The rate of return to the HighScope Perry Preschool Program

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Housekeeping

Research Papers

- Heckman, J. J., Moon, S. H., Pinto, R., Savelyev, P., and Yavitz, A. (2010b). The rate of return of the HighScope Perry Preschool Program. *Journal of Public Economics*, 94(1):114–128
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Special Guests

- **Chase Corbin**, research assistant at the Center for the Economics of Human Development at The University of Chicago
- **Fabian Kosse**, postdoctoral researcher at the Institute on Behavior & Inequality at the University of Bonn

If you are interested in issues regarding the econometrics of policy evaluation, you can join our chat. We use https://gitter.im to keep the frictions to a minimum.

You can sign up on the course website at

`https://github.com/policyMetrics/course/wiki`

Setup

The Generalized Roy Model

Potential Outcomes

$$Y_1 = \mu_1(X) + U_1$$

$$Y_0 = \mu_0(X) + U_0$$

Observed Outcome

$$Y = DY_1 + (1 - D)Y_0$$

Choice

$$D = \mathrm{I}[\mu_D(X, Z) - V > 0]$$

Treatment Status

D	self-selected
ξ	assigned
A	actual

Key Identifying Assumptions

$$(Y_1, Y_0) \perp\!\!\!\perp D$$
$$(Y_1, Y_0) \perp\!\!\!\perp \xi$$
$$(Y_1, Y_0) \perp\!\!\!\perp A$$

When do we have to worry about compliance?

$$
\begin{aligned}
&E(Y \mid A = 1) - E(Y \mid A = 0) \\
&\qquad = E(Y_1 \mid A = 1) - E(Y_0 \mid A = 0) \quad \text{(by full compliance)} \\
&\qquad = E(Y_1) - E(Y_0) \qquad\qquad\qquad\qquad \text{(by randomization)} \\
&\qquad = ATE = TT = TUT
\end{aligned}
$$

What if we can only deny program participation to individuals who are willing to participate?

$$
\begin{aligned}
&E(Y \mid D = 1, A = 1) - E(Y \mid D = 1, A = 0) \\
&\qquad = E(Y_1 \mid D = 1, A = 1) - E(Y_0 \mid D = 1, A = 0) \\
&\qquad = E(Y_1 \mid D = 1) - E(Y_0 \mid D = 1) \\
&\qquad = TT \neq ATE \neq TUT
\end{aligned}
$$

Issues

- Compliance
- Imperfect Randomization
- Ethical Concerns
- Feasibility
- Expenses
- External Validity

Challenges to Scaling Experiments

- market equilibrium effects
- spillovers
- political reactions
- context dependence
- randomization or site-selection bias
- piloting bias

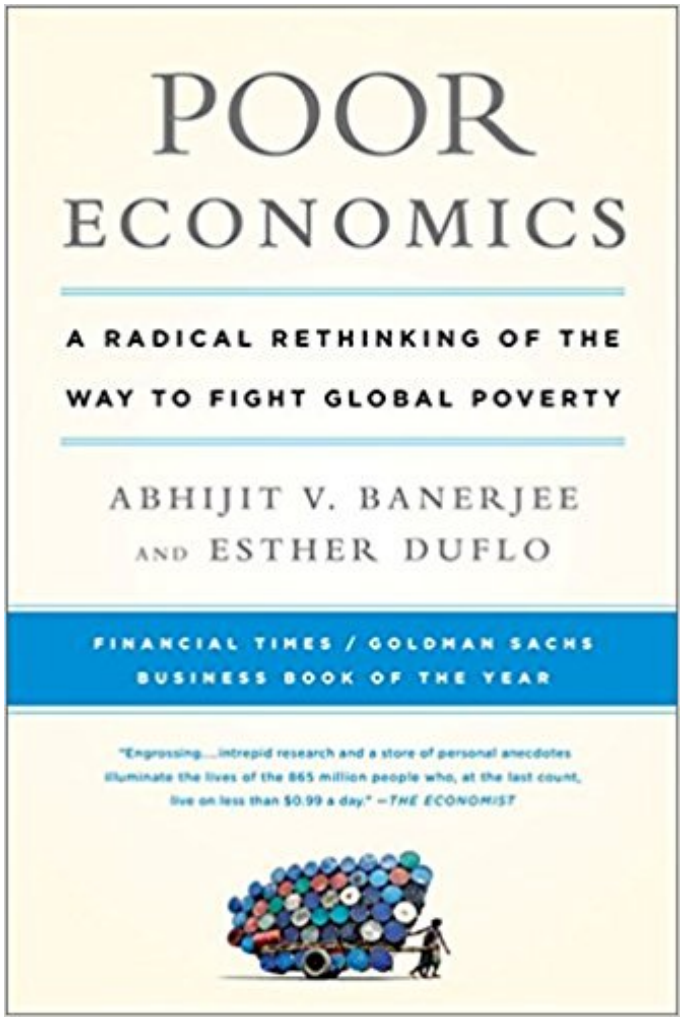
See Banerjee et al. (2017) for a discussion of these challenges and their attempts to address them in their work.

