



# Behavior Change in the Face of Disaster Risk Finance

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## About the Academic Alliance for Anticipatory Action's Conversation Starter Series

As the Academic Alliance for Anticipatory Action (4As) works to develop an evidence base on anticipatory action, we regularly uncover questions that we need to explore. Through the Conversation Starter series, we share what we are learning about these questions and invite others to join us as we grapple with these questions.

If these questions resonate with you, contact us to start a conversation: [Theodore.ezike@tufts.edu](mailto:Theodore.ezike@tufts.edu).

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## The questions we asked

It is important for countries to understand how Disaster Risk Finance (DRF) can affect risk perception and provoke behavior change. We sought to answer two questions:

- Does the presence of DRF or similar mechanisms cause behavior change in people covered and if so, how?
- What role does risk communication play in DRF and behavior change?

## Summary of findings

Large-scale DRF mechanisms are relatively new tools in the field of humanitarian assistance and anticipatory action that can have significant positive effects on disaster recovery. However, there is a lack of analysis on how DRF can affect behavior or risk perception. Drawing on findings from similar programs, such as community health and microfinance, can provide insights on areas where DRF may have impact. The available research indicates that disasters make people risk averse and that insurance and other DRF mechanisms can enable beneficial outcomes. Trust in public institutions, ideally the ones that manage DRF, alongside accurate and timely information from government or other relevant actors, is needed for acceptable levels of risk to be communicated and for appropriate corresponding actions to be taken.



# How we went about answering the questions

Because there are few studies that explicitly test these claims at the level of sovereign DRF instruments, we reviewed the literature about similar (smaller-scale) insurance instruments to see if and how there is evidence that individual policyholders change their behavior. Specifically, we reviewed literature on the observed behaviors of communities with savings and insurance products. Understanding the reactions by recipients to microscale DRF implementations could inform future directions in DRF, including how it is communicated, the scale of programming, and the development of effective monitoring and evaluation frameworks.

## Background

The increasing frequency of humanitarian disasters has prompted countries to evaluate how they respond to humanitarian crises (Financial Protection Forum 2017). These crises can incur massive economic losses, significantly set back recovery from previous disasters, and reduce the resilience of the countries, regions, and communities that are affected. DRF is a promising approach to proactively reduce the risk involved in humanitarian disasters (OECD 2015). DRF mobilizes financial resources to ensure affected populations are financially protected from the impacts of a disaster. Disaster reserve funds, insurance, catastrophe bonds, and contingent credit arrangements are some common and effective DRF schemes that governments have employed Financial Protection Forum 2020 (See Box 1).

### Box 1. Most common types of DRF mechanisms used by countries

- **Disaster reserve fund:** These are flexible funds allocated from the national or local budget over time. The use of the disaster reserve fund is usually contingent on the event of a natural disaster. The reserve fund can quickly be accessed in the event of a disaster to provide emergency relief and mitigate the financial shock. It can reduce the need for budget reallocation.
- **Disaster insurance:** National and community (re)insurance and risk transfer schemes are cost-effective instruments used to gain access to financial resources. Disaster insurance allows governments to quickly gain funds for relief after a natural disaster once a certain layer of risk is reached. It can help to develop a “risk management” culture among risk owners and stakeholders by attaching a price to the risk.
- **Catastrophe bonds:** A catastrophe bond is an insurance-linked security that allows countries exposed to natural disaster risk to transfer some of that risk to investors in the form of bonds through a Special Purpose Vehicle, which then invests the proceeds. The returns on the investment are paid out periodically to the investors until the event of a natural disaster, when the fund is then liquidated.
- **Contingent credit arrangement:** A contingent credit arrangement is a way for governments to gain access to low-interest loans. Governments plan ahead of time to draw on a line of credit in the case of a disaster. The credit agreement between the lender and the government details how the interest rate would be established, the loan's maturity date, and how the loan may be used.

(OECD 2015)

Governments around the world use combinations of these common mechanisms as well as plans specific to their own country context to help mitigate the impact that crises have on their infrastructure, institutions, and citizens (Clarke et al. 2017). A similarity among these tools is their leveraging of risk to ensure access to funds when a natural disaster occurs. Proponents of these tools argue that having a DRF mechanism in place can enable the policyholder to make better choices in non-disaster times as well, such as governments making development investments because they understand that a trust fund is available in the case of an emergency. It also helps humanitarian agencies quickly respond to disasters without needing to wait for drawn-out appeals and donations to arrive (Hill, Peredo, and Tarazona 2021).

## What we learned

DRF is quite new in the field of disaster management. While researching the questions, we found the available information and literature on how DRF affects behavior to be sparse. With the information available we could theorize that people adjust their pre-disaster and during-disaster behavior when there is a trusted guarantee of timely support (Hill, Peredo, and Tarazona 2021).

