

# Introduction to the Economics of Development

## 4. Why Do People Stay Poor?

---

Luke Heath Milsom

AY 2024-25

[luke.heathmilsom@kuleuven.be](mailto:luke.heathmilsom@kuleuven.be)

## What we will cover today

- The theoretical concept of poverty traps.
- The logic and practice of randomized control trials.
- The economic concept of misallocation.

Main citation: “Why Do People Stay Poor” Balboni, Bandiera, Burgess, Ghatak, and Heil (2022)

## Focus on the individual

Two main views...

- The poor are poor today because they are “different” in terms of ability, talent, or motivation. **Differences.**
- The poor are poor today because they were poor yesterday. **Poverty trap.**

## Why do we care?

- **Intellectual curiosity** — gain a better understanding of how the world works.
- **Practical use** — the answer influences policy.

Goal: Poverty irradiation.

Policy prescription:

- **Differences**  $\Rightarrow$  focus on equalising: education, equal opportunity etc.
- **Poverty trap**  $\Rightarrow$  focus on one-off big push interventions.

# The question

Q: Do people stay poor because of differences or poverty traps?

Approaches to find an answer:

1. Look for differences between poor and rich people.
2. Equalize differences (more education) between poor and rich people.
3. Over time see if relatively richer poor people “escape” poverty.
4. Give some poor people resources and see if they can then “escape” poverty.

# The Econ approach working out how to answer the question

Q: Do people stay poor because of differences or poverty traps?

1. Formalise the problem “What should we look for in the data?”

- Requires (some) economic theory.
- Allows one to make precise predictions.

2. Test empirically using data.

- Requires (some) econometric theory.
- Allows one to precisely test the precise predictions made above.

## Step 1: Formalise the problem

Aim: Find the simplest possible theory that produces an empirical test and clear assumptions.

We want to be able to say: If variable  $X$  does  $Y$  when  $Z$  happens then the answer is **poverty traps** assuming assumptions  $A, B, C$  hold.

## What ingredients do we need

- Theory must allow for poverty traps.
- Theory must allow for individual differences.
- We are interested in modeling individuals' total assets.



## The beginning

- Let us model an individual (or household) which we call  $i$ .
- We shall focus on the value of  $i$ 's total assets which we denote  $K_i$ .
- Poverty traps necessarily happen over time, which we denote by  $t$ .
- Therefore we will focus on how  $K_{it}$  changes over time.

## How does $K_{it}$ change over time?

- How do we get from  $K_{it}$  to  $K_{it+1}$ .
- Let's keep things as simple as possible.
- The amount of stuff I have today is equal to:
  - The amount of stuff I had yesterday =  $K_{it}$
  - Plus the new stuff I bought =  $I_{it}$
  - Minus the stuff that broke or otherwise depreciated =  $d_{it}$

So:  $K_{it+1} = K_{it} + I_{it} - d_{it}$  an **accounting identity**.

## How does $K_{it}$ change over time? — some assumptions.

- Assumption 1 [A1]: Assets depreciate at a constant rate  $d \Rightarrow d_{it} = d \cdot K_{it}$ .
- Assumption 2 [A2]: Individuals save a constant proportion  $s$  of their income  $Y_{it}$  and invest all savings  $\Rightarrow I_{it} = s \cdot Y_{it}$ .

So now:  $K_{it+1} = K_{it} + s \cdot Y_{it} - d \cdot K_{it}$

## WTF is $Y_{it}$

- $Y_{it}$  is individual income.
- We focus on a world of self-employment. Smallholder farmers, street vendors etc.
- Income is a function of your assets more farming equipment, fields, food prep equipment, ingredients etc equals more income.
- $Y_{it} = f(K_{it})$ .

