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Children of Drought: Rainfall Shocks and Early Child Health in Rural India

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Abstract

Identifying the long-run effects of *in utero* and early-life conditions has become an important research topic in economics. Since the seminal work by Almond (2006), a growing literature finds that *in utero* exposure to adverse environments may negatively affect the health and educational attainment later in life.

The hypothesis that the *in utero* period is the most critical period in a person's life was first posited by David J. Barker, a British physician and epidemiologist, who argued that nutritional deprivation of pregnant women are transmitted to the fetus leading to impaired fetal development with long lasting consequences that continue to persist after birth and even through adulthood.

This paper exploits the plausibly exogenous variation in rainfall to examine the effect of *in utero* exposure to a rainfall shock on health outcomes of children in India. We study the medium-term effect of drought in the year before birth (*in utero*) and in the year of birth on the health outcomes of children younger than 60 months living in rural India. About 70 % of Indian working population rely on agriculture directly or indirectly for living and their income is highly volatile due to erratic monsoon rainfall as agriculture is highly rainfed in India. Droughts are common phenomena in India. Given the dependency of rural lives on rainfall, a negative rainfall shock in a year is likely to affect the household income due to reduction in agricultural production as well as food availability which in turn may affect the maternal and fetal nutrition.

We show that exposure to droughts *in utero* is associated with lower weight- for-age z-scores and increased probabilities of being underweight. However, *in utero* exposure to drought does not seem to affect the anemic status of children. Our results also indicate that drought in the year of birth is also an important predictor of health. We also find evidence of heterogeneity in the effects of drought on child's health.

Keywords: Fetal origins hypothesis, India, rainfall, undernutrition