Reducing inequalities: beyond RCTs & education policies

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Evidence-based policy research





Randomized Control Trials (RCTs)



RCT is very useful, but not the only tool.

RCT limitations

- Expensive for large scale
- Sometimes not possible (treated = sick, not living with mother)



Natural or quasi-experiments



- cleverly designed analysis helps distinguish correlation & causation
- RCTs & experiments rarely discuss exact mechanisms



Structural models



- Basic ideas:
 - program robots to behave like people
 - use theory to guide possible mechanisms
 - make sure the model replicates reality
- useful for understanding mechanisms & predicting counter-factual scenarios







Example #1

measuring & explaining upward mobility with Big Data (Chetty et al., 2014; Chetty & Hendren 2018)

Upward mobility: chance that a child born to parents in the bottom fifth of the income distribution reaches the top fifth:





Example #1

measuring & explaining upward mobility with Big Data (Chetty et al., 2014 ; Chetty & Hendren 2018)

- Use de-identified tax records on all children born in America between 1980-1982 (10 million children)
- Classify children into locations based on where they grew up
- Measure the children's income when they were about 30

Differences in opportunity across areas

Chances of Reaching the Top Fifth Starting from the Bottom Fifth by Metro Area





What explain the variation in children's outcomes?

Is it because

- 1. Different people live in different places (sorting) or
- 2. Places have a *causal* effect on upward mobility for a given person ?



Why does it matter for policy interventions?

Is it because

- 1. Different people live in different places (sorting) or
- 2. Places have a *causal* effect on upward mobility for a given person?

If #1 \rightarrow focus on families (parents, family structure) If #2 \rightarrow focus on local environment (school quality, crime rate, pollution)



Why does it matter for policy interventions?

Is it because

- 1. Different people live in different places (sorting) or
- 2. Places have a *causal* effect on upward mobility for a given person?
- If #1 \rightarrow focus on families (parents, family structure) If #2 \rightarrow focus on local environment (school quality, crime rate, pollution)

Ideal experiment : randomly assign children to neighborhoods & compare outcomes in adulthood



Big data allows for a quasi-experiment design

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Earnings Gain from Moving to a Better Neighborhood



- Study 3 millions families who moved across neighborhoods
 - Key idea: if places matter, how long the children live in a better area should matter.



Is it "people" or "places" that leads to different rates of upward mobility across areas?



- Places matter (60-70%), but the gain diminishes with age
- further control for family effects by compare siblings' outcomes



Example #2

Using a structural model to understand, predict & evaluate the Thai One Million Baht Village Fund (Kabowski & Townsend, 2011 – prize-winning Econometrica paper)



สำนักงานกองทุนหมู่บ้านและชุมชนเมืองแห่งชาติ (สทบ.) National Village and Urban Community Fund Office

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วัตถุประสงค์กองทุนหมู่บ้านและชุมชนเมือง

- 1. เป็นแหล่งเงินทุนหมุนเวียน สำหรับการลงทุน
 - พัฒนาอาชีพ สร้างงาน
 - สร้างรายได้ หรือ เพิ่มรายได้
 - ลดรายจ่าย
 - บรรเทาเหตุฉุกเฉิน และจำเป็นเร่งด่วน
- 2. ส่งเสริมและพัฒนาหมู่บ้านและชุมชนเมืองให้มีขีดความสามารถ
 - จัดระบบเงินกองทุน
 - บริหารจัดการเงินทองทุน้

- 3. เสริมสร้างกระบวนการพึ่งพาตัวเองของหมู่บ้านและชุมชนเมือง
 - การเรียนรู้
 - การสร้างและพัฒนาความคิดริเริ่ม
 - เสริมสร้างศักยภาพและส่งเสริมเศรษฐกิจพอเพียง
- 4. กระตุ้นเศรษฐกิจในระดับฐานราก
 - เสริมสร้างภูมิคุ้มกันทางเศรษฐกิจและสังคมในอนาคต
- 5. เกิดศักยภาพ / ความเข้มแข็งของประชาชนในหมู่บ้าน / ชุมชนเมือง
 - เศรษฐกิจ
 - สังคม



Example #2 Using a structural model to understand, predict & evaluate the Thai One Million Baht Village Fund (Kabowski & Townsend, 2011)

Data + IV : after the program launched,

a large increase in borrowing, consumption, but not investment

Questions:

- what can drive these observed patterns?
- is the village fund (subsidized loan) better than direct transfer program?
- is there any other effective policy to increase investment?



Example #2 Using a structural model to understand, predict & evaluate the Thai One Million Baht Village Fund (Kabowski & Townsend, 2011)





Example #2 Using a structural model to understand, predict & evaluate the Thai One Million Baht Village Fund (Kabowski & Townsend, 2011)



pre-intervention data model household behavior: consumption, borrowing, investment, default

given income, credit constraints

predict out-of-sample responses to the intervention (more available credits) model predict well





Example #2 Using a structural model to understand, predict & evaluate the Thai Million Baht Village Fund (Kabowski & Townsend, 2011)

Q1: What can drive the observed increase in consumption, borrowing but not investment?

Different types of households

Household type	borrow	consume	invest
cash-constrained		1	
non-cash constrained, reduce buffer stock saving			
highly indebt	懀 repay debt		
Non-cash constrained, invest more	1		1



Example #2 Using a structural model to understand, predict & evaluate the Thai Million Baht Village Fund (Kabowski & Townsend, 2011)

Q2: Is the village fund (subsidized loan) better than direct transfer program? on average: less effective than a direct transfer but 24% of households benefit more from the subsidized loan

Q3: Is there any other effective policy to increase investment? the program allows borrowing for investment only can be more effective



Education policies: the short-run, long-run outcomes & market consequences





Expected outcomes & consequences of education policies

Short-run : increase school attendance, increase college enrollment

Long-run : better health, better jobs & higher income



Expected outcomes & consequences of education policies

Short-run : increase school attendance, increase college enrollment

Long-run : better health, better jobs & higher income

Market consequence (e.g., Heckman et al. 1998)

US national college intuition subsidy

- \rightarrow vastly increase in the supply of college graduates
- \rightarrow lower relative wages of college graduates



Thailand : a significant increase in years of schooling



Education reform since the late 1970s

- Increased compulsory education
- Free school for 12 years

Source : Paweenawat et al. (BOT symposium paper 2019)



Does higher education lead to higher wages?

1988-1990



1988-1990:

higher education led to higher average wage



Does higher education lead to higher wages?

2015-2017 : wage distributions of dropout, primary, secondary have become similar

1988-1990

2015-2017





Secondary group were relatively worse off College workers left other groups behind



Median real hourly wage: overall



Secondary group were relatively worse off College workers left other groups behind



Median real hourly wage: overall

What had happened? (i) education no longer signals skills ; or (ii) not enough labor demand for college & secondary



Empirical-based policy research

- All the techniques have their pros & cons. choice : question, data, whether shock/policy randomly occurs
- Tackling the right problem requires understanding the mechanism.
- Policy interventions have intended and unintended consequences.





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