$$Y_{it} = f(K_{it})$$

- Still very general.
- But, there is a problem:  $Y_{it} = f(K_{it})$  implies that if everyone had the same  $K_{it}$  everyone would also have the same income.
  - ⇒ differences are purely a function of your initial stock of assets.
- Why is this a problem?
  1. Doesn't allow for the **differences** answer.
  2. It's hard to get data on the initial stock of assets.
  3. Too far removed from real life to be realistic.

$$Y_{it} = f(K_{it})$$

- Still very general.
- But, there is a problem:  $Y_{it} = f(K_{it})$  implies that if everyone had the same  $K_{it}$  everyone would also have the same income.
  - $\Rightarrow$  differences are purely a function of your initial stock of assets.
- Why is this a problem?
  1. Doesn't allow for the **differences** answer.
  2. It's hard to get data on the initial stock of assets.
  3. Too far removed from real life to be realistic.
- Augment with individual productivity [A3]  $\Rightarrow Y_{it} = A_i \cdot f(K_{it})$ .

## Putting it all together

We have constructed a “transition equation”:

$$K_{it+1} = K_{it} + s \cdot A_i f(K_{it}) - d \cdot K_{it}$$

$$K_{it+1} = s \cdot A_i f(K_{it}) + (1 - d) \cdot K_{it}$$

Recall the point of all this: To have precise empirical predictions allowing us to answer differences or poverty traps under a set of clearly articulated assumptions.

1. **Differences:** Different  $A_i$  will lead to different assets today and tomorrow.
2. **Poverty traps:** ??? the function  $f(\cdot)$  is key.

$f(\cdot)$  determines the existence of poverty traps



$f(\cdot)$  determines the existence of poverty traps

If we look at the distribution of  $K_{it}$  in a sample and find two humps, then this implies...

1. The differences explanation holds.
2. The poverty trap explanation holds.
3. Can't tell.

Can't tell! Need to know the shape of  $f(\cdot)$ , is it S?

The existence of some threshold  $\bar{K}$  implies an S shape.

## We have a precise prediction!

If we can find evidence for a threshold then we have evidence for the poverty trap explanation!

Assumptions we have made:

A1 Assets depreciate at a constant rate.

A2 Individuals save a constant proportion of their income and invest all savings.

A3 Income is given by  $Y_{it} = A_i \cdot f(K_{it})$ .

## We have a precise prediction!

If we can find evidence for a threshold then we have evidence for the poverty trap explanation!

Assumptions we have made:

A1 Assets depreciate at a constant rate.

A2 Individuals save a constant proportion of their income and invest all savings.

A3 Income is given by  $Y_{it} = A_i \cdot f(K_{it})$ .

Are any of the above crucial?

Are there any hidden assumptions?

Group discussion :)

**Defend your assumptions!**

# Recap

Step one of the Econ Method done!

1. Formalise the problem “What should we look for in the data?”

- Requires (some) economic theory.
- Allows one to make precise predictions.

2. Test empirically using data.

- Requires (some) econometric theory.
- Allows one to precisely test the precise predictions made above.

On to step two...

## How do we test this empirically?

Q: Do people stay poor because of differences or poverty traps?

A: If we can find evidence for a threshold then we have evidence for the poverty trap explanation!

How do we find evidence of a threshold?

## Idea 1

- In some base period look at levels of assets  $K_{i0}$ .
- For different levels of  $K_{i0}$  see what happens to assets at  $t = 1, 2, 3, 4, \dots$
- For low levels of  $K_{i0}$  we expect future assets to stay around  $K_{i0}$  (below the threshold).
- For high levels of  $K_{i0}$  we expect future assets to increase over time (above the threshold).
- Where the change happens, is where  $\bar{K}$  is — easy!

Will this work?

## The problem — Identification

Suppose we enact idea one. We find some  $\bar{K}$  above which people mainly get richer and below which people mainly don't.

Can we explain this with **poverty traps**?

Can we explain this with **differences**?

We have an identification problem. From the empirical evidence gathered we can't separately identify either two explanation.

Why does this problem occur? **Endogeneity**.



