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Harry J. Holzer, Georgetown University and the Urban Institute

Diane Whitmore Schanzenbach, University of Chicago

Greg J. Duncan, Northwestern University

Jens Ludwig, Georgetown University and National Bureau of Economic Research

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**THE ECONOMIC COSTS OF POVERTY IN THE UNITED STATES:
SUBSEQUENT EFFECTS OF CHILDREN GROWING UP POOR**

Harry J. Holzer
Georgetown University and the Urban Institute

Diane Whitmore Schanzenbach
University of Chicago

Greg J. Duncan
Northwestern University

Jens Ludwig
Georgetown University and National Bureau of Economic Research

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Abstract

In this paper, we review a range of rigorous research studies that estimate the average statistical relationships between children growing up in poverty and their earnings, propensity to commit crime, and quality of health later in life. We also review estimates of the costs that crime and poor health per person impose on the economy. Then we aggregate all of these average costs per poor child across the total number of children growing up in poverty in the U.S. to estimate the aggregate costs of child poverty to the U.S. economy. Our results suggest that *the costs to the U.S. associated with childhood poverty total about \$500B per year, or the equivalent of nearly 4 percent of GDP.*

Introduction

Why should the U.S. expend scarce public resources to reduce its poverty rate? The most common response to this question focuses on the *moral* case that reducing poverty is fair and just. This argument usually stresses the high costs imposed on individuals and families—and especially children in poor families—when they are poor. In a nation where equal opportunity—regardless of race, ethnicity, or family background—is a widely accepted goal for public policy, inequities associated with children growing up in poverty are troubling.

Others argue for poverty reduction on *economic* grounds. In this view, poverty burdens the rest of U.S. society and robs it of some of its productive potential. The economic costs of poverty to society include certain public expenditures on poor families, especially for conditions and behaviors—such as poor health and crime—associated with the poor. Costs borne by victims of crime are examples of private expenditures and losses for the nonpoor that should count as burdens as well. Moreover, the income that the poor might have earned represents a loss of productive capacity and output that ultimately reduces the aggregate value of our economy. By this argument, it is not only fair and just to reduce poverty in the U.S., but may be in the nation's material self-interest as well.

When viewed in this economic way, expenditures on poverty reduction can be viewed as public or social *investments*, which generate returns to society over time in the form of higher real gross domestic product (GDP), reduced expenditures on crime or health care problems, reduced costs borne by crime victims or those in poor health, and improvements in everyone's quality of life in a wide variety of other ways as well. To make the case for these investments, we need to estimate the social costs associated with poverty, as well as some sense of the returns on any investments in poverty alleviation.

This paper focuses on the economic and social costs of poverty. We attempt to quantify the overall costs to U.S. society of having children grow up in poverty—both in the form of lost economic productivity and earnings as adults, and also as additional costs associated with higher crime and poorer health later in life. Before presenting our estimates, we review our conceptual framework and its limitations (Section II). We present our estimates in Sections III and IV, and conclude in Section V with some thoughts and implications.

All told, we estimate that *the costs to America associated with childhood poverty total \$500 billion per year—the equivalent of nearly 4 percent of GDP*. In other words, we could raise our overall consumption of goods and services and our quality of life by about a half trillion dollars a year if childhood poverty were eliminated. If anything, this calculation likely understates the true annual losses associated with U.S. poverty.

II. Our Approach

What is the right way to think about the costs that poverty imposes on the U.S., and how might this thinking be captured in a convincing empirical framework?

We begin with what we *do not* include in estimating poverty costs. We omit from our cost estimates the poverty “gap” of poor households themselves, defined as the difference between household income and its poverty threshold. To do so would be tautological: the costs of poverty would be defined as poverty itself. Nor do we estimate the effects of adult poverty on earnings capacity, crime, or health, since it is very difficult to determine whether adult poverty is a cause or an effect of crime and bad health.

Instead, we seek to estimate links between poverty among *children* and the elements of their behavior or circumstances as *adults* that generate economic costs for U.S. society. But why

do we believe that children who grow up in poverty might have lower incomes, as well as worse health and higher crime rates as adults? A very long literature (e.g., Duncan, 2006) documents strong statistical relationships between the incomes of families in which children grow up, various cognitive and behavioral measures we observe for these children, and important outcomes they experience as adults. These statistical correlations also seem to reflect the very different home, school, and neighborhood environments in which more affluent and poorer children grow up.

As Ludwig and Sawhill (2006) summarize: "...compared to kindergarteners from families in the bottom fifth of the socioeconomic distribution, children from the most advantaged fifth of all families are four times more likely to have a computer in the home, have three times as many books, are read to more often, watch far less television, and are more likely to visit museums or libraries... These differences in early environments contribute to large gaps in test scores, which show up even at a very early age... The early years also appear to be a sensitive period for the development of non-cognitive skills... large differences in non-cognitive outcomes such as physical aggression between children in families above versus below the poverty line have been documented.... These early gaps in cognitive and non-cognitive skills tend to persist through the school years and into later life. Those who score poorly before entering kindergarten are likely to do less well in school, to become teen parents, to engage in crime, and to be unemployed as adults...."

Family economic conditions seem to impact children because they affect the material and social resources available to children and family psychological processes, such as parental emotional well-being and parenting styles. And differences in the quality of schools attended and

neighborhoods resided in by children of different family backgrounds up through the teen years likely reinforce and widen the many gaps that emerge early on in the home.

So we focus in this paper on measuring how childhood poverty in the U.S. affects outcomes for adults later in life, and what these effects imply for the broader U.S. economy and society. We estimate the reductions in the annual aggregate U.S. production of goods and services (as measured by earnings) associated with childhood poverty, as well as the extra expenditures (both public and private) and reduced safety and well-being due to crime and poor health associated with adults who grow up poor as children. One can think of this exercise as estimating the total economic value of increased production and higher quality of life that would accrue to the U.S. if childhood poverty were eliminated. We express the costs of poverty as a share of GDP. But these estimates also include some of the intangible social costs, such as the value of improved health, that are not directly counted as part of the formal government GDP calculations but nonetheless have obvious value in Americans' quality of life.

