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Aspirations and the Role of Social Protection

Evidence from a Natural Disaster in Rural Pakistan

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Contents

Tables

Figures

ABSTRACT

Citizens' aspirations for the future are politically important; they are linked to welfare and whether citizens engage in forward-looking political and economic behavior. How do natural disasters affect aspirations, and can governments' social protection policies successfully mitigate any damaging effects? If natural disasters threaten aspirations, there is strong policy interest in understanding these threats and what government can do to protect aspirations. This article uses Pakistan's 2010 floods to identify the effects of a natural disaster on citizens' aspirations. Aspirations were significantly reduced—especially among the poorest and most vulnerable. However, by exploiting exogenous variation in access to targeted government social protection, the authors show that social protection following natural disasters can significantly reduce their negative aspirational effects. This offers a new understanding of government social protection. It not only raises social welfare in the short term by restoring livelihoods and replacing damaged assets; it also has an enduring effect by raising citizens' aspirations for the future. The authors show not only that the aspirations of citizens matter for citizens' behaviors, but also that government policies can effectively protect and increase those aspirations. This implies that the value and efficacy of government disaster relief programs are underestimated when aspirations are not taken into account.

Keywords: aspirations, disaster relief, natural disasters, Pakistan, social protection

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1. INTRODUCTION

Understanding and fostering the aspirations of citizens is important for nation-states committed to improving citizens' well-being. Low aspirations have been suggested as a possible explanation for the difficulty of escaping poverty (Appadurai 2004; Duflo 2013; Macours and Vakis 2014; Ray 2006). Duflo (2013), for example, notes that low aspirations among the poor correspond to low economic, social, and civic investments to bring about a more prosperous future. If the poor do not see a tomorrow in which their well-being can feasibly be much higher than what it is today, they do not take actions to improve it, and are accordingly stuck in a poverty trap.

Aspirations may also be critical for explaining the function of the citizenry itself. A variety of individual-level characteristics are known to predict political behavior and attitudes of the mass public, including crime victimization (Bateson 2012), economic self-interest (Campbell et al. 1960), education levels (for example, Almond and Verba 1989; Converse 1964), gender (for example, Delli Carpini and Keeter 2005; Wirls 1986), and income (for example, Gelman et al. 2009). Aspirations are theorized to have a similarly important impact on opinion and behavior (for example, Appadurai 2004; Ray 2006). The capacity to aspire—to "visualize the future and engage in forward-looking behavior" (Dalton, Ghosal, and Mani 2015, 2)—is thought by cognitive psychologists to play an important role in everyday decisionmaking. This suggests that higher aspirations may encourage future-oriented economic and political behavior (such as voter turnout, membership in civic organizations, and political knowledge). However, we know of no existing empirical evidence showing such a relationship between aspirations and political behavior.

The study of aspirations has been gaining traction in economics and psychology. It is a relatively nascent subject of study in political science. The increasing attention of political scientists to aspirations is merited given both the role that aspirations may play in affecting individuals' political opinions and behavior, and also the role that government may play in raising or protecting against the deterioration of the aspiration levels of citizens. The existence of nation-states is commonly justified by their ability to protect and promote the well-being of their citizens—which includes their aspirations. Governments often pass laws to help regulate the interactions of their citizens and hopefully increase their social welfare. Laws devoted to social protection—or the promotion of citizens' material well-being and livelihoods—have a relatively short history when judged against the backdrop of human history, but they are now frequently thought to be an essential component of good governance. In fact, we often judge countries by the extent to which they can provide for the well-being of their citizens.[1] This is especially the case in developing countries, where low incomes and income inequality mean that a substantial share of the population lives below the poverty line and depends vitally on government support. If aspirations are important for citizen welfare, then exploring how government policy can influence aspirations is essential for understanding its obligations to foster and protect that welfare.

In this paper, we argue that aspirations are indeed important for assessing the well-being of individuals and the health of democracy, given that aspirations are linked with greater civic engagement and productive, future-oriented behaviors. We then show how natural disasters adversely affect citizens' aspirations for the future—especially among the poor—and that governments' social protection policies can successfully mitigate these damaging effects.

We focus on natural disasters in the form of weather shocks because they are exogenous to factors determining citizens' aspirations and they form an increasingly relevant and important subject of study in their own right. Widespread damage in the developing world due to weather-based natural disasters has received significant attention in policy circles because (1) governments and international organizations face pressure to provide costly emergency response and social protection, and (2) climate change promises to increase the likelihood of such extreme weather events worldwide. This makes understanding

[1] The last two decades have witnessed an increase in the number of social welfare indicators and a rapid growth of initiatives around social welfare from important institutions like the European Union, Organisation for Economic Co-operation and Development, the United Nations Development Programme, and the World Bank (Fleurbaey 2009).

the aspirational impacts of weather shocks—especially in regions with institutional challenges—critical (Somanathan and Somanathan 2009).

Understanding the relationship between the aspirations of citizens and government policy is especially critical in developing countries. In such settings, citizens have fewer resources (such as assets, savings, and formal insurance) to offset the negative impacts of an economic, social, and psychological shock like a natural disaster. As a result, if aspiration levels can fluctuate drastically in response to weather shocks, there is a relatively more important role for government in potentially alleviating those swings.

Our study focuses on Pakistan, the world's sixth-largest country, with a population of 185 million (United Nations 2014). Pakistan resembles many other developing country contexts given its dependence on agriculture and resulting vulnerability to weather shocks, citizens' varied and usually low access to methods of coping with those shocks, and difficulties faced in providing timely social protection to those affected by natural disasters (World Bank 2013). Therefore, it is an interesting laboratory in which to study the relationship between natural disasters and aspirations, as well as the potential impact of government social protection.

The first part of our analysis examines whether there is an important relationship between aspirations and forward-looking political and economic behaviors. We demonstrate that higher aspirations are associated with an array of future-oriented political and economic behaviors and outcomes, from turning out to vote and increasing political knowledge to making long-term economic investments. We examine political and economic behaviors that are consistent with a willingness to incur costs with respect to time and/or resources to improve future outcomes, as low aspirations have been argued to cause individuals to be trapped in poverty as they forgo even small costs that can potentially result in large benefits (Ray 2006). This part of our analysis, while controlling for a vector of individual-, household-, and regional-level controls, cannot be interpreted as causal. However, it buttresses extant theoretical and empirical findings that aspirations are important for forward-looking behaviors, and examines political behaviors that have not been explored by prior researchers on aspirations.

Next, our study makes two causal claims. First, we leverage Pakistan's 2010 floods to identify the effects of negative weather shocks on individuals' aspirations. We examine their medium-term impact, a year and a half later, in order to ensure that we are measuring enduring impacts rather than brief and temporary ones.[2] We find that rainfall shocks dramatically affect individual-level aspirations for the future. Individuals experiencing 2010 monsoon-season rainfall that was one standard deviation higher than average had aspiration levels 1.5 years later that were 0.15 standard deviations lower than those of similarly situated individuals experiencing just average rainfall. Moreover, these negative impacts were not evenly felt, and fell almost entirely on the poor (specifically, those in the bottom three quintiles of per capita expenditures). Similarly, the aspirations of individuals most exposed to risk (for example, those heavily dependent on agriculture, and those without relatives in other districts and provinces) were the most negatively affected.

Second, we show that government social protection policies may successfully blunt the negative effects of natural disasters on aspirations. While some may theorize that social welfare programs lower aspirations by "rewarding" idleness, we show that social protection provided after a disaster is associated with higher aspirations. We do so by examining the government of Pakistan's 2010 launch of the Citizens Damage Compensation, or Watan Card program. During September 2010 – June 2011, the program provided flood relief to 1.62 million families among the estimated 20 million affected by the 2010 floods; each family received a one time payment of about USD 213 (World Bank 2013). The Watan Card program was one of the largest post-disaster social safety nets ever implemented (World Bank 2013). The official criterion for a household to receive relief was living in a "heavily affected" village, defined as one with at least 50 percent of houses or crops having been flood-affected. We exploit information stemming from this discontinuity to causally identify the extent to which social protection can mitigate the negative effects of natural disasters on aspirations.

[2]Additionally, we wanted our survey data to be collected after a government social protection program, the Watan Card program, was implemented and payments received.

We find that flood-affected individuals living in villages that received disaster relief through the Watan Card program experienced no reduction in their aspirations, while aspirations of those in similarly affected villages without the program were severely lowered.[3] These results suggest an important and thus far largely ignored role for government social protection: not only to protect the welfare of citizens today but also to guard against declines in aspirations for the future which could potentially limit forward-looking behavior today.

In making these claims, we make three important contributions. First, we argue that understanding the drivers and impacts of aspirations is critically important to an understanding of citizen well-being and political and economic behavior. Second, we contribute original household survey data to advance the study of aspirations in political science. We surveyed 2,090 households to empirically advance knowledge of aspirations, social protection, and the relationship between them. This dataset—collected following a natural disaster and a state response—uniquely allows us to link aspirations with forward-looking political behaviors, causally examine the impact of natural disasters on aspirations, and examine how government social protection responses can blunt these causal impacts. Finally, we contribute to extant political science research on the politics of natural disasters and government response. Although exogenous to politics, natural disasters are "deeply and inherently political occasions" (Drury and Olson 1998, 153). Citizens may blame them on "nature, fate or God" (Jennings 1999, 5) but often hold government responsible for reducing the effects of natural disasters (for example, Arceneaux and Stein 2006; Carlin, Love, and Zechmeister 2014a; Cole, Healy, and Werker 2012; Drury and Olson 1998; Jennings 1999). Our finding that disaster relief programs can lessen the negative effects of natural disasters on aspirations establishes another dimension on which politics interacts with the consequences of natural disasters. Our research shows that the value and efficacy of disaster relief programs are underestimated when aspirations are not taken into account.

The rest of the paper is organized as follows. We first provide theoretical background information on extant literature on aspirations and the impacts of natural disasters. We then justify our focus on rural Pakistan and describe our empirical strategy and data. The next section empirically motivates the study of aspirations by presenting evidence of the critical role aspirations play in the forward-looking political and economic behaviors of citizens before demonstrating that Pakistan's catastrophic 2010 monsoon rainfall shocks significantly lowered aspiration levels. The following sections explore how social protection policies adopted by the Government of Pakistan impacted the aspirations of individual citizens, and provide a discussion of the implications of our results for understanding the role of government social protection in the wake of a natural disaster.

[3] Fair et al. (2015) find that communities most affected by the 2010 floods had higher voter turnout and levels of political engagement 18 months later. Our finding that a social protection flood-relief program attenuated the negative effect of the floods on aspiration levels is consistent with their finding given our results that (1) aspiration levels are correlated with forward-looking political behavior like voter turnout, civic membership, and greater political knowledge; and (2) the most flood-affected villages received more relief, and hence, more protection against aspiration hits, than did less-affected villages.

2. ASPIRATIONS AND POLITICS

Aspirations can be understood as the degree or quality of performance which an individual desires to attain or feels he/she can attain (Locke and Latham 2002). The concept of aspiration is well-grounded in psychology and sociology (for example, Irwin 1944; Lewin et al. 1944). In other words, aspirations are goals that individuals feel they can realistically achieve. Aspirations may relate to income, wealth, educational attainment, social status, security, or any other area an individual considers important for their welfare. There is not one single determinant of aspirations; an individual's aspiration level is determined by various external and internal factors.[4] These include a person's social circle, life experiences, personality, awareness, perception, reasoning, and judgment, all of which affect how they approach and perceive their future (Ray 2006).

Aspiration levels are a core concept for theories of bounded rationality (Simon 1955; Bendor 2010); in the face of limited cognitive resources and incomplete information, individuals may employ heuristics to make real-world decisions. Satisficing behavior, in which the individual accepts the first encountered alternative that meets a sufficiently high aspiration level, may then prevail. Accordingly, there are implications if one's aspirations are too low. Since aspiration levels are "targets," *where* this target is set plays a key role in individual decisionmaking (Mao 1970). What one aspires to can potentially help determine whether individuals make investments to better themselves economically, politically, and socially (Maertens 2012; Mo 2012). It is highly improbable that one moves out of poverty, whether it is through attaining more education, effecting political change in one's community, or making forward-oriented economic investments, without aspiring to do so. Individuals with low aspirations may be afflicted by a type of pathological conservatism, whereby they forgo even small and feasible costs with potentially large benefits for fear of losing the little they already possess (Ray 2006).

We know of no study examining the impacts of aspirations on political engagement, the aspirational impacts of natural disasters, nor the effectiveness of government relief and social protection efforts in mitigating such impacts. However, a growing and multidisciplinary literature has drawn attention to aspirations. Extant research on aspirations ranges from the study of the relationship between aspirations and economic activity and education (Bernard et al. 2014; Coleman and DeLeire 2003; Macours and Vakis 2014) to assessing differences in aspiration levels between different subgroups, like men and women (Beaman et al. 2012).

Weather shocks are a natural way to learn about the impacts of income shocks on the aspirations of individual citizens. A large body of extant research on income shocks leverages weather shocks, for two reasons. First, weather shocks are, at least when measured in terms of deviations from the norm, truly exogenous events (Dell, Jones, and Olken 2014). Second, agricultural yields and demand for agricultural labor are extremely sensitive to weather conditions; accordingly, weather shocks have a notable economic impact on rural citizens and the poor (Jensen 2000).

We posit that natural disasters such as Pakistan's catastrophic 2010 floods can dramatically impact aspirations. Natural disasters could result in people making fewer subsequent investments due to actual losses (for example, they cannot afford more years of education), which causes them to aspire for less. Or natural disasters could result in individuals thinking that they have very little control over their lives, and hence, feel that they should not have high aspirations. This effect could help explain short-term and long-term reductions in investments in education, health, governance, and other areas following shocks. Additionally, such shocks may lead to changes in individuals' everyday realities, such as the levels of violence and instability, health itself, migration decisions, or general expectations about life, which could themselves affect aspirations.[5] However, little is directly known about how such shocks affect citizens' aspirations, and what nation-states can do to alleviate any impacts, providing motivation for the present paper.

[4] See, for example, Karandikar et al. (1998), Ray (1998), Bendor, Mookherjee, and Ray (2001a, 2001b), and Borgers and Sarin (2000).

