcffdis98}) - 0.005(\text{pcffag98}) - 0.005(\text{pcffhh98}) + 0.000(\text{pcffhug198}) + 0.036(\text{pcffhu98}) + 0.001(\text{expperstdt}) \quad (4b)$$

Farming-dependent is negative and insignificant with respect to percent of the population that has graduated from high school. Percent of the population that is black is negative and significant with respect to percent of the population that has graduated from high school; given a 1 percentage point increase in the percent of the population that is black, the percent of the population that has graduated from high school is expected to decrease by 0.117 percentage points. Social Security Disability Insurance is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Social Security Disability Insurance funding, the percent of the population that has graduated from high school is expected to decrease by 0.029 percentage points. Agriculture Department is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Agriculture Department funding, the percent of the population that has graduated from high school is expected to decrease by 0.005 percentage points. Health and Human Services Department is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Health and Human Services Department funding, the percent of the population that has graduated from high school is expected to decrease by 0.005 percentage points. Housing and Urban Development's Guaranteed/Insured Loans is neutral and insignificant with respect to

percent of the population that has graduated from high school. Housing and Urban Development is positive and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Housing and Urban Development, the percent of the population that has graduated from high school is expected to increase by 0.036 percentage points. Total expenditure per student is positive and insignificant with respect to percent of the population that has graduated from high school. The results of regressions (2a') and (2b') are reported in Table 8.

Table 8: Influences on percent in poverty & educational attainment				
Equation	Obs	R-sq		
Perhsabove	68	0.610		
Perpov	68	0.906		
	Coef.	Std. Err.	z	P> z
Perhsabove				
Farmingdepend	-0.457	1.546	-0.30	0.768
Perblack	0.020	0.098	0.20	0.841
Perfamsinglep	-0.319	0.223	-1.43	0.153
pcffdis98	-0.023	0.009	-2.63	0.008
pcffag98	-0.005	0.001	-4.18	0.000
pcffhh98	-0.005	0.001	-3.77	0.000
pcffhugl98	0.000	0.000	0.50	0.618
pcffhu98	0.042	0.010	4.19	0.000
Expperstdt	0.001	0.001	1.25	0.211
Constant	84.009	6.109	13.75	0.000
Perpov				
Perhsabove	-0.109	0.163	-0.67	0.502
Perfamsinglep	0.600	0.198	3.02	0.002
Perblack	-0.065	0.083	-0.79	0.432
Interstate	0.001	0.686	0.00	0.999
River	-0.135	0.914	-0.15	0.882
Farmingdepend	0.489	0.882	0.55	0.580
Percommuteout	-0.011	0.026	-0.44	0.658
Popden	-0.004	0.002	-1.80	0.072
Pop16inlf	-0.560	0.152	-3.69	0.000
Avgfarmsize	0.002	0.001	1.71	0.087
Delta	-0.369	0.849	-0.43	0.664
perpopu5	0.944	0.639	1.48	0.140
Constant	38.759	8.862	4.37	0.000

(2a')

$$\begin{aligned} \text{perpov} = & 38.759 - 0.109(\text{perhsabove}) + 0.600(\text{perfamsinglep}) - \\ & 0.065(\text{perblack}) + 0.001(\text{interstate}) - 0.135(\text{river}) + 0.489(\text{farmingdepend}) - \\ & 0.011(\text{percommuteout}) - 0.004(\text{popden}) - 0.560(\text{pop16inlf}) + \\ & 0.002(\text{avgfarmsize}) - 0.369(\text{Delta}) + 0.944(\text{perpopu5}) \end{aligned}$$

Percent of the population that has graduated from high school is negative and insignificant with respect to percent of the population in poverty. Percent of families headed by a single parent is positive and significant with respect to percent of the population in poverty; given a 1 percentage point increase in the families headed by a single parent, percent of the population in poverty is expected to increase by 0.600 percentage points. Percent of the population that is black is positive and insignificant with respect to percent of the population in poverty. Interstate is positive and insignificant with respect to percent of the population in poverty. River is negative and insignificant with respect to percent of the population in poverty. Farming-dependent is positive and insignificant with respect to percent of the population in poverty. Percent of workers commuting out of county of residence is negative and insignificant with respect to percent of the population in poverty. Population density is negative and significant with respect to percent of the population in poverty; given an additional person per square mile, percent of the population in poverty is expected to decrease by 0.004 percentage points. Percent of the population 16 years and over in the labor force is negative and significant with respect to percent of the population in poverty; given a 1 percentage point increase in the population 16 years and over in the labor force, percent of the population in poverty is expected to decrease by 0.560 percentage points. Average farm size is positive and significant with respect to percent of the population in poverty; given a 1 acre increase in average farm size, the percent of the population in poverty is expected to increase by 0.002

percentage points. Delta is negative and insignificant with respect to percent of the population in poverty. The percent of the population under 5 is positive and insignificant with respect to percent of the population in poverty.

