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Mitigating the legacy of violence: Can flood relief improve people's trust in government in conflict-affected areas? Evidence from Pakistan

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ABSTRACT

Climate change and violent conflict present two of the most substantial barriers to reaching the Sustainable Development Goals by 2030. Many of the countries bearing the greatest impacts of a changing climate also grapple with protracted armed conflict. Despite this, we still have limited knowledge about how political and environmental insecurities affect trust in the institutions that are responsible for disaster management, security and conflict resolution. In this paper we explore whether being exposed to violent armed conflict is associated with low levels of political trust, and whether this can be mitigated by state action. Relying on a household survey covering some 2000 rural households in Pakistan, we investigate how state disaster response shaped trust in conflict-affected contexts in the years following the severe flooding of 2010. Our study suggest that negative implications of violence exposure on political trust can be offset by disaster relief efforts by the state, but only in instances when the government is not involved in the violent activities. Our findings contribute to our understanding of the joint impact of conflict and disasters on political trust, and importantly shows that in some instances, government interventions in a different political domain can reduce negative consequences of armed conflict on trust. Understanding the interplay of compound risks in contexts where multiple risks are occurring simultaneously is crucial because without adequate, coordinated government action, it will be impossible to protect the lives, health and livelihoods of affected people in Pakistan and beyond.

1. Introduction

Many of the countries that are most vulnerable to the consequences of a changing climate and extreme weather events are also experiencing protracted armed conflicts. From floods in Pakistan, cyclones in Bangladesh and Myanmar, to droughts in Somalia, natural hazard-related disasters and violent conflicts have long occurred in the same communities, at the same time. About 60% of climate-related disaster deaths happened in the world's top 30 fragile states (Peters & Budimir, 2016), and armed conflict has a considerable impact on many aspects of disaster risk reduction and management. It diverts financial resources that could be invested into disaster prevention, damages infrastructure, affects social cohesion within communities and reduces social trust between citizens and the state (Walch, 2016). Policies guiding disaster and conflict prevention continue to be drafted and managed in silos, both at national and international levels (Peters, 2019). Targeted interventions towards either conflict or disasters are nonetheless likely to impact the other, and in this study we zoom in on the interplay of conflict and disaster by examining how post-disaster assistance impacts political trust in conflict-affected areas. We ask the following question:

Can government flood response reduce the negative effect of armed conflict on citizen trust in the state?

Considering the substantial geographical overlap between violent conflict and natural-hazard-related disasters, research in the context of such compound events is surprisingly scarce. There is a vast body of literature assessing how climate impacts shape conflict risk (see e.g. mapping by Koubi, 2019), and more recently how disasters influence the vulnerabilities that condition conflict (see e.g. Reinhardt & Lutmar, 2022). Less is understood, however, about how these risks interact beyond the acknowledgment that climate change and violent conflict pose dual and reinforcing risks, potentially locking countries into vicious cycles of perpetual vulnerability (Buhaug & von Uexkull, 2021). Specifically, the co-occurrence of disaster and conflict makes for a crisis where authority, legitimacy and capacity are all put to the test (Desportes et al., 2019). Trust and functioning institutions have been found to mitigate violent outcomes after flooding across Sub-Saharan Africa (Petrova, 2022), but the question of whether post-disaster relief could also influence the negative effects of armed conflict on trust remains unanswered.

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Understanding trust and local legitimacy in conflict settings is an important task even in the absence of disasters. We start from the theoretical expectation that being exposed to political violence reduces people's political trust because the government has failed to provide safety from violence and enforce public order (Gates & Justesen, 2020). Considering that conflict blame is often attributed to the state, we then ask whether an intervention on the part of the government – in the form of disaster relief – might reduce the negative effects of conflict exposure on trust. Even though psychological research shows that pro-social behavior sometimes follows traumatic events like disasters (Vardy & Atkinson, 2019), we know that people place a higher value on disaster response than on failed disaster prevention. Thus, depending on the quality and scope of the response, flood relief might be able to mitigate some of the negative effects of violence exposure on trust in the state. Importantly, we expect that it matters whether the government is involved in the violence, and that in areas where the government is not engaged in violent activities, it will be rewarded more for their relief efforts than in areas where the government itself is directly involved in violent conflicts.

We explore these relationships in the case of Pakistan, a context marked by protracted violence and severe (recurrent) flooding. We test our theoretical expectations on nearly 2000 households surveyed in 2012 and 2013 in the Pakistan Rural Household Panel Survey (PRHPS).[1] The survey covers 19 divisions[2] in Pakistan, allowing us to make a context-specific assessment of the compound effect of two phenomena on political trust. To that end, we combine the fine-grained survey data with conflict events, available from the Uppsala Conflict Data Program (UCDP). Our results suggest that households that have been exposed to state-based violence do display lower trust in state government. When we take into account whether households were part of the government's flood relief program, we witness a somewhat less negative effect on trust, but this effect is weak, leading us to conclude that disaster relief does not seem to mitigate the negative consequences of state conflict exposure. When we look at households exposed to violence between non-state groups however, we see that trust in state institutions is compromised only for those who did not participate in the flood program. Among the households exposed to non-state conflict, those who received flood assistance do in fact display higher levels of trust in the state than those who did not. These findings imply that the negative effects of violence exposure for political trust can be offset by government action in the form of disaster relief, but only when the government is not involved in the violence in the first place.

The study makes two main contributions. First, while the literature focusing on the relationship between climate and conflict has predominantly investigated violent contention as a response to negative climatic conditions, we provide one of the first studies that address how disaster and conflict jointly impact another outcome, in our case, political trust. As such, we move beyond a perspective highlighting a one-directional impact of climate vulnerability on conflict and explore alternative responses and practices to adopt in times of crises. Moreover, focusing on relief rather than the disaster itself improves our understanding of post-disaster dynamics and supports existing findings that response matters for people's assessments of governments after disasters. Second, by examining the effects of state response on political trust in the context of protracted violence, we contribute new knowledge on possible effective interventions that can break the destructive interactions between natural hazard-related disasters and armed conflict. Citizens' level of trust in their government is increasingly recognized as a key component of political engagement and community well-being, as well as a fundamental part of peace and reconstruction efforts. This carries important implications for both short- and long-term policies, as we show that well-administered social protection programs can restore livelihoods in the present, but also improve political trust for the future. Our results indicate that governments can successfully engage in crisis response even in conflict-affected contexts, and as long as they are not themselves involved in the violence, trust can improve as a consequence.

2. Existing literature: Armed conflict, disasters and trust

In this section, we begin with a brief overview of literature on the consequences of armed conflict for affected societies, including on trust. This provides an important foundation for understanding the consequences of living in areas of protracted armed conflict, and is relevant for our first expectation that conflict exposure reduces trust among affected populations. After this, we move to the literature on disasters and conflict. While most of this literature investigate how disasters influence conflict risk, we focus instead on the studies that consider how conflict can shape disaster vulnerability, how consequences for post-disaster trust is connected to government action rather than the disaster itself, and finally how disasters and conflict jointly reinforce vulnerabilities.

The devastating consequences of violent conflict for affected societies have long been discussed in the academic literature as well as among policy makers. There is a solid body of literature, albeit mainly focusing on large-scale conflicts, showing that armed conflict undermines economic development (Gates et al., 2012), public health provision (Ghobarah et al., 2003), access to natural resources (Raleigh, 2011) and psychological well-being (Mollica et al., 1999). When it comes to economic costs, civil war has been found to influence both the level and composition of economic activity in war-affected countries (Collier, 1999). Numerous studies have found that armed conflict constrains households' livelihoods by deteriorating income stability (Brück et al., 2019) and exacerbating poverty levels (Nigel, 2009). Beyond armed conflict, studies have also looked at the negative and durable consequences of state repression for political behavior, political engagement such as voter turnout (e.g., Zhukov & Talibova, 2018), mobilization (e.g., Chenoweth et al., 2017; Sullivan et al., 2012), preferences for dissent (e.g., Hatz, 2019) and trust in the central government (e.g., Desposato et al., 2021; Lupu & Peisakhin, 2017). Some studies find that increased violence or attacks can increase trust in the president and ruling party also in conflict situations (e.g., Blattman, 2009).[3] While most of the literature on conflict/state repression and trust aims to explain variation in trust levels, some have also looked at the importance of trust for post-conflict reconstruction. Casas-Casas et al. (2020) find, for instance, that higher levels of trust in the Colombian government and ex-combatants improved people's attitudes towards the peace process and reconciliation after the conflict.

Even though armed conflict and disasters often co-occur geographically, the focus in the literature has been almost exclusively on how disasters, including subsequent aid inflows, can impact conflict risk (see for instance De Juan et al., 2020; Ide, 2023; Walch, 2018b). More relevant to our research question, a handful of studies have also looked at how conflict affects disaster vulnerability, concluding that many of the capacities required to adapt to a changing climate, including extreme weather events, are also affected by ongoing armed conflict or legacies of past conflict (Barnett, 2006). For example, Jones et al. (2016) reported that Nepal's history of conflict negatively affected the legislative and institutional framework around earthquake risk reduction in the country. In a rare cross-country assessment of how armed conflict impacts disaster vulnerability, Marktanner et al. (2015) find that disaster deaths are consistently higher in countries with a history of armed conflict. Another example comes from Field (2018),

[1] The time period is restricted to 2012–2013 due to data availability.

[2] These are second-order administrative units.

[3] Others again ascribe this to so-called "preference falsification" where fear of the regime explains higher levels of trust following increased insecurity (García-Ponce & Pasquale, 2015).

who uses the case of the Philippines to show how violence in Mindanao and Typhoon Haiyan placed pressure on the same national governance structures and drew on the same humanitarian resources to mutually reinforce the risks faced by affected populations.

Looking at the impact of violence on trust in Turkana, Kenya, armed conflict has transformed social networks that are instrumental for resource governance and building resilience to drought (Eriksen & Lind, 2009). Similarly, mistrust in the government following the long civil war in El Salvador hampered the ability to address the root economic and political causes of disaster vulnerability and provide effective relief for the early 2001 earthquake (Wisner, 2001). This does not mean that disaster resilience cannot be improved in conflict contexts, however. Exploring disaster risk reduction (DRR) in Mali and the Philippines, Walch (2018a) finds that while armed conflict increases people's vulnerability to disasters, DRR can also be sustained depending on the wartime political order. He finds that in situations of 'rebel stability', where rebel groups that control territory, are on good terms with the local populations and utilize existing informal institutions, DRR efforts can be improved even in conflict situations.

