Poverty Traps

Jonathan Colmer

October 6, 2025

What Explains Divergence?

- How does one reconcile persistent poverty with the convergence view?
  - Is convergence slow?
  - Is it conditional convergence?
  - Is it a poverty trap, and if so, what is the mechanism?

The Persistence of Poverty

- A generic story of poverty traps:
    - y depends on some choices x, but x also depends on y through either an income effect, or through saving and accumulation.
- Following Ghatak (2015) we will distinguish between two kinds of poverty traps
    - External Frictions
    - Scarcity

External Frictions – Same people, worse environment

- The poor and non-poor are the same in terms of potential (ability, preferences, etc.).
- The poor simply operate in an unfavorable environment or with low endowments.
  - Production function $q = Af(x)$
    - low x, bad A (conditional convergence)
  - However, true A' is worse than potential A
  - There may be poverty traps – if you start poor, you tend to stay poor

What are External Frictions?

- "External frictions" prevent the poor from making the best use of their endowments
  - Market frictions, e.g., credit market frictions
  - Government frictions, e.g., bad infrastructure, insecure property rights
  - Social frictions, e.g., social norms relating to gender, caste, etc.
- Temporary phenomenon if external environment can be made more favorable.
- Otherwise the poor may be trapped in poverty.

Inefficiency and Inequity

- $\Rightarrow$ Poverty is inefficient as well as inequitable.
- A combination of individual rationality and market forces should work to utilize any potential gains
- The question is, what policies will remove the frictions that prevent this from happening?

Benchmark Model

The Benchmark Model with No Frictions & Homothetic Preferences

- An individual has an endowment $\bar{k}$
- The profits of this individual are

$$\pi = \max_{k} Af(k) - rk$$

- With perfectly competitive markets income is,

$$\begin{aligned} y &\equiv \pi + r\bar{k} \\ &= Af(k^*) - rk^* + r\bar{k} \end{aligned}$$

Economic outcomes and Productivity are Separable

- The individual's endowment of k does not matter for productive efficiency
  - If low endowments: buy, rent in, or borrow.
  - If high endowments: sell, rent out, or lend.
- Individual's final disposable income reflects endowments
- With perfect markets and no non-convexities, there is **separation** between productive efficiency and individual economic outcomes.
- We may still want to use redistribution if an individual's income falls below some minimum threshold, but it has no bearing on productivity.

Convergence again

- In a dynamic model, where people save at a constant rate s to accumulate capital and capital depreciates fully after use,

$$k_{t+1} = s(\pi + rk_t)$$

- Assuming $sr < 1$ we get convergence.

- Convergence is the anti-thesis of a poverty trap

Friction-Driven Poverty Traps

Capital Market Imperfections

- Suppose capital markets are imperfect
- For simplicity, let us assume that there are no capital markets
  - We could allow intermediate levels of capital market imperfections.
  - Can be generated by one of the standard channels of credit market frictions, e.g. ex ante or ex post moral hazard

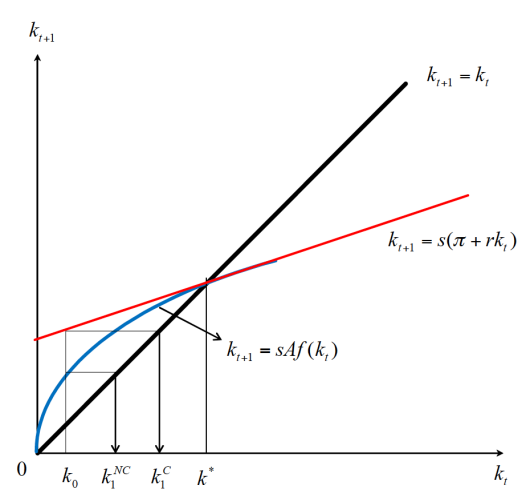
Frictions alone do not cause poverty traps!

