World Development 201 (2026) 107317

Contents lists available at ScienceDirect

World Development

journal homepage: www.elsevier.com/locate/worlddev

Development Review

# On risk-based poverty traps

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ARTICLE INFO

*Keywords:*
Behaviors
Catastrophes
Coping
Disasters
Insurance

ABSTRACT

Much development policy has followed from the idea of poverty traps, the belief that the poor (and poor countries) lack capital and the ability to borrow, thus cannot invest sufficiently to build a better future for themselves. Poverty is thus self-reinforcing. This essay explores a complementary, alternate hypothesis, that poverty traps may be driven not only by lack of access to capital, but also (or instead) by differential exposure to uninsured risk and ability to cope with that risk. We explain the hypothesis and its historical roots, discuss empirical evidence, and tease out prospective solutions to the possibility of risk-based poverty traps.

Many people suffer extended periods of material deprivation (Baulch and Hoddinott 2000; Addison et al. 2009). Motivated by this fact, development research has focused heavily on how to sustainably reduce poverty. Persistent poverty – the observation that many people cannot exit poverty rapidly without assistance – poses challenges for both policy and research because choices driven by individuals' environments and endowments may generate feedback effects, reinforcing deprivation. For example, the poor are less likely to adopt productivity-boosting technologies (Dercon and Christiaensen 2011), have higher rates of school dropout (Edmonds and Schady 2012), and face greater underemployment (Fafchamps 1993). This reinforcing feedback can create a 'poverty trap' (Azariadis and Stachurski 2005; Carter and Barrett 2006; Sachs 2006; Barrett et al. 2019).

The poverty trap idea has influenced much development thinking. If poverty traps do not exist, then households can steadily improve their circumstances – via gradual capital accumulation, skills development, etc. – and effective interventions merely accelerate progress. By contrast, if poverty traps exist, even modest interventions may prove insufficient to induce households to cross critical asset thresholds, beyond which self-sustaining capital accumulation and enhancement of living standards become possible. This insight has spurred a range of approaches from the 'big push' macro-development strategies of post-World War 2 reconstruction and independence movements in post-colonial Africa, Asia, and Latin America (Rosenstein-Rodan, 1943; Murphy et al. 1989) to the microfinance revolution of the late 20th century, as well as the Millenium Villages program (Sachs 2006) and multi-faceted 'graduation' interventions (Banerjee et al. 2015, 2022; Bandiera et al. 2017). These efforts rest on a simple premise, that the poor (and poor countries) lack the minimum financial, human, and physical capital – and the ability to borrow – necessary to invest in building themselves a better future. They remain trapped in a low-level equilibrium, unable to achieve the higher standards-of-living enjoyed by those born into better circumstances, precisely because of their initial poverty.

This essay highlights and discusses a complementary, alternate hypothesis motivated by the observation that poverty and uninsured risk exposure are strongly correlated. As low-income populations appear to face increasing exposure to conflict, disease, price, weather and other risks, this perspective merits greater attention. Poverty traps may be driven not only by lack of access to capital, but also by differential exposure to uninsured risk (Rosenzweig and Binswanger, 1993; Morduch 1995). This reflects a combination of greater initial risk exposure — e.g., higher disease burden, extreme weather, occupations with greater income volatility or risk of injury — as well as limited or no ability to safeguard their future against such adverse shocks — e.g., lack of disability, health, flood, or unemployment insurance. Further, when insurance is unavailable, poverty may lessen one's ability or willingness to pay (explicitly or implicitly) for risk-reducing amenities that yield safer food, housing, and water, ensuring more reliable work and income, or avoiding external risks such as extreme weather or interpersonal violence (Fafchamps 2003; Hill et al. 2013). Risk aversion can also deter households and firms from experimenting with new products or technologies even when expected returns are positive (Karlan et al. 2014; Carter et al. 2017; Killeen, 2025). And a single disastrous misstep or misfortune, or a disaster befalling one's community, can spark a slide by even the non-poor into sustained destitution when uninsured

