

**LIVING WITH CONFLICT:  
THE EFFECT OF COMMUNITY ORGANIZATIONS, ECONOMIC ASSETS,  
AND MASS MEDIA CONSUMPTION ON MIGRATION DURING ARMED  
CONFLICT**

**by**

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## **DEDICATION**

To all those who are living with armed conflict today. May they find peace and security.

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## **ABSTRACT**

This dissertation is an examination of migration during armed conflict and the individual and community characteristics that shape this relationship. Although evidence consistently shows that conflict affects migration on an aggregate level, there is little theoretical or empirical work at the micro-level that addresses the individual- and community-level determinants that make people willing and able to migrate during conflict.

To address this gap, I develop multi-dimensional theoretical models that analyze migration decisions at the individual level and the role of community organizations, employment and economic status, and consumption of mass media in systematically altering the way individuals react to armed conflict. Using the recent Maoist insurrection in Nepal as a case study, I empirically test these theoretical models with prospective survey data and detailed records of specific violent events.

I find that specific violent events have different effects on migration, with gun battles increasing and bomb blasts decreasing the likelihood of migration. Within this context, community organizations can provide economic and social support that mitigates the influence of conflict on individuals' lives. I find evidence that organizations such as markets, employers, farmers' cooperatives, and religious institutions dampened the effect of violent events on migration. Economic indicators also moderated the conflict-migration relationship. Location specific characteristics that an individual could lose upon migration, such as employment and land ownership, decreased migration after any

violent event. Conversely livestock, which are a more liquid asset, increased migration after violent events. Finally, results show that use of the mass media positively affected migration during the conflict, likely through the provision of information and influencing exaggerated perceptions of threat.

Overall, this dissertation contributes to the academic literature through the construction and empirical testing of theoretical models of individual migration decisions during armed conflict. I demonstrate that individuals react to violence differently, depending upon their individual and community circumstances which affect their experience and perceptions of violence and the utility and ability to migrate away. I also demonstrate that detailed measurement of the specific events that constitute armed conflict is necessary to effectively study subsequent behaviors.

## **CHAPTER 1**

### **Introduction**

The study of social change and its effect on human behaviors has long been a core concern of the social sciences. Just like individuals, societies are constantly changing, to the extent that no society, organization, or group of people is ever truly static. Some of these changes are relatively smooth, occurring in small steps over long periods of time. Others can be drastic and sudden, brought about by such events as economic collapses, political coups, armed conflicts, terrorist incidents, or natural disasters which significantly affect the context within which people live. Although singly each of these drastic macro-level events are relatively rare and not probable to occur at any given time, together they additively constitute a much more probable reality and actually occur with considerable frequency. For example, in the course of ten years, even the United States which is often considered a relatively stable country, experienced serious changes in government in 2000 and 2008, a major terrorist incident in September of 2001, a large-scale natural disaster (Hurricane Katrina) in 2005, and a serious economic collapse beginning in 2008. Given the frequency with which drastic macro-level changes occur, the importance of research on these changes and how individuals, families, and societies respond to them cannot be understated.

The field of sociology has undoubtedly taken a leading role in the study of macro-level social change and its impact on micro-level behaviors in general (Axiinn and Yabiku 2001, Entwistle and Mason 1985, Giddens 1976, 1984, Parsons 1937, Thornton and Lin

1994), and has contributed significant knowledge of how drastic macro-level events change the context within which people live, altering individuals' and families' lives, livelihoods, and behaviors (Anderson and Silver 1985, Coser 1957, Kreps 1984, Rodgers et al. 2005, Smith and McCarty 1996). However, there are different ways in which change can occur, and even in sociology with its strong focus on social change, scholars do not always clearly define the type of change they are describing or investigating.

The most common way in which we conceptualize change is that of macro- or meso-level contexts. Health centers and schools can be built, new industries or employers can enter a community. Governments, laws, and even climate can change. Additionally, schools, health centers, industries, and employers can be destroyed or downsized. In essence, the context within which people live changes and this can subsequently affect behavioral changes in the population. Drastic macro-level events can of course institute these changes very abruptly.

A second way to conceptualize social change is by examining changes in the *meaning* that people attach to specific aspects of their context or changes in the ways in which people respond to their context. That is, the *mechanisms* that drive the relationships we study can change. For example, in periods of relative peace, wealth is often perceived as a positive attribute and something that people seek to achieve. Behaviors then correspond to this meaning, where individuals who are wealthy often behave in such ways as to display their wealth, and people who are not wealthy might behave in such ways as to align themselves with others who are. However, during several armed conflicts in the past such as the communist revolution in China, the Khmer Rouge period in Cambodia, and the recent Maoist insurrection in Nepal as prime

examples, the meaning of wealth changed to become negative; wealthy people suddenly were thought of as morally reprehensible and became targets not of admiration but of violent reprisals. In such situations, wealthy people might change their behavior so as to hide their wealth instead of displaying it, and non-wealthy people might behave so as not to align themselves with those who are. As this example shows, it is not just the *context* that surrounds people that changes; the *relationships* and *behavioral patterns* that we study change as context changes and time progresses.

There has been much less attention to the study of this dimension of social change, both in sociology and the social sciences in general, for several reasons. First, it is much too easy to assume that once we have identified a detailed and nuanced model of a certain behavior, that the theory and mechanisms connecting the aspects of this model will stay the same over time. Thus we often assume that when people's behavior changes over time, this is caused by changes in their context, not by changes in the meaning they ascribe to their context and the mechanisms that drive their behavior. Second, the data demands for a study of this type are complex, requiring detailed information not only on different dimensions of context and behavior, but information of this type over time, particularly the periods of time before, during, and after any drastic (but unplanned) macro-level event. Without this temporal data, we can study how people behave after any event, but we have no ability to determine if this behavioral pattern is any different than before the event. In this case, we cannot determine if any change has actually occurred.

With the broad intent to better understand processes of social change, this dissertation focuses on one specific type of drastic macro-level event, armed conflict, and

the effects on one specific micro-level behavior, migration. The main contribution of this study to the literature on social change is in providing an evidence-based assessment of both ways in which social change can occur. I examine the physical, social, and economic contextual changes that conflict brings to people's lives and how this affects their migration behavior. I also use the temporal perspective described above to examine how behavioral patterns and the mechanisms that drive behaviors change as context changes over time.

The theoretical models that I develop and the empirical analyses in this study are based at the micro-level, examining the migration decisions of *individuals* and the reasons that some individuals migrate while others do not when exposed to violence. I use the recent Maoist insurrection in Nepal as a case study. I employ detailed and time specific data from the Chitwan Valley Family Study that extend for a period of three years before the violence began, through six years of the violent period in this area. I examine a variety of (although certainly not all) determinants of migration. Given the temporal perspective, these determinants become moderating factors; whereas the conflict might arguably be the underlying cause of migration for many of the people in this study, their various individual and community characteristics moderate the relationship between the conflict and their migration behaviors.

The second chapter of this dissertation examines the role of community organizations in the conflict-migration relationship. Here, I use a multi-dimensional theoretical model of individual out-migration that addresses the economic and social consequences of conflict in addition to the physical threat consequences. Within this model, I describe how community organizations condition the experience of these

consequences and systematically alter migration patterns. My empirical models test the moderating effects of several specific community organizations on out-migration during conflict; these include employers, religious institutions, markets, dairies, mills, and farmer's cooperatives. Results show that in all cases, access to these organizations decreased the effect of conflict on out-migration by providing resources that help individuals to cope with the economic, social, and psychological consequences of conflict.

The third chapter examines how employment and household assets moderate the relationship between armed conflict and migration. Results from this study indicate that location-specific, employment and non-saleable assets such as farmland decrease the likelihood of migration after violent events. Similarly, employment (which is arguably location-specific) also decreases migration after violent events. This is exactly the opposite effect of employment during periods of relative peace. These results provide evidence that individuals likely make cost-benefit calculations, weighing the expected danger of staying where they are against the likelihood of losing their employment or assets from migrating. On the other hand, saleable assets, such as livestock, need not constitute a financial loss for potential migrants, and can also provide the financial means to undertake a journey and thereby increase the likelihood of migration.

The fourth chapter examines how consumption of the news media moderates the relationship between armed conflict and migration. I apply theoretical insights from social-psychological research on fear of crime to examine how consumption of the news media alters individuals' perceptions of threat from violent events, and subsequently affects their migration decisions. Results show that listening to the radio and reading the

newspaper increased the likelihood of migration following violent events. These results are similar to those found in the literature on mass media use and fear of crime in the United States.

As a whole, this dissertation demonstrates two key contributions to the literature on migration during armed conflict and more generally on the study of social change brought about by drastic macro-level events. First, individuals experience and react to violence differently, depending upon their individual and community circumstances. Second, social change affects not just the context within which people live, but also the meanings they attach to aspects of their context. In the following chapters I apply these perspectives and introduce several new theoretical tools from other areas of sociological and demographic study that significantly advance our ability to understand the consequences of armed conflict on individual lives and livelihoods and their subsequent migration decisions.

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## **CHAPTER 2**

### **Coping With Conflict: Do Community Organizations Moderate the Effect of Armed Conflict on Migration?**

Sociologists have long identified conflict as a source of social change (Coser 1957; Dahrendorf 1959; Marx [1848] 1967)). We understand that conflict changes the context within which people live and shapes the social dimensions of daily life. In order to cope with this changing social environment, people develop new behaviors and ideas that can persist long after a conflict ends. Although we understand the theoretical reasons for expecting conflict to instigate social change, sociologists have relatively little empirical insight into the nature and breadth of change that we might expect during and after any given conflict. Much social research focuses on the leaders and participants in conflict processes and how they affect change (Fearon and Laitin 2003; Gould 1991; Muller 1985; Myers 1997; Pitcher, Hamblin, and Miller 1978; Snyder and Tilly 1972). There is less attention paid to the general population, whose behavior and ideas might change in response to conflict, regardless of their level of participation in the conflict itself. This leaves a crucial gap in our understanding of conflict and social change, a gap this paper is designed to address by focusing explicitly on the general population and their responses to a context of violent conflict.

Towards this end, this study focuses on one important and easy to observe behavioral response to conflict—out-migration. Migration is an important dimension of social change; research has shown that it can shape family relationships, it can affect

economic resources and livelihood strategies, and it can serve as a conduit for the spread of new ideas and behaviors (Donato 1993; Durand et al. 1996; Goldstein and Goldstein 1981; Massey 1988; Stark and Lucas 1988; Taylor et al. 1996a; Taylor et al. 1996b). On a macro level, migration plays a role in globalization, nationalism, security, and environmental degradation (Castles 2003; Jacobsen 1997; Kibreab 1997; Richmond 1994; Weiner 1996). Although the evidence consistently shows that conflict affects migration on an aggregate level, we understand little about the individual- and community-level determinants of migration during conflict. Alternately, there is extensive research on the individual- and community-level determinants of migration during times of relative peace (Donato 1993; Massey and Espinosa 1997; Massey et al. forthcoming; Palloni et al 2001; Pedraza 1991; Stark and Bloom 1985; Stark and Taylor 1991; VanWey 2005) but there is no link between this literature and that on migration during periods of conflict. As a result, though we know that many people migrate away from conflict, we have less understanding of the specific characteristics or circumstances that lead some people to migrate and others to remain where they are. Consequently, we have little ability to predict either migration responses during times of conflict or the social change likely to ensue.

Despite the fact that sociology has played a small role in the study of migration during conflict (Castles 2003), this area of study clearly has much to gain from sociological insights into the nature of the influences of macro-level context on micro-level behaviors and the recognition that these relationships are contingent upon individual characteristics and local context (Mazur 1988). Furthermore, classic sociological theory acknowledging that macro- and meso-level structures can provide opportunities as well

as constraints on individual decision-making (Giddens 1976; 1984; Parsons 1937) needs to be considered in the study of what is still termed ‘forced’ migration.

In this study, I use a sociological perspective to begin developing a new model of individuals’ responses to the context of conflict in general and out-migration from conflict affected areas in particular. Instead of simply reproducing classic migration theory, I address the contextual changes that conflict induces on the daily lives of individuals and how their migration responses might be different in these new contexts compared to times of relative peace. By focusing on individuals, I am able to show that people who are exposed to the same violence react in different ways. This opens up the possibility to understand individual variability in migration patterns during conflict, or *why* some people migrate and others choose to stay where they are in the face of danger. This question has not yet been addressed in the literature, despite calls to do so (Castles 2003; Arango 2000) and evidence that non-migration is prevalent even during severe conflicts<sup>1</sup>.

Departing from much of the literature that treats conflict as a single and homogenous event, I evaluate how specific violent events, such as major gun battles and bomb blasts, have different effects on out-migration. Furthermore, going beyond previous work that focuses largely on physical safety consequences, the model presented here identifies the additional social and economic consequences of conflict. This multidimensional view of armed conflict constitutes an important advance in theories of

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<sup>1</sup> For example, in the severe on-going conflicts in Afghanistan, Iraq, and Darfur, large proportions of the population have not migrated. According to UN data sources, about 90% of the Afghan population, 82% of Iraqis, and 43% of the population of Darfur are not officially displaced (OCHA 2006; UNFPA 2003; UNHCR 2006, 2007).

conflict and provides the opportunity to understand how pre-existing community organizations condition the experience of conflict, systematically altering the way individuals in different communities react to the same kinds of conflict events. Using this model, I am able to show that during periods of violent and political upheaval, community organizations function as sources of stability that partially counteract the effects of armed conflict as a source of change.