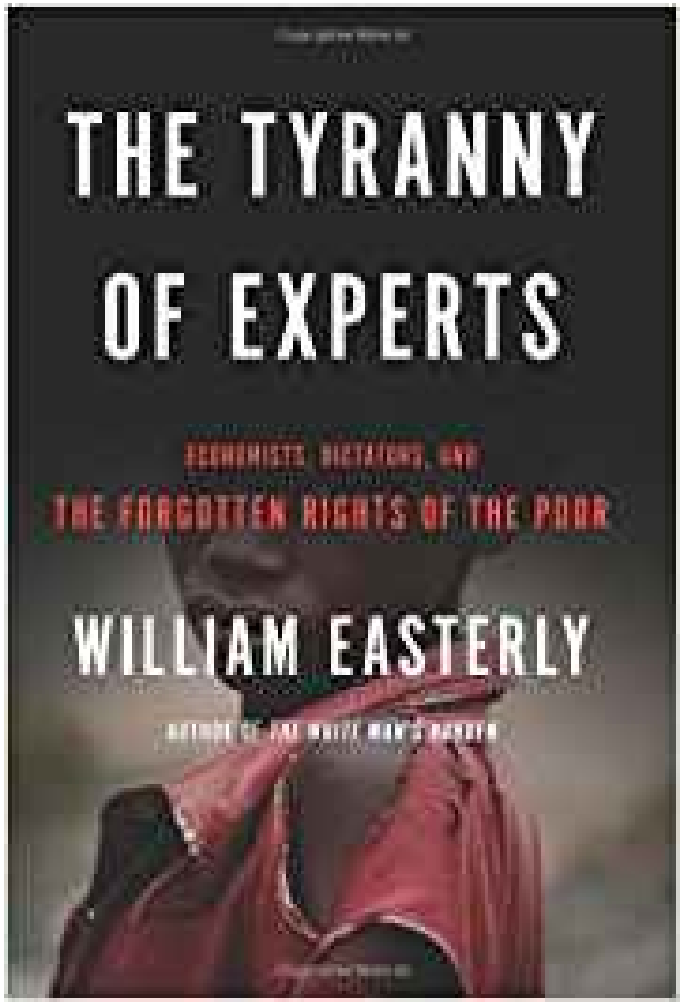
The Abdul Latif Jameel Poverty Action Lab

> *The Abdul Latif Jameel Poverty Action Lab (J-PAL) is a network of 158 affiliated professors from 51 universities. Our mission is to reduce poverty by ensuring that policy is informed by scientific evidence. We do this through research, policy outreach, and training across six regional offices worldwide.*

See their website for an impressive amount of resources for running experiments.

Figure: Book Recommendations





Paper

This paper estimates the rate of return to the HighScope Perry Preschool Program, an early intervention program targeted toward disadvantaged African-American youth. Estimates of the rate of return to the Perry program are widely cited to support the claim of substantial economic benefits from preschool education programs. Previous studies of the rate of return to this program ignore the compromises that occurred in the randomization protocol. They do not report standard errors. The rates of return estimated in this paper account for these factors. We conduct an extensive analysis of sensitivity to alternative plausible assumptions. Estimated annual social rates of return generally fall between 7 and 10%, with most estimates substantially lower than those previously reported in the literature. However, returns are generally statistically significantly different from zero for both males and females and are above the historical return on equity. Estimated benefit-to-cost ratios support this conclusion.

