POVERTY

- Behavioral economics aspects of poverty
- Poverty traps

The psychological lives of the poor

Shah, Mullainathan, Shafir, 2012
Mullainathan and Shafir, 2013
Shah, Shafir, Mullainathan, 2015
Schilbach et al, 2016

Poor but rational?(Duflo, 2003)

- Poor but rational?
  - Many important facts can be accounted for in “poor but rational” framework, but there are many facts left to be explained.
  - A natural tendency would then be to turn to new hypotheses, incorporating insights of psychology to better understand economic decisions.

Poor but rational? (Duflo, 2003)

- Poor but rational?
  - Behavioral economists have argued that ways in which humans deviate from the standard economic model need to be incorporated into economic reasoning.
  - Their ability to analyze information, compute, and remember is limited.
  - Their willpower is also bounded.
  - They do not always make choices that are in their best interest in the long run.
  - Finally, they are not purely self-interested.

Poor but rational? (Duflo, 2003)

- Poor but rational?
  - Being poor almost certainly affects the way people think and decide. Perhaps when choices involve the subsistence of one's family, trade-offs are distorted in different ways.
  - What is needed is a theory of how poverty influences decision-making, not only by affecting the constraints, but by changing the decision-making process itself.

Claim:“The poor are worse decision makers.”

- One explanation for poverty:

(Bad)_____  Poverty

- Alternative Explanation:

_____  (Bad) Decision-Making

RESEARCH ARTICLE

Poverty Impedes Cognitive Function

Anandi Mani,[1] Sendhil Mullainathan,[2]* Eldar Shafir,[3]* Jiaying Zhao[4]

The poor often behave in less capable ways, which can further perpetuate poverty. We hypothesize that poverty directly impedes cognitive function and present two studies that test this hypothesis. First, we experimentally induced thoughts about finances and found that this reduces cognitive performance among poor but not in well-off participants. Second, we examined the cognitive function of farmers over the planting cycle. We found that the same farmer shows diminished cognitive performance before harvest, when poor, as compared with after harvest, when rich. This cannot be explained by differences in time available, nutrition, or work effort. Nor can it be explained with stress: Although farmers do show more stress before harvest, that does not account for diminished cognitive performance. Instead, it appears that poverty itself reduces cognitive capacity. We suggest that this is because poverty-related concerns consume mental resources, leaving less for other tasks. These data provide a previously unexamined perspective and help explain a spectrum of behaviors among the poor. We discuss some implications for poverty policy.

A variety of studies point to a correlation between poverty and counterproductive behavior. The poor use less preventive health care (*1*), fail to adhere to drug regimens (*2*), are tardier and less likely to keep appointments (*3*, *4*), are less productive workers (*5*), less attentive parents (*6*), and worse managers of their finances (*7*–*9*). These behaviors are troubling in their own right, but they are particularly troubling

tential collision course is prone to neglect other planes in the air, the poor, when attending to monetary concerns, lose their capacity to give other problems their full consideration.

This suggests a causal, not merely correlational, relationship between poverty and mental function. We tested this using two very different but complementary designs (*16*, *17*). The first is a laboratory study: We induced richer and poorer

larger monetary problems that also cause gr
load. Perhaps the poor manage to restructure
lives so that they do not face as many cognit
challenging problems. Put simply, the labor
study, although illustrating the mechanism,
not show its relevance in natural settings.

Our second study takes a different appr
and allows us to assess what happens whe
come varies naturally. We conducted a field
that used quasi-experimental variation in a
wealth. Indian sugarcane farmers receive in
annually at harvest time and find it hard to sm
their consumption (*20*). As a result, they ex
ence cycles of poverty—poor before harves
richer after. This allows us to compare cognitiv
pacity for the same farmer when poor (pre-har
versus richer (post-harvest). Because harvest
are distributed arbitrarily across farmers, w
further control for calendar effects. In this s
we did not experimentally induce financial
cerns; we relied on whatever concerns occ
naturally. We were careful to control for other
sible changes, such as nutrition and work e
Additionally, we accounted for the impact of s
Any effect on cognitive performance then obs
would thus illustrate a causal relationship bet
actual income and cognitive function in situ
such, the two studies are highly complemen
The laboratory study has a great deal of int

Mani et al (2012)

Some Consequences of Having Too Little

Anuj K. Shah,[1]* Sendhil Mullainathan,[2] Eldar Shafir[3]

Poor individuals often engage in behaviors, such as excessive borrowing, that reinforce the conditions of poverty. Some explanations for these behaviors focus on personality traits of the poor. Others emphasize environmental factors such as housing or financial access. We instead consider how certain behaviors stem simply from having less. We suggest that scarcity changes how people allocate attention: It leads them to engage more deeply in some problems while neglecting others. Across several experiments, we show that scarcity leads to attentional shifts that can help to explain behaviors such as overborrowing. We discuss how this mechanism might also explain other puzzles of poverty.

The poor often behave in ways that reinforce poverty. For instance, low-income individuals often play lotteries (*1*, *2*), fail to enroll in assistance programs (*3*), save too little (*4*), and borrow too much (*5*). Currently there are two ways to explain this behavior. The first focuses on the circumstances of poverty, such as education (*6*), health (*7*), living conditions (*8*), political representation (*9*), and numerous demographic and geographic variables (*10*, *11*). Put simply, the poor live in environments (for sociological, political, economic, or other reasons) that promote these behaviors. The second view focuses on personality traits of the poor (*12*–*14*). But we suggest a more general view: Resource scarcity creates its own mindset, changing how people look at problems and make decisions.

To understand this hypothesis, consider how people manage expenses. When money is abundant, basic expenses (e.g., groceries, rent) are handled easily as they arise. These expenses come and go, rarely requiring attention and hardly lingering on the mind. But when money is scarce, expenses are not easily met. Instead of appearing mundane, they feel urgent. The very lack of available resources makes each expense more insistent and more pressing. A trip to the grocery store looms larger, and this month's rent constantly seizes our attention. Because these problems feel bigger and capture our attention, we engage more deeply in solving them. This is our theory's core mechanism: Having less elicits greater focus.

