Does Resilience Capacity Reduce the Negative Impact of Shocks on Household Food Security? Evidence from the 2014 Floods in Northern Bangladesh

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Abstract. — Using data collected before and after the catastrophic flooding that took place in northern Bangladesh in 2014, this paper contributes to the growing evidence on the factors enhancing households’ resilience to shocks, or their “resilience capacities”. The analysis takes into account all three dimensions of resilience capacity—absorptive, adaptive, and transformative—as well as a broad range of specific capacities supporting them. In addition to disaster preparedness and mitigation, it finds suggestive evidence that the following capacities reduced the negative impact of the flooding on household food security: social capital, human capital, exposure to information, asset holdings, livelihood diversity, safety nets, access to markets and services, women’s empowerment, governance, and psychosocial capabilities such as aspirations and confidence to adapt. The paper highlights the importance of taking a comprehensive approach to understanding the determinants of resilience in future research, one that accounts for the full range of potential capacities. It also points to the value of taking a cross-sectoral, multi-intervention approach to on-the-ground resilience programming in Bangladesh and other developing-country areas that are increasingly vulnerable to climate shocks.

Key words — resilience capacity, climate shocks, food security, Bangladesh

1. INTRODUCTION

Bangladesh is one of the most shock-prone countries in the world. It is ranked sixth on the 2016 Global Climate Risk Index in terms of exposure to extreme weather events, enduring a total of 222 such events during 1995–2014, third only to the Philippines and Vietnam. While there is some debate as to whether climate change is happening within its own borders, there is no doubt that the country is highly vulnerable to its impacts (IPCC, 2014; Mondal, 2014; Pender, 2008; Todd, 2014).

Topography, population density, and poverty contribute, but geographic location is a key source of Bangladesh’s vulnerability to the potential increased shock exposure brought by climate change. It is sandwiched between the Himalayas and the Indian Ocean—the former exposing it to glacial snow melt and the latter to the heavy rainfalls of the annual monsoons, both of which are exacerbated by global warming. The country is part of the world’s most dynamic hydrological system and contains one of the biggest active deltas. Three main rivers drain into the Bay of Bengal through Bangladesh: the Ganges, the Brahmaputra, and the Meghna. All have their peak flows during the highest rainfall months of the monsoon season (July, August and September). In normal years these rivers overflow their banks and deposit fertile silt on the floodplains, typically covering 20–25% of the country’s land area. However, in some years the peak water levels of all three rivers occur at the same time, and severe flooding covering large areas of the country can ensue. The most recent catastrophic flooding took place in 1998 when the “flood of the century” covered near 70% of the country in flood waters. Even in a normal year, extreme flooding can occur due to flash floods, coastal floods accompanying storm surges generated by cyclones, and local flooding due to high rainfall in the monsoon season (Bangladesh Water Development Board, 2014; Del Ninno, Dorosh, & Roy, 2001).

While 2014 did not mark a year of widespread flooding in Bangladesh—flood waters covered only 25% of the country—major catastrophic flooding did take place in its northern regions due to a combination of factors. These include heavier-than-normal monsoon rains, flash flooding, and heavy rainfall upstream in India, leading the Brahmaputra and Meghna to flow above danger levels. The floods left nearly half a million people homeless, devastated the auman rice crop, and destroyed public infrastructure, such as roads, schools and health facilities. They also disrupted employment, transportation and access to services, and led to a loss of safe

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This paper investigates the impact of the abnormally high flooding in northern Bangladesh during the 2014 monsoons on households’ food security. Its main objective is to determine whether the degree of households’ resilience to the shock—their ability to maintain their food security in its wake—was boosted by their resilience capacities prior to its onset, and which capacities are likely to matter the most in future shocks of this type.

Formally, resilience is defined as “the capacity that ensures adverse stressors and shocks do not have long-lasting adverse development consequences” (FSIN, 2014). A household that is resilient is able to maintain its well-being even in the face of shocks and stressors. While resilience itself is an ability to manage or recover, resilience capacities are a set of conditions that are thought to enable households to achieve resilience in the face of shocks. Three types of resilience capacity are recognized: (1) absorptive capacity—the ability to minimize exposure to shocks and recover quickly when exposed; (2) adaptive capacity—the ability to make informed choices about alternative livelihood strategies based on changing conditions; and (3) transformative capacity—system-level enabling conditions for lasting resilience (Béné, Headey, Haddad, & von Grebmer, 2016; Frankenberger, Kimberly Swallow, Tom Spangler, & Sara Alexander., 2013).

