

Institutions and Development: Limits to Identification

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The Micro-Analytic Revolution in Development Studies

- The Easterly shock to World Bank orthodoxy derived from the Solow growth model
- The revolution in econometric identification
- The creation of experimental infrastructures (JPAL)

The Critiques

- Rodrik: External vs. Internal Validity – and need to learn from what Fenno called “soaking and poking”.
- Deaton: Loss in both IV (macro) and RCT (micro) of a concern for theoretical mechanisms
- For a “war of the planets” drama of development economics, see Banerjee vs. Deaton go after one another in an NYU symposium

What Policy Advice Can We Provide?

- Here is Arvind Subramanian, responding to a Nicholas Kristof op-ed supporting RCTs:
“What would be the effects of disbursing \$1-1.5 billion of foreign aid to Pakistan? RCTs do not, and cannot, have anything to say on the matter—not only because of their narrow focus and applicability, and hence non-generalizability, but also because they cannot speak to macroeconomic effects.
“We are still left to rely on other evidence—economic and historic—about the effects of aid in stunting institutional development, in creating aid-dependence, in entrenching the hold of the bad guys, and in making the export sector uncompetitive in a way that is detrimental to long run development.”

Incorporating the Critiques into a Positive Research Program

The critiques suggest improvement for micro-institutional interventions by adding three elements to their research designs:

- (1) Going beyond marginal effects of x on y , estimating what part of the macro problem that motivated the research is being ameliorated.
- (2) Going beyond IV, to capture more directly what is affecting outcomes
- (3) Going beyond static models to provide theoretical intuitions of why any innovation would be self-reinforcing (Greif and Laitin, APSR).

The Plan

Here I will make some modest suggestions on each of these three points, without going into economic theory or econometric estimation, in neither of which do I have competence to offer advice.

Estimating Effect Size

- Suggestion: From how big is the effect of x on y → how much of a dent on the macro problem that drives the research does x solve?
- Three illustrations:
 - Breast feeding in India (Jayachandran and Kuziemko)
 - CERP spending in Iraq (Berman, Shapiro and Felter)
 - Rugged terrain in Africa (Nunn and Puga)

Breastfeeding in India

Finding: preference for boys → quicker weaning of girl babies → higher likelihood of death from one to five years

Magnitude of the effect: accounts for up to 21,000 additional deaths to girls/year in India, explaining ~9% percent of the gender gap in child mortality

Dent on Macro Problem: mortality from 1-5 years old in India is 61/1,000, as opposed to OECD rates at about 4/1000. Therefore, if India had OECD rates, there would be 1,809,180 fewer infant deaths/year. Breastfeeding deficiency accounts for 1.3% of the difference.

But at least we know the precise effect!

- Atul Gawande “Slow Ideas” in *The New Yorker* (29 July, 2013)
- Shows that diffusing a home remedy for diarrhea and a 29-point hospital checklist at birthings have order of magnitude larger effects on survival than an average 10 days more of breastfeeding.
- Knowing whether a nurse wore sterilized gloves is harder data to collect so identification is more problematic
- Could you do it as a RCT? Gawande shows there can be no standard protocol in inducing nurses to follow a treatment regime, if you actually want to implement it.
- As a result, publication of Gawande’s approach in QJE – relying on best practices in RCT – would likely fail.

Rugged Terrain in Africa

- Finding: Rugged terrain → lower yield on slave raiding → advantage for growth until 19th c. for locales with rugged terrain
- Magnitude of this effect: Without slave trade, per capita income in 2000 would be \$4,149, an increase of \$2,365. Ruggedness adds \$747 per cap. Senegal’s GDP/cap=US \$1,994 (WB 2012); so the maximum return to ruggedness would be a large 37%!
- Dent on Macro Problem: By WB calculations, with equal GDP/cap in 1960, Senegal’s deficiency by 2012 compared to S. Korea is US\$28,778 (WB2012), making ruggedness explain 2.6% of the gap (747/28,778), a more realistic assessment of magnitude.

CERP Spending in Iraq

- Finding: Decentralized development funding on small projects as part of COIN strategy reduces violence
- Magnitude of the Effect: Each \$ of CERP spending drops violent incidents from an average of 58.6/1,000 residents to 57.0; thus an additional \$37/cap of CERP spending (*ceteris paribus*) → absence of violence
- Dent on Macro Problem: Drop in level of violence predates CERP program; and no apparent gains from CERP in forestalling post-occupation civil war. Paper provides no estimate on what overall violence in Iraq would have been without CERP.

