

Recent Developments in Intergeneration Mobility

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Motivation: What is the optimal amount of intergenerational mobility?

- Equality of opportunity: Those who work hard should be able to succeed.
- Children of wealthy parents earn higher incomes in part because they invest more in human capital and have more education, or because of genetic differences in ability. Zero intergenerational correlation would suggest no return to higher human capital.

Understanding the mechanisms underlying the observed intergenerational correlations is crucial for the development of appropriate public policy.

1 Correlation

1.1 Concepts

Benchmark regression:

$$\log(Y_1) = \alpha + \beta \log(Y_0) + \epsilon \quad (1)$$

$$\Rightarrow y_1 = \beta y_0 + e \quad (2)$$

Intergenerational elasticity/mobility:

β : intergenerational elasticity

$1 - \beta$: intergenerational mobility

Intergenerational correlation:

$$\rho = \frac{\sigma_0}{\sigma_1} \beta$$

where σ is the standard deviation of log earnings.

1.2 Issues in estimating IGE

- y should be a measure of permanent earnings \rightarrow measurement error
 - Averaging earnings over T years for each father, the attenuation bias rapidly declines. A high value of T is required in order to accurately estimate the IGE.
 - One-period earnings may be a better proxy for life-time earnings at some ages (around 40) than at others.
 - The bias to the IGE need not be an attenuation bias.
- Transition matrices: the quantile of the child's earnings conditional on the parents' earnings quantile
 - Results can vary based on the exact metric used.

1.3 Empirical findings

1. Nordic countries (0.07-0.26) have generally confirmed a higher level of mobility than in the US (0.517) and UK (0.306).
2. It is almost entirely due to differences in the tails.
3. Father-daughter elasticities are smaller than the equivalent father-son ones.
4. The primary mechanisms of gender difference: assortative mating (women from high income families are likely to marry high-earning men and they then choose fewer hours of work and end up with lower labor earnings); labor supply responses (women have higher own-wage labor supply elasticities than men, and this tends to raise the female IGE relative to that of men).
5. Estimates for family earnings: individual earnings of husbands and wives are as highly correlated with the incomes of their in-laws as with the incomes of their own parents.
6. No broad trends in persistence across Europe and North America, but possibly an increase in mobility in Nordic countries (strong welfare states).

1.4 Model

- Solon(2004)

$$(1 - \tau)Y_0 = C_0 + I_0$$

$$h_1 = \theta \log(I_0 + G_0) + e_1$$

$$e_1 = \delta + \lambda e_0 + v_1$$

$$\log(Y_1) = \mu + p h_1$$

$$\frac{G_0}{(1 - \tau)Y_0} = \phi - \gamma \log(Y_0)$$

$$\Rightarrow \log(Y_1) = \mu^* + [(1 - \gamma)\theta p] \log(Y_0) + p e_0$$

$$\Rightarrow \text{Probability limit of the OLS estimator: } \frac{(1 - \gamma)\theta p + \lambda}{1 + (1 - \gamma)\theta p \lambda}$$

1. Heritability coefficient $\lambda \uparrow$, IGE \uparrow
2. Human accumulation efficiency $\theta \uparrow$, IGE \uparrow
3. Earnings returns to human capital $p \uparrow$, IGE \uparrow
4. Governmental investment progressivity in human capital $\gamma \downarrow$, IGE \uparrow

(For example, the low IGEs for Nordic countries could be explained either by their compressed earnings distributions(3), or by social and educational policies(4))

- Credit constraints

Low income families may not be able to optimally invest in their children's human capital. The IGE would be greater for credit constrained families. Testing this hypothesis is troublesome.

1.5 Intergeneration transmission of education

Children of highly educated parents will tend to choose higher education due both to the direct effect of having more educated parents (casual channel), and the indirect effect of having higher ability.

- South America 0.6; US 0.46; Western Europe 0.4; Nordic lowest.
- Intergenerational educational persistence is higher in countries with higher returns to education and lower in countries that spend more public funds on education.
- Schooling system matter: earlier school tracking increases intergenerational educational persistence; early enrolment increases intergenerational educational mobility.
- The evidence on the change over time is fairly mixed.

2 Causal effects

Nature/Nurture?

2.1 Sibling and neighborhood correlations

- Positive sibling correlations in earnings can imply the effect of genetic and environment factors. (0.4)
- Neighborhood characteristics are not a predominant factor.
- The findings of very low neighborhood correlations helps rule out the predominance of geographic factors but leave open the question of why outcomes within families are highly correlated.