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https://doi.org/10.1016/j.worlddev.2026.107317
Accepted 11 January 2026
Available online 17 January 2026

individuals are unable to borrow to rebuild lost productive assets or when shocks are irreversible. Crucially, causality may flow the other way as well – from differential risk exposure to persistent poverty. That claim is broadly consistent with the observation that the past two decades' increased frequency and severity of major shocks – most notably the COVID-19 pandemic, but also rising conflicts and extreme weather events, food price spikes, etc. – has slowed the rate of poverty reduction worldwide and increasingly concentrated it especially in precarious places subject to climate, conflict, and disease shocks (Decerf et al. 2021; Hill et al. 2025).

**What are risk-based poverty traps?**

It is perhaps worth quickly, if only coarsely, establishing categories of poverty based on observed well-being dynamics to allow us to distinguish the population of interest. First, especially in places where labor and financial markets function effectively and social protection programs offer broad coverage, much poverty is transitory, arising temporarily during periods of unemployment, illness, extreme adverse weather, etc (Baulch and Hoddinott 2000; Addison et al. 2009; Barrett and Swallow 2006). Among those who find themselves chronically poor, some will eventually exit poverty by migrating to a place where their capital endowments generate greater returns or after a long, sometimes-slow trajectory of accumulating productive financial, human, natural, physical, or social capital, yielding increased permanent income and improved well-being indicators (Kraay and McKenzie, 2008; Ravallion 2015). The slowly progressing poor are, like the transitorily poor, not our focus.

We focus instead on those who have no reasonable expectation of exiting poverty in their lifetime and for whom the next generation(s) will likely remain mired in poverty. There exist two distinct – but not mutually exclusive – types of persistently poor people. The first is caught in a unique, low-level dynamic equilibrium standard of living driven by permanently low human capital leaving them incapable of economic independence. For example, those who suffer permanent cognitive or physical impairment(s) due to illness, injury, or acute malnutrition. Their only escape from poverty comes through others providing for them. Call these type I – for inescapable – poverty traps. The risk of falling into type I poverty traps increases as the perils of violence, workplace or traffic accidents, or acute infectious disease, rise and as access to quality health care, associated emergency services, and generous safety nets falls. Poorer communities disproportionally bear such risks. Poverty and risk exposure become mutually reinforcing through limited state fiscal capacity, and the resulting inability to invest in adequately inclusive and generous safety nets as well as physical and institutional infrastructure to reduce such risks (Barrett and Swallow 2006).

The other type of risk-based poverty trap is less visible, arising from the subtle, insidious effects of multi-equilibrial systems, wherein households and individuals can, in principle, attain different equilibria. Optimal actions bifurcate depending on one's current conditions, leading to convergence over time by some people towards a non-poor, high equilibrium while others – who are perhaps only subtly different – converge instead towards a different, poor, low equilibrium (Nelson 1956; Mazumdar 1959; Stiglitz 1976; Loury, 1981; Banerjee and Newman 1993; Azariadis and Stachurski 2005; Carter and Barrett 2006; Barrett et al. 2019; Ikegami et al. 2019). Any combination of multiple market failures or health shocks can give rise to these type M (for multiple equilibrium) poverty traps (Gross and Notowidigdo, 2011).

Fig. 1, adapted from Barrett and Constas (2014), offers a simple heuristic representation of unidimensional well-being dynamics under poverty traps.[1] Well-being here is quite general; it could be in terms of income, wealth, human capital, or whatever measure one favors. The horizontal axis reflects the present state, the vertical axis the expected

