

Researcher

David Weil (David_Weil@brown.edu)
Brown University Department of Economics and the
Population Studies Training Center

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The Effects of Health and Demographic Change on Economic Growth: Integrating Micro and Macro Perspectives — Part I

I. The Role of Population in Health-Income Casality

The Brown University research program aims to increase the understanding of how investments in health and fertility decline contribute to economic growth. The project focuses on the effects of changes in health and demographic structure on the level of economic activity, the role of demographic change in the sustainable use of environmental resources, and the long-term effects of early child health and nutrition on adult productivity. This subproject looks at the role that population plays in mediating the relationship between health and income by using microeconomic estimates to build macroeconomic predictions.

Countries where the research will take place

Global

How does the research describe the impact of population/reproductive health on poverty reduction and/or economic growth?

The questions in the research program are organized around three major themes:

1. What are the long-term economic effects of interventions that affect population health or fertility? What are the magnitudes and time-profiles of effects operating through channels of worker productivity, resource congestion, investment in education, changes in living arrangements, reallocation of labor across economic sectors, and variation in population composition?
2. How is the relationship among health, population size, and economic outcomes influenced by local conditions, including social structure, income inequality, the nature of environmental resources, the operation of markets for labor and capital, and economic policy?
3. What are the biological, social, and economic structures that underlie the effects of health and fertility on aggregate economic variables? How do individuals and households make decisions regard health behaviors and resources allocation? What are the economic effects of changes in individual health inputs?

This project aims to contribute to these themes by examining the demographic and economic effects of changes in population health by answering the macroeconomic ques-

tion: how much does health determine national incomes, and how much can national income be raised by interventions that affect health? Throughout the research, the focus will be on giving a quantitative analysis of health interventions, so that we can estimate how much extra output a given intervention will produce over a specific time period.

How will the research address a policy need, and what kind of policy lesson is expected?

This program and project will produce results that contribute to a more nuanced understanding of the mechanisms that underlie the relationship among health, fertility, and economic growth. The results from the analysis of health's effect on economic growth will have a number of policy-specific uses. An understanding of the demographic dynamics that accompany health improvements may suggest complementary investments, for example in family planning, which can greatly improve the rate at which improvements in health are translated into improvements in the standard of living.

Methods used

The project uses microeconomic estimates to build macroeconomic predictions in an effort to link the micro and macro perspectives. Care will be taken to take proper account of both general equilibrium effects and the dynamic impact of health. Three sets of parameters will be used: those involving the demographic response to health and mortality changes; those involving the effect of health on labor productivity and other aspects of human capital; and those involving the aggregate production function.

Data used

Magnitudes on key parameters are derived from published estimates, reanalysis of existing microeconomic data sets and new data from countries undergoing or that have undergone health transitions.

Research products

David Weil, Quamrul Ashraf, and Ashley Lester, “When Does Improving Health Raise GDP?” NBER Macroeconomics Annual (2008).

David Weil and Joshua Wilde, “How Relevant Is Malthus for Economic Development Today?” American Economic Review Papers and Proceedings (May 2009).

David Weil, “Rapid Population Growth Raises the Stakes for African Governments,” Boston Review 33, no. 3 (May/June 2008). Presented at “Is It Africa’s Turn?” symposium.

David Weil, “Endemic Diseases and African Economic Growth: Challenges and Policy Responses,” Journal of African Economies 19, no. 3 (2010).

Notes

This project is in its second year of funding. The work has resulted in four academic articles