- In the one-period model the separation result breaks down
- Output is now $q = Af(\bar{k})$
- In the infinite-horizon model, no capital markets = the standard Solow model with constant saving
- As we assume capital fully depreciates, the modified transition equation is,

$$k_{t+1} = sAf(k_t)$$

- We still get convergence, but it is slower than when capital markets are available.

Frictions alone do not cause poverty traps!



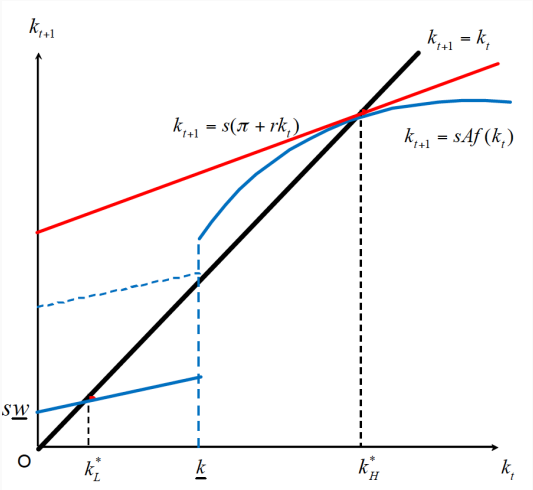
Non-Convexities in the Production Technology

- Introduce start-up costs

$$q = Af(k) \text{ for } k \geq \underline{k},\ \underline{w} \geq 0 \text{ otherwise}$$

- $\underline{w} < Af(\underline{k})$ is the return from subsistence activity
- Can still save and the slope will be sr
- In this case, there will be multiple steady states

Non-Convexities in the Production Technology



Borrow the start-up costs — or raise s, w, r

- With perfect capital markets it is possible to borrow $\underline{k}$ or more
- No poverty trap
- Alternatively, if s or $\underline{w}$ or r are high enough, then you can save your way out of the poverty trap
- Otherwise you are stuck at the low steady state k_L^*

Non-Convexities in the savings technology or A

- Without capital markets the wealth transition equation is,

$$k_{t+1} = sAf(k_t)$$

- Suppose everyone has the same s, in terms of preferences.
- But, imperfect property rights (easy to steal from the poor) means only the wealthy are able to save efficiently.
- In this case we can get poverty traps without technological non-convexities
- Similar result for A if there are complementary inputs such as skills or infrastructure

Friction-Driven Poverty Traps – Take-Away Points

1) no single friction is sufficient to trap individuals in poverty

    - We require some other departure from the standard framework (e.g., non-convexities)

2) If capital is the only input, or all other inputs have perfect markets, then capital frictions are *necessary* for friction-driven poverty traps to emerge independent of any other frictions.

3) if other inputs are needed and these markets have frictions that cannot be overcome via the capital market, then direct intervention in the market of this input would be warranted.

Scarcity-Driven Poverty Traps

Behavior Driven by Scarcity

- Even if there were no external frictions, the poor are subject to different pressures and constraints than the non-poor.
- This drives them into making choices that are very different.
- These choices can reinforce poverty
- It is tempting to call this view a "behavioral" perspective of poverty; however, it is a broader phenomenon.
    - Even if all individuals are rational, choices under extreme scarcity can reinforce poverty

Behavior Driven by Scarcity

- At very low income levels, subsistence considerations may rule out saving and investment
- $\Rightarrow$ poverty is "efficient" and there are no self-correcting mechanisms that can be unleashed
- Either redistribute, focus on policies that will change behavior, or ignore.

Departures from the Benchmark Model – Non-Homothetic Preferences

- When preferences are non-homothetic then one can have poverty traps that are driven by income effects only.
- The main idea is that there are no external frictions to be fixed to help people get out of poverty
- People are trapped in poverty because insufficient endowments and not exogenous frictions prevent them from making the best use of their endowments

Departures from the Benchmark Model – Non-Homothetic Preferences

- Not "behavioral" poverty trap, e.g., poverty traps that arise from behavioral biases only, e.g., loss aversion, hyperbolic discounting

- Behavioral factors are possible, but you generate poverty traps with standard preferences (Banerjee and Mullainathan, 2010; Bernheim, Ray, and Yeltekin, 2013).

