Migration Patterns after Natural Disasters: 
A Test of the Resilience Hypothesis?

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Introduction

Migration has been referred to as one of the key survival or coping strategies adopted by people after a natural disaster (Hugo 2008). It has been suggested that people move away from areas affected by a disaster because they have lost their homes and/or means of livelihood and they have to move in order to look for employment elsewhere to help them and their families to survive (Paul 2005 and studies cited therein).

The scale of a natural disaster affects the level of migration although arguments can be made about whether the relationship is positive or negative. A study of the 2004 tsunami that hit Indonesia in 2004 has shown that outmigration is higher from areas that suffer more extensive damage (Gray et al. 2009) and a study of Hurricane Katrina also shows a higher evacuation rate in more highly damaged areas (Groen and Polivka 2010). However, it is also argued than severely damaged infrastructure caused by large scale disasters can inhibit mobility (Gray and Mueller 2012). Also, more people are likely to die in large scale disasters, leaving fewer survivors to migrate.

This paper reviews the theoretical models on migration and disasters and the findings of recent studies on migration patterns following natural disasters to provide a background to the current project and to identify the research issues and questions to be examined and the data needed.
Theoretical models

The research literature on migration and disasters has referred to theoretical models of migration, mobility and displacement after a disaster (discussed in Gray et al. 2009). These models have focused on the strategies that people and households take in response to the risk of being affected by natural disasters and their effect on their migration decision.

The livelihood model argues that people are more likely to migrate from damaged areas if they have invested (before the disaster) in strategies that support subsequent migration. These strategies include accumulation of human capital (education) and social capital (contacts, networks) that will support resettlement elsewhere (Gray et al. 2009). The accumulation of financial capital theoretically has an ambiguous influence on displacement as greater wealth can lead to greater or lesser likelihood of displacement. Whether people migrate after a disaster depends on the liquidity of their assets and whether they are affected by the disaster; whereas having more money will enable migration, having land or property may inhibit outmigration unless they are severely damaged (Gray et al. 2009).

Theoretical models of migration usually focus on the demographic, economic and social factors that can affect the propensity to migrate and the costs associated with migration. These models are still relevant in studying migration after disasters as they identify those demographic, economic and social groups that are more vulnerable or more resilient and the factors that facilitate or inhibit their migration. Studies of vulnerability in the event of hazards and disasters have suggested that women, children and older adults and poorer or less educated people may be more likely to be displaced following a disaster because they are more likely to live in poor quality housing and are less able to take steps to protect themselves and their homes (Fothergill et al. 1999, cited in Gray et al. 2009). However, some studies have also shown that this is not always the case (Gray et al. 2009; Paul 2005).

Current research findings on migration and natural disasters

The studies of migration and natural disasters in Asia have focussed on two specific disasters, the 2004 tsunami in Indonesia and the 2004 tornado in Bangladesh, and
episodes of flooding in Bangladesh. The findings from these studies show that one cannot assume that outmigration will occur after a disaster. Some people did not leave the affected area.

Studies of the effects of the 2004 tsunami in Indonesia have been undertaken by researchers in the US and Indonesia in the STAR (Study of the Tsunami Aftermath and Recovery) project (Frankenberg et al. 2008; Gray et al. 2009; 2011; Rofi et al. 2006). A study of population displacement and mobility after the tsunami (Gray et al. 2009) uses a longitudinal survey dataset, based on a national survey before the tsunami and a follow-up survey after the tsunami, linked to data on location-specific measures of damage constructed from remote satellite imagery, to assess migration patterns from affected areas. The study found high levels of residential mobility after the tsunami: two-thirds of people living in heavily damaged areas moved away within 4 months, but one-third did not move. The mobility rate correlated with severity of damage, as expected. The decision to move was also associated with asset ownership and other aspects of livelihood strategies. There was no evidence that women, older adults and people with limited resources were the most likely to be displaced. People whose home had been damaged or who had lost their savings were more likely to move than those who did not experience these losses. There was evidence that loss of social networks might also contribute to displacement: people were more likely to move if they had family or friends who had suffered losses in the tsunami. But some people who lost assets and suffered damage did not move and it was not clear why they did not. The authors of the study suggested that future relief projects should also consider investing in resources to reach these people who did not move despite suffering damage.

