Government Spending on Children and Equality of Opportunity

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In the United States between 1960 and 1997, price-adjusted federal government spending on programs for children (not counting schooling) increased by 246 percent although the number of children increased by only 9.7 percent. The two main rationales for government spending on children are that such spending will improve the mean economic productivity of children and that it will increase equality of opportunity among children, both of which will increase future economic growth. In this paper we use variation in government spending across states and over time to assess the extent to which government spending affects equality of economic opportunity among children.

Background

Most economic research on intergenerational mobility estimates the relationship between parents' economic status (Y_p) and a child's (Y_c) economic status (in adulthood) as follows:

$$ln\ Y_c = \alpha + \beta\ ln\ Y_p + \varepsilon_c. \quad (1)$$

In this equation β is the elasticity of children's income with respect to parents' income. The common argument made is that $1 - \beta$ is a measure of mobility. It follows that one extreme is a society with $\beta = 0$. In this case, the society is perfectly mobile, i.e., one's parents have no bearing on one's position in the economic distribution. The other extreme is a society with $\beta = 1$. In this case, mobility = 0 and one would label this a perfectly immobile society, i.e., one's economic position is entirely determined by one's parents.

The economic model underlying this approach is a human capital model in which a child's economic status is a function of parental endowments and monetary investments. Endowments include characteristics, such as IQ and eye color, influenced by biology and genes. Monetary investments are goods and services that help children succeed, such as nutritious meals, schooling, and health care.

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According to this model affluent parents can afford to invest more in their children. As a result their children are more likely than children of low-income parents to become affluent once they are adults.[1]

The human capital model is central to the claim that the intergenerational elasticity of income is an indicator of equality of opportunity since in both cases children's own economic status is at least partly the result of factors beyond their control, namely their parents' income. If rich parents can buy a better education for their children and rich and poor children benefit equally from better schooling, the fact that rich children get better schooling violates norms of equal opportunity.

Implicitly, equation 1 represents a model of investment in children. However, parents are not the only investment source for children. Governments invest a considerable amount of resources in children as well. If governmental investment provide the most fundamental human capital, education or minimal nutrition or health care, for instance, then parental resources may be less important to a child's future economic success than suggested by model 1. Further, because different states invest different amounts in children, one may expect to see higher intergenerational elasticities among those who live in low-investment states compared to those who live in high investment states. This hypothesis serves as our motivation for this study.

Data and Empirical Model

Estimating whether government spending increases intergenerational mobility requires individual-level data on children's family background and on their income once they are adults. It also requires a source of variation in government investment. We use the Panel Study of Income Dynamics (PSID) for all individual level data. Our PSID sample includes all individuals born between 1956 and 1970 whose parents were respondents to the PSID and who had positive family income when they were 30 years old, although the income could come from sources other than the child's earnings such as spouse's earnings or unearned income.[2]

To the PSID sample we merge data on total state spending, which comes from the United States Census of Governments. The Census of Governments includes information at the federal, state, and local levels. We use state expenditure data from the 1972, 1977, 1982, and 1987 Census of Governments. For

[1] Psychologists and sociologists usually emphasize a third mechanism to explain the relationship between parents' and children's economic status, namely non-monetary benefits such as good parenting, high expectations, and emotional support. Becker and Tomes (1979) allude to these factors when they make reference to "family culture." Poor parents might provide inferior non-monetary benefits to their children if low income increases stress or makes it harder to obtain information about the importance of non-monetary inputs.

[2] Beginning in 1997, the PSID began to alternate years to survey respondents, thus we do not have data from 1998 and 2000. Since income and earnings are reported for the previous year, our data do not include children born in 1967 and 1969.

the intervening years, we interpolated expenditures in order to smooth the expenditure measures.[3] We divide the expenditures by the state population aged zero to 17 to get per child state expenditures. We then average these per child state expenditures from the state within which the individual resided at ages 15 through 17.

In principle our basic strategy to determine if intergenerational income mobility depends on government spending is to estimate the following model:

$$Y_{cst} = \beta_0 + \beta_1 \ln Y_{pst} + \beta_2 G_{st} + \beta_3 (\ln Y_{pst} * G_{st}) + \varepsilon_{cst}, \qquad (2)$$

where the subscript c represents a child, the subscript p represents the child's parents, the subscript s represents the child's state of residence when young, the subscript t represents the child's birth cohort, Y is income, and G is government spending.