As for our actual methodology, we measure the effects of poverty on these outcomes using estimates of the statistical association between childhood poverty (or low family income) and such outcomes as adult earnings, participation in crime, or poor health.¹ These impacts do not hold for every single individual growing up in poverty, as some children who grow up poor

¹ These estimates come from regressions that take the following form: $Y_i = a + b\text{POVERTY}_i + u_i$, where Y represents one of the outcomes affected for person i – either adult earnings, participation in crime, or poor health – and POVERTY is a dichotomous (or dummy) variable for whether or not he/she spent at least a certain number of years as a child in a poor household. The coefficient b then represents the average (presumably negative) effect of childhood poverty on his/her earnings, or its (positive) effect on their likelihood of engaging in crime or having poor health. In some cases below, we may use a measure of average parental income rather than a poverty indicator as the independent variable, and simply predict the impact of having poverty-level income (relative to some benchmark level) on the outcome in question. Of course, using family income rather than poverty as the independent variable leads to expectations of a positive sign on the estimated coefficient b when the dependent variable is earnings or income, and a negative coefficient when it is crime or poor health. In this case, calculating $b^*(\text{POVINC}-\text{INC})$, where POVINC and INC represent the poverty and benchmark levels of income respectively, generates a predicted impact of poverty with the same sign as the coefficient estimated from a poverty variable. The magnitudes of the estimated impacts on outcomes should also be comparable, as long as the effects of income on any outcomes are linear. Which approach we use in any particular case depends on what we find in the relevant literature.

do not become poor as adults and some who are non-poor as children become poor as adults.² But the estimates we use represent the *average* likelihood of lower earnings, participation in crime or poor health among adults who grew up in poverty.

In the jargon of economists, lost earnings are an *opportunity cost*—a cost that is incurred because the opportunity to be productive and generate earnings is lost. And since all earnings ultimately derive from economic output, it is reasonable to consider any foregone earnings associated with poverty as reflecting lost output for the U.S. economy.³ This estimate will also reflect the average impact of poverty on the *level* of GDP in any year, which abstracts from any effects poverty might have on the rate of *growth* in GDP over time.

In addition to lost earnings, we focus on childhood poverty's impacts on adult crime and poor health. These are certainly not the only possible costs of poverty, but they are likely to be the largest and most easily quantifiable costs. The value of other costs potentially associated with poverty, such as low cognitive skills (as measured by test scores) and low levels of education, should be largely captured by lost earnings.⁴ In contrast, poor health and crime impose large costs, above and beyond the lost earnings of those who are sick or jailed, and these costs have been quantified by some researchers. Furthermore, these costs are often borne both by the poor themselves and by crime victims or taxpayers who pay for the public expenditures to deal with these problems.

The annual costs of crime and poor health associated with poverty are then the magnitudes of each that appear to be “caused” by (or at least statistically associated with)

² According to Corcoran (2001), the poverty rates at ages 25-27 for those who grew up in poor v. non-poor households are about 24 percent and 4 percent respectively.

³ One previous attempt to calculate the economic costs of poverty in a similar manner can be found in a report by the Children's Defense Fund (1994).

⁴ This is not strictly true, as there are likely benefits to education that go beyond the higher wages and salaries that they generate for individuals, but these are not easy to quantify.

childhood poverty, multiplied by our estimates of the annual cost per “unit” of crime or poor health to the U.S. economy. Since lost earnings already represent a direct dollar cost to the economy, we need only calculate the direct loss of such earnings associated with childhood poverty. In all cases, these social costs per individual who was poor as a child need to be aggregated across the number (or percent) of all children who grow up in poverty, and then calculated as portions of GDP.⁵

An important issue with our approach is whether the estimated effects of poverty for children are caused by low family income *per se*, or a broader range of family and community forces that afflict the poor. Susan Mayer’s book (1997) argues that the costs of poverty have less to do with income, and more with the quality of family life, schools, and neighborhoods that poor children experience. In turn, these nonpecuniary factors might be reflected in a range of attitudes, behaviors, and values that poor children develop and carry into adulthood, which might have been caused by their parents’ and/or peers’ attitudes, behaviors, and values in addition to (or even instead of) their low childhood income.

Of course, the latter interpretation does not imply that poverty is any less costly to the children who experience it. Rather, it implies that the mechanisms through which poverty hurts children may not be exclusively (or even primarily) financial. If not, then boosting the incomes of parents might not be the appropriate policy remedy. In our view, elaborated below, statistical efforts to disentangle the effects of income *per se* from other characteristics of poor parents, schools, and neighborhoods are far from definitive.

⁵ In mathematical terms, foregone adult earnings per poor child are simply $\Delta\text{LOSTEARN}/\Delta\text{POVERTY}$, whereas the loss associated with crime would be $\Delta\text{CRIME}/\Delta\text{POVERTY} * \Delta\text{COST}/\Delta\text{CRIME}$; and the losses associated with poor health would be comparable to those of crime. Multiplying these fractions by POVERTY , that is the percentage of children who grow up poor, generates aggregate losses and costs that can be compared to annual GDP.

As a result, we interpret the causal effects of childhood poverty quite broadly. They include *not only the effects of low parental incomes, but also of the entire range of environmental factors associated with poverty in the U.S., and all of the personal characteristics imparted by parents, schools, and neighborhoods to children who grow up with or in them.* We define “poverty” broadly in this way in part because researchers have been unable to clearly separate low income from other factors that affect the life chances of the poor, and also because the set of potential policy levers that might reduce the disadvantages experienced by poor children go beyond just increasing family incomes. Of course, in defining poverty this way, we also assume that the entire range of negative influences associated with low family incomes would ultimately be eliminated if all poor children were instead raised in non-poor households.

This broad interpretation of poverty effects enables us to use fairly simple estimates of the statistical relationships between childhood poverty and adult outcomes, rather than estimates from studies that adjust for factors correlated with poverty such as parental education, race, etc. Controls for these explanatory variables are sometimes used to isolate the effects of low childhood incomes, although we view most of these efforts as unsuccessful, since the list of variables for which we can control are almost always incomplete. Our broader interpretation of the effects of poverty enables us to avoid this issue entirely and measure the impact of poverty along with its related characteristics such as neighborhood and parental characteristics.