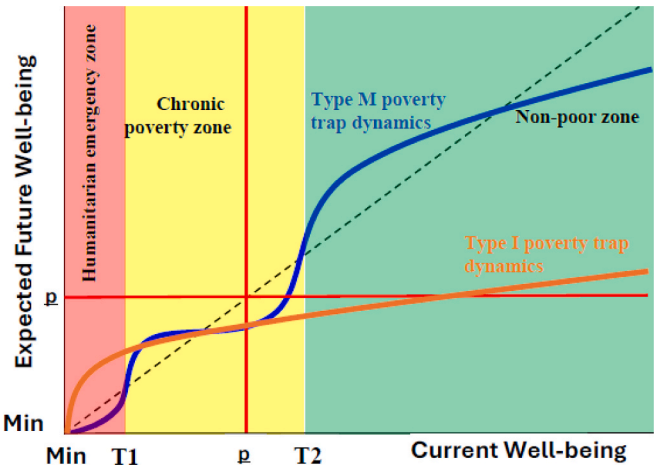


**Fig. 1.** Reduced form poverty trap dynamics.

future state, and the dashed 45-degree line reflects the locus where the two are equal, i.e., dynamic equilibria. The red lines reflect the poverty line, p.

The orange line depicts expected transition dynamics for type I poverty traps. Current well-being exceeds expected future well-being over the entire non-poor range (i.e., to the right of p), indicating a unique, poor, dynamic equilibrium standard of living, an inescapable poverty trap.

The blue line depicts expected transition dynamics under type M poverty traps. Wherever the blue line crosses the 45-degree line from below, an unstable dynamic equilibrium exists that defines a threshold at which path dynamics bifurcate. For example, for one with current well-being T1, a negative shock drives well-being to its minimum, while a positive shock induces further increase until well-being reaches one of the stable dynamic equilibria where the blue line crosses the 45-degree line from above. In this stylized figure, current well-being above the T2 threshold enables a sustainable non-poor standard of living in expectation. Variation within that (green) basin of attraction naturally draws the subject back toward the stable dynamic equilibrium. Well-being between thresholds T1 and T2 – the yellow basin of attraction – implies chronic poverty in expectation. Note that, as drawn, this includes current non-poor well-being levels, those above the poverty line, p, but below T2. Whether T2 lies above or below p is an empirical question; there is no universal ordering between the two. We intentionally draw Fig. 1 with a stable, chronic poverty equilibrium that is identical for both the blue and orange lines to underscore that observed poverty trap dynamics may reflect either type I or type M poverty traps and thus the importance of probing the causal mechanisms (on which, more below). To the left of T1 lies a (red) 'humanitarian emergency zone' basin of attraction. If current well-being is in human capital terms, the stable dynamic equilibrium at the far left edge of Fig. 1 reflects death.

The dynamics depicted in Fig. 1 offer a reduced form representation of the joint product of the stochastic environment and people's decision-making in that environment. The well-being measures reflect outcomes from a structural stochastic dynamic programming model for which the underlying state variables are capital stocks (Ikegami et al. 2019). The experience of shocks moves one along the horizontal axis. Exposure to risk affects behaviors and thus the (blue or orange) mapping from current to future state. It is easier to understand those effects using a more structural representation. Moreover, not all forms of capital are perfect substitutes for one another. Everyone is endowed with human capital that is vulnerable to irreversibilities (e.g., death, permanent loss of cognitive or physical function). Not everyone has non-human (financial, natural, physical, social, etc.) capital, which may complement or substitute for human capital. Separating those two broad capital stocks enables us to reflect the basins of attraction from Fig. 1 in capital state

[1] For formal models, see Banerjee and Newman (1993), Azariadis and Stachurski (2005), or Ikegami et al. (2019).

space and more easily unpack type I and type M poverty trap mechanisms.

Fig. 2 offers a simple heuristic representation of poverty traps in human and non-human capital space. The horizontal axis depicts an individual's[2] human capital, while the vertical axis reflects composite non-human capital, both represented as scalars. There exists some mapping from assets to living standards – a production function of sorts – such that well-being increases as one accumulates more of either human or non-human capital; the highest standards of living occur in the upper right corner, the lowest in the lower left corner. This yields a downward-sloping asset poverty line, the locus that maps to $\underline{p}$ in Fig. 1, to the left of which people are poor.