Altogether, extant literature on disasters and armed conflict tends to treat either disaster (sometimes humanitarian relief) or armed conflict as the dependent variable. Since both phenomena frequently happen simultaneously and even repeatedly, they are also likely to jointly impact other relevant outcomes, such as trust. Apart from Walch (2018a) and Field (2018), the impacts of both conflict and disasters, and then predominantly the response to the disasters rather than the disaster itself, on trust are assessed separately. As a consequence, we still do not know much about how the phenomena interact to shape trust in affected societies, and whether government action can have an impact on trust levels even in conflict-affected societies. This is important because many communities face this dual burden of disasters and conflict, and because trust is a central component of social capital, and ultimately conflict resolution and reconciliation.

3. Theoretical argument

In this section, we outline our theoretical expectations concerning how violent conflict impacts trust in formal structures and institutions before we move to the possible mitigating effects of flood shocks and related governmental responses. Separately, both exposure to violent conflict and disasters have detrimental consequences for affected people and their households,[4] and to the extent that people attribute the consequences of the shock to the (in)action of the government we assume that both reduce political trust. This attribution is key, however, and because effective disaster relief has the potential to increase people's trust in the government, we expect that government disaster relief response has the potential to offset some of the negative effects of conflict on political trust.

While there are many reasons to expect that the prevalence of and exposure to violence will influence people's perception of, and trust in, the government and state institutions, the literature on this is limited, though growing.[5] As stated by Deglow and Sundberg (2021b), much of the research on political trust – trust between the state and its citizens – has focused on Western democracies. Here, large-scale violent attacks are often found to increase people's trust in political institutions because the threat causes people to "rally round the flag". This holds true in cases of both foreign (see,e.g. Dinesen & Jæger, 2013; Woods, 2011) and domestic (e.g. Wollebæk et al., 2012) terrorism.

In contexts of protracted violence, however, the conditions shaping political trust are different from those found in a peaceful environment. The presence of an armed conflict means that the government has effectively failed to provide security for (at least parts of) the population. Gates and Justesen (2020) point out that attacks are not very likely to trigger increased support and trust in state institutions in situations where voters blame the government for failing to provide protection against recurring violence. Governments' action (or inaction) in conflict areas often leads to direct physical and human losses among the local population, negatively affecting their perception of the state (De Juan & Pierskalla, 2016). This is of course the case when governments are themselves the perpetrators of violence, but also because the population evaluates the performance of the government and, thereby, its ability to provide for the population.

In countries with ongoing armed conflict then, we expect people's evaluations of the state to be more negative, due to the lack of security as well as reduced economic and social opportunities. This follows clearly from existing research showing that exposure to violence reduces people's trust in the national government (Axinn et al., 2012; De Juan & Pierskalla, 2016), the president (Gates & Justesen, 2020) and other state institutions, such as the police (Deglow & Sundberg, 2021a).[6] Following the accountability argument put forward by Gates and Justesen (2020), we expect violence exposure to negatively impact people's trust in the national government, and propose the first hypothesis:

Hypothesis 1a. Households exposed to state-based violence have lower levels of trust in state institutions

When the government is not involved in the violence however, the expectation is less clear. It is conceivable that attacks by insurgents and armed groups may cause people to rally around the government and result in increased trust in its institutions. However, in an environment of repeated attacks and protracted violence, it is also possible that the government will be punished for failing to protect citizens from violence as well as to enforce political order in general. We expect the latter effect to be the strongest and propose that the state will receive reduced levels of trust also among households exposed to non-state violence:

Hypothesis 1b. Households exposed to non-state violence have lower levels of trust in state institutions

While failure to protect citizens from violence, and even being the perpetrator of the violence, can be attributed directly to the government, other types of shocks may also have similar consequences. For instance, negative economic shocks tend to reduce people's trust in political institutions (Margalit, 2019). Similarly, natural hazard-related disasters such as floods, storms and earthquakes often have both physical and psychological impacts on affected individuals. Disasters can destroy people's livelihoods and physical assets, and create economic barriers to services like schooling and healthcare. This may reduce people's trust in state institutions responsible for delivering these services. For instance, Katz and Levin (2015) found that, after the Ica earthquake in 2007, support for the incumbent in Peru decreased and remained low for a long period, although the immediate reduction in support for democracy did not persist very long. Flores and Smith (2013) also showed that states' disaster preparedness levels affect leaders' tenure in office, depending on the type of political regime. Guiso et al. (2017) found a strong negative association between economic insecurity and trust in political institutions, and given that people's hard work and investments are vulnerable to the occurrence of extreme weather events,

[4] See also Justino (2011) for a specific investigation of the effect of exposure to conflict on household well-being.

[5] See Fiedler and Rohles (2021) for a thorough overview of the literature on the effects of armed conflict on social cohesion more broadly.

[6] Exposure to violence is likely to erode social trust, particularly towards out-groups (Fiedler & Rohles, 2021), and while it is possible to have high levels of interpersonal or social trust, i.e. trust in other people, and low level of trust in political leaders, the opposite is less common. Even though the relationship between social and political trust is less clear than one might expect (Newton, 2007), it is conceivable that, particularly long-term, exposure to conflict might erode political trust through social-psychological effects as well.

feeling diminished control over their lives, people may be less inclined to trust formal structures.

Disasters per se are rarely attributed to political leaders, but in contexts facing repeated disasters, failure to provide adequate prevention and preparedness measures, is likely to be. Consequent inabilities on the part of governments to provide public goods and impede destruction following disasters might therefore threaten their survival (Chang & Berdiev, 2015). Thus, the impact of a disaster on trust in the political system ultimately depends on how the government reacts in the aftermath of the shock. Disasters are sometimes devastating to (e.g., Drury & Olson, 1998) and at other times beneficial for (e.g., Gallego, 2018) incumbent survival. A key element of government reaction is disaster relief, which has the potential to mitigate negative appraisals related to the damage caused by the disaster itself.

Both Gasper and Reeves (2011) and Cole et al. (2012) attribute post-disaster positive assessments of government officials to disaster relief specifically. Evidence from rural Pakistan show that flood-affected individuals from villages that received disaster relief experienced no reduction in aspirations, while the aspirations of those from similarly affected villages without the program were substantially lowered (Kosec & Mo, 2017). Disasters can also be positively associated with social capital (Yamamura, 2016), but the relationship is highly dependent on the efficacy of government response (Fair et al., 2017). In places in Latin America where governments respond poorly to disasters, the correlation between self-reported damage from earthquakes and interpersonal trust appears to be negative, while the opposite is true when communities felt that the government response was effective (Carlin et al., 2014). Generally, disaster social protection programs can restore assets, facilitate access to education and healthcare, and generate new job opportunities. Psychologically, governmental programs can also ensure that individuals will be less fearful and more confident about their future by offering support and showing that the government is reliable (Kosec & Mo, 2017). In addition, when the government and civil society response effectively addresses a disaster's economic impact, political engagement and trust may increase as citizens learn about their government's capacity and willingness to respond (Fair et al., 2017). In a study of trust in the local government after the Wenchuan earthquake in China in 2008, Han et al. (2011) find that people's trust in the local government increased when local authorities responded to the earthquake effectively, but when responses were slow or absent, political trust decreased.

In this study, we focus on a flood relief program as an example of state intervention. Nevertheless, post-disaster social protection programs differ from other state actions such as implementing education programs in that they relate to an extremely dramatic event, where the government is expected to respond in the immediate aftermath. Inadequate response in certain areas can also reveal traces of patronage politics. Disaster response can as such become a platform for political issues to play out in relation to aid flows, especially in contexts of violent conflict (Desportes et al., 2019). While the expectations for receiving government assistance will vary between different groups in a society, particularly a society in armed conflict, disaster relief is a response to an external event and the likelihood that people will expect (and accept) help from the government should be higher than for other types of government schemes and assistance, even among the most marginalized parts of the population.

Taken together, then, while floods in themselves may decrease the level of governmental trust, we expect that government reaction in the form of flood relief can mitigate this decrease in trust among relief recipients. In addition, we expect that governmental disaster relief schemes will also be able to offset some of the negative impacts of conflict on trust, as a high level of state action may come as an unexpected and positive surprise for the population.[7] Based on this, our third hypothesis reads:

H2a. Households' exposure to government disaster relief will mitigate the negative effect of violence on political trust

Because we are interested in the interaction between violence exposure and flood response, the role of the state vis-a-vis other conflict actors also matters. Who is involved in the violence, will likely influence levels of trust both independently and through expectations regarding government assistance following flooding. For instance, De Juan and Hänze (2021) argue that whether exposure to adverse environmental conditions increases or decreases inter-ethnic trust depends on the degree of group-level equality of exposure. When the state is not among those involved in the violence, we expect the attribution mechanism to be easier to "reverse" by providing support of some kind – for instance by disaster relief – than when the state is involved in the violence itself.[8] Consequently we expect that the mitigating effect of flood relief is stronger for non-state violence, as reflected in our final hypothesis:

H2b. The mitigating effect of government disaster relief on trust is stronger when the government is not involved in the violence that households are exposed to

While it is evident that armed conflict can reduce trust in institutions and that disaster relief can increase levels of trust, the impacts are not unidirectional. As already mentioned, there is a burgeoning literature on the effects of climate disasters on conflict risk. It is completely plausible that the severe flooding that happened in 2010 influenced the ongoing conflicts in affected areas, which in turn could have potentially affected levels of trust. Another, perhaps more pertinent concern, is the risk that conflict increases the severity of flood consequences and as such – the distribution of disaster relief. The presence of armed conflict is likely to make affected areas more vulnerable to extreme weather as infrastructure, local governance and disaster preparedness can be weak or even non-existing, depending on the actors involved and the severity of the conflict. This means that there is an inherent bias towards conflict-affected areas to be worse off following a disaster than a comparable area that is not affected by conflict. Relatedly, conflict alignments could also impact the likelihood of receiving flood relief. For instance, conflict could prevent the distribution of relief aid both directly and indirectly, depending on access and the intensity of violence. Disaster relief could also be connected to patronage, or it could be a way for governments to reward its supporters. In addition, people who do not trust the government at all might even refuse to accept disaster relief.

The diagram in Fig. 1 shows these complex interrelationships and illustrates the endogeneity between the factors of interest in our study. The figure shows that impacts are multi-directional and that there are feedback loops between most of the factors. The solid black arrows indicate the relationships that we focus on in this paper, namely investigating how conflict exposure and disaster relief after flooding impact trust. In the research design and analysis sections, we discuss and address the various implications of these endogeneities for our study in more detail.

4. Research design

4.1. The case of Pakistan

Pakistan provides a pertinent environment for studying both the consequences of conflict for households' trust in state institutions, *and*

[7] A similar argument was put forward by Frye and Borisova (2019) arguing that when citizens in Russia expect repression that subsequently does not occur, people update their beliefs about how trustworthy the government is.