But at least part of the lower earnings, poorer health, and greater tendency to commit crime among poor adults might not be caused by childhood poverty, even broadly defined. We know that hereditary characteristics can play an important role in determining such personal attributes as height, weight, physical and mental health, temperament, and cognitive ability. The degree to which the observed association between growing up in a disadvantaged family and

later life outcomes is caused by inherited rather than environmental causes remains controversial, and we do not take a strong stand on this question ourselves. We also understand that, at least historically, genetic research has sometimes been misused and misinterpreted (by racists or others advocating harsh treatment of the poor) in ways that we oppose.

Still, in acknowledging that there may be a hereditary component of poverty, and in order to generate a conservative estimate for the social costs of having children grow up in poverty, we err on the side of adjusting for the possible genetic contributions to the intergenerational transmission of disadvantage. To isolate the impact of poverty *per se* on outcomes, we deduct some portion of the costs when research suggests that some of the costs could be hereditary in origin. The best available studies on this topic rely heavily on comparisons of identical twins to fraternal twins, on siblings raised separately after birth from those raised together (where the former have only shared genes and very little shared environment), or on twins/siblings adopted by families of different socioeconomic status from one another. Since such studies often generate a range of estimates (and are often based on richer data from other countries, particularly Sweden), we will use estimates of hereditary effects that have been judged by respected scholars as the most plausible and convincing in each case. Our adjustments might well overstate the hereditary component of poverty (for reasons discussed in Footnote 19 below), but we make them anyway to be conservative.

All in all, we believe that our estimates almost certainly underestimate the true costs of poverty. For one thing, many children who do not grow up poor become poor as adults, and their poverty likely imposes costs on themselves and the nation. As noted above, it is very difficult to separate causes from effects of poverty in these cases, so we do not attempt to measure these costs. But they are likely to be substantial. Furthermore, we cannot capture all of the many costs

associated with child poverty such as the nonmonetary costs on the poor themselves, or the costs of living in poor areas that are not captured by crime or health measures.

A few other analytical and interpretative issues must be mentioned here as well. The costs associated with poverty for children will almost certainly depend on the number of years that they spend in poverty, and may also depend on the timing of poverty—in early childhood, primary school, or adolescence. Poverty is dynamic, with some families experiencing temporary spells of poverty and others experiencing longer spells (e.g., Blank, 1997). Longer (or more permanent) spells of poverty will likely be costlier to children than shorter (or more temporary) ones. Consequently, the number of years spent in poverty, or a family's average income over the years of childhood, will be used in most studies as the primary determinant of its effects. On the other hand, recent research also suggests that the timing of such poverty matters as well. Given that poverty early in life may be most damaging (Duncan *et al.*, 1998), it might well be true that even short spells of poverty during those years can impose large and permanent costs on children. Many fewer studies measure the timing of poverty for children, though its importance must certainly be acknowledged in any such efforts.

And, in defining and measuring poverty during the childhood years, we will rely on many studies that use the official "poverty line," despite its well-known limitations and arbitrariness (National Research Council, 1995).⁶ But since most of these studies use family incomes averaged over several years, those years in which family incomes were above but near the official poverty line will still contribute to poverty-level average incomes in many cases. Also, the choice of a reference group for the poor becomes critical in these calculations. We will

⁶ Many studies we reference below use the average ratio of family income to needs (with the latter based on family size) when children were growing up as the primary variable reflecting child poverty; ratios below one represent families below the poverty line. Some studies use family income as a linear variable rather than its ratio to needs; average income for a family of four, conditional on being in poverty, can be used in these cases to calculate the effects of childhood poverty on later earnings.

generally use those with *family incomes at twice the poverty line* as our reference group for the poor, as this is considered by many researchers to be an upper bound of where a true “poverty line” might be drawn. This level of income can also be considered a realistic goal for antipoverty policy efforts.

Finally, we note that these definitions of poverty use an *absolute* rather than *relative* income measure. There remains some debate over whether absolute income levels or inequality have larger effects on outcomes, both in the U.S. and abroad, though the evidence suggests stronger effects of the former than the latter (Deaton, 2003). This choice also suggests a more *supply*-based interpretation of how poverty hurts children—i.e., one that emphasizes the effects of growing up poor on individual skills, productivity, and behavior. Clearly, other economic factors also influence the outcomes these children face in life—such as the structure of wages and the quality of jobs generated on the *demand* side of the labor market. Even where the latter are important, the benefits of higher productivity, lower crime, and improved health associated with eliminating child poverty could be used to improve the quality of life for a broad range of Americans.⁷

III. Empirical Estimates of the Impacts of Childhood Poverty: Foregone Productivity and Earnings

As we noted above, the most straightforward way to estimate the effects of childhood poverty on adult earnings would be from simple regressions in which adult earnings, averaged

⁷ For instance, if there are a limited number of high-wage jobs in the economy for less-educated workers (Andersson *et al.*, 2005), then childhood poverty might restrict the ability of individuals to compete for those jobs – but ultimately the “causes” of their low earnings would include these demand-side economic variables as well as their own characteristics. Whether the labor market over the long run generates enough high-wage jobs to match rising worker skills remains a controversial issue in the economics literature. But, even if it doesn’t, the benefits of higher productivity could be distributed to these or other workers, in the form of publicly subsidized wages or benefits or other publicly provided goods and services. The benefits of lower crime and better health would still accrue more directly to the public.

over several years, are regressed on the prevalence of poverty when the child was growing up.⁸ Alternatively, some studies generate broader estimates of *intergenerational mobility*, where sons' (or daughters') earnings are related to those of their fathers (or mothers), or where the family incomes of the former are related to those of the latter. The two sets of studies differ from one another in the type of outcome they use (i.e., earnings, income, or some mix of the two), and in that the designation of an explicit poverty cutoff can allow for the effects of parental income to differ at various points in the income distribution (i.e., the estimated effects of income can be *nonlinear*).⁹

We draw on this entire range of studies below. All of them require panel data on several years of earnings or income, both for parents and their children. The best source of such data in the U.S. to date has been the Panel Study on Income Dynamics (PSID), which most of these studies have used. Others, such as the 1979 cohort of the National Longitudinal Survey of Youth (NLSY79), are sometimes used as well.