This view is not bound to the specific circumstances of poverty, nor does it make assumptions about the dispositions of the poor. This mindset stems from the most fundamental feature of poverty: having less. And this hypothesis is about scarcity more generally, not just poverty. Indeed, just as expenses capture the attention of the poor, researchers have found that people who are hungry and thirsty focus more on food- and drink-related cues (*15*, *16*). Likewise, the busy (facing time scarcity) respond to deadlines with greater focus on the task at hand (*17*). Across many contexts, we see a similar psychology. People focus on problems where scarcity is most salient.

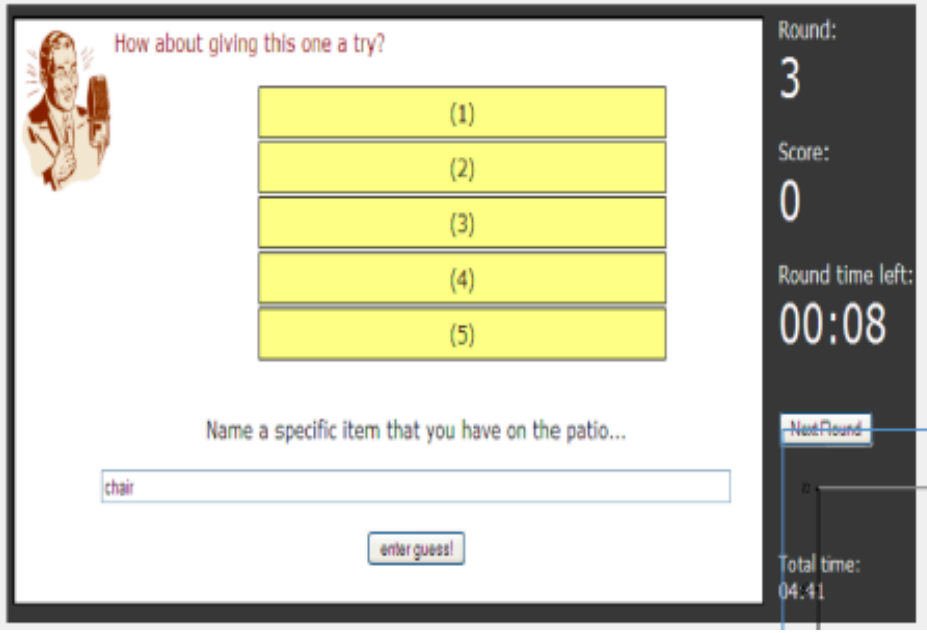
The second part of our theory follows readily from the first. Because scarcity elicits greater engagement in some problems, it leads to neglect of others. While focusing on the groceries from week to week, we might neglect next month's rent. While consumed with meeting tomorrow's

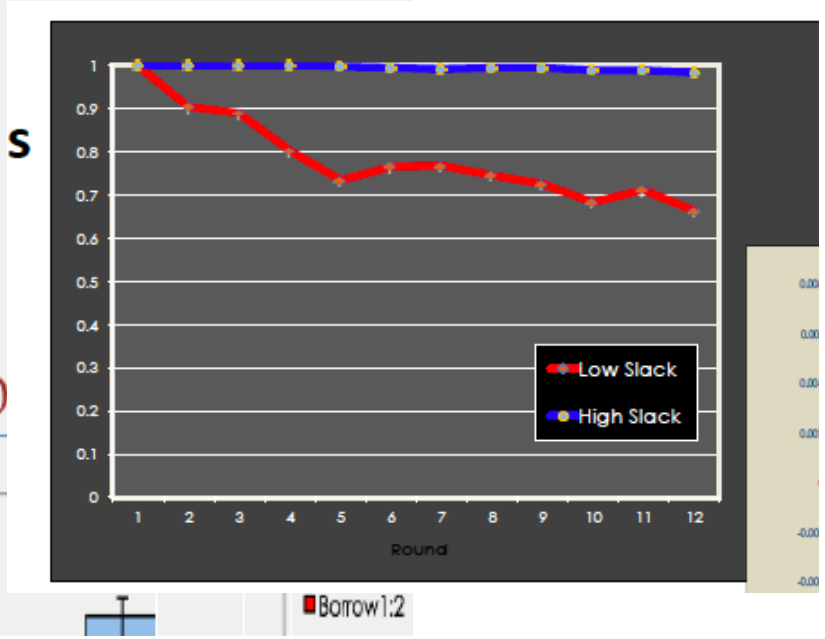
[1]Booth School of Business, University of Chicago, Chicago, IL 60637, USA. [2]Department of Economics, Harvard University, Cambridge, MA 02138, USA. [3]Department of Psychology and Woodrow Wilson School of Public and International Affairs, Princeton University, Princeton, NJ 08544, USA.

*To whom correspondence should be addressed. E-mail: anuj.shah@chicagobooth.edu

Shah, Mullainathan, Shafir (2012)

20 rounds
“Rich”: 50 sec / rnd (1000 sec total)
“Poor”:15 sec / rnd (300 sec total)
No borrowing vs. High Interest Borrowing





Rounds Completed

Mullainathan and Shafir, 2013

Scarcity: Introduction

- Scarcity means _____.
- Scarcity can also make us more effective.
  - When scarcity captures the mind, it focuses our attention on using what we have.
- However, scarcity has price.
  - Scarcity captures our attention and makes it difficult for us to think about anything other than the source of the scarcity.

Cognitive scarcity of the poor

- The poor must manage sporadic income, juggle expenses, and make difficult financial tradeoffs.
- This is when scarcity comes in to play.
- Concerns about (financial) scarcity are taxing…

– They capture our attention (mental bandwidth) and trigger intrusive thoughts…

– … leaving less for other important, but less urgent tasks such as finding a permanent solution to get out of debt in the long run

Benefit of Scarcity:_____

- Scarcity captures our minds and makes us focus on the source of scarcity, in order to survive given such scarcity.
- This helps us make better choices regarding the source of the scarcity.
- Scarcity makes us more efficient users of the thing that is scarce.
- Examples: Time scarcity
  - Fixed deadlines work better than flexible ones
  - Sales people work hardest in the last weeks of the sales cycle
- Example: Immediate money shortage
  - Usage of informal loan lenders, or selling (productive) assets

_____

_____

- Scarcity causes us to tunnel:

_____

- Tunneling changes the way we choose.
  - Focusing on something that matters to you makes you less able to think about other things you care about: Goal inhibition
  - Tunneling makes us ignore tasks that are crucial but do not appear urgent.