- We call them scarcity driven poverty traps instead.

Scarcity-Driven Poverty Traps

- Output is given by $q = Af(k)$ and capital markets are perfect.
- As such, the income of an individual is,

$$y_t = \pi + rk_t$$

- where

$$\pi = \max_k Af(k) - rk$$

- Suppose there are no external frictions whatsoever, barring bequests being non-negative.

Scarcity-Driven Poverty Traps

- As before, agents derive utility from consumption c and from bequests b
- In addition, we allow individuals to consume a luxury good z
- The utility function is given by,

$$U(c, b) = \log c + \beta \log(b + B) + \gamma \log(z + Z)$$

- $B > 0$, $Z > 0$, $\beta \in [0, 1]$, and $\gamma \in [0, 1]$
- We assume that the marginal utility of bequests at $b = 0$ is higher than the marginal utility of luxury goods when $z = 0$

$$\frac{\beta}{B} > \frac{\gamma}{Z}$$

Scarcity-Driven Poverty Traps

- c = basic consumption, b = money passed on to children, and z = luxury good (durables, leisure activities, etc.)

  z is not essential for survival but consumed more as income goes up.

- Our assumption ensures that for low levels of income, all income is spent on c, for moderate levels of income it is split between c and b, and for high levels of income it is split between c, b, and z.

- Available capital is determined by bequests, $k_{t+1} = b_t$

- The budget constraint is,

$$c_t + b_t + z_t = \pi + rk_t$$

Scarcity-Driven Poverty Traps

- We can derive two income thresholds, $\underline{y}$ and $\bar{y}$, with corresponding thresholds for capital,

$$\underline{k} \equiv \frac{B - \beta\pi}{\beta r}$$

$$\bar{k} \equiv \frac{(1+\beta)Z - \gamma B - \gamma\pi}{\gamma r}$$

$$\bar{k} > \underline{k}$$

follows from our assumption,

$$\frac{\beta}{B} > \frac{\gamma}{Z}$$

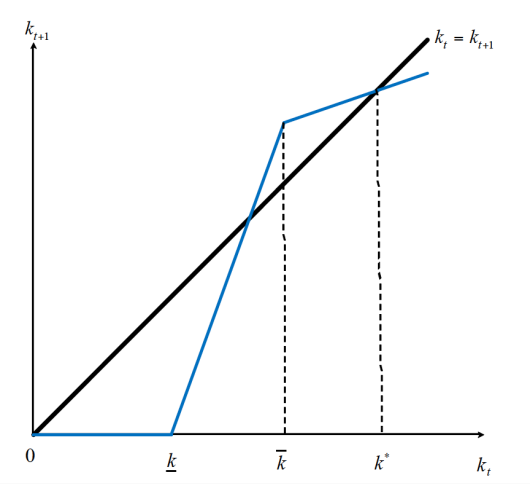
Scarcity-Driven Poverty Traps

- Using $k_{t+1} = b_t$, we will have that,

$$\begin{aligned} k_{t+1} &= 0 \text{ for } k \leq \underline{k} \\ &= \frac{\beta}{1+\beta}(rk_t + \pi) - \frac{B}{1+\beta} \text{ for } \underline{k} \leq k \leq \bar{k} \\ &= \frac{\beta}{1+\beta+\gamma}(rk_t + \pi) - \frac{(1+\gamma)B - \beta Z}{1+\beta+\gamma} \text{ for } k_t \geq \bar{k} \end{aligned}$$

- We assume that $\frac{\beta}{1+\beta} r > 1 > \frac{\beta}{1+\beta+\gamma} r$ and $B - \beta\pi > 0$ to generate a productivity trap.
- If $k_t < \underline{k}$, don't save at all and so have $k^* = 0$.
- If $k_t > \underline{k}$, grow rapidly until luxury consumption kicks in, then converge to high steady state.