[5] Individuals living in regions that have experienced adverse weather shocks have lower investments in education and health (Jensen 2000; Maccini and Yang 2009). The income contractions stemming from adverse weather shocks have even been linked

Government should also care about citizens' aspirations since material and economic well-being does not fully capture individuals' self-reported welfare and happiness. For example, scholars working in the field of hedonic psychology have found that rising economic well-being does not necessarily translate to greater perceived well-being or happiness (Stutzer 2004). A prime example is the fact that while per capita gross national product rose dramatically in France, Japan, and the United States over the last five decades, "there was no increase in mean reports of [subjective well-being]" (Diener et al. 1999, 288). Endogenously rising aspirations can help explain this dynamic of doing well but feeling no better. Evaluating public policy from an aspiration-based lens rather than a utilitarian lens—and thus examining citizens' subjective well-being and aspiration levels rather than simply maximizing citizen utility using cost-benefit analysis (Bendor 2010)—helps elucidate why happiness is not increasing in income. A perceived discrepancy between an individual's standing in society and that individual's aspirations—relative deprivation—can result in anger, discontent, and ultimately, political protest (Gurr 1970).

It is worth noting that raising aspirations is not necessarily an unalloyed good. Extant hedonic psychology and relative deprivation research speak to problems when aspirations are too high, and extant aspiration research on the poverty trap speaks to concerns when aspirations are too low. Given these literatures, this paper maintains the following hypothesis: in the wake of a natural disaster, especially in a poor-country context, there is a nontrivial portion of the population for whom raising their aspirations (for example, through some successful social protection policy) would raise their welfare. Further, these benefits more than offset any negative impacts of raising aspirations through social protection, such as conceivably raising the aspirations of some by too much.[6]

with migration (Mueller, Gray, and Kosec 2014), democratic change (Bruckner and Ciccone 2011; Burke and Leigh 2010), politician effort and behavior (Afzal 2008), and increased political violence (Ciccone 2011; Miguel, Satyanath, and Sergenti 2004; Miguel and Satyanath 2011).

[6]We state this caveat in response to theories forwarded by scholars studying relative deprivation and the psychology of happiness, suggesting that aspirations could theoretically be too high. We assume that this is not the case for some non-trivial segment of the population. In a poor country context, this is likely a safe assumption. Extant work on aspiration levels being too high has largely focused on developed-country rather than poor-country contexts.

3. RESEARCH DESIGN: LEVERAGING THE CASE OF PAKISTAN

While aspirations are important in every political context, rural Pakistan provides a particularly appropriate environment to study aspirations and the role of government social protection in supporting them. Pakistan is at a critical juncture given its deteriorating security situation, and it is widely feared that its youth bulge—in the absence of jobs and aspirations for the future—will only further fuel the extremism currently destabilizing the country. Among the world's 10 largest countries, Pakistan has the largest share of its population in the 15–25 age group (21.5 percent), a critical age group given they will be the primary economic and political actors affecting the future of the country (U.S. Census Bureau 2013). Understanding what leads individuals to aspire or fail to aspire could provide lessons for many countries experiencing similar population growth. Climate change threatens only to exacerbate the situation. Pakistan's 2010 monsoon rainfall affected almost one-fifth of the country's land mass, and was described as the highest rainfall experienced in more than 80 years (FAO 2011; BBC 2010); the floods affected 20 million people, destroying an estimated crop value of US $ 1 billion (IFRC 2011). Such extreme weather events are becoming increasingly common in Pakistan and elsewhere, putting added strain on governments to ensure material and aspirational resilience (Somanathan and Somanathan 2009).

The 2010 floods in Pakistan provide a unique opportunity to observe the impacts of a natural disaster on aspiration levels and the role social protection can play in attenuating these negative impacts. First, given prevailing long-term rainfall patterns captured by 30 years of satellite imagery of Pakistan, we are able to isolate that part of extreme 2010 rainfall that was unanticipated and therefore exogenous to other factors shaping aspirations. In short, we can account for long-term rainfall patterns and variability and measure 2010 shocks in terms of deviations from the norm. Second, the floods prompted the Government of Pakistan to deploy one of the largest post-disaster social safety net programs ever implemented—the Citizen's Damage Compensation, or Watan Card program (World Bank 2013). The stated goal of the program was to compensate for loss of livelihoods due to the 2010 floods, and to help recapitalize damaged or lost assets. Given the program's sheer magnitude and cost, understanding its impacts is important in its own right. From an aspirations lens, it also offers a unique opportunity to see whether a large government response to a natural disaster can offset any of its negative aspirational impacts.

The Watan Card program was only received by select households due in part to federal rules which generate exogenous variation in access to relief funds. By carefully exploiting this variation, we are able to make causal statements about the program's impact. The official criterion for a household to receive the Watan Card program was living in a "heavily affected" village, defined as one with at least 50 percent of houses or crops being flood-affected. Village damage was assessed by the federal government in concert with a number of organizations and provincial and local government departments, leading to a list of villages to be targeted with the program.[7] Program beneficiaries received a large, 20,000 Rs. (about USD 213) cash payment in late 2010 (Phase I of the program).[8] Payments were disbursed using a prepaid debit

[7] The Space and Upper Atmosphere Research Commission provided satellite imagery and remote sensing data on the actual spread of water as the floods unfolded. The Federal Floods Commission provided real time information on the size of water flows and discharge at various upstream and downstream points on Pakistan's rivers. Daily Assessment Reports were filed by District Coordinating Officers—the principal administrative officials in charge of district governments. Finally, Damage Needs Assessments (DNAs) were undertaken by the World Bank and the Asian Development Bank, and the Food and Agriculture Organization undertook an estimation of costs to the agricultural sector. All of this information contributed to a list of officially affected villages, resulting in block allocations of federal funds to each district.

[8] The program ultimately led to three staggered cash payments of USD 213 each, distributed between September 2010 and June 2013. Selection criteria changed slightly in Phase II of the program (June 2011–June 2013)—in which the latter two payments were provided—and as such, not all households received all three payments. While Phase I was primarily funded by the Government of Pakistan, international donors became more involved in Phase II, providing USD 480 million out of the total USD 580 million spent in Phase II. Data collection on aspirations took place after Phase I was completed and Phase II was initiated. Given that Phase II was more sophisticated, targeting affected individuals rather than affected villages, to the extent that there are some individuals who received Phase II aid that did not receive Phase I aid when data was collected, our estimates of the impact of Phase I of the Wantan Card program on aspirations is a conservative one.

card called a "Watan Card." In principal, all households in a village with at least 50 percent of the population being flood-affected should have received relief while nobody should have received relief in villages with less than 50 percent of the population affected. In practice, implementation was far from perfect due to a combination of factors: the inherent difficulties of implementing a massive relief effort quickly (timeliness came at the price of imperfect targeting of the flood-affected); capacity limitations; political temptations to redirect some funds to households that were heavily flood-affected but technically not eligible for aid given they reside in villages with less than 50 percent affectedness; and insufficient communication between policy makers and implementers (Hunt et al. 2011; World Bank 2013). While the federal government oversaw assessment of damages and drew up a budget based on which villages were 50 percent or more affected, district government officials were heavily involved in ultimately disbursing the funds, and could have redirected funds to some heavily flood-affected households in a village with less than 50 percent total flood affectedness (which in theory should get no funds). As of 2008, Pakistan had 52,376 *mauzas* (villages) in 131 districts, and hence, approximately 400 villages per district (Pakistan Bureau of Statistics 2008).[9] An impact evaluation of Phase I of the Watan Card program suggested that for every 100 potentially eligible households, only 43 actually received a Watan Card (Hunt et al. 2011).

We exploit a discontinuity in the formula used by the federal government to allocate funds to local (district) governments in order to construct an instrumental variable for receipt of the Watan Card program. Specifically, districts with a greater share of their flood victims concentrated in villages with at least 50 percent flood affectedness were given more funds per victim than were districts with *the same number* of flood victims spread across villages with less than 50 percent flood affectedness (since these villages—and the flood victims in them—did not "count" from a federal government budgetary standpoint). We construct an instrumental variable for each village, which is the share of flood victims in other sample villages in the same district that reside in villages that were at least 50 percent flood-affected.[10] This number indicates the share of a district's flood-affected population (other than the population of the village in question) that was counted. With higher values of the instrument, a village's district has more federal funds per flood victim, due purely to the distribution (not the number) of flood victims in *other* villages of the same district. By its construction, this instrument should be uncorrelated with factors determining aspiration levels in a village. First, and most obviously, it does not incorporate information on the flood-affectedness of the village itself—which is important for asserting its exogeneity to aspirations formation. Second, and more subtly, it does not incorporate information on the flood-affectedness of *other* villages in the district, either; it only takes into account the share of those flood-affected that the federal government recognized due to its discontinuous decision to count flood victims in villages with 50 percent or greater affectedness, but to ignore those in villages with less than 50 percent affectedness. Using the instrument, we can therefore account for endogenous selection of villages into the Watan Card program and assess its causal effects on aspirations.

We capture the exogenous aspirational impacts of the extreme rainfall of the 2010 monsoon season (June to September) by examining the extent to which rainfall during that season was atypical relative to reasonable expectations in each village. We do so by controlling for the mean and standard deviation of rainfall in the village during 1981–2010—based on satellite imagery from NASA (2013)—and by including agroecological zone fixed effects in our models.[11] The mean and standard deviation capture

[9] As of 2008, the average village had a population of 1.3 million (Pakistan Bureau of Statistics 2008).

[10] We randomly selected four villages from each sample district. The instrument thus relies on information from the other three villages in a district (as it never uses information on the village itself). Since villages vary greatly in size, we population weight the results so that larger villages receive more weight than do smaller villages. The population weight is necessary as the Watan Card program flood relief budget provided to a large village that meets the 50 percent flood-affectedness criterion was larger than the relief amount provided to a small village that meets the criterion. To the national government, every village was not created equal with respect to resource allocation; district officials received more funds if affected villages had a larger population size.

[11] There are eight agroecological zones in our sample, each defined by the province in which it is located and the crops primarily grown there (if more than one combination is grown in the province): the rice/wheat region of Punjab, the cotton/wheat region of Punjab, the mixed region of Punjab, the barani region of Punjab, the low agricultural intensity region of Punjab, the cotton/wheat region of Sindh, the rice/other region of Sindh, and Khyber-Pakhtunkhwa.

what can reasonably be expected in terms of the level and also the variability of rainfall in a given village, given 30 years of data. We measure 2010 rainfall in several ways: both in terms of deviations from the 30-year season mean (Hidalgo et al. 2010; Hsiang, Burke, and Miguel 2013) and in terms of cumulative rainfall (in centimeters).

To measure the effect of the abnormal rainfall shocks on individual aspirations, and their differential effects by receipt of social protection, we estimate several versions of the following equation:

$$A_i = \alpha_0 + \alpha_1 R_v + \alpha_2 W_v + \alpha_3 R_v \times W_v + \beta X_i + \sigma_j + \varepsilon_i \tag{1}$$

where A_i is an individual's aspiration level in 2012 (1.5 years after the rainfall shock), R_v is a measure of severity of rainfall in village v during the 2010 monsoon season, W_v indicates the presence of the Watan Card program in village v following the 2010 monsoon season,[12] σ_j are agroecological zone fixed effects, and X_i is a vector of year 2012 controls describing individual i and their household.[13] When we assess whether or not social protection—in the form of the Watan Card program—offsets the negative aspirational impacts of the 2010 floods, the coefficient of interest is α_3; a positive value indicates that social protection plays a significant role in reducing the effects of the shock.

Our primary data source is an original data collection effort we conducted, hereafter called the Pakistan Rural Household Panel Survey (RHPS). This survey consisted of two rounds: March–April 2012 (Round 1) and April–May 2013 (Round 2). We designed the RHPS to be a multi-topic survey covering 76 rural villages in Punjab, Sindh, and Khyber-Pakhtunkhwa (KPK) provinces, and a total of 2,090 rural households.[14] The head of each household, their spouse, and the youngest household member between age 18 and 35 completed household surveys.[15] A village-level survey was also completed by a three-member focus group of village leaders and knowledgeable individuals.

We included a module on aspirations in Round 1 of the survey based upon the work of Bernard, Taffesse, and Dercon (2008). The module first asks individuals about their current and aspired level along four possible dimensions of aspirations: income, assets, education, and social status. It also asks individuals about the relative importance they place on each of these dimensions (by asking them to allocate 20 beans across the four dimensions).

[12] Watan Card villages were identified using our community focus group questionnaire, as a government registry of Watan Card villages is not publicly available. These data tell us if the program was in place by 2011.