In recent years the development community has come to realize that building these capacities to withstand shocks, which are becoming more frequent across the developing world, is key to assisting households pull out of poverty. Awareness of the close interactions between short-term shocks and longer term development is rising. Further, interventions to enhance households’ incomes and well-being are increasingly undermined by shocks. Enhancing resilience through boosting households’ resilience capacities is thought to not only increase the sustainability of impact of such interventions, but also help ensure that the costs incurred by implementing agencies get their expected return in terms of development outcomes (Frankenberger, Mark A. Constan, & Laurie Starr., 2012; Von Grebmer & et al., 2013).

But stand efforts to bolster resilience through enhancing households’ resilience capacity help mitigate the negative impacts of shocks on well-being outcomes such as food security? As governments, Non-Governmental Organizations, and donors look ahead to incorporating resilience into their strategies, solid evidence on this question, including which types of resilience capacity are important in specific settings, is needed. Yet, beyond economic factors such as assets, savings, and formal safety nets (Frankenberger et al., 2013; World Bank., 2016), which have been studied in piecemeal fashion, little is known about how resilience capacity intervenes in times of crisis and what aspects of it are most important.

In this paper we add to the evidence base on the role of resilience capacity using data collected from households in the target area of the “Strengthening Household Ability to Respond to Development Opportunities II” (SHOUHARDO II) program of CARE Bangladesh. The program was implemented in the most shock-prone areas of Bangladesh—the Chars, the Haors, and the Coastal flood plains—from 2010 through 2015. Fifty percent of its 1,573 participating villages were exposed to the 2014 flooding. Data sets representative of the households residing in program villages collected shortly after the flooding ended (in December 2014) and two years earlier (December 2012) are a rich source of information on households’ food security, the extent to which they were exposed to the flooding, and their resilience capacities.

The paper’s main contribution is to provide a quantitative analysis of how resilience capacity bolstered households’ well-being in the face of an actual shock, analysis that is based on a comprehensive conceptual understanding of the determinants of resilience. It is thus able to inform intervention planning for future projects from a holistic standpoint, allowing planners to take into account the full range of potential capacities. Note that two recent studies, one conducted in the pastoral lowlands of Ethiopia and the other in Sahelian areas of Burkina Faso and Niger, have provided some first evidence from semi-arid and conflict-prone areas using this approach (Frankenberger and Smith, 2015; Smith et al., 2016).

The next section gives some background information on the SHOUHARDO II program and the study area. In Section 3 the data and empirical methods employed in the paper are laid out. Section 4 describes the shocks households were exposed to over 2014, including flooding, and the state of their food security after the flood waters receded. Next, Section 5 presents the indicators used to measure their resilience capacities. Section 6 reports on the main empirical analysis investigating the role of resilience capacities in mitigating the negative impact of the flooding on food security. Finally, Section 7 ends with some concluding remarks regarding the implications of the findings for boosting households’ resilience to future climate shocks in Bangladesh and elsewhere.

2. BACKGROUND: SHOUHARDO II AND ITS PROGRAM AREA

A Food for Peace Title II program, CARE Bangladesh’s SHOUHARDO II program was funded by the United States Agency for International Development (USAID) and the Government of Bangladesh at nearly US$130 million over five years, making it one of the largest non-emergency food security programs in the world. Its overall objective was to “transform the lives of women and men in 370,000 poor and extreme poor households in eleven of the poorest and most marginalized districts in Bangladesh”. Typical of a Food for Peace program, SHOUHARDO II’s main goals were to (1) enhance household food security; (2) improve the health and nutritional status of children under two. However, following on its predecessor, SHOUHARDO I (Smith et al., 2013), it also addressed some systemic causes of food insecurity and malnutrition in a cross-sectoral manner, having additional goals to (3) empower women; (4) promote improved governance among local elected bodies and government service providers; and (5) assist households to prepare for, mitigate, and respond to disasters and adapt to climate change.

As can be seen, the program had a strong focus on both food security and disaster risk mitigation and reduction, both of which were key in forming the criteria for locating an appropriate target population. National data bases were used to identify the areas in the country most vulnerable to food insecurity and child malnutrition and most susceptible to natural disasters.

Figure 1 locates the resulting four SHOUHARDO II program areas—Coast, Haor, Mid Char and North Char—within Bangladesh. The northeatenal Chars are riverine islands surrounded by water most of the year. They are prone to dramatic erosion and floods, which result in crop loss, isolation, and poor access to markets and services. Also highly flood-prone and with similar food insecurity issues to the Chars is the northeastern Haor area. Haor is characterized by vast expanses of depressed wetlands with scattered, elevated mounds that become largely inhabitable islands during the
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