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Part of a whole sequence ...

- Heckman, J. J., Pinto, R., Shaikh, A. M., and Yavitz, A. (2011). Inference with imperfect randomization: The case of the Perry Preschool Program. *NBER Working Paper*, 16935
- Heckman, J. J., Moon, S. H., Pinto, R., Savelyev, P., and Yavitz, A. (2010a). Analyzing social experiments as implemented: A reexamination of the evidence from the HighScope Perry Preschool Program. *Quantitative Economics*, 1(1):1–46
- Heckman, J. J., Karapakula, G., and Pantano, J. (2017). Intergenerational effects of the Perry Preschool Project. *Unpublished Manuscript*

HighScope Perry Preschool Program

- Perry Elementary School in Yipsilanti, Michigan in early 1960s
- beginning at age three and lasting two years
- 2,5 hours preschool program on weekdays during the school year
- weekly home visits by teachers
- curriculum based on supporting children's cognitive and socio-emotional development
- follow-up interviews at age 15, 19, 27, and 40

Challenges

- the randomization was compromised
- there are not data on participants past age 40 and it is necessary to extrapolate out-of-sample to obtain earnings profiles pat that age to estimate the lifetime impacts
- some data are missing for participants prior to age 40
- there is difficulty in assigning reliable values to non-market outcomes such as crime

Selected Contributions

- We account for compromised randomization in evaluating this program.
- We develop standard errors for all our estimates of the rate of return.
- We use state-of-the-art methods to extrapolate missing future earnings.

Table 1
Selected estimates of IRRs (%) and benefit-to-cost ratios.

Return		To individual			To society[a]		
Murder cost[b]					High ($4.1M)		
		All[d]	Male	Female	All[d]	Male	Female
Deadweight loss[c]							
IRR	0%	7.6	8.4	7.8	9.9	11.4	17.1
		(1.8)	(1.7)	(1.1)	(4.1)	(3.4)	(4.9)
	50%	6.2	6.8	6.8	9.2	10.7	14.9
		(1.2)	(1.1)	(1.0)	(2.9)	(3.2)	(4.8)
	100%	5.3	5.9	5.7	8.7	10.2	13.6
		(1.1)	(1.1)	(0.9)	(2.5)	(3.1)	(4.9)
Discount rate							
Benefit–cost ratios	0%	–	–	–	31.5	33.7	27.0
					(11.3)	(17.3)	(14.4)
	3%	–	–	–	12.2	12.1	11.6
					(5.3)	(8.0)	(7.1)
	5%	–	–	–	6.8	6.2	7.1
					(3.4)	(5.1)	(4.6)
	7%	–	–	–	3.9	3.2	4.6
					(2.3)	(3.4)	(3.1)

Public Impact

Every dollar we invest in high-quality early childhood education can save more than seven dollars later on – by boosting graduation rates, reducing teen pregnancy, even reducing violent crime.

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INVEST in early education for disadvantaged children

+ DEVELOP cognitive skills, social abilities and healthy behaviors early

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= GAIN a more capable and productive workforce

LEARN MORE ABOUT THE BENEFITS OF
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This handbook chapter provides the most recent overview on early childhood education.

- Elango, S., Garcia, J. L., Heckman, J. J., and Hojman, A. (2016). Early childhood education. In Moffitt, R., editor, *Economics of Means-Tested Transfer Programs in the United States*, volume II, chapter 4, pages 235–298. University of University of Chicago Press, Chicago, IL

Appendix

References

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Carneiro, P., Heckman, J. J., and Vytlacil, E. J. (2011). Estimating marginal returns to education. *American Economic Review*, 101(6):2754–2781.

Elango, S., Garcia, J. L., Heckman, J. J., and Hojman, A. (2016). Early childhood education. In Moffitt, R., editor, *Economics of Means-Tested Transfer Programs in the United States*, volume II, chapter 4, pages 235–298. University of University of Chicago Press, Chicago, IL.

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