



THE IMPACT OF CONFLICT ON NATURAL DISASTER RESILIENCE

EVIDENCE FROM NEPAL

May 2016 | The Center on Conflict and Development at Texas A&M University

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ABSTRACT

Due to a changing global climate and the increased frequency of natural disasters, the need for a broader understanding of disaster resilience is a current priority in the development community. While many factors influence natural disaster resilience, this study focuses on the effect of conflict history: a previously unstudied factor.

The Bush School of Government and Public Service Spring 2016 capstone course—comprised of students Levi Brewer, Leah Crowder, Minseok Lee, Elshad Mikayilov, Sanmita Nepal, Alexandra Perl, Brittany Hardin Tanguay and Morten Wendelbo, conducted this research under the supervision of Dr. Ren Mu and guidance of Dr. Leslie Ruyle. For specific inquiries, please contact ConDev's Leslie Ruyle (ruyle@tamu.edu) or Morten Wendelbo (wendelbom12@tamu.edu).

The Center on Conflict and Development (ConDev) at Texas A&M University seeks to improve the effectiveness of development programs and policies for conflict-affected and fragile countries through multidisciplinary research, education and development extension. The Center uses science and technology to reduce armed conflict, sustain families and communities during conflict, and assist states to rapidly recover from conflict. condev.org



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INTRODUCTION

The year 1996 marked the beginning of an armed conflict in Nepal that continued for ten years, consisting of 3,030 conflict events and resulting in 16,278 fatalities. More recently, on April 25 and May 12, 2015, Nepal was struck by major earthquakes that inflicted damage on all aspects of society and devastated many communities. The earthquakes resulted in enormous damages and losses and are considered the greatest natural disaster events to hit Nepal in over eighty years.

This study links recent natural disaster damages and history of conflict, both conceptually and empirically, by answering the question: *Did conflict experience during the armed conflict in Nepal impact the degree of damage resulting from the 2015 earthquakes?* A conceptual framework derived from the literature review highlights channels through which history of conflict may impact natural disaster resilience. The empirical findings indicate that districts with more intensified conflict episodes during the armed conflict in Nepal suffered more damages in the 2015 earthquakes. Additionally, the authors find that the importance of conflict history is greater in districts that experienced more severe earthquakes.

BACKGROUND: CONFLICT AND NATURAL DISASTER IN NEPAL

Disagreements regarding a lack of social and economic reforms in Nepal sparked a decade-long conflict from 1996 to 2006 between the Nepalese Monarchy and Maoist activists. In the early years of the conflict, the fighting occurred primarily between Maoists and local police in small events in rural Nepal. In 2006, after ten years of conflict, the Maoists and the government finally reached a peaceful solution and agreed to the Comprehensive Peace Agreement (CPA), which abolished the monarchy and marked the end of the armed conflict. The agreement was instituted across Nepal the following year.

POLICY IMPLICATIONS

1. **Frameworks and models can be developed to forecast areas that could be most adversely affected by natural disasters**

A history of conflict should be used as a predictor for potential weak resilience during and directly after a natural disaster.

2. **Place additional emphasis on disaster resilience in former conflict areas**

In disaster-prone regions, NGOs and aid organizations should emphasize natural disaster preparedness in prior conflict zones. This would include preparations and emergency-preparedness measures taken before the natural disaster, training on what to do during the natural disaster, and assistance rebuilding following a natural disaster.

3. **NGOs and aid organizations should remain alert to continued aftershocks**

While the focus of attention tends to be the first two largest earthquakes in Nepal, aftershocks can be damaging in vulnerable areas. NGOs and aid organizations should respond accordingly and provide continuous response.