[8] It is also reasonable to expect that the rally-around-the-flag effect is stronger than when the state itself is involved in the violence.

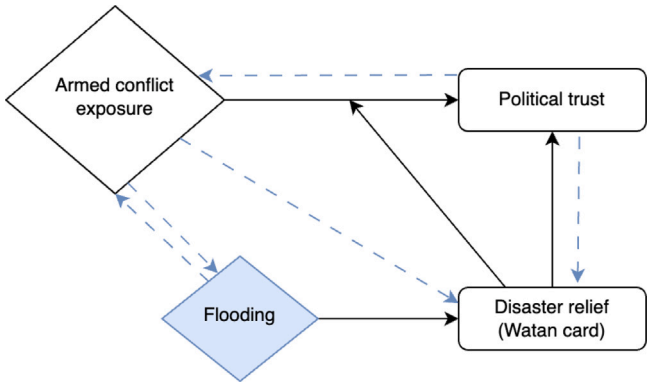

Fig. 1. Impacts between armed conflict, trust, disaster and disaster relief.

whether disaster relief can mitigate this proposed negative relationship. First, Pakistan is economically dependent on agriculture and therefore vulnerable to extreme weather events. Kinship and clan ties dominate most parts of life in Pakistan (Lieven, 2012). This means that citizens have generally limited access to savings and formal insurance that could help them cope with adverse shocks. As such, governmental institutions as well as local and international organizations are crucial for providing emergency response and social protection in the aftermath of adverse weather events (Kosec & Mo, 2017). Second, Pakistan has a fragile security situation. Throughout its history the country has shifted between dictatorships and democratic politics. In addition to several military coups, separatist conflicts and the conflict with India over Kashmir, a protracted conflict over government began in the 1990s. Since then, many groups have been active at different times, but the conflict escalated in 2007 with the Pakistani Taliban (TTP) taking the lead against the government and fighting to give Islamic traditions a greater influence (UCDP, 2022).

The 2010 floods were the second worst in scale and impact in Pakistan's modern history, only surpassed by the unprecedented flooding in June 2022. It affected almost one-fifth of the country's land mass, claimed around 2,000 lives, displaced a population of about 20 million and damaged around 1.5 million houses (Nisar Hashmi et al., 2012). The disaster occurred at a time when the country was seeing substantial changes toward democratization, and the Pakistani people had only two years earlier elected their government for the first time after almost a decade of military rule (Siddiqi, 2014). While the government was criticized for its flood response (Ali, 2010), their effort along with civil society organizations and foreign aid influx was at a higher level than in previous natural hazard-related disasters.

The government eventually rolled out a large-scale flood relief program – the so-called Watan Card – to flood-affected citizens. This was a major flood relief cash transfer program administered by the national and regional disaster management authorities, running in two phases, from September 2010 to June 2011 and from June 2011 to June 2013. To determine eligibility, community damage was assessed by the federal government together with a number of organizations and provincial governments. The criteria for affected districts entailed that they suffered at least 50% damages to property or crops (World Bank Group, 2013). Thanks to the program, eligible households received 20,000 rupees each (a bit over the average monthly expenditure of a household in our sample) to help them cope with displacement and losses following the floods. District government allocated funds in the form of three staggered cash payments to those households living in flood-affected districts. In practice, the implementation of the program had its shortcomings due to limitations in capacity, challenges related to coordination communication between implementers and political incentives to provide aid for technically ineligible districts (Kosec & Mo, 2017).[9] As such, Pakistan provides a window through which to assess how the distribution of disaster relief following major flooding could potentially address negative effects of a legacy of violence on political trust. Understanding the interactions of violence and disaster in this environment can provide important lessons for disaster responses in similar fragile contexts.

4.2. Dependent variable: Trust in government

Following the definition offered by Miller and Listhaug (1990), we understand political trust as the "judgment of the citizenry that the system and the political incumbents are responsive and will do what is right even in the absence of constant scrutiny". The literature has conceptualized two types of political trust; diffuse trust, which develops as a result of socialization and is usually tied to social identities; and specific trust, which stems from recent experiences such as assessment of government responses during crises (Reinhardt, 2019). Here, we are interested in capturing the latter form of trust, concerning people's assessment of government actions (and inactions). To measure the extent to which citizens' trust and support state institutions, we use data from the Pakistan Rural Household Panel Survey (PRHPS) project (IFPRI, 2014, 2016). The PRHPS is a survey that covers about 2,000 rural households in 76 rural villages in the Punjab, Sindh, and Khyber-Pakhtunkhwa (KPK) provinces. We use two rounds of data from this survey; March–April 2012 (Round 1) and April–May 2013 (Round 2).[10]

This survey project is especially valuable for gaining insights into political attitudes in conflict-affected places, as research in conflict areas is difficult to undertake because researchers' movement is limited. One caveat about using the survey is that the project was not administered in the most violent provinces of Pakistan. This is understandable from a research ethics point of view as it would have been risky for enumerators to access these regions and reach certain populations. On the one hand, this inevitably brings certain biases to our study and our findings will not be representative of the entire country. In addition, even if we find an estimated effect of flood relief aid on trust in the context of violent conflict, it would be difficult to translate our findings to high-intensity conflict zones where people are potentially even more distant from governmental contact and services. On the other hand, the surveyed areas are provinces largely controlled by the government, which in most cases facilitates access for researchers, but importantly also constitutes a relevant spatial scope when examining the question of trust in the state.

Survey items pertaining to households' level of trust in state institutions are only available in the second round of the survey project, that is in 2013. This means that we examine the conditioning impacts of flood relief on institutional trust three years after initiation of the flood aid program. While this may seem like a long interval, the negative effects of violent conflict on both political and interpersonal trust are often found to persist over time (Grosjean, 2014; Hong & Kang, 2017). In addition, the relief program itself continued for three years following the disaster (World Bank Group, 2013), meaning that this is a reasonable time frame to employ for testing our hypotheses.

To construct the dependent variable, we first run a factor analysis for all survey items from the second wave related to attitudes toward, and perceptions of, the current government and political system, the goal being to see which factors, if any, form a latent dimension.[11] We find that the following five items, as shown by the darker blue shades

[9] Some impact evaluations of the flood relief program indeed show that for every 100 eligible households, only 43 actually benefited from the program (Kosec & Mo, 2017).

[10] The Pakistan People's Party was the ruling party since 2008 until after the second round of the survey period.

[11] A list of all survey items is provided in the Appendix.

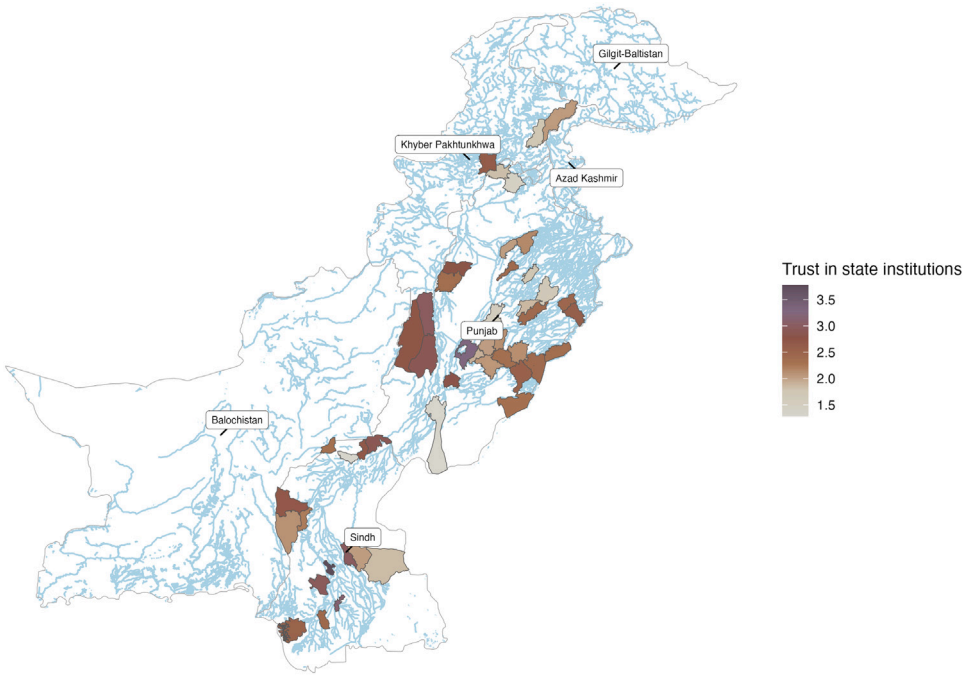

Fig. 2. Mean trust in state institutions across surveyed tehsils, available from the second wave of the Pakistan Rural Household Panel Survey (PRHPS) project.

in Fig. A.1, load on the same main factor: *(1) To what extent are citizens basic rights well protected by the political system? (2) To what extent do you feel proud of living under this political system? (3) To what extent do you think that one should support the political system? (4) In your opinion, to what extent do you trust the political system of Pakistan? (5) To what extent do you feel your leaders are doing the best job possible?* From these, we calculate a simple mean index and construct a variable that captures the same latent concept – trust in state institutions – that is measured at the household level.[12] The advantage of an averaged measure is that it takes care of measurement error associated with any one of the index components. In that sense, our constructed index is methodologically defined, but also theoretically motivated. Central governments are the entities responsible for disaster prevention and subsequently for distributing disaster relief aid. Disasters per se are rarely attributed to political leaders, but failure to provide adequate prevention, particularly response measures, is likely to be. It is, thus, conceivable that citizens will hold national leaders and the political system they represent accountable. As such, our index includes survey items that refer to trust and support in the political system, and perceptions that people's basic rights are protected and leaders are doing a good job. All indicators are continuous variables varying from 1 to 5, with higher values indicating greater trust. The map in Fig. 2 shows the level of state trust in each tehsil (sub-divisions of districts), as reported by surveyed households.

4.3. Independent variable: Violence exposure

To estimate the effect of *exposure to violence* on our dependent variable, we use data available from the Uppsala Conflict Data Program Georeferenced Event Data (UCDP GED) version 20.1. (Pettersson et al., 2021; Sundberg & Melander, 2013). We look at two types of violent events; state-based conflict, defined as contested incompatibility, which concerns government and/or territory, and includes the use of armed force between two parties, of which at least one is the government of a state; and non-state conflict, which assumes the use of armed force between two non-state armed groups. The maps in Figs. 3 and 4 show the share of households in each tehsil that report being affected by flooding in 2010 as well as the location of state-based and non-state fatalities resulting from violent events recorded in the UCDP GED since 1989.

