Nutrition: the Hidden traps

14.73, Lecture 6

Abhijit V. Banerjee and Esther Duflo

The puzzle of nutrition

- We saw that the poor did not appear particularly hungry for extra calorie, or extra nutrients
- And yet, by all accounts they are still not well nourished:
  - India, 2004, 33% of men and 36% of women were undernourished (BMI below 18.5)
  - Iron deficiency anemia is believed to affect up to 1 billion of people worldwide
- What could be happening?

The role of micronutrients

- Micronutrient deficiency has been described as “hidden hunger”
- A randomized experiment in Indonesia (WISE study):
  - Household were provided iron supplement OR a placebo (why the placebo)?
- Anemia was reduced
- Increase in yearly earnings for self-employed workers who got the supplement and were anemic at baseline: $40
- Cost of fortified Fish sauce for one year:$6

The role of good nutrition in childhood

- Good nutrition in adulthood makes the adult more productive *now.*
- But good nutrition during childhood is an investment, and may improve wages of the child every year in adulthood for two reasons:
  - Long term impact on health (body many not well recover from deficiencies during childhood)
  - Long term impact through education: children may learn better if they are well nourished.

An Example: Deworming

- Seventy-five of 89 rural primary schools in rural western Kenya (two divisions in Busia district) took part (Figure 1)

  -- Broadly representative of rural Kenya in education, health, worms
- List randomization into three treatment groups:

  -- Group 1: deworming drugs and health education in 1998-2003

  -- Group 2: 1999-2003, Group 3: 2001-2003

  -- Cost-sharing in random subset of schools in 2001

This study tracks down children who were in primary school during the deworming period (group 1 and 2=treatment, group 3=control) in 2007-2009