## Endogeneity

- People with initial high levels of  $K_{i0}$  are not a random group of people.
- On average they will be more productive i.e. have higher  $A_i$ .
- Higher  $A_i$  will also cause higher  $K_{it}$  in the future.

This is a general problem. Another unrelated example:

- People who spend longer in school have higher wages therefore school causes higher income.
- But only those with higher “ability” spend longer in school.
- Ability causes higher income.

## Overcoming endogeneity and solving the identification problem

- Solving these problems takes up most of an applied economist's time.
- There are various approaches, we will see some in this course.
- Let's start with the most straightforward. A randomized control trial (RCT).

## An RCT

- Randomly change  $K_{i0}$ .
- Then see what happens to assets after.
- Look for evidence for a threshold.
- As we have broken the link between  $K_{i0}$  and  $A_i$  endogeneity is no longer a concern.
- If we find such a  $\bar{K}$  the only explanation is **poverty traps**.
- We have solved the identification problem!

## An aside: RCT ethics

- In an RCT you are experimenting on people, ethics are a first-order concern.
- If you randomly give out assets some people could become worse off, this is unethical.
- Why couldn't you give more assets to the control group?
- Power imbalances.
- Many questions are unanswerable with RCTs.

## Operationalising the RCT

- Based on the initial distribution of  $K_{i0}$  find a candidate  $\bar{K}$ .
- Randomly shock some individuals assets individuals have  $K_{i1} = K_{i0} + T_i$ , where  $T_i = t$  if treated and  $T_i = 0$  if in the control group.
- Compare assets over time of those treated above move above the threshold with those in the control group.
- If treated have assets rising or persistently higher than the control it implies poverty traps are the answer.

## This lecture key concepts

- The Econ method of answering questions.
- How to formalise and abstract to generate empirical predictions.
- Identification
- Endogeneity
- RCTs

## Next lecture

- Put the above into practice following Balboni et al. (2022) in Bangladesh.
- Talk about mechanisms and missallocation.
- Discuss another use for economic theory: Counterfactuals.
- External validity and other pitfalls of RCTs.
- Come to an answer to our first question: “Why do people stay poor?”

**Next lecture**



## Today's plan

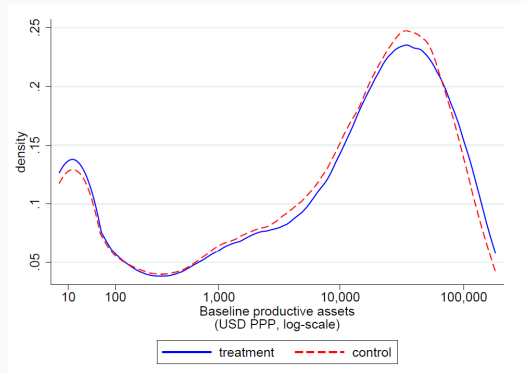
1. See what we did last lecture in action in Bangladesh.
2. Theory: Misallocation.
3. Econ method: Counterfactuals.
4. Empirics: More on RCTs.
5. Answer our first question!

## Quick recap

- The question: Why do people stay poor?
- We want to distinguish between (a) differences and (b) poverty traps.
- We wrote down some theory:  $K_{it+1} = s \cdot A_i \cdot f(K_{it}) + (1 - d) \cdot K_{it}$ .
- The theory generated a testable implication: The existence of a threshold  $\bar{K}$  above which incomes rise, and below which they fall  $\Rightarrow$  poverty traps!
- We discussed endogeneity and how an RCT could solve the problem.