(2b')

$$\begin{aligned} \text{perhsabove} = & 84.009 - 0.457(\text{farmingdepend}) + 0.020(\text{perblack}) - \\ & 0.319(\text{perfamsinglep}) - 0.023(\text{pcffdis98}) - 0.005(\text{pcffag98}) - \\ & 0.005(\text{pcffhh98}) + 0.000(\text{pcffhugl98}) + 0.042(\text{pcffhu98}) + 0.001(\text{expperstdt}) \end{aligned}$$

Farming-dependent is negative and insignificant with respect to percent of the population that has graduated from high school. Percent of the population that is black is positive and insignificant with respect to percent of the population that has graduated from high school. Percent of families headed by a single parent is negative and insignificant with respect to percent of the population that has graduated from high school. Social Security Disability Insurance is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Social Security Disability Insurance funding, the percent of the population that has graduated from high school is expected to decrease by 0.023 percentage points. Agriculture Department is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Agriculture Department funding, the percent of the population that has graduated from high school is expected to decrease by 0.005 percentage points. Health and Human Services Department is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Health and Human Services Department funding, the percent of the population that has graduated from high school is expected to decrease by 0.005 percentage points. Housing and Urban Development's Guaranteed/Insured Loans is neutral and insignificant with respect to percent of the population that has graduated from

high school. Housing and Urban Development is positive and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Housing and Urban Development funding, the percent of the population that has graduated from high school is expected to increase by 0.042 percentage points. Total expenditure per student is positive and insignificant with respect to percent of the population that has graduated from high school. The results of regressions (5a) and (5b) are reported in Table 9.

Table 9: Influences on percent in poverty & educational attainment (without race variable)				
Equation	Obs	R-sq		
Perhsabove	68	0.610		
Perpov	68	0.905		
	Coef.	Std. Err.	z	P> z
Perhsabove				
Farmingdepend	-0.424	1.520	-0.28	0.780
Perfamsinglep	-0.276	0.076	-3.66	0.000
pcffdis98	-0.023	0.009	-2.68	0.007
pcffag98	-0.005	0.001	-4.15	0.000
pcffhh98	-0.005	0.001	-3.82	0.000
pcffhugl98	0.000	0.000	0.50	0.616
pcffhu98	0.041	0.010	4.16	0.000
Expperstdt	0.001	0.001	1.24	0.216
Constant	83.698	5.751	14.55	0.000
Perpov				
Perhsabove	-0.126	0.148	-0.85	0.393
Perfamsinglep	0.451	0.062	7.28	0.000
Interstate	-0.014	0.688	-0.02	0.984
River	-0.153	0.910	-0.17	0.867
Farmingdepend	0.407	0.866	0.47	0.638
Percommuteout	-0.020	0.022	-0.93	0.351
Popden	-0.004	0.002	-1.78	0.075
Pop16inlf	-0.536	0.137	-3.91	0.000
Avgfarmsize	0.002	0.001	1.78	0.075
Delta	-0.336	0.854	-0.39	0.693
perpopu5	1.084	0.652	1.66	0.096
Constant	39.924	7.987	5.00	0.000

(5a)

$$\begin{aligned} \text{perpov} = & 39.924 - 0.126 (\text{perhsabove}) + 0.451 (\text{perfamsinglep}) - 0.014 \\ & (\text{interstate}) - 0.153 (\text{river}) + 0.407 (\text{farmingdepend}) - 0.020 \\ & (\text{percommuteout}) - 0.004 (\text{popden}) - 0.536 (\text{pop16inlf}) + 0.002 \\ & (\text{avgfarmsize}) - 0.336 (\text{Delta}) + 1.084 (\text{perpopu5}) \end{aligned}$$