Summary of Point 1: Assessing Effect Magnitudes

In the past decade, macro development economists have been pushed to address robustness, possible missing variable biases, and exclusion restrictions for the IV’s (Rodrik’s 2008 Working Paper)

One way to do this is to introduce a new section in micro papers that assesses the degree to which the identified effect addresses the gap that motivated the research.

This will require a range of new assumptions about external validity for experimental designs – and will necessarily require the use of observational data to make and analyze the implications of these assumptions. This might become a new challenge for future experimental research.

What About Institutions in Doing the Work?

- The IV approach (in AJR) infers institutions from settler mortality; similarly in Jha, institutions are inferred from coastal trading cities in India. But we don't actually see the "work" the institutions are doing.
- In Greif, we see the institutions (e.g. the community responsibility system), but can't assess the magnitude of their effect on development.
- Can we measure institutional effects directly?

Parliamentary Institutions and Civil War Onsets: A research program

- Variation in the imposition of parliamentary institutions in colonial states
- Fearon and I collected data for all post-imperial countries on the number of years before independence was there an elected legislature with natives participating
- No identification strategy as of yet; mere correlations with controls

Correlates of Years with Pre-Independence Legislatures

Correlate of Years of Colonial Legislature	Correlation Coefficient
New State War (1=a civil war onset in first two years of independence)	-0.1359
New State War (if country is in Sub-Saharan Africa)	-0.2827 [†]
Civil War Years post independence (COW)	-0.0651
Civil War Years post independence (Breke)	-0.0255
GDP Growth from 1960-2000	0.1566
Average Democracy Score since 1960	0.4969**

Note: Correlations with Years of Colonial Legislature for all 71 countries that were colonies post WWII and subsequently became independent states; † - p<.1; * - p<.05; ** - p<.01

Yield

- The table meets no identification standards; nor is it meant to.
- It presents some stylized facts about long term implications of institutional imposition that should be the source of more precise estimations of what we presently claim, viz. "that good institutions at t_0 are consequential for outcomes at t_n "

Estimating Strategic Reactions

- Nunn and Puga – Imagine no slave trade; but Africans are induced to emigrate as indentured servants, would the outcome today for Africa be as negative as the counter-factual (no population loss)?
- Callen, Gibson, Jung, and Long, paper using RCT relying on ICT to show reduction in electoral fraud in Uganda, but no way to estimate strategies of the President's protectors to use alternative means of assuring the president's re-election.

Self-Reinforcing Institutions?

- Consider an institutional design (an unwritten National Covenant) that meets criteria of incentive compatibility (i.e. is self-enforcing), such as the Lebanon power sharing agreement of 1948
- It assumed a certain percentage of Maronites, Shi'ites and Sunnis, so each group got a quota of representatives (population share as a quasi-parameter)
- What happens when its prosperity makes it an attractive adopted homeland for Muslim migrants displaced from Israel's war of independence? Indeed, it led to conflict over demands for re-setting the quotas, and eventually a disastrous civil war. The Covenant was not self-reinforcing.
- Similar issues arise in designing institutions for post-intervention Iraq and Somalia.
- General point: we need to examine our recommendations to see if they lead to changed values in quasi-parameters that will make the institutions less robust to exogenous shock. That is to say, we need models not only of self-enforcing equilibria, but self-reinforcement as well.

Conclusion

- I applaud the new econometric analyses (as in Nunn/Puga) and also the more experimental designs for the continued breath of fresh air in understanding economic backwardness.
- But I think there are areas for improvement, viz.
 - Assessing the degree to which the identified cause addresses the macro problem that motivated the research
 - Getting direct data on the institutions that supposedly are doing the work, and assessing the mechanisms by which that work is being done
 - Thinking more dynamically about second order effects of our treatments

Appendix: Calculating Macro Effect on Infant Mortality in India

- Birth rate: (2012) WB 20.6/1,000 population
- Total population: 1,220,800,000
- Births per year: 31,740,000 ($1,220,800 \times 26 \times 1,000$)
- 61 deaths/1,000 births ($31,740 \times 61$) = 1,936,140 deaths/year
- If there were 4/1,000, the OECD rate, there would be 126,960 deaths/year
- Excess deaths India's vs. OECD rate: $1,936,140 - 126,960 = 1,809,180$
- Breastfeeding loss is $23,000/1,809,180 = .027$