What do these studies show? Of the most recent studies¹⁰ that explicitly link the earnings of children to their parents' family income, Mayer (1997) and Corcoran and Adams (1997) show that doubling the incomes of families below or at the poverty line raises the earnings of their sons by 30-40 percent—with the larger estimates generated when longer periods of time are available for measuring sons' adult earnings, and without controls for parental education and other personal characteristics.¹¹ Allowing family incomes to rise to the national median, rather

⁸ Coefficients from simple regressions equal simple correlation coefficients when the dependent and independent variables have unit variances.

⁹ Nonlinear effects of income can also be tested even in studies that use a broader income measure, with various nonlinear (e.g., quadratic or logarithmic) functional forms.

¹⁰ Other studies besides those listed here include those of Hauser and Sweeney (1997) and Haveman and Wolfe (1995). We focus on the few studies below that were most recent and generated the empirical estimates that most closely resemble what we have described in Section II above.

¹¹ Mayer finds that doubling average family income during the 13-17 age period from \$15,000 to \$30,000 in 1992 dollars (when the poverty line for a family of four was roughly \$15,000) increases the earnings of sons by just under

than just to 1.5 or twice the poverty line, generates effects that are roughly twice as large (as median household income is almost three times the poverty line for a family of four and more than three times the average income of a poor family).¹²

Alternatively, much of the earnings and income mobility literature in the 1990's (e.g., Solon, 1992, Zimmerman, 1992) generate intergenerational "elasticities," in which percentage changes in parental earnings or income are related to percentage changes in those of offspring as adults. The best recent estimates suggest elasticities of at least 0.4, when many years of both parent and offspring earnings are used (in order to capture the permanent earnings or incomes of both); and near 0.5, when other statistical techniques are used to adjust for measurement error in the data.¹³ More recently, when Bhashkar Mazumder (2005) uses similar statistical techniques on longer panels of intergenerational data from Social Security earnings records, he generates estimates of intergenerational elasticities above 0.6. These estimates are much higher than those generated in the 1970s and 1980s (which were often 0.2 or less), since measurement of

25 percent; but her equations include controls for parental education and other personal characteristics. Corcoran and Adams show that these controls reduce the coefficients on family income by about 40 percent, implying an effect in Mayer's estimates of about 0.4. In the Corcoran-Adams paper (Table 15.3), growing up in poverty reduces the adult family's income-to-needs ratio by about 20 percent relative to families with average income-to-needs ratios of 100-200 percent of the poverty line in an equation controlling for other factors, or about 35 percent without controls. In both papers, the ages of the adult offspring are only in their twenties or early thirties, which likely biases their estimates downward.

¹² In Corcoran and Adams, those growing up in poverty (i.e. with average family incomes/needs below one) had incomes as adults about 35 percent below those who grew up in families with income-to-needs ratios between 200-300 percent of the poverty line when other factors are included as control variables, implying about a 60 percent difference without controlling for other factors. When they compare those who spent more than half of their childhood in families with below-poverty incomes to those who either spent less than half of their childhood in poverty, or those who were not in poverty at all, the estimates are almost identical. Mayer's estimates also imply similar magnitudes when comparing those at the poverty line to the median income level. In Corcoran (2001), the earnings of those who grew up poor on average are only 40 percent lower than those who were not poor on average, though her sample of adult men is very young and based only on 3 years of data.

¹³ Earnings and incomes in these studies are always measured in natural logs, which allow the estimated coefficients to be described as "elasticities." Both Solon and Zimmerman use instrumental variables (IV) methods to reduce measurement error in parental income, which is likely to generate downward biases in estimates; in fact, their IV estimates are generally larger than those based on more traditional regression methods (i.e., ordinary least squares). These studies generally find that the estimated elasticities rise with the number of years of data included for both parents and offspring, and with the age of the offspring. A good review of the 1990's literature can be found in Solon (1999).

permanent income and overall accuracy are now much improved, and they suggest much less economic mobility over time than was earlier thought.

Few of these studies show strong nonlinear effects that vary across the income distribution.¹⁴ Differences across studies that use sons as opposed to daughters, or parental income as opposed to earnings, also appear to be quite modest (Solon, 1999). Overall, these estimates imply effects of rising incomes for the poor that are quite comparable to those found by Mayer, Corcoran, and others who focused on poor v. nonpoor families.¹⁵

To calculate the aggregate effects of childhood poverty on the earnings of adults, we use an average intergenerational elasticity estimate of 0.5; and a difference in family income of 0.98 log points, which represents the difference between the average incomes for poor families (about \$14,500) and twice the poverty line for a family of four (about \$38,800) in 2005. This implies a reduction of 0.49 log points in earnings for those who grew up in poverty relative to the median household. Since median adult earnings was about \$30,500 in 2005, a reduction of 0.49 log points associated with poverty reduces average adult earnings to about \$18,770, or by 39 percent relative to median earnings.¹⁶ According to Blank (1997), 9.6 percent of all children grew up in families whose incomes were below the poverty line for over half of all recorded years in the PSID in the period 1979-94. Adjusting for the fact that median earnings in the U.S. is about 60

¹⁴ On the one hand, Corcoran and Adams find larger effects on income elasticities at the very bottom of the income ladder, compared to the median. But Solon (1992) argues that the sons of the poor seem a bit more likely to rise out of poverty than the sons of the wealthy are to fall; his estimates, using earnings rather than income, are based on a quadratic functional form that doesn't necessarily allow estimated effects at the bottom to be larger than those at the middle of the income distribution. Hertz (2005) estimates income elasticities separately for blacks and whites over the entire income range; his estimates show little nonlinearity between the bottom and the middle of the income distribution.

¹⁵ For instance, a doubling of parental earnings or income from the poverty line to twice the poverty line, which implies an increase of 0.7 log points, would generate a rise of earnings or income of about 0.35 log points, or about 40 percent, using an estimated intergenerational elasticity of 0.5.

