



THE LONG-TERM IMPACTS OF SHORT-TERM SHOCKS: POVERTY TRAPS AND ENVIRONMENTAL DISASTERS IN ETHIOPIA AND HONDURAS

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Coping's high cost

A HURRICANE SUDDENLY DEVASTATES A VILLAGE: livestock are killed, houses ruined, and places of employment lost. A drought works a longer devastation: livestock waste away and crops dwindle to where, at best, they provide bare subsistence for a family. In a world of well-developed financial markets, some families might draw on insurance to replace lost assets, while others might take out loans, borrowing against future earnings so they are not compelled to sell assets at emergency prices. In regions with deep labor markets, people can redirect or increase work time to replace lost income. Despite the hardship of coping with the shock, access to various markets allows for strategies that sustain household consumption in the short term and also lead to eventual recovery of both assets and income.

Unfortunately, these strategies for coping and recovery often are not options for rural families in developing countries. Instead, many families are forced to rely on destructive coping strategies that only perpetuate poverty. Often, families “cope” with shocks by depleting valuable assets, which allows a family to maintain a level of consumption in the aftermath of a hurricane or during a drought, but eventually can cause the family to fall into a poverty trap created by low levels of assets. Indeed, fear of being trapped in long-term destitution leads other households to protect assets at all costs, and the cost is very high. To maintain its assets, the family reduces consumption, which can have long-term ill effects on household health and capacity.

Anatomy of a shock

In an effort to better understand the direct impacts of environmental shocks on assets and income, and the long-term opportunity for recovery, BASIS researchers analyzed the asset dynamics of rural households in the wake of the three-year drought in the late 1990s in Ethiopia and the 1998 Hurricane Mitch in Honduras. Whether a shock is sudden or prolonged, most households, both the wealthiest and the poorest, experience a loss of assets and a reduction of disposable household income. Yet, the full economic effects of an environmental shock go well beyond the shock itself.

A poverty trap can be defined as a critical minimum asset threshold, below which families are unable to educate their children, build up productive assets, and improve economically over time. Poverty traps are most likely to be problematic in areas where markets are thin or weak and families are unable to borrow against future earnings to build up their assets. In the face of a poverty trap, short-lived environmental shocks can have permanent long-term consequences. First, if the environmental shock destroys a family's assets, it may push them below the minimum asset threshold and into a poverty trap from which they cannot escape, even over time. Figure 1 (next page) illustrates the type of environmental shock that pushes a poor family's asset stock below the poverty-trap threshold and may leave them in a permanently lower economic position, especially since the asset loss is usually combined with a corresponding loss of income.

A second avenue by which a poverty trap can have dire long-term consequences for a family subject to environmental shocks is illustrated in Figure 2. The shock itself may have little direct impact on the family's assets; however, a shock such as a lingering drought may expose the family to a sequence of poor harvests and real income shortfalls. The family faces a cruel choice: either sell assets in order to sustain consumption, or reduce consumption in order to defend assets. While the latter strategy may permit the family to ultimately rebuild their stock of productive assets, the costs of this coping strategy can be horrific. As shown in an earlier study analyzing coping in Zimbabwe, children of families that choose to reduce consumption suffer permanent, irreversible growth losses that signal weaker educational and economic achievement later in life.

The degree to which poverty traps exist and create long-term consequences from short-term events depends critically on the nature of markets and social structure. Formal and informal financial markets, insurance, and disaster assistance can help eliminate poverty traps and allow families to recover from asset losses. Families in Ethiopia coping with a lingering drought can avoid further depletion of assets and even begin to re-accumulate them. Honduran families, whose assets were wiped out by Mitch, can begin to recover. Labor markets also create opportunities to increase income. Yet, where those market and assistance mechanisms are absent, coping is problematic and poverty traps become a real threat.