A follow-up study on return migration thirty months after the tsunami (Gray et al. 2011) found that people were less likely to return if their house had been destroyed. Older people were more likely to return, but there was no difference in the return rate by education or wealth.

While the Indonesian tsunami studies use a large-scale longitudinal dataset, the study of migration and the 2004 tornado in Bangladesh was based on interviews with 291 people in 8 villages supplemented by government and other reports of what happened after the tornado (Paul 2005). The interview responses indicated that no one had migrated
from the affected areas 4-5 months after the tornado. The reasons suggested for the people not leaving were that emergency aid was distributed efficiently by government and non-government organisations and that it was effective and more than compensated people for the losses they incurred; therefore they decided to stay and rebuild instead of moving away. The author also pointed out that the people also thought that the area was not considered to be prone to tornadoes and that the area affected was not large so the risk of experiencing a similar disaster in the future was not high. He also argued that people might be reluctant to migrate to cities because of reports of increased crime and that the high population density in Bangladesh limited migration options. These factors might have contributed to people’s decision to stay and rebuild, particularly when the aid they received enabled them to do so.

A forthcoming paper on flooding in Bangladesh also shows that the effect on migration is mixed (Gray and Mueller 2012). Using longitudinal data for 1700 households spanning a 15 year period, the authors examine flooding and population mobility in Bangladesh. They examine the effects of flooding and crop failures on local population mobility and long-distance migration, controlling for potential confounding factors in statistical analyses. The results show that flooding has modest effects on mobility while crop failures unrelated to flooding have stronger effects on mobility. The authors suggest that people are more likely to migrate if their means of livelihood have been destroyed. Moderate flooding has positive effects on local mobility, with women and poorer people more affected, but these effects were not evident after severe flooding. The authors suggest that severe flooding inhibits mobility because of damage to infrastructure. They also suggest that women in Bangladesh have more options to move than men because they are not tied to the land (men usually own the land) and generally move for marriage; they also have options for urban employment in the garment industry.

The authors conclude by saying that (pp.10-11): “discussions commonly assume that adverse environmental conditions universally result in permanent and long-term displacement, particularly among vulnerable populations. However, accumulating evidence from this and other studies indicates that environmentally induced population displacement are often temporary, short-distance and of a smaller magnitude than expected, and that the poor are not necessarily disproportionately affected. Future
discussions should acknowledge the significant adaptability [resilience?] of rural households, as well as the significant economic, social and legal barriers that often lie in the way of migration….Migration is almost always multi-causal and …only a small proportion of displaced people will have the means or motivation to cross a national boundary.”

The non-Asian studies of migration and disasters have focussed mainly on the effects of hurricanes in the United States (Fussell 2011; Groen and Polivka 2010; Madkour 2011; Sastry and Gregory 2010; Smith and McCarty 1996). Smith and McCarty’s (1996) study of the demographic effects of Hurricane Andrew in 1992 showed that evacuation was more common among women and mobile home inhabitants and that the likelihood of evacuation increased with hurricane strength. However, a study of Hurricane Katrina (Groen and Polivka 2010) showed that rates of evacuation did not vary greatly across demographic groups; however, the probability of return increased with an evacuee’s age and decreased with severity of damage of origin. In highly damaged areas, people with children were less likely to return than those without children.

These studies indicate that it cannot be assumed that migration is a key coping or survival strategy for most people following natural disasters. There appear to be other factors that determine whether a person or household that is affected by the disaster stays in or move from the affected area. It is important to examine the contextual factors in the case of each disaster situation in assessing the impact of disasters on population mobility.

Gray and Mueller (2012) have also cited studies that show that migration after a disaster is mostly short-distance and temporary mobility. The studies have suggested that disasters may limit costly forms of migration: if people have lost their assets and livelihood they are not able to migrate long-distance.

Research approach and issues

Methodologically, the studies reviewed, although not an exhaustive list, have highlighted the various approaches that researchers of migration and disaster have used to study this issue. It is important to note that most of the studies have examined or controlled for the various demographic, social and economic variables that can affect people’s propensity to migrate such as sex, age, marital status, birthplace, household size,
presence of children, education, income and assets and source of livelihood. Data on the damage caused and losses suffered are also examined, such as whether the person’s house was destroyed, what other assets were affected, whether a family member died.