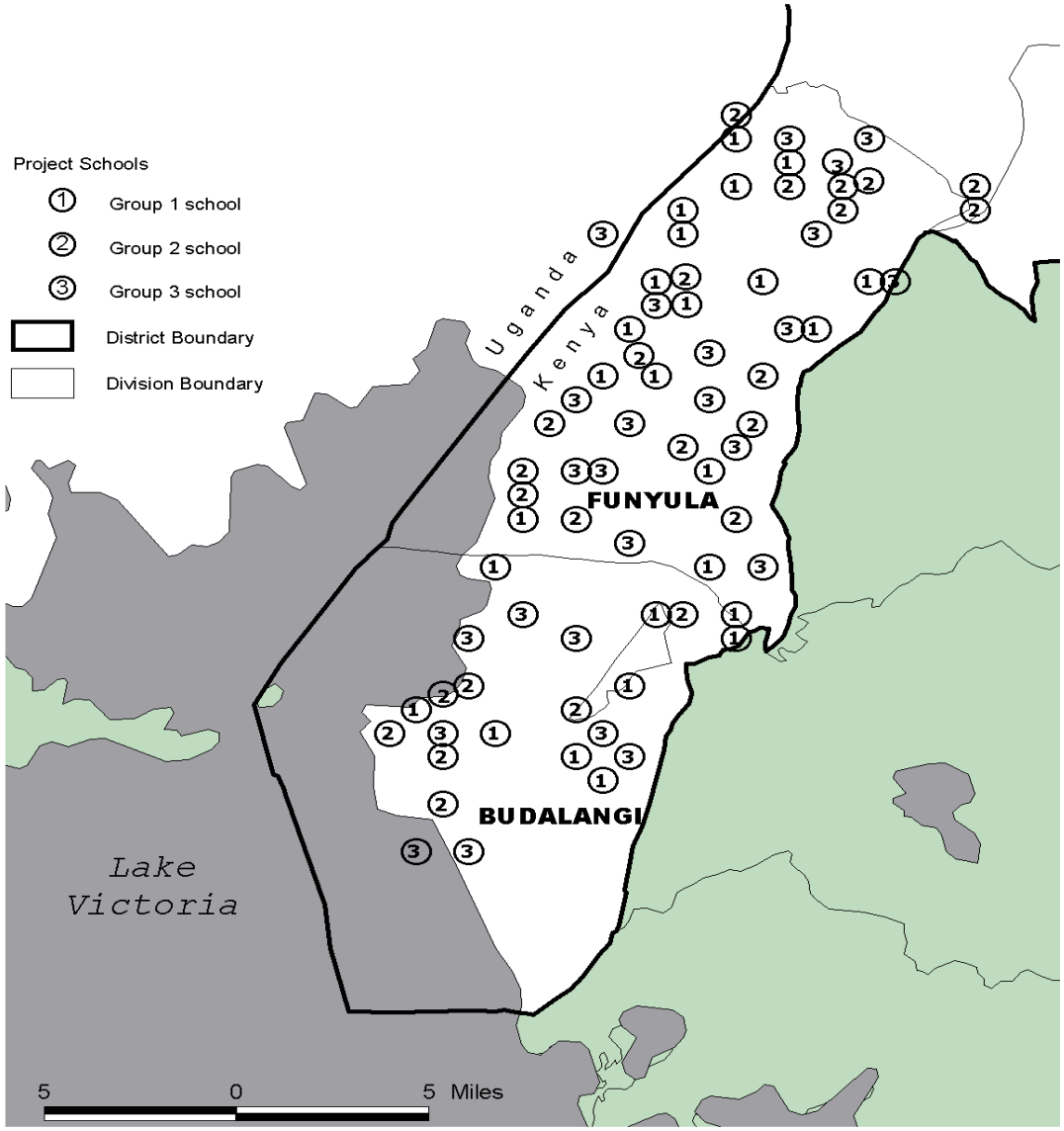

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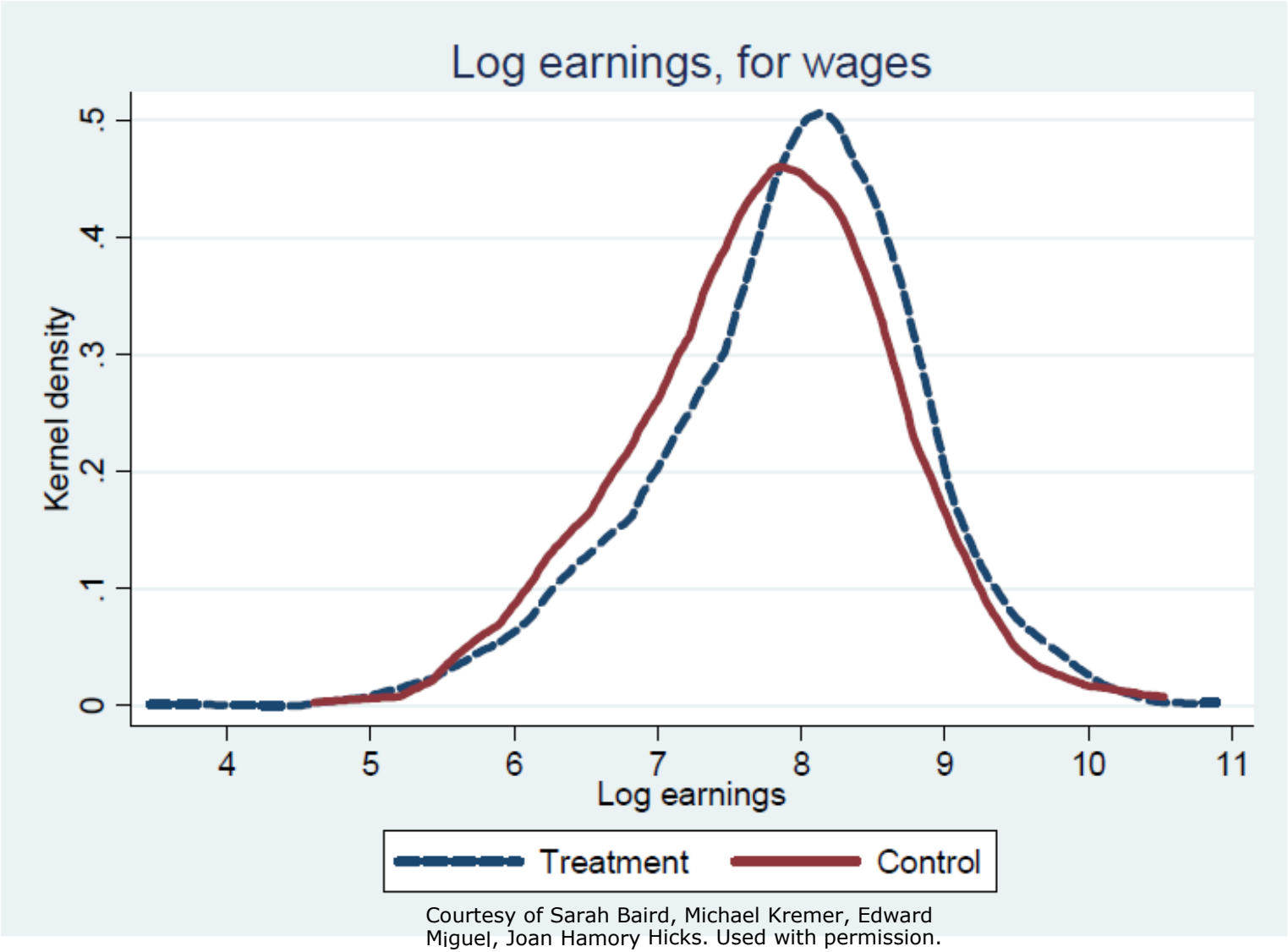
Figure 3:

Panel A: The distribution of log labor earnings in the last month, deworming treatment versus control (among those with positive labor earnings)



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The EXTRA WAGES EARNED BY STUDENT IN TREATMENT GROUP

Table 3: Deworming impacts on labor earnings (2007-2009)

	Dependent variable:					
	Ln(Total labor earnings, past month)			Total labor earnings, past month (in Kenya Shillings)		
	(1)	(2)	(3)	(4)	(5)	(6)
Deworming Treatment indicator	0.191**	0.181**	0.242***	578**	576*	696*
	(0.078)	(0.077)	(0.092)	(292)	(306)	(418)
Deworming Treatment pupils within 6 km (in '000s), demeaned			0.183			345
			(0.167)			(734)
Total pupils within 6 km (in '000s), demeaned			-0.085			-124
			(0.126)			(571)
Additional controls	No	Yes	Yes	No	Yes	Yes
R^2	0.060	0.169	0.175	0.056	0.115	0.117
Observations	710	710	710	710	710	710
Mean (s.d.) in the control group	7.81	7.81	7.81	3,531	3,531	3,531
	(0.86)	(0.86)	(0.86)	(3,611)	(3,611)	(3,611)

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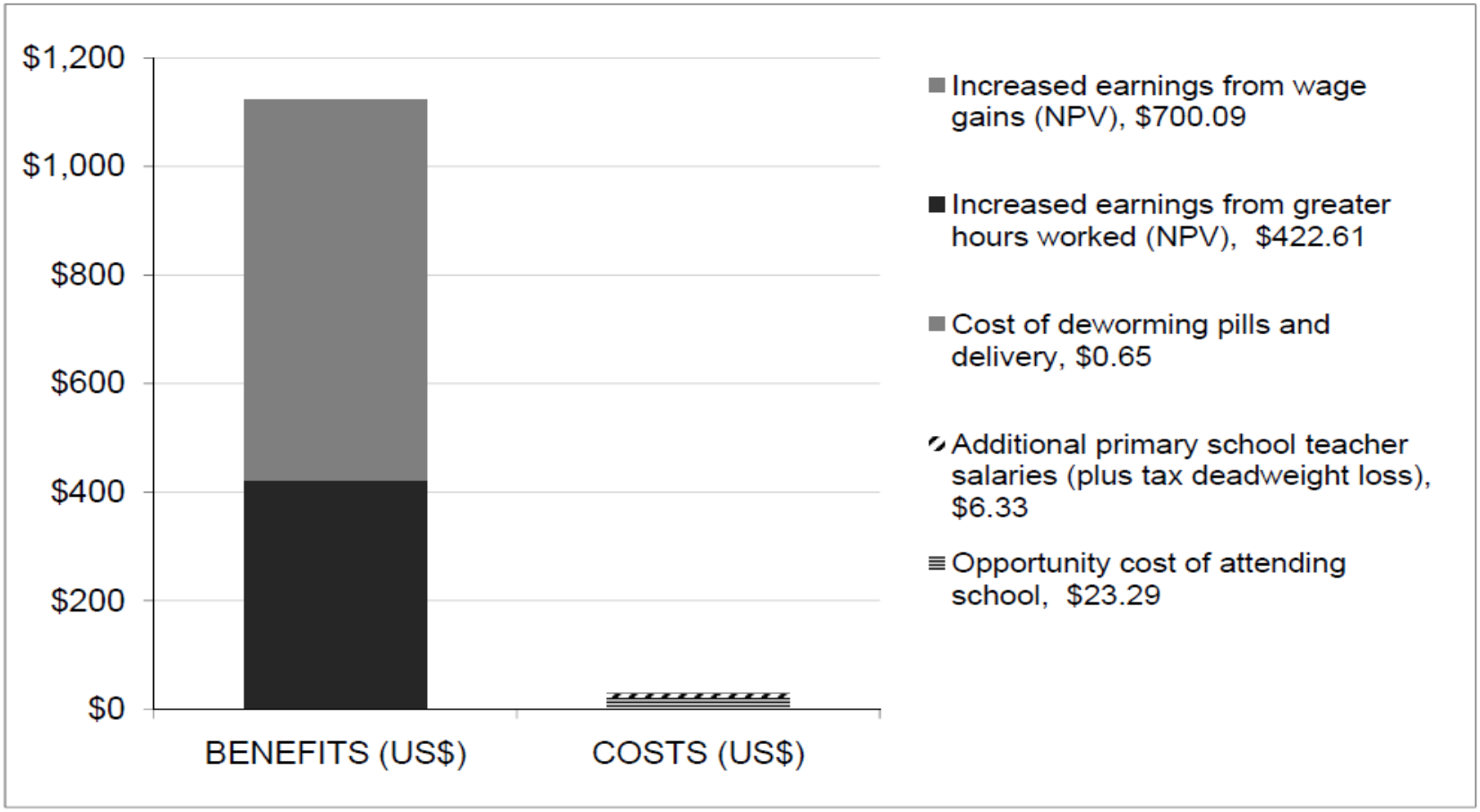
The mean in the CONTROL GROUP (in log)