In this model we allow government spending and parental income to have different effects on children's income. If government spending increases intergenerational mobility, β_3 will be negative. Unfortunately in this model, the interaction term will be highly correlated with the main effects making it difficult to estimate the interaction with any precision (assuming it exists). Therefore, we will divide our sample into thirds based on the government spending levels each child experienced when aged 15 to 17.[4] We will then estimate equation 1 for the children in each tertile comparing the differences in the estimated elasticities. A priori, we expect the marginal dollar of parental investment in a low-investing state to have a larger impact than the marginal dollar of parental investment in a high-investing state. Presumably, the human capital purchased with parental investments in low-investing states is more fundamental to the child's economic success than the human capital purchased in a high investment state since the high-investment states probably purchase "high priority" human capital.[5]

Preliminary Results

The first three columns in the first row of Table 1 show the intergenerational elasticity estimated using equation 1 for each of the three tertiles of government spending. The elasticities are in the range of

[3] In non-Census years, the Census Bureau draws a sample of governments and collects financial data. As a test of robustness, we tested our results using the annual data in the years between censuses and found little difference in our results.

[4] We chose tertiles primarily based on data considerations. With more than three categories, our sub-samples become too small to estimate the elasticity with any confidence. In addition, we also estimated the results splitting the sample at the median government expenditure. Results from these models were similar to those reported below: those in the upper half had lower intergenerational elasticities than those in the lower half. The differences were not statistically significant. These results are available upon request.

[5] We are currently collecting information on the proportion of state senators and representatives that are female to use as an instrument for government expenditures (see Case (1998) for an argument for this instrument in a different context). We are also experimenting with using the "industrial mix" as an instrument. The industrial mix is the average wage in the state based on the composition of jobs in the state. We believe that changes in the industrial job composition might change create exogenous changes in government expenditures.

other estimates that use PSID data and average parental income over several years (Solon 1999). The elasticity in low investment states is 0.497, the elasticity in the medium investment states is 0.414, and the elasticity in the high investment states is 0.319.

The second three columns in the first row report the differences in the elasticity for low and medium, low and high, and medium and high investment states, respectively. As expected the elasticity decreases, implying an increase in mobility, as states spend more. Further, the difference in the elasticity in the low investment states and the high investment states is statistically significant at the 0.01 level.[6]

The second row shows that including state fixed effects hardly changes the elasticity estimates and the difference between high-spending and low-spending states remains statistically significant, while the difference between low and medium states is now significant. The fact that state fixed effects do not alter the elasticity much suggests that invariant characteristics of states, such as political and social climate, do not affect intergenerational mobility much.

Table 1, Coefficients Estimates for Child's Income Regressed on Parental Income

	Low Invest. States	**Medium Invest. States**	**High Invest. States**	**Diff. in Low and Medium**	**Diff. in Low and High**	**Diff. in Medium and High**
Model 1: Baseline	0.497*** (0.050)	0.414*** (0.047)	0.319*** (0.042)	0.082 (0.068)	0.178*** (0.064)	0.095 (0.063)
N	791	775	773			
Model 2: State FE	0.491*** (0.045)	0.362*** (0.046)	0.308*** (0.058)	0.129** (0.062)	0.183** (0.070)	0.054 (0.073)
N	790	774	773			

Notes: * p < 0.10; ** p < 0.05; *** p < 0.01; robust standard errors reported in parentheses; all estimates weighted by individual PSID weights; low, medium, and high state investment determined by dividing the total state expenditures (divided by population aged 0-17) into thirds. State fixed effects are based on the state/division of residence when 15 years-old.

[6] Since $\beta = r_{\ln Y_c, \ln Y_p} * \frac{s_{\ln Y_c}}{s_{\ln Y_p}}$, one might expect to see a difference in intergenerational elasticities across government investment categories even if the intergenerational correlation is constant across spending categories. However, the ratio of the standard deviations is nearly the same in all three categories (1.22 in the lowest, 1.22 in the middle, and 1.12 in the highest) suggesting that any difference in the elasticity is primarily due to the intergenerational correlation.