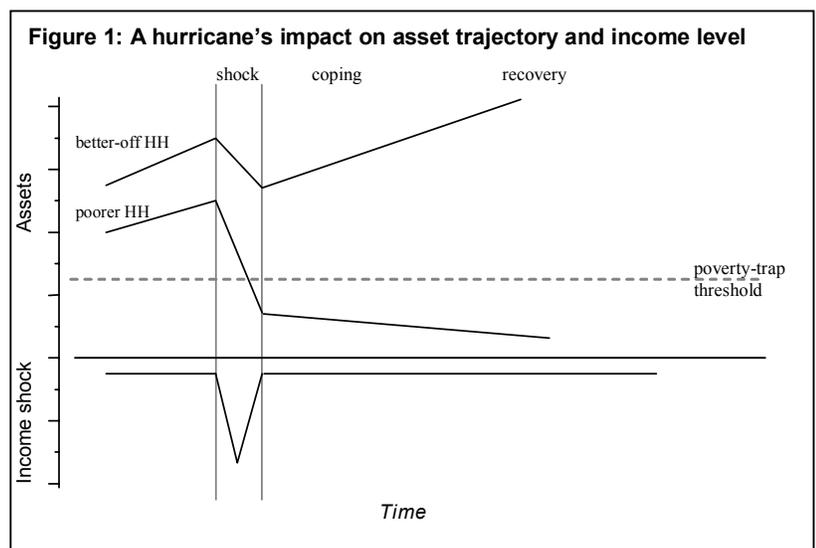
After the period of coping comes the recovery stage, when families hope to rebuild assets lost in the disaster and then often further depleted during the coping phase. It is in this stage that we begin to see the consequences of certain coping strategies and also the family's likelihood of recovering or being trapped in long-term poverty. In both shock scenarios, recovery depends on whether the household's coping strategy allows it either to climb back above the poverty-trap threshold or avoid falling below it in the first place. Households unable to avoid the trap—either from a direct asset shock or from coping strategies during a prolonged shock that further reduce asset holdings—cannot engineer a successful re-accumulation of assets.

Testing for poverty traps

In an effort to determine the significance of poverty traps, and the ability of markets and social structure to

ameliorate them, we examined the loss and recovery patterns of rural Ethiopian and Honduran households that experienced severe environmental shocks. Using an econometric approach that examines overall changes in assets from the pre-shock period to the post-recovery period, coupled with survey data, we explored factors that allow people to cope with and recover from shocks.

In *Ethiopia*, land, labor, and capital markets are relatively weak; therefore, non-market mechanisms are especially important. Food aid makes up a large portion of consumption, and social institutions, such as burial societies and religious associations, present some of the best opportunities for coping and recovering. Data on a sample of rural households in the South Wollo and Oromiya zones tracked assets over a period



of pre-drought (1996-1998), drought (1999-2000), and recovery (2001-2003). Analysis reveals a disturbing pattern of the lowest wealth households trying desperately to hold on to their few assets even as income and consumption dwindled. The analysis also reveals weak resilience among the poorest households: those who exit the shock with few assets experience grave difficulty rebuilding assets.

Following the onset of the drought, livestock assets of the top two wealth quartiles dipped sharply, which suggests consumption-smoothing behavior. In contrast, the two lowest quartiles appeared to hold onto their livestock, showing on average only small decreases. For the lowest wealth quartile, the shock had an insignificant effect on livestock, as these households destabilized consumption in order to defend their

modest holdings. Asset sensitivity, therefore, shows a pronounced wealth-differentiated pattern. (Though the highest wealth households exhibited greater asset sensitivity, this does not imply that the *welfare* of these households was more vulnerable to shocks.)

Community membership in social organizations increases the rate of growth (or limits the rate of loss) of livestock but does so primarily for households in the higher wealth groups. There is only weak evidence that labor market access significantly affects the livestock rate of growth. Availability of food aid does not appear to protect households' future assets, and in fact seems to have the opposite effect.

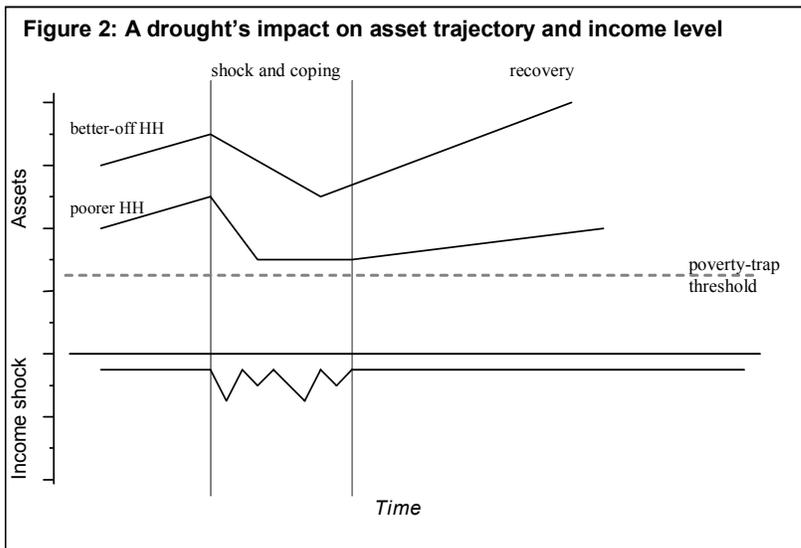
Post-shock growth appears relatively robust even for households without livestock at the end of the drought. A possible explanation is that households that

holds under several scenarios. The results show that the rate of recovery of livestock assets is slower where shocks are higher, and stronger in an environment of better access to community social capital. Also, wealthier households de-accumulate assets faster while experiencing shocks, but this group also is relatively better equipped to rebuild assets later.