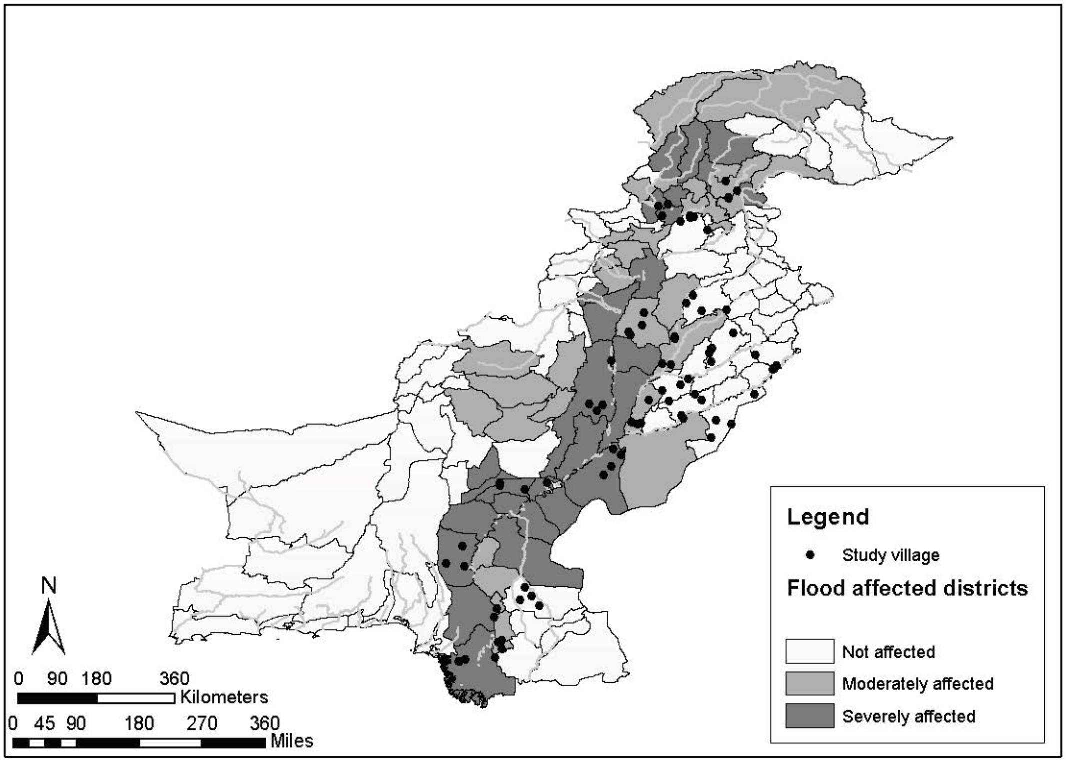
[13] We include both time-varying and time-invariant controls. The time-varying controls include dummies indicating one's age group, household size, and education level, as well as household expenditures and household wealth. The time-invariant controls include dummies for the individual's gender and ethnicity, as well as longitude, latitude, longitude × latitude, and elevation. We also include controls for the years of education of their father and of their mother, which should be considered time-invariant since our sample is comprised of adult individuals whose parents long ago stopped their education. Because several of the time-varying controls may be endogenous to aspiration levels (in particular, expenditure and wealth), we will show in Table 6.1, columns (1),(3), and (5) that all of our main findings of the impact of rainfall shocks on aspirations are robust to the exclusion of these controls. We unfortunately have data on aspirations for only one time period, making a difference-in-difference design infeasible. However, since none of the regressions are much influenced by the inclusion of individual- and household-level controls, this suggests that the results would change little if we did have two periods of data and could use individual fixed effects. We formalize this argument using several robustness tests including that advocated by Bellows and Miguel (2009).

[14] The RHPS provides village-, household-, and individual-level data on a range of economic, political, and social topics. The RHPS sample was selected using a multistage, stratified sampling technique. Nineteen districts were selected: 12 from Punjab, five from Sindh, and two from KPK. The sampling frame excluded Balochistan, the Federally Administered Tribal Areas, and 13 of KPK's 24 districts due to safety concerns. Districts in each province were selected using a probability-proportionate-to-size approach. In each district, four *mauzas* (villages) were randomly selected, and then 28 households were randomly chosen from each mauza.

[15] Every effort was made to survey the head of household and spouse. In many households, a third respondent was not interviewed as there were no other household members between age 18 and 35 who were neither the head nor the spouse.

Nearly half of sampled households resided in districts affected by Pakistan's 2010 flooding; 21 percent of sample villages were in severely affected districts and 23 percent were in moderately affected districts. The "severe" and "moderate" flood affectedness designations are based upon the 2010 United Nations Office of the Coordination of Humanitarian Affairs (UNOCHA) report. Figure 3.1 maps flood affectedness on August 26, a date within the peak flooding period, at the district level.

Figure 3.1 Flood-affected districts in Pakistan on August 26, 2010



Source: UNOCHA (2010).

4. MEASUREMENT

Table 4.1 provides summary statistics for each of our measures.[16] Among respondents, 62 percent are male, 83 percent are married, 42 percent have no formal education, and the average age is 39. The average household is comprised of seven members, and the largest ethnic groups represented in the study are Punjabi (37 percent), Saraiki (22 percent), and Sindhi (14 percent).

Table 4.1 Summary statistics

Variable	Mean	SD	Number
Panel A: Basic summary statistics			
Aspiration level	0.06	0.64	3,526
Absolute value of rainfall deviation from mean	1.6	0.36	3,526
Square of rainfall deviation from the mean	2.7	1.13	3,526
Centimeters of rainfall in 2010 monsoon (10s)	3.5	0.68	3,526
Average rainfall during monsoon, 1981–2010 (10s cm.)	2.03	0.53	3,526
Standard Deviation (S.D.) of rainfall during monsoon, 1981–2010 (10s cm.)	1.01	0.15	3,526
Dummy—male	0.62	0.49	3,526
Age (years)	38.84	14	3,522
Dummy—married	0.83	0.38	3,526
Dummy—primary education (grades 1–5)	0.18	0.38	3,520
Dummy—middle education (grades 6–8)	0.09	0.28	3,520
Dummy—high/intermediate education (grades 9–12)	0.13	0.34	3520
Dummy—postsecondary education	0.02	0.15	3,520
Years of education of mother	0.19	1.09	3,490
Years of education of father	1.11	2.72	3,487
Monthly HH expenditure per capita (10,000 Rs.)	0.31	0.22	3,526
HH wealth (10,000 Rs.)	136.9	351.8	3,525
HH size (number of people)	6.52	2.95	3,526
Ethnicity = Punjabi	0.37	0.48	3,520
Ethnicity = Sindhi	0.14	0.34	3,520
Ethnicity = Pakhtoon	0.05	0.22	3,520
Ethnicity = Baloch	0.06	0.24	3,520
Ethnicity = Urdu	0.04	0.19	3,520
Ethnicity = Shina	0.07	0.25	3,520
Ethnicity = Saraiki	0.22	0.41	3,520
Ethnicity = Mevati	0	0.07	3,520
Ethnicity = Hindko	0.01	0.09	3,520
Ethnicity = Marwari	0.01	0.09	3520
Ethnicity = Hazarwal	0.04	0.2	3520
Ethnicity = Kashmiri	0	0.02	3,520
Elevation	1.36	0.98	3,518
Latitude	29.71	2.66	3,522
Longitude	71.18	1.99	3,523
Latitude x longitude	21.19	2.37	3,521
Agroecological zone = rice/wheat Punjab	0.07	0.25	3,526
Agroecological zone = mixed Punjab	0.17	0.37	3,526
Agroecological zone = cotton/wheat Punjab	0.28	0.45	3,526
Agroecological zone = low intensity Punjab	0.09	0.29	3,526
Agroecological zone = barani Punjab	0.04	0.19	3,526
Agroecological zone = cotton/wheat Sindh	0.09	0.29	3,526
Agroecological zone = rice/other Sindh	0.19	0.39	3,526
Agroecological zone = Khyber Pakhtunkhwa	0.08	0.27	3,526

[16]Summary statistics for Panels A and B are based upon the sample of individuals with an aspiration index score.

Table 4.1 Continued

Variable	Mean	SD	Number
Panel A: Basic summary statistics			
Annual household expenditure on seeds per acre cultivated	2,495	3,606	1,655
Annual household expenditure on fertilizer per acre cultivated	8,745	8,673	1,655
Total savings as a share of monthly expenditure	0.18	1.69	3,526
Total cash loans outstanding as share of yearly total expenditure	0.35	0.61	1,156
Individual's household operates a nonagricultural enterprise	0.16	0.37	3,526
Voted in 2008 elections	0.74	0.44	2,735
Attended a village meeting in 2013	0.07	0.25	2,735
Member of a political or civic organization	0.02	0.14	2,735
Score on test of political knowledge (0–2)	0.55	0.81	2,735
Panel B: Mean and SD of aspiration level by household type			
Bottom quintile of per capita household income	-0.06	0.6	755
2nd quintile of per capita household income	0.01	0.61	720
3rd quintile of per capita household income	0.06	0.65	718
4th quintile of per capita household income	0.09	0.61	730
Top quintile of per capita household income	0.23	0.72	603
Land-cultivating household	0.16	0.71	1,659
Agricultural wage laborer	-0.17	0.48	878
Rural nonfarm worker	0.07	0.58	912
No nonagricultural enterprise	0.05	0.63	2,967
Has a nonagricultural enterprise	0.13	0.68	559
Dummy—does not have relatives in another district in this province	0	0.59	1,053
Dummy—does have relatives in another district in this province	0.08	0.66	2,466
Dummy—does not have relatives in another province	0.04	0.63	2,863
Dummy—does have relatives in another province	0.12	0.69	652

Source: Authors.
Note: SD = standard deviation; Rs. = Pakistani rupees.

Aspirations

We measured an individual's aspiration level using an index similar to that used by Beaman et al. (2012) and Bernard and Taffesse (2012). The index was constructed using respondents' answers to questions about their aspirations along four dimensions: income, wealth, education, and social status. Specifically, respondents were asked to report the level of personal income, the level (value) of assets, the level of education (recoded as desired years of education), and the level of social status (on a 10-step ladder of possibilities) they would like to achieve. While there are a potentially infinite number of dimensions in which an individual could aspire, we argue that these four capture a large and important share of poverty-related aspirations.

We combined these four aspiration levels into an index using the following methodology.[17] First, we normalized each respondent's aspiration level on each dimension by subtracting the average level for individuals in the same district and then dividing this difference by the standard deviation for individuals in the same district.[18] We then asked each individual to allocate 20 beans across the four dimensions

[17]While we collapse multiple dimensions into one single measure of aspiration level in our core analyses, we also look at each of the four measures separately on one set of analyses (Table B.5) to get a sense of what dimension may be most significant. Further research to get at the dimensionality of aspirations is needed. The dimensionality of aspirations is an interesting and, we suspect important issue both theoretically and empirically.

[18]The resulting, normalized outcome represents the number of standard deviations from the district average that an individual's aspiration level is located. Respondents with an aspiration level for a particular outcome above their district's average have a positive value on the normalized outcome, while those with a level below the average have a negative value. We examine the individual's aspirations relative to the district, as an individual's aspiration levels are affected by a process of social comparison with others in the individual's social environment or reference groups (for example, Festinger 1954; Merton and Rossi 1950; Suls and Wheeler 2000).

according to their relative importance, and took a weighted average by weighting each dimension by the share of beans placed on each dimension. The index is then

$$Aspiration\ Level = \sum_{n=1}^{4} \left(\frac{a_n^i - \mu_n^i}{\sigma_n^d} \right) w_n^i. \tag{2}$$

Here, a_n^i is the aspired-to outcome of individual i on dimension n (income, assets, education, or social status). μ_n^d is the average aspired-to outcome in district d for outcome n. The standard deviation of aspired-to outcomes in district d for outcome n is σ_n^d. Finally, w_n^i is the weight individual i places on dimension n, and these four weights sum to 1.[19] Poverty and economic opportunities vary widely across districts. To the extent that the district average aspiration level represents what is typically possible to achieve in a district, our measure of aspirations captures the distance between what is generally possible and what an individual aspires to achieve.

Table 3.1, Panel A includes summary statistics for our measure of one's aspiration level. The average individual has an aspiration level of 0.06, with a standard deviation of 0.64. The aspiration level takes both negative and positive values, and its mean is close to 0. Panel B summarizes the mean and standard deviation of our key outcome measure for each subpopulation we consider in our analyses (for example, subgroups by income quintile, economic sector, social network, and receipt of the Watan Card program). For some subpopulations, the mean aspiration is above 0, while for others—those with relatively low aspirations—it is below 0. Panel C summarizes the non-normalized average and standard deviation of the aspired-to levels of income, assets, social status, and education (a_n^i from Equation (2)). We see that the average individual aspires to personally earn 196,000 Pakistani Rupees (Rs.) per year (about US$2,150 in 2012) and would like their household to own 339,000 Rs. worth of assets (about US$3,700 in 2012). They would further prefer a social status of 7.7 on a 1–10 ladder of possibilities, and would like to obtain 8.6 years of education.

It is useful to consider what a one standard deviation (that is, a 0.64 unit) increase in the aspiration level implies. An individual with aspirations at around the 10th percentile has an aspiration level of -0.66, while an individual at the median has a level of 0 (just over one standard deviation apart). Around the 10th percentile,[20] individuals aspire to a personal income of 46,000 Rs./year, asset wealth of 71,000 Rs., a social status of 6.0 on the 1–10 ladder, and 4.3 years of education. However, considering individuals with aspirations around the median,[21] they aspire to a personal income of 132,000 Rs./year (2.9 times more), asset wealth of 174,000 Rs. (2.5 times more), a social status of 8.1 (1.4 times higher), and 9.3 years of education (2.2 times more).

Rainfall

The 2010 floods in Pakistan provide a unique opportunity to observe the impacts of a major natural disaster on aspiration levels. The Southwest Monsoon normally occurs in the summer months of June through September, with peak rainfall in July and August. In July 2010, Pakistan was ravaged by unusually heavy monsoon rainfall, which led to floods that affected almost one-fifth of the country's land mass (FAO 2011; BBC 2010). The floods occurred 1.5 years before Round 1 of the Pakistan RHPS, allowing us to capture the floods' medium-term impacts on those affected.

[19] Note that the index is a weighted average of four normally distributed variables with mean 0 and standard deviation 1. However, it is not itself distributed normally with mean 0 and standard deviation 1.

[20] Specifically, we consider the 143 individuals with aspirations between -0.71 and -0.61.

[21] Specifically, we consider the 254 individuals with aspirations between -0.05 and 0.05.

Which areas were flooded is likely to be endogenous to aspirational outcomes, since poorer and more vulnerable households may be more likely to lie in a flood p lain. However, based on observable long-term patterns of rainfall, one can know how much rainfall could be reasonably expected in different parts of Pakistan, and thus how much of the 2010 monsoon-season rainfall was unanticipated and exogenous. Accordingly, we focus on 2010 monsoon-season rainfall in each of the sample villages as measured in NASA-POWER) Prediction of Worldwide Energy Resource) satellite data (2013), obtained from the NASA Langley Research Center POWER Project.[22] Since villages accustomed to heavy monsoon rainfall, or villages accustomed to unpredictable rainfall, may have been differently poised to absorb heavy rainfall during the 2010 monsoon season, all specifications additionally controlled for the 1981–2010, 30-year village average monsoon-season rainfall as well as the 30-year standard deviation. We then constructed three measures of the severity of 2010 monsoon-season rainfall.[23]

Our primary measure of 2010 monsoon-season rainfall shocks is the absolute value of rainfall deviations from the 1981–2010 30-year village mean, following Hidalgo et al. (2010) and Hsiang, Burke, and Miguel (2013). We took monthly rainfall totals for each of the four monsoon-season months (June through September) and normalized them using the 30-year mean (μ_{im}) and standard deviation (σ_{im}) of rainfall for village i in month m. We then summed these four-month values:

$$x_{i,2010} = \sum_{m=6}^{9} \frac{x_{im,2010} - \mu_{im}}{\sigma_{im}} \tag{3}$$

Normalizing by month takes seasonal patterns into account and can help more accurately identify years of abnormal rainfall (Mitchell 2003). Normalization also makes rainfall measurements comparable across villages given that agricultural production across Pakistan is likely to be adapted to the mean (average level) and standard deviation (predictability) of rainfall in each village. Next, we normalized these rainfall deviations by the 1981–2010 30-year mean (μ_i) and standard deviation (σ_i) of rainfall in village i, and took the absolute value:

$$z_{abs} = \left| \frac{x_{i,2010} - \mu_i}{\sigma_i}. \right| \tag{4}$$

To ensure our estimates are not sensitive to our measures of rainfall, we also examined two other measures. Our second measure was squared rainfall deviation from the 30-year mean:

$$z_{sq} = \left(\frac{x_{i,2010} - \mu_i}{\sigma_i} \right)^2. \tag{5}$$

The third was a simple, linear measure: level of rainfall (in 10 cm intervals) in village i during June to September 2010. While during the 30-year period of 1981–2010, the average individual's village received 20.3 cm of rain during the monsoon season (June to September), in 2010 the average was 75 percent higher, at 35.0 cm.