I use the recent Maoist insurrection in Nepal as a case study to empirically investigate this model. A unique combination of data, including records of violent events such as gun battles and bomb blasts, and a prospective panel survey of individuals and the communities within which they live, make direct empirical documentation of these relationships possible. The individual surveys from Nepal that span the entire period of conflict provide records of individuals' migrations on a monthly basis, thereby allowing precise comparisons between violent events each month and out-migration. Community surveys from the same study provide information on social and economic resources available in each community, including employers, markets, farmer's cooperatives, dairies, mills, and temples. This multi-level combination of data provides the means to empirically test hypotheses linking individual migration to macro-level armed conflict and access to community resources. Because these data cover the period of time from three years before the insurrection began, through the six years of the violence, they provide an unprecedented opportunity to investigate differences in migration patterns during times characterized by armed conflict and by relative peace.

## THEORY

Although the study of migration during conflict has advanced significantly in the last few decades, both theory and empirical studies are still largely focused on aggregate groups and address physical danger as the principal, if not only, motivation for migration during conflict. This leaves an incomplete picture of the complex interactions between armed conflict, individuals, and the communities within which they live. Here, I briefly discuss the standard threat-based decision model of forced migration studies. Building on this approach, I then propose a multi-level model of individual migration behavior that is based on a broader social-ecological understanding of how individuals and families<sup>2</sup> are affected by and cope with conflict. I first describe how individuals make migration decisions in response to the physical safety consequences of conflict. Then I address the social and economic consequences and how individuals might respond to these. The theory proposed here is not intended to replace the classic economic (Stark and Bloom 1985; Todaro 1969; Todaro and Maruszko 1987) and social networks theories (Massey et al. 1987) that are prevalent in studies of migration. These theories are arguably still important to the explanation of migration in the context of conflict. Instead my purpose is to address the additional contextual constraints and opportunities that are imposed on people during periods of conflict in order to better understand their subsequent migration reactions.

The threat-based decision model is the dominant explanatory model of forced migration and the only theory that has been empirically tested in the literature. This

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<sup>2</sup> Migration decisions are likely most often made by individuals and families together(Massey 1987). The theoretical model presented here assumes that both family and individual desires are taken into account in the migration decision. However, for the sake of brevity, throughout this paper I use the terms ‘individual’ and ‘micro-level’ to refer to decisions made by the individual person in consultation with family members.

model argues that potential migrants base their decision to migrate away from a conflict on the perceived threat to their personal security. When the perceived threat to their security increases beyond an acceptable level, they migrate away. This model is explained in further detail in Davenport, Moore, and Poe (2003) and Moore and Shellman (2004). Recent empirical studies have found strong support for this theory. Several country-level comparative studies have found that a variety of types of generalized violence result in large increases in migration out of the afflicted area (i.e. refugee flight), including civil war, international war, genocide and politicide, and human rights violations (Apodaca 1998; Clark 1989; Davenport et al. 2003; Gibney, Apodaca, and McCann 1996; Melander and Oberg 2006; Moore and Shellman 2004; Schmeidl 1997; Stanley 1987; Weiner 1996; Zolberg, Suhrke, and Aguayo 1989). The outcome of these studies is that there is strong and consistent evidence that people flee from generalized violence.

The threat-based decision model however is designed to understand the migration patterns of aggregate groups. It is less helpful in understanding individual behavior. This is in part because the model adopts a largely deterministic perspective to explain how a single aspect of the macro-level context—armed conflict—determines micro-level behavior—migration. It incorporates to some extent the general lay assumption that armed conflict places absolute constraint on the behavioral choices of the individual, regardless of their individual or community circumstances. It is precisely through this assumption that people have no choice in the context of conflict that we use the term ‘forced migration’. Because this model does not consider the complexity of the migration decision at the individual level, it is not able to explain the individual

variability in migrants leaving any given conflict nor is it able to explain the phenomenon of non-migration.

In addition, this model references only physical threat as a mechanism through which conflict motivates people to migrate. It does not address the economic, social, or political consequences of conflict on civilian lives and livelihoods. Independent of the physical threat, these disruptions of economic, social, and political life could also be important mechanisms that motivate people to migrate (Avogo and Agadjanian 2008).

### ***Responding to the Physical Safety Consequences of Conflict***

We understand that violence increases the perceived threat to people's well-being. For this reason, we believe that people migrate away in order to remove themselves from this threat (Davenport et al. 2003; Moore and Shellman 2004). However, the relationship between violence and migration is likely more complicated than a simple linear function. The process of migrating or travelling, which includes being outside the home and the community and in less familiar surroundings, exposes people to the violence they are seeking to escape. Furthermore, migration is only a logical choice to protect one's safety if they are able to migrate fully out of the conflict zone.

Another option to decrease one's exposure to violence is to consciously choose not to migrate. In doing so, people continue to be exposed to the possibility of violence in their own community, but they do not expose themselves to the danger of violence while travelling. This option is also less costly to the individual and family. There is evidence of a similar type of precautionary behavior in dangerous neighborhoods in the US. Several studies find that when faced with increased danger in the neighborhood, adults remain within their own homes more often, participate in community activities

less, and children spend less time playing outside (Mesch 2000; Keane 1998; Rountree and Land 1996; Liska, Sanchirico, and Reed 1988; Warr 1984). This consideration is important for people who reside in an area exposed to conflict and do not routinely migrate away. There is reason to believe that they might choose not migrate especially when exposed to armed conflict. It is perhaps even more important when we consider people whose residence in such areas is less stable, such as those who migrate on a seasonal or regular basis during periods of relative peace. It is possible that these people might actually choose not to migrate when exposed to armed conflict, when they would have otherwise chosen to do so.

The two precautionary behaviors—migrating away and not migrating or migrating less—at first seem opposite and there is no clear connection between the literature on each of these responses explaining why individuals may choose one over the other. Here I propose one reason for this discrepancy—the decision whether it is safer to migrate or to not migrate could depend on the level of violence. At lower levels of violence, the safest option could be to stay within one's own home and community, rather than to be outside where the violence is mainly occurring. However, at higher levels of violence, people could feel threatened even in their own homes and communities. In this case, the safest option would be to migrate away. Hurricanes provide a useful analogy to this discussion. When a low to medium strength hurricane is predicted, people are advised to stay within the protection of their own homes, rather than to be outside where they will be exposed to the storm. However, when a very large hurricane is expected, people are advised that they will not be safe within their homes, and thus it is safer to evacuate the area.

Taking levels of violence into account, I predict that during periods of high levels of violence, there will be a higher rate of out-migration. However, during periods of low levels of violence, I predict a lower rate of migration compared to periods of relative peace. This prediction takes into account those who would normally have been resident in their homes and do not choose to migrate in response to the violence; it also includes the people who would have otherwise migrated (for labor, education, marriage or other reasons) and consciously choose not to do so because of the danger they would encounter in the process of migrating.

### ***The Social and Economic Consequences of Conflict***

Although physical threat is undoubtedly an important motivation to migrate away from conflict, it is only one of the many ways in which conflict affects individuals and families. In addition, there are a variety of deleterious economic and social consequences both during and after conflict or violent events. This understanding is the basis upon which the study of natural disaster is based, where disasters are defined as “the consequences of events triggered by natural hazards that overwhelm local response capacity and seriously affect the social and economic development of a region.” (InterAgency Standing Committee 2006:8). In other words, it is not only the event itself that is problematic, but the aftermath of the event and the interaction between the event and contextual and individual characteristics that determine how it affects individuals (Galea, Hadley, and Rudenstine 2006). The same is likely true for human-made disasters such as conflict—it is not just the danger that is important, but the inclusive effects on individuals’ lives that provide motivation for migration. Thus in order to better understand individuals’ behavior when faced with armed conflict, it is necessary to have

a broader understanding of how armed conflict affects their lives and livelihoods, in other words, the context within which individuals make migration decisions.

First, armed conflict can disrupt individuals' and households' livelihoods. It can limit their ability to go to work and to farm. Conflict can also disrupt access to markets, to buying and selling goods, and it can increase prices of commodities (Bundervoet and Verwimp 2005; Collier 1999; Gebre 2002; Justino 2006; Mack 2005; Verpoorten 2005). Civilians often face destruction of personal property including homes, farms, and other assets (Justino 2006; Shemyakina 2006). In addition, conflict can bring increased taxes and required billeting for military forces. This effectively decreases wages, increases the cost of living, and makes household livelihood strategies increasingly risky. Under these circumstances, both neo-classical economics and the new economics of migration theories would predict increased migration (Harris and Todaro 1970; Stark and Bloom 1985; Stark and Taylor 1991).

Second, social life can be disrupted by conflict. Research has shown that it can affect children's schooling (Shemyakina 2006) and access to health services (Justino 2006; Mack 2005). It is also likely that the vast social upheaval of armed conflict changes social relationships and formal and informal leadership hierarchies. All of these consequences on daily economic and social life are likely part of the motivation to migrate during armed conflict. This could also increase the likelihood that people will migrate in order to seek social opportunities that have been disrupted in their communities.

### ***Responding to the Social Consequences of Conflict***

Not all people experience these social and economic consequences of conflict in the same way. For example, community organizations that provide social, economic, and psychological support can mitigate the social and economic consequences of conflict. Individuals with access to these organizations likely experience the consequences of conflict differently than those without access, which could in turn affect the likelihood that they will migrate away.

Community organizations that provide social support can help people to better adapt to and cope with the social and psychological consequences of conflict. In other words, social support organizations can decrease the impact of conflict as a motivation to migrate or not migrate. There is strong empirical evidence that community organizations play an important role in moderating psychological responses and coping behaviors to conflict and other disasters. The Conservation of Resources theory proposed by Hobfoll and Lilly (1993:128) argues that “People, groups, or organizations that are endowed with strong personal or social resource reserves should better resist the deleterious effects of stress and withstand everyday challenges.” Subsequent empirical studies on disasters support this proposition. Several studies of responses to conflict and natural disasters find that individuals experienced less distress after disasters if they experienced higher social embeddedness, perceived social support, and received social support (Carr et al. 1997; Cleary and Houts 1984; Creamer et al. 1993; Galea et al. 2002; Jenkins 1997; Kwon, Maruyama, and Morimoto 2001; Norris and Kaniasty 1996; Tracy et al. 2008). Based on a literature review of 160 empirical studies of armed conflict and natural disasters, Norris et al. state “[Social resources] undoubtedly account for the overall

resilience many, if not most, people show in the face of even quite serious stress" (Norris et al. 2002:247).

These studies all address psychological responses to disasters. They do not examine how this affects subsequent behavior. In this study, I extend this theory and propose that social support increases the ability to cope with and adapt to the social and psychological consequences of conflict. In other words, social support decreases an individual's vulnerability to the social consequences of conflict. This in turn can decrease the likelihood of major changes in behavior, including any substantial change in the likelihood of migration. In the situation of low levels of violence, when we would expect a negative likelihood of migration, I predict that access to social support organizations in the community will reduce the negative effect of violence on migration. In the situation of higher levels of violence, when we would expect a positive likelihood of migration, I predict that access to social support organizations will reduce the positive effect of violence on migration.

### ***Responding to the Economic Consequences of Conflict***

Economic support organizations in the community could work similarly by moderating the conflict-migration relationship. They can help people to better adapt to and cope with the economic consequences of conflict and thereby decrease the motivation to make migration decisions as a response to the conflict. Here again the literature on psychological responses to disasters (including violent events) is helpful. Research in this area has shown that those with fewer economic resources and lower incomes are more vulnerable to and less able to cope with the consequences of disasters (Brewin, Andrews, and Valentine 2000; Hobfoll, Tracy, and Galea 2006). For example, in the

case of armed conflict, in the event that an individual or family suffers economic setbacks through destruction of their home, farm, or business, employers and markets could provide a continued or additional source of income to rebuild that which was destroyed. Community groups such as farmer's cooperatives can provide small loans. In this way, economic support organizations can decrease the impact of conflict as a motivation to migrate or not migrate. Thus, in situations of low levels of violence, I predict that access to community-level economic support will reduce the negative effect of violence on migration. In situations of high levels of violence, I predict that access to community-level economic support will reduce the positive effect of violence on migration.

## **CONTEXT AND SETTING**

### ***The Maoist Insurrection***

The context of this study is the recent Maoist insurrection in Nepal. Following a relatively unsuccessful political campaign, the Communist Party of Nepal (Maoist) made a formal declaration of "People's War" on February 13, 1996, with the aim to unseat the current constitutional monarchy and install a democratic republic. They charged the government with poor administration, corruption, unfair taxation, and neglect of poor rural areas of the country.

The earlier stages of the insurrection were contained primarily in several mid-western districts (around Rolpa, Rukum, Jajarkot, Salyan, Pyuthan, and Kalikot) and aimed at damage to government installations and communication infrastructure, capturing weapons, and threatening government security forces. From mid-2000 however, the Maoists progressively expanded their campaign nationwide, spreading first into the far eastern districts where there was little government presence, and then across rural areas

of most of the country. In January 2001, the Nepalese government responded by creating a special armed police force to fight the Maoists. After that, the government generally maintained control of cities and large towns, and the Maoists controlled a majority of the rugged countryside of Nepal, where communication and transportation are difficult. By 2001, they were operating in 68 of Nepal's 75 administrative districts<sup>3</sup>. The Maoists came close to the capital, when in March 2006 they launched a successful week-long blockade of Kathmandu. In June 2006 serious peace talks commenced and on November 21, 2006 the government and Maoists signed a comprehensive peace agreement declaring an end to the conflict.