Percent of the population that has graduated from high school is negative and insignificant with respect to percent of the population in poverty. Percent of families headed by a single parent is positive and significant with respect to percent of the population in poverty; given a 1 percentage point increase in the families headed by a single parent, percent of the population in poverty is expected to increase by 0.451 percentage points. Interstate and river are negative and insignificant with respect to percent of the population in poverty. Farming-dependent is positive and insignificant with respect to percent of the population in poverty. Percent of workers commuting out of county of residence is negative and insignificant with respect to percent of the population in poverty. Population density is negative and significant with respect to percent of the population in poverty; given an additional person per square mile, percent of the population in poverty is expected to decrease by 0.004 percentage points. Percent of the population 16 years and over in the labor force is negative and significant with respect to percent of the population in poverty; given a 1 percentage point increase in the population 16 years and over in the labor force, percent of the population in poverty is expected to decrease by 0.536 percentage points. Average farm size is positive and significant with respect to percent of the population in poverty; given a 1 acre increase in the average farm size, percent of the population in poverty is expected to increase by 0.002 percentage points. Delta is negative and insignificant with respect to percent of the population in poverty. The percent of the population under 5 is positive and significant with respect to

percent of the population in poverty; given a 1 percentage point increase in the percent of the population under 5, percent of the population in poverty is expected to increase by 1.084 percentage points.

$$\begin{aligned} \text{perhsabove} = & 83.698 - 0.424 (\text{farmingdepend}) - 0.276 (\text{perfamsinglep}) - \\ & 0.023 (\text{pcffdis98}) - 0.005(\text{pcffag98}) - 0.005(\text{pcffhh98}) + 0.000 (\text{pcffhugl98}) \\ & + 0.041 (\text{pcffhu98}) + 0.001 (\text{expperstdt}) \end{aligned} \tag{5b}$$

Farming-dependent is negative and insignificant with respect to percent of the population that has graduated from high school. Percent of families headed by a single parent is negative and significant with respect to percent of the population that has graduated from high school; given a 1 percentage point increase in the percent of families headed by a single parent, the percent of the population that has graduated from high school is expected to decrease by 0.276 percentage points. Social Security Disability Insurance is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Social Security Disability Insurance funding, the percent of the population that has graduated from high school is expected to decrease by 0.023 percentage points. Agriculture Department is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Agriculture Department funding, the percent of the population that has graduated from high school is expected to decrease by 0.005 percentage points. Health and Human Services Department is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Health and Human Services Department funding, the percent of the population that has graduated from high school is expected to decrease by 0.005 percentage points. Housing and Urban Development's Guaranteed/Insured Loans is neutral and insignificant with respect to

percent of the population that has graduated from high school. Housing and Urban Development is positive and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Housing and Urban Development funding, the percent of the population that has graduated from high school is expected to increase by 0.041 percentage points. Total expenditure per student is positive and insignificant with respect to percent of the population that has graduated from high school. The results of regressions (6a) and (6b) are reported in Table 10.

Table 10: Influences on percent in poverty & educational attainment (without single parent family variable)				
Equation	Obs	R-sq		
Perhsabove	68	0.597		
Perpov	68	0.891		
	Coef.	Std. Err.	z	P> z
Perhsabove				
Farmingdepend	-0.193	1.551	-0.12	0.901
Perblack	-0.110	0.034	-3.24	0.001
pcffdis98	-0.025	0.009	-2.80	0.005
pcffag98	-0.005	0.001	-4.13	0.000
pcffhh98	-0.006	0.001	-4.06	0.000
pcffhugl98	0.000	0.000	0.65	0.518
pcffhu98	0.037	0.010	3.74	0.000
Expperstdt	0.001	0.001	1.16	0.245
Constant	80.901	5.674	14.26	0.000
Perpov				
Perhsabove	-0.200	0.162	-1.23	0.217
Perblack	0.163	0.028	5.83	0.000
Interstate	-0.018	0.739	-0.02	0.981
River	0.104	0.965	0.11	0.914
Farmingdepend	0.059	0.929	0.06	0.950
Percommuteout	-0.049	0.023	-2.16	0.031
Popden	-0.004	0.003	-1.39	0.166
Pop16inlf	-0.518	0.158	-3.27	0.001
Avgfarmsize	0.002	0.001	1.86	0.063
Delta	0.269	0.916	0.29	0.769
perpopu5	1.737	0.692	2.51	0.012
Constant	47.611	8.174	5.82	0.000