2.2 Structural analysis of different types of siblings

$$y_i = gG_i + sS_i + uU_i$$

G : genetic factor; S : environmental factor shared by siblings; U : environmental factor idiosyncratic to the individual. g, s, u present the relative importance of each of the factors.

Covariances: $g^2 + s^2$: monozygotic twins raised together; $0.5g^2 + s^2$: dizygotic twins and non-twin full siblings raised together; $\dots \dots$

- Given the empirical correlations, one can calculate the values of g, s, u from these equations.
- Genes are more important than shared environment.
- This approach relies on strong assumptions. This type of methodology is limited to decomposing the variances that exist in the sample.

2.3 Decompositions of intergenerational persistence

$$y_1 = \beta_{y_1 y_0} y_0 + \beta_{y_1 s_1} s_1 + \beta_{y_1 c_1} c_1 + \epsilon_{y_1}$$

- To see how much of the IGE can be explained by the effect of parental earnings on an intermediate outcome, and the effect of the intermediate outcome on child earnings.
- IQ and educational attainment can explain at most three-fifths of the intergenerational transmission of earnings.
- The approach provides no way of getting at causal effects. There are likely to be many omitted variables.

2.4 Sibling and twin differences

- Use exogenous variation in education within monozygotic twin pairs to examine the role of mothers' education on the education of their children.
- Identification of the effects of father's education is based on the difference in education between the husbands of the twin mothers.
- Fathers' education has a positive effect on children's outcomes but mothers' education has no effect. But for more recent cohorts, results go into reverse.
- Relies on strong assumptions. Impossible to fully control for all characteristics of the mate. First cousins may interact frequently and be influenced by each other and their aunt.

2.5 Regression analysis using adoptees

1. Bivariate regression

$$y_1 = \alpha + \lambda y_0 + \epsilon$$

- If nurture is unimportant, we would expect λ to be zero for adoptees and positive for non-adoptees. If genetics and endowments in infancy are unimportant, we would expect λ to be positive and equal for adoptees and non-adoptees.
- Genetics and infant endowments are more important than nurture in determining educational attainment.
- Adoption selection process.

2. Multivariate regression

$$y_1 = \alpha + \lambda_1 S_0^m + \lambda_2 S_0^f + \lambda_3 Z + \epsilon$$

- Use adoptees to determine which particular parental characteristics matter most.
- Cannot convincingly pin down the effect of any one particular parental characteristic.

3. Using information on biological and adoptive parents

$$y_1 = \alpha + \lambda_a y_{0a} + \lambda_b y_{0b} + \epsilon$$

- Biological mothers have bigger effects than adoptive mothers on education. Adoptive fathers have a larger impact than biological fathers on earnings and income.

2.6 Natural experiments/IV estimates

Welfare programs; labor market status of a parent; parental job loss due to plant closure; change in the compulsory schooling laws; student riots; mothers' birth date.

2.7 Summary

- OLS significantly overstates the causal intergenerational relationship.
- Different methods tend to shock different parts of the education distribution.
- Taken as a whole the findings in the literature are very inconsistent.

3 Other family background characteristics

3.1 IQ/ability

- Positive intergenerational/sibling correlations
- No clear causal mechanisms have been uncovered.

3.2 Jobs and occupations

- 0.4-0.75 for father-child pairs, 0.3-0.5 for mother-child pairs.
- Higher elasticity for higher socio-economic status parents. More recent cohorts are more mobile than their earlier counterparts.
- Further work might be useful to test the relative roles of discrimination, preference transmission and information.

3.3 Welfare receipt

- The evidence suggests a strong intergenerational correlation in welfare participation.
- Poverty trap (intergenerational correlation of income); Welfare trap (children who grew up on welfare believe it is more socially acceptable to be on welfare).
- While the intergenerational correlations in welfare receipt are clear, there is much less evidence that a causal relationship exists.

3.4 Health

- Positive intergenerational correlation in a variety of health outcomes.
- Those that have tried to identify a causal link focus on intergenerational transmission of birth weight.

3.5 Attitudes and social behavior

- Positive correlations in traits, behavior, attitudes; charitable donations; the preferences of the son in terms of the marriage market.

3.6 Consumption and wealth

- Intergenerational correlations in food consumed away from home 0.14-0.20. Both parental income and tastes have statistically significant effects on consumption of their children.
- Intergenerational wealth elasticity appear to be lower than the IGE.

4 Further topics

1. There is still much work to do to pin down which family background factors are most important.
2. We have quite limited evidence on the causal effect of family income compared to education.
3. The reach of literature on topics such as intergenerational transmission of health, weight, behavior, and preferences will continue to grow.