The tsunami study (Gray et al. 2009) compared migration from damaged areas with that from “control” areas that were not affected by the tsunami. This is to control for economic or marriage migration that would have occurred from similar locations in normal circumstances. In studies using large scale datasets, multivariate statistical analysis is used to compare people who are displaced with those who are not to identify the factors that are associated with displacement and mobility.

Smaller studies using mixed methods such as that of Paul (2005) on Bangladesh are useful in examining the contextual factors of the disaster including the role of emergency aid and response in helping people to survive and cope as this can affect their migration decision.

The studies have not addressed the role of social capital and networks directly, except for the one study of the tsunami in Indonesia which examined whether people’s migration decision was related to whether their family members and friends had been affected by the tsunami (Gray et al. 2009). The lack of attention to the issue of social capital is likely to be due to difficulties with measurement and unavailability of appropriate data. None of the studies reviewed referred to community factors such as those considered by Douglas Paton in his analytical framework on studying resilience and adaptation to the risk of disasters (Paton 2008). It would add an important dimension to studies of migration and disasters to consider the role of community factors as indicated by Paton, such as community participation and collective efficacy, in people’s migration decisions after a natural disaster. Social capital and networks can facilitate people’s decision to move, stay or return and it will be of interest to examine which kinds are associated with each of these migration responses.

Research questions

The research questions to be addressed in the current research project relating to migration patterns, as specified in the research proposal, are:
• What is the impact on migration into and out of disaster-affect areas and what are the socio-economic impacts of these migration flows on individuals and populations?
• How does access to social capital in family and kinship networks and land and assets influence migration patterns after a disaster? What role does social capital (networks) have in facilitating migration, staying or returning?
• How do governments respond to natural disasters in terms of migration policies?

To address these research questions, the usual research questions relating to studying migration generally also apply. These questions include:

• Who migrate?
• Over what distance?
• Is migration short-term or long-term?
• What factors positively or negatively affect short-term or long-term mobility?

Previous studies have also examined the question whether poorer, less educated people, women, children and older people and those who are isolated from social networks are more likely to be displaced. The studies proposed for this project can also examine this question to add to current knowledge about the effects of disasters on these more vulnerable groups.

The research literature showing that migration is not necessarily a demographic response or survival strategy after natural disasters in two Asian countries suggests that future research should attempt to understand why some people do not migrate. Is this an indication of resilience in these Asian populations? The research questions in testing this resilience hypothesis are:

• Who did not move? Why not?

Research questions can include those relating to return migration:

• Who returned? Why and when?

In examining these questions, Douglas Paton’s analytical framework is one approach that can be used to examine the role of community factors and social capital in people’s migration decision after a natural disaster.

Data needs
Studies of migration and disasters have acknowledged that lack of data has usually been a limitation (Gray et al. 2009). It is particularly difficult to locate and interview people who have moved away from the disaster area. Population data before and after the disaster are usually needed to assess the demographic impacts and these are often not available in developing countries. While the studies of the effects of the tsunami in Indonesia have been able to use a large national survey dataset supplemented by a large scale follow-up survey undertaken specifically for the studying the effects of the tsunami, the Bangladesh studies have used data collected for other purposes by an international organisation and from a small sample survey of a few affected villages.

If the studies in this project are to focus on testing the resilience hypothesis and the role of social capital in people’s migration decisions after a natural disaster, this should also make primary data collection easier. This is because the focus is on people who did not move so data collection will be from people who still live in the affected areas. The challenge of locating people who have moved away is avoided, unless the objective is to compare those who did not move with those who did.

In testing the resilience hypothesis, measures of adaptability and resilience and social capital should be incorporated into the theoretical models of migration and disaster. Therefore, data will be needed on measures of adaptability, resilience, social capital and social networks as well as on means of livelihood, family and financial resources and how they have been affected by the disaster. Measures of community participation and collective efficacy that have been used by Douglas Paton in his studies of adaptive behaviour to risks of natural disasters should also be included.

Considering that one of the significant findings of existing studies of population mobility and natural disasters in Asia is that migration does not always happen after a disaster, it is of interest to examine the factors that contribute to people’s adaptability or resilience as indicated by their migration decision. Such studies will also help to improve knowledge on how best to provide assistance to those people who do not move.
References