¹⁶ Our estimates of median annual earnings are based on weighted averages of full-time and part-time workers in 2005, aged 25 and above, in Bureau of Labor Statistics (2006).

percent of mean earnings,¹⁷ and that earnings represent about 65 percent of GDP, our calculations suggest that having this percentage of children growing up in poverty implies an annual reduction of GDP of 1.5 percent.¹⁸ A comparable calculation for the roughly 8 percent of children who spend at least a fourth of their time growing up in poor families (Blank, *op. cit.*), with half as large an effect on their earnings (Corcoran and Adams, *op. cit.*), is associated with an additional loss of 0.6 percent of GDP, for a total of roughly 2.1 percent.

How much of this reduction might be hereditary as opposed to environmental? Jencks and Tach (2006) carefully review the various studies of siblings, twins, and adoptions, using mostly Swedish data but also some based on Americans. Abstracting from possible complicating interactions between genetic and environmental components, their best guess regarding the hereditary portion of intergenerational transmission of inequality is about 40 percent, implying that the other 60 percent represents the entire range of environmental factors.¹⁹ Overall, then, our calculations imply that once the hereditary component is factored out, *the experience of growing up in poverty or near poverty for about 17 percent of our nation's children reduces the nation's aggregate output by about 1.3 percent, or about \$170B per year.*²⁰

Of course, there is a range of estimates for several of the key parameters used in these calculations, and the real number could therefore be higher or lower than our estimate. Changes over time in the child poverty rate and the demographic makeup of the poor might invalidate these estimates, though we believe that the net effect of such changes should not greatly change

¹⁷ A variety of estimates suggest that *mean* annual earnings are now about \$50,000. More details are available from the authors.

¹⁸ In other words, $0.096 * 0.39 * 0.60 * 0.65 = 0.015$.

¹⁹ Bowles *et al.* (2005) argue that the most credible estimate of the hereditary effect is closer to 1/3, though there are other papers in this literature that suggest estimates over one-half. Also, Turkheimer *et al.* (2003) suggest that genetic inheritance and socioeconomic status of children interact, with very low hereditary effects for low-SES children and very high ones for high-SES children (since the environments of the latter allow them to reach their full innate potentials while those of the former do not). These interactions suggest that the 40 percent figure might well overstate the role of inherited traits for those from low-income families.

²⁰ GDP is currently measured at roughly \$13.2 trillion dollars per year by the U.S. Department of Commerce.

our predictions.²¹ And it is important to note that these calculations are all based on studies which include only those individuals who report positive earnings in any given year. Those with zero earnings—either due to incarceration, disability, death, or any other reason for permanent labor force withdrawal—are not captured in these data, and, at least among minority men, the incidence of those with zero earnings has grown (Holzer *et al.*, 2005). Their growing absence from the data likely implies downward biases in the true estimates today, although the growth of earnings among low-income women in the 1990s (Blank, 2002) might offset this somewhat.

It is also important to note that these estimates often represent the effects of parental income averaged over many years, often including the teen years of the children. But Duncan (2005) argues, based on a range of studies from the developmental psychology literature that the negative effects of low parental income are likely to be more severe when children are very young than in their later childhood, adolescent, or teen years—which implies more negative effects of certain periods of transitory low income, even relative to permanent income.

Transitory events in the lives of parents, such as a particular episode of job loss, also can translate into relatively permanent reductions in income affecting children in their households.²²

The studies that generate our estimates capture permanent but not transitory effects of parental income on the later earnings of children. Various attempts in the economics literature in the late 1990s to separate the effects on children of permanent versus transitory income changes

²¹ The child poverty rate rose between the 1980's and mid-1990s, declined substantially in the late 1990's, and then has risen modestly since the year 2000. The largest change in the demographics of the poor is the growth in the representation of Hispanics among them, mostly owing to immigration. Blacks have much lower mobility out of poverty than whites (Corcoran and Adams, *op. cit.*; Hertz, 2005), though we have few estimates for Hispanics alone. While the children of less-educated immigrants traditionally have high intergenerational mobility, this has been much less true of Hispanic and especially Mexican-American immigrants in the past few decades (Borjas and Katz, 2005).

²² Oreopoulos *et al.* (2005) using Canadian data find that children whose fathers lost their jobs due to a plant closing had annual earnings that were about 9 percent lower than children from similar family backgrounds where the adult earner did not suffer a similar job loss. The decline in family income that results from job loss is certainly one plausible explanation for this pattern.

were inconclusive.²³ Some greater progress has been made in just the last few years to sort out the effects of the timing of income changes on children, and also the effects of income *per se* from the broader environmental effects of poverty. These recent studies use “natural experiments” in the policy world, as well as data from actual experimental evaluations to do so.

For instance, Dahl and Lochner (2006) use the timing and location of extensions of Earned Income Tax Credits to estimate the effects of higher income on children’s achievement in poor families, while Morris *et al.* (2006) use data from various welfare-to-work experiments, including those where earnings supplements were provided to the mothers of small children. The data in the latter study uses the micro-data from evaluations using “random assignment” of welfare mothers into treatment and control groups that did or did not receive the earnings supplementation when they worked. Both of these studies find significant positive effects of earnings supplementation on child achievement. The experimental evidence also suggests that earnings supplements boost achievement of younger children the most.

Achievement increases for children, if sustained, are likely to translate into increases in educational attainment and earnings later in life. But it is hard to know the extent to which the results of these studies can be generalized to broader populations and other kinds of income increases. Recent evidence from Jacob and Ludwig (2006), using households who were randomly assigned (by lottery) to receive housing assistance in Chicago, found little gain in test scores but some modest gains in educational attainment of youth. Thus, the extent to which the estimated effects of parental income on the later earnings of children can be attributed to income poverty, as opposed to broader environmental factors, remains unclear at this time—which reinforces our decision to interpret the environmental effects of poverty broadly.

²³ See, for example, Duncan *et al.* (1998) and Blau (1999) for estimates using a variety of “fixed effects” models to sort out permanent and transitory effects.