(6a)

$$\begin{aligned} \text{perpov} = & 47.611 - 0.200 (\text{perhsabove}) + 0.163 (\text{perblack}) - 0.018 (\text{interstate}) \\ & + 0.104 (\text{river}) + 0.059 (\text{farmingdepend}) - 0.049 (\text{percommuteout}) - 0.004 \\ & (\text{popden}) - 0.518 (\text{pop16inlf}) + 0.002 (\text{avgfarmsize}) + 0.269 (\text{Delta}) + 1.737 \\ & (\text{perpopu5}) \end{aligned}$$

Percent of the population that has graduated from high school is negative and insignificant with respect to percent of the population in poverty. Percent of the population that is black is positive and significant with respect to percent of the population in poverty; given a 1 percentage point increase in the percent of the population that is black, percent of the population in poverty is expected to increase by 0.163 percentage points. Interstate is negative and insignificant with respect to percent of the population in poverty. River is positive and insignificant with respect to percent of the population in poverty. Farming-dependent is positive and insignificant with respect to percent of the population in poverty. Percent of workers commuting out of county of residence is negative and significant with respect to percent of the population in poverty; given a 1 percentage point increase in the workers commuting out of county, percent of the population in poverty is expected to decrease by 0.049 percentage points. Population density is negative and insignificant with respect to percent of the population in poverty. Percent of the population 16 years and over in the labor force is negative and significant with respect to percent of the population in poverty; given a 1 percentage point increase in the population 16 years and over in the labor force, percent of the population in poverty is expected to decrease by 0.518 percentage points. Average farm size is positive and significant with respect to percent of the population in poverty; given a 1 acre increase in the average farm size, percent of the population in poverty is expected to increase by 0.002 percentage points. Delta is positive and insignificant with respect to percent of the population in poverty. The percent of the

population under 5 is positive and significant with respect to percent of the population in poverty; given a 1 percentage point increase in the population under 5, percent of the population in poverty is expected to increase by 1.737 percentage points.

$$\begin{aligned} \text{perhsabove} = & 80.901 - 0.193 (\text{farmingdepend}) - 0.110 (\text{perblack}) - 0.025 \\ & (\text{pcffdis98}) - 0.005 (\text{pcffag98}) - 0.006 (\text{pcffhh98}) + 0.000 (\text{pcffhugl98}) + \\ & 0.037 (\text{pcffhu98}) + 0.001 (\text{expperstdt}) \end{aligned} \tag{6b}$$

Farming-dependent is negative and insignificant with respect to percent of the population that has graduated from high school. Percent of the population that is black is negative and significant with respect to percent of the population that has graduated from high school; given a 1 percentage point increase in the percent of the population that is black, the percent of the population that has graduated from high school is expected to decrease by 0.110 percentage points. Social Security Disability Insurance is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Social Security Disability Insurance funding, the percent of the population that has graduated from high school is expected to decrease by 0.025 percentage points. Agriculture Department is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Agriculture Department funding, the percent of the population that has graduated from high school is expected to decrease by 0.005 percentage points. Health and Human Services Department is negative and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Health and Human Services Department funding, the percent of the population that has graduated from high school is expected to decrease by 0.006 percentage points. Housing and Urban Development's Guaranteed/Insured Loans is neutral and insignificant with respect to

percent of the population that has graduated from high school. Housing and Urban Development is positive and significant with respect to percent of the population that has graduated from high school; given a 1 dollar increase in Housing and Urban Development funding, the percent of the population that has graduated from high school is expected to increase by 0.037 percentage points. Total expenditure per student is positive and insignificant with respect to percent of the population that has graduated from high school.

Discussion and Implications of Results:

The Delta is often talked about as being poor more simply because it is the Mississippi Delta, as if there is something fundamentally different and immeasurable about the region that has prevented its growth. For this reason the dummy variable “Delta” was included; however, it never came out as being significant when regressed with other variables, nor was the sign consistently negative or positive. Hence, there is no evidence to support that the Mississippi Delta’s population is poor simply because they live in the region defined as “the Delta.” Other economic and societal factors must be at work.