Figure 4: Labor market returns of childhood deworming treatment



Students earned about 20% extra PER YEAR, for a life time, when the cost is 0.65 cents

The role of nutrition in the womb

- Conditions experienced in-utero have long lasting effects: The Barker Hypothesis
  - Doug Almond found that, in the US, people who were in utero during the big flu pandemics were sicker and more likely to die early
  - *Children of children* born during Chinese famine are smaller
  - Children who were in utero during ramadan earn less as adults
  - Field and Toreror: A campaign to provide Iodine supplementation to pregnant women in Tanzania: higher educational achievement for students who were in utero at the right place and time (when those supplements were distributed)

The potential for poverty trap

- Nutritional investments in micronutrients in adulthood, childhood, and pregnancy, all have returns that that are much larger than costs.
- If poor are less likely to undertake the investment, there is a potential for a poverty trap.
- Is it the case?

Are the poor less likely to get the right micronutrients for them and their children

- Most of the poor still consume a diet that is poor in iron
- The vast majority of the world's children are not dewormed
- WHO estimates that 40% of pregnant women world wide are anemic (not all that anemia is Iron deficiency anemia).

Is money the problem?

- Very mall costs seem to discourage people:
  - Iron fortified fish sauce costs $6 for a year in Indonesia. If the returns is $40, it seems that that investment is worthwhile, and doable even for a poor family.
  - When small cost-sharing was introduced in Kenya in some of the schools (a few cents) take up went almost to zero.
  - In India, a free iron fortification program was introduced in some villages. But it was not at all millers in the villages.
    - Very few people switched to fortifying miller
    - And when they did, if miller stopped fortifying, they did not insist that they must continue.

Other Problems

- Will the workers reap the benefits?
  - In Indonesia, wages did not go up for people who worked for a wage: may be the employer does not perceive the increase in productivity. Why bother…
- Information:
  - Very difficult to find out on your own: as late at the 70s, scientists thought protein deficiency was the big nutritional problem, not iron or vitamins
  - Do you trust outsiders that give you information?

Consumption is a decision

- Human beings maximize their utility, not their productivity…
- And utility is made of other things than how productive you can be
  - How good the food you have to eat every day tastes (hence, perhaps, the prevalence of sugar in the diet of the poor).
  - Your social status, which may be related to how you spend and other spend: “keeping up with the Jones” (funeral, but also large TV)
  - The diversity of goods you have (cell phones, TV, etc.).

Conclusion: policy Implications

- What does this all mean for policy?
- Policies that puts a lot of emphasis on the *quantity* of food may be misguided, in terms of the benefits they bring: the poverty trap they try to solve is not really there...
- Better ideas:
- Subsidizing double fortified salt purchase, rather than offering free grain (most of which gets lots on the way anyway).
  - Making it as easy as possible to do the right thing: invent foods people like to eat, and which are good for you (e.g. yams rich in beta-caroten).
  - Make school meals rich in nutrition (e.g. sprinkle them with sachets)
  - Other ideas?

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