Finally, none of these studies clearly establish whether it is changes in absolute or relative income of parents that generate the impacts we observe on their children. Evidence that parental poverty negatively affects children's educational attainment or achievement suggests that the underlying mechanism might be that poverty reduces the productive capacities of children when they reach adulthood, which is consistent with the effects being driven by absolute income changes. But we cannot be certain that reduced skill and productive capacity really drive the negative effects of parental income on their children independently of the characteristics of the demand side of the labor market. Thus it remains unclear whether increases in the incomes of these parents would directly translate into earnings increases for their children of the implied magnitude in the aggregate, though other policies (like taxes and public subsidies) could be used to ensure that any productivity increases from reducing poverty are widely shared by Americans.

Overall, then, we conclude that children who grow up in persistently poor households have reduced earnings as adults, by enough to reduce aggregate GDP in the U.S. by about 1.3 percent. On the basis of the most recent evidence, it seems likely that some part of this represents the effects of income *per se*, as opposed to other factors related to growing up in poor environments, though it is still unclear how much of the reduction is related to the former vs. the latter. Other transitory effects of low income during early childhood, and differences in relative as opposed to absolute income across parents may also be important, though these are not well captured by the studies used for our estimates.

IV. Empirical Estimates of the Costs of Childhood Poverty: Crime and Poor Health

The costs of crime and health associated with poverty depend on two factors: 1) the impacts of childhood poverty on crime and health among adults; and 2) the costs associated with each of these to the overall economy. Below we consider what the research literature suggests about the magnitudes of each of these factors for crime and then for health.

A. Crime

Using data from the NLSY79, Bjerk (2004) estimates that youth growing up in the bottom quintile of the income distribution are about 1.3 times as likely to be involved in serious crime compared with youth from the second income quintile.²⁴ When Elliott and Ageton (1980) use data from the 1977 National Youth Survey and pay particular attention to distinguishing between violent and other serious crimes, and also pay closer attention to measuring the frequency of offending rather than just involvement with offending at all, they find that "lower class" youth report committing nearly four times as many violent crimes as "middle class" youth. The estimated differences across income or class categories in both studies for property, drug, or other less serious crimes are smaller; but Cohen (2005) shows that violent crime accounts for the vast majority (as much as 84 percent) of the costs to victims of crime. Given this range of estimates, we conservatively infer that low childhood income doubles the likelihood that individuals commit and report costly crimes, relative to children growing up in families with incomes around twice the poverty line. We use this data to infer that the annual incidence of crime attributable to poverty is then $0.2 \times (100 \text{ percent})$, or 20 percent.²⁵

²⁴ Bjerk (2004) Table 1 shows that the estimated relationship between family income and involvement in serious crimes in the NLSY97 (after trying to adjust for measurement error with the family income variable) is equal to $-.043$. The mean rate of involvement with serious crime for youth in the bottom income quartile in his data is $.189$ (personal correspondence between Jens Ludwig and David Bjerk, 8/11/06), which implies that the mean offending rate for the second quartile is $.146$ and so $(.043 / .146) = 29 \text{ percent}$.

²⁵ The 0.2 reflects the fact that 20 percent of children fall into the bottom quintile of the household income distribution. Also, the vast majority of serious crime in any year is committed by young men, so we can apply this

If anything, this number almost certainly understates the true magnitude of the poverty effect on crime by a considerable amount, since it is well-known that self-reported crime rates in national surveys understate the true rates, especially among minorities. Indeed, self-reported crime and arrest rates among young black men in the 1997 cohort of the NLSY are not dramatically different from those of young white and Hispanic men (Abe, 2001; Hill and Holzer, 2006), even though arrest rates among young black men are several times higher than those of their counterparts in reality (Bureau of Justice Statistics, 2006). One of the best known studies on the magnitude of this problem (Hindelang *et al.*, 1981) states that the ratio of actual criminal participation to self-reported participation for blacks is in the range of two to four; and some researchers (e.g., Viscusi, 1986) have used this finding to adjust upwards the self-reported criminal income of blacks by a factor of three

We assume that the underreporting for blacks relative to whites is mostly driven by the differences across groups in average socio-economic status (SES) rather than the effects of race *per se* on survey reporting patterns. Under this assumption we expect underreporting among low-income whites and Latinos.²⁶ To be conservative, we use the lower end of the range identified by Hindelang and his coauthors, and adjust our estimates by a factor of two. Hence, the incidence of annual crime and its costs attributable to poverty after we adjust for survey reporting problems is on the order of 40 percent (i.e., 2*20 percent).

estimate to the overall rate of serious crime commission per year. To the extent that some crime is committed by those beyond the age category of “youth” (say, above the age of 24), we can simply assume that the estimated relationships between growing up in poverty and the incidence of crime in any year hold for this group as well.

²⁶ For example Kling, Ludwig and Katz (2005) use data from the Moving to Opportunity (MTO) experiment, which has a program population that is around two-thirds African-American and one-third Latino, and compare self-reported rates of arrest against arrest rates measured from administrative data, and find substantial under-reporting. We might expect under-reporting to be even more pronounced for actual criminal behavior rather than arrests, since the latter is at least in principle verifiable.

What are the costs that the additional crime associated with poverty imposes on the U.S.? In recent testimony to the Senate Judiciary Committee, Ludwig (2006) updates the well-known cost-of-crime estimates from Anderson (1999) and Cohen (2005) and argues that the total costs of crime in the U.S. may be as large as \$2 trillion per year, of which around \$1.3 billion stems from “street crime” and the remainder comes from economic crimes such as fraud and white collar offenses. We conservatively assume that “poverty” only matters for “street crime” (though this is surely not the case in practice); that any changes in the crime rate only affect those part of the costs of crime associated with victimization; and that protective measures against crime (such as spending on police, prisons, or private security) are essentially unchanged as a result of marginal changes in crime. The victimization costs of street crime are estimated to be on the order of \$700 billion per year given the best available data for crime rates in the U.S. for recent years (Ludwig, 2006).

As with foregone earnings, it is also important to net out the part of criminal activity that is likely attributable to hereditary rather than environmental factors. Here, again, the available estimates are not very precise or consistent. Raines (1993) reports that various studies of twins suggest that 50-70 percent of crime has a hereditary source, while the best adoption studies suggest much lower estimates in the ballpark of 25 percent. Given the considerable uncertainty associated with such a wide range, we continue to use the 40 percent figure suggested by Jencks and Tach (*op. cit.*) for our estimate of the hereditary component, or 60 percent for the environmental piece.

