ECON 672: Economics of Development

Week 11: Human capital: health and education

Prof. Remy Beauregard

de Janvry & Sadoulet on Human Capital and Development

Because education and health are intrinsically valuable to individuals for their wellbeing, they are development objectives in themselves. For this reason, the Human Development Index [HDI] gives salience not only to per capita income, but also to levels of achievement in education and health in characterizing a country's level of development. But education and health are also major sources of economic growth, a key dimension of development. This is because better education and health contribute to raising the productivity of labor and the quality of entrepreneurship.

— *de Janvry & Sadoulet, p. 419*

Positive Externalities and Public Goods

Common theme: positive externalities

- Education: generate jobs, improve children's lives, better political citizenship
- Health: reduced group transmission of disease, herd immunity

Market failure results in *underinvestment* requiring government intervention ("internalize the externality").

Health and education are also **public goods**, non-rival and non-excludable, which can also lead to underinvestment ("free-rider problem").

Cost-Benefit Mismatch

Cost-benefit mismatch:

- Are benefits of improved health and education properly understood?
- Short-run cost vs. long-run benefit makes underinvestment attractive
- Preventative measures (vaccination) may not have obvious benefits *due to being effective*

de Janvry & Sadoulet on Intergenerational Underinvestment

There is also an intergenerational issue in that the cost of schooling is paid by parents, while the benefits go to children. Parents have shorter time horizon [sic] than their children, leading to underinvestment in education and excess child labor (Baland and Robinson, 2000).
— de Janvry & Sadoulet, p. 427

Health

Health Indicators

Common health indicators:

- Life expectancy
- Infant Mortality Rate
- Burden of Disease, Health-Adjusted Life Expectancy, Disability-Adjusted Life Year
- Daily Calorie Intake, Micronutrient Intake, Body Mass Index (BMI)

Major Health Issues in LMICs

Major health issues facing LMICs:

- Hunger and malnutrition (820 million people undernourished), declining more slowly than extreme poverty
- Malaria (500,000 deaths per year, 67% children)
- HIV/AIDS (770,000 deaths in 2021; 2.3 million in 2005)
- Diarrhea (1.7 million deaths per year, 48% children)
- Tuberculosis (1.5 million deaths per year, 24% HIV+)
- Ebola and coronavirus

Banerjee & Duflo on Low-Hanging Fruit for Health

These are cheap and simple technologies that, if properly utilized, would save much in resources (in terms of extra days worked, less antibiotics used, stronger bodies, and so on). They could pay for themselves, in addition to saving lives. But too many of these fruits are left unpicked. It is not that people don't care about their health. They do, and they devote considerable resources to it. They just seem to spend money elsewhere: on antibiotics that are not always necessary, on surgery that comes too late to help. Why does it have to be this way?

— *Banerjee & Duflo, p. 47*

Determinants of Health

What determines the level of health?

- Lifetime model of health
  $H = H(Y(H, E), p_h, q_h, E(H_0), z, H_0)$ with income Y (itself a function of health and education), prices p_h, quality q_h, education E (a function of initial health), other characteristics z, and initial health H_0
- **Supply-side factors**: weak fiscal resources, absenteeism and (lack of) training of staff, and low incentives for providers
- **Demand-side factors**: income (expenditures vs. results), high sensitivity to prices, previous experience, cash-on-hand availability (*liquidity*), behavioral factors (*asymmetric information*, *present bias*)

Banerjee & Duflo on Immunization and Procrastination

*[...] the poor find ways to force themselves to save despite themselves, which requires a great deal of sophisticated financial thinking. If they really believed that immunization is as wonderful as WHO believes it to be, they would probably have figured out a way to overcome their natural tendency to procrastinate. The more plausible explanation is that they procrastinate **and** they underestimate the benefits.*

— *Banerjee & Duflo, p. 74*

Health, Growth, and Income

How does health translate into growth and income?