Tunneling

- When we decide to forgo the gym for the deadline, our mind is not on that subtle cost-benefit problem of not going to the gym.
- Immediate scarcity looms large, and important things unrelated to it will be neglected.
- Scarcity alters how we look at things. It makes us choose differently.

Tunneling Tax

- **Insurance:** the poor do not insure as they think they cannot afford insurance, and it seems better to spend money on food, rents, school fees, and other urgent expense).
- The threats for health/low rainfall seem abstract, but if it actually occurs, it costs more than they can afford.

The Bandwidth Tax

The Bandwidth Tax

Bandwidth measures our cognitive capacity, our ability to think, to reason, to pay attention, to make good decisions, to solve problems, to stick with our plans, and to resist temptations

Scarcity taxes our bandwidth, as a result, inhibits our most fundamental capacities.

Scarcity directly reduces bandwidth, by constantly loading the mind with other processes. It leaves less ‘mind’ for the task at hand. Less capacity is currently available for use.

Scarcity: Wrap-up by Cass R. Sunstein

- It is common to think that economics is the study of scarcity – in terms of goods and services. But economists have rarely studied **cognitive scarcity**, at least not in any sustained way.

- Their basic claim is that if you are hungry, busy, poor, or lonely, you face the same difficulty: You are focused on a particular problem of scarcity, and that focus occupies your mind.

Scarcity: Wrap-up by Cass R. Sunstein

- Those who are hungry must think about how to get food, which means that they will not be able to think about much else.

- Poor people have to "tunnel" on the problem of making ends meet. In trying to solve immediate economic problems, they might enjoy a kind of "focus dividend"—no less than busy people, faced with a deadline, who sometimes accomplish great things in a short period of time. But tunneling and the focus dividend come with a "band width tax," which means that poor people might not be able to attend to important matters that do not demand their immediate attention. They might not be able to solve health problems faced by their children; long-term planning will predictably suffer.

Scarcity: Wrap-up by Cass R. Sunstein

- Mullainathan and Shafir show that hungry, busy, or lonely people are, in a sense, trapped by cognitive scarcity.
- If you are busy, you might not be in a good position to figure out how to provide yourself with temporal cushions.
- Poor people face the same problem; their limited bandwidth (might create) creates a poverty trap.
- Policies are designed with far too little attention to the bandwidth problem.

Policy design that considers the Bandwidth Tax

- Policies should be created in a way that doesn’t impose higher cognitive demand for the poor.
- New policies should not come with paperwork or application requirements that undermine or defeat their own goals. In the context of poverty relief, for example, economic or educational benefits, or training programs, often impose paperwork burdens.
- Set up the right default in retirement plans, health insurance, saving bank accounts
- Set up commitment devices

Design life's cockpit with scarcity & bandwidth in mind…

Aim to provide more bandwidth (pay day, work shifts, child care, transportation)
Aim to demand less bandwidth (reminders, flex demands, Financ. literacy?!?!)

Scarcity Frames Value

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Anuj K. Shah[1], Eldar Shafir[2,3], and Sendhil Mullainathan[4]
[1]Booth School of Business, University of Chicago; [2]Department of Psychology, Princeton University; [3]Woodrow Wilson School of Public and International Affairs, Princeton University; and [4]Department of Economics, Harvard University

Abstract
Economic models of decision making assume that people have a stable way of thinking about value. In contrast, psychology has shown that people's preferences are often malleable and influenced by normatively irrelevant contextual features. Whereas economics derives its predictions from the assumption that people navigate a world of scarce resources, recent psychological work has shown that people often do not attend to scarcity. In this article, we show that when scarcity does influence cognition, it renders people less susceptible to classic context effects. Under conditions of scarcity, people focus on pressing needs and recognize the trade-offs that must be made against those needs. Those trade-offs frame perception more consistently than irrelevant contextual cues, which exert less influence. The results suggest that scarcity can align certain behaviors more closely with traditional economic predictions.

Keywords
context effects, judgment and decision making, scarcity, open data, open materials

Shah, Shafir, Mullainathan(2015)

Schilbach, Schofield&Mullainathan (2016)

The Psychological Lives of the Poor†

By Frank Schilbach, Heather Schofield, and Sendhil Mullainathan*

There is growing interest in understanding the psychology of the poor—biases that may affect decision-making are of particular interest. The sheer diversity of potential biases—hyperbolic discounting, probabilistic, and judgmental errors just to name a few—poses a key challenge. These psychological biases cannot easily be put into a common unit such as money spent. However, two insights from psychology make this problem more tractable.

First, a large body of work points toward a two-system model of the brain.[1] System 1 thinks fast: it is intuitive, automatic, and effortless, and as a result, prone to biases and errors. System 2 is slow, effortful, deliberate, and costly, but typically produces more unbiased and accurate results.

Second, when mentally taxed, people are less likely to engage their System 2 processes. Put simply, one might think of having a (mental) reserve or capacity for the kind of effortful thought required to use System 2. When bur-

Psychologists often study this underlying resource by imposing "cognitive load" to tax bandwidth and measure the impact on judgments and decisions. The many ways to induce load produce similar results on various bandwidth measures and consequences from reduced System 2 thinking. This insight is particularly useful because it implies that bandwidth is both malleable and measurable. It also suggests a unified approach of studying the psychology of poverty. We can understand factors in the lives of the poor, such as malnutrition, alcohol consumption, or sleep deprivation, by how they affect bandwidth. And we can understand important decisions made by the poor, such as technology adoption or savings, through the lens of how they are affected by bandwidth. Clearly, bandwidth is not the only important aspect of the psychological lives of the poor; no single metric can take on this role. However, it provides a way to at least partly understand a great many of the thought processes that drive decision-making by

Loewenstein et al(2015) Modeling the interplay between system 1 & 2

- Poverty Trap

- *What is poverty trap ?*
  - Any self-reinforcing mechanism that causes poverty to persist(Azariadis & Stachurski, 2005)
- Well being dynamics with multiple steady states

Source: Angeletos, George-Marios, **MIT OpenCourseWare , Course of Origin**, 14.451 Macroeconomic Theory I, Spring 2007, Figure 2.6 Non-concave G and Poverty Trap

Motivating example (Kraay and McKenzie 2014)