[22]We computed the centroid of all households in a village. We found the rainfall for this point and applied it to all households in the village.

[23]Despite our focus on rainfall, we note that rainfall is distinct from observed flooding. Heavy rainfall need not bring about floods, and floods may happen in low-lying regions even if local rainfall is not extreme. However, we are unable to find an exogenous source of variation in observed flooding.

5. IMPACT OF ASPIRATIONS ON FUTURE-ORIENTED BEHAVIORS

Aspirations are critical because future-oriented actions and behaviors are likely to be predicated on them. Our analysis accordingly begins with examining linkages between aspirations and important economic and political behaviors. Table 5.1 presents ordinary least squares (OLS) regressions of a number of specific behaviors on aspiration levels; all specifications include our full set of controls, which include measures for socioeconomic status (for example, income, education, ethnicity, and gender).[24] While these estimates cannot be interpreted as causal, they suggest that having higher aspirations is correlated with behaviors that may reflect underlying efforts on the part of individuals to improve their future livelihoods by making economic investments, accessing credit, and effecting political change in their communities.

Table 5.1 Effects of aspiration levels on future-oriented behaviors

Future-oriented outcome	Aspiration effect	Standard error	Sample size	R-Squared
Panel A: Economic behavior				
Household expenditure on seeds per acre cultivated	208.518*	115.425	1,619	0.127
Household expenditure on fertilizer per acre cultivated	452.686	325.077	1,619	0.198
Savings as a share of monthly expenditure	0.038	0.064	3,459	0.041
Cash loans outstanding as share of yearly expenditure	0.125**	0.052	1,128	0.143
Household operates a non-agricultural enterprise	0.026**	0.012	3,459	0.059
Panel B: Political behavior				
Voted in 2008 elections	0.036***	0.013	2,685	0.274
Attended a village meeting in 2013	0.003	0.011	2,685	0.086
Member of a political or civic organization	0.015**	0.008	2,685	0.067
Score on test of political knowledge (0–2)	0.083***	0.025	2,685	0.429

Source: Authors.

Note: Column (2) indicates the effect of aspiration level on the outcome measure noted in column (1). Robust standard errors are in column (3) and clustered at the household level. Columns (4) and (5) are the sample size and R-squared of the model, respectively. All specifications include agroecological zone, household size, and ethnicity fixed effects, and ontrols for gender, age, education, parental education, expenditure, income, latitude, longitude, latitude X longitude, and elevation. Specifications in rows (1) and (2) include only individuals from land-cultivating households; all otherot specifications use the full sample. * p < 0.10, ** p < 0.05, *** p < 0.01.

We first examine several economic outcomes that may be associated with greater productivity (see Panel A in Table 5.1): annual seed expenditure per acre of cultivated land, annual fertilizer expenditure per acre of cultivated land, total savings as a share of monthly expenditure, total cash loans outstanding as a share of yearly total expenditure, and a dummy for the household operating a nonagricultural enterprise. Greater expenditure on inputs (seeds and fertilizer) per acre is likely associated with more intensive and productive use of land. More savings provide a buffer capital stock that can help households smooth shocks and make productive investments when opportunities arise. Greater use of credit is not an unambiguously positive behavior. However, it may indicate greater access to credit. Because credit constraints are a recognized market failure that harms the poor in rural areas, utilization of credit suggests that households have found a way to circumvent credit constraints and potentially make more productivity-enhancing investments. Finally, households that are able to operate a nonagricultural enterprise may be entrepreneurs seeking opportunities to earn more money and diversify their sources of income.

[24] The full set of controls includes agro-ecological zone, household size, and ethnicity fixed effects, and controls for gender, age, education, parental education, expenditure, wealth, latitude, longitude, latitude × longitude, and elevation.

We find firm evidence of a link between aspirations and poverty traps, bolstering extant work (for example, Appadurai 2004; Duflo 2013; Macours and Vakis 2014). Specifically, a standard deviation increase in the aspiration level (0.64 units) is associated with an additional 208 Rs. per acre per year spent on seeds, which is an 8 percent increase over the mean expenditure on seeds (a finding statistically significant at the 10 percent level). It is also associated with a 12.5 percentage point increase in cash loans outstanding as a share of yearly expenditure, which corresponds with a 36 percent increase over the mean share. Additionally, it is associated with a 2.6 percentage point increase in the probability of operating a nonagricultural enterprise, which is a 16 percent increase over the mean. These later two effects are statistically significant at the 5 percent level. An increase in aspirations is also associated with an additional 453 Rs. per acre increase in fertilizer expenditure and a 3.8 percentage point increase in savings as a share of expenditure, but these associations are not statistically significant.

Might aspirations also be linked with future-oriented political behavior? Political engagement is evidence of a sense of self-efficacy to bring about change in the future; one will not participate in political actions if there is no sense that this behavior can impact future outcomes (Sloam 2007). To this end, we examine the relationship between aspiration levels and four political engagement outcomes (see Panel B in Table 5.1): voter turnout, participation in village meetings, membership in a political or civic organization, and political knowledge. Political knowledge is measured as the score (0, 1, or 2) on a test asking two questions, who is the current prime minister of Pakistan, and who is the current chief minister of the individual's province.

We find convincing suggestive evidence that having higher aspirations is linked with more future-oriented political behavior. A one-unit increase in one's aspiration level (a large, 1.6 standard deviation increase in aspirations) corresponds with a 3.6 percentage point increase in voter turnout, a 1.5 percentage point increase in the likelihood of being a member of a political or civic organization, and a 0.08 point increase in one's political knowledge test score. Because average voter turnout of our study sample is 70 percent, the 3.6 percentage point increase is about a 5 percent increase in the voter turnout rate.[25] Also, given that only 1.9 percent of Pakistanis in our sample are members of political or civic organizations, on average, the 1.5 percentage point effect is a nearly 80 percent increase in the rate of membership in such organizations. Finally, because the average political knowledge test score is 0.49, the 0.08 point increase corresponds with a 17 percent increase in political knowledge. Aspiration levels are positively correlated with participation in a village meeting, though this finding is statistically insignificant.

[25] According to the International Institute for Democracy and Electoral Assistance (IDEA), voter turnout in Pakistan during the 2008 elections was only 45 percent. We do not claim that our sample is nationally representative, as we focused on only three out of the four provinces in Pakistan, and excluded 13 out of 24 districts in one province in the sampling frame, due to safety concerns. Moreover, the study focused only on the head of household, his/her spouse, and another household member between the ages of 18–35, which may have resulted in a sample that has a higher turnout rate than the national average.

6. THE EFFECTS OF 2010 MONSOON-SEASON RAINFALL ON ASPIRATIONS

Our findings on the impact of aspirations on economic investments, voting, civic engagement, and political knowledge begin to reveal why aspirations are central to the study of political behavior. They highlight why shocks negatively impacting aspirations are of interest from a political science perspective, and raise questions about the proper role of government in addressing any negative impacts. In particular, they motivate our first major research question: what is the impact of weather shocks—a natural disaster and an exogenous shock—on aspiration levels?

We show that aspirations are decreasing in all three measures of extreme 2010 monsoon-season rainfall that caused flooding—a natural disaster (see Table 6.1). We find that these effects are always significant at the 1 percent level, and that they vary little with the inclusion of controls. In columns (1) and (2), we see that aspirations are decreasing in the absolute value of 2010 monsoon-season rainfall deviation from the mean. In the fully controlled specification of column (2), a standard deviation increase in this rainfall measure (0.36) is associated with a 0.09 point decrease in the aspiration level, which corresponds with a 0.15 standard deviation decrease in the aspiration level (a finding significant at the 1 percent level).[26] The results suggest that when households are confronted with a large deviation from the rainfall that they have known and come to expect, their aspirations are drastically lowered.

There are a number of individual and household characteristics associated with higher aspirations, as shown in Table 6.1. Men aspire to more than do women those aged 45–55 aspire to more than those at other ages (and those over age 55, the omitted category in our regression specifications, aspire to less than any group) and aspirations are increasing in household expenditure per adult equivalent,[27] total household wealth, and education. The education level achieved by one's parents, and one's marital status, are not significant predictors of aspirations. The signs on these controls are largely invariant to the 2010 rainfall measure used.

We measure 2010 rainfall taking typical and expected weather patterns into account, thus properly ensuring that they reflect a truly exogenous shock. Furthermore, the floods took place *before* the 2012 RHPS survey, addressing any concerns around reverse causality. However, one may still be concerned that households receiving large rainfall shocks were in some way different from those that did not (for example, in the quality of housing materials, access to roads, or income). The coefficient on the absolute value of 2010 monsoon-season rainfall deviation from the mean varies little when we account for regional differences (for example, agroecological zones, elevation, latitude, and longitude) and for demographic controls that would not have changed due to extreme 2010 rainfall. This result offers initial evidence that omitted variables are not driving the results. To increase our confidence that there is not another factor that is correlated with aspiration levels and flood affectedness biasing our results, we pursue

[26]Standard errors are clustered at the household level because aspirations are highly correlated within households (there is much lower correlation in the aspirations of individuals within the same village) and are driven in part by household-level characteristics and highly correlated individual characteristics resulting from assortative matching that is, marrying a spouse similar to oneself). We include agroecological zone fixed effects (there are 8 in our sample) since these capture the variety of types of agricultural and economic activity in which rural Pakistani households are engaged. Findings that instead use district fixed effects (there are 19 in our sample) yield similar results that are slightly larger in magnitude and remain statistically significant at the 1 percent level, as shown in columns (1)–(3) of Table B.1, in Appendix B. Findings that use district fixed effects and also more conservatively cluster standard errors at the village level are always significant at the 5 percent level, as shown in columns (4)–(6) of Table B.1.

[27]Instead of using a per capita normalization, we normalize by the number of "adult equivalents" in the household. The conversions we use are based on the caloric requirements of each household member, according to age and gender, as determined by Pakistan's Ministry of Health and Nutrition, following the guidelines of the World Health Organization. An adult equivalent is a person who consumes 2,350 calories per day, and anyone requiring more or fewer calories counts as more than or less than one adult equivalent (Pakistan, MoF 2003).

two additional strategies. Bellows and Miguel (2009) proposed a way of assessing omitted variable bias for linear models by measuring the ratio of selection on unobservables to selection on observables that would be required if the entire effect of a regressor were due to omitted variable bias. We use the magnitude of the attenuation in the coefficient on rainfall following the addition of controls to estimate the relative importance of the omitted variables required to explain away the entire effect of rainfall.[28] Comparing specifications (1) and (2) in Table 6.1, we find that selection on unobservables would have to be 89 times greater than selection on observables to itself account for the entire effect of the 2010 monsoon-season rainfall. The addition of other controls is thus unlikely to eliminate the relationship between rainfall and aspiration levels. To further increase our confidence that unobserved selection effects do not account for the key results, we also conduct a sensitivity analysis based on Imbens (2003) using the absolute value of rainfall deviation from the mean. We find that our results are not particularly sensitive to the unconfoundedness assumption, and hence are robust to endogeneity concerns related to selection effects (see Figure A.1 in Appendix A).

These findings are all robust to using either of the other two measures of 2010 monsoon-season rainfall: the square of rainfall deviation from the mean (columns (3) and (4))[29] and total centimeters of rainfall during the 2010 monsoon season (columns (5) and (6)). In the fully controlled specification of column (6), we see that an additional 10 cm of rain during the 2010 monsoon season is associated with a 0.28 point decrease in the aspiration level, which is a 0.42 standard deviation decrease in aspirations.[30]

From these results, we conclude that the negative impacts of extreme rainfall are not limited to their immediate destruction of property. A full 1.5 years later, individuals with similar education levels, expenditures, assets, and demographic characteristics additionally aspire to achieve less in the future as a result of the extreme rainfall. This has important implications for policy. It suggests that the benefits of disaster relief programs should be viewed to go beyond property recovery.

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[28] Following Bellows and Miguel (2009), the ratio is computed as follows (where *C* denotes "controls," and *NC* denotes "no controls"): $\frac{\hat{\alpha_{OLS,C}}}{\hat{\alpha_{OLS,NC}} - \hat{\alpha_{OLS,C}}} = \frac{-0.267}{-0.264+0.267} = -89$.

[29] In the fully controlled specification of column (4), a standard deviation increase in this rainfall measure (1.13) is associated with a 0.08 point decrease in the aspiration level (0.07, the coefficient on rainfall, multiplied by 1.13—a standard deviation increase in rainfall—equals 0.08), which corresponds with a 0.12 standard deviation decrease in aspirations.

[30] These findings are also robust to instead measuring extreme rainfall with a dummy for whether the village was affected by flooding in 2010, and instrumenting for this village-level flooding variable with total rainfall in that village during the 2010 monsoon season. These results are available in Table B.2 of Appendix B.