As indicated in Fig. 3, the areas most affected by state-based violence from the ones included in our survey are the Khyber Pakhtunkhwa province (KPK), followed by some incidents of conflict in Punjab (Lahore and Islamabad) and a few in Sindh (Karachi). Much of the conflict in Karachi is ethnic-related violence between the Muhajirs and the Pashtuns related to demands for more political rights and economic competition for greater control over land and resources. Although Karachi, along with the other big cities in Punjab, Lahore and Islamabad-Rawalpindi, are periodically targeted by groups such as the TTP, generally Sindh and Punjab as the two most populous provinces see less armed conflict than the rest of the country. Punjab is also the most vibrant economic province in Pakistan. Although conflict incidents are significantly lower than in the rest of the country, their high intensity still indicates an increasing political instability in the province. Punjab is also home to a number of extremist militant organizations, including the TTP, which still actively recruit in the region. KPK, on the other hand, is located between the more violent areas of Pakistan and the more stable provinces of Punjab and Sindh. In Peshawar, the capital of KPK, there is a considerable amount of violence by TTP targeting convoys, checkpoints of the security forces and police stations. As such, fighting between the Pakistani government and TTP continues in the province with high intensity (UCDP, 2022).

Violent conflict exposure is measured at the district level, which is the second-order administrative unit and the most precise disaggregated geo-referenced level available. This measure is more aggregated than the household-level information we have on, e.g., political trust. However, we believe that living in a district that is exposed to violence entails recognition that the government has failed to protect not just individuals themselves but also their entire community, despite the state being responsible for protecting and promoting citizens' well-being. Even if indicators of self-reported exposure to violence had been available, it may have been difficult for individuals to differentiate between attacks involving non-state groups and the government, as

[12] There are also separate survey items concerning support for the type of political regime in general e.g., *How important is it to live in a democracy?* We do not include those, aiming to focus only on questions that pertain to support for the ruling party.

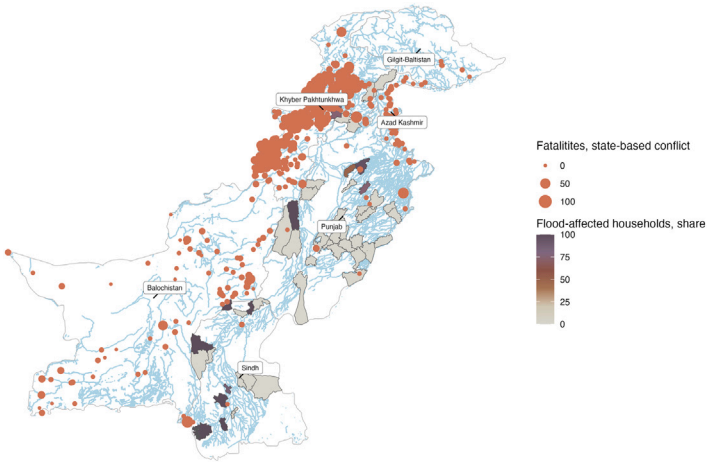

Fig. 3. Share of surveyed flood-affected households per tehsil and state-based conflict exposure between 1989–2012.

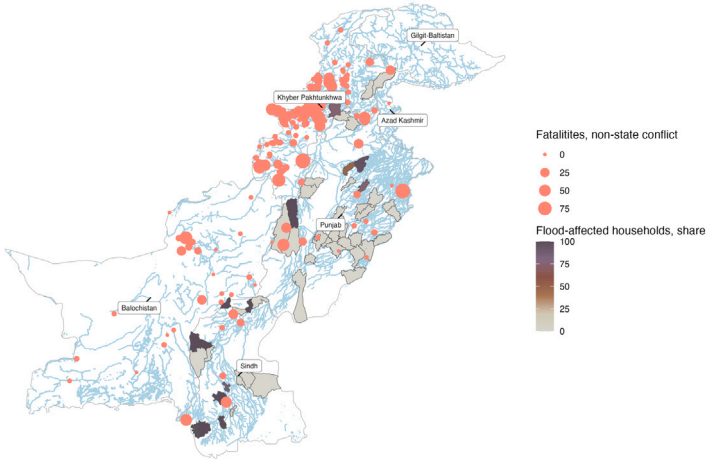

Fig. 4. Share of surveyed flood-affected households per tehsil and non-state conflict exposure between 1989–2012.

opposed to only non-state actors. As such, we believe that district-level exposure to violence is an appropriate measure of conflict for our analysis.

Instead of measuring conflict exposure as conflict onset or number of conflict events in the previous year, we focus on the history of violence in affected areas. The rationale behind our choice is that in this way we not only capture the exposure to violence in the last year or the year before that, but account for the durable legacies of armed conflict, also after the direct violence has stopped. Some districts experienced conflict as recently as last year, but others might not have had severe violence in the last five years. However, if we only account for conflict occurrence in the recent past and lag the independent variable by one or two years, the latter district will appear as peaceful in our data, i.e. as never having experienced violence. As we believe an alternative approach is more suitable, we construct a measure of conflict exposure that takes into account the time since a district has last experienced conflict. To that end, we create a decay function, calculated such that if there has been a conflict in the past (counting backwards from when the second wave of the survey project was administered, and political trust is measured, in April 2013), we perform the following calculation:

$$2^{-(m/5)}$$

Here m is the number of years without conflict and 5 is the half-life parameter. In this setup, the effect of a conflict is halved after five years. Around 31% of the households in our sample reside in districts that have been exposed to state-based violence in the last two years, where the average duration of conflict is two and a half years. Fig. 4 shows the prevalence of non-state conflict, with quite similar spatial distribution. Around 52% of the households live in districts that have experienced non-state conflict in the last 2 years, with an average duration of one and a half years.

4.4. Conditioning variable: Flood relief

Our conditioning variable is *flood relief*, and to measure this we look at whether households benefited from the flood relief program, formally the Pakistan's Citizen's Damage Compensation Program (CDCP). The variable is available from the PRHPS project and is coded as 0 if the household was not affected by the 2010 flood and did not benefit from the protection scheme; 1 if the household was affected by the flood disaster, but still did not benefit from the flood relief program; and 2 if the household reports both being affected by the flood and receiving the Watan Card.

To look at which households *experienced flooding*, we use households' reported experiences of the 2010 floods in Pakistan, also available from the survey project. The flood variable is a dichotomous measure for having experienced the disaster in 2010. The micro-level approach also allows us to take variation in households' experiences of natural hazards and associated losses into account. An aggregated measure would imply that all households in the area would experience a certain disaster, but surveys often show large inter-household variation in disaster experiences within the same community.

The floods greatly affected all four provinces of the country (Sindh, Punjab, Khyber Pakhtunk-wa and Baluchistan), as well as the autonomous territories of Gilgit-Baltistan and Azad Jammu and Kashmir

(AJK). Overall, around 23% of all households in our data report being affected by the 2010 flooding. From those exposed to state-based conflict, 12% report being flood-affected without having benefited from the flood relief, while 7% were both flood-affected and had received the Watan card. From those exposed to non-state conflict, 5% report being flood-affected without having benefited from the flood relief, while 5% were both flood-affected and had received the Watan card.

4.5. Empirical strategy and controls

To evaluate the effect of conflict on trust and the conditioning role of flood relief, we start with a regular OLS regression, first looking at the estimated effect of conflict exposure and then including an interaction term for households that received the Watan Card and conflict exposure in the district. To address potential spurious relationships, we also control for possible confounders, relying on measurements at the household level related to demographic characteristics such as age and educational attainment of the head of household, as well as ethnicity and religion of the household, all available from the first wave of the survey project.

It is important to note, however, that the Watan Card program was not without its critics. Arifeen and Nyborg (2021) argue that the scheme was based on a simplistic understanding of vulnerability where greater losses meant groups were eligible for higher levels of assistance, even though losing more physical assets means households need to own them in the first place. In that sense, we expect that certain social identities might affect not only the likelihood that certain households would have been exposed to violence in the area of residence and would have benefited from the flood relief program, but also the level of trust in the government. We also include terms in our specification for having recently migrated to the district of study in case those born in the district were systematically more likely to receive the Watan card, but also tend to have greater trust in the government. At the district level, we also include population size, distance to capital, road density, area size and night light emission as proxies for economic development, all derived from the xSub project examining cross-national data on sub-national violence (Zhukov et al., 2019).

In a study assessing the impact of conflict on political trust, and the role of flood relief aid, there are certainly potential sources of endogeneity to be taken into account. The first one is the endogeneity of 2010 rainfall levels to trust. Areas which experienced severe 2010 rainfall may be areas prone to weather shocks more generally with a history of exposure to flooding. As such, we might not be sure whether it is heavy 2010 rainfall levels or just their correlation with a history of weather shocks that is impacting trust.

It is also possible that places that experience flooding more frequently would experience lower impact (and therefore will not benefit from the governmental scheme) due to learning from past experience. Recent flood experiences may also affect the extent to which affected households trust the government. As such, to capture the time since the last flooding as a relevant confounder, we use district-level geo-located flood event data, provided by Rosvold and Buhaug (2021) and available between 1960 and 2018. All controls are lagged by one year to ensure the temporal order of events. Descriptive statistics for all variables can be found in Tables A.1 and A.2 in the Appendix.

Another form of endogeneity, as mentioned earlier in our theoretical section, relates to the possible impact of flood disasters on conflict risk. Indeed, the 2010 flooding greatly affected the armed conflict between the government and the TTP. The fighting significantly declined, especially in the KPK province, as the region was amongst those most affected. The security forces were forced to withdraw from the fighting in order to provide flood relief after the disaster, while the TTP used the opportunity to regroup. To address the temporary dampening effect the flood disaster had on conflict severity, we once again consider our measure of conflict exposure as conflict history, as opposed to conflict onset or number of events, to be more appropriate. In that sense, we not only capture recent conflict dynamics but the longer legacies of violence which are theoretically expected to have shaped political trust throughout the years.

Finally, it is conceivable that conflict occurrences also affect disaster relief aid. Such impacts can be expressed directly – by influencing its distribution depending on access to conflict-affected areas and potential political alliances between state and citizens. However, the disaster relief program that we assess is based on strict criteria for losses incurred by the flooding, and should, while not completely free from this bias, be less of a problem in our sample. Several impact evaluations indeed show that there were certain biases in delivering the aid, where not all eligible households ended up participating in the program (Kosec & Mo, 2017). To account for this we control for ethnic and socio-economic background of all households. In addition, the indirect impacts of conflict on disaster aid can manifest indirectly by shaping the severity of flood consequences, and as such, the probability of benefiting from the protection scheme. While this is a relevant caveat for our theoretical story, it is important to mention again that our sample only includes provinces with lower intensity of conflict. As such, we think it is less likely that conflict would have such severe impacts on e.g. infrastructure as to intensify the flood effects and obstruct access to aid within the spatial scope of our study.

