Genetic Influences on Human Capital Development

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Abstract

This paper investigates how genes and household investment choices jointly shape skills and educational attainment during adolescence. Using data from the National Longitudinal Study of Adolescent to Adult Health, I exploit random genetic variation between siblings to identify a causal schooling effect of 0.47 years per standard deviation of a genetic score for educational attainment, compared with 0.66 years without family fixed effects. Controlling for parental education and household income attenuates the estimate to 0.42 years, suggesting these controls alone absorb much of the confounding induced by parents passing down both genes and other advantages. Reduced-form estimates cannot separate direct genetic effects from parental responses, while within-family investment regressions cannot detect parental investments shared by both siblings. Sibling spillovers also contaminate the pooled-within-family gap, and interaction terms in outcome regressions conflate skill technology with parental choices. I therefore estimate a structural model of skill production and parental investment using the simulated method of moments. I find a direct genetic effect on cognitive skill, little gene-investment complementarity, and evidence that parents reinforce sibling differences by reducing leisure and reallocating investment time toward the higher-score sibling. Finally, I use the model to evaluate policy interventions while accounting for endogenous household responses.

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