The per capita income model shows the interstates and the river to be consistently negative but insignificant with respect to per capita income. When viewed in respect to the percent of the population in poverty, the sign of the coefficients are not constantly positive or negative, and their significance is even lower. Likewise, a county’s economy being dependent on farming never came out as significant, although the coefficient was more strongly negative in the models with both *perblack* and *perfamsinglep* or with only *perfamsinglep* in respect to those with a high school education or above. Its coefficients’ sign shows it to have a positive effect on both per capita income and the percent in

poverty, so there are likely other elements to this variable that are either accounted for elsewhere or not captured.

The percent of workers commuting out of their county of residence for work is positive and insignificant with respect to per capita income. It is negative and insignificant with respect to the percent of the population in poverty in all but the last regression. This says that when more people that commute out of their county to work, the percent of the population in poverty will decrease. While this is a believable statement, why the variable would be so strongly influenced by either *perfamsinglep* or *perblack* is unclear. When *perfamsinglep* was left out of the regression, the variable became significant.

The percent of the population in the labor force is consistently significant. Its coefficient is negative with respect to the percent of the population in poverty and is positive with respect to a county's per capita income. Hence, the more people participating in the labor force, the better off economically the county will be. The average labor force participation rate for the region is only 55%, which is relatively low for the country. This variable also merits future attention to determine why it is so low. For instance, there may be discouraged workers who are not in the labor force because they couldn't find a job when they were in the labor force, or the jobs that are available may not be attractive enough to people.

The percent of the population under 5 years of age came out as insignificant with respect to per capita income. Its coefficient was positive in the first two regressions; however, it switched to negative when regressed with only *perblack*, which could mean that the percent of families headed by a single parent was picking up the under 5 variable previously. When modeled with percent in poverty, the percent of the population under 5

was insignificant when both *perfamsinglep* and *perblack* were included. But, it was positive and significant, though barely, when only *perfamsinglep* was included as a right hand side variable, and it was positive and highly significant when only *perblack* was included as the right hand side variable, meaning that poverty increases as the percent of the population under 5 years old does. The single parent family variable and the percent of the population under 5, have a correlation of 0.52, so this, combined with the model's results reinforces the idea that there is interaction between the two. Additionally, when tested for joint significance, *perpov*, *perpopu5* and *perfamsinglep* were shown to be strongly jointly significant.^{lix} These things could be because parents are more likely to be single while their children are young, or they could be simply picking up the overlap between the two variables. Either way, it is a logical conclusion to say that more children under 5 would be associated with high poverty for three possible reasons. First, low income families tend to have more children than high income families. Second, children are time-consuming and may prevent parents from being able to work. Third, as Table 3 illustrates, the expense of each additional child is not counted into the poverty threshold by a constant amount, and in some cases, an additional child under 18 can mean that the poverty threshold goes down, not up.

The federal funding variables were consistent between the two models. While the Housing and Urban Development Department's Guaranteed/Insured Loans never came out as significant and came out as neither positive nor negative, the four remaining federal funding variables are consistently significant with respect to that percent of the population with at least a high school education. Agriculture Department funding, Social Security Disability Insurance and Health and Human Services funding all have negative

coefficients, meaning that for a one dollar per person increase in funding for these organizations, the percent of the population graduating from high school will actually go down. This could be indicative of several things. There could simply be a high correlation between the counties that get a lot of federal funding and have low graduation rates and the time lag of two years is not enough to really look at the effects. On the other hand, the argument can be made that increased federal funding creates perverse incentives. For instance, increased funding for agriculture could entice students to drop out of school to work on the farms, or it could simply help to perpetuate the agricultural economy that has prevented industrialization. The argument can also be made that if federally funded housing is available, people may be less likely to finish school because they are not as worried about finding a place to live.

The sign on the coefficients for the Housing and Urban Development's funding is positive and much stronger in terms of magnitude than the other three federal funding coefficients, meaning that it appears that each dollar used by the HUD is causing more students to graduate high school. The possibility also exists that the two variables are simply highly correlated because the areas that tend to attract the department's funds are ones that are also more likely to graduate students for other reasons. Additionally, HUD also gives, on average, much less in total dollar amounts than the other departments mentioned, which could skew the data if the funding is concentrated in a few areas. Hence, while federal funding is undoubtedly significant, the effects of it are an issue that needs more attention in order to justify saying that an increase or a decrease in any particular department would help an area's economy. Surprisingly, expenditure per student never came out as significant, although it was slightly positive with respect to the

percent of people who graduated high school. What this likely says is that there are simply other factors more important to whether or not a person graduates than how much money is spent on each student, such as whether or not their parents graduated from high school.

