

# A Bayesian Analysis of the Effect of Education on Earnings from a Change in the Minimum Schooling Law

SIDDHARTHA CHIB

*Olin Business School, Washington University, One Brookings Drive,  
St. Louis, MO 63130, U.S.A.  
e-mail: chib@wustl.edu*

LIANA JACOBI

*Department of Economics, University of Melbourne  
Victoria 3010, Australia  
e-mail: ljacobi@unimelb.edu.au*

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## ABSTRACT

In this paper we provide a new analysis of the causal effect of education on earnings given a change in law on the minimum years of schooling. In our specific setting, that occurred in the UK in 1947, the minimum school leaving age was raised from 14 to 15. This change had a substantial effect on the school leaving behaviour of subjects that turned 14 just around the policy change. For example, in a sample of subjects based on the 1979 to 1998 surveys in the UKGHS, in the cohort of students who turned 14 in 1946, over 50% dropped out of school at age 14, and only around 15% at age 15. In comparison, over 50% of the students that were 14 in 1948 dropped out at age 15, while roughly 10% dropped out at age 14. The schooling behaviour of students that dropped out of school beyond age 15 was unaffected by the policy change. These observations motivate our new analysis in which we isolate the effect of an additional year of schooling from subjects who turned 14 around the policy change and who dropped out of school at either age 14 or 15. In the manner of the LATE framework, and the principal stratification environment of Frangakis and Rubin (1999), we further imagine three types of (latent) subjects: compliers (subjects that drop out at 14 or 15 depending on the policy in place), always drop-outs at 14 (subjects who drop out at 14 regardless of the policy in place), and always drop-outs at 15 (subjects who drop out at 15 regardless of the policy in place) and develop a Bayesian framework for isolating the latent subject types and the causal effect for compliers (these being the subjects that are comparable across the two policy arms). The model is fit to a sample of subjects from the UKGHS data that turned 14 between 1946 and 1948. The analysis undertaken in this paper differs substantially from previous work that has focused on large sets of cohorts and 2SLS based approaches. In contrast, in our analysis, we exploit the strong effect of the policy change on the schooling intake behaviour on a subset of comparable cohorts around the policy change to identify the causal earnings effect for those subjects who comply with the policy change.