Natural disasters have a significant impact on economies and humans across the globe, and South Asia is one of the most natural disaster and earthquake prone regions in the world. In April 2015, Nepal experienced an earthquake of magnitude 7.8, followed by a 7.3 magnitude earthquake less than three weeks later. Roughly one-third of the Nepalese population was directly affected by the earthquakes and the following aftershocks. Nine thousand people were killed and over 20,000 people were injured. Over half a million houses were damaged or destroyed by the earthquake. Estimates predict it will cost \$7 billion United States Dollars to rebuild Nepal. Since the first two major earthquakes, there have been roughly 400 aftershocks with magnitudes greater than 4.0.

CONCEPTUAL FRAMEWORK

Academics of conflict have long established that a history of conflict can affect various social and economic factors in a country. Literature on disaster resilience highlights that some of these factors can impact a country's ability to withstand a natural disaster. From these two strands of literature, we construct a conceptual framework that examines the link between conflict history and disaster resilience through four intermediary variables: economy, education, governance, and health.

This literature suggests a negative relationship between conflict and education. Conflict events can result in a reduction of school expenditures and enrollment. Conflict can also limit students' ability to attend school, particularly if the school building has been destroyed during fighting. Additionally, parents may decide to keep children from going to school due to fear of forced military enrollment or kidnapping. Households with higher levels of education see a reduction in damages due to disaster. In communities with higher levels of education, there are better and safer decision-making skills when faced with a crisis. Because of this, increases in average education levels are associated with reduced economic and human loss in a community following natural disaster.

Conflict has long-term negative consequences on the health of civilian populations. Civilians, including medically trained personnel, are less likely to stay during conflict and are not likely to return after the conflict has ended. Damage to health infrastructure also decreases population health levels during a conflict. Clinics, hospitals, water treatment facilities, and electrical systems can all be targets in the midst of conflict, resulting in lack of access to medical resources for individuals in need. The impact of low health levels on natural disaster resilience is evident in many studies: individuals who are malnourished and/or have a weakened immune system are particularly vulnerable when disaster strikes. Additionally, an insufficiently funded health sector is likely to have poor emergency preparedness and disaster management ability.

EMPIRICAL EVIDENCE

To empirically test the hypothesis that conflict is an indicator of natural disaster resilience, data were gathered from a variety of sources including Ministry of Home Affairs in Nepal, United Nations Office for the Coordination of Humanitarian Affairs, Armed Conflict Location and Event Data Project, the National Seismological Centre in Nepal, and the 2011 Nepalese Census. An attenuation model of ground-shaking is used to construct a district-specific measure of earthquake shaking, which takes into account the magnitudes of all aftershocks and the distances from district centers to the epicenters of the shocks.

We apply ordinary least squares regression method and control for earthquake shaking and various district characteristics in the regressions. The regression results show that an increase in the occurrence of conflict events between 1996 and 2006 is associated with a large increase in damage after the 2015 earthquakes. More specifically, for every conflict event a district experienced during the 1996-2006 armed conflict, it is associated with approximately 165 more buildings damaged in the earthquake. In addition, the results show that the negative impact of conflict is most pronounced in districts with a more severe earthquake.

CONCLUSION

The empirical analysis shows a statistically and economically significant relationship between conflict experience and how the earthquakes affected individuals and households in Nepal. Increased exposure to the conflict is associated with a lower resilience during and immediately after the earthquakes, in terms of building damage and fatalities. In addition, conflict experience is of greater significance as the amount of earthquake shaking increased. This is consistent with the conceptual framework, which suggests that conflict history may be associated with disaster resilience through a variety of intermediary channels.

In order to examine the generalizability of our results, this study can be replicated in countries that have a previous history of conflict and are prone to natural disasters. The timeliness of this study is especially pertinent considering the recent earthquake that struck Ecuador, a country that also has a history of intermittent conflicts with neighboring Peru. Other potential countries where studies could be conducted include Chile, El Salvador, Honduras and Indonesia. Furthermore, while this particular study focused on earthquakes, similar studies should expand this research to encompass other natural disasters, including tsunamis, hurricanes, wildfires, droughts and more. ∞

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