1960 per capita income (2005 PPP USD)

Burundi: $347

Haiti: $1512

Nicaragua: $2491

2010 per capita income (2005 PPP USD)

Burundi: $396

Haiti: $1411

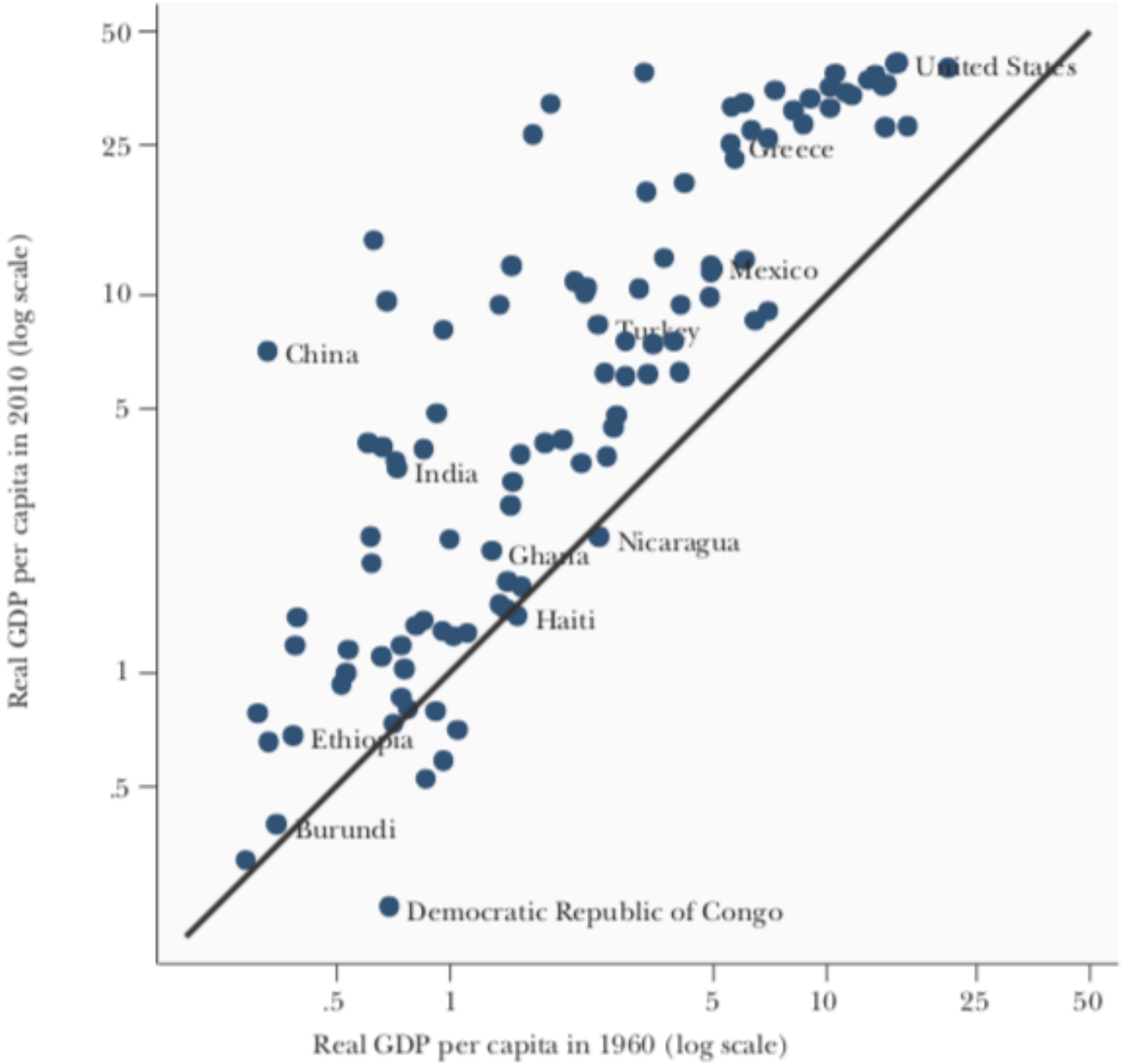
Nicaragua: $2289

Poverty traps: various mechanisms

- Non-convex asset dynamics (S-shaped models of savings and output)
- Coordination failures / multiple market failures that underlie ”Big push” theories of development
- Hunger- or nutrition-based poverty traps
- Occupational poverty traps where lumpy investments + borrowing constraints prevent some household-based businesses from growing beyond subsistence

What these have in common:_____

Macro evidence



Source: Penn World Tables, Version 7.1.
Note: Real GDP per capita is in thousands of 2005 US dollars adjusted for differences in purchasing power.

Micro evidence 1a

"The economics of poverty traps and persistent poverty: An asset-based approach"

Carter and Barrett (2006)