5. Results

5.1. Conflict history, flood relief and households' trust in institutions

Looking first at the level of household trust in state institutions, we explore whether political attitudes are affected by different forms of exposure to violence. Table 1 shows that households that have been exposed to state-based violence in the recent past on average display lower levels of trust in state institutions than households that have not been exposed to violence. This is in line with our first hypothesis. We are not able to pinpoint whether this is explained more by socio-psychological impacts of the conflict or due to households blaming the government for failing to protect them from violence. The coefficient capturing the association between non-state violence and trust in state institutions is positive and statistically significant at the 90% confidence level. If anything, households that have been exposed to non-state violence appear to have greater trust in the state, suggesting that the attribution effect might not be so large after all. Non-state violence instead seems to be associated with rally-around-the-flag effects and to increase people's evaluation of the state, negating the expectation in our second hypothesis. This means that, to the extent that failure to provide safety is an important driver of the negative influence of conflict exposure on trust, this appears to only be the case when the government itself is involved in the violence.

Because a range of additional factors can be expected to influence households' political trust, we also include a series of controls in the model. First, different societal groups might have different baseline levels of trust in the state depending on ethnic alignment and history of state protection. The second largest ethnic group, the Sindhi, as well as the Baloch and Urdu show higher levels of state trust than the largest ethnic group – which is our reference category – the Punjabi. This is not surprising given that neither of the two biggest parties in Punjab, the Pakistan Muslim League or the Pakistan Tehreek-e-Insaf, were in the governing coalition during the period of our study. In addition, individuals who have completed a high school education seem to exhibit greater trust in the state than those with primary education. Heads of households who are over the age of 35 also seem to trust the state less than their younger counterparts do. At the district level, smaller provinces further away from the capital display lower levels of trust. This could be explained by the stronger presence of and reliance on informal and customary institutions in the more rural parts of the country. This is also consistent with the positive coefficient for night light emissions, indicating higher levels of trust among the more

Table 1
Households' trust in state institutions and conflict exposure in Pakistan.

	Dependent variable:
	Trust in state institutions
State-based conflict decay	−1.177***
	(0.213)
Non-state conflict decay	0.192*
	(0.105)
Religion	
Islam	−0.184
	(0.159)
Christianity	0.420
	(0.620)
Ethnicity	
Sindhi	0.741***
	(0.103)
Pakhtoon	0.149
	(0.116)
Baloch	0.696***
	(0.103)
Urdu	0.692***
	(0.135)
Shina	−0.027
	(0.081)
Saraiki	0.356***
	(0.062)
Other	0.337**
	(0.136)
Education	
Middle education	−0.072
	(0.050)
High education	0.079*
	(0.047)
Post secondary education	0.100
	(0.087)
Age of household head	
Between 25 and 35	−0.160
	(0.100)
Between 36 and 45	−0.171*
	(0.099)
Between 46 and 55	−0.187*
	(0.099)
Over 56	−0.167*
	(0.099)
Born in district	0.035
	(0.087)
District level	
Time since last flood	0.014***
	(0.001)
Log (population)	−0.0001
	(0.030)
Log (area size)	−0.399***
	(0.073)
Distance to capital	−0.001***
	(0.0003)
Night lights emissions	4.462***
	(0.758)
Road density	−0.216
	(0.382)
Observations	1911
R^2	0.182
Adjusted R^2	0.171
Residual Std. Error	0.843 (df = 1885)
F Statistic	16.745*** (df = 25; 1885)

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

economically active areas. The coefficient for time since flooding is also positive and statistically significant at the 99% confidence level, which suggests that political trust is higher the further away households' past flood experience was, indicating that recovery over time could restore trust levels.

However, it could still be the case that households that are better off are also less prone to experiencing flooding. As such, level of income and asset ownership could ultimately be related to political trust. Although we only have this information from 2011, which is after

Table 2
The effect of different forms of violence on political trust, conditioned on flood relief program in Pakistan.

	Dependent variable:	
	Trust in state institutions	
	(1)	(2)
Benefited from Watan card	0.163***	0.136***
	(0.042)	(0.039)
State-based conflict decay	−1.087***	−0.999***
	(0.215)	(0.217)
Non-state conflict decay	0.216*	0.118
	(0.112)	(0.118)
Time since last flood	0.016***	0.016***
	(0.001)	(0.001)
Religion fixed effects	Y	Y
Ethnicity fixed effects	Y	Y
Education fixed effects	Y	Y
Age windows fixed effects	Y	Y
District-level controls	Y	Y
Watan card*Non-state violence decay		0.243***
		(0.091)
Watan card*State-based decay	0.110	
	(0.094)	
Observations	1911	1911
R^2	0.197	0.200
Adjusted R^2	0.186	0.188
Residual Std. Error (df = 1883)	0.835	0.834
F Statistic (df = 27; 1883)	17.136***	17.400***

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

the flood, we still control for income, assets, house and livestock value in our robustness tests shown in Table A.7 in the Appendix to ensure there is no omitted variable bias related to the socio-economic status of each household. We observe results largely similar to the original ones. To address the issue of including post-treatment controls in our original estimation, we limit our selection to only including religion, ethnicity, educational attainment and age, which are household-level characteristics that should not be affected by the flood or the flood response at all. Because income level, ownership of assets and property remain important confounders, we show in Table A.6 in the Appendix that religion, ethnicity and educational attainments are still statistically significant predictors of economic well-being, meaning that they are still proxied in our model specifications.

Having found initial support for our first hypothesis, which holds that households exposed to state violence display lower levels of political trust than households not affected by violence, we proceed to test for the conditioning effects of having received flood relief. To that end, we interact the two conflict exposure types with a variable indicating whether households were part of the flood relief program. A simple t-test shows that flood-affected households tend to live in districts that are exposed to recent state-based *and* non-state conflict.

The regression results are shown in Table 2 and in Fig. 5 where we plot the interaction terms for easier interpretation of the estimated interaction effects. The plots show predicted values of trust in state institutions on the y-axis and a decay function for each conflict type on the x-axis, conditioned on having been affected by the flood shock and having received the Watan Card. Fig. 5 (a) again suggests that the recent history of state-based violence is associated with lower political trust.[13] Those who were affected by the 2010 flood and benefited from the flood relief program appear to have slightly higher levels of trust in state institutions than do households that were not affected by the disaster or were affected, but did not receive the relief aid. Overall,

[13] Here, 0.5 on the *x*-axis means that there has not been any state-based conflict in the last 2 years; 0.75 in the last year and 1 means that there was still an ongoing conflict in 2012.

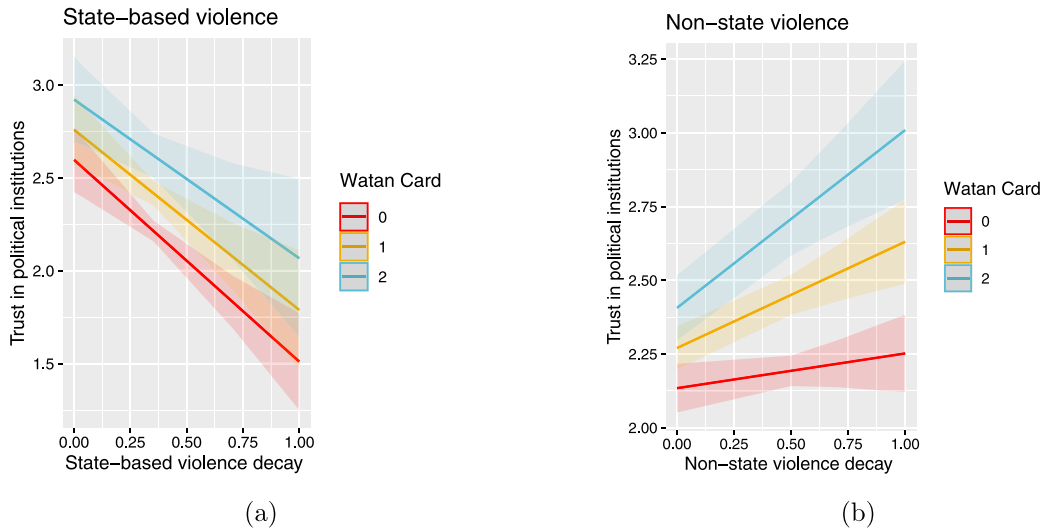

Fig. 5. Predicted values of trust in state institutions in the presence of (a) state-based and (b) non-state conflict in Pakistan, at the 90% confidence level.

however, the flood and its associated governmental response do not seem to offset the estimated negative effects of violence on trust in formal structures, negating the expectations put forward in our third hypothesis. Economic development and trust in state institutions in Pakistan have long been undermined by military dictatorships. Levels of corruption and ethnic, religious, and sectarian fragmentation have extensively undermined the legitimacy of the government, especially in the most violent areas of the country (Suleri et al., 2017). It is possible that citizens are too hardened by having been subjected to state violence for the cash transfer to have a meaningful impact on how much they trust that the state institutions will act in their interest and do what is right in times of crisis. As such, it is perhaps not so surprising that the persistent negative consequences of violence – with the involvement of the government – on political trust are not mitigated by flood relief.

Turning to the estimated interaction effects between non-state violence and flood relief, shown in Fig. 5 (b), we see that, strikingly, those affected by the flood who also received the Watan Card in fact seem to have substantially higher levels of trust in the current political institutions at the 90% confidence level than those who were not affected by the flood. They also appear to have somewhat higher levels of trust than those that were affected, but did not get the card. Compared to those exposed to state-based violence, there is also a slight increase in state trust among households that were not affected by the 2010 floods. These heterogeneous results once again highlight the importance of conflict actors when it comes to the consequences of violence exposure. The flood and its associated protection scheme do not seem to offset the negative impacts of violence when the government is involved in the conflict, but this seems to be very much the case in the context of non-state violence. Once again, this supports the rally-around-the-flag explanation for how violence can lead to increased levels of trust. It also supports our final hypothesis that in some instances, flood relief can mitigate negative evaluations of state performance. Our findings are also in line with studies by Fair et al. (2017) and Kosec and Mo (2017), who find an increase in legal political engagement and aspiration levels in flood-affected individuals from villages that received disaster relief compared to those who did not. The results are also consistent with the cross-national trend identified in Ahlerup and Hansson (2011), who find that disasters are correlated with democratization in countries that are substantial aid recipients.