- Difficult to measure causality due to endogeneity problems
- Negative effect of improved health on GDPpc in a stagnant economy? (Acemoglu & Johnson, 2007)
- Positive effect of health on labor productivity and wages? (Thomas & Strauss, 1997)
- Positive effects of child health and education on long-term welfare (Miguel & Kremer, 2004)

Banerjee & Duflo on Self-Control and the Poor

The poor seem to be trapped by the same kinds of problems that afflict the rest of us—lack of information, weak beliefs, and procrastination among them. It is true that we who are not poor are somewhat better educated and informed, but the difference is small because, in the end, we actually know very little, and almost surely less than we imagine. Our real advantage comes from the many things that we take as given. [...] In other words, we rarely need to draw upon our limited endowment of self-control and decisiveness, while the poor are constantly being required to do so.

— Banerjee & Duflo, p. 74

The Surprising Cost of *Free*

We believe health products, even those critically important, cannot be purchased by poor households at market prices. Thus, we ask what level of subsidy should be used:

- If demand outpaces income, subsidies should increase takeup significantly (Cai et al., 2020)
- Does a cheap/free product get used less than an expensive one *because it was cheap/free*?
- Do buyers *anchor* to cheap/free prices and refuse to pay more in the future? (No; Dupas, 2010)
- Oversaturation of medications may result in antibiotic resistance

General takeaway: subsidies should be well-targeted, prescription-linked, avoid *crowd-out*, and eventually *phased out*

Education

Education Indicators: Enrollment and Completion

Education indicators:

- Gross Enrollment Rate: ratio of children enrolled to children corresponding to level of schooling
- Net Enrollment Rate: percentage of children of a given age group enrolled in a given category
- Primary School Age Children Out of School
- Grade completion rate, regardless of age
- Grade retention rate

Rapid progress in educational outcomes and gender equality in schooling, but gender, income, cross-country gaps remain.

Education Indicators: Attainment and Quality

Educational attainment:

- Average completed years of schooling per adult 25+
- Percentage distribution of the population between less than primary, completed primary, completed secondary, and completed short-cycle tertiary

Quality of education also matters: internationally-standardized **PISA** (Program for International Student Assessment) tables in math, sciences, and reading (not easily comparable between richer and poorer countries)

Returns to Schooling: Growth

How does education (S) relate to *growth*?

$$\ln Y_{it} = \beta_0 + \beta_1 S_{it} + \varepsilon_{it}$$

- Stable, linear estimate of β_1 around 0.04; 4% higher income for each additional average year of schooling
- Causality problems and OVB with this estimate, but very stable estimates across samples and specifications
- "First-order-of-importance role in explaining growth"

Returns to Schooling: Earnings

How does education (S) relate to *earnings*?

$$\ln w_i = \beta_0 + \beta_1 S_i + \beta_2 \text{Exp}_i + \varepsilon_i$$

- Causality problems and OVB with this estimate as well (upward bias on β_1)
- Estimates of β_1 usually between 0.05 and 0.15, 5–15% increase in wage from an additional year of schooling
- Effects on other important indicators, including maternal and infant health and fertility

Banerjee & Duflo on Enrollment versus Learning

Getting children into school is a very important first step: This is where learning starts. But it isn't very useful if they learn little or nothing once they're there. Somewhat bizarrely, the issue of learning is not very prominently positioned in international declarations: The Millennium Development Goals do not specify that children should learn anything in school, just that they should complete a basic cycle of education. [...] The implicit assumption [of the 2000 Education for All Summit], presumably, was that learning would follow from enrollment. But unfortunately things aren't that simple.

— Banerjee & Duflo, p. 80

Determinants of Schooling

What determines the level of schooling?

