

Bhalotra, S. and A. van Soest (2008). **Birth-spacing, fertility and neonatal mortality in India: Dynamics, frailty and fecundity.** *Journal of Econometrics*, 143 (2): 274-290.

Using microdata on 30,000 child births in the Indian state of Uttar Pradesh and dynamic panel data models, we analyze causal effects of birth spacing on subsequent neonatal mortality and of mortality on subsequent birth intervals, controlling for unobserved heterogeneity. Right censoring is accounted for by jointly estimating a fertility equation, identified by using data on sterilization. The initial conditions problem is resolved by using data on first borns. We find evidence of frailty, fecundity, and causal effects in both directions. In particular, we find evidence of endogenously determined “death traps” within families. Neonatal mortality risk for the index child is 14 percentage points higher if the preceding sibling died than if he or she survived the neonatal period. We estimate that genuine state dependence accounts for 37% of this, the rest being explained by interfamily heterogeneity. Endogenously determined birth spacing explains about a fourth of state dependence in mortality; we suggest that maternal depression is a candidate alternative mechanism. We find that *ex-ante* hoarding of births is empirically unimportant, but there is substantial replacement fertility following a neonatal death. For every 100 children who die in their first month, 37 are replaced by a new birth of the same mother. We find evidence of son-preference in the probability of and duration to the next birth. We present some of the first estimates of the effects of maternal age at birth on mortality and fertility that allow for the endogeneity of age at birth. Our estimates indicate that neonatal mortality in this Indian state has declined at an average rate of 0.16% points p.a. during 1963-99, which is 3.3% of the benchmark probability and that fertility started to decline in 1981.

**Dissemination:** This paper was presented at 10 conferences/seminars in 2004-2006: Population Association of America (PAA in LA), the 13 Conference on Panel Data (Cambridge), the Econometric Society World Congress (UCL), ESPE (Paris), the ESRC Econometrics Study Group conference (Bristol), seminars at Departments of Economics / Social Statistics / Labour & Population at Toronto, McMaster, RAND (LA), Tilburg, Southampton, Bristol.