We conduct further robustness checks, looking at the effect of conflict history and flood relief program on each survey item, which comprises the trust-in-state-institutions index. Table A.5 in the Appendix suggests that all separate indicators have substantially similar relationship with the independent and conditioning variables to the one presented in the main results.[14]

5.2. Determining the role of the flood itself

When assessing the impact of conflict on political trust, and the role of social protection after the 2010 floods in moderating these effects, there are also potential endogeneity issues related to our measurement of flood and flood relief to consider. What we notice is that in the context of non-state violence exposure, experiencing the flood even without having benefited from the aid program (coded as 1 in Fig. 5b) seem to also be positively associated with political trust. This raises the question of whether the flood event per se has had an estimated unifying effect on population attitudes towards the government, or whether the positive and substantial association we see between having experienced the disaster and trust in the state is due to certain biases in the self-reported disaster measure. In an extended analysis, we therefore explore variation in flooding determined by elevation levels to see whether there is a similar estimated positive effect on trust. It has been shown that elevation data are critical for assessments of flood exposure. The elevation level of a home, for example, determines the flood insurance premium a household will need to purchase, reflecting the likelihood that lower-lying locations are more vulnerable to flooding. Rising water levels tends to inundate low-lying areas and exacerbates flooding. In addition, low-lying coastal areas often flooded during severe thunderstorms because they drain slowly (Gesch, 2018). Table A.8 in the Appendix shows that elevation level is indeed a strong predictor of exposure to flooding.

To capture mean elevation levels, we use a time invariant variable of meters above sea-level on the district level that is made available by the xSub project examining cross-national data on sub-national violence (Zhukov et al., 2019). We create a binary variable, where elevation levels below the mean are coded as 0 and elevation levels above the mean as 1.

The estimated elevation level effect on institutional trust, as shown in Table A.9 in the Appendix, appears to be positive. This result indicates that the higher the elevation level (where the likelihood of experiencing flooding is lower), the higher the level of the political

[14] We also run a robustness analysis including an additional survey item not included in the index: *What is your overall level of satisfaction with the government?*. Results presented in Table A.5, models 11 and 12, are substantively similar to the rest of the survey items findings, supporting the notion that our index captures assessment of current incumbents versus the regime in general.

trust. That is to say, exposure to the 2010 disaster is negatively correlated with trust in state institutions. As such, the positive association we observed between having experienced the 2010 flood and increased levels of trust in our original analysis, shown in Fig. 5 (b), signals some form of bias in the self-reported measure of flood experience. Our extended analysis, which instead looks at the effect of elevation level, suggests that the flood event is in fact negatively associated with trust in state institutions. This supports the notion that it is the flood relief program rather than the flood event itself that is associated with increased levels of trust in areas exposed to non-state conflict.

6. Concluding discussion

While the literature on the role of violent conflict and climate-related disasters for political trust is growing, there is still little evidence to show how the compound effect of such negative shocks impact state trust, and perhaps more importantly whether governments could play a role in restoring trust following weather shocks. These questions are important since the finding that disasters and violent conflicts impact political trust implies that we underestimate both the long-term costs of these shocks as well as the potential benefits of social protection programs. Rather than addressing how one affects the other, we examine how the joint influence of conflict history and flood response impacts political trust.

We first analyze whether exposure to violence reduces households' trust in state institutions. We then examine how this is compounded by the occurrence of the flood and the subsequent ability of the government to intervene and offset any negative impacts on trust levels. The results suggest that state response to disasters can mitigate negative political consequences of conflict exposure in the context of non-state conflict, but not when communities have been exposed to violence where the state itself is involved. As such, our findings suggest that investments in helping countries respond to climate-related disasters could yield long-run political gains in addition to the initial economic help. Well-distributed social protection schemes can not only restore livelihoods and replace damaged assets today, but also raise political trust for the future. Additional lessons from the 2010 flood show the importance of providing social protection schemes. For example, after the government failed to provide flood assistance in parts of Pakistan, including areas governed by the Taliban, extreme groups used the opportunity to step in and grow their networks by providing assistance (Priess & Sikorsky, 2022).

Our study also illustrates the importance of studying the determinants of institutional trust. Citizens' level of trust in their government is increasingly recognized as a key component of current and future levels of political engagement and community well-being. State governments that are mistrusted by their own citizens may face challenges in putting policies into practice, especially in conflict-affected areas where disaster risk reduction options are already not available to all (Stein & Walch, 2017; Wisner et al., 2004). Knowing how households react to governmental policies in armed conflict settings and understanding the consequences of resulting welfare on their attitudes toward the state are critical to designing effective disaster prevention, management and recovery policies (Justino, 2011). Research shows that citizens' political trust can affect individual behavior during disaster preparation and recovery phases (Reinhardt, 2019). Disaster responses are often implemented by a state, which might itself constitute a threat to certain communities that may either not be reached by governmental policies or even trust that they can rely on them (Siddiqi, 2018). For example, there were instances during the 2022 flood evacuation in Pakistan where the government warned certain provinces about the projected flood risk, but people did not leave because they did not trust the government (Priess & Sikorsky, 2022). As such, exploring how government disaster assistance policies affect political attitudes is essential to understanding the state's obligations to foster and protect that welfare. Studying co-occurrence of these crises also has wider implications with respect to the ability of local communities and governments to handle environmental impacts, but also to ensuring peaceful political engagement at the national and even regional levels.

Finally, our findings both point to the importance of looking at the interplay of compound risks in contexts where multiple risks are occurring simultaneously, and confirms the importance of taking conflict-affected contexts into account when assessing impacts of disasters. The 2010 floods illustrated the human cost of the climate crisis. Without adequate, coordinated government action, it will be impossible to protect the lives, health and livelihoods of affected people in Pakistan. While well-funded humanitarian responses are essential, they might not be sufficient in the future. A long-term multi-sectoral preventive response that includes the government of Pakistan and high carbon-emitting countries is essential (Amnesty International, 2022). Knowing that violent conflict and climate change impact existing considerable obstacles for many developing countries trying to achieve the Sustainable Development Goals (SDGs) by 2030, a better understanding of how these two phenomena interact is necessary. Minimizing exposure and vulnerability to climate-related extreme events and strengthening disaster resilience are specifically reflected in the targets for achieving SDG 1 on reducing poverty, SDG 11 on resilient cities and SDG 13 on climate action. Representatives from the Global Platform for Disaster Risk Reduction in Geneva have already called for more context-specific disaster risk reduction strategies in conflict-affected areas (Mena & Hilhorst, 2022), and our study of Pakistan offers valuable insights for developing and designing DRR programs given the perception of state institutions in conflict settings. Such programs often bring additional resources and intervene in social organizations by working with community actors, which leads not only to collaborations, but also to potential social tensions. As such, conflict sensitivity should be an important aspect of DRR projects, where formal institutions may be less equipped to perform their conflict resolution function (Mena & Hilhorst, 2022).

While we have only studied this in the context of Pakistan, and although the survey was not administered in the most violent areas of the country, our findings can still be relevant for other areas affected by medium- or low-intensity conflict. We would expect that mitigating the negative effect of violence by providing flood relief will be even more challenging in the context of high-intensity state-based conflict, as populations will be even more hardened by protracted and severe exposure to violence. However, hopefully with the availability of new data, future research will be able to test whether our findings in the context of non-state violence travel to other cases with high intensity conflict. To enhance our understanding of the dynamics at play and test the estimated effect of conflict history and social protection schemes on political trust, further research can also look at more exogenous variations of these factors on trust and trace the causal mechanism qualitatively.

CRediT authorship contribution statement

Kristina Petrova: Conceptualization, Methodology, Development, Validation, Formal analysis, Investigation, Data curation, Writing. **Elisabeth L. Rosvold:** Conceptualization, Methodology, Development, Validation, Investigation, Data curation, Writing, Visualization.

Declaration of competing interest

None.

Data availability

Data will be made available on request.

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Appendix

A.1. Descriptive statistics

See Tables A.1 and A.2

Table A.1
Pakistan rural household survey, wave 1.

Statistic	N	Mean	St. Dev.	Min	Max
Religion					
Islam	1911	0.980	0.140	0	1
Christianity	1911	0.001	0.032	0	1
Hinduism	1911	0.019	0.136	0	1
Ethnicity					
Punjabi	1911	0.365	0.481	0	1
Sindhi	1911	0.124	0.330	0	1
Pakhtoon	1911	0.064	0.245	0	1
Baloch	1911	0.054	0.227	0	1
Urdu	1911	0.036	0.185	0	1
Shina	1911	0.069	0.254	0	1
Saraiki	1911	0.212	0.409	0	1
Education					
Primary educ	1911	0.290	0.454	0	1
Middle educ	1911	0.208	0.406	0	1
High educ	1911	0.262	0.440	0	1
Post sec educ	1911	0.053	0.224	0	1
Household head age					
Between 18 and 24	1911	0.047	0.211	0	1
Between 25 and 35	1911	0.204	0.403	0	1
Between 36 and 45	1911	0.246	0.431	0	1
Between 46 and 55	1911	0.245	0.430	0	1
Over 56	1911	0.257	0.437	0	1
Male	1911	0.981	0.138	0	1
Female	1911	0.019	0.138	0	1
Born in district	1911	0.938	0.242	0	1
Income					
Livestock value	1911	107,260	192,569	0	2,690,000
Farm assets value	1911	33,236	143,680	0	2,867,000
House assets value	1911	256,068	353,525	0	5,101,100
House value	1911	212,076	310,699	0	5,000,000
Own property	1911	0.893	0.310	0	1
Earnings from non-farm assets	1911	54,192	79,064	0	980,000
Flood 2010					
Flood shock 2010	1911	0.231	0.422	0	1
Flood house damage 2010	1911	0.156	0.363	0	1
Flood agr damage 2010	1911	0.104	0.305	0	1
Flood displacement 2010	1911	0.144	0.352	0	1
Flood food insec 2010	1911	0.121	0.327	0	1
Flood water insec 2010	1911	0.111	0.314	0	1
Flood 2011					
Flood shock 2011	1911	0.173	0.379	0	1
Flood agr damage 2011	1911	0.081	0.273	0	1
Flood displ 2011	1911	0.082	0.275	0	1
Flood house damage 2011	1911	0.138	0.345	0	1
Flood food insec 2011	1911	0.106	0.308	0	1
Flood water insec 2011	1911	0.096	0.295	0	1
Affected by both flood shocks 2010 & 2011	1911	0.295	0.456	0	1
Benefited from Watan card	1911	0.448	0.744	0	2

Table A.2
Pakistan rural household survey, wave 2.