Overall, these figures suggest that poverty raises the costs of crime by at least $0.6 \times 0.4 \times \$700$ billion, or about \$170 billion annually. This figure represents about 1.3 percent of

GDP today, and is still likely a lower bound to the true effect of poverty and crime on the economy.

B. Health

As in the case of crime, we need to compute the likely impacts of child poverty on the incidence of poor health, and the costs associated with poor health in economic terms. In terms of the latter, there are two dimensions of costs that we can capture: 1) Additional expenditures on health care; and 2) The value of lost quantity and quality of life associated with early mortality and morbidity. In each case, our estimates are somewhat incomplete, and based only on estimates in the research literature that we are able to find.

To obtain the impact of child poverty on later health outcomes, we use estimates from Case *et al.* (2002, 2005) in which the impacts of income on self-reported categories of health (poor, fair, good, very good, excellent) are reported.²⁷ We use these estimates to predict the effects of family income rising from the average of those currently in poverty to twice the poverty line (in log points), as we did earlier. We then use data on health expenditures by age group and health status (Agency for Healthcare Research and Quality, 2006) to predict how child poverty affects health expenditures per age group.²⁸

²⁷ These papers report coefficients from ordered probit estimates of self-reported health on log(parental income) for different age groups, using American and British data respectively. The 2002 paper presents estimates of the impact of poverty with no further controls, and also the impact of poverty when other characteristics such as parental education are accounted for, and in general the former coefficients are 1.5 times the latter. The 2005 paper only presents estimates controlling for other characteristics, so we inflate the reported coefficients by 1.5. We transformed the probit coefficients into partial derivatives for different categories of health. Studies using British data rely on a 4-point self-reported health status measure instead of the 5-point scale used in the United States. To make those comparable, we collapsed the top 2 categories in the U.S. data (“excellent” and “very good”) to one single top category (“excellent.”) The work of Case and her coauthors also helps to establish the direction of causality as running from socioeconomic status in childhood to health of adults, since data on incomes and health of adults are plagued by causality running in both directions (Smith, 1999).

²⁸ We obtain the distribution of self-reported health status and average medical spending across various age groups (0-4, 5-17, 18-24, 25-44, 45-64, and 65-90) in 2003 tabulated from the Medical Expenditure Panel Survey using the MEPSnet interface on the Agency for Healthcare Research and Quality website. We then estimate the percentage

Finally, we convert these age-specific estimates over the life-cycle to an aggregated set of annual health costs by computing the present discounted value of additional health expenses for all children born in poverty in a year, assuming four million births per year and a 15 percent child poverty rate.²⁹ Based on these assumptions, we find that poverty raises direct expenditures on health care by about \$22B per year. In addition, data on some other categories of direct expenditures, such as special education, along with estimates of the impact of poverty on assignments to special education generated additional direct expenditures of \$4B.³⁰ Together, these expenditures account for about 0.20 percent of GDP, though this no doubt understates the true effects of poverty (as expenditures on Social Security, Disability Insurance, and other categories are omitted here due to lack of estimates of these poverty effects).

Of course, the higher rates of morbidity and especially mortality among the poor have costs in terms of lost quantity and quality of life, above and beyond their effects on medical or education expenditures.³¹ We use estimates provided by David Cutler and Elizabeth Richardson (1998), who estimate the value of “health capital” at birth—in other words, the total value of lifetime health—for individuals born into poor v. non-poor families; and we once again convert

change in self-reported health status across age groups implied by the Case *et al.* ordered probit models for an income increase of 1.3 log points, and multiply the changes by the average costs by age and health status group to obtain average cost savings by age group.

²⁹ We compute the present discounted value of health costs over the life cycle because these costs vary so much with age, and given changes over time in the sizes of birth cohorts and life expectancy, we never really reach a “steady state” that would enable us to aggregate across the current age structure of the population. We assume a 3 percent discount rate and a 3 percent rate of inflation in real medical costs (compared to about a 2 percent annual increase over the past decade, but about 3.6 percent over the previous two decades.)

³⁰ According to the Office of Special Education’s 2003 annual report, elementary and middle-school students are 4 percentage points more likely to be in special education if they live in poverty compared to those in a middle-income group. High school students in poverty are 5 points more likely to be in special education. These increased rates are multiplied by the additional \$12,600 spent on special education students, on average, per year (United States Department of Education, 2005). See also Chambers *et al.* (2004).

³¹ For example, Smith (1999) cites studies showing that poverty reduces the life expectancy of white and black men by an average of 7 years.

these estimates into annual costs of mortality and morbidity for all poor children born in any given year.

The estimates of “health capital” are the present discounted values of the expected numbers of “quality-adjusted life years” (QALY’s) for different groups. The QALY’s are essentially life expectancies, adjusted for the effects of various illnesses on self-reported quality of health; they thus capture the effects of both differential mortality and morbidity in one measure. Each year is then valued using an average annual “value of statistical life,” which is routinely used to measure the cost-effectiveness of medical procedures and the value of various health and environmental risks. Some estimates of this value (e.g., Aldy and Viscusi, 2006) allow it to vary over the life-cycle before computing an average annual value over the life cycle. But these calculations are generally not based on earnings, and therefore do not overlap with the estimates of lost productivity and earnings that we calculated in Section III above.³²

Cutler and Richardson, using a value of life of \$100,000 per year (in 1997 dollars), estimate that poverty reduces the present discounted value of health capital over the lifetime of a child by about \$124,000.³³ But the annual value of life on which this computation is based, or its equivalent in 2006 dollars (\$127,000), is definitely at the low end of credible estimates. Alternatively, Aldy, and Viscusi estimate the average annual value of life to be over \$300,000 in 2000 dollars, or about \$350,000 in today’s dollars. In another influential article, Miller *et al.* (2004) used a value of \$160,000 per year, based on a survey of this literature published in the year 2000.

³² These various estimates use different statistical methodologies but are usually based on actual expenditures or surveys of willingness to pay for additional years of life for different demographic groups.