Table 6.1 Effect of 2010 monsoon-season rainfall on aspiration levels

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Absolute value of rainfall deviation from mean	-0.264***	-0.267***				
	(0.094)	(0.077)				
Square of rainfall deviation from the mean			-0.083***	-0.071***		
			(0.030)	(0.024)		
Centimeters of rainfall in 2010 monsoon (10s)					-0.292***	-0.277***
					(0.103)	(0.084)
Average rainfall during monsoon, 1981–2010	-0.026	0.257***	-0.021	0.255***	0.266	0.531***
	(0.095)	(0.081)	(0.097)	(0.082)	(0.164)	(0.135)
SD of rainfall during monsoon, 1981–2010	0.901**	-0.158	0.707**	-0.378	1.307***	0.204
	(0.361)	(0.310)	(0.345)	(0.299)	(0.412)	(0.352)
Dummy—male		0.363***		0.362***		0.361***
		(0.021)		(0.021)		(0.021)
Dummy—age 18–25		0.091***		0.093***		0.090**
		(0.035)		(0.035)		(0.035)
Dummy—age 25–35		0.068**		0.069**		0.068**
		(0.029)		(0.029)		(0.029)
Dummy—age 35–45		0.076**		0.077***		0.076**
		(0.030)		(0.030)		(0.030)
Dummy—age 45–55		0.107***		0.109***		0.108***
		(0.034)		(0.034)		(0.034)
Dummy—married		0.013		0.014		0.013
		(0.030)		(0.030)		(0.030)
Dummy—primary education (grades 1–5)		0.234***		0.234***		0.236***
		(0.030)		(0.030)		(0.030)
Dummy—middle education (grades 6–8)		0.336***		0.337***		0.337***
		(0.038)		(0.038)		(0.038)
Dummy—high/intermed. educ. (grades 9–12)		0.515***		0.514***		0.516***
		(0.035)		(0.035)		(0.035)
Dummy—postsecondary education		0.838***		0.837***		0.840***
		(0.086)		(0.086)		(0.086)
Years of education of mother		-0.005		-0.005		-0.005
		(0.009)		(0.009)		(0.009)
Years of education of father		0.003		0.002		0.002
		(0.004)		(0.004)		(0.004)
Log monthly HH expend. per capita (10,000 Rs.)		0.147***		0.151***		0.149***
		(0.026)		(0.026)		(0.026)
Log HH wealth (10,000 Rs.)		0.073***		0.072***		0.072***
		(0.007)		(0.007)		(0.007)
Observations	3,507	3,459	3,507	3,459	3,507	3,459
R-squared	0.019	0.322	0.019	0.321	0.019	0.322
Household size dummies	No	Yes	No	Yes	No	Yes

Source: Authors.

Note: SD = standard deviation; HH = household; Rs. = Pakistani rupees. Robust standard errors are in parentheses and clustered at the household level. All specifications include agroecological zone, household size, and ethnicity fixed effects, and controls for latitude, longitude, latitude X longitude, and elevation. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

We next consider whether the impacts of the 2010 floods on aspirations are larger among households for which we expect the magnitude of the shock to be relatively large compared to the household's ability to withstand loss. This includes (1) households that are poorer, (2) households with greater economic exposure to natural disasters, and (3) households without a diversified family network. This serves as a useful robustness check, allowing us to observe whether rainfall shocks are higher among those who likely feel the effects of the rainfall shock most acutely. Moreover, the proceeding analyses offer important policy implications by helping to identify which individuals and households are most vulnerable to substantially lowered aspirations following such shocks, and as such, are particularly in need of relief assistance.

Table 6.2 shows the effects of extreme 2010 monsoon-season rainfall on aspirations by the household's quintile of expenditure per adult equivalent. The absolute value of 2010 monsoon-season rainfall deviation from the mean has an economically large and statistically significant impact on households in the first three quintiles. As shown in columns (1)–(3), respectively, a standard deviation increase in 2010 rainfall deviation from the mean is associated with a 0.14 point decrease in aspirations for the bottom quintile, a 0.16 point decrease for the second quintile, and a 0.14 point decrease for the third quintile. All of these findings are statistically significant at the 5 percent level or higher. Given the distribution of aspiration levels at each of these expenditure quintiles, this implies a 0.24 standard deviation decrease in aspirations for the first quintile of expenditure, a 0.27 standard deviation decrease in aspirations for the second quintile, and a 0.21 standard deviation decrease in aspirations for the third quintile. The impacts of the same increase in 2010 rainfall deviations on households in the fourth and fifth expenditure quintiles (columns (4) and (5)) are far smaller in magnitude (a 0.02 and 0.004 point decrease, respectively), and are statistically insignificant.[31]

Overall, these findings suggest that the aspirations of the poor were most negatively affected by the 2010 floods. Less-poor households may have access to better private coping mechanisms (such as family support, remittance income, or better labor market opportunities), which dull the negative aspirational blow. It is also possible that relatively poor households were the most exposed to 2010 flooding, perhaps due to residing in and cultivating land in lower-lying or more flood-vulnerable areas. When considering declines in aspirations, this suggests that the poor are in greatest need of help and support following a natural disaster like the 2010 floods. Additional analyses further show that individuals who are most vulnerable to shocks are most adversely affected. Natural disasters in the form of weather shocks are most acutely felt by those who depend on weather for their livelihood and do not have consumption-smoothing strategies. We find that those who are most exposed to agriculture-related risk—specifically, those dependent on agricultural wage labor, those without nonagricultural enterprises, and those without relatives in other districts and provinces—were more negatively affected by the 2010 floods (see Appendix Tables B.3 and B.4).[32]

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[31]Given the small sample sizes in each column of Table 6.2, the only statistically significant difference between groups is between the second and fourth quintiles, where the second quintile faces a significantly higher reduction in aspirations (significant at the 10 percent level). We find this by estimating a fully interacted model; each of the coefficients in Table 6.2 enters in its level form as well as interacted with each of the quintiles of expenditure, and we additionally include controls for each quintile of expenditure.

[32]Given that we saw men aspire to more than women, and those aged 45–55 aspire to more than those at other ages (see Table 6.1), we also examine whether treatment effects differ by gender and age. Interestingly, we see that there are no strong heterogeneous treatment effects by gender or by age (see Appendix Tables B.6 and B.7, respectively). There is weak evidence that the aspirations of youth (those between 18 and 35) are more impacted than are those of older age cohorts, and that the aspirations of women are more impacted than are those of men (see columns (5) and (6) of Appendix Tables B.6 and B.7)—though these results are not robust to all measures of rainfall. Future work on the heterogeneous treatment effects of natural disasters by individual-level characteristics is warranted.

Table 6.2 Effect of 2010 monsoon-season rainfall on aspiration levels of individuals in households at different quintiles of expenditure per adult equivalent

Variable	Bottom quintile (1)	2nd quintile (2)	3rd quintile (3)	4th quintile (4)	Top quintile (5)
Absolute value of rainfall deviation from mean	-0.392**	-0.450***	-0.385**	-0.067	-0.016
	(0.184)	(0.171)	(0.176)	(0.146)	(0.208)
Average rainfall during monsoon, 1981–2010	0.678***	0.457**	-0.056	-0.026	0.109
	(0.172)	(0.226)	(0.168)	(0.168)	(0.208)
SD of rainfall during monsoon, 1981–2010	-1.332**	-0.309	1.844***	0.6	-0.699
	(0.651)	(0.754)	(0.703)	(0.705)	(0.708)
Dummy—male	0.334***	0.370***	0.346***	0.384***	0.443***
	(0.042)	(0.048)	(0.050)	(0.048)	(0.054)
Dummy—age 18–25	0.129	-0.015	0.200**	0.112	0.047
	(0.083)	(0.078)	(0.088)	(0.069)	(0.083)
Dummy—age 25–35	0.02	0.06	0.119	0.086	0.087
	(0.068)	(0.060)	(0.073)	(0.059)	(0.082)
Dummy—age 35–45	0.062	0.149**	0.082	-0.025	0.082
	(0.071)	(0.061)	(0.078)	(0.061)	(0.082)
Dummy—age 45–55	0.05	0.161*	0.106	0.141*	0.044
	(0.072)	(0.086)	(0.074)	(0.075)	(0.093)
Dummy—married	0.065	-0.055	0.03	0.097*	0.044
	(0.057)	(0.073)	(0.066)	(0.051)	(0.088)
Dummy—primary education (grades 1–5)	0.234***	0.224***	0.306***	0.115**	0.288***
	(0.070)	(0.060)	(0.068)	(0.056)	(0.081)
Dummy—middle education (grades 6–8)	0.296***	0.285***	0.404***	0.326***	0.302***
	(0.104)	(0.078)	(0.102)	(0.077)	(0.073)
Dummy—high/intermediate education (grades 9–12)	0.472***	0.321***	0.435***	0.503***	0.670***
	(0.090)	(0.062)	(0.080)	(0.075)	(0.086)
Dummy—postsecondary education	1.083***	0.999***	0.702***	0.934***	0.724***
	(0.183)	(0.381)	(0.146)	(0.253)	(0.088)
Years of education of mother	-0.012	-0.007	-0.025	0.002	0.009
	(0.025)	(0.026)	(0.025)	(0.018)	(0.012)
Years of education of father	0.004	0.027**	0.004	-0.011	0.001
	(0.010)	(0.012)	(0.012)	(0.007)	(0.009)
Log monthly HH expenditure per capita (10,000 Rs.)	0.201**	-0.053	-0.26	0.184	0.054
	(0.089)	(0.181)	(0.194)	(0.136)	(0.073)
Log HH wealth (10,000 Rs.)	0.066***	0.067***	0.039***	0.078***	0.086***
	(0.014)	(0.019)	(0.014)	(0.014)	(0.017)
Observations	741	704	705	717	592
R-squared	0.334	0.31	0.303	0.428	0.397

Source: Authors.

Note: SD = standard deviation; HH = household; Rs. = Pakistani rupees. Robust standard errors are in parentheses and clustered at the household level. All specifications include agroecological zone, household size, and ethnicity fixed effects, and controls for latitude, longitude, latitude X longitude, and elevation. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

In examining these results, a natural next question is on what dimensions of aspirations extreme rainfall is having the greatest negative impacts. Recall that the aspiration level is a weighted average of four variables, capturing aspirations in four dimensions: income, assets, social status, and education. Table A.5 separately examines the impacts of our three extreme 2010 monsoon-season rainfall measures on each of these four outcomes; Panels A–D examine impacts on income, asset, social status, and education aspirations, respectively. Because each of the four outcome variables has the same distribution, we can directly compare the impact of extreme rainfall on one outcome (for example, income aspirations) with its impact on another outcome (for example, social status aspirations). What is immediately apparent is that regardless of the measure of extreme rainfall used, it is income and educational aspirations that are most negatively impacted by extreme rainfall. They are impacted roughly equally, with a standard deviation (0.36 unit) increase in rainfall deviation from the mean (our primary measure) leading to a 0.13 standard deviation drop in income aspirations and a 0.10 standard deviation drop in education aspirations. While extreme 2010 rainfall has the anticipated negative sign for its impact on asset aspirations, this effect is not statistically significant at conventional levels—likely due to the noise with which assets are valued during a quick household survey. There appears to be no impact of extreme rainfall on social status aspirations; however, the social status measure may also be a noisy measure as study participants may not be interpreting the 10-point scale in a uniform way. This suggests that if government policy is to raise aspirations in the wake of a natural disaster, raising income aspirations may be the most promising route, followed closely by education aspirations.

7. THE ROLE OF SOCIAL PROTECTION

Following a natural disaster like the 2010 monsoon-season floods in Pakistan, the response of governments, nongovernmental organizations, and the international development community is typically to provide rapid assistance to disaster-affected households. The goals of such assistance are to alleviate the immediate negative economic impacts of the disaster. Such support is typically aimed at staving off hunger and returning individuals and households to productive activities. While many studies have evaluated the success of such strategies—with mixed results—we know of no studies examining the effects of such assistance on the aspirations of beneficiaries. This investigation is important given that natural disasters have an adverse impact on aspirations, which are consequential to important future-oriented economic behavior and political engagement. If government social protection policies following natural disasters can dampen these negative effects, disaster-targeted social protection not only raises social welfare in the short term but also has a longer- term effect by increasing citizens' aspirations for the future.

In this section, we examine the causal impacts of Pakistan's 2010 Watan Card program of flood relief on aspirations and the degree to which it attenuated the negative impacts of Pakistan's 2010 floods. Effectively, we compare the aspirations of similar individuals in similarly-flood-affected villages that did versus did not receive the program. We account for endogenous selection of villages into the Watan Card program by instrumenting for the presence of the program with the instrument described earlier: the share of flood victims in other sample villages in the same district that reside in villages that were at least 50 percent flood-affected. This instrument effectively measures the share of a district's flood victims that were counted as qualifying for aid from the federal government, given its somewhat arbitrary rule that a flood victim is only counted as qualifying for post-flood aid if they reside in a village in which at least 50 percent of the population is a victim. With higher values of the instrument, a village's district has more federal funds per flood victim, due purely to the distribution (not the number) of flood victims in *other* villages (not one's own village) of the same district. We demonstrate that the negative, causal impact of unexpected 2010 extreme rainfall on aspirations was largely offset by the presence of the Watan Card program, suggesting that disaster-targeted relief does not necessarily create a dependency that lowers aspirations. This suggests an important role for social protection during crisis conditions—not only in raising the welfare of the poor today, but also in increasing their aspirations for the future.

Table 7.1 shows how the impacts of the 2010 floods on aspiration levels vary according to whether or not the individual lives in a village that received the Watan Card program. Columns (1) through (3) present OLS results while Columns (4) through (6) present instrumental variable (IV) results using our instrument and its interaction with rainfall to address the endogeneity of the presence of the Watan Card program and its interaction with rainfall. Regardless of which of the three measures of rainfall shocks we employ, the impact of the Watan Card program is unambiguous: its presence provides social protection that offsets a large share or all of the negative impact of 2010 extreme rainfall on aspiration levels. In the IV specification displayed in Column (4), where we measure 2010 rainfall in terms of deviations from the 30-year mean, we find that in the absence of the Watan Card program, a standard deviation increase in rainfall is associated with a 0.12 point decrease in the aspiration level, which corresponds with a 0.19 standard deviation decrease in the aspiration level (a finding significant at the 1 percent level). However, in a similarly-affected village without the Watan Card program, there is no negative impact of extreme rainfall on aspirations. The first stage F-Statistic is 46.8, indicating no problems of weak instruments.

