Impact Evaluation

Dragalina Ogor

Rw316

Part 1

Q1: What is the motivation and purpose of this paper?
Describe the research question(s) that the authors attempt to answer, and explain why these questions are relevant/important.

The paper "Worms" by Miguel and Kremer (2004) investigates the effects of a school-based deworming program in Kenya on health, education, and treatment externalities. Key research questions were:

1. How does deworming impact children's health and school attendance?
2. What are the indirect benefits (externalities) of deworming on untreated individuals?
3. Is deworming a cost-effective intervention?

This study is important because it highlights the connections between health and education, demonstrates the societal benefits of addressing parasitic infections, and provides evidence for cost-effective public health policies to improve human capital in low-income settings.

Q2: Most earlier studies have examined a link between education and health, but not the other way around. Why should we believe that health causes educational outcomes?

There are many reasons to believe health state cause educational outcome, the main one being that being healthy means school attendance would be higher and higher school attendance can lead to better performance

Q3: (1pt) Describe the specific experimental design. On what level is the treatment distributed? Who serves as a control/comparison group? (See section 3)

The study employs a cluster-randomized controlled trial (RCT) design. In the treatment distribution phase 75 schools have participated in the project and were first divided randomly into three groups. In 1998 only group one received dewarming treatment, the controls were thus group 2 and 3. Next year roup 1 and group 2 received treatment, group 3 now being the sole control group. Finally, at the end all schools received treatment.

Q4: (3pt) The authors write that: “Given that there was no randomization of treatment within schools, Group 1 pupils who did not receive treatment in 1998 are compared to Group 2 pupils who did not

receive treatment in 1999, the year that Group 2 schools were incorporated into treatment, to at least partially deal with potential bias due to selection into medical treatment." (p. 178) Explain, in your own words, why the authors are conducting such an analysis. How would selection into medical treatment threaten their results? What result do they find?

Randomization occurred at the school level rather than for individual students, meaning that within each school children and their parents could decide if they were going to participate or not. This prevents distinguishing the causal effects of deworming on randomly chosen treated students from spillover effects on untreated students in the same schools.

Since this randomization is not available, the researchers compute the spillover effect by comparing the untreated individuals within all groups.

Self-selection into treatment could overestimate their result if more sicker students would be more likely to receive deworming treatment. However, the evidence suggests students with higher worm loads were less likely to be treated, likely due to absenteeism or household reluctance. This means that the results could be biased towards zero, meaning that the results could be interpreted as a lower bound.

Q5: (3pt) The authors write that: "The larger [school] participation differences between treatment and comparison schools in 1998 may also have been due to the widespread El Nino flooding in this region in early 1998, which substantially increased worm loads between early 1998 and early 1999." (p.190) Explain how the increase in worm load in early 1998 due to El Nino could bias the results when comparing treatment and comparison schools. What would the direction of the bias be? Justify your answer.

The El Niño flooding in early 1998 increased worm loads across all schools. Since Group 1 schools received treatment that year while comparison schools (Groups 2 and 3) did not, the comparison schools experienced worse health outcomes due to the higher worm burden. This would bias results by overstating the treatment effect, as the worse outcomes in comparison schools were partly due to the flooding, not just the absence of treatment. The bias arises from the timing of deworming coinciding with the peak in worm transmission caused by El Niño.

Table 1 replication:

	Group 1	Group 2	Group 3	Group 1- 3	Group 2 - 3
Panel A: Pre- School to Grade 8					
Male	0.53	0.51	0.52	0.01	-0.01
Proportion girls< 13, and all boys	0.89	0.89	0.88	0.00	0.01
Grade Progression	-1.97	-1.82	-1.97	0.00	0.15
Year of Birth	1986.19	1986.54	1985.79	0.41	0.76
Panel B: Grades 3 to 8					
Attendance recorded in school registers	0.97	0.96	0.97	0.00	-0.01
Blood in stool	0.26	0.22	0.19	0.07	0.02
Child is often sick	0.10	0.10	0.08	0.02	0.02
Malaria	0.37	0.38	0.40	-0.04	-0.02
Child is clean	0.60	0.66	0.67	-0.06	-0.01
Panel C: School characteristics					
Distance to Lake Victoria	10.03	9.92	9.46	0.58	0.47
Pupil population	392.72	403.80	375.88	16.84	27.92
School latrines per pupil	0.01	0.01	0.01	0.00	0.00
Proportion moderate-heavy infections in zone	0.37	0.37	0.36	0.01	0.01
Group 1 pupils within 3 km	430.39	433.17	344.51	85.88	88.66
Group 1 pupils within 3–6 km	1157.60	1042.97	1297.34	-139.75	-254.38
Total primary school pupils within 3 km	1272.72	1369.09	1151.87	120.85	217.22
Total primary school pupils within 3–6 km	3431.26	3259.79	3502.10	-70.84	-242.31