- Intertemporal model between costs today and higher wages tomorrow: educate iff $i(q,x) - c + \delta w_1(q,x,M) > w_0 + \delta w_0$, with school quality q, student and household characteristics x, macroeconomic conditions M, and wage rates $w_{0,1}$
- **Supply-side factors**: school construction, teacher staffing/absenteeism/monitoring, training, and motivation, and educational resources
- **Demand-side factors**: intrinsic value of schooling (i), expected returns to education $(w_1 - w_0)$, direct costs (c), opportunity cost (w_0), and discount rate $(\delta \equiv 1/(1+r) \leq 1)$

Banerjee & Duflo on Supply and Demand for Education

Supply and demand strategies have no reason to be mutually exclusive. Supply by itself does some good, but demand is important, too. There are indeed people who somehow find ways to get educated without any topdown help when the right jobs come to town, but for many others, the impetus from schools being built in their area can be critical.

— Banerjee & Duflo, p. 91

Cash Transfers for Education

Cash transfers have been a particularly key demand-side policy tool for increasing educational attainment

- Conditional (CCTs), *Progresa/Oportunidades/Prospera* in Mexico, *Bolsa Familia* in Brazil
- Unconditional (CTs), in Ecuador and other countries
- Merit awards for school performance
- Food-for-school programs, in Bangladesh

Solve the intertemporal valuation problem for parents: lower the cost today (c) so I wait for the benefit tomorrow ($w_1 \gg w_0$)

Banerjee & Duflo on Conditional Cash Transfers

Building schools and hiring teachers is a necessary first step to lower the cost of sending a child to school, but it may not be enough. This rationale explains why most rich countries simply give parents no choice [...] But this clearly does not work where state capacity is more limited and compulsory education cannot be enforced. In such cases, the government must make it financially worthwhile for parents to send their children to school. This is the idea behind the new tool of choice in education policy: the conditional cash transfer. [...] by linking the receipt of welfare payments to investment in human capital (health and education), [Levy] could ensure that the money spent today could contribute to eradicating poverty, not only in the short term but in the long term as well, by fostering a healthy and well-educated generation.

— Banerjee & Duflo, p. 85

Conditional versus Unconditional Transfers

Active debate about whether *conditional* or *unconditional* transfers provide more (*cost-effective*) benefit to households:

- Concerns about ethics and paternalism may motivate CTs
- "Flypaper effect" may make CTs and CCTs indistinguishable

Why might a constraint help?

1. Parents may not be fully informed of education benefits ($\mathbb{E}[w_1] \neq w_1$)
2. Parents may not decide *optimally* for children due to having a different time horizon/discount rate ($\delta_p \neq \delta_c$)
3. Parents may underinvest in education due to positive externalities

5-minute Break

Miguel & Kremer (2004)

Randomly selected presenter: **David**

1. What is the research question?
2. How do the authors answer it?
3. What do they find?
4. Are you convinced by the design and results?
5. How does the paper connect to our other readings?

Group Discussion

Bringing together our lecture material and academic article, I have prepared the following suggested discussion questions:

- What role do health and education play as a *determinant* of economic growth? What role do they play as *outcomes* of economic growth?
- What features of RCTs targeting improved health and education outcomes have been most effective? Have any surprised you?
- How might some of the key *behavioral* biases discussed here be addressed?

Roadmap

Looking Ahead to Week 12

What do we have on the horizon before next Tuesday?

- Our **Data Analysis** assignment will be due on Friday at 6pm
- My office hours for ECON 672 will be held Tuesday before class, 12:15-2:15pm in MCL 108 or virtually by appointment
- Our twelfth topic will be *Labor markets and migration*. Our textbook reading will be Chapter 12. Our *Poor Economics* reading will be Chapter 9. Our required journal article will be Lagakos, Mobarak, & Waugh (2023), "The Welfare Effects of Encouraging Rural-Urban Migration," Econometrica.
- Our **Weekly Reading Response** assignment for this paper will be due Tuesday at 2:40pm before class. One student will be randomly selected to **present their response** to the class in 5-8 minutes.