Statistic	N	Mean	St. Dev.	Min	Max
Trust in institutions					
Attend village meetings	1911	0.115	0.319	0	1
Being rewarded for efforts	1911	2.594	1.125	1	5
Wealth important for progress	1911	3.529	1.269	1	5
Gov responsible for diff in income	1911	4.152	1.036	1	5
Courts guarantee fair trail	1911	2.652	1.200	1	5
Basic rights protected	1911	2.465	1.117	1	5
Proud of the political system	1911	2.302	1.105	1	5
Support for the political system	1911	2.448	1.131	1	5

(continued on next page)

Table A.2 (*continued*).

Statistic	N	Mean	St. Dev.	Min	Max
Trust in the political system	1911	2.262	1.123	1	5
Leaders are doing a good job	1911	1.989	1.063	1	5
Satisfaction with the government	1911	3.065	1.974	1	7
Satisfaction with the military	1911	6.250	1.230	1	7
Satisfaction with the police	1911	3.303	2.039	1	7
Bribes	1704	0.238	0.426	0	1
Gov trust community affairs	1911	2.670	1.262	1	6
Gov trust law and order	1911	2.638	1.266	1	6
Support for democracy	1911	3.822	1.250	1	5
District level					
Population	1911	2095	2002	120	15,000
Distance to nearest city	1911	12.839	8.135	1.000	40.000
Public transportation	1911	0.707	0.455	0	1
Electricity	1911	0.919	0.273	0	1
Owning a cell phone	1911	1.000	0.000	1	1
Time since last flood	1911	26.210	20.758	0	49
Elevation level	1911	296	547	60	2582
Distance to capital	1911	219	117	28	425
Area km	1911	32,534	14,566	4901	53,214
Road density	1911	0.169	0.142	0.000	0.430
Nightlight emissions	1911	0.137	0.043	0.080	0.246
Conflict variables					
State-based violence decay	1911	0.391	0.356	0.0002	1.000
Non-state violence decay 2012	1911	0.356	0.374	0.0002	1.000

A.2. T-tests

See Table A.3

Table A.3
Two-sided t-test p-values are reported.

Sub-samples	Benefited from Watan card	Did not benefit from Watan card	p-Value
Religion			
Islam	**0.921**	**0.985**	**<0.01**
Christianity	0.000	0.001	0.157
Hinduism	**0.079**	**0.015**	**<0.01**
Ethnicity			
Punjabi	**0.082**	**0.268**	**<0.01**
Sindhi	**0.260**	**0.378**	**<0.01**
Pakhtoon	0.140	0.095	0.09
Baloch	0.082	0.069	0.58
Urdu	**0.113**	**0.063**	**0.03**
Shina	0.003	0.015	0.16
Saraiki	**0.260**	**0.044**	**<0.01**
Education			
Primary	**0.219**	**0.393**	**< 0.01**
Middle	0.099	0.147	0.09
High	**0.243**	**0.176**	**0.05**
Upper secondary	0.071	0.036	0.06
Age of hh head			
Between 18 and 24	0.041	0.069	0.14
Between 25 and 35	**0.174**	**0.345**	**<0.01**
Between 36 and 45	**0.315**	**0.235**	**0.03**
Between 46 and 55	0.260	0.216	0.227
Over 56	**0.208**	**0.132**	**0.01**
Gender hh head			
Female	0.013	0.015	0.919
Male	0.986	0.985	0.919
Other			
Born in district	**0.999**	**0.948**	**<0.01**
District-level			
Population	**1739**	**1282**	**<0.01**
Dist to nearest city	**14.12**	**12.53**	**0.03**
Distance to capital	**211**	**151**	**<0.01**
Area size	**37264**	**35829**	**0.343**
Road density	**0.252**	**0.145**	**<0.01**
Nightlight emissions	**0.112**	**0.123**	**<0.01**
State-based violence	**0.187**	**0.299**	**<0.01**
Non-state violence	0.175	0.171	0.914

Bold values signify statistically significant differences.

A.3. Measuring political trust

See Fig. A.1 and Table A.4.

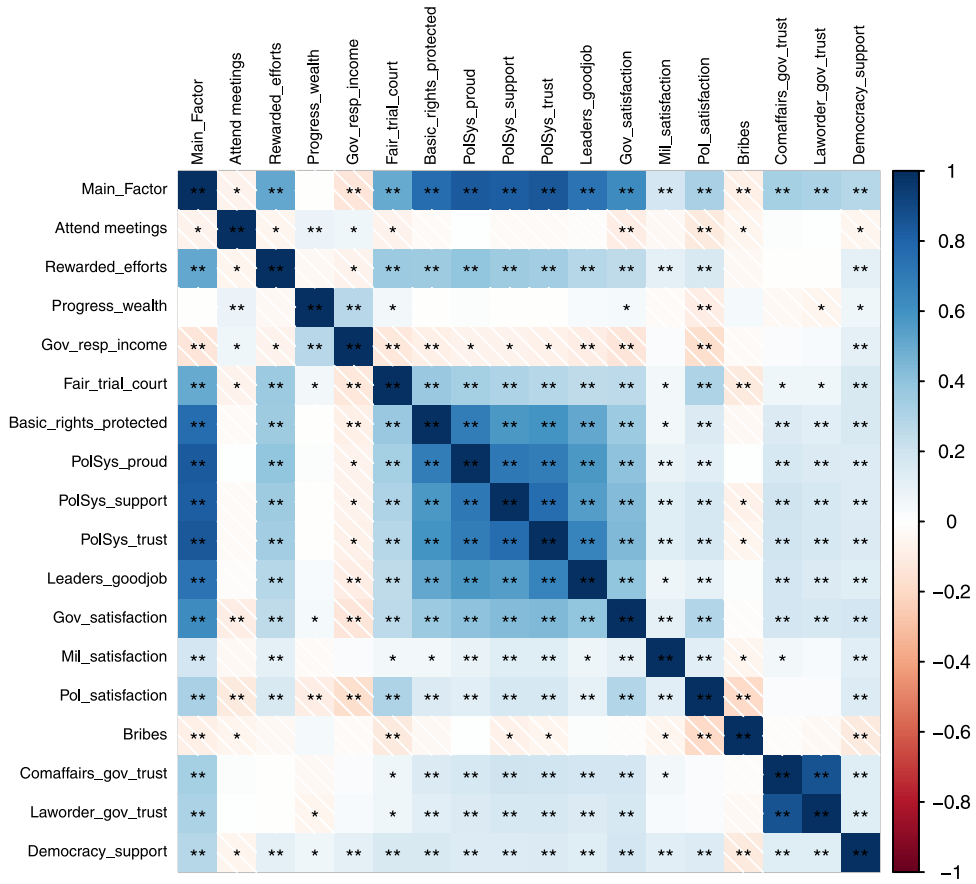

Fig. A.1. Correlation matrix showing the correlation and level of statistical significance between the main factor and all survey items from wave 2, which relate to attitudes towards and perception of the current government and political system.

Table A.4
List of included survey items.

PRHS Wave 2	Variable name	Variable label	Answer label
Round 2	s8p1_q11_m	When did you last attend a village meeting?	0 = Never, 1 = More than 5 years ago, 2 = Last year, 3 =Last month, 4 = Do not Know/Do not recall
Round 2	s8p2_q6	To what extent do people in Pakistan get rewarded for their effort?	Numeric, ranging between 1 and 5
Round 2	s8p2_q8	How essential/very important to getting ahead is coming from a wealthy family?	Numeric, ranging between 1 and 5
Round 2	s8p2_q10	To what extent is it the responsibility of the govt to reduce diff in income?	Numeric, ranging between 1 and 5
Round 2	s8p2_q11	To what extent do you think the courts in Pakistan guarantee a fair trial?	Numeric, ranging between 1 and 5
Round 2	s8p2_q13	To what extent are citizens basic rights well protected by the political system?	Numeric, ranging between 1 and 5
Round 2	s8p2_q14	To what extent do you feel proud of living under this political system?	Numeric, ranging between 1 and 5
Round 2	s8p2_q15	To what extent do you think that one should support the political system?	Numeric, ranging between 1 and 5
Round 2	s8p2_q16	In your opinion, to what extent do you trust the political system of Pakistan?	Numeric, ranging between 1 and 5
Round 2	s8p2_q17	To what extent do you feel your leaders are doing the best job possible?	Numeric, ranging between 1 and 5
Round 2	s8p3_q1	What is your overall level of satisfaction with the government?	1 = Extremely dissatisfied, 2 = Moderately dissatisfied, 3 = Slightly dissatisfied, 4 = Neither satisfied nor dissatisfied, 5 = Slightly satisfied, 6 = Moderately satisfied, 7 = Extremely satisfied, −77 = Do not Know
Round 2	s8p3_q4	What is your overall level of satisfaction with the military?	1 = Extremely dissatisfied, 2=Moderately dissatisfied, 3 = Slightly dissatisfied, 4 = Neither satisfied nor dissatisfied, 5 = Slightly satisfied, 6 = Moderately satisfied, 7 = Extremely satisfied, −77 = Do not Know

(*continued on next page*)

Table A.4 (*continued*).

PRHS Wave 2	Variable name	Variable label	Answer label
Round 2	s8p3_q6	What is your overall level of satisfaction with the police in your community?	1 = Extremely dissatisfied, 2 = Moderately dissatisfied, 3 = Slightly dissatisfied, 4 = Neither satisfied nor dissatisfied, 5 = Slightly satisfied, 6 = Moderately satisfied, 7 = Extremely satisfied, −77= Do not Know
Round 2	s8p3_q8	To get public and health and education services, do members of your community have to pay any extra fees	0 = No, 1 = Yes, −77 = Do not Know
Round 2	s8p3_q12	For general community affairs (such as what community projects to partake in), do you trust the government over your religious leader	1 = Always trust the government, 2 = Mostly trust the government, 3 = I sometimes trust the government, sometimes trust religious leaders, 4 = I trust neither, 5 = I mostly trust the religious leaders, 6 = I always trust the religious leaders, −77 = Do not Know
Round 2	s8p3_q13	For issues of law and order, do you trust the government over your religious leader	1 = Always trust the government, 2 = Mostly trust the government, 3 = I sometimes trust the government, sometimes trust religious leaders, 4 = I trust neither, 5 = I mostly trust the religious leaders, 6 = I always trust the religious leaders, −77 = Do not Know

Table A.5
Households' trust in state institutions and history of conflict exposure in Pakistan, conditioned on having benefited from the Watan Card.