Because this conflict was staged mainly as a guerrilla war, there was generally no 'frontline', it was largely unknown where fighting would break out, and civilians were often unintentionally caught up in firefights and bomb blasts. In addition, both Maoists and government forces intentionally used civilians for political purposes. Reported violent acts by the Maoists and Nepalese government security forces against civilians include torture, extra-judicial killings (both discriminate and indiscriminate), bombings, gun fights, abductions, forced conscription, billeting, taxing, and general strikes (Hutt 2004; Pettigrew 2004; South Asia Terrorism Portal<sup>4</sup>). Three ceasefires were called and subsequently broken. The government called a State of Emergency and instituted martial law twice, in 2001 and 2005. From 2000 until the end of 2006, the Maoists were

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<sup>3</sup> This data is available on the South Asia Terrorism Portal website, "Nepal Terrorist Groups- Communist Party of Nepal- Maoist" at <http://www.satp.org/satporgtp/countries/nepal/terroristoutfits/index.html>. Retrieved September 11, 2008.

<sup>4</sup> Reports of these violent events are available on the South Asia Terrorism Portal website, "Major Incidents of Terrorist Violence in Nepal, 1999-2006," at <http://www.satp.org/satporgtp/countries/nepal/database/majorincidents.htm>. Retrieved September 11, 2008.

responsible for a total of 4312 deaths and the government forces were responsible for 7544 deaths (Informal Sector Service Center 2006).

Throughout the conflict, the Chitwan Valley, from which the data for this study were collected, has remained one of the relatively less violent districts in Nepal, mainly because it is located far from the western regions of the country where the Maoist insurrection started and has raged the strongest and far from the capital and government stronghold Kathmandu. Between 1996 and April 2006, Chitwan experienced 194 conflict related fatalities (Informal Sector Service Center 2006). This is slightly higher than the average number of fatalities of all districts, but much lower than the fatality toll in the most-affected western districts that experienced from 300 to 950 deaths throughout this same time period (Informal Sector Service Center 2006). Other violent disturbances in Chitwan have been infrequent. There were a few bomb blasts, the great majority in 2003 and 2004, the largest of which injured or killed 17 people. There was one major gun battle between Maoists and security forces in June 2005 that resulted in 34 civilian fatalities. There were no abductions of large groups, but a few individuals were abducted in 2003 and 2004. Along with these visible and countable disturbances, the people of Chitwan Valley have been subjected to taxes, billeting, conscription (by both Maoists and the government), curfews, and general strikes.

### ***The Chitwan Valley of Nepal***

My data analysis is based in the Chitwan Valley of south-central Nepal. The valley is flat, fertile, and dominated by agriculture. The administrative district of Chitwan borders India and is about 100 miles from Kathmandu. There is one large city, Narayanghat, and

the rest of Chitwan's population, like much of Nepal, lives in small, rural villages. Most villages are connected to other villages and larger roads by paths or dirt roads.

### ***Migration in the Chitwan Valley***

Historically, there has been a large amount of migration from the Chitwan Valley to other areas of Nepal, but also notably to nearby areas of India. Much of the migration is seasonal and is viewed as a strategy to supplement regular farm and household incomes during low periods of the harvest and planting cycle (Kollmair et al. 2006; Thieme and Wyss 2005). For domestic migrants, agricultural work is common (HMG et al. 2004), as well as urban wage labor in factories, and informal sector jobs (Graner 2001).

International migration is also common. Most Nepalese who migrate to other countries go to India where they can work as seasonal laborers in the larger wage labor markets in rural and urban areas (Kollmair et al. 2006). Nepal and India share an open border, so there are no restrictions on Nepalese cross-border travel to India, making this international migration no more difficult than migration to other areas of Nepal. The 2001 census estimated that 2.5-5.0% of Chitwan residents were living abroad in 2001 (HMG et al. 2002) and 77% of these international migrants were in India. Data from a nationally representative sample survey allow us to estimate that about as many Chitwan residents are internal migrants (HMG et al. 2004).

Figure 2.1 shows the monthly rate of out-migration, including internal and international migration, from the Chitwan Valley from June 1997 through January 2006. Out-migration steadily declines from a high of about 3% per month in early 1997 until about the middle of 2000. After this time, the percent of the population that moved out of

the area in each month remains at a relatively stable, but low rate of around 0.6% per month.

[Figure 2.1 about here]

## **DATA AND MEASURES**

My analyses cover a period of nine years from June 1997, three years before the outbreak of nation-wide violence, and continuing for six more years during the violence until January 2006. As such, this is an unusual opportunity to study migration patterns during armed conflict in comparison with migration patterns during a period of relative peace before the conflict.

I use three separate kinds of data in this study- survey data about individuals, survey data about communities, and data about violent events involved with the conflict. For measures of violent events, I use the South Asia Terrorism Portal (SATP), an Indian-based NGO that compiles records of all violent events in Nepal and other south Asian countries. For measures of individual and community characteristics, I use the Chitwan Valley Family Study (CVFS), a large-scale multidisciplinary study of the western part of the Chitwan Valley of Nepal, designed to investigate the impact of macro-level socioeconomic changes on micro-level individual behavior (Axinn, Barber, and Ghimire 1997; Axinn, Pearce, and Ghimire 1999; Barber et al. 1997).

The CVFS includes a variety of kinds of data, including an individual interview and life history calendar that were collected in the end of 1996. A CVFS prospective demographic event registry that was collected monthly beginning in 1997 is the source of my migration data. The prospective nature of this data makes it ideal for studying migration, by providing information on a representative sample of all people exposed the

possibility of migration, including those who do not migrate, those who do migrate and subsequently return, and those who migrate and never return. On the other hand, retrospective data is not able to include the individuals who migrate and never return, thus restricting research based on retrospective data to the study of temporary migration.

Overall, the CVFS includes 171 separate neighborhoods that were selected with an equal probability, systematic sample. All individuals between the ages of 15 and 59 and their spouses within these neighborhoods were included in the survey. At 97% of the original sample, the response rates are exceptional.

Although 171 communities were sampled for the 1996 individual and life history calendar surveys, only 151 of these communities were included in the prospective demographic event registry. I use data from this registry; therefore my sample includes those individuals who were resident in these 151 neighborhoods of the Chitwan Valley study area in 1996. Furthermore, I restrict my sample to those who were between the ages of 18 and 59 at the beginning of this study in June 1997<sup>5</sup>. This age range excludes those who are likely too young or too old to be living independently or to make migration decisions for themselves. It also excludes the vast majority of young people who could still be enrolled in school, which past research in this area has shown to be a strong and significant predictor of migration (Williams in press).

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<sup>5</sup> The period of time that this study covers begins in June 1997. Although the prospective demographic event registry (which I use to measure migration) began in February 1996, the migration data during the first few months of data collection is likely biased. The initial interviews were collected in the latter half of 1996. Several months after this, the prospective demographic event registry was started. Thus those individuals who migrated during the several months between the time they were initially interviewed and the beginning of the registry were recorded as migrants during the first few months of the registry. For this reason, migration rates during these first few months are likely biased. I present results in this paper of models that begin in June 1997, however I tested these models using February 1997 as a start date. Results from these tests were substantively equivalent to what I present here.

### ***Measures of Violent Events***

I use two measures of violent events—major gun battles and bomb blasts. In this context gun battles represent a high level of violence or threat. On average, 31 people died in each major gun battle in Nepal (South Asia Terrorism Portal 2006). Gun battles tended to last for a longer period of time than bomb blasts, up to several hours. In addition, reports indicate that nearby civilians were used as human shields and forced to clear dead and wounded bodies. In comparison, in this context bomb blasts represent a much lower level of violence. Bombs are small, often homemade devices that have much less destructive power than the bombs used in other current conflicts such as Iraq. During this conflict in Nepal, each bomb blast killed or injured an average of three people (South Asia Terrorism Portal 2006).

The South Asia Terrorism Portal provides records of the date and place of each major gun battle and bomb blast in Nepal. The data for major gun battles covers 51 months, from November 2001 through January 2006. The data for bomb blasts covers 49 months, from January 2002 through January 2006. With these data, I create variables for the number of major gun battles and the number of major bomb blasts per month in the local area. I define the local area that can influence Chitwan residents' perceptions of threat as Chitwan district and the six neighboring districts (Nawalparasi, Tanahu, Gorkha, Dhading, Makwanpur, and Parsa).

For the time period that these data do not cover, from the beginning of my study in June 1997 until November 2001 or January 2002 (for gun battles and bomb blasts respectively), I impute the number of major gun battles and bomb blasts to be zero. While it is likely that there were some gun battles and bomb blasts during this time, news

reports and research indicate that the conflict was at a very low intensity (Hutt 2004) and CVFS research staff who are resident in the area indicate that there were very few of these violent events before 2002. Furthermore, in 2002 there was exactly one bomb blast and one gun battle in the local area. Thus this imputation strategy for the period before 2002 is likely a close representation of reality<sup>6</sup>.

Major gun battles in this area were sporadic. There were gun battles in 12 of the 51 months of records. The largest number of major gun battles in one month in this area was four, in April 2005. Bomb blasts occurred more routinely. For example, from September 2003 there was at least one bomb blast in almost every month until August 2005. Of the 49 months of data about bomb blasts, there were 24 months in which there was at least one bomb blast. The largest number of bomb blasts in any one month was 12, in July 2004.

All of these event records from SATP were “compiled from official sources and the English language media in Nepal.” (South Asia Terrorism Portal 2006b). The accuracy, or more to the point- the inaccuracy, of these news reports should be examined, particularly in the case of Nepal, a country that has been repeatedly accused of severely restricting freedom of the press (Amnesty International 2005; International Federation of Journalists 2006; United Nations Office of the High Commissioner for Human Rights 2005). The government was been accused of falsifying official figures of casualties from the insurgency (Dixit 2002; Hutt 2004). In fact, it is argued that “for greater precision government casualties be doubled and Maoist losses be halved against official figures.”

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<sup>6</sup> I also tested these models using with variables created by imputing all the missing data with 1's, the mean of each variable for the 2002-2006 time period, and random numbers within one standard deviation of the mean. The results of these tests were very similar to the models that I present here that use variables with missing data imputed with 0's.

(Mehta 2002). However, while news reports of the number of deaths or injuries are likely less accurate, reports that a violent event happened and the time and date of the event are likely to be more accurate. It is easier to misrepresent the size or impact of an event such as a gun battle than it is to misrepresent that it happened at all. For this reason, I use records of events (bomb blasts and major gun battles) and not the number of people that were involved in each event.

I also use a measure that delineates the period of nationwide violence that affected the lives of civilians from the period before the outbreak of this violence. There is no official starting date for the violence of the Maoist insurrection. However September 2000 approximately marks a “turning point” in the insurrection (Hutt 2004), when the Maoists escalated their violent campaign and began to expand nationwide and the government created the armed police force specifically to fight the Maoists. The number of fatalities from this time on changed the insurrection from a low-intensity, to a high-intensity conflict (Pettigrew 2004; Wallensteen and Sollenberg 2000). Thus, I create a dichotomous variable ‘during war’ that is coded as ‘1’ for the period from September 2000 until the end of my study in January 2006. From 1997 through August 2000, when there was little generalized violence, this variable is coded ‘0’

### ***Migration***

My measure of migration during the study period comes from the CVFS prospective demographic event registry. This is a panel study where interviewers visited each household in the study sample on a monthly basis from 1996 through the present. Thus the CVFS registry has residence records for each individual in the sample on a monthly basis<sup>4</sup>. I define a migration as a one month or longer absence from an individual’s

original 1996 residence<sup>7</sup>. This measure captures short- as well as long-term migration. This is especially important in the case of conflict, where research has shown that much of migration is temporary. Over the 104 month period of this study, 59% of the sample population migrated at least once. Table 2.1 shows the descriptive statistics for this and all other variables used in this study.

[Table 2.1 about here]

### ***Community Economic and Social Support Organizations***

I use the CVFS neighborhood history calendar for measures of community context. Based on the local settlement pattern in the Chitwan Valley, this data set operationalizes the concept of community as the clusters of households, called ‘tols’ or neighborhoods, that constitute the hub of daily social life in the Chitwan Valley. These neighborhoods are comprised of 5-15 households each. The CVFS neighborhood history calendar was collected in 2006 using archival, ethnographic, and structured interview methods (Axinn et al. 1997) to record a detailed annual history of key services and organizations in each neighborhood.

The contextual measures I examine in this project include access to temples and monasteries, markets, employers, farmer’s cooperatives, mills, and dairies. Temples and monasteries provide individuals with religious or spiritual support. While temples are Hindu establishments and monasteries are Buddhist, it is common and acceptable for individuals of either religion to visit both temples and monasteries. Temples are more common in this study area and people sometimes visit them as often as once a day. Thus,

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<sup>7</sup> I also tested these models using three and six month absences to define migration. The results were similar, with coefficients that were slightly smaller and less significant in some cases.

in addition to providing spiritual support and solace, temples also serve as a community meeting place.

In this study, markets are defined as any place with two or more contiguous shops or stalls that sell goods. As places for people to buy and sell produce and other goods, markets provide economic support. In addition, they often serve as informal community meeting places that provide social support and serve to maintain community relationships.

Employers are defined as any institution that employs at least ten people. They include places that hire people for salaried jobs or for less permanent wage labor. Thus they can provide economic support for those who are currently employed. Employers can also provide the possibility of employment for those in need who are not already employed.

Farmer's cooperative, mills, and dairies are facilities that enable small farmers to process and market grain, milk, and other farm produce. In order to use these facilities, farmers must be members of the group and invest some capital to purchase equipment for processing products as well as trucks or other means to bring products to markets or wholesalers. In addition, many cooperatives provide small loans to members in times of need. Thus, cooperatives, mills, and dairies all provide economic support.