## Lets put it into practice — Balboni et al. (2022)

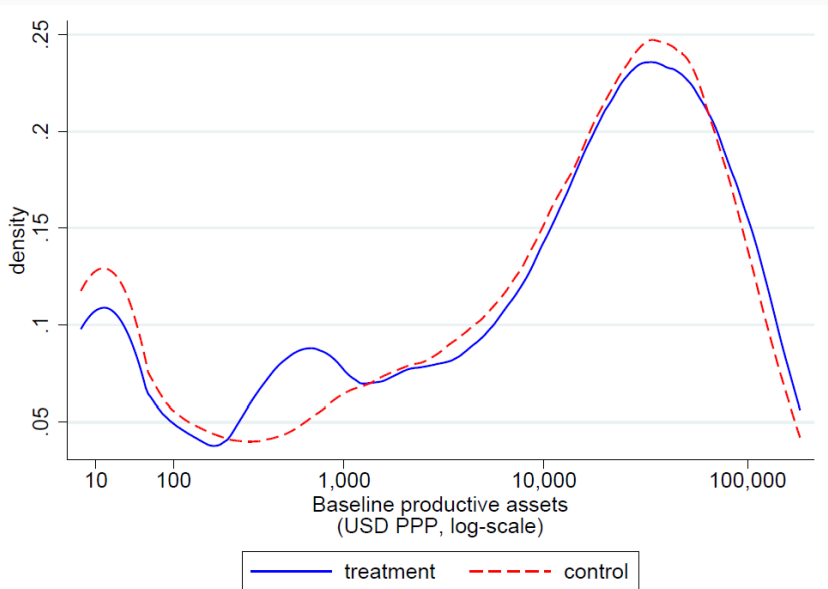
- Setting: 6,000 poor households in rural Bangladesh tracked from 2007 to 2018, focus on women.
- Simple occupation structure: Those who own land or livestock combine it with their labor and hired labor, those who don't work as casual laborers. Leads to a bimodal asset distribution:



## The experiment

- Use an existing transfer program: BRAC Targeting the ultra-poor program.
- Over the 6,000 participants BRAC randomly gives 3,000 assets worth 488 USD PPP, mainly in the form of a cow.
- Do you have any ethical concerns with this RCT?

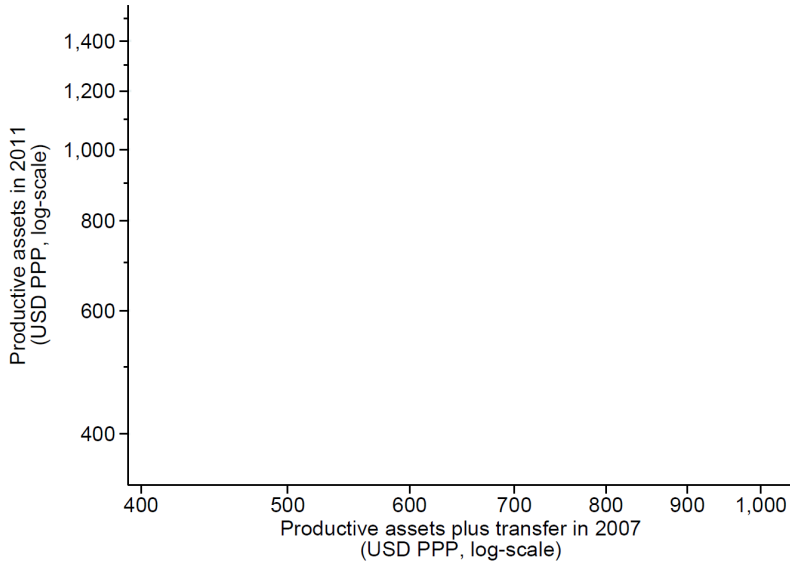
Crucial question: Will the asset transfer be sufficient?