Journal of Development Studies

Motivation

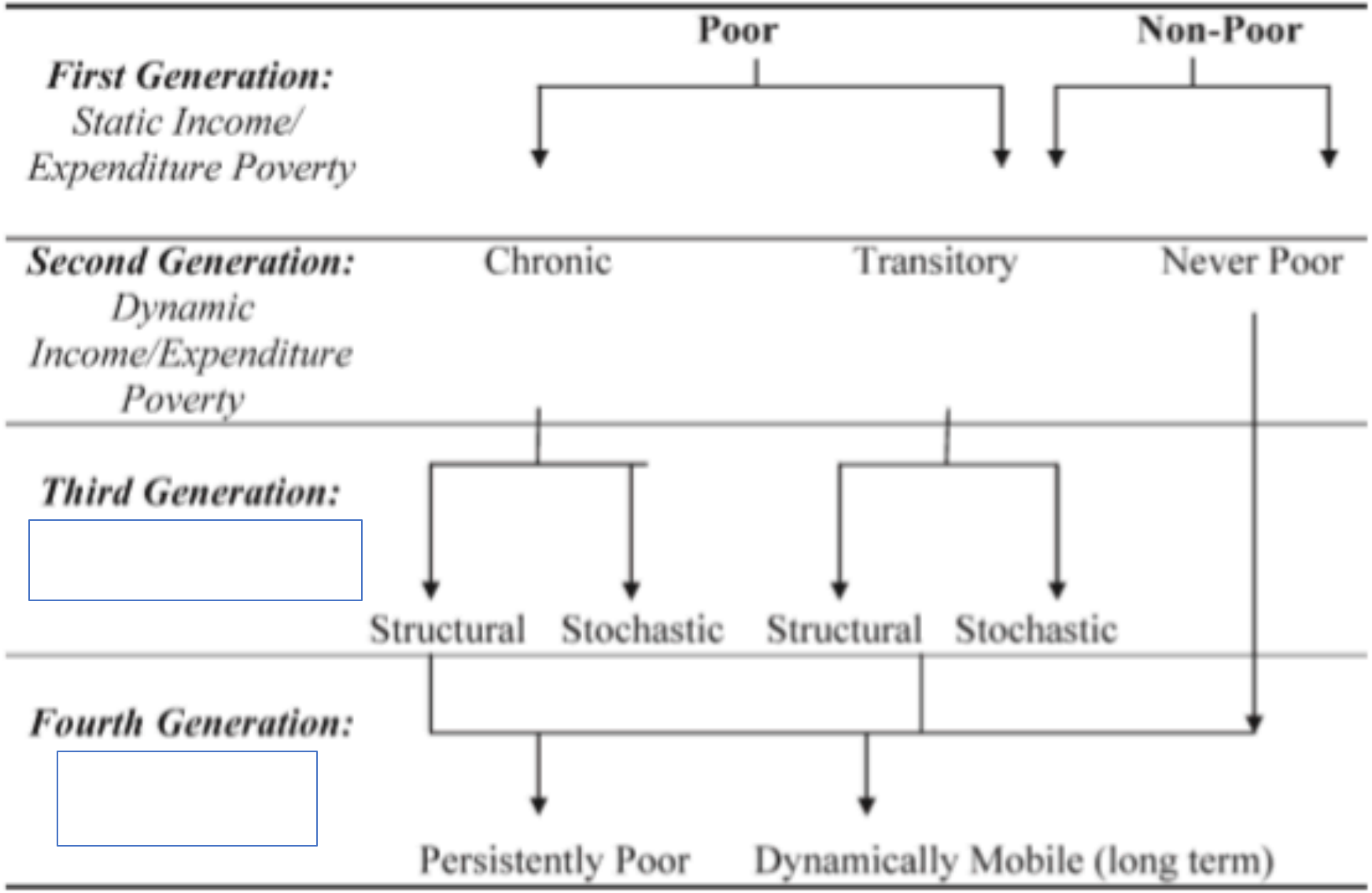


Figure 1. Alternative approaches to poverty measurement

An asset-based approach

