THE COGNITIVE EFFECTS OF MICRONUTRIENT DEFICIENCY: EVIDENCE FROM SALT IODIZATION IN THE UNITED STATES

James Feyrer  
Department of Economics, Dartmouth College, and NBER

Dimitra Politi  
School of Economics, The University of Edinburgh

David N. Weil  
Department of Economics, Brown University, and NBER

Abstract

Iodine deficiency is the leading cause of preventable mental retardation in the world today. The condition, which was common in the developed world until the introduction of iodized salt in the 1920s, is connected to low iodine levels in the soil and water. We examine the impact of salt iodization on cognitive outcomes in the US by taking advantage of this natural geographic variation. Salt was iodized over a short period of time beginning in 1924. We use military data collected during WWI and WWII to compare outcomes of cohorts born before and after iodization in localities that were naturally poor and rich in iodine. We find that for the one quarter of the population most deficient in iodine this intervention raised IQ by approximately one standard deviation. Our results can explain roughly one decade’s worth of the upward trend in IQ in the US (the Flynn Effect). We also document a large increase in thyroid-related deaths following the countrywide adoption of iodized salt, which affected mostly older individuals in localities with high prevalence of iodine deficiency. (JEL: I12, I18, I24, N32)

Keywords: Cognitive ability, Flynn Effect, human capital, productivity.

The editor in charge of this paper was Fabrizio Zilibotti.

Acknowledgments: We would like to thank Hoyt Bleakley, Kenneth Chay, Andrew Clausen, Joseph Ferrie, seminar participants at Tel Aviv University, Boston College, Brown University, Northwestern University, and conference participants at the NBER’s Cohort Studies Meeting, AEA Meetings and SIRE’s Young Researchers Forum for helpful comments. Desislava Byanova, Federico Droller, Bryce Millett Steinberg, and Young Min Kim provided excellent research assistance.

E-mail: james.feyrer@dartmouth.edu (Feyrer); dimitra.politi@ed.ac.uk (Politi); david_weil@brown.edu (Weil)