# Introduction to the Economics of Development

## 3. Why Do People Stay Poor?

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## 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.
- $Y_{it} = f(K_{it})$.

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- 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.

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  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

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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 $Y_{it} = A_i \cdot f(K_{it})$.

Are any of the above crucial?

Are there any hidden assumptions?

## Defend your assumptions!

- A strong answer convincingly articulates and defends the assumptions underlying it.
- Assumptions [A1] and [A2] are not crucial $\rightarrow$ no need to defend.
- The hidden assumption of no (or incomplete) credit markets is easily dealt with.
- Assumption [A3] could be more problematic. $Y_{it} = A_i \cdot f(K_{it})$. We need to argue...
  - $A_i$ is constant over time.
  - $f(\cdot)$ is only a function of $K_{it}$ not for example labor $L_{it}$.

# Recap

Step one of the Econ Method done!

1. Formalise the problem "What should we look for in the data?"
   - Requires (some) economic theory.
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2. Test empirically using data.
   - Requires (some) econometric theory.
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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 $t = 1, 2, 3, 4, ....$
- 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 a 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?"