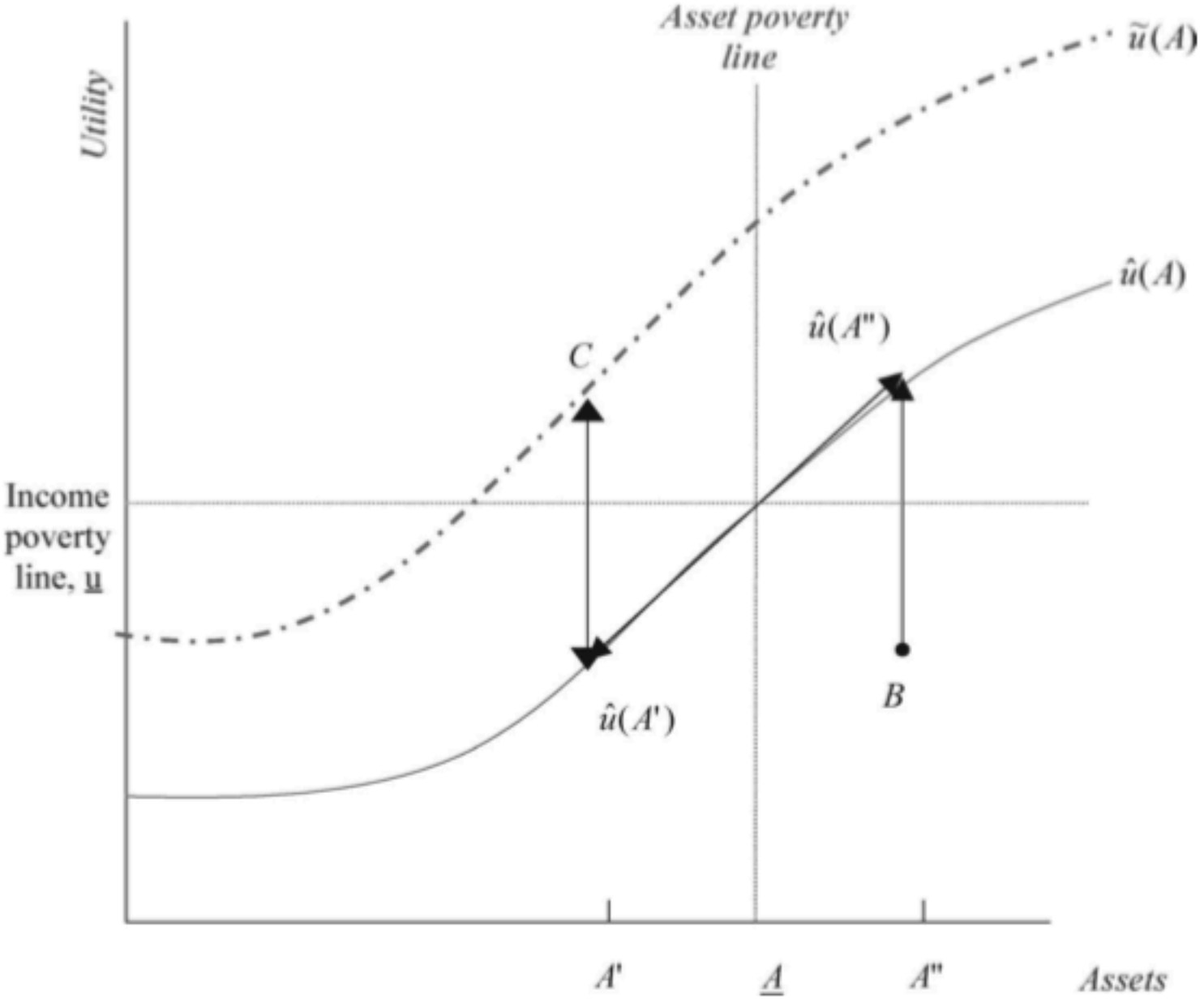


Figure 2. Single period income and asset poverty lines

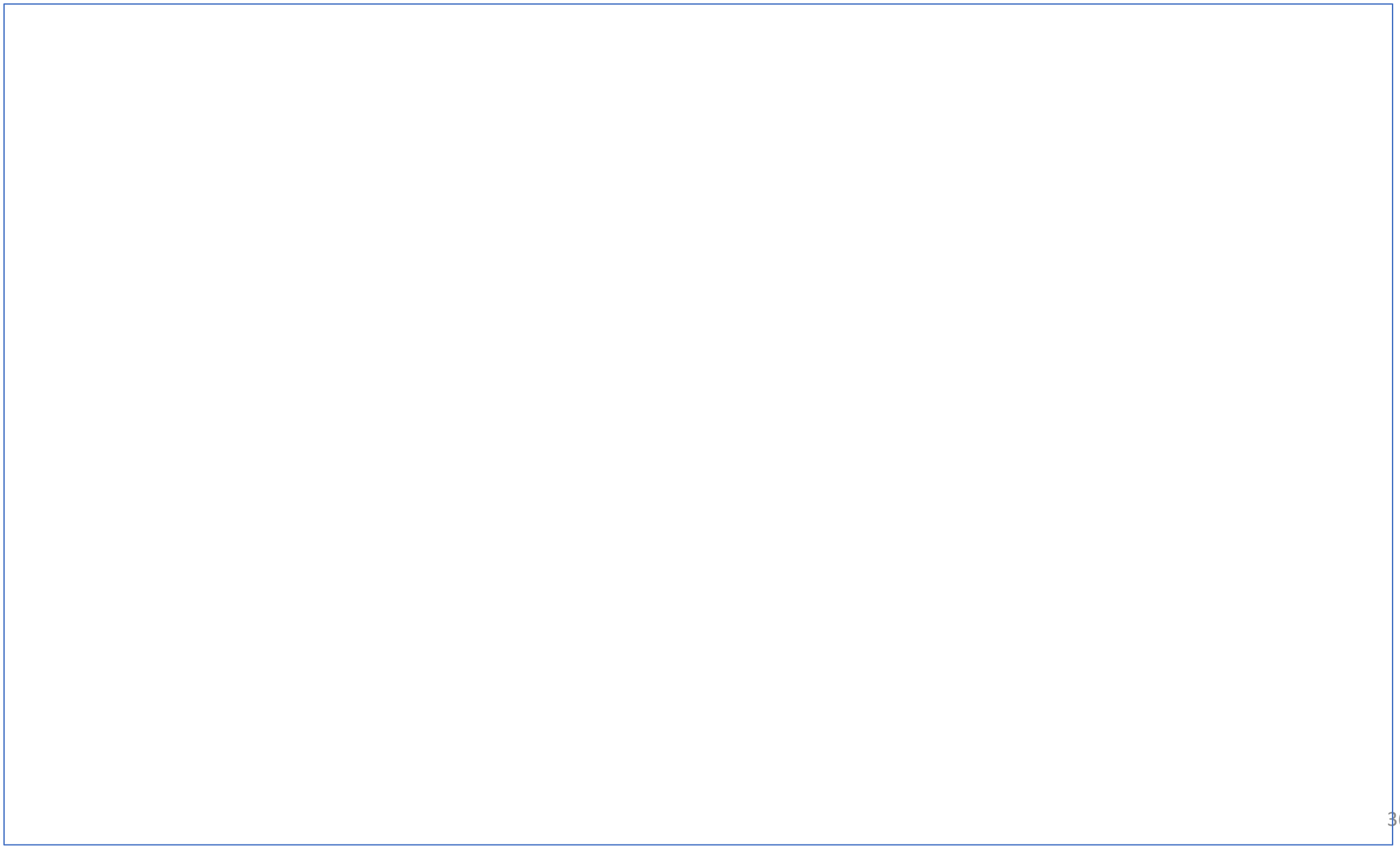
Micro-foundations of an asset-based poverty trap