Scarcity-Driven Poverty Traps



Scarcity-Driven Poverty Traps

- The sources for these kind of poverty traps can be more general than the specific channel developed above
- For example, the scarce resource in question may be time, or attention span, or cognitive capacity, rather than physical or financial capital
- Or consider how scarcity interacts with insufficient intergenerational altruism, as well as various behavioral biases.

Scarcity-Driven Poverty Traps – Take-Away Points

1) Poverty traps can exist even without any external frictions

2) As the root cause of scarcity-driven poverty is scarcity, the most obvious policy implication is a lump-sum transfer to the poor.

    - With external frictions there are likely strong complementarities between policies that fix these frictions and lump-sum transfers

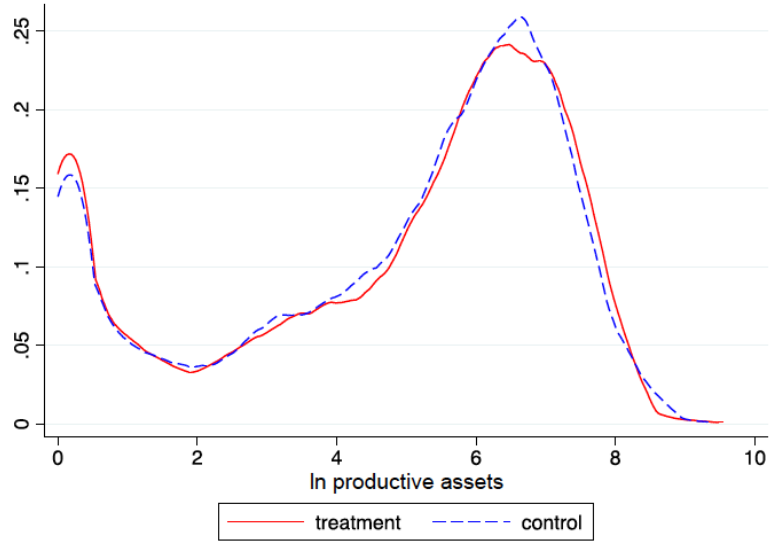
3) If there are grounds for paternalistic interventions, unconditional lump-sum transfers may not be the most efficient form of intervention.

Why do People Stay Poor?
Balboni et al. (2022)
Quarterly Journal of Economics

Why do People Stay Poor? Balboni et al. (2022)

- Do people stay poor because they are only able to do bad jobs, or do they do bad jobs because they are poor?
- Hard to distinguish but, as discussed, very different policy implications.
- Balboni et al. (2022):
  - use an RCT providing variation in a large asset transfer program in Bangladesh over 11 years to test directly for a poverty trap.
  - Estimate a structural model of occupational choice to back out the implied misallocation.

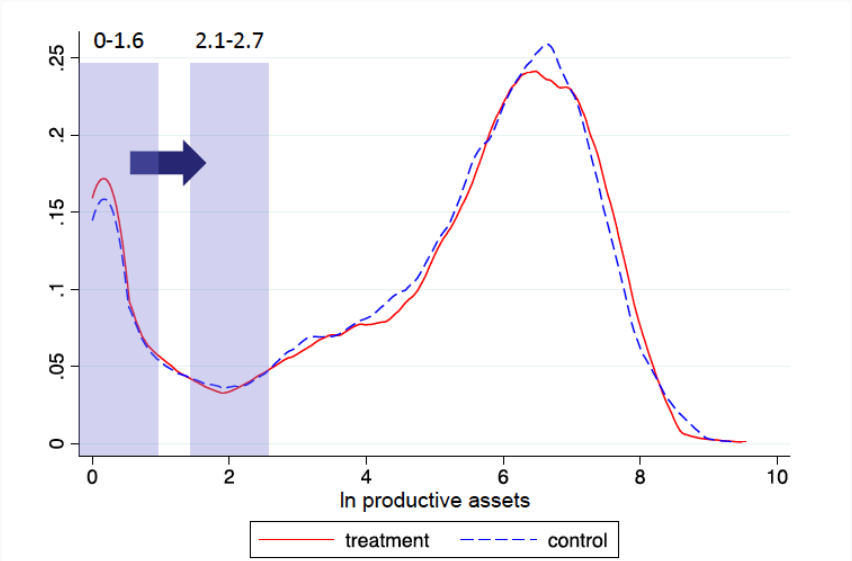
The Distribution of Productive Assets is bimodal