Where there is no DRF present, households engage in routines that have long-term economic and health consequences, such as cutting back on eating or selling assets. Further, households may lack the confidence to make vital investments, such as in their children's education or agricultural investments at the start of the season, if they don't feel certain that help will arrive when it is required (Hill, Peredo, and Tarazona 2021). However, when they know they will have funding through one or more of a country's DRF schemes in the case of a disaster, people may reallocate savings. Less money may go to personal disaster recovery so households can put money towards other important needs (Peredo, and Tarazona 2021).

## Example studies that review how common micro-DRFs affect individual and community behavior

### Informal community insurance

To mitigate against risk vulnerability, many communities will create informal insurance in the absence of formal institutions creating such mechanisms (Frisancho and Valvida 2021). Savings groups, also known as village savings and loan associations (VSLAs), are a common way that poor communities self-insure, although many different types of groups exist across countries (Frisancho and Valvida 2021). Cameron and Shah (2013) highlight, for example, the use of "Arisan" in Indonesia, in which a group of community members get together once a month for a private lottery. Each member of the group puts a set amount of money into a pot, and a winner is selected at random and given the money. This continues monthly until everyone's name is drawn once. Arisan has the typical characteristics of many savings groups around the world and can be used to reduce the impact of shocks. A sort of ex ante insurance is offered by Arisan, and participation is possible even in the absence of a catastrophe (Cameron and Shah 2013). VSLAs and other organically formed savings groups indicate that people in those communities where they exist feel financially insecure and vulnerable to shocks that include climate and humanitarian disasters.

### Formal community insurance

Evidence from Robyn et al. (2004), while not focused on natural disasters and DRF, examines the effect of community-level health insurance on behavior. In 2004, the Nouna district of Burkina Faso implemented a community-based health insurance (CBI) program with the primary goal of increasing access to facility-based health services. Ordinarily, individuals would self-treat. This paper examined whether the introduction of CBI increased the prevalence of healthcare-seeking behavior. Though the results were not statistically significant, there was some evidence of a change in behavior by those covered by the CBI program. This paper illustrates the need for further studies in this area.

### Weather-based crop insurance

Weather-based crop insurance also provides insight into the behavior change observed in individuals that are covered. A Consultative Group on International Agricultural Research (CGIAR) study (Greatrex et al. 2015) analyzing case studies in index insurance held by smallholder farmers found that in many of the cases, insured farmers were better off than those who didn't receive insurance. In the case of Agriculture and Climate Risk Enterprise (ACRE) index insurance for East Africa, farmers covered by the scheme saw a 16 percent increase in yearly earnings (Greatrex et al. 2015). This increase was attributed to a 19 percent increase in investments made by covered farmers. The research suggests that, due to the guaranteed support from an DRF program like ACRE, farmers were able to engage in business risks that they would otherwise have not been able to take. Many farmers were able to significantly scale up their production. This ability to scale up production had the cascading effect of making premiums easier to pay, thereby illustrating the value of such assistance (Greatrex et al. 2015).

## Studies of risk communication and public institutions

Risk communication is part of a comprehensive disaster management approach. National governments and other actors who guide policy development have a role to play in whether DRF schemes influence behavior positively or negatively. Risk communication by the government is necessary to produce the behavioral outcomes needed to recover effectively from natural disasters such as landslides, floods, droughts, and severe storms (Financial Protection Forum 2020).

Communication is critical for people to know that DRFs exist. Even the knowledge of the existence of DRF scheme could impact the behavior of individuals. For example, research conducted by Roder et al. (2019) in the Veneto region of Italy showed that once individuals understood their specific risk (flooding), they were more likely to take up flood insurance. The paper found that social networks had a large influence on people's behavior (Roder et al. 2019). The study showed that residents would be willing to bear the cost of the insurance if it were compulsory. Therefore, we see that knowledge of the benefits of DRF, or any disaster management plan, can spur positive action.

Another study examined the relationship between trust in public institutions and uptake in disaster risk mitigation activities against landslides in the mountainous regions of Chongqing, China. For farmers, public institutions are a vital source of disaster information. The establishment of such institutions broadens farmers' social networks and social capital. Individuals frequently lack the ability to make thorough risk evaluations in the case of geological disasters such as landslides and mudslides. Public institutions, on the other hand, have disaster specialists, prediction tools, and a plethora of scientific information sources (Peng et al. 2019). This study showed that an individual's level of trust in these institutions can shape their perceptions, illustrating the vital role of both accurate and timely

information dissemination by institutions and the cultivation of public trust in sources of information when considering factors for the success of DRF and other disaster risk reduction interventions.

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#### About the Academic Alliance for Anticipatory Action (4As)

The 4As is a consortium of researchers from seven universities working to increase the knowledge base on anticipatory action. 4As is led by Tufts University in the U.S., partnering with Bangladesh University of Engineering and Technology, Eduardo Mondlane University in Mozambique, Makerere University in Uganda, University of Namibia, National University of Lesotho, and University of the Philippines.



*This publication was made possible through support provided by the Office of Acquisition and Assistance, Bureau for Management, United States Agency for International Development (USAID), under the terms of Cooperative Agreement No. 720BHA21CA00044. The opinions expressed herein are those of the authors and do not necessarily reflect the views of USAID.*