1. Income process (production function) exhibits increasing returns to scale over a range

2. Fixed capital requirement / minimum project size required to make use of a higher return technology

3. Financial market imperfections + risk aversion lead poor households to choose low return / low risk income strategies

Micro-foundations of an asset-based poverty trap



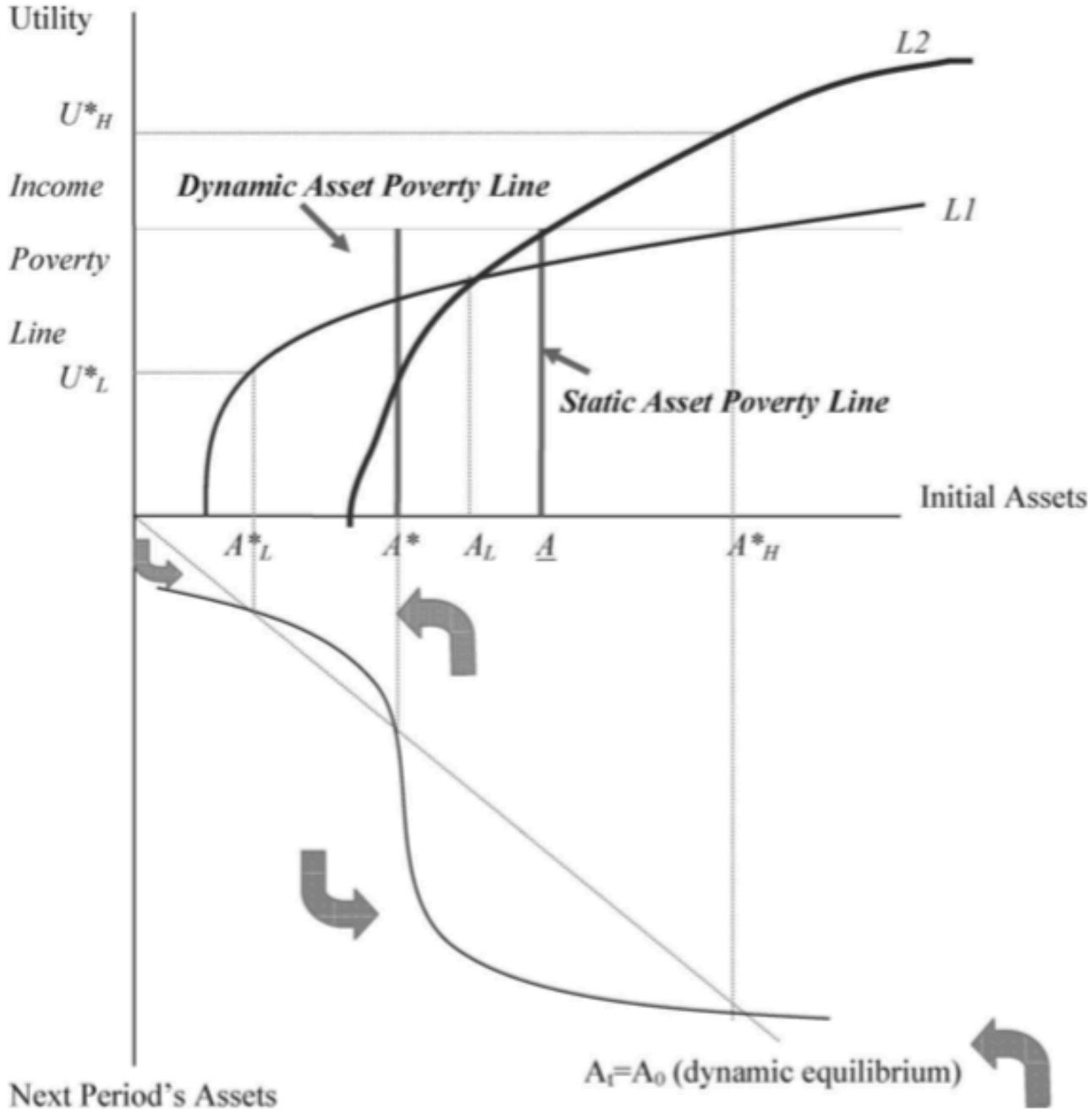


Figure 4. The dynamic asset poverty line

Micro evidence 1b

"Welfare dynamics in Rural Kenya and Madagascar"

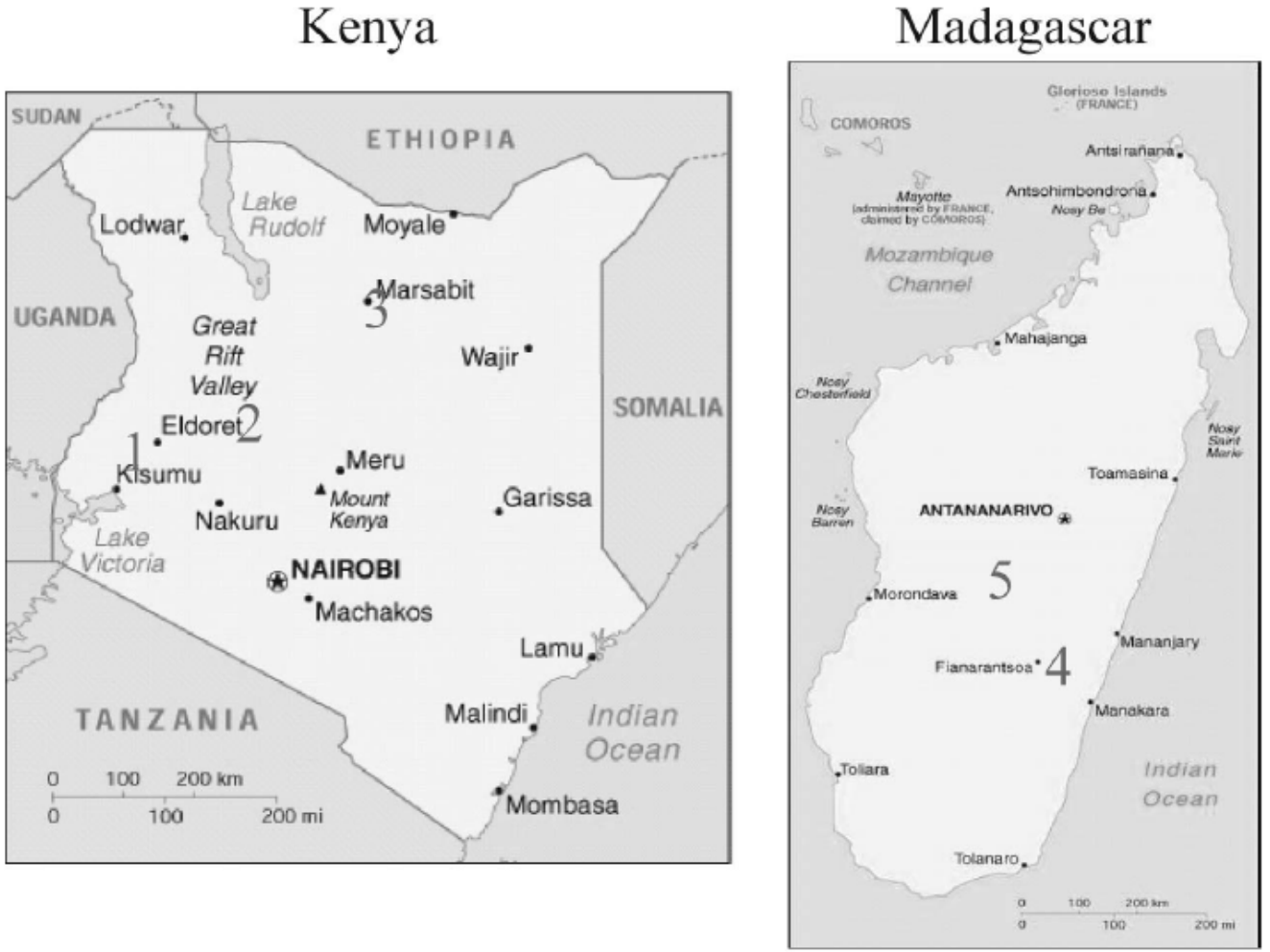
Barrett et al. (2006)

Journal of Development Studies

Empirical test of the model from Carter and Barrett

- Panel data sets from Kenya and Madagascar
- Sample stratified on market access and agro-ecology

Research sites



1 = Madzuu (Vihiga)

2 = Ng'ambo (Baringo)