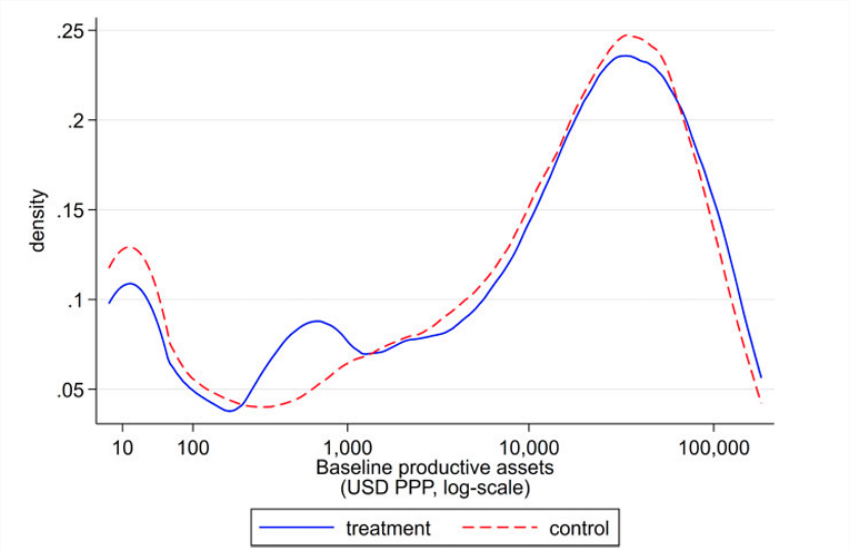
BRAC's Targeting the Ultra-Poor Program

- Randomly allocated across villages.
- Beneficiaries are the poorest women in these villages
- Program transfers a large asset (a cow) and training

Program moves the poorest into the lowest density area



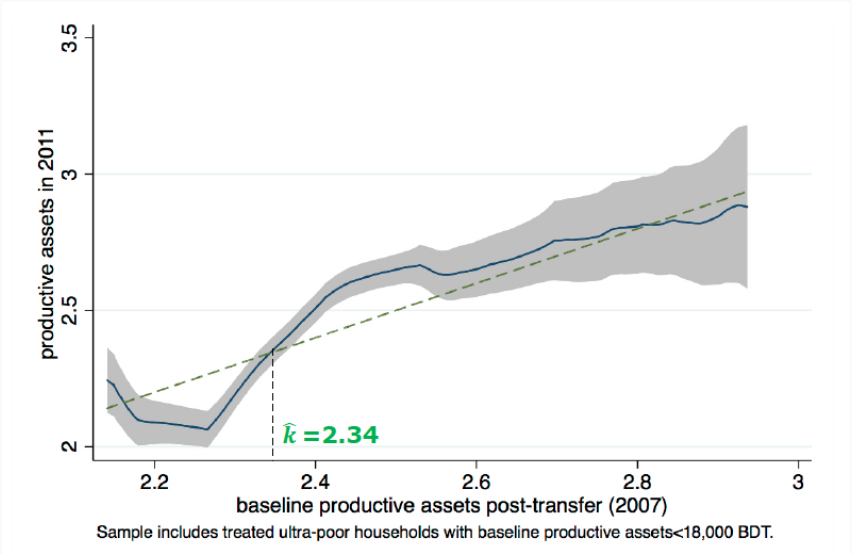
Program moves the poorest into the lowest density area