For all of these organizations, the CVFS neighborhood history calendar recorded the distance in walking time on foot from each neighborhood to the nearest service on an annual basis. These travel times vary from 0 (when the organization is located in the neighborhood) to over 100 minutes. I create dichotomous variables for access to each of these organizations. The variable *Religious Institutions* is coded '1' if a neighborhood is

within 10 minutes walk of a temple or monastery, and ‘0’ if it is further. For markets I use a distance of 5 minutes walk, for employers 20 minutes walk, for mills 5 minutes, for dairies 10 minutes, and for farmer’s cooperatives 10 minutes walk<sup>8</sup>.

In addition to these community context variables, I create a series of interaction variables between violent events and community organizations. For example, I create a variable by multiplying the number of bomb blasts per month with the variable for access to markets. These interaction terms will allow me to test how community organizations affect the relationship between violent events and migration.

### ***Control Variables***

In order to accurately estimate the effects of violence and community organizations on migration, I include in my models a variety of individual- and household-level characteristics that could confound the relationship I am studying. These measures include age, sex, ethnicity, marital status, children, past migration experience, education, work outside the home, land ownership, and months of the year. These variables come from the CVFS Life History Calendars (Axinn et al. 1999), individual interviews, and household consumption survey. Based on classic migration theories, including neoclassical economics, the new economics of migration, and cumulative causation theory,

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<sup>8</sup> I tested dichotomous variables using different distances to each of these organizations, such as 5, 10, and 20 minutes walk. The walking distances that I use here are the strongest (and often only) significant measures of access to these organizations. Other research in this study area has shown that distances of five and ten minutes walk to employers and markets are significant predictors of contraception, marriage, and education (Axinn and Yabiku 2001; Beutel and Axinn 2002; Yabiku 2004). In addition to the empirical evidence that these specific distances are important, these measures also make sense conceptually. Considering how people use each service, markets and mills often require users to transport a large amount of goods (produce and grain respectively) to and from the organization. Dairies and farmer’s cooperatives require smaller loads to transport, and employers and religious institutions do not require that users transport any goods. Thus it is reasonable that people are willing to travel further for the organizations that require them to transport smaller or no loads. Whereas larger loads to transport effectively decrease the distance that people consider functionally accessible.

as well as empirical evidence, these control measures have been shown to be related to regular migration patterns in this setting and in other countries (Donato 1993; Harris and Todaro 1970; Massey 1990; Massey and Espinosa 1997; Massey et al. forthcoming; Pedraza 1991; Shrestha, Velu and Conway 1993; Stark and Bloom 1985; Stark and Taylor 1991; VanWey 2005; Williams in press).

I use a spline function to measure age that allows my models to be sensitive to rates of migration that change non-linearly with age. I use six age categories as follows: 15-20, 21-25, 26-30, 31-40, 41-50, and 51 years and older. I use dichotomous variables for sex, and to measure if an individual has ever migrated before 1997, was working outside the home in 1996, owned any land in 1996, or had any children in 1996. I use a series of dichotomous variables to control for the five functional ethnic groups in this area: Upper-Caste Hindu, Lower-Caste Hindu, Newar, Hill Tibeto-Burmese, and Terai Tibeto-Burmese. Similarly, I measure marital status with four time-varying dichotomous variables including never married, married and living with spouse, married and not living with spouse (such as when a spouse is temporarily working elsewhere), and post married (divorced, separated, or widowed). I use an interval level variable for educational attainment that records the number of years of education an individual has completed by 1996. I also use an interval level variable the records the number of years an individual had lived in their 1996 neighborhood. Finally, in order to control for regular seasonal migration patterns in the Chitwan Valley, particularly in relation to the harvesting and planting cycles, I use a series of eleven dichotomous variables for each month of the year.

## ANALYTIC STRATEGY

I use a series of discrete-time event history models to predict out-migration from the Chitwan Valley in any given month. Person-months are the unit of exposure to risk. The models test the monthly hazard of first migration out of the Chitwan Valley neighborhood after June 1997, contingent upon violent events and access to community organizations. I lag all both violent event variables by one month in order to assure that the result I am measuring (migration) occurred chronologically after the event. For example, the models test the effect of a bomb blast in April on out-migration in May.

I use the logistic regression equation given below:

$$\ln\left(\frac{p}{1-p}\right) = a + \sum(B_k)(X_k)$$

where  $p$  is the probability of migrating out of the Chitwan neighborhood,  $\frac{p}{(1-p)}$  is the odds of migrating out,  $a$  is a constant term,  $B_k$  is the effect of independent variables in the model, and  $X_k$  is the value of these independent variables.

Because the objective of my analyses is to estimate the moderating effect of community organizations on migration after violent events, I use multi-level, discrete-time, event history models (Barber et al. 2000). Community organizations are measured at the neighborhood level, whereas all other variables (including migration) are measured at the individual level. This modeling strategy has been successfully used before with these data and similar measures (Axinn and Barber 2001; Brauner-Otto, Axinn, and Ghimire 2007; Yabiku 2004).

As with all analyses of neighborhood-level effects on individual behavior, my models face a common set of problems that could threaten the validity of the results. The

biggest issues in this case are selective migration into specific neighborhoods and endogenous influences on the neighborhood characteristics (or non-random placement of neighborhood organizations). The detail available in the CVFS data allows me to use several different strategies to address these issues and assess the extent to which they might threaten my results.

First, I test my models using a fixed effects approach. This strategy involves using a dichotomous indicator for each individual neighborhood to control for neighborhood specific effects. This is a relatively conservative strategy to measure common ecological effects of neighborhoods that forces the results from my analyses to come from temporal differences, or interactions between temporal and spatial differences, rather than spatial or general neighborhood differences. This strategy is possible in this study because my interest is not primarily in the effects of specific neighborhood characteristics, or spatial variation, but in the interactions of neighborhood characteristics, with violent events, or temporal variation (Subramanian, Glymour, and Kawachi 2007). To test this strategy I estimate fixed effects models that are entirely analogous to my other models, except with the addition of dichotomous indicators for each neighborhood. These fixed effects models produce results that are substantively equivalent to my models without the fixed effects.

Second, I employ a less conservative, but more targeted approach to address the specific issues of selective migration and nonrandom placement of community organizations. Because many of the community organizations were created in the recent past, those who have lived in their neighborhoods for a longer period of time are more likely to have participated in the creation in some of these organizations and less likely to

have migrated to that neighborhood for these organizations. Using the CVFS life history calendar data, I separate my sample into different groups based on how long they have lived in their neighborhoods. The length of time that individuals have lived in their neighborhood prior to 1996 was a significant predictor of migration; the more time each individual lived in their neighborhood, the lower the probability that they would migrate away. Next, I tested models with an interaction term for the length of time an individual lived in Chitwan and each violent event (bomb blasts and gun battles). These models showed that those who have lived in their neighborhood in Chitwan for 0-2 years did not react significantly different to these violent events than those who had lived there for longer periods of time. Models testing an interaction for those who had lived in their neighborhood for ten years or longer produced similarly non-significant results for the interaction term.

Finally, some of community organizations that I use, such as dairies and cooperatives, are generally initiated by an outside source (such as the Nepal Dairy Association and the National Cooperative Federation of Nepal). Others, such as mills, markets, religious institutions, and employers, are more likely to have been created within the community. Thus reactions to this latter type of organization are more likely to be subject to the problem of non-random placement than the former organizations. My results for both types of organizations are similar—individuals with access to dairies and cooperatives reacted similarly to violent events as individuals with access to mills, markets, religious institutions, and employers.

All three sets of analytical tests indicate that there are no significant differences in reactions to violent events and the interaction of violent events and community

organizations based on neighborhood differences, the length of time an individual lived in their neighborhood, or the type of organization. In the final models that I present in this paper, I use a control variable for the number of years each individual lived in their neighborhood prior to 1996. I do not present the results of the fixed effects models as this is a less targeted approach and did not yield substantively different results.

## RESULTS AND DISCUSSION

### *Violent Events and Migration*

Table 2.2 presents the results of Model 1 which tests the effects of major gun battles, bomb blasts, and the general period of conflict on out-migration. As discussed above, in this context gun battles indicate a high level of violence or threat while bomb blasts indicate a lower level of threat. As shown in Model 1, the odds ratio of 1.16 for major gun battles indicates that in a month following one major gun battle, there was a 16% higher rate of migration than otherwise. Odds ratios are multiplicative, so that in a month following two major gun battles there was a 35%<sup>9</sup> higher rate of migration. The predicted probabilities of migration in months following different numbers of gun battles and bomb blasts is shown in Figure 2.2.

[Table 2.2 about here]

Bomb blasts, had the opposite effect of gun battles; they decreased the likelihood of migration. The odds ratio of 0.95 for bomb blasts indicates a slightly lower rate of migrating in the month following a bomb blast. Again, these effects are multiplicative, so that with increasing numbers of bomb blasts, we would expect a progressively decreasing rate of migration, as shown in Figure 2.2. Similar to bomb blasts, the general

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<sup>9</sup> Calculated by squaring the odds ratio for gun battles:  $1.16 \times 1.16 = 1.35$ .

period of conflict had a negative effect on migration. During the conflict the rate of migration was reduced by about 40% compared to before the conflict.

[Figure 2.2 about here]

These results confirm that specific violent events affected out-migration. The negative effects of bomb blasts and the general period of conflict, both of which indicate relatively low levels of violence in this context, are opposite of what we would expect given the threat-based decision model. However, they support the argument that given the desire to avoid exposure to violent events, people faced with low levels of violence could consciously decide not to migrate, choosing instead the relative safety of their own homes.

These results are clearly context specific. It is not necessarily bomb blasts and gun battles per se that affect lower and higher rates of migration. The important point is that bomb blasts and gun battles indicate lower and higher levels of danger or threat to civilians and it is the level of threat that likely affects higher or lower rates of migration. In other contexts, different kinds of violence could represent different levels of threat. For example, in Iraq today, bombs are generally larger and more destructive devices that represent a much higher level of threat than they did in Nepal. Other types of violence or intimidation that is prevalent could represent lower levels of threat. In this case, we might actually expect bomb blasts to result in higher rates of migration and intimidation to result in lower levels of violence.

### ***Conflict, Community Organizations, and Migration***

Models 2-13 (presented in Tables 2.3 and 2.4) test the moderating effects of community organizations on the relationship between conflict and migration. Each of these models

includes variables for major gun battles, bomb blasts, one community organization, and the corresponding interaction variable. I test the interaction of each organization with major gun battles and bomb blasts in a separate model. For example, I test the interaction of markets with bomb blasts in one model, and the interaction of markets and gun battles in a separate model.

Several community-level economic and social support organizations affected not only the likelihood of migration, but also the relationship between conflict and migration in this setting. In general, access to a market had a negative effect on migration. As shown in Model 2 (in Table 2.3), the odds ratio for Market is 0.89, indicating that if there was a market within five minutes walk of one's community, we would expect them to have about a 11% lower odds of out-migration.

[Table 2.3 about here]

Model 3 includes the interaction term for '*Gun battles*' x '*Markets*'. Here, the effect of access to a market on migration was similar but not statistically significant. The effect of gun battles on migration was positive (and statistically significant), as we would expect. However, the interaction term of gun battles and markets was negative and statistically significant, with an odds ratio of 0.75. This means that while the effect of gun battles on migration was positive, it was less positive for those with access to a market in their neighborhood. Specifically, in months following one gun battle, the rate of migration for those without access to a market was 32% higher than otherwise; the migration rate for those with access to a market was 9% lower<sup>10</sup>. Again, because odds ratios are multiplicative individuals without access to markets had progressively

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<sup>10</sup> Calculated by multiplying the odds ratios for gun battles, markets, and the interaction:  
1.32\*0.92\*0.75=0.91.

increasing rates of migration with increasing numbers of gun battles per month, as shown in Figure 2.3. However the rate of migration for those with access to markets changed very little with increasing numbers of gun battles per month.

[Figure 2.3 about here]

The interactions between dairies and gun battles and mills and gun battles produced a similar pattern, as shown in Models 5 and 7 respectively. Again, the effect of dairies and mills on migration was negative. In both models, the odds ratio for gun battles was positive. However, the interactions between gun battles and dairies and gun battles and mills were negative and statistically significant. Thus, we would expect those without access to a dairy or mill to have higher rates of migration in any month following a major gun battle. We would expect those with access to have slightly lower rates of migration following one gun battle. Again, with increasing numbers of gun battles per month, those without access to dairies or mills had an increasing likelihood of migration, while we see almost no change for those with access.

The effect of coops is slightly different from that of markets, dairies, and mills. The effect of coops on migration, as shown in Model 9, was positive with an odds ratio of 1.37. This is opposite of markets, dairies, and mills. This positive effect of coops is likely because they provide access to micro-credit loans, in addition to functioning as a means to market farm produce and other goods. Micro-credit loans provide individuals and families with liquid capital that can be used for migration. Although the effect of both coops and gun battles was positive in Model 9, the interaction between these two variables was negative, with an odds ratio of 0.61. Thus, the pattern of migration in response to gun battles when we consider access to coops is similar to the pattern with

markets (shown in Figure 2.3), dairies and mills: increasing numbers of gun battles per month had almost no effect on migration for those who have access to coops.

These results all indicate that access to these community organizations dampened the effect of gun battles on migration. This supports the theory that the economic and social support provided by these organizations helps individuals to cope with the economic and social consequences of gun battles. I note that while these organizations are designed to provide economic support, it is likely that they also provide some measure of social support through encouraging interaction with others outside the home.