This representation helps us begin to unpack type I and type M poverty traps. Below some critical level of human capital, $\underline{H}$, an individual with negligible non-human capital falls into the Type I poverty trap. To a limited degree, one can compensate for human capital disability through capital to access assistive technologies, hence the slope of the right frontier of the Type I poverty trap space. Those who fall into the Type M poverty trap exist to the right of the Type I poverty trap space but to the left of the "Micawber frontier', the locus that yields threshold T2 in Fig. 1 that separates the long-term poor from those who in expectation eventually climb out of current poverty as a result of optimal investment behavior.[3] Those whose current endowments are to the right of the Micawber frontier in expectation accumulate more capital and ultimately attain the non-poor high-level equilibrium; those to its left do not. Note that we expressly drew Fig. 2 with an asset poverty line above the Micawber frontier, in contrast to Fig. 1's representation of $\underline{p} < T2$, to underscore that the ordering between the two is an open empirical question likely to vary across contexts.

This simple heuristic permits relative straightforward – if necessarily over-simplified – representation of various mechanisms through which risk and shocks might affect poverty traps. We can represent the effects of various mechanisms, discussed in the next section, in three basic movements in Fig. 2.

First, an individual can suffer a catastrophic health shock that pushes her beneath the frontier that defines the Type I poverty trap, like that depicted by arrow 1. As Krishna (2010) documents across a range of settings, many (non-poor) individuals are but one illness away from persistent poverty. In the Fig. 1 representation, the catastrophic health shock shifts her from the type M (blue) to type I (orange) dynamics.

Second, even a modest shock, like that depicted by arrow 2,[4] can lead to a collapse from a non-poor state into persistent poverty, in this case into a Type M poverty trap, perhaps from land, livestock or equipment losses due to natural disaster or conflict (Lybbert et al. 2004; Fiala 2015). Conversely, windfall gains could push someone in the opposite direction. Indeed, those caught in type M poverty traps who are near enough to the Micawber frontier may rationally to take gambles with negative expected payoff – e.g., buying lottery tickets or taking on temporary, high risk-high return work – lured by the positive probability of a windfall that liberates the lucky from poverty (Lybbert and Barrett 2011). In expectation, such gambles rarely pay off. Thus on average, this choice reinforces poverty until losses accumulate sufficiently that the likelihood – and thus hope – of escape dims.

The first two mechanisms reflect losses of capital as might occur from shocks. The third mechanism reflects changes in risk exposure even without the realization of an asset shock. The Micawber threshold could move up and to the right, expanding the capital space occupied by Type M poverty traps. This happens, for example, when the probability of asset loss increases or the expected returns to investments in either sort of capital falls, even without a shock that depletes the capital stock. As we discuss below, this path 3 effect can also work in reverse when innovations that reduce or transfer risk or change behaviors move the Micawber frontier leftward, opening a pathway out of poverty.[5]

We intentionally depict arrows 1 and 2 as impacting the initially-non-poor simply to underscore our point that uninsured risk exposure may be a critical mechanism behind poverty traps. Risk and poverty reinforce each other. And thus as uninsured risk exposure increases, so does the likelihood of poverty traps.

Note that risk can also affect current well-being independent of where individuals sit with respect to the relevant poverty traps frontier. That is, risk or shocks can transitorily shift the asset poverty line up and to the right by temporarily reducing the productivity of capital stock via market disruptions, changes in production patterns, or forcible displacement from sources of income (Kondylis 2008; Fiala 2015; Rockmore 2020, 2017). However, if a shock does not destroy productive capital or change assets' expected future returns that govern forward-looking investment behavior, such shocks need not impact individuals' long-run poverty status. Temporary production shocks can thereby cause transitory poverty from which people, in expectation, escape. We abstract from those cases in the rest of the paper.

## 1. Mechanisms

We can use these simple heuristics to briefly summarize a range of mechanisms – broadly grouped into market imperfections and behavioral phenomena – associated with movement into or out of poverty traps. While some evidence exists supporting these mechanisms, many require further study.