Table 7.1 Effect of 2010 Monsoon-season rainfall on aspiration levels, by whether the village has the flood relief Watan Card program

Variable	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
Dummy—Watan Card program	-0.259**	-0.133*	-0.012	-0.040	0.268*	-0.396
	(0.127)	(0.073)	(0.137)	(0.246)	(0.158)	(0.376)
Absolute value of rainfall deviations from mean	-0.328***			-0.331***		
	(0.084)			(0.110)		
Watan Card × abs. value of rainfall deviations	0.169**			0.421**		
	(0.080)			(0.175)		
Square of rainfall deviations from mean		-0.085***			-0.084***	
		(0.025)			(0.032)	
Watan Card × square of rainfall deviations		0.055**			0.139**	
		(0.025)			(0.057)	
Centimeters of rainfall in 2010 monsoon (10s)			-0.278***			-0.457***
			(0.085)			(0.146)
Watan Card × centimeters of rainfall in 2010			0.004			0.400**
			(0.040)			(0.167)
Average rainfall during monsoon, 1981–2010	0.265***	0.261***	0.532***	0.239**	0.244**	0.494***
	(0.081)	(0.081)	(0.134)	(0.115)	(0.114)	(0.178)
SD of rainfall during monsoon, 1981–2010	-0.386	-0.553*	0.190	-0.772*	-0.810**	-0.735
	(0.330)	(0.310)	(0.371)	(0.427)	(0.385)	(0.597)
Dummy—male	0.362***	0.362***	0.361***	0.380***	0.381***	0.380***
	(0.021)	(0.021)	(0.021)	(0.023)	(0.023)	(0.023)
Dummy—age 18–25	0.094***	0.096***	0.090**	0.128***	0.129***	0.144***
	(0.035)	(0.035)	(0.035)	(0.040)	(0.040)	(0.043)
Dummy—age 25–35	0.069**	0.071**	0.068**	0.101***	0.102***	0.116***
	(0.029)	(0.029)	(0.029)	(0.033)	(0.033)	(0.036)
Dummy—age 35–45	0.078***	0.078***	0.076**	0.091***	0.091***	0.095***
	(0.030)	(0.030)	(0.029)	(0.033)	(0.033)	(0.035)
Dummy—age 45–55	0.108***	0.109***	0.108***	0.124***	0.124***	0.130***
	(0.034)	(0.034)	(0.034)	(0.038)	(0.038)	(0.040)
Dummy—married	0.015	0.016	0.013	0.037	0.039	0.044
	(0.030)	(0.030)	(0.030)	(0.033)	(0.033)	(0.036)
Dummy—primary education (grades 1–5)	0.232***	0.232***	0.236***	0.228***	0.228***	0.238***
	(0.029)	(0.029)	(0.030)	(0.032)	(0.033)	(0.034)
Dummy—middle education (grades 6–8)	0.336***	0.337***	0.337***	0.363***	0.364***	0.362***
	(0.038)	(0.038)	(0.038)	(0.043)	(0.043)	(0.044)
Dummy—high/interm. educ. (grades 9–12)	0.513***	0.513***	0.516***	0.518***	0.520***	0.516***
	(0.035)	(0.035)	(0.035)	(0.041)	(0.041)	(0.043)
Dummy—postsecondary education	0.833***	0.831***	0.840***	0.871***	0.870***	0.892***
	(0.086)	(0.085)	(0.085)	(0.110)	(0.110)	(0.113)
Years of education of mother	-0.005	-0.006	-0.005	-0.000	0.000	-0.000
	(0.009)	(0.009)	(0.009)	(0.011)	(0.011)	(0.012)
Years of education of father	0.002	0.002	0.002	0.007	0.007	0.007
	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
Log monthly HH expend. per capita (10,000 Rs.)	0.147***	0.150***	0.149***	0.133***	0.130***	0.131***
	(0.026)	(0.026)	(0.026)	(0.030)	(0.031)	(0.033)
Log HH wealth (10,000 Rs.)	0.073***	0.073***	0.072***	0.075***	0.075***	0.076***
	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.009)
Observations	3,459	3,459	3,459	3,017	3,017	3,017
R-squared	0.323	0.322	0.322	0.271	0.270	0.202
First Stage F-Statistic				46.83	48.84	26.56

Source: Authors.
Note: SD = standard deviation; HH = household; Rs. = Pakistani rupees. Robust standard errors are clustered at the HH level. All specifications include agroecological zone, HH size, and ethnicity fixed effects, and controls for latitude, longitude, latitude × longitude, and elevation. The excluded instrument is the share of the flood-affected people in other villages in the district living in villages with ≥ 50% of households flood-affected. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

We see similar effects when we instead use the squared rainfall deviation measure (Columns (2) and (4)) and a linear measure of cumulative 2010 monsoon season rainfall (Columns (3) and (6)).[33] Overall, the results indicate that the presence of a flood relief program is associated with a significantly lessened and possibly no negative impact of the 2010 floods on aspirations.[34]

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[33] In the case of the OLS specification with our linear measure, the interaction between rainfall and the Watan Card program is not statistically significantð though it has same positive sign, indicating that the negative aspirational effects of rainfall are offset by the Watan Card program. Once we account for the endogeneity of the Watan Card program in our IV specification (Column 6), the interaction term becomes statistically significant.

[34]Results that instead allow every coefficient to vary by whether or not the Watan Card program is in place by separating estimating the model on two samplesð villages with the Watan Card, and villages without the Watan Cardð yield similar results (see Appendix Table B.8).

8. CONCLUSION

Leveraging the case of Pakistan, this paper first empirically establishes a link between aspirations and future-oriented political and economic behavior. It then examines whether natural disasters have only material effects or whether they also change individual behaviors by affecting individual aspirations for and investments in the future. We further examine the ability of governments to intervene and offset any negative aspirational impacts. These questions are important because a finding that natural disasters impact aspirations implies that we underestimate both the long-term costs of natural disasters and the benefits of social protection programs.

In addition to contributing new original data on aspirations and social protection, we make three important contributions to the literature. First, we highlight the important role that individual aspirations play in influencing individual actions and the subsequent level of economic development and political engagement in a country. Higher aspirations are associated with more voting, civic engagement, and even political knowledge. Second, we use unique circumstances in rural Pakistan to explore the impacts of natural disasters on individual aspirations, and we importantly examine the extent to which the presence of social welfare programs either inhibits or promotes high aspirations. Third, we introduce another research thread to the rich political science literature on the politics of natural disaster.

We focus on weather shocks as our negative shock to citizen well-being; future research should assess whether other types of negative shocks (for example, earthquakes or financial crises) have different effects on aspirations, and if aspirations are then differentially affected by government relief efforts. Responses to shocks perceived to be “acts of God” may differ from responses to those perceived to be manmade. On the other hand, responses to manmade shocks may be similar to responses to natural “acts of God” if individuals nonetheless consider themselves to have no control over them. Future research can disentangle what features of a shock motivate differential aspirational responses, and provide more nuanced policy lessons related to the optimal government response.

The 2010 Pakistan floods provide a natural experiment, and we marry 2010 rainfall data with historical rainfall data and original survey data we collected a year and a half later to capture the medium-term impacts of the floods. We find that the negative impacts of extreme rainfall are not limited to immediate property destruction. A year and a half later, individuals affected by extreme flooding aspire to achieve less in the future, which translates into fewer productive behaviors and less political engagement. Moreover, the effects are largest among those who are more vulnerable to the negative weather shock, including the poor, those dependent on agriculture, and those without strong informal support networks. Natural disasters like flooding have enduring detriments beyond immediate property loss because rainfall shocks results in loss of aspirations.

We importantly find that social welfare policies can successfully mitigate the negative effects of natural disasters on aspirations. We do so by taking advantage of data on the Pakistani government’s disaster relief program—the Watan Card program—to examine whether families that received flood relief faced a less severe negative aspirational blow from the 2010 floods. The Watan Card program was one of the largest post-disaster social safety net programs ever implemented (World Bank 2013). The official criterion for a household to receive relief was living in a “heavily affected” village, defined as one with at least 50 percent of houses or crops having been flood-affected. We exploit information stemming from this discontinuity to causally identify the extent to which social protection can lessen the negative effects of shocks on aspirations.

We indeed find that aspirations in early 2012 were higher for individuals residing in villages with the social protection program than for similar individuals residing in similarly flood-affected villages without the program. Our finding is akin to the work of Carlin, Love and Zechmeister (2014b), who find that a natural disaster can undermine social cohesion and trust, but that effect is less likely to the extent that the state delivers services (rule of law, welfare) effectively. We find that aspirations for the future is also adversely affected by natural disasters, and demonstrate that the government can blunt the disaster's negative impacts through social protection programs. In other words, disaster relief can improve the welfare of disaster-affected citizens today and increase their aspirations for the future. Moreover, our findings on the efficacy of the Watan Card program suggests that disaster-targeted relief does not necessarily create a dependency that lowers aspirations. Instead, such programs are associated with higher aspirations for the future.

Future research should examine the mechanism by which government social protection programs protect aspiration. For instance, do social welfare policies have an impact on citizens' aspirations by increasing their confidence in their government's capacity to provide citizens with economic and social security? Future research should also assess whether social welfare programs that do not respond directly to acute negative shocks like natural disasters have similar effects as do targeted relief programs. The relationship between aspirations and social protection is likely impacted by the context in which the protection is provided. Future research should also build on extant work on how victims hold political incumbents accountable after natural disasters (for example, Achen and Bartels 2004; Arceneau and Stein 2006; Bechtel and Hainmueller 2011; Gasper and Reeves 2011; Healy and Malhotra 2009; Jennings 1999; Malhotra and Kuo 2008). If disaster relief programs can help attenuate the negative effects of natural disasters on aspirations years after the disaster, does that also translate to greater support for incumbents in the long term?

Our results are important from a policy perspective. First, they suggest that raising individual aspirations is a worthy goal of government policy in its own right. Given the strong evidence we present on the links between aspirations and forward-looking behavior, policymakers should expect that their citizens will behave differently depending on their aspiration levels. In poor and developing-country contexts, eradicating poverty requires not only creating opportunities for citizens to succeed but also fostering the conditions that lead citizens to aspire to achieve and therefore avail of those opportunities. To the extent that a government is committed to ensuring the welfare of its citizens, it must tackle both of these challenges. Second, our results suggest that targeted social protection is an effective policy lever for raising aspirations in the wake of a natural disaster. The aspirational impacts of a disaster relief or other social protection programs properly belong in any cost-benefit analysis of the program's merits; failing to include them would lead one to underestimate the policy's benefit-cost ratio. Our findings importantly suggest that good policy can create and cultivate the institutional conditions that permit and encourage individuals to aspire.

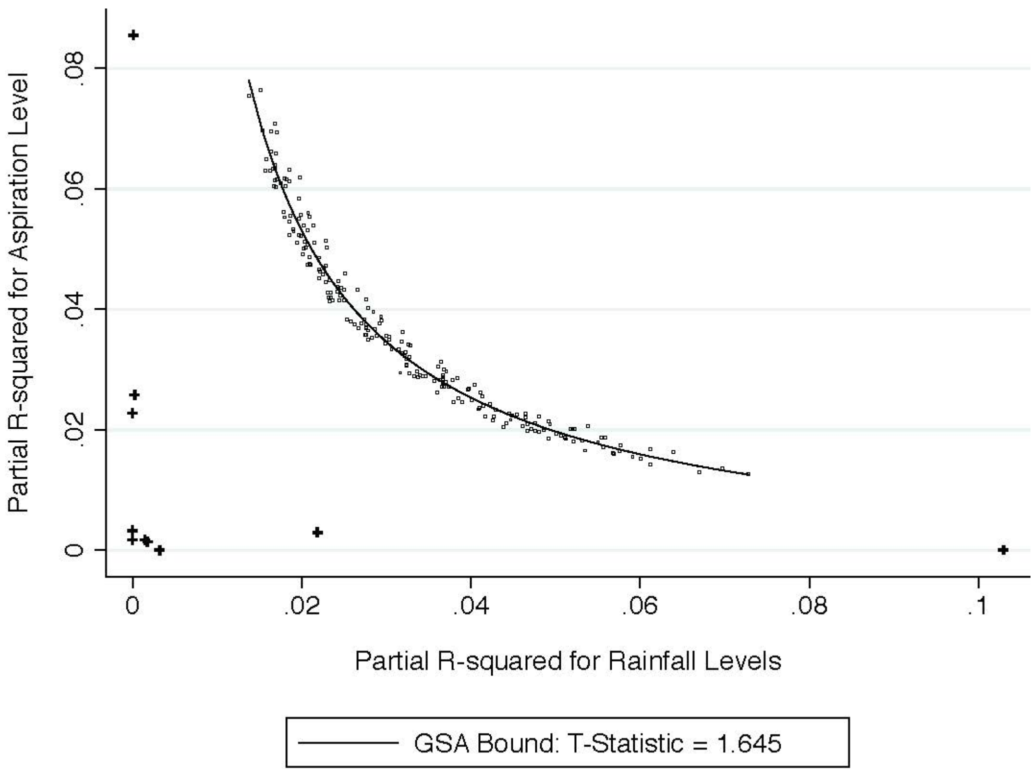
APPENDIX A: SENSITIVITY ANALYSIS

Aspirations Questions:

- Annual income: Annual income is the amount of CASH income you earn from all agricultural and non-agricultural activities, and money from BISP or other programs.
  - A.1.1 What is the level of personal income you have at present?
  - A.1.2 What is the level of personal income you would like to achieve?
- Assets: In section A.2, "you" implies "your household." Example of assets are vehicle, furniture, tv, cellphone. Please DO NOT include land and livestock, since these questions are aimed at non-productive assets (standard of living).
  - A.2.1 What is the level of assets you have at present? (What is the approximate value of the assets you have at present)? Report in PKR
  - A.2.2 What is the level of assets that you would like to achieve?
- Social Status On a scale of 1 to 10, 1 being the lowest and 10 being the highest level of social status one has, answer the following section.
  - A.3.1 What is the level of social status you have at present?
  - A.3.2 What is the level of social status that you would like to achieve?
- Education
  - A.4.1 What is your current level of education?
  - A.4.2 What level of education you would like to (wanted to) achieve?
    - 00 - Katchi/Pacci
    - 01 - Grade 1pr
    - 02 - Grade 2
    - 03 - Grade 3
    - 04 - Grade 4
    - 05 - Grade 5
    - 06 - Grade 6
    - 07 - Grade 7
    - 08 - Grade 8
    - 09 - Grade 9
    - 10 - Grade 10
    - 11 - Grade 11
    - 12 - Grade 12
    - 13 - Incomplete higher secondary (not university)
    - 14 - Complete higher secondary (not university)
    - 15 - Incomplete university
    - 16 - Complete university
    - 17 - MBBS Doctor

To increase our confidence that unobserved selection effects do not account for the key results that exogenous economic shocks impact aspirations, we also conduct a sensitivity analysis based on Imbens (2003). The downward-sloping curve in Figure A.1 represents how strongly a hypothetical observed variable would have to be correlated with (1) our key measure of economic shock (absolute value of 2010 monsoon-season rainfall deviation from the mean) and (2) our outcome measure (aspirations) to make the impact of economic shocks on aspirations statistically insignificant at the 10 percent level. The curve represents a threshold beyond which the hypothetical unobserved variable can annul the substantive estimated effect associated with our measure of economic shock. The contour in the figure represents the set of partial effects of an unobservable that makes our economic shock measure statistically insignificant. To judge whether the threshold is high or low, we turn to observed covariates. As the graph indicates, no covariate (the + on the figure) exceeds this threshold, implying that our results are not particularly sensitive to the unconfoundedness assumption, and hence are robust to endogeneity concerns about selection effects.