As discussed above, bomb blasts produced a negative effect on migration, opposite to that of gun battles. However, a similar dampening pattern occurred for the interactions between bomb blasts and religious institutions and employers. As shown in Model 11 in Table 2.4, the effect of religious institutions on migration was negative. The effect of bomb blasts was also negative. However, the interaction between these two variables was positive, with a statistically significant odds ratio of 1.14. Thus those without access to religious institutions had about 15% lower rates of migration in a month following one bomb blast. Those with access to religious institutions also had 18% lower rates of migration. These rates are very similar; however the rates of migration for those with and without access to religious institutions diverge with increasing numbers of bomb blasts per month, as shown in Figure 2.4. Those without access to religious institutions had progressively decreasing likelihoods of migration when faced with increasing numbers of bomb blasts. On the other hand, there was a much lower change in the likelihood of migration for those with access to religious institutions. This pattern was almost exactly replicated in Models 12 and 13 that examine the effect of access to

employers on the relationship between bomb blasts and migration. Again, these results for the interactions of bomb blasts and religious institutions and employers support the theory that community level economic and social support helps individuals and families to cope with the consequences of bomb blasts and thereby decreases the effect of violence on migration decisions.

[Table 2.4 about here]

All of the interactions with community organizations that I tested dampened the effect of violence on migration. In other words, in all cases, the interaction term had an opposite effect to that of the violence term. These results suggest that the effect of community organizations is not simply a matter of opportunity costs as suggested by neoclassical migration theory as well as empirical research on forced migration in Colombia (Ibanez and Velez 2003; Sjaastad 1962; Todaro and Maruszko 1987). If the mechanism through which community organizations affect migration is only a matter of opportunity costs, then we would expect that access to community organizations would have produced a negative effect in all cases, whether they were interacted with bomb blasts or gun battles. Instead, these results support the theory that community organizations help individuals to cope with violence, and thereby dampen the effect of violence on migration. These results are very similar to a number of studies of natural disasters that show that social and economic support helps individuals to cope with the deleterious consequences of natural disasters and thereby affect decreased rates of psychological problems (Galea et al. 2002; Hobfoll and Lilly 1993; Kwon et al. 2001; Norris and Kaniasty 1996; Tracy et al. 2008).

[Figure 2.4 about here]

While I tested interactions of each community organization with both bomb blasts and gun battles, it is notable that the community organizations that produced significant interactions with bomb blasts (employers and religious institutions) did not produce significant interactions with gun battles. Likewise, the four community organizations that produced significant interactions with gun battles (markets, mills, coops, and dairies) did not produce significant interactions with bomb blasts. With the data available I am not able to determine why this pattern occurred. While bomb blasts and gun battles indicate different levels of violence, it is quite possible that there are other differences between these two types of violence. For example, some gun battles were planned before they occurred, thus civilians might have had some prior warning. On the other hand, civilians likely had little prior warning of bomb blasts. In addition, these two types of violence could have occurred in different places and resulted in different types of consequences, which could then affect individuals' reactions to them. Future qualitative studies could produce further insight into this issue.

## **CONCLUSION**

Prior research on forced migration has shown that periods of armed conflict increase migration on an aggregate level. However, this subject is more complex than previous models reveal. Armed conflict is rarely a single or homogenous event and migration streams are composed of individuals who experience these conflict events in diverse ways. The main contribution of this paper is the presentation and empirical evaluation of a theoretical model of *individual* migration during armed conflict. I specifically address two of the many factors that can affect individuals' migration decisions during conflict:

the *specific violent events* that constitute a period of armed conflict and the pre-existing *community context* within which people live.

Using data from the Chitwan Valley of Nepal, this study provides evidence that the relationship between violence and out-migration is not necessarily linear. When faced with high levels of violence (namely major gun battles in this context), individuals were more likely to migrate than otherwise. This is consistent with prior research and general assumptions about forced migration (Apodaca 1998; Clark 1989; Davenport et al. 2003; Gibney, Apodaca, and McCann 1996; Melander and Oberg 2006; Moore and Shellman 2004; Schmeidl 1997; Stanley 1987; Weiner 1996; Zolberg et al. 1989). However, in this study I find that when faced with low levels of violence (such as bomb blasts) individuals were less likely to migrate than during periods of relative peace. This supports the theory that when faced with relatively low levels of violence, people feel safer staying at home instead of travelling which will increase their exposure to danger. This conclusion is similar to studies in several other countries showing that violent crime or perceptions of violent crime in people's neighborhoods leads to precautionary behaviors such as limiting spent time outside the home and changing locations and methods of travel (Gomez et al. 2004; Gordon-Larsen, McMurray, and Popkin 2000; Piro, Ness, and Claussen 2006; Warr and Ellison 2000). By examining different levels of violence and the non-linear effect on migration, this study provides a possible theoretical link between studies showing that violent conflict increases migration and studies showing that violent crime decreases activity and travel outside the home.

This study also shows that not everyone has the same likelihood of migrating (or not migrating) when faced with violence. Specific resources in communities (such as

employers, temples, markets, dairies, mills, and coops) systematically altered the propensity of individuals in these communities to migrate in response to violent events. These results are similar to evidence from recent studies about the psychological and health consequences of conflict which find that community organizations provide an important psychological coping mechanism during conflict (Ahern et al. 2004; Norris et al. 2002; Tracy et al. 2008). Results from this study indicate that community organizations can also increase the ability to cope with the economic and social consequences of conflict. For example, in times of economic insecurity caused by conflict, employers can provide employment; farmer's cooperatives, mills, and dairies can provide small loans and access to food banks as well as continued opportunities to process and sell farm produce. This enables people to rebuild or continue their lives and livelihoods in their current residences. Thus, community organizations can counteract the constraints imposed by conflict so that people are less 'forced' to resort to migration during times of violence and hardship.

Evidence from this study highlights a need to extend the theories we work with to better reflect the mechanisms through which conflict affects behavior changes in the general population. New theories must acknowledge that even when faced with high levels of violence, individuals are strategic and knowledgeable actors and the behavioral choices they make are complex, involving considerations of physical safety as well as current and future economic, social, and psychological wellbeing. In this regard, a social-ecological approach has much to offer in advancing our understanding of the full range of consequences of armed conflict on people's lives and livelihoods and how these consequences interact with the broader context within which people live.

The micro-level data about individual and community characteristics used here provides a detailed and nuanced documentation of variations in migration behavior in response to conflict. To date, the study of the causes of conflict-induced migration has been heavily influenced by aggregate, often country-level, studies, which has hampered the ability to understand systematic micro-level variation in migration rates. The analyses presented here demonstrate that such micro-level documentation can substantially advance the study of both conflict-induced migration and also inquiries into other consequences of conflict on individuals, families, and communities.

In addition to the theoretical and empirical contributions of this article to understanding migration decisions on an individual level, these micro-level results also point towards key macro-level long term consequences of conflict in the general population. In this case, evidence shows that migration patterns during the Maoist insurrection in the Chitwan Valley were not random. Instead there was a systematic redistribution of the population, partially contingent upon the resources available in each community. The demographic composition of communities with more resources was less affected by the conflict; while communities with fewer resources were less stable and experienced more demographic change. In turn, this population redistribution will likely shape the social context of post-conflict Nepal, affecting family relationships, social and economic networks, household livelihood strategies, and the future security of the country (Castles 2003; Donato 1993; Durand et al. 1996; Jacobsen 1997; Massey 1988; Stark and Lucas 1988; Weiner 1996). This is an important example of how the responsive behaviors of the general population, regardless of their participation or

leadership in a conflict process, can play a significant role in determining the future course of a post-conflict society.

While the empirical analyses in this study are based in one specific context, the theoretical approach and evidence in this paper should have substantial relevance to understanding the effects of conflict on individuals' lives, and on migration behaviors in particular, during conflicts in other parts of the world. Demographic, social, economic, and health indicators for Nepal are similar to other countries in South Asia, Southeast Asia, and many countries in Sub-Saharan Africa where the majority of the world's recent and on-going conflicts are now based. Living conditions and the role community-based organizations in providing small-scale social and economic support for the rural agricultural population of Nepal (on which this study is based) have a lot in common to that of much of the world's population in non-industrialized countries. In addition, the Maoist insurrection in Nepal was an intrastate civil war, with close parallels to a majority of the armed conflicts in Asia and Africa of the last several decades. Thus while the relationships between specific measures in this study (such as gun battles and Buddhist temples) might have few exact parallels with other conflicts around the world, the broad conclusions relating different levels of violence, social and economic consequences of violence, community-level social and economic support, and individual migration decisions are highly relevant to understanding human behavior during armed conflict.

In more general terms, this study provides evidence that community organizations which help people to maintain current patterns of daily living function as sources of stability, partially counteracting the effect of armed conflict as a source of change. It is also likely that community organizations serve this same function during other periods of

macro-level upheaval and change such as natural disasters, economic crises, and changes in government. Thus, these results have broad implications for understanding processes of social change and stability during contexts of disaster and upheaval that routinely affect human societies around the world, in both industrialized and non-industrialized countries.

**Table 2.1 Descriptive Statistics**

Measure	Mean/Median	Std dev
VIOLENT EVENTS:		
Gun battles	0.19 / 0	0.62
Bomb blasts	0.97 / 0	2.17
INDIVIDUAL LEVEL VARIABLES:	Mean	Std dev
Migration	0.59	0.49
Gender (female)	0.54	0.50
Ethnicity:		
Upper Caste Hindu	0.46	0.50
Lower Caste Hindu	0.10	0.30
Hill Tibeto-Burmese	0.15	0.36
Terai Tibeto-Burmese	0.21	0.41
Newar	0.06	0.24
Age (in 1997):		
18-20 years old	0.09	0.28
21-25 years old	0.16	0.36
26-30 years old	0.16	0.36
31-40 years old	0.26	0.44
41-50 years old	0.20	0.40
51 + years old	0.14	0.35
Marital Status:		
Never married	0.09	0.29
Married, living with spouse	0.72	0.45
Married, not living with spouse	0.13	0.33
Divorced, Separated, Widowed	0.06	0.24
Have any children (in 1996)	0.81	0.39
Educational Attainment (in 1996) (Range = 0-16)	3.86	4.44
Working wage or salary job (in 1996)	0.44	0.50
Own any land (in 1996)	0.92	0.27
Ever migrated (before 1996)	0.25	0.43
Community Level Variables		
Employer (within 20 mins walk)	0.88	0.33
Religious institutions (temple or monastery within 10 mins walk)	0.85	0.36
Market (within 5 mins walk)	0.54	0.50
Cooperative (within 10 mins walk)	0.09	0.28
Dairy (within 10 mins walk)	0.46	0.50
Mill (within 5 mins walk)	0.44	0.50

**Table 2.2 Conflict, Violent Events and Migration. Logistic Regression Estimates of Discrete-Time Hazard Models of Out-Migration from Chitwan Valley**

Measure	Model 1	
	Violent Events	
<b>VIOLENCE:</b>		
Major Gun Battles (# per month)	1.16 **	(2.84)
Bomb Blasts (# per month)	0.95 *	(2.38)
During War (0,1)	0.59 ***	(9.05)
<b>CONTROL VARIABLES:</b>		
Gender (female)	0.79 ***	(3.96)
Age:		
18-20 years old	0.86	(1.04)
21-25 years old	0.92 ***	(3.21)
26-30 years old	0.94 **	(2.98)
31-40 years old	0.95 ***	(4.25)
41-50 years old	1.02 *	(2.05)
51 + years old	1.00	(.00)
Marital Status:		
Never married	0.82 *	(2.04)
Married, living with spouse	reference	
Married, not living with spouse	1.25 **	(3.06)
Divorced, separated, or widowed	1.52 ***	(3.64)
Have any children (in 1996)	0.55 ***	(6.94)
Educational Attainment (in 1996)	1.05 ***	(6.46)
Working wage or salary job (in 1996)	1.12 *	(2.15)
Own any land (in 1996)	0.55 ***	(6.89)
Ever migrated (by 1996)	1.68 ***	(9.14)
Years lived in neighborhood (prior to 1996)	0.98 ***	(5.55)
Ethnicity:		
Upper Caste Hindu	Reference	
Lower Caste Hindu	1.06	(.55)
Hill Tibeto-Burmese	1.23 **	(2.51)
Terai Tibeto-Burmese	0.80 **	(2.42)
Newar	0.75 **	(2.51)
Months of the year:		
January	0.92	(.80)
February	0.81 *	(1.85)
March	0.98	(.16)
April	0.89	(1.00)
May	1.04	(.38)
June	Reference	
July	0.90	(.96)
August	1.16	(1.47)
September	1.16	(1.42)
October	0.71 **	(2.94)
November	0.99	(.06)
December	0.85	(1.43)
No. of person-months	181,398	
-2 log likelihood	1,411,298	

Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.

\*p<.05    \*\*p<.01    \*\*\*p<.001 (one-tailed tests).