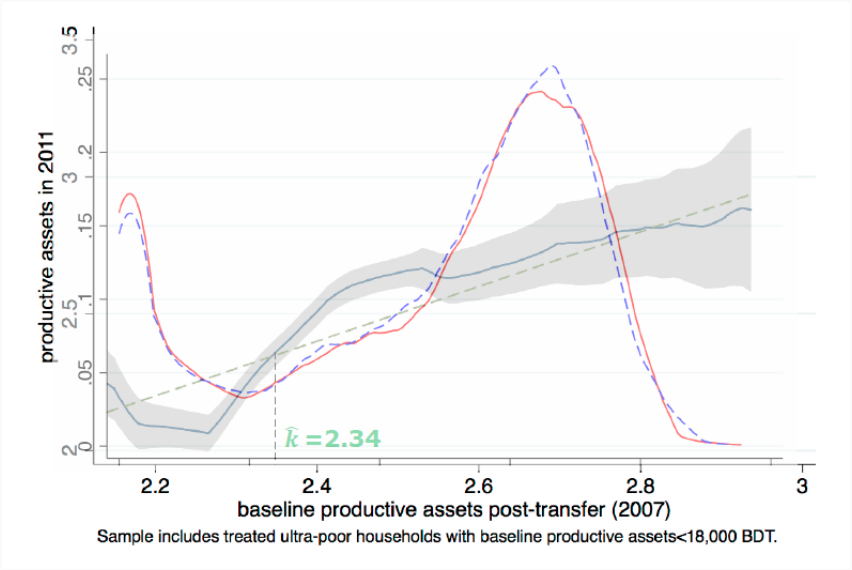
Their Test

- Poverty traps and differential productivity are observationally the same in steady state
- But they produce different transition equations
- A necessary condition is that the transition equation isn't concave
  - Test using the fact that beneficiaries differ slightly in baseline assets
  - Exploit to estimate transition equation from k_{2007} to k_{2011}
  - Test predictions of poverty trap model up to 11 years post-transfer