Figure A.1 Impact of relaxing the assumption of unconfoundedness: Rainfall levels



Source: Authors.

Note: The figure represents the results of the sensitivity analysis following Imbens (2003). Each + represents a covariate, plotted according to its additional explanatory power for the independent variable of interest (on the horizontal axis) and its explanatory power for the outcome (vertical axis), which in this case is aspiration level. In essence, each axis measures the increase (or decrease) in the R-squared statistic from adding that covariate to the regression in question. The downward-sloping curve represents the locus of points at which any independent covariate (observed or unobserved) would have sufficient association with both the independent variable and the outcome to reduce the effect of rainfall on aspirations such that the effect is statistically insignificant at a 10 percent level.

APPENDIX B: SUPPLEMENTAL TABLES

Table B.1 Effect of 2010 Monsoon-season rainfall on aspiration levels, showing robustness to using district fixed effects and clustering standard errors at the village level

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Absolute value of rainfall deviation from mean	-0.327***			-0.327**		
	(0.098)			(0.136)		
Square of rainfall deviation from the mean		-0.090***			-0.090**	
		(0.030)			(0.041)	
Centimeters of rainfall in 2010 monsoon (10s)			-0.353***			-0.353**
			(0.108)			(0.150)
Average rainfall during monsoon, 1981–2010	0.090	0.086	0.486***	0.090	0.086	0.486*
	(0.090)	(0.091)	(0.175)	(0.103)	(0.103)	(0.245)
SD of rainfall during monsoon, 1981–2010	0.592*	0.352	0.915**	0.592	0.352	0.915**
	(0.353)	(0.338)	(0.391)	(0.376)	(0.399)	(0.434)
Dummy—male	0.376***	0.376***	0.375***	0.376***	0.376***	0.375***
	(0.021)	(0.021)	(0.021)	(0.054)	(0.054)	(0.054)
Dummy—age 18–25	0.092***	0.095***	0.093***	0.092**	0.095**	0.093**
	(0.035)	(0.035)	(0.035)	(0.039)	(0.039)	(0.039)
Dummy—age 25–35	0.069**	0.071**	0.070**	0.069**	0.071**	0.070**
	(0.029)	(0.029)	(0.029)	(0.027)	(0.027)	(0.027)
Dummy—age 35–45	0.084***	0.086***	0.084***	0.084***	0.086***	0.084***
	(0.029)	(0.029)	(0.029)	(0.027)	(0.027)	(0.027)
Dummy—age 45–55	0.104***	0.105***	0.104***	0.104***	0.105***	0.104***
	(0.033)	(0.033)	(0.034)	(0.037)	(0.037)	(0.037)
Dummy—married	0.005	0.006	0.006	0.005	0.006	0.006
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
Dummy—primary education (grades 1–5)	0.238***	0.238***	0.240***	0.238***	0.238***	0.240***
	(0.029)	(0.029)	(0.029)	(0.028)	(0.029)	(0.029)
Dummy—middle education (grades 6–8)	0.334***	0.334***	0.336***	0.334***	0.334***	0.336***
	(0.037)	(0.038)	(0.038)	(0.041)	(0.041)	(0.041)
Dummy—high/intermediate education (grades 9–12)	0.510***	0.510***	0.511***	0.510***	0.510***	0.511***
	(0.035)	(0.035)	(0.035)	(0.042)	(0.043)	(0.042)
Dummy—post-secondary education	0.833***	0.832***	0.836***	0.833***	0.832***	0.836***
	(0.087)	(0.087)	(0.087)	(0.078)	(0.077)	(0.077)
Years of education of mother	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
	(0.009)	(0.009)	(0.009)	(0.007)	(0.007)	(0.007)
Years of education of father	0.004	0.004	0.004	0.004	0.004	0.004
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Log monthly HH expenditure per capita (10,000 Rs.)	0.153***	0.155***	0.152***	0.153***	0.155***	0.152***
	(0.027)	(0.027)	(0.027)	(0.032)	(0.032)	(0.032)
Log HH wealth (10,000 Rs.)	0.073***	0.073***	0.074***	0.073***	0.073***	0.074***
	(0.007)	(0.007)	(0.007)	(0.009)	(0.009)	(0.009)
Observations	3,459	3,459	3,459	3,459	3,459	3,459
R-squared	0.332	0.331	0.332	0.332	0.331	0.332
Level of clustering	Household	Household	Household	Village	Village	Village

Source: Authors.
Note: SD = standard deviation; HH = household; Rs. = Pakistani rupees. Robust standard errors are in parentheses and clustered at the household level. All specifications include district, household size and ethnicity fixed effects, and controls for latitude, longitude, latitude X longitude, and elevation. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.2 Effect of village being flooded in 2010 on aspiration levels

Dependent variable	Dummy—Village flooded in 2010			Aspiration Level		
	(1)	(2)	(3)	(4)	(5)	(6)
Centimeters of rainfall in 2010 monsoon (10s)	0.360***	0.375***	0.389***			
	(0.071)	(0.069)	(0.069)			
Dummy—village flooded in 2010				-0.811**	-0.737***	-0.889***
				(0.320)	(0.264)	(0.267)
Average rainfall during monsoon, 1981–2010	-0.193**	-0.267***	-0.288***	0.110	0.334***	0.322***
	(0.082)	(0.084)	(0.090)	(0.129)	(0.103)	(0.109)
SD of rainfall during monsoon, 1981–2010	-1.088***	-0.962***	-1.155***	0.425	-0.506	-0.597
	(0.327)	(0.312)	(0.314)	(0.377)	(0.342)	(0.379)
Dummy—male		-0.037***	-0.036***		0.334***	0.338***
		(0.010)	(0.010)		(0.024)	(0.024)
Dummy—age 18–25		-0.060**	-0.075***		0.046	0.041
		(0.027)	(0.027)		(0.044)	(0.048)
Dummy—age 25–35		-0.014	-0.022		0.058*	0.056
		(0.023)	(0.022)		(0.033)	(0.035)
Dummy—age 35–45		-0.036	-0.046**		0.049	0.044
		(0.023)	(0.023)		(0.036)	(0.038)
Dummy—age 45–55		-0.039	-0.048**		0.080**	0.072*
		(0.024)	(0.024)		(0.040)	(0.041)
Dummy—married		0.002	-0.010		0.014	0.012
		(0.023)	(0.022)		(0.034)	(0.036)
Dummy—primary education (grades 1–5)		-0.024	-0.016		0.218***	0.214***
		(0.019)	(0.019)		(0.033)	(0.033)
Dummy—middle education (grades 6–8)		-0.091***	-0.074***		0.270***	0.254***
		(0.027)	(0.027)		(0.047)	(0.047)
Dummy—high/intermediate education (grades 9–12)		-0.079***	-0.055**		0.458***	0.442***
		(0.024)	(0.023)		(0.044)	(0.043)
Dummy—postsecondary education		-0.097**	-0.054		0.768***	0.748***
		(0.049)	(0.045)		(0.095)	(0.095)
Years of education of mother		-0.020***	-0.016**		-0.020*	-0.022**
		(0.008)	(0.007)		(0.011)	(0.011)
Years of education of father		-0.006**	-0.005		-0.002	-0.003
		(0.003)	(0.003)		(0.005)	(0.005)
Log monthly HH expenditure per capita (10,000 Rs.)		0.146***	0.151***		0.257***	0.252***
		(0.025)	(0.026)		(0.050)	(0.052)
Log HH wealth (10,000 Rs.)		-0.021***	-0.010		0.057***	0.055***
		(0.006)	(0.007)		(0.010)	(0.011)
Baseline individual- and HH-level controls?	No	Yes	Yes	No	Yes	Yes
Housing quality controls?	No	No	Yes	No	No	Yes
Observations	3,507	3,459	3,451	3,507	3,459	3,451
F Stat, excluded instrument	25.67	29.78	31.83	25.67	29.78	31.83

Source: Authors.

Note: Robust standard errors are in parentheses and clustered at the household level. All specifications include agroecological zone, household size, and ethnicity fixed effects, and controls for latitude, longitude, latitude X longitude, and elevation.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.3 Effect of 2010 monsoon-season rainfall on aspiration levels, by household type and ownership of nonagricultural enterprises

Variable	Land cultivating household (1)	Agricultural wage labor (2)	Rural nonfarm household (3)	No non agricultural enterprise (4)	Has a non agricultural enterprise (5)
Absolute value of rainfall deviations from mean	-0.299**	-0.539***	-0.136	-0.279***	-0.188
	(0.130)	(0.137)	(0.132)	(0.085)	(0.221)
Average rainfall during monsoon, 1981–2010	0.313**	0.442**	0.083	0.244***	0.516**
	(0.153)	(0.188)	(0.111)	(0.086)	(0.248)
SD of rainfall during monsoon, 1981–2010	-0.528	0.482	0.112	-0.145	-0.913
	(0.637)	(0.602)	(0.584)	(0.335)	(0.900)
Dummy—male	0.505***	0.191***	0.279***	0.374***	0.329***
	(0.033)	(0.034)	(0.043)	(0.023)	(0.057)
Dummy—age 18–25	0.029	0.127*	0.212***	0.087**	0.134
	(0.057)	(0.065)	(0.058)	(0.039)	(0.087)
Dummy—age 25–35	0.067	0.041	0.121**	0.055*	0.130*
	(0.050)	(0.046)	(0.048)	(0.032)	(0.068)
Dummy—age 35–45	0.038	0.106**	0.151***	0.055*	0.222***
	(0.050)	(0.046)	(0.053)	(0.032)	(0.077)
Dummy—age 45–55	0.09	0.065	0.163***	0.091**	0.206**
	(0.057)	(0.050)	(0.060)	(0.036)	(0.094)
Dummy—married	0.021	0.03	-0.01	0.029	-0.06
	(0.048)	(0.054)	(0.053)	(0.032)	(0.082)
Dummy—primary education (grades 1–5)	0.211***	0.227***	0.168***	0.228***	0.229***
	(0.049)	(0.050)	(0.046)	(0.033)	(0.071)
Dummy—middle education (grades 6–8)	0.220***	0.334***	0.384***	0.310***	0.416***
	(0.056)	(0.057)	(0.071)	(0.039)	(0.124)
Dummy—high/intermediate education (grades 9–12)	0.463***	0.607***	0.443***	0.515***	0.440***
	(0.056)	(0.077)	(0.055)	(0.038)	(0.095)
Dummy—post-secondary education	0.921***		0.593***	0.880***	0.574***
	(0.150)		(0.077)	(0.100)	(0.124)
Years of education of mother	-0.001	0.02	-0.012	-0.006	0.007
	(0.015)	(0.023)	(0.013)	(0.010)	(0.019)
Years of education of father	0.002	-0.003	0.004	0.003	0.005
	(0.007)	(0.009)	(0.008)	(0.005)	(0.010)
Log monthly HH expenditure per capita (10,000 Rs.)	0.138***	0.073	0.187***	0.138***	0.217***
	(0.040)	(0.045)	(0.050)	(0.028)	(0.076)
Log HH wealth (10,000 Rs.)	0.100***	0.009	0.057***	0.069***	0.098***
	(0.015)	(0.013)	(0.013)	(0.007)	(0.025)
Observations	1,623	863	897	2,912	547
R-squared	0.355	0.26	0.307	0.321	0.373

Source: Authors.
Note: SD = standard deviation; HH = household; Rs = Pakistani rupees. Robust standard errors are in parentheses and clustered at the household level. All specifications include agroecological zone, household size, and ethnicity fixed effects, and controls for latitude, longitude, latitude *X* longitude, and elevation. Columns (1), (2), and (3) present three mutually exclusive, exhaustive groups, as do Columns (4) and (5). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.4 Effect of 2010 monsoon-season rainfall on aspiration levels, by geographic reach of social network

Variable	Has relatives who live in another district No (1)	Has relatives who live in another district Yes (2)	Has relatives who live in another province No (3)	Has relatives who live in another province Yes (4)
Absolute value of rainfall deviation from mean	-0.446***	-0.166*	-0.250***	0.163
	(0.141)	(0.094)	(0.085)	(0.242)
Average rainfall during monsoon, 1981–2010	0.374***	0.213**	0.383***	-0.436**
	(0.137)	(0.103)	(0.099)	(0.216)
SD of rainfall during monsoon, 1981–2010	-0.216	-0.273	-0.477	1.05
	(0.511)	(0.399)	(0.346)	(1.078)
Dummy—male	0.429***	0.347***	0.362***	0.401***
	(0.035)	(0.026)	(0.023)	(0.056)
Dummy—age 18–25	-0.03	0.124***	0.084**	0.13
	(0.061)	(0.043)	(0.038)	(0.088)
Dummy—age 25–35	0.056	0.067*	0.065**	0.069
	(0.049)	(0.035)	(0.032)	(0.069)
Dummy—age 35–45	0.113**	0.065*	0.082**	0.008
	(0.052)	(0.035)	(0.032)	(0.075)
Dummy—age 45–55	0.089*	0.105**	0.110***	0.091
	(0.052)	(0.043)	(0.035)	(0.092)
Dummy—married	0.004	0	0.033	-0.057
	(0.050)	(0.037)	(0.032)	(0.090)
Dummy—primary education (grades 1–5)	0.178***	0.253***	0.231***	0.278***
	(0.054)	(0.035)	(0.031)	(0.084)
Dummy—middle education (grades 6–8)	0.333***	0.342***	0.349***	0.304***
	(0.057)	(0.048)	(0.044)	(0.069)
Dummy—high/intermediate education (grades 9–12)	0.557***	0.491***	0.554***	0.389***
	(0.072)	(0.040)	(0.043)	(0.069)
Dummy—post-secondary education	0.789***	0.857***	0.790***	0.836***
	(0.094)	(0.116)	(0.079)	(0.180)
Years of education of mother	0.01	-0.007	-0.003	-0.007
	(0.028)	(0.010)	(0.010)	(0.023)
Years of education of father	0.021***	-0.002	0.005	0
	(0.007)	(0.005)	(0.005)	(0.009)
Log monthly HH expenditure per capita (10,000 Rs.)	0.063*	0.183***	0.130***	0.317***
	(0.037)	(0.035)	(0.027)	(0.082)
Log HH wealth (10,000 Rs.)	0.054***	0.081***	0.069***	0.075***
	(0.011)	(0.009)	(0.008)	(0.019)
Observations	1,040	2,413	2,810	639
R-squared	0.408	0.318	0.328	0.372

Source: Authors.