**Table 2.3 Major Gun Battles, Community Support, and Migration. Logistic Regression Estimates of Discrete-Time Hazard Models of Out-Migration from Chitwan Valley**

MARKETS		Model 2		Model 3	
Gun Battles	(# per month)	1.16 **	(2.84)	1.32 ***	(4.47)
Market	(within 5 mins walk)	0.89	(1.52)	0.92	(1.06)
Gun Battles * Market Interaction				0.75 ***	(3.09)
-2 log likelihood		1,411,593		1,411,422	
DAIRIES		Model 4		Model 5	
Gun Battles	(# per month)	1.16 **	(2.85)	1.53 ***	(4.90)
Dairy	(within 20 mins walk)	0.86	(1.55)	0.91	(.99)
Gun Battles * Dairy Interaction				0.70 ***	(3.58)
-2 log likelihood		1,411,448		1,411,533	
MILLS		Model 6		Model 7	
Gun Battles	(# per month)	1.16 **	(2.84)	1.30 ***	(4.37)
Mill	(within 5 mins walk)	0.94	(0.89)	0.98	(0.35)
Gun Battles * Mill Interaction				0.74 **	(3.03)
-2 log likelihood		1,411,472		1,411,288	
COOPS		Model 8		Model 9	
Gun Battles	(# per month)	1.16 **	(2.84)	1.20 ***	(3.36)
Coop	(within 10 mins walk)	1.32 *	(2.10)	1.37 **	(2.38)
Gun Battles * Coop Interaction				0.61 *	(1.96)
-2 log likelihood		1,411,695		1,411,720	
---- Control Variables not shown ----					
No. of person-months: 181,398					

Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.

\*p<.05    \*\*p<.01    \*\*\*p<.001 (one-tailed tests).

**Table 2.4 Bomb Blasts, Community Support, and Migration. Logistic Regression Estimates of Discrete-Time Hazard Models of Out-Migration from Chitwan Valley**

RELIGIOUS INSTITUTIONS		Model 10		Model 11	
Bomb Blasts	(# per month)	0.95 **	(2.37)	0.85 **	(2.44)
Religious Institution	(within 10 mins walk)	0.88	(1.21)	0.85	(1.50)
Bombs * Religious Institution Interaction				1.14 *	(1.87)
-2 log likelihood		1,411,472		1,412,119	

EMPLOYERS		Model 12		Model 13	
Bomb Blasts	(# per month)	0.95 **	(2.38)	0.84 **	(2.60)
Employer	(within 20 mins walk)	0.91	(.77)	0.88	(1.10)
Bombs * Employer Interaction				1.14 *	(2.02)
-2 log likelihood		1,411,417		1,411,258	

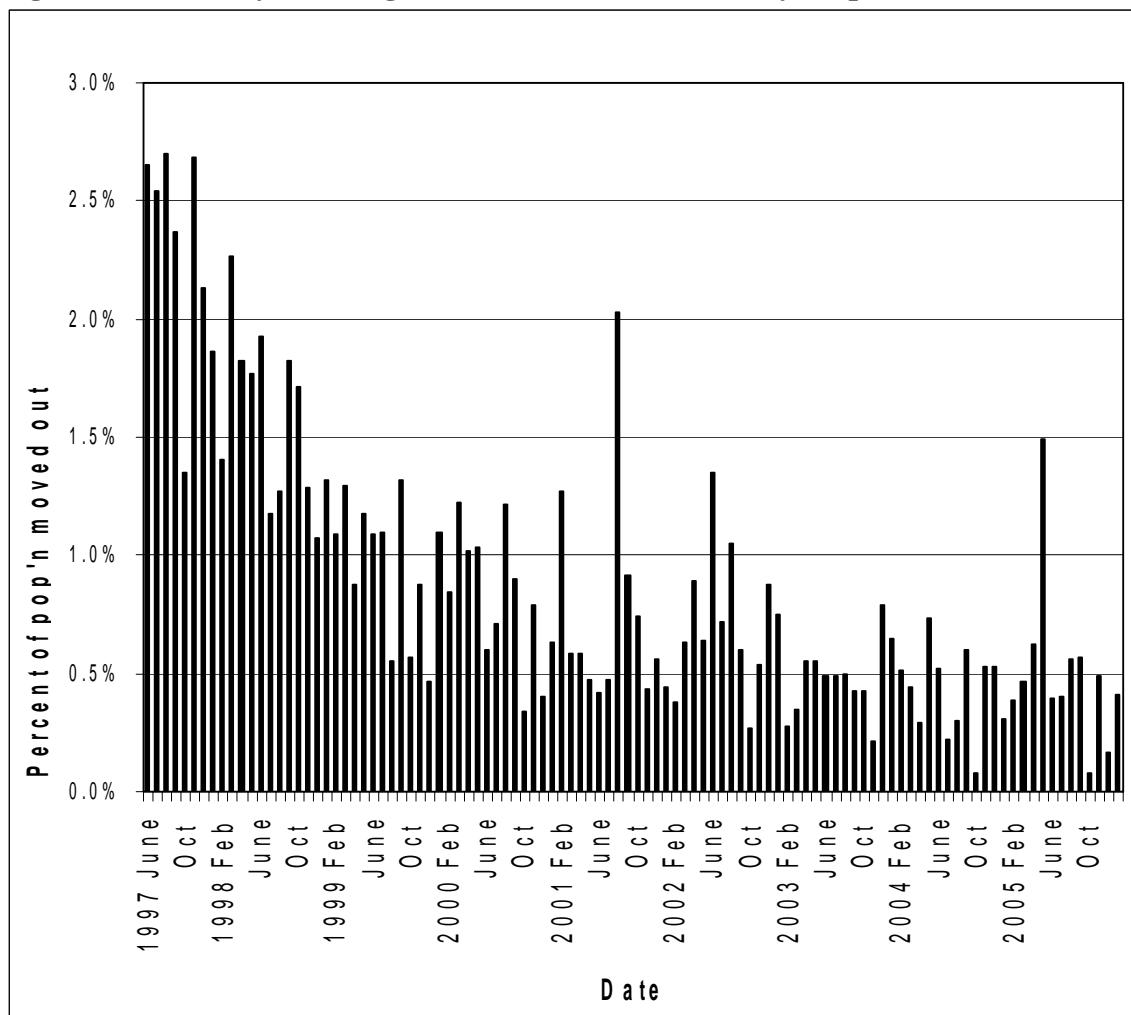
---- Control Variables not shown ----

No. of person-months: 181,398

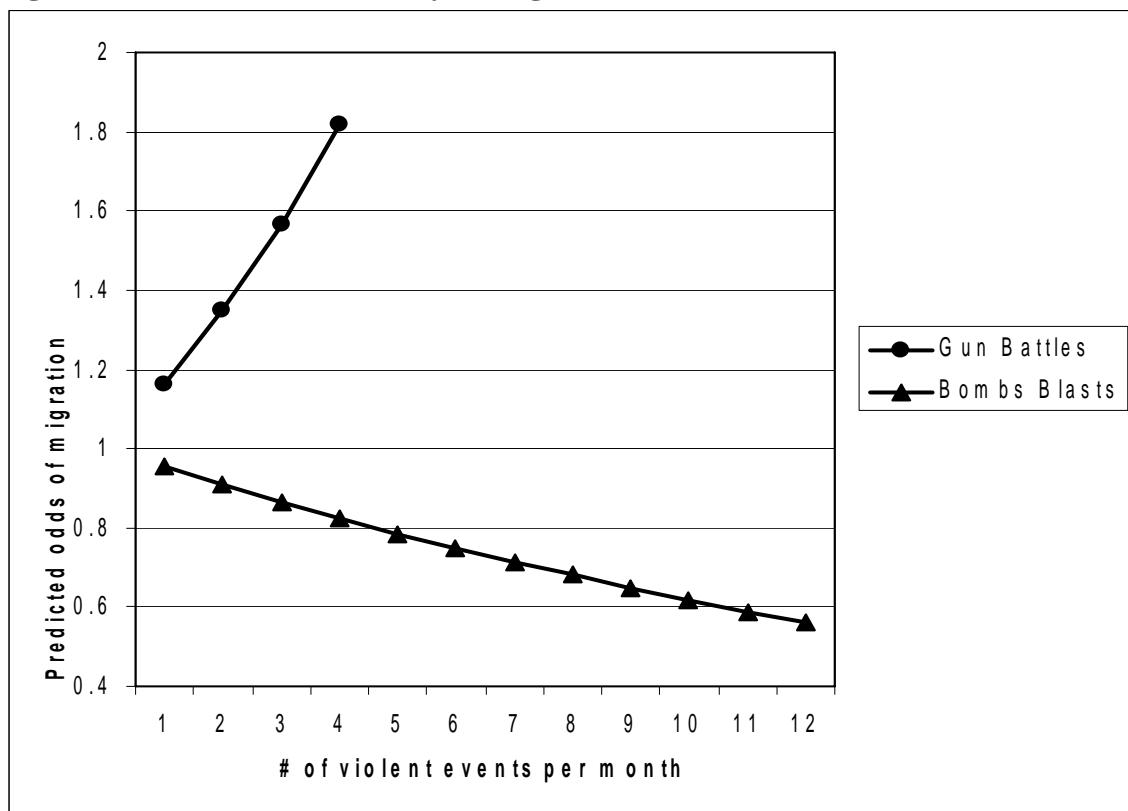
Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.

\*p<.05    \*\*p<.01    \*\*\*p<.001 (one-tailed tests).

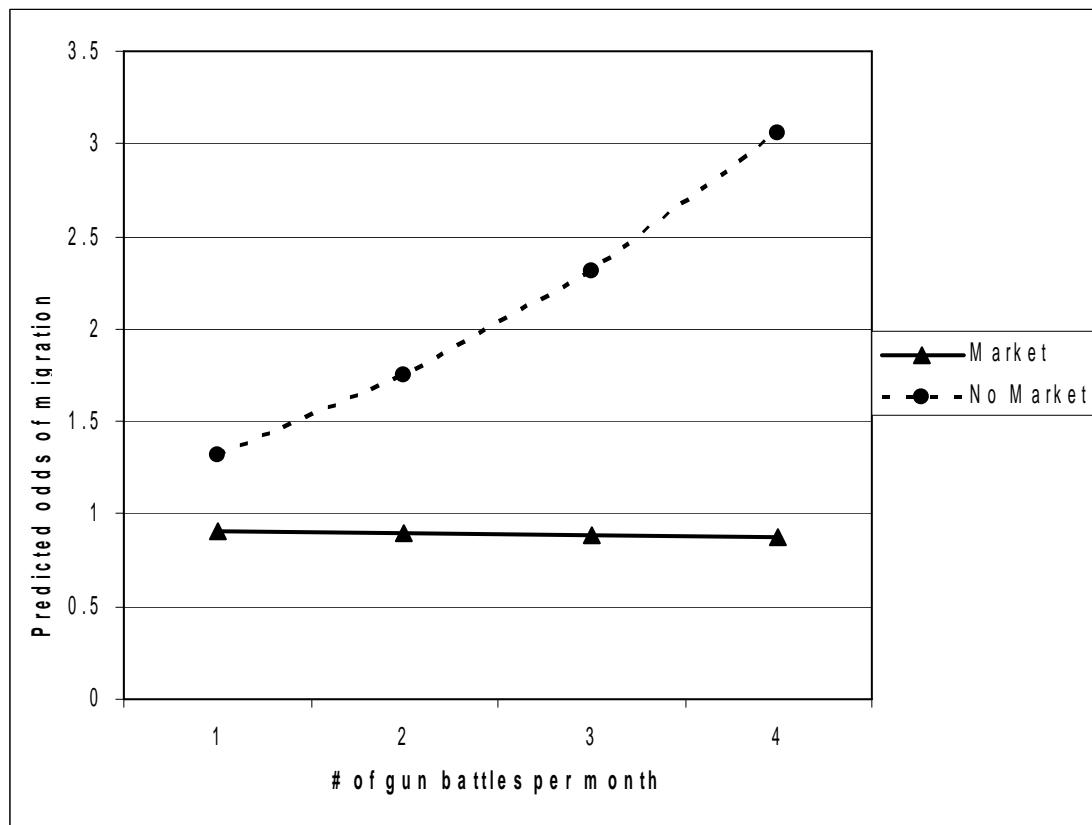
**Figure 2.1 Monthly Out-Migration Rates, Chitwan Valley, Nepal**



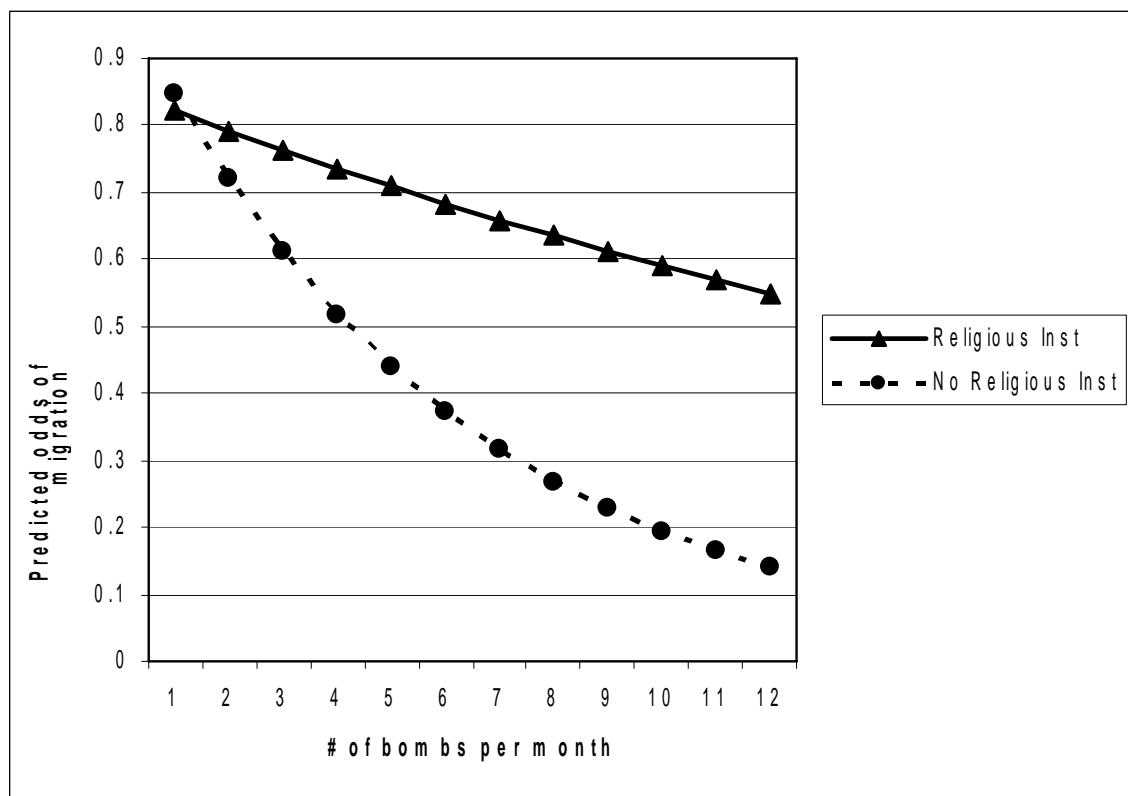
**Figure 2.2 Predicted Probability of Migration After Bomb Blasts and Gun Battles**