³³ They also use a 3 percent discount rate, as we did above in our calculations of the discounted value of future medical expenditures.

We conservatively use a value of \$200,000 as an estimate of the annual value of life, which is much closer to the estimate of Cutler and Richardson (in current dollars) than to that of Aldy and Viscusi. As this estimate doubles the annual value of life used in Cutler and Richardson, we accordingly double their estimate of lost health capital per poor child to a value of \$248,000 (in today's dollars). Again assuming that 15 percent of four million children annually are born into poverty, we generate an estimate of lost "health capital" of about \$149B per year in the aggregate, or about 1.1 percent of GDP. This figure captures the economic value of lost quantity and quality of life, though not lost earnings (which we have measured separately).

Combining our estimates of additional expenditures and lost "health capital" due to poverty thus generates an estimate of 1.3 percent of GDP. Once again, it is likely that some component of this effect is hereditary. Somewhat surprisingly, research has recently found that these components of the estimated socioeconomic impacts on health are relatively small. Using an estimate of seven percent, our estimate of the impact of poverty on health costs is reduced to 1.2 percent of GDP per year.³⁴

V. Conclusion

Summing the costs of foregone earnings and productivity, high crime rates and poor health associated with adults who grew up in poor households, we estimate the economic costs of U.S. poverty to be:

³⁴ Indeed, Case and her colleagues estimate that it might be as little as seven percent in their data, since controlling for parental health status only reduces the relationship between child poverty and health by that amount.

Foregone earnings:	1.3 percent GDP
Crime:	1.3 percent GDP
Health:	<u>1.2 percent GDP</u>
Total:	3.8 percent GDP

Thus, our best estimates suggest that *childhood poverty imposes costs on American society equal to nearly four percent of GDP, or about \$500B per year*. In other words, the total value of our production of goods and services and our quality of life in America might rise by about a half trillion dollars annually if all of our poor children were instead growing up in non-poor households.

Of course, any such estimates are highly uncertain. In many cases—especially our attempts to attribute these costs to their hereditary and environmental components—the range of estimates we found in the relevant literatures was often very high. In these cases, we rely on our best judgments (or those of scholars whom we respect) to generate the most plausible point estimates. Of course, the true estimates in these cases might be higher or lower than the numbers we use. We cannot be certain that the effects we observe are driven by absolute or relative differences in parental income (or the rationing of a limited number of “good jobs” on the demand side of the economy irrespective of the supply of skills), though these issues might affect the policy implications derived from this work.

On the other hand, we have good reason to believe that, if anything, our estimates understate the true costs of poverty to the U.S., and therefore should be considered lower bounds to the true effects. For one thing, we focus only on the effects of childhood poverty on subsequent outcomes for youth and adults, rather than poverty among adults who were not poor

as children. We focus only on three components of costs (foregone output, crime, and health), and ignore others that are harder to quantify. For instance, the others might include environmental costs—such as the blight of poor urban neighborhoods, and the costs of “sprawl” generated by those who flee this blight when moving to the suburbs and exurbs in our metropolitan areas. Our calculations also omit (except in the area of health) a whole range of important nonpecuniary costs—mostly borne by the poor themselves—that reflect the “psychic” costs and scars of unfulfilled potential, pain, and grief in their lives.

Even regarding the issues of foregone earnings, crime, and poor health, our estimates likely understate the true costs of poverty. Our adjustments for underreporting of crime in survey data and for the value of life when computing lost “health capital” use calculations that are at the lower ends of the ranges of credible estimates in the literature. Since our estimates of foregone earnings are based almost exclusively on those who participate at least marginally in the labor force each year, the experiences of those who do not—because of disability, early mortality, or other factors—are not captured in those estimates; nor are certain categories of additional public expenditures, such as on disability and Social Security payments. And our estimates of the impacts of low family income mostly capture permanent income effects, rather than those transitory effects during early childhood years that could have important negative long-term effects on them as well.

What does all of this imply for public policy? The high costs of poverty to the U.S. clearly imply that the potential returns to effective anti-poverty strategies might be high as well. Of course, because we defined the environmental components of poverty so broadly, and we did not try to sort out the specific mechanisms through which poverty operates on children, the range of antipoverty policies that could be effective at reducing these costs is very wide. The creation

of higher-wage jobs (through higher minimum wage, more collective bargaining, etc.), income supplementation (especially for working parents, along the lines of the EITC or earnings disregards for welfare recipients), education and training policies (including early education, class-size reduction, teacher training, or other reforms), neighborhood revitalization and housing mobility, marriage promotion, and faith-based initiatives might all potentially be useful in reducing those costs. In each case, rigorous statistical evidence will continue to be needed to determine exactly what works or does not work.

But the high costs of poverty to the U.S. also suggest that *the investment of some significant resources in poverty reduction might be more socially cost-effective over time than we previously thought*. This view is consistent with some recent calculations by Dickens and Sawhill (2006) suggesting that, if we made high-quality pre-kindergarten programs universally available to children, the expected returns over time might easily dwarf the costs. Indeed, their preferred calculations suggest, in steady state, such a program would increase GDP by 3.7 percent annually.³⁵ Interestingly, this magnitude suggests that very high-quality early childhood efforts could overcome a very large part, though perhaps not all, of the costs of poverty to the U.S. that we estimate. And other investments, such as those which make the EITC more generous to working poor families, might have important positive effects as well (according to Dahl and Lochner, and Morris *et al.*, *op cit.*)

At a minimum, the high costs that childhood poverty imposes on the U.S. imply that we should work hard to identify cost-effective strategies that reduce such poverty, and we should not

³⁵ Their estimates assume that early childhood interventions as successful as the Abecedarian or the Perry Preschool Program could be implemented nationally, with net new enrollment rates of 70 percent. Given that both of these efforts were very small and intensive, our ability to generate these benefits on a large national scale remains very uncertain. Other small experiments in education that have generated large returns, and that might be brought to scale, include the class-size reductions of the Star program in Tennessee (Krueger and Whitmore, 2001). 2001 article is cited in references.

hesitate to invest significant resources in such efforts when they are identified. In the meantime, a great deal of experimentation and evaluation in poverty-reduction is clearly warranted.

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