The Transition Equation is S-Shaped

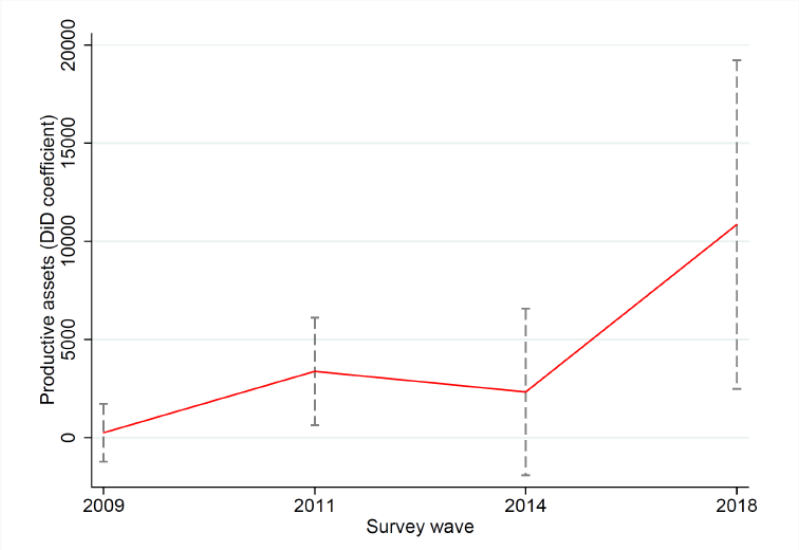


The unstable steady state is at the point of lowest density

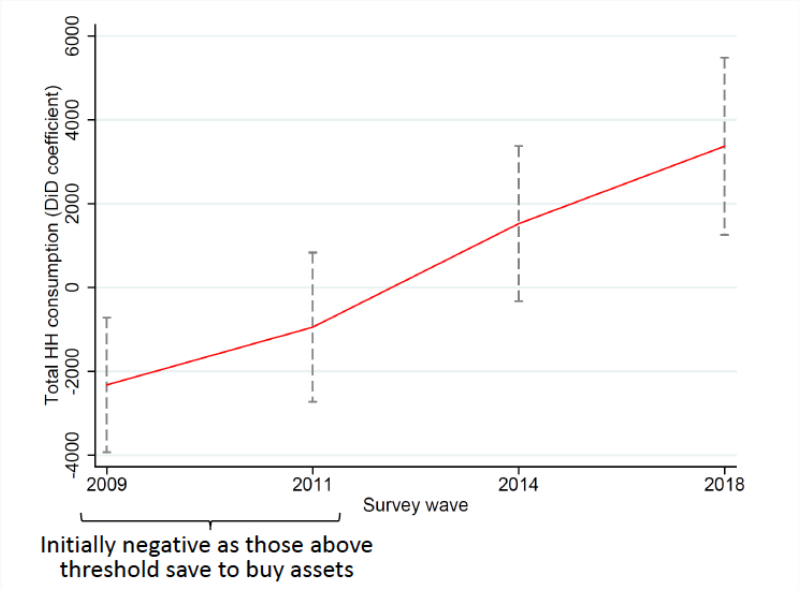


Sample includes treated ultra-poor households with baseline productive assets<18,000 BDT.

Differences in productive assets grow over time



Differences in productive assets grow over time



Conclusions

- Poor people are not unable to take on more productive employment activities, they just lack the required capital
- Misallocation results suggest lack of opportunity prevents 96% from engaging in optimal occupation
- The existence of a poverty threshold implies that only transfers large enough to push beneficiaries past the threshold reduces poverty in the long run
- Key policy conclusion – to tackle persistent poverty, need big push policies that tap into the talents of the poor rather than just propping up their consumption

From Convergence to Divergence: What Have We Learned?

- **The Solow model's prediction:** Diminishing returns to capital $\Rightarrow$ convergence
  - Clean prediction, but doesn't match the data
- **Initial response:** Conditional convergence
  - Countries converge to different steady states based on fundamentals
  - But still requires us to explain *why* these fundamentals differ
- **Poverty traps offer a deeper explanation:**
  - Multiple steady states $\Rightarrow$ *history matters*
  - Can explain divergence across countries (different initial conditions) *and* within countries (some households trapped, others not)
  - Two mechanisms: external frictions prevent efficient allocation, or scarcity itself constrains behavior
- **Key insight:** Poverty traps transform the growth problem from one of patience (wait for convergence) to one of coordination (escaping the wrong equilibrium)

Policy Implications: It Matters Which Story is True

- If **conditional convergence** is the answer:
  - Change fundamentals: increase savings rates, improve institutions, invest in technology
  - Small interventions can have cumulative effects over time
- If **friction-driven poverty traps** exist:
  - *First-best:* Fix market failures (credit markets, property rights, infrastructure)
  - *Second-best:* Big push transfers to overcome non-convexities when frictions cannot be removed
- If **scarcity-driven poverty traps** exist:
  - Big push transfers are *necessary*—no frictions to fix
  - Small interventions will have no lasting effect
- **Balboni et al. (2022):** First credible evidence that poverty traps exist and big push policies can work

What the Neoclassical Model Can and Cannot Explain

- **What we've explained:**
  - Conditional convergence – countries converge to different steady states
  - Poverty traps – multiple equilibria can arise with frictions and non-convexities
  - But are poverty traps enough to explain between-country divergence?
  - If not, where does between-country divergence come from?
- **Next:** Endogenous growth theory
  - Make technology and innovation the outcome of economic decisions
  - Provide micro-foundations for sustained growth
  - New policy implications beyond "save more" or "remove frictions"