**Figure 2.3 Predicted Probability of Migration, With and Without Access to Markets**



**Figure 2.4 Predicted Probability of Migration, With and Without Access to Religious Institutions**



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## **CHAPTER 3**

### **The Role of Employment and Assets in the Decision to Migrate During Armed Conflict**

Sociologists have long identified conflict as a source of social change (Coser 1957; Dahrendorf 1959; Marx [1848] 1967)). We understand that conflict affects the context within which people live and shapes the social dimensions of daily life. In order to cope with this new social environment, people develop new behaviors and ideas that can persist long after a conflict ends. In addition, conflict can affect the relationships and behavioral patterns that we study. That is, as context changes, the meaning that people attach to specific aspects of their context can also change and affect subsequent behaviors. Both of these types of change, in context and in meaning, are key consequences of armed conflict resulting in new behaviors and ideas and thus long-term social change.

Broadly, this paper is a study of armed conflict and social change. I address changes in context, and also changes in the meaning and value of specific aspects of context and how this affects behaviors. I specifically focus on migration as one important and easy to observe behavioral outcome. In the context of armed conflict, I address the relationships between employment, assets, and migration, theoretically and empirically examining how these relationships are different before and during conflict. While conflict clearly changes the employment opportunities and economic assets that

are available to individuals and families, I address how the value of these items also changes, resulting in new behavioral patterns.

In this study, I introduce new theoretical tools that can be used in the study of migration from areas affected by conflict or other macro-level disasters. Departing from much of the literature that treats conflict as a single and homogenous event, I evaluate how specific violent events, such as major gun battles and bomb blasts, have different effects on out-migration. Furthermore, going beyond previous work that focuses almost entirely on physical threat as the prime consideration and motivation to migrate during conflict, my theoretical framework acknowledges the role of individual and household economic characteristics in the conflict-migration relationship. This multidimensional view of the migration decision process allows us to understand how people must weigh the expected cost of losing their livelihoods and investments against the expected threat to their lives. This constitutes an important advance in theories of migration and the consequences of armed conflict, and it provides an opportunity to understand how individual characteristics systematically alter the way different people react to the same kinds of disastrous macro-level events.

I use the recent Maoist insurrection in Nepal as a case study to empirically investigate this theoretical framework. A unique combination of data, including records of violent events such as gun battles and bomb blasts, and a prospective panel survey of individuals and households make direct empirical documentation of these relationships possible. The individual surveys from Nepal that span the entire period of conflict provide records of individuals' migrations on a monthly basis, thereby allowing precise comparisons between violent events each month and out-migration. These surveys also

provide records of individuals' employment and household surveys from the same study provide information on the economic status of each household, including indicators such as ownership of land, livestock, and household goods. This combination of data provides the means to empirically test hypotheses linking individual migration to macro-level armed conflict and individual-level employment and investments in the local area. Because these data cover the period of time from three years before the insurrection began, through the six years of the violence, they provide an unprecedented opportunity to investigate differences in migration patterns during times characterized by armed conflict and by relative peace.

## **THEORY**

The study of migration during conflict has advanced significantly in the last few decades; however both theory and empirical research are largely limited to the study of aggregate groups and use a structuralist perspective to explain how the macro-level context—armed conflict—determines micro-level behavior—migration. There is a general assumption that armed conflict places absolute constraint (and thereby lack of agency) on the behavioral choices of the individual, regardless of their circumstances. It is precisely through this assumption that people have no choice in the context of conflict that we use the term ‘forced migration’. Because this model does not consider individual agency and the complexity of the migration decision at the individual level, it is not able to explain the individual variability in migrants leaving any given conflict or to predict the magnitude of migration flows from conflict affected areas.

To address this gap, my theoretical framework focuses on individual decision-making. I use a cost-benefit framework to analyze factors that encourage or discourage

migration during conflict. This type of framework has long been an important analytical tool in understanding migration during times of relative peace (Harris and Todaro 1970; Sjaastad 1962; Todaro 1969) and more recently during conflict in Colombia (Ibanez and Velez 2003). Most theory and empirical studies of migration during conflict focus largely on the benefit of migration (increased physical safety) and tend to ignore the possible costs that can affect the migration decision. This research allows us to understand why people flee conflict, but has thus far failed to address the question of why many people do not flee conflict. The question of non-migration during conflict is important, given that in most conflicts a large proportion, if not the majority, of the population do not migrate away<sup>11</sup>.

In this study, I focus on three specific individual and household characteristics that can affect the costs and benefits of migration—salaried employment, ownership of land, and ownership of livestock. I first address the effects of these characteristics on migration during periods of relative peace. Then I describe how armed conflict changes the context within which individuals make their migration decisions. Finally, I provide specific empirical predictions about how each of these four characteristics will affect migration during conflict.

### ***Employment and Assets in the Cost-Benefit Calculation during Peace***

The study of migration has been particularly successful in the examination of the economic determinants of migration. Theory and empirical research have shown that both employment status and household assets are important predictors of migration

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<sup>11</sup> For example, in the severe on-going conflicts in Afghanistan, Iraq, and Darfur, large proportions of the population have not migrated. According to UN data sources, about 90% of the Afghan population, 82% of Iraqis, and 43% of the population of Darfur are not officially displaced (OCHA 2006; UNFPA 2003; UNHCR 2006, 2007).

(Massey and Espinosa 1997; Massey et al 1987; Shrestha 1989; VanWey 2003).

According to neo-classical economic theory of migration, geographic differentials in wages drive migration (Todaro 1969; Todaro and Maruszko 1987). This model describes how individuals decide to migrate based on cost-benefit calculations, comparing their current wages with expected wages at another location, given their specific skill set. If the expected wages at a destination are higher than they are likely to migrate. Predictions based on this theory are of course contingent upon the type of employment and skill set an individual possesses. For example, an individual working a salaried job would migrate if they could expect better wages from a salaried job elsewhere. In rural areas, where salaried jobs are often remunerated worse than in urban areas, we would expect a salaried employee to have a higher likelihood of out-migration. Farmers however, who likely do not have the skills to obtain a salaried job elsewhere, would make this calculation by comparing their farming and wage labor income with the expected income from wage labor elsewhere. Thus neo-classical economics theory would not predict an increased likelihood of migration for farmers.

In the case of farmers, other theories treat land and livestock as a form of employment (Durand and Massey 1992; Stark and Taylor 1991; VanWey 2005; Zhao 1999). Raising livestock requires daily attention; farming land requires seasonal attention, especially during the planting, growing, and harvest seasons. Thus migration could necessitate that an individual or household forego income from land or livestock; in other words ownership of land or livestock can increase the costs of migration. Thus, we would expect ownership of land and ownership of livestock to decrease the likelihood of (temporary) migration.

The new economics theory of migration uses a different approach, treating land, and livestock as assets (Stark and Bloom 1985). This approach treats these items as investments in agricultural livelihoods, positing that people in rural areas migrate in order to fund the purchase of land, livestock, and other farm and household goods. In this scenario, earning capital in order to purchase any of these investment items is a potential benefit of migration. If a household already owns these items there is less benefit to migrating. Thus, we would expect any one individual in the household to be less likely to migrate.

### ***Employment and Assets in the Cost-Benefit Calculation during Conflict***

During armed conflict, the context within which individuals make their migration decisions is very different. Periods of armed conflict are characterized not just by violence, but also political instability. The very existence of the current government and legal structures can be threatened. A new governing body might or might not uphold the norms and legal obligations of the old government. This instability, along with labor strikes, conscription, and forced labor can affect the economy. Research has shown that conflict can lead to increasing commodity prices and unemployment. In agricultural areas, where the timing of planting and harvest is crucial, instability, strikes, and conscription can threaten the ability to productively farm. Thus a wide variety of livelihoods and investments can be threatened by armed conflict.

Because periods of armed conflict create a different context from periods of relative peace, we can expect that the value of employment and assets to people and the effect they have on migration will also be different (Ibanez and Velez 2003). During periods of armed conflict, I argue that cost-benefit calculations will still influence

migration decisions. In this context, the risk of physical danger from violence enters into calculation; the higher the expected future danger, the greater the benefit to migrating. Notably, it is the *probability* or *risk* of future danger that is important here. There is no certainty that one will be subjected to harm in the future.

On the other hand, the costs of migrating can include whatever an individual or household will lose or leave behind, including those assets upon which their livelihood is based. With employment and some assets, the cost is not a probability; if one decides to migrate, they will definitely lose or compromise their ownership of assets or employment. Thus, during times of armed conflict, the migration decision can involve weighing the *possibility* of risk to one's safety against the *certainty* of losing or compromising their livelihood or certain investments.

In this context, I examine two types of assets: 1) location-specific, non-saleable assets and 2) saleable or moveable assets. Location-specific, non-saleable assets are items that cannot be easily moved or sold. In other words, they will be lost if an individual migrates during conflict. Individuals with more location-specific assets will have more to lose if they migrate, i.e. the costs of migration will be higher. We would expect these people to be less likely to migrate away from violence in order to protect their assets and livelihoods<sup>12</sup>.

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<sup>12</sup> Individuals or households that own very large amounts of assets, especially wealth that is visible to others, are often specifically targeted for violence. This was the case during the Maoist insurrection in Nepal, as well as other conflicts around the world (Ibanez and Velez; South Asia Terrorism Portal 2006a; South Asia Terrorism Portal 2006b; Sharma 2004; United People's Front 1996). Because of this, those in the highest wealth categories might be more likely to migrate and we would expect a curvilinear effect of wealth on migration during conflict. However, in the sample I use for this study there are few very wealthy people to which this would apply. Thus, it is unlikely that there will be a curvilinear effect in this analysis.

In this discussion, the concept of ‘location specificity’ does not represent dichotomous states of totally location specific and totally moveable. Instead, it represents a continuum on which some assets are totally location-specific, such as land, others are quite moveable, such as gold or diamonds, and some items are in between, such as livestock which can be moved but with varying amounts of difficulty.

As mentioned above, land is obviously a location specific asset. During times of conflict, it can also be relatively non-saleable. During times of relative peace a potential migrant might be able to sell their land or retain ownership when they are not present through legal land titles. However during armed conflict, these options are less viable. Because of increased out-migration and political instability it can be very difficult, if not impossible, to sell land. In addition, although land titles officially ensure that land owners retain legal rights to their land whether or not they are present, they might not be viable recourse in times of conflict when the government and legal system that issued the titles are insecure or absent. Research has shown that in many places returning refugees have had problems regaining rights to their land, even in cases where they had legal titles (Myers 1994; Unruh 1995; Unruh and Turray 2006; Wily 2003). Thus if an individual or family migrates during conflict, they risk losing their land. Furthermore, land can have emotional or non-economic value. In many countries, Nepal included, land is passed down as an inheritance through generations of families. If this is the case, ownership of a particular plot of land can be tied to one’s identity and family heritage. Because both the economic and non-economic value of land will likely be lost to out-migrants, ownership of land increases the cost (and likewise decreases the utility) of migration. Thus I predict that those who own more land will be increasingly less likely to migrate during conflict.

Saleable or moveable assets are items that can be more easily moved or sold. The full value of these items need not be lost if an individual migrates. People with more saleable assets will not be faced with higher costs of migrating. In addition, in selling their assets, potential migrants not only recoup at least part of the value, but they also gain liquid cash that can provide the means to undertake a journey and settle in a destination (Durand and Massey 1992; Sjaastad 1962; Todaro 1969). This is particularly important in contexts of subsistence agriculture where relatively few people have savings and keeping large amounts of liquid cash is uncommon. Thus I predict that saleable assets will have the opposite effect of location-specific non-saleable assets and increase the likelihood of migration during conflict.

One example of a saleable asset is livestock. Livestock can be sold on the market or bartered for other goods, thus a migrant would not lose their total investment on this asset. While land may be difficult to sell during conflict, livestock, that can be sold as food are likely easier to sell. Compared to land, livestock also have less economic and non-economic value, thus failure to sell them prior to migration constitutes smaller loss. If a potential migrant is able to sell or barter their livestock, they also gain the financial means to undertake the migration. Thus ownership of livestock increase the ability to migrate. Therefore, I predict that those who own more livestock will be more likely to migrate during conflict than those who do not.