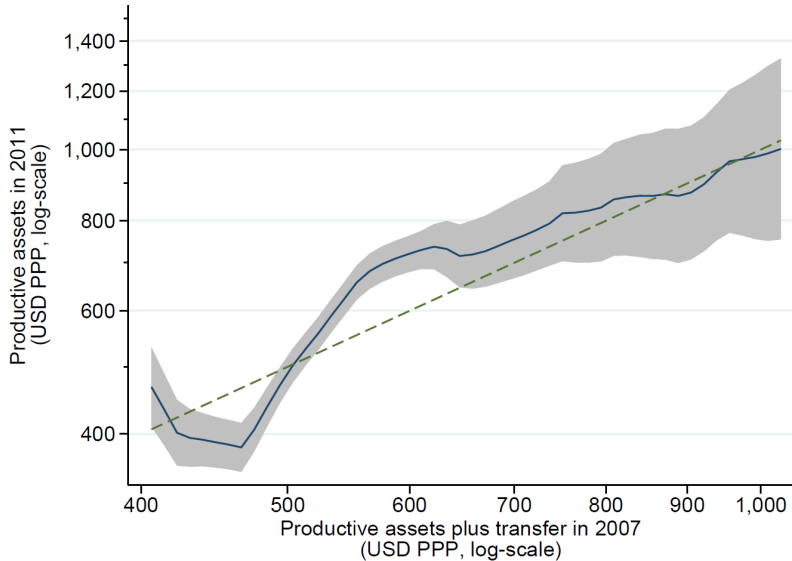
## The plan

- Initial asset distribution implies  $\bar{K} \approx 500$  USD PPP.
- So, fortuitously, the transfer will take many treated households over the threshold.
- Do those who are moved above  $\bar{K}$  increase in wealth over time, and those below  $\bar{K}$  decrease (or flat line).

## Is there an S?

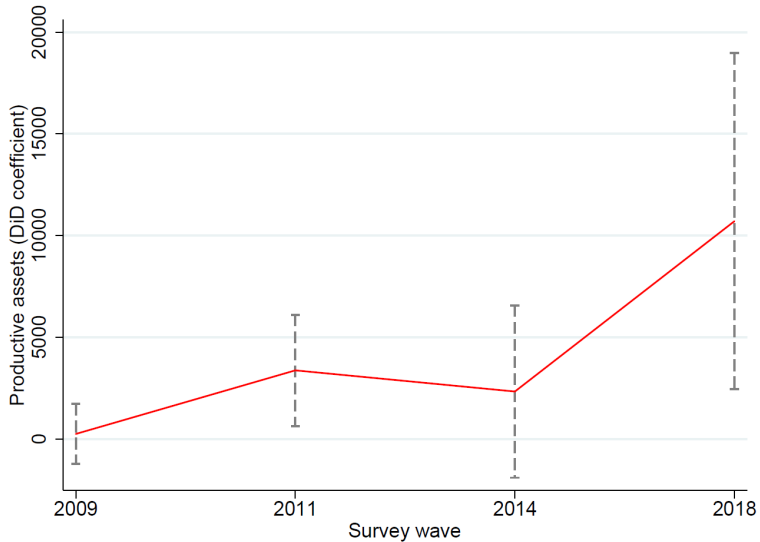


## Is there an S?





## Do treated households escape poverty?



## Summary

Balboni et al. 2022 show that poverty traps are the reason why the poor stay poor.

Any problems with this statement?

## Summary

Balboni et al. 2022 show that poverty traps are the reason why the poor stay poor.

Any problems with this statement?

Balboni et al. 2022 show that the “ultra poor” in some Bangladeshi villages exhibit behavior consistent with a poverty trap explanation of persistent extreme poverty. A large asset transfer moves them from ultra-poor to fairly poor over a decade.

Difference: External validity.

## Two questions

These results raise two questions.

1. How much are we leaving on the table?
2. Are the results externally valid?

## How much are we leaving on the table

- The current distribution is not optimal.
- In Econ every inoptimality comes from a friction (market failure). What is the friction?
  1. Transport costs.
  2. Incomplete credit markets.
  3. Monopolistic power.
  4. Labor market frictions.
- The question: How different is reality from the “first-best” with no frictions?