### 1.1. *Market imperfections*

Financial market failures underpin standard theories of poverty traps. The inability or expense of borrowing prevents the poor from investing in sufficient capital or technology to generate returns sufficient not only to pay off the loan but to sustain a non-poor living standard (Stiglitz 1976; Dasgupta and Ray 1986, 1987; Banerjee and Newman 1993; Dasgupta 1997; Alderman et al., 2006).

The same logic applies to the inability to insure against adverse shocks. Private insurance markets are largely inaccessible to the poor, especially in sparsely populated rural communities (Barnett et al. 2008; Karlan et al. 2014; Carter et al. 2017). Yet poor people appear more (objectively and subjectively) exposed to conflict, crime, disease, price, weather or other shocks that can thrust them into either type I or type M poverty traps, i.e., path 1 or 2 movements in Fig. 1 (Hill et al. 2025). Despite heavy risk exposure – indeed, partly because of it – insurance markets routinely fail for the poor.

The experience of adverse shocks can trap the poor. For many of the world's poor, life seems a Sisyphean struggle of interminable toil, regular setbacks, and futile efforts to advance as they lose accumulated assets to shocks or engage in distress sales to cushion income shocks. They commonly need many things to go right – appropriate seeds, adequate rains, health, high output market prices – each fraught with risk, leading to an O-ring problem (Kremer 1993) wherein a single, modest shock undercuts their efforts.

[2] This could instead be a household or other aggregate unit. For conceptual simplicity, we focus on individual endowments and abstract away from collective choice.

[3] The Micawber Frontier is named for Charles Dickens' David Copperfield character Wilkins Micawber who lived a precarious existence and famously opined that a knife's edge existed between high and low standards of living. Here it reflects the policy function that solves the individual's stochastic dynamic programming problem. See Carter and Barrett (2006) and Barrett et al. (2019) for more details.

[4] Arrow 2 could also go straight down, with no loss of human capital.

[5] In principle, the frontier defining the Type I poverty trap boundary could shift rightward. We cannot think of realistic examples of such movements. Leftward movements – e.g., due to improved rehabilitative, restorative, and/or therapeutic care – seem more common.