The variable population density was included in order to account for the rural and urban elements of a county. Population density was consistently positive and significant with respect to per capita income, implying that the more urban a county is, the higher the incomes should be. Similarly, it was negative and significant in respect to the percent of the population in poverty, implying that the people per square mile, the lower the percent of the people in poverty. This is with the exception of when `perfaminglep` was left out of the regression because in that case it was insignificant although still negative. Average farm size, another rural indicator, is positive and insignificant with respect to per capita income. Conversely, it is positive and significant with respect to the percent of the population in poverty, meaning that as the farms get larger on average, the general population is more impoverished. This fits with the idea that there is a legacy of the plantation in some form in the Mississippi Delta, but the fact that the variable is insignificant and positive with respect to per capita income is suspicious.

The percent of the population that has graduated from high school is consistently positive and the most significant variable with respect to per capita income. This implies that the more educated the populace, the high incomes will be on average. With respect to the percent of the population in poverty, it is negative but insignificant, a surprising result in light of the strong significance with per capita income in the first model. It seems to be that the population density measures of `avgfarmsize` and `popden` are positively correlated with `perhsabove` and perhaps drawing away from its significance. When tested for joint

significance in their effects on *perpov*, the three variables indeed come out as being jointly significant.^{lx} This makes sense in the light of the theory that educated people tend to congregate so that they can reap the benefit of working with other educated people. It also explains why the t-statistics on *perhsabove* would be lower in the second model. It is most likely the case that its correlation with other variables is the cause of the *perhsabove* variable appearing to lose its significance.

The variables representing the percent of the population that is Black or African American and the percent of the families that are headed by a single parent have a correlation of 0.96, which is why the two additional regressions were run for each model. In both models, when both variables are included, neither has a significant impact on *perhsabove*; however, *perfamsinglep* was significant with respect to the income and poverty variables. When the variables were each run separately, both were consistently significant and had consistent effects. In the first model, the *perfamsinglep* was shown to negatively affect both the percent of people who had a high school education and the per capita income; in other words, the more single parent families, the lower the educational attainment of the county and the lower the per capita income. The percent of the population that is black also affected *perhsabove* and *pcinc* negatively so that the higher the proportion of black persons in the county, the lower the educational attainment and per capita income levels. When inserted into the second model, the variables had the same effect on the percent of the population in poverty and educational attainment. The coefficients for *perblack* and *perfamsinglep* are again both negative with respect to *perhsabove*, and they are both positive with respect to the percent of the population in poverty. Hence, more single parent families lowers the educational attainment level and

increase the percent of people in poverty, and the higher the percent of the population that is black, the lower the educational attainment and the higher the percent of people in poverty.

Ultimately, the five most important variables seem to be the percent of the population over 16 in the labor force, the population density, the percent of the population that has graduated from high school, the percent of the population that is black, and the percent of families that are headed by a single parent. As for the first variable, the percent of the population over 16 in the labor force, the point is clear that people need more incentives to join the labor force. Whether that means higher wages, equal hiring law enforcement, changing the welfare laws, or another solution, this merits more investigation as to the influences and effects. The second variable, population density, is highly correlated with other measures of urban and rural influences and with the third variable, the percent of people who have graduated high school. This says that educated people tend to go where there are other educated people; hence, education matters. The fourth and fifth variables, the percent of the population that is black and the percent of families that are headed by a single parent are highly correlated; however, the percent of families headed by a single parent is more significant, which leads one to the conclusion that it is perhaps the more influential variable of the two. A societal matter as complex as single parent headed households is not something that is easily answered, nor is it possible to answer given the framework here. Additionally, whether this is a cause or effect of poverty is a messy question.

What is known is that internationally females have a higher tendency to drop out of school, and they do so in order to help with household chores and raising children.^{lxi}

“Experience has shown that investment in girl’s and women’s education not only makes for greater equity but also tends to translate directly into better nutrition for the family, better health care, declining fertility and potentially greater economic empowerment.”^{lxii} This is likely true in the Delta as well. So, it once again comes back to education, both in terms of its quality and the incentives to obtain it.