## How different is reality from the “first-best” with no frictions?

- How do we answer this?
- Need to know how good things would be in the **counterfactual** world with complete credit markets.
- Estimating **counterfactuals** is another use for econ models.
- The theory is more involved, we need to know how individual choices would differ under a different state of the world.
- Necessarily we will need to make more assumptions, and ones that are harder to defend.

## What choices are key here?

- To create a counterfactual world we need to know what choices are important.
- We still want to keep things as simple as possible: What should I eat, when should I marry, how many children should I have — all important choices but not first-order here.
- Recall — women in these villages almost all work in either “livestock” or as a casual laborer. Richer in the former, poorer in the latter.
- Points to a key choice → occupation.

## Forming the counterfactual

- Modeling individual occupation choice: livestock or laborer.
- How do choices differ under complete credit markets?
- How much on aggregate is the economy better off with the unconstrained choices?



## Modeling occupation choice

- Constructing a counterfactual is pretty involved — we will just touch on the main points of intuition here.
- Individuals choose three things:
  1. How many hours to work as a laborer:  $h$ .
  2. How many hours to work in livestock:  $l$ .
  3. How many hours of farm help to hire:  $h'$ .
- Individuals get some benefit for each hour worked, and incur some cost.

Activity	Benefit	Cost
$h$	$w$	Dislike working
$l$	Benefit depends on $K_{it}$	Dislike working
$h'$	Benefit depends on $K_{it}$	$w'$

Also opportunity cost — there is limited time in a day!

## Results

Total misallocation = 15m USD. Total cost = 1m USD.

Almost everyone should work in livestock rearing.

## General equilibrium effects

- If almost everyone starts rearing livestock this might affect prices.
- If livestock prices fall we will have overestimated the loss due to misallocation.
- This is called a **general equilibrium** effect — a catch-all term to describe how prices and other variables may change if large numbers of people change their actions.
- Taking GE effects into account can get complicated, but it is necessary to understand how scaled-up interventions might work.

# Summary

Balboni et al. 2022 have shown:

- Among poor rural households in Bangladesh a large asset transfer allowed some HH to switch occupations and escape extreme poverty.
- Returns are long-lasting and far in excess of the initial cost.
- Strong evidence for the poverty-trap explanation of persistent poverty and against the differences explanation.

In doing this we have discussed the following concepts:

- The Econ method of doing research.
- A simple theory of poverty traps.
- Identification.
- Endogeneity.
- RCTs.
- External validity.
- Misallocation.
- Counterfactuals.

## Answering our question.

Q: Why do people stay poor?

- Balboni et al 2022, have provided compelling evidence in a specific setting.
- How general is this?
- Let us quickly consider some other approaches.

## Kraay and McKenzie 2014: “Do Poverty Traps Exist? Assessing the Evidence.”

- Take a more macro view — consider poverty traps at the country level.
- Survey the literature to look for evidence for various types of poverty trap:
  - Hunger-based traps.
  - Occupation-based traps.
  - Behavioural poverty traps.
  - Geographic poverty traps.
- Conclude that only geographic poverty traps have supporting evidence.
- Other papers have also found evidence that geography is key e.g. Lagakos, Mobarak, and Waugh 2023.

## The fractal poverty traps theory

- Main citation: Barrett and Swallow (2006)
- The idea is that instead of one poverty trap that you're either stuck in or not, the world is better described as many small poverty traps at almost every income level.
- Therefore, overcoming one poverty trap won't necessarily lift you completely out of poverty.
- In the extreme, with very small traps, we're back in the **differences** world.
- Balboni et al. 2022 could be seen as giving evidence for fractal albeit fairly large poverty traps.
- Fractal poverty trap theory also emphasises that traps exist at different levels. Individual, community, national etc.

## So, what's the answer?

Why do poor people stay poor?

1. Due to poverty traps.
2. Due to individual differences.
3. Bit of both, but mainly poverty traps.
4. Bit of both, but mainly individual differences.



## Next lecture

Are natural resources a solution or a trap?