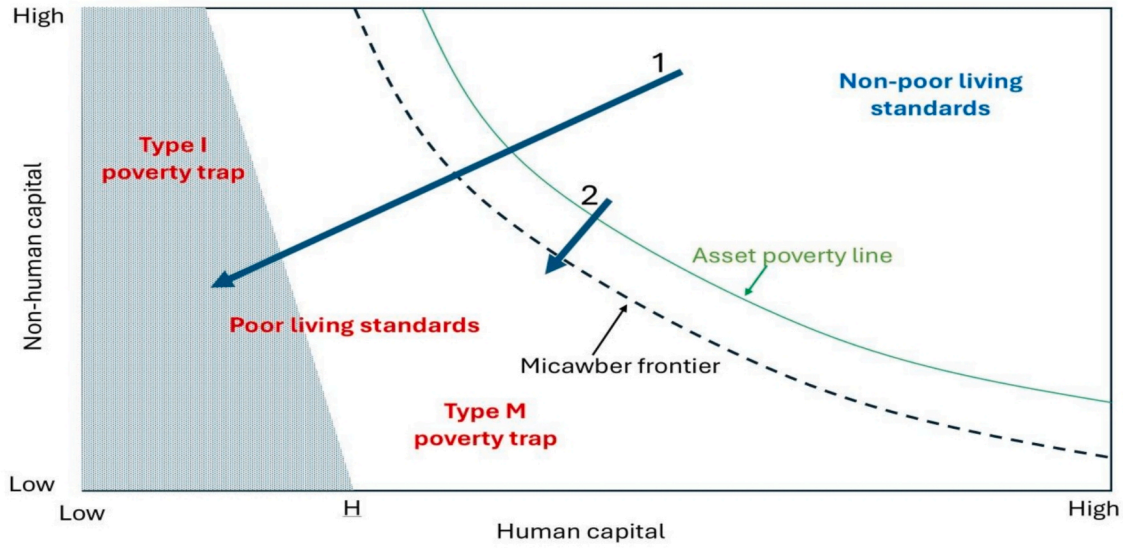


**Fig. 2.** Heuristic representation of poverty traps in human and non-human capital space.

Moreover, merely the prospect of sufficiently adverse shocks can induce the poor not to make a likely-Sisyphean effort; ex ante risk exposure suffices to trap them, even if no shock materializes. If uninsured risk exposure correlates negatively with standards of living, the poor are less likely to invest scarce resources in the hope of generating sustainable improvements in well-being, consistent with underemployment of the rural poor (Fafchamps 1993; McCullough 2017), as well as in apparent underinvestment in productive inputs due to risk exposure (Dercon and Christiaensen 2011; Karlan et al. 2014). This effect is reinforced by preferences (decreasing absolute risk aversion) that induce the poor to stick with low-return activities to minimize risk exposure (Yesuf and Bluffstone, 2007) and by the need for precautionary savings in low-return, liquid assets (Zimmerman and Carter 2003).

### 1.2. Behavioral phenomena

Elevated risk and shocks may also generate behavioral responses that reinforce poverty in a variety of ways. For example, shocks and high-risk environments may impair mental health, leading to depression and anxiety as well as trauma and post-traumatic stress (Ridley et al 2020; Friedman and Thomas 2009; Di Maio and Leone Sciabolazza 2021).

Poor mental health may in turn impair economic decision making and limit labor force participation, creating feedback loops which can perpetuate poverty. For example, poor mental health may make individuals more pessimistic as well as sap energy and drive and may lead them to forgo productive opportunities (de Quidt and Haushofer 2019; Carvalho et al. 2025). Shocks, economic risk, and deprivation may also shape economic preferences such as one's taste for risk or impatience (Haushofer and Fehr 2014; Carvalho et al. 2016; Moya 2018). These changes may limit or alter investments, leading individuals in risky environments to invest in lower return activities, i.e., pushing their Micawber frontier rightward.

The effects of shocks may persist well beyond the shock itself (Schaner et al. 2025; Friedman and Thomas 2009). For example, individuals who suffer a natural disaster or violence often perceive heightened risks of adverse events and behave more cautiously, even if there is no shift in objective risk exposure (Cameron and Shah 2015; Jakiela and Ozier 2019; Nasir et al. 2020) or become significantly more risk-seeking (Rockmore and Barrett 2022).

Beyond impacts on mental health and preferences, poverty and risk exposure may reduce aspirations and hope, leading individuals to forgo high-reward activities or longer-term investments like education (Lybbert and Wydick 2018; Bernard et al., in press). Poverty and some (e.g., health) shocks can also induce stigma. The stress of social vigilance and avoidance of risk to social standing can generate a physiological stress response that impairs cognitive function, decision-making, and emotional regulation (Slavich 2020; Slavich et al. 2023). In turn, this stress and risk avoidance may impair mental health and limit engagement with high social risk but high return activities (e.g., pursuing a non-traditional career). Finally, economic deprivation and shocks may impair cognition, limit attentional resources devoted to productive activities, and reduce labor supply and the ability to engage in the formal economy (Banerjee and Mullainathan 2008; Schilbach et al. 2016; Boswell Dean et al. 2019; Cefala et al., 2025). These changes may sustain poverty both through lower returns in the labor market and impaired economic decision-making.

## 2. Prospective solutions

Solutions to the problem of uninsured risk exposure that begets poverty traps can be grouped into three coarse categories, discussed below.

### 2.1. Risk Reduction

Many low-cost strategies to reduce common risks confronting the poor already exist. For example, vaccines, preventive measures like vitamin A to prevent blindness, and medical treatments prevent the irreversible morbidity or mortality that characterizes Type I poverty traps (Chang et al., 2018). Because many of the world's poor work in agriculture, agricultural innovation – including stress-adapted seeds, improved pest management, climate and pricing information services – is another key area for risk reduction (Hansen et al. 2019; Rosenzweig and Udry 2014; Belay and Ayalew 2020; Hansen et al. 2022). Investments in public goods such as bridges, roads, electric grids, traffic safety, and effective judicial systems and property rights can also substantially reduce private risk exposure (Brooks and Donovan 2020; Habyarimana and Jack 2011; Besley 1995). Finally, diversifying income sources, both through livelihoods and migration, also provides natural insurance against shocks, though potentially at the cost of the returns to specialization.

