

County-Level Determinants of Intergenerational Economic Mobility

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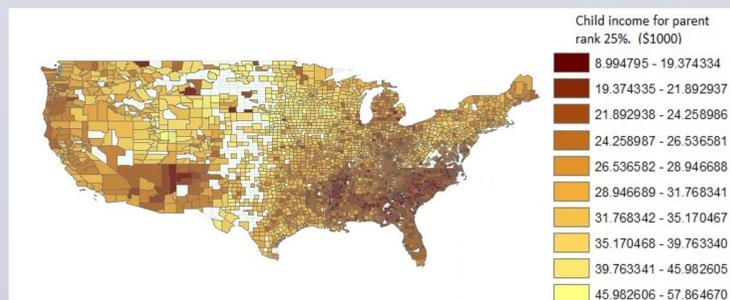
Abstract

Using recently published county-level income mobility data developed with federal income tax records, this paper seeks to determine the impacts of local policy and economic conditions on absolute income mobility. Following Solon's mobility model, three independent variables are chosen as measures of public investment in human capital, returns to human capital, and taxation. To ameliorate endogeneity concerns, deeply time lagged variables, spatial lagged variables, and national wage rate shocks are used as instruments. Our results show that better school quality and higher return to human capital contribute to higher income mobility for children with low income parents, which are consistent with the predictions of the Solon model. However, per capita taxation also have positive contribution to higher income mobility, which is different from the theoretical prediction. We hypothesize that the productive effect of taxation out-weighs the income reducing effect. The same empirical strategy is applied to subsamples of US counties, and the entire parent income distribution. It was found that non-urban counties and children from wealthier families are more sensitive to changes in school quality.

Background

- Recently available commuting zone and county level data revealed that the variation of income mobility within the US is comparable to cross country variations (Chetty, Hendren, Kline, & Saez, 2014; Björklund & Jäntti, 1997).
- At the regional level, mobility is low in the Southwest and high in Mountain west and Midwest.
- Within regions, nearby cities can occupy opposite ends of the mobility ranking (e.g. among the 50 largest cities, Pittsburg ranks 2 while Cleveland, 130 miles away, ranks 40).
- Such subnational disparity is likely caused by differences in local policies and economic conditions.

Figure. 1 Map of county-level absolute income mobility, measured by the adult income (averaged over 2011 and 2012) of children born between 1980~1982 whose parents ranked in the 25th percentile (averaged over 1996 to 2000) in the national income distribution. Data from Chetty, Hendren, Kline, & Saez (2014).



Theory

The following model is from Solon (2004)

$$U_p = (1 - \alpha) \log C_p + \alpha \log y_c \quad (1)$$

$$(1 - \tau) y_p = C_c + I_p \quad (2)$$

$$h_c = \theta \log(I_p + G_p) + e \quad (3)$$

$$\log y_c = \mu + p h_c \quad (4)$$

$$(\log y_c)_{\bar{y}_p} = \mu + \theta p \log \left[\frac{\alpha \theta p}{1 - \alpha(1 - \theta p)} \right] + \theta p \log[(1 - \tau) \bar{y}_p + G_p] + p(e)_{\bar{y}_p} \quad (5)$$

- Parents' utility function (U_p) is the weighted sum of their own consumption (C_p) and their children's income in logs.
- Parents face the budget constraint that their consumption (C_p) and investment in children's human capital (I_p) add up to their after tax income.
- Children's human capital (h_c) is produced from private (I_p) and public (G_p) investment in education.
- Children's income (I_p) is determined by their human capital (h_c) and the market return for human capital (p).
- The model predicts that children's income increases with public investment in education and market return to human capital, and decreases with taxation.

Empirical method

Use instrumental variables method to estimate the following equation:

$$\bar{y}_{cj} | \bar{y}_{pj}=25 = \alpha_{y_j} + \beta_{y_j} X_j + \gamma_{y_j} Z_j + e_j \quad (6)$$

Where:

- j is the index for each county;
- $\bar{y}_{cj} | \bar{y}_{pj}=25$ is the average income of children whose parents ranked 25% in the national income ranking;
- X_j represents public education (measured by income adjusted high school dropout rate), return to human capital (measured by the difference between the wage rate of college and high school graduates), and per capita taxation. These three variables are assumed to be endogenously determined and need instrumentation.

- Z_j are control variables that are assumed to be exogenous, which includes a tax progressivity index, percentage of adults (25+) with bachelor's degrees, percentage of racial minorities, percentage of single mothers, and percentage of workers who commute less than 15 minutes to work.

Choices of instrumental variables:

- Dropout rate is instrumented by past (1972) government capital investments in education and the average dropout rate of neighboring counties.
- Return to human capital is instrumented by the hypothetical average wage rate change of the commuting zone if wage rates in all industries in the commuting zone followed national trends.
- Tax is instrumented by past (1972) per capita tax and the average per capita tax of neighboring counties.

Results

Table 1. The dependent variable is absolute income mobility, measured by the adult income of children whose parents ranked in 25th percentile in the national income distribution.

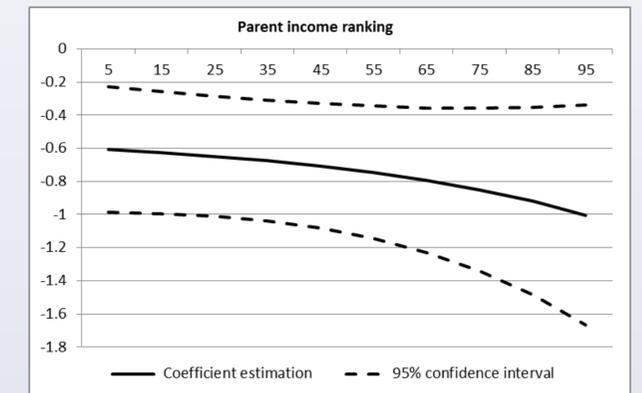
	OLS all counties	IV all counties	IV urban	IV non-urban
Dropout Rate	-0.3***	-0.6***	-0.5***	-0.8***
Return to human capital	-0.04	0.9***	0.5**	0.4
Per capita tax	0.7**	0.8	1.8**	0.5

(Results for control variables not reported in this table)

Note: *** $p < 0.01$ ** $p < 0.05$ * $p < 0.1$. All standard errors are clustered at state level. Urban is defined as metropolitan counties and nonmetro counties that are adjacent to metropolitan counties. The rest -- nonmetropolitan non-adjacent counties -- comprise non-urban counties.

Results

Fig. 2 The impacts of public education over the parent income spectrum. This graph is constructed by repeatedly running the preferred specification (column 2, table 1) while changing the dependent variable to the income of children with different parent income rankings.



Conclusions

- Better school quality has a positive impact on children's mobility, which is consistent with the prediction of the Solon model.
- Children from non-urban counties and wealthier families are more sensitive to changes in school quality.
- Return to human capital has positive impact on mobility.
- Contrary to the prediction of the theoretical model, taxation has positive impact on mobility. We think this is because the productive effect of taxation at the local level outweighs the income reducing effect.

References

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