Note: SD = standard deviation; HH = household; Rs. = Pakistani rupees. Robust standard errors are in parentheses and clustered at the household level. All specifications include agroecological zone, household size, and ethnicity fixed effects, and controls for latitude, longitude, latitude X longitude, and elevation. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.5 Effect of 2010 monsoon-season rainfall on aspiration levels

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Income aspirations level						
Absolute value of rainfall deviations from mean	-0.344***	-0.353***				
	(0.129)	(0.124)				
Square of rainfall deviations from the mean			-0.106***	-0.095**		
			(0.040)	(0.039)		
Centimeters of rainfall in 2010 monsoon (10s)					-0.389***	-0.378***
					(0.142)	(0.137)
Full set of controls	No	Yes	No	Yes	No	Yes
Observations	3,653	3,595	3,653	3,595	3,653	3,595
R-squared	0.008	0.170	0.008	0.170	0.008	0.170
Panel B: Asset aspirations level						
Absolute value of rainfall deviations from mean	-0.091	-0.046				
	(0.131)	(0.119)				
Square of rainfall deviations from the mean			-0.025	-0.007		
			(0.040)	(0.037)		
Centimeters of rainfall in 2010 monsoon (10s)					-0.163	-0.133
					(0.148)	(0.133)
Full set of controls	No	Yes	No	Yes	No	Yes
Observations	4,635	4,560	4,635	4,560	4,635	4,560
R-squared	0.004	0.064	0.004	0.064	0.004	0.065
Panel C: Social status aspirations level						
Absolute value of rainfall deviations from mean	0.022	0.077				
	(0.129)	(0.120)				
Square of rainfall deviations from the mean			0.019	0.040		
			(0.040)	(0.037)		
Centimeters of rainfall in 2010 monsoon (10s)					0.052	0.106
					(0.137)	(0.130)
Full set of controls	No	Yes	No	Yes	No	Yes
Observations	4,762	4,684	4,762	4,684	4,762	4,684
R-squared	0.007	0.080	0.007	0.080	0.007	0.080
Panel D: Education aspirations level						
Absolute value of rainfall deviations from mean	-0.351***	-0.281***				
	(0.117)	(0.086)				
Square of rainfall deviations from the mean			-0.111***	-0.070***		
			(0.035)	(0.026)		
Centimeters of rainfall in 2010 monsoon (10s)					-0.391***	-0.305***
					(0.123)	(0.090)
Full set of controls	No	Yes	No	Yes	No	Yes
Observations	4,601	4,532	4,601	4,532	4,601	4,532
R-squared	0.019	0.482	0.019	0.482	0.019	0.482

Source: Authors.

Note: Each of the four outcome variables has mean 0 and standard deviation 1. Each individual's aspirations in the stated dimension were normalized using the district mean and standard deviation. Robust standard errors are in parentheses and clustered at the household level. All specifications include our full set of geographic, individual-, and household-level controls, including agroecological zone fixed effects and controls for the mean and SD of rainfall for the last 30 years. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.6 Effect of 2010 monsoon-season rainfall on aspiration levels, by gender

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Absolute value of rainfall deviations from mean	-0.293***	-0.277***				
	(0.099)	(0.084)				
Absolute value of rainfall deviations from mean × Dummy—male	0.037	0.017				
	(0.055)	(0.055)				
Square of rainfall deviations from the mean			-0.084***	-0.077***		
			(0.031)	(0.027)		
Square of rainfall deviations from the mean × Dummy—male			0.015	0.009		
			(0.018)	(0.018)		
Centimeters of rainfall in 2010 monsoon (10s)					-0.421***	-0.429***
					(0.110)	(0.091)
Centimeters of rainfall in 2010 monsoon (10s) × Dummy—male					0.182***	0.178***
					(0.030)	(0.030)
Dummy—male	0.422***	0.336***	0.440***	0.339***	-0.154	-0.259**
	(0.093)	(0.092)	(0.055)	(0.055)	(0.109)	(0.108)
Average rainfall during monsoon, 1981–2010	-0.006	0.256***	-0.007	0.252***	0.262	0.535***
	(0.095)	(0.081)	(0.096)	(0.082)	(0.162)	(0.134)
SD of rainfall during monsoon, 1981–2010	0.702*	-0.155	0.486	-0.372	1.231***	0.412
	(0.366)	(0.310)	(0.351)	(0.298)	(0.413)	(0.349)
Full set of controls	No	Yes	No	Yes	No	Yes
Observations	3,507	3,459	3,507	3,459	3,507	3,459
R-squared	0.142	0.322	0.142	0.321	0.149	0.329

Source: Authors.

Note: Robust standard errors are in parentheses and clustered at the household level. All specifications include agroecological zone, household size, and ethnicity fixed effects, and controls for latitude, longitude, latitude X longitude, and elevation. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.7 Effect of 2010 monsoon-season rainfall on aspiration levels, by age cohort

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Absolute value of rainfall deviation from mean	-0.274**	-0.244**				
	(0.119)	(0.101)				
Absolute value of rainfall deviation from mean × Dummy—age 18–25	0.044	-0.080				
	(0.114)	(0.104)				
Absolute value of rainfall deviation from mean × Dummy—age 25–35	-0.004	-0.017				
	(0.095)	(0.081)				
Absolute value of rainfall deviation from mean × Dummy—age 35–45	0.077	0.033				
	(0.094)	(0.079)				
Absolute value of rainfall deviation from mean × Dummy—age 45–55	-0.021	-0.046				
	(0.103)	(0.089)				
Square of rainfall deviation from the mean			-0.090**	-0.067**		
			(0.038)	(0.032)		
Square of rainfall deviation from the mean × Dummy—age 18–25			0.026	-0.015		
			(0.036)	(0.034)		
Square of rainfall deviation from the mean × Dummy—age 25–35			0.007	0.000		
			(0.031)	(0.027)		
Square of rainfall deviation from the mean × Dummy—age 35–45			0.025	0.012		
			(0.030)	(0.026)		
Square of rainfall deviation from the mean × Dummy—age 45–55			-0.012	-0.017		
			(0.033)	(0.029)		
Centimeters of rainfall in 2010 monsoon (10s)					-0.177	-0.180**
					(0.110)	(0.090)
Centimeters of rainfall in 2010 monsoon (10s) × Dummy—age 18–25					-0.148**	-0.145***
					(0.058)	(0.050)
Centimeters of rainfall in 2010 monsoon (10s) × Dummy—age 25–35					-0.147***	-0.121***
					(0.052)	(0.046)
Centimeters of rainfall in 2010 monsoon (10s) × Dummy—age 35–45					-0.088*	-0.075
					(0.053)	(0.046)
Centimeters of rainfall in 2010 monsoon (10s) × Dummy—age 45–55					-0.039	-0.051
					(0.059)	(0.051)
Average rainfall during monsoon, 1981–2010	-0.022	0.258***	-0.017	0.256***	0.251	0.520***
	(0.095)	(0.082)	(0.097)	(0.082)	(0.163)	(0.134)
SD of rainfall during monsoon, 1981–2010	0.876**	-0.165	0.695**	-0.381	1.224***	0.169
	(0.363)	(0.311)	(0.348)	(0.300)	(0.410)	(0.352)

Table B.7 Continued

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Dummy—age 18–25	0.041	0.219	0.042	0.135	0.624***	0.594***
	(0.188)	(0.170)	(0.105)	(0.096)	(0.200)	(0.175)
Dummy—age 25–35	0.079	0.096	0.055	0.068	0.584***	0.488***
	(0.153)	(0.133)	(0.087)	(0.076)	(0.176)	(0.157)
Dummy—age 35–45	-0.072	0.025	-0.016	0.046	0.356**	0.333**
	(0.149)	(0.129)	(0.084)	(0.074)	(0.180)	(0.157)
Dummy—age 45–55	0.113	0.182	0.115	0.155*	0.214	0.282
	(0.172)	(0.149)	(0.101)	(0.088)	(0.202)	(0.177)
Full set of controls	No	Yes	No	Yes	No	Yes
Observations	3,503	3,459	3,503	3,459	3,503	3,459
R-squared	0.022	0.322	0.022	0.321	0.025	0.324

Source: Authors.

Note: SD = standard deviation; HH = household. Robust standard errors are in parentheses and clustered at the household level. All specifications include agroecological zone, household size, and ethnicity fixed effects, and controls for latitude, longitude, latitude longitude, and elevation. *p < 0.10, **p < 0.05, ***p < 0.01.

Table B.8 Effect of 2010 Monsoon season rainfall on aspiration levels, by whether the village has the Watan Card Flood Relief Program (separate samples)

Variable	Village does not have the Watan Card Program			Village has the Watan Card Program		
	(1)	(2)	(3)	(4)	(5)	(6)
Absolute value of rainfall deviations from mean	-0.446***			-0.055		
	(0.102)			(0.210)		
Square of rainfall deviations from the mean		-0.130***			-0.019	
		(0.030)			(0.070)	
Centimeters of rainfall in 2010 monsoon (10s)			-0.533***			-0.121
			(0.112)			(0.238)
Average rainfall during monsoon, 1981–2010	0.378***	0.383***	0.965***	0.590***	0.596***	0.680***
	(0.099)	(0.100)	(0.187)	(0.151)	(0.148)	(0.233)
S.D. of rainfall during monsoon, 1981-2010	-0.056	-0.019	0.910*	-1.913**	-1.977***	-1.543
	(0.460)	(0.460)	(0.516)	(0.743)	(0.570)	(1.064)
Dummy - male	0.308***	0.307***	0.306***	0.536***	0.536***	0.537***
	(0.026)	(0.026)	(0.026)	(0.034)	(0.034)	(0.034)
Dummy - age 18–25	0.090**	0.089**	0.087**	0.102	0.102	0.101
	(0.042)	(0.042)	(0.042)	(0.070)	(0.070)	(0.070)
Dummy - age 25–35	0.058	0.057	0.059*	0.097*	0.097*	0.097*
	(0.036)	(0.036)	(0.036)	(0.052)	(0.052)	(0.052)
Dummy - age 35–45	0.085**	0.084**	0.085**	0.053	0.053	0.053
	(0.036)	(0.036)	(0.036)	(0.053)	(0.053)	(0.053)
Dummy - age 45–55	0.121***	0.122***	0.122***	0.035	0.036	0.035
	(0.039)	(0.039)	(0.039)	(0.065)	(0.065)	(0.065)
Dummy - married	0.015	0.014	0.014	0.040	0.040	0.040
	(0.034)	(0.034)	(0.034)	(0.066)	(0.066)	(0.066)
Dummy - primary education (grades 1–5)	0.245***	0.245***	0.250***	0.188***	0.188***	0.188***
	(0.034)	(0.034)	(0.034)	(0.057)	(0.057)	(0.057)
Dummy - middle education (grades 6–8)	0.373***	0.374***	0.373***	0.214***	0.215***	0.214***
	(0.044)	(0.044)	(0.043)	(0.065)	(0.065)	(0.065)
Dummy - high/interm. education (grades 9–12)	0.542***	0.543***	0.542***	0.388***	0.388***	0.387***
	(0.041)	(0.041)	(0.041)	(0.072)	(0.072)	(0.072)
Dummy - post-secondary education	0.950***	0.951***	0.951***	0.505***	0.506***	0.506***
	(0.111)	(0.111)	(0.111)	(0.111)	(0.111)	(0.111)
Years of education of mother	-0.004	-0.004	-0.005	-0.045	-0.045	-0.045
	(0.010)	(0.010)	(0.010)	(0.030)	(0.030)	(0.030)
Years of education of father	0.001	0.001	-0.000	0.006	0.006	0.006
	(0.005)	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)
Log monthly HH expend. per capita (10,000 Rs.)	0.160***	0.161***	0.163***	0.052	0.053	0.052
	(0.033)	(0.033)	(0.032)	(0.043)	(0.043)	(0.043)
Log HH wealth. (10,000 Rs.)	0.076***	0.076***	0.076***	0.073***	0.073***	0.073***
	(0.009)	(0.009)	(0.009)	(0.013)	(0.013)	(0.013)
Observations	2531	2531	2531	928	928	928
R-squared	0.324	0.323	0.325	0.393	0.393	0.393

Source: Authors.

Note: Columns (1)–(3) use the sample of villages that did not receive the Watan Card Program, while columns (4)–(6) use the sample of villages that did receive the program; separating the sample allows *all* covariates to have differential impacts on aspirations depending on whether the Watan Card Program was in place. Robust standard errors are clustered at the HH level. All specifications include agro-ecological zone, HH size, and ethnicity FE, and controls for latitude, longitude, latitude × longitude, and elevation. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

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