### 2.2. Risk transfer

Even with efforts to reduce risk exposure, adverse shocks can still happen. Risk transfer – the ability to spread losses among many or over

time – is therefore crucial. Beyond informal safety nets through mutual insurance, informal credit, and altruistic gifts, private insurance and public safety nets hold broad appeal, but can be difficult and expensive to scale (Morduch 1995; Dercon 2005; Barnett et al. 2008; Carter et al. 2017; Gentilini 2024; Karlan et al. 2014). Markets beyond insurance, such as mobile money and mobile banking and access to short term credit can also enhance risk transfer (Suri 2017). Improved roads that enhance labor and commodity market integration also help households smooth consumption in the face of production and asset shocks (Asher and Novosad 2020; Negi and Barrett 2025).

### 2.3. Behavioral coping mechanisms

Beyond reducing or transferring risk, interventions that help individuals better manage the psychological and behavioral impacts of risk limit the potential for feedback loops. For example, psychological interventions such as Problem Management Plus (PM+) and Cognitive Behavioral Therapy help individuals develop coping strategies, preventing a downward spiral whereby stress and depression impair decision-making and reduce labor supply (World Health Organization, 2018; Lund et al. 2024). Behaviorally informed technologies such as simple household tools to plan consumption over time can also help individuals make better choices despite risk exposure and its impacts on preferences and decision-making (Augenblick et al. 2025). Finally, schools and youth programs can serve as vehicles for building resilience and key life skills such as patience and reflective rather than impulsive behavior at scale (Alan and Ertac 2018; Heller et al. 2017).

## 3. Conclusions

Poverty traps may arise due to uninsured exposure to catastrophic risk, not just due to initial, self-reinforcing poverty. Occasionally poor people beat the odds and escape destitution, while some non-poor suffer catastrophic misfortune and never recover. Because risk and poverty are correlated, the central role risk plays in the etiology of poverty traps is often overlooked.

This matters for policy. If no poverty traps exist, such that all poverty is transitory (over sufficiently long horizons), then costly, imperfect policy interventions become harder to justify. Furthermore, if poverty traps arise exclusively due to multiple market failures, then improving communications and transportation infrastructure and financial innovations should steadily reduce the population prevalence of poverty traps exposure. Both of those hypotheses seem difficult to reconcile with the hundreds of millions of persistently poor people in places plagued by a range of conflict, economic, health, and weather shocks.

Risk-based poverty traps, however, seem consistent with the broad empirical pattern of increasingly spatially concentrated persistent poverty in places facing multiple sources of risk. Risk-based poverty traps imply a need to emphasize risk reduction and risk transfer strategies through technologies, policies, markets and institutions, along with efforts to enhance coping behaviors among exposed subpopulations. Indeed, the possibility of risk-based poverty traps has implicitly motivated much of the rapidly increased attention to and investment in building (development) resilience in order to prevent shocks from erasing the gains generated by effective development programming in low-income, risk-prone communities (Barrett and Constas 2014; Béné et al. 2014; Barrett et al. 2021). There remains much to be done to probe the risk-based poverty traps hypothesis more carefully and to solidify the conceptual and empirical bases for resilience and poverty reduction programming. The reality of risk-based poverty traps must inform how we think about development.

## CRediT authorship contribution statement

**Christopher B. Barrett:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Heather Schofield:** Writing – review & editing, Writing – original draft, Formal analysis, Conceptualization.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Acknowledgement

Barrett acknowledges support from National Science Foundation grants DEB-2109293 and BCS-2307944 and many stimulating conversations with Michael Carter on this topic.

## Data availability

No data was used for the research described in the article.

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