In *Honduras*, data on a sample of rural households captured Hurricane Mitch's immediate impact on assets and incomes in 1998, as well their status in 2001, two and half years after Mitch. The data show that the percentage of households suffering a loss of productive assets increases with household wealth, rising from 22% for the lowest wealth quartile to 68% for the highest. However, among households suffering losses, poorer households lost a greater percentage of their productive wealth (31%) than did wealthier households (8%). Not surprisingly, households that suffered asset losses also experienced greater income losses.

Across all pre-Mitch wealth quartiles, households without asset losses show substantially higher growth in recovery than those that suffered losses. The gap is 13.8% in the lowest quartile, where households with losses showed -5% net growth, while households without losses showed 8.8% growth. The gap is 5.1% in the wealthiest quartile (-2.1% vs. 3% growth). These growth differences seem to signal that poor households are more sensitive to shocks, yet among those households that did not suffer any asset losses, poor households tended to grow faster (8.8%) than wealthier households (3.1%).

In order to more fully understand the anatomy of shocks and recovery in Honduras, we used regression analysis to estimate patterns of household sensitivity and resilience from shocks. Using these estimates, we then calculated predicted asset levels for a variety of stylized low- and high-wealth households that experienced different shocks in different market environments. Initial asset levels are taken to be the mean for each quartile. In this way, we contrasted the experience of a household that had no asset shock with the experience of a household that suffered a 31% asset loss (the mean loss level for the lower wealth quartile households that experienced losses). Without a shock, the low-wealth household shows higher growth than the high-wealth household. In the high-shock scenario, the excess sensitivity of poor households to asset shocks completely overturns this modest convergent process. Absent good market access, a low wealth



had completely stocked out were precisely those that enjoyed good social capital. Confident about borrowing animals to rebuild depleted herds, they had no reason to fear a poverty trap. In contrast, households that defended their livestock could be those that would have fallen under the poverty-trap threshold had they depleted their stocks.

The econometric results provide evidence of poverty traps, including the poorer households' relatively low resilience, apparent patterns of asset rather than consumption smoothing, and weaker benefits from social capital. Other factors point to a possible net positive livestock recovery for the poorest households. In order to assemble these countervailing forces into a single indicator of asset recovery, we predicted recovery period assets for poor and wealthier house-



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household that experienced an immediate 31% asset loss is estimated to experience further declines and a net asset growth rate of -48% from before Mitch to the time of the study 30 months later. A wealthier household that experienced an identical 31% loss is estimated to have recovered partially from the loss and exhibit a net growth rate of -14%. Considering that wealthier households on average lost only 7.5% of their assets (not 31%), then the unequalizing effect of the shock is magnified.

Where there is more buoyant labor and capital market access, the unequalizing effect of asset shocks is offset, and the recovery gap between poor and rich households is almost eliminated. These results are especially interesting in the context of a related study that finds that recovery from Mitch was more rapid in communities characterized by high levels of pro-social norms of trust and altruism. Yet, only a subset of households seems to actually benefit, suggesting processes of exclusion that prevent all households from benefiting from socially-mediated access to insurance and capital. In such an environment, access to supporting capital and, especially, labor markets seems particularly important.

Using policy to enable recovery

Disasters and their impacts are development problems and not mere short-term humanitarian problems. The impact of an environmental shock can go well beyond the coping phase. Family wellbeing can suffer for generations due to desperate coping strategies that attempt to maintain household assets. Yet, the very inability to hang onto assets can trap poor households in persistent long-term poverty. Guaranteeing food needs or minimal cash income could allow the poorest households to avoid destructive coping strategies and instead engage in activities that build assets and pull them out of poverty. Building social safety nets could prevent vulnerable households from losing assets. Social networks and institutions play an important role in keeping households from

falling into poverty, and development policy must be aware of how such social networks operate so as to minimize the potential negative impact of programs on existing social institutions.

Yet, programs must also build around the key role played by markets in creating livelihoods that help families avoid the erosion of valuable assets. Policies that improve non-farm employment opportunities, rural market infrastructure, and availability of credit—especially in the coping period—can help limit long-term asset depletion. Market conditions do make a difference in how shocks affect communities and regions. Policies that make markets more accessible to the chronically poor and vulnerable will mitigate the widespread human suffering now associated with natural disasters.



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