3 = Dirib Gombo (Marsabit)

4 = Fianarantsoa

5 = Vakinankaratra

Figure 1. Survey sites in rural Kenya and Madagascar

Empirical test of the model from Carter and Barrett

- Panel data sets from Kenya and Madagascar
- Sample stratified on market access and agro-ecology
- 301 households in total
- Panel length varies from 1989-2002 to 2000-2002

Dynamic income-based poverty

Table 1. Ultra-poverty transition matrices
As measured against $0.50/day per capita real income ultra-poverty line

	Poor in subsequent period		Non-poor in subsequent period	
Poor in initial period	2000–2002 Dirib Gombo 100.0% **70.8%**	1989–2002 Madzuu 60.7% 1997–2002 Fianarantsoa 82.8%	2000–2002 Dirib Gombo 0.0% **11.2%**	1989–2002 Madzuu 20.2% 1997–2002 Fianarantsoa 10.3%
	2000–2002 Ng'ambo 86.5%	1997–2002 Vakinankaratra 58.5%	2000–2002 Ng'ambo 9.0%	1997–2002 Vakinankaratra 7.4%
Non-poor in initial period	2000–2002 Dirib Gombo 0.0% **11.3%**	1989–2002 Madzuu 10.1% 1997–2002 Fianarantsoa 6.9%	2000–2002 Dirib Gombo 0.0% **6.8%**	1989–2002 Madzuu 9.0% 1997–2002 Fianarantsoa 0.0%
	2000–2002 Ng'ambo 0.0%	1997–2002 Vakinankaratra 22.3%	2000–2002 Ng'ambo 4.5%	1997–2002 Vakinankaratra 11.7%

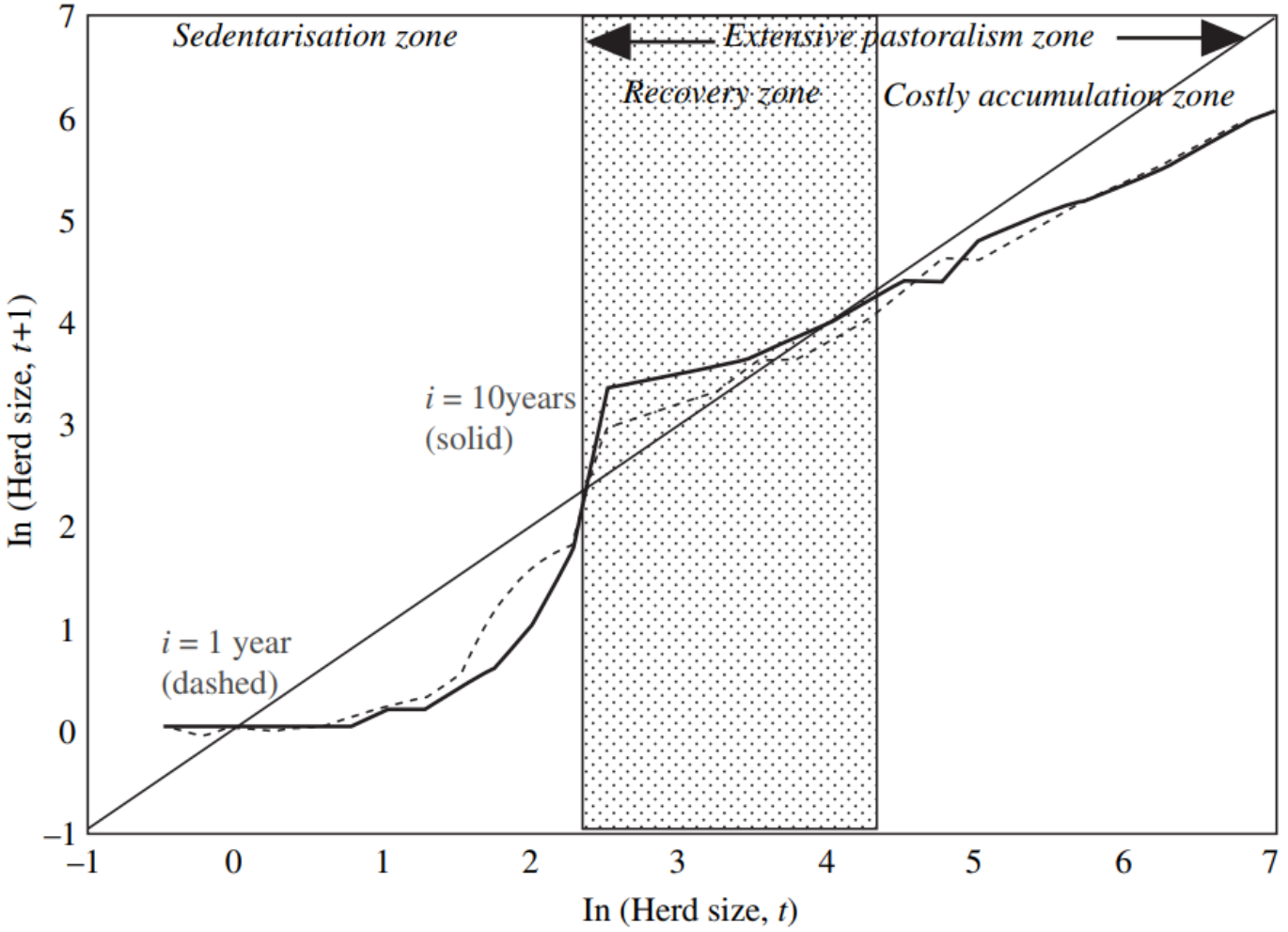
Micro evidence 1c

"Stochastic wealth dynamics and risk management among a poor population"

Lybbert et al. (2004)

Economic Journal

17-year panel in southern Ethiopia



Nadaraya-Watson estimates using Epanechnikov kernel with bandwidth ($h = 1.5$)

Fig. 4. *Nonparametric Estimates of Expected Herd Size Transition Functions*

Final thoughts

- These are some of the strongest positive findings of poverty traps
- Jalan and Ravallion (2002 JAE) find evidence of geographic poverty traps in a different setting (rural China)
- At least one systematic review is more skeptical of multiple equilibrium models of poverty traps, and summarizes some of the negative results (Kraay and McKenzie 2014)
- This is an area ripe for more work using theory and thoughtful analysis of existing data