	Dependent variable:											
	Basic rights protected		Proud of the pol system		Support the pol system		Trust the pol system		Leaders doing a good job		Satisfaction with the gov	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Benefited from Watan card	0.150***	0.121**	0.171***	0.144***	0.154***	0.094*	0.185***	0.140***	0.157***	0.181***	0.407***	0.397***
	(0.052)	(0.049)	(0.050)	(0.047)	(0.053)	(0.050)	(0.052)	(0.049)	(0.048)	(0.045)	(0.091)	(0.086)
State-based conflict decay	−1.051***	−0.965***	−1.270***	−1.165***	−1.036***	−0.878***	−0.884***	−0.767***	−1.197***	−1.222***	−0.885*	−0.830*
	(0.267)	(0.270)	(0.260)	(0.262)	(0.275)	(0.277)	(0.270)	(0.273)	(0.249)	(0.251)	(0.470)	(0.474)
Non-state conflict decay	0.026	−0.069	0.270**	0.151	0.358**	0.186	0.179	0.052	0.247*	0.269**	0.497**	0.433*
	(0.139)	(0.147)	(0.136)	(0.143)	(0.143)	(0.151)	(0.141)	(0.148)	(0.130)	(0.137)	(0.245)	(0.258)
Time since last flood	0.020***	0.020***	0.018***	0.018***	0.011***	0.012***	0.013***	0.014***	0.015***	0.015***	0.016***	0.016***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
Religion fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ethnicity fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Education fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Age windows fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
District level controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Watan card*Non-state violence decay		0.211*		0.338***		0.345***		0.246**		0.073		0.207
		(0.113)		(0.110)		(0.117)		(0.115)		(0.106)		(0.199)
Watan card*State-based decay	0.074		0.194*		0.081		0.049		0.152		0.142	
	(0.117)		(0.114)		(0.121)		(0.119)		(0.109)		(0.206)	
Observations	1911	1911	1911	1911	1911	1911	1911	1911	1911	1911	1911	1911
R^2	0.149	0.150	0.176	0.179	0.122	0.126	0.139	0.141	0.186	0.186	0.159	0.160
Adjusted R^2	0.137	0.138	0.164	0.167	0.110	0.113	0.126	0.128	0.175	0.174	0.147	0.148
Residual Std. Error (df = 1883)	1.038	1.037	1.010	1.009	1.068	1.065	1.050	1.048	0.965	0.966	1.823	1.823
F Statistic (df = 27; 1883)	12.218***	12.351***	14.873***	15.164***	9.702***	10.052***	11.235***	11.426***	15.982***	15.916***	13.221***	13.248***

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

A.4. Robustness checks

See Tables A.6 and A.7

Table A.6
Household level asset value and social identity characteristics.

	Dependent variable:			
	log(farm assets value)	log(livestock value)	log(house assets value)	log(non-farm earnings)
	(1)	(2)	(3)	(4)
Religion				
Islam	1.926**	3.104***	1.027***	1.999**
	(0.790)	(0.916)	(0.226)	(0.946)
Christianity	−2.037	5.178	0.552	7.008*
	(3.368)	(3.907)	(0.963)	(4.033)
Ethnicity				
Sindhi	−1.606***	0.478	−0.917***	−1.644***
	(0.338)	(0.392)	(0.097)	(0.405)

(*continued on next page*)

Table A.6 (*continued*).

	Dependent variable:			
	log(farm assets value) (1)	log(livestock value) (2)	log(house assets value) (3)	log(non-farm earnings) (4)
Pakhtoon	−1.548***	−1.058**	0.298**	0.540
	(0.431)	(0.500)	(0.123)	(0.516)
Baloch	0.270	1.432***	−0.838***	−1.230**
	(0.446)	(0.517)	(0.127)	(0.534)
Urdu	−0.750	0.454	−0.878***	−1.372**
	(0.576)	(0.668)	(0.165)	(0.689)
Shina	−0.108	0.210	−0.161	0.354
	(0.420)	(0.487)	(0.120)	(0.503)
Saraiki	0.328	0.570*	−0.103	−1.269***
	(0.277)	(0.321)	(0.079)	(0.332)
Education				
Middle ecudation (2011)	0.696***	0.308	0.463***	0.392
	(0.263)	(0.305)	(0.075)	(0.314)
High education (2011)	0.653***	−0.451	0.688***	0.818***
	(0.242)	(0.280)	(0.069)	(0.289)
Post-secondary education (2011)	1.469***	−0.881	0.849***	1.377**
	(0.463)	(0.538)	(0.133)	(0.555)
Head of household's age				
Between 25 and 35	0.491	0.354	0.153	−1.216**
	(0.504)	(0.585)	(0.144)	(0.604)
Between 36 and 45	0.503	0.670	0.356**	−1.501**
	(0.496)	(0.576)	(0.142)	(0.594)
Between 46 and 55	1.475***	1.791***	0.280*	−1.028*
	(0.500)	(0.581)	(0.143)	(0.599)
Over 56	1.424***	1.679***	0.420***	−1.251**
	(0.501)	(0.581)	(0.143)	(0.600)
Observations	2058	2058	2058	2058
R^2	0.057	0.030	0.213	0.040
Adjusted R^2	0.050	0.023	0.208	0.033
Residual Std. Error (df = 2042)	4.612	5.350	1.319	5.523
F Statistic (df = 15; 2042)	8.259***	4.169***	36.917***	5.622***

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

Table A.7
Households' trust in state institutions and history of conflict exposure in Pakistan, conditioned on having benefited from the Watan Card, including socio-economic controls.

	Dependent variable:	
	Trust in state institutions (1)	(2)
Benefited from Watan card	0.162***	0.134***
	(0.042)	(0.040)
State-based conflict decay	−1.039***	−0.957***
	(0.217)	(0.219)
Non-state conflict decay	0.224**	0.129
	(0.113)	(0.118)
Time since last flood	0.016***	0.016***
	(0.001)	(0.001)
Religion fixed effects	Y	Y
Ethnicity fixed effects	Y	Y
Education fixed effects	Y	Y
Age windows fixed effects	Y	Y
District level controls	Y	Y

(*continued on next page*)

Table A.7 (*continued*).

	Dependent variable:	
	Trust in state institutions	
	(1)	(2)
log(Livestock value)	0.004	0.004
	(0.004)	(0.004)
log(Farm assets value)	0.006	0.006
	(0.005)	(0.005)
log(House assets value)	−0.016	−0.015
	(0.016)	(0.016)
log(Non-farm earnings)	0.0003	0.001
	(0.004)	(0.004)
Watan card*State-based decay	0.090	
	(0.095)	
Watan card*Non-state violence decay		0.226**
		(0.092)
Observations	1911	1911
R^2	0.199	0.201
Adjusted R^2	0.186	0.188
Residual Std. Error (df = 1879)	0.835	0.834
F Statistic (df = 31; 1879)	15.075***	15.279***

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

A.5. Extended analysis

See Tables A.8 and A.9
See Fig. A.2.

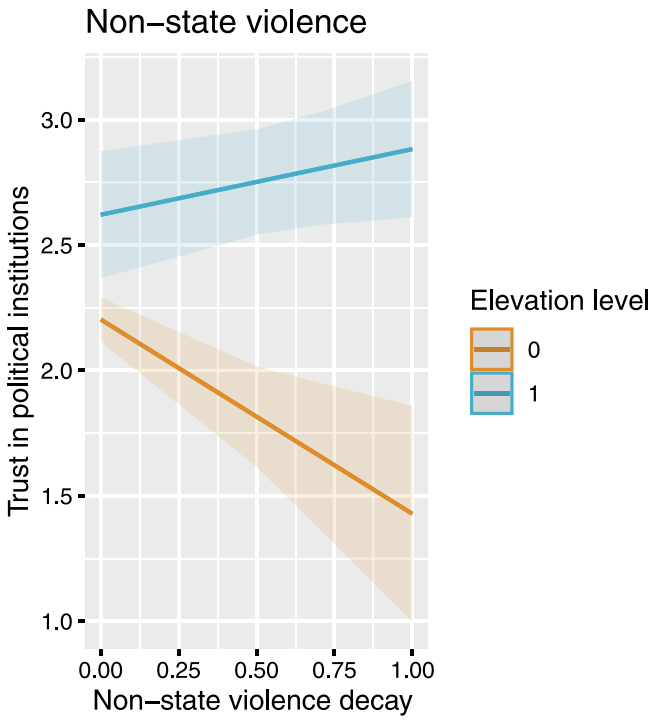

Fig. A.2. Predicted values of trust in state institutions in the presence of non-state conflict in Pakistan, at the 95% confidence level.

Table A.8
Elevation level and exposure to the 2010 flood shock in Pakistan.

	Dependent variable:	
	Affected by flood shock 2010	
	(1)	(2)
Elevation level	−0.002***	−0.010***
	(0.0004)	(0.002)
Born in district		0.587*
		(0.352)
Religion		
Islam		0.401
		(0.531)
Christianity		−9.039
		(344.611)
Ethnicity		
Sindhi		−0.486
		(0.363)
Pakhtoon		0.259
		(0.450)
Baloch		−1.496***
		(0.385)
Urdu		−0.429
		(0.446)
Shina		−0.806
		(0.497)
Saraiki		−0.067
		(0.245)
Other		1.614***
		(0.618)
Education		
Middle education		−0.441**
		(0.197)
High education		0.019
		(0.181)
Post-secondary education		0.123
		(0.330)
Age of household head		
Between 25 and 35		0.581*
		(0.332)
Between 36 and 45		0.386
		(0.330)
Between 46 and 55		0.551*
		(0.332)
Over 56		−0.044
		(0.334)
District level		
Time since last flood		−0.024***
		(0.005)
Log(population)		−0.350***
		(0.115)
Log(area size)		−2.048***
		(0.268)
Distance to capital		−0.010***
		(0.001)
Nightlights		−57.187***
		(4.278)
Road density		−0.668
		(1.150)
Observations	1911	1911
Log Likelihood	−1,119.711	−630.259
Akaike Inf. Crit.	2243.423	1310.519

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

Table A.9
The effect of history of non-state conflict interacted with elevation levels on trust in state institutions in Pakistan.

	Dependent variable:
	Trust in state institutions
Elevation level	0.417***
	(0.129)
Non-state conflict decay	−0.776***
	(0.242)
State-based conflict decay	−1.846***
	(0.283)
Time since last flood	0.014***
	(0.001)
Religion fixed effects	Y
Ethnicity fixed effects	Y
Education fixed effects	Y
Age windows fixed effects	Y
District level controls	Y
Elevation levels:Non-state conflict decay	1.038***
	(0.298)
Observations	1911
R^2	0.191
Adjusted R^2	0.180
Residual Std. Error	0.838 (df = 1883)
F Statistic	16.507*** (df = 27; 1883)

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

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