Costas Azariadis and John Stachurski draw their paper to a close with the statement that “there is a real sense in which poverty traps are optimistic. Poverty is not the result of some simple geographic or cultural determinism.”^{lxiii} I would like to do the same. There is nothing fundamentally different about the Mississippi Delta or the people of the Mississippi Delta to account for the poverty there. Based on the finding presented here, if schools in the Mississippi Delta can be brought up to the standard of other schools around the country so that the students get the human capital necessary to compete in the job market, and if the proper incentives can be offered to entice them to stay in school through graduation, the income gap should close and the poverty numbers drop.

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Appendix:

Table 1A: Variable Correlation							
	pcinc	perpov	perhsabove	farmingdepend	perblack	perwhite	perfamsinglep
pcinc	1.00						
perpov	-0.84	1.00					
perhsabove	0.88	-0.70	1.00				
farmingdepend	-0.31	0.29	-0.33	1.00			
perblack	-0.57	0.81	-0.42	0.16	1.00		
perwhite	0.56	-0.81	0.41	-0.17	-1.00	1.00	
perfamsinglep	-0.57	0.83	-0.43	0.11	0.96	-0.96	1.00
pcffdis98	-0.19	-0.05	-0.25	-0.12	-0.03	0.04	-0.01
pcffag98	-0.48	0.58	-0.45	0.40	0.35	-0.33	0.35
pcffhh98	-0.57	0.65	-0.53	0.23	0.39	-0.40	0.44
pcffhugl98	0.09	-0.05	0.10	-0.08	-0.07	0.06	-0.05
pcffhu98	-0.10	0.35	0.08	-0.13	0.45	-0.46	0.51
expperstdt	-0.25	0.35	-0.13	0.17	0.22	-0.22	0.24
interstate	0.37	-0.35	0.32	-0.33	-0.20	0.21	-0.18
river	-0.11	0.30	0.04	0.09	0.38	-0.39	0.41
percommuteout	0.08	-0.27	-0.03	0.03	-0.21	0.23	-0.34
popden	0.48	-0.27	0.45	-0.13	-0.02	0.01	0.01
pop16inlf	0.85	-0.74	0.75	-0.40	-0.50	0.49	-0.43
avgfarmsize	-0.45	0.59	-0.41	0.20	0.45	-0.45	0.53
delta	-0.20	0.32	-0.23	-0.02	0.44	-0.44	0.49
perpopu5	-0.09	0.34	-0.09	-0.13	0.38	-0.41	0.52
	pcffdis98	pcffag98	pcffhh98	pcffhugl98	pcffhu98	expperstdt	interstate
pcffdis98	1.00						
pcffag98	-0.28	1.00					
pcffhh98	0.14	0.38	1.00				
pcffhugl98	-0.10	0.26	-0.06	1.00			
pcffhu98	-0.12	0.26	0.30	0.27	1.00		
expperstdt	-0.15	0.47	0.29	0.06	0.28	1.00	
interstate	0.03	-0.34	-0.24	-0.08	0.09	-0.27	1.00
river	-0.35	0.28	0.03	0.19	0.45	0.40	-0.17
percommuteout	0.09	-0.18	-0.35	-0.17	-0.43	-0.37	0.20
popden	-0.18	-0.21	-0.15	0.01	0.20	-0.01	0.24
pop16inlf	-0.10	-0.47	-0.55	0.06	-0.12	-0.28	0.42
avgfarmsize	-0.26	0.69	0.18	0.23	0.29	0.47	-0.27
delta	-0.12	0.15	-0.10	-0.13	0.07	-0.15	0.00
perpopu5	-0.02	0.00	0.24	0.06	0.33	-0.07	0.12
	river	percommuteout	popden	pop16inlf	avgfarmsize	delta	perpopu5
river	1.00						
percommuteout	-0.23	1.00					
popden	0.19	-0.20	1.00				
pop16inlf	-0.09	0.01	0.39	1.00			
avgfarmsize	0.45	-0.34	-0.19	-0.28	1.00		
delta	0.08	-0.01	-0.05	-0.02	0.36	1.00	
perpopu5	0.33	-0.32	0.14	0.17	0.40	0.31	1.00