

# A Dynamic Structural Model of Labor Supply and Educational Attainment<sup>†</sup>

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## Abstract

This paper investigates the process by which a cohort of males accumulate human capital via formal education and labor market participation. I use all available annual waves of the 1979 youth cohort of the National Longitudinal Survey of Labor Market Experience (NLSY79) to estimate a dynamic structural model of behavior in the teen to early forties segment of the life cycle. The theoretical model provides a detailed treatment of the economic costs, benefits and uncertainties associated with the schooling and labor supply alternatives faced by individuals in a world where returns to human capital are skill specific. Under the maintained assumption that observed allocations are pareto optimal, the estimated model explicitly accounts for the economic costs and benefits of schooling, aggregate skill level effects on returns to education and educational choices, the intertemporal nonseparabilities in preferences with respect to leisure, and aggregate productivity shocks. The estimated model also identifies individual-time varying study time of individuals enrolled in school, which is specified as determined by individual specific unobservables, economic and demographic factors, depreciation in knowledge, and a knowledge renewal process. The estimated parameters from the model are then used to conduct policy simulations to investigate (1) the effect of working during the school year on educational attainment and future wages; (2) the relative effectiveness of tuition subsidies versus a work study program targeted at increasing aggregate educational attainment; and (3) the effect of an exogenous increase in study time (increase in school hours, after school study programs, or Saturday classes) on educational and labor market outcomes.

**Keywords:** Educational Outcome, Labor Supply, Skill Group Effects, Dynamic Models.

**JEL classification:** C14, C23, I20, J24

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