Investigating the impact of income inequality and public provisioning of health care on health outcomes in India

Professor Ceren Soylu: Professor Deepankar Basu

UGRA: Andrea Bates
Economics / Public Health, Commonwealth Honors College Class of 2015

INTRODUCTION

This is the first step of a 3 step project investigating, in the context of India, the following issues:

i) the distributional dimensions of the determinants of health status, especially income distribution and public provisioning;

ii) the change in public health provisioning and its implications for distribution and health outcomes; and

iii) the institutional context of changing health care management.

For this first step, building on the empirical framework in Filmer and Pritchett (1999), this study will construct a panel data from Indian states to analyze the impact of income, education and distributional factors on health outcomes across the past 3 decades.

METHODS

The research project will proceed in two steps. In the first step, we will collect data from various sources to create a state-level panel data set for India covering the last three decades. In the second step, we will use the panel data set to investigate the impact of distribution and public provisioning on average state-level health outcomes.

DATA COLLECTION

i) Data Collection: the first step of our research project will involve collecting data on key variables of interest from various sources:

- State-level public expenditure on health care will be collected from State budgets.
- Literacy (male and female), infant mortality rates, per capita real income, and other important demographic and geographical variables will be collected from various issues of the Handbook of Statistics on Indian Economy, an annual publication of the Reserve Bank of India.
- Empirical Analysis: the second step of our research project will involve empirical analysis to study the link between inequality, public provisioning of health care and health outcomes.
- Exploratory data analysis using time series plots, and summary statistics will be used to discern relevant trends in the data.
- Multiple regression analysis will be used to investigate possible causal mechanisms. Our basic regression model will be the following:

\[ y_{it} = \beta_0 + \beta_1 x_{it} + \gamma_1 z_{it} + \epsilon_{it} \]

where \( y \) denotes some health outcome of interest (like infant mortality rate or life expectancy at birth), \( x \) stands for many variables of inequality (like a Gini coefficient of consumption expenditure), \( z \) stands for state-level policies, such as per capita public health expenditure on healthcare, \( \epsilon \) stands for various control variables. The null hypothesis we wish to test is that

\[ H_0: \beta_1 = 0 \]

against the alternative

\[ H_1: \beta_1 > 0 \]

We will estimate the parameters of our model with the fixed effects (i.e., within transformed) estimator and use parameter estimates with heteroskedasticity robust standard errors (clustered at the state level) to test our null hypothesis.

OBJECTIVES

We are conducting research investigating the impact of income inequality and public provisioning of health care on health outcomes in India. As part of the research project, we are collecting data on health outcomes, income, literacy, public spending on health care, and other relevant variables for Indian states between 1980 and 2010. After constructing this state-level panel data set, we plan to use it to econometrically study the impact of income inequality and public provisioning of health care on health outcomes.

There is robust empirical evidence that the cross country variation in average health status - measured by life expectancy at birth and, or infant mortality rate (IMR), or under 5 mortality rate (USMR) - is strongly correlated with per capita income levels and the formal education of women. Recent studies have not only established this correlation, but have even provided some evidence that the effect of income on health status is causal.

While income and women’s education have received lot of attention in the context of developing economies, the distributional dimensions of the determinants of health status have been relatively neglected. In particular, there are two distributional aspects that seem to be important as determinants of average health status in poor countries: income distribution and public health care.

It is generally accepted that health status at the individual level is a nonlinear concave function of per capita income. With a rise in per capita income status rises, but each unit increase in per capita income may be associated with higher increments of per capita income as per capita income levels rise. For instance, life expectancy at birth (LEB) is an increasing concave function, and infant mortality rate (IMR) is a decreasing convex function, of per capita income.

The second “distributional” aspect relates to the public provisioning of health care. In poor countries like India, a substantial portion of health care has been and still is provided by the state. Large hospitals with expensive equipment and specialists provide high-quality care, whereas general practitioners and nutritional programs, and similar interventions with impact on average health status is partly supported by public policy. Other countries, with higher LEB conditional on per capita income, will have less LEB conditional on per capita income and its distribution.

To do this, I have greatly improved my skill set in excel, because in order to successfully complete this work, I had to gain a stronger foundation in excel and its functions.

WHAT I AM LEARNING

As an undergraduate, I have been able to experience firsthand the process of consuming and conducting a research project. It is enlightening to work on a project of this caliber, both in terms of learning how to effectively prioritize tasks, as well as learning how to effectively organize. I am especially grateful to be working on this research team because I feel better equipped and prepared to conduct research of my own that I will be completing for my Commonwealth Honors College senior thesis.

From this research experience, I am learning and improving my technical skills in terms of data gathering and data manipulation, which enables me to better understand the work that goes into studies such as this. Beginning to learn Stata and to delve more deeply into excel-based work and functions has been particularly exciting to me. They are skills that are certainly relevant and necessary to all work in economics and in other facets of academia and life, and this research work has enabled me to expand my knowledge of both areas, which is extremely useful.

I am also pursuing dual-degrees in both Economics and Public Health. Because the nature of this project is such that the impact of health status on income inequality and public provisioning of health care is being studied through the lens of economics, I have been able to delve more deeply into health economics. In this respect, I have been able to become a more knowledgeable scholar of both of my disciplines of study, and is expanding my perspective on the interdisciplinary nature of both degrees.

Further, I am vastly expanding the breadth and depth of knowledge I have Indian culture from the research I have been conducting and through the data I have been collecting and working with. I am extremely excited to continue to do so through this research.

UNDERGRADUATE ROLE IN THE PROJECT

I began my involvement on the research team by learning about the project’s goals, and researching and understanding the Filmer and Pritchett studies from which the empirical foundation of this work is built upon.

From there, my primary role has consisted of data gathering, collection, and organization. I have worked on organizing data for a state level panel set on state populations and expenditures in India, calculating per capita NSDP real data for India, and organizing population sex ratio data and incidence of cognizable crimes (IPC) data, primarily focusing on the years from 1980-2000.

IMPLICATIONS OF THIS RESEARCH

Our research has the potential to shed light on a long-standing debate in health economics and the analysis of public policy: does inequality (of wealth and income) affect average health outcomes? does public provisioning of health care affect average health outcomes? Our research has immense policy relevance. Even as India has grown rapidly over the past three decades, health indicators (life expectancy at birth, child mortality) have not significantly improved. Policy makers have been puzzled by this apparent disconnect between economic growth and improvement in living standards. A clue to this puzzle is provided by the fact that inequality has also increased over this period of growth. But, to the best of our knowledge, no researcher has investigated the causal link between the two. By investigating the causal effect of inequality on average health outcomes, further analysis of our follow-up research as outlined below, our research has the potential to explain this puzzle and shape policy debates in India.

REFERENCES

Deaton, A. Health, Inequality and Economic Development. Journal of Economic Literature