The third factor that is important to this discussion is employment, especially salaried jobs. Because salaried jobs are most often tied to a specific location, they are likely to have similar effects on migration during conflict as location-specific, non-saleable assets. It is of course possible to obtain a salaried job elsewhere. However,

during times of conflict with increasing unemployment and instability, it is unlikely that an individual working a salaried job will be able to obtain another salaried job elsewhere. If they chose to move, they stand to lose their job and the income they derive from it. This increases the cost of migrating. Thus, I predict that individuals working salaried jobs will be less likely to migrate during conflict than those not working salaried jobs.

## **CONTEXT AND SETTING**

### ***The Maoist Insurrection***

The context of this study is the Maoist insurrection in Nepal which began in 1996.

Following a relatively unsuccessful political campaign, the Communist Party of Nepal (Maoist) made a formal declaration of “People’s War” on February 13, 1996, with the aim to unseat the current constitutional monarchy and install a democratic republic. They charged the government with poor administration, corruption, unfair taxation, and neglect of poor rural areas of the country.

The earlier stages of the insurrection were contained primarily in several mid-western districts (around Rolpa, Rukum, Jajarkot, Salyan, Pyuthan, and Kalikot) and aimed at damage to government installations and communication infrastructure, capturing weapons, and threatening government security forces. From mid-2000 however, the Maoists progressively expanded their campaign nationwide, spreading first into the far eastern districts where there was little government presence, and then across rural areas of most of the country. In January 2001, the Nepalese government responded by creating a special armed police force to fight the Maoists. After that, the government generally maintained control of cities and large towns, and the Maoists have controlled a majority of the rugged countryside of Nepal, where communication and transportation are

difficult. By 2001, they were operating in 68 of Nepal's 75 administrative districts (South Asia Terrorism Portal 2006a). The Maoists came close to the capital, when in March 2006 they launched a successful week-long blockade of Kathmandu. In June 2006 serious peace talks commenced and on November 21, 2006, the government and Maoists signed a comprehensive peace agreement declaring an end to the conflict.

Because this conflict was staged mainly as a guerrilla war, there was generally no 'frontline', it was largely unknown where fighting would break out, and civilians were often unintentionally caught up in firefights and bomb blasts. In addition, both Maoists and government forces intentionally used civilians for political purposes. Reported violent acts by the Maoists and Nepalese government security forces against civilians include torture, extra-judicial killings (both discriminate and indiscriminate), bombings, gun fights, abductions, forced conscription, billeting, taxing, and general strikes (South Asia Terrorism Portal 2006b; Hutt 2004; Pettigrew 2004). Three ceasefires have been called and subsequently broken. The government called a State of Emergency and instituted martial law twice, in 2001 and 2005. From 2000 until the end of 2006, the Maoists were responsible for a total of 4312 deaths and the government forces were responsible for 7544 deaths (Informal Sector Service Center 2006).

Throughout the conflict, the Chitwan Valley has remained one of the less violent districts in Nepal, mainly because it is located far from the western regions of the country where the Maoist insurrection started and has raged the strongest and far from the capital and government stronghold Kathmandu. This of course is relative to other areas. Between 1996 and April 2006, Chitwan experienced 194 conflict related fatalities (Informal Sector Service Center 2006). This is just higher than the average number of

fatalities of all districts, but much lower than the fatality toll of the most-affected western districts that have experienced from 300 to 950 deaths throughout this same time period (Informal Sector Service Center 2006). Other violent disturbances in Chitwan have been infrequent. There were a few bomb blasts, the great majority in 2003 and 2004, the largest of which injured or killed 17 people. There was one major gun battle between Maoists and security forces in June 2005 that resulted in 34 civilian fatalities. There were no abductions of large groups, but a few single people were abducted in 2003 and 2004. Along with these visible and countable disturbances, the people of Chitwan Valley have been subjected to taxes, billeting, conscription (by both Maoists and the government), curfews, and general strikes.

### ***The Chitwan Valley of Nepal***

My data analysis is based in the Chitwan Valley of south-central Nepal. The administrative district of Chitwan borders India and is about 100 miles from Kathmandu. There is one large city, Narayanghat, and the rest of Chitwan's population, like much of Nepal, lives in small, rural villages. Most villages are connected to other villages and larger roads by paths or dirt roads.

The valley is flat, fertile, and dominated by agriculture. 82% of households in the study area of the Chitwan Valley Family Study<sup>13</sup> are involved in farming or animal husbandry. Most of these households operate on a subsistence level, owning small amounts of land and livestock. Except for new varieties of seeds and fertilizers, there has been little improvement on indigenous farming technology (Shrestha, Velu, and Conway 1993). For example, oxen-driven wooden plows are still common and much of the labor

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<sup>13</sup> Further details about the Chitwan Valley Family Study are provided in the Data and Measures section below.

is done by hand. Most of the households involved in agriculture in this study area own their land. In addition, some also sharecrop, mortgage, or rent the land they use. Land that is owned is often passed through the family as a form of inheritance (Bhandari 2004). Thus as well as financial value, it can have emotional value and be tied to one's individual and family identity.

### ***Migration in the Chitwan Valley***

Historically, there has been a large amount of migration from the Chitwan Valley to other areas of Nepal, but also notably to nearby areas of India. Much of the migration is seasonal and is viewed as a strategy to supplement regular farm and household incomes during low periods of the harvest and planting cycle (Kollmair et al 2006; Thieme and Wyss 2005). For domestic migrants, agricultural work is common (HMG et al 2004), as well as urban wage labor jobs in factories and other informal jobs (Graner 2001).

International migration is also common. Most Nepalese who migrate to other countries go to India where they can work as seasonal laborers in the larger wage labor markets in rural and urban areas (Kollmair et al 2006). Nepal and India share an open border, so there are no restrictions on Nepalese cross-border travel to India, making this international migration no more difficult than migration to other areas of Nepal. The 2001 census estimated that 2.5-5% of Chitwan residents were living abroad in 2001 (HMG et al 2002) and 77% of them were in India. Data from a nationally representative sample survey allow us to estimate that about as many Chitwan residents are internal migrants (HMG et al 2004).

Figure 3.1 shows the monthly rate of out-migration, including internal and international migration, from the Chitwan Valley from June 1997 through January 2006.

Out-migration steadily declines from a high of about 3% per month in early 1997 until about the middle of 2000. After this time, the percent of the population that moved out of the area in each month remains at a relatively stable, but low rate of around 0.6% per month. This trend of decreasing rates of migration during conflict, compared to the period of relative peace before the conflict, is contrary to popular assumptions and the literature on forced migration.

[Figure 3.1 about here]

Past research in this study area provides some explanation for this unexpected trend. The first issue to consider is that the vast majority of the quantitative empirical research on migration during armed conflict is based on country level data and the populations of study are restricted to refugees and internally displaced persons, totally disregarding other migrants who do not fit these legal definitions. Using individual level data and taking all migrants (and non-migrants) into account, research in the Chitwan Valley during the Maoist insurrection shows that the relationship between violent events and migration was not a simple linear function (Williams 2007, 2008) and that not migrating during armed conflict might in fact be a reasonable choice for safety seeking individuals. Specifically, these studies show that in months following gun battles, which impose a high level of danger, there were higher rates of migration. However, in months following bomb blasts, which impose much lower danger, there were lower rates of migration. This evidence indicates that individuals might feel safer staying within their own homes and communities during low levels of violence, compared to migrating through less familiar surroundings where they will be even more exposed to the violence

they are seeking to escape. However, when events become more dangerous such that individuals do not feel safe even within their own homes, they choose instead to migrate.

## **DATA AND MEASURES**

I use two separate kinds of data in this study- survey data about individuals, and data about violent events involved with the conflict. For measures of violent events, I use the South Asia Terrorism Portal (SATP), an Indian-based NGO that compiles records of all violent events in Nepal and other south Asian countries. For measures of individual and household characteristics, I use the Chitwan Valley Family Study (CVFS), a large-scale multidisciplinary study of the western part of the Chitwan Valley of Nepal, designed to investigate the impact of macro-level socioeconomic changes on micro-level individual behavior (Axinn, Barber, and Ghimire 1997; Axinn, Pearce, and Ghimire 1999; Barber et al. 1997).

The CVFS includes a variety of data sets, including an individual interview and life history calendar that were collected in the end of 1996, a prospective demographic event registry that has been collected monthly, beginning in 1996 and continuing through 2008, and household agriculture and consumption surveys in 1996 and 2001. Overall, the CVFS includes 171 separate neighborhoods that were selected with an equal probability, systematic sample. All individuals between the ages of 15 and 59 and their spouses within these neighborhoods were included in the survey. At 97% of the original sample, the response rates are exceptional.

Although 171 communities were sampled for the 1996 individual and life history calendar surveys, only 151 of these communities were included in the prospective demographic event registry. I use data from this registry; therefore my sample includes

those individuals who were resident in these 151 neighborhoods of the Chitwan Valley survey area in 1996. Furthermore, I restrict my sample to those who were between the ages of 18 and 59 at the beginning of this study in June 1997<sup>14</sup>. This age range excludes those who are likely too young or too old to be living independently and have significant power to make migration decisions for themselves. It also excludes the vast majority of young people who may still be enrolled in school, which past research in this area has shown to be a strong and significant predictor of migration (Williams forthcoming).

### ***Measures of Violent Events***

I use two measures of violent events—major gun battles and bomb blasts. In this context gun battles represent a high level of violence or threat. On average, 31 people died in each major gun battle in Nepal (South Asia Terrorism Portal 2006b). Gun battles tended to last for a longer period of time, up to several hours. In addition, reports indicate that local residents were used as human shields and forced to clear dead and wounded bodies. In comparison, in this context bomb blasts represent a much lower level of violence. Bombs are small, often homemade devices that have much less destructive power than the bombs used in other current conflicts such as Iraq. During this conflict in Nepal, bomb blasts killed or injured an average of three people (South Asia Terrorism Portal 2006b).

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<sup>14</sup> This period of time that this study covers begins in June 1997. Although the prospective demographic event registry (which I use to measure migration) began in February 1996, the migration data during the first few months of data collection is likely biased. The initial interviews were collected in the latter half of 1996. Several months after this, the prospective demographic event registry was started. Thus those individuals who migrated during the several months between the time they were initially interviewed and the beginning of the registry were recorded as migrants during the first few months of the registry. For this reason, migration rates during these first few months are likely biased. I present results in this paper of models that begin in June 1997, however I tested these models using February 1997 as a start date. Results from these tests were substantively equivalent to what I present here.

The South Asia Terrorism Portal provides records of the date and place of each major gun battle and bomb blast in Nepal. The data for major gun battles covers 51 months, from November 2001 through January 2006. The data for bomb blasts covers 49 months, from January 2002 through January 2006. With this data, I create variables for the number of major gun battles and the number of major bomb blasts per month in the local area. I define the local area that can influence Chitwan residents' perceptions of threat as Chitwan district and the six neighboring districts (Nawalparasi, Tanahu, Gorkha, Dhading, Makwanpur, and Parsa).

For the time period that this data does not cover, from the beginning of my study in June 1997 until November 2001 or January 2002 (for gun battles and bomb blasts respectively), I impute the number of major gun battles and bomb blasts to be zero. While it is likely that there were some gun battles and bomb blasts during this time, news reports and research indicate that the conflict was at a very low intensity (Hutt 2004) and CVFS research staff who are resident in the area indicate that there were very few of these violent events before 2002. Furthermore, in 2002 there was exactly one bomb blast and one gun battle in the local area. Thus this imputation strategy for the period before 2002 is likely a closer representation of reality<sup>15</sup>. It is also a conservative approach that is more likely to underestimate than overestimate the effect of violent events on migration.

Major gun battles in this area were sporadic. There were gun battles in 12 of the 51 months of records. The largest number of major gun battles in one month in this area was four, in April 2005. Bomb blasts occurred more routinely. For example, from

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<sup>15</sup> I also tested my models using with variables created by imputing all the missing data with 1's, the mean of each variable for the 2002-2006 time period, and random numbers within one standard deviation of the mean. The results of these tests were very similar to the models that I present here that use variables with missing data imputed with 0's.

September 2003 there was at least one bomb blast in almost every month until August 2005. Of the 49 months of data about bomb blasts, there were 24 months in which there was at least one bomb blast. The largest number of bomb blasts in any one month was 12, in July 2004.

All of these event records from SATP were “compiled from official sources and the English language media in Nepal.” (South Asia Terrorism Portal 2006b). The accuracy, or more to the point- the inaccuracy, of these news reports should be examined, particularly in the case of Nepal, a country that has been repeatedly accused of severely restricting freedom of the press (Amnesty International 2005; International Federation of Journalists 2006; United Nations Office of the High Commissioner for Human Rights 2005). The government was been accused of falsifying official figures of casualties from the insurgency (Dixit 2002; Hutt 2004). In fact, it is argued that “for greater precision government casualties be doubled and Maoist losses be halved against official figures.” (Mehta 2002). However, while news reports of the number of deaths or injuries are likely less accurate, reports that a violent event happened and the time and date of the event are likely to be more accurate. It is easier to misrepresent the size or impact of an event such as a gun battle than it is to misrepresent that it happened at all. For this reason, I use records of events (bomb blasts and major gun battles) and not the number of people that were involved in each event.

I also use a measure that delineates the period of nationwide violence that affected the lives of civilians from the period before the outbreak of this violence. There is no official starting date for the violence of the Maoist insurrection. However September 2000 approximately marks a “turning point” in the insurrection (Hutt 2004), when the

Maoists escalated their violent campaign and began to expand nationwide and the government created the armed police force specifically to fight the Maoists. The number of fatalities from this time on changed the insurrection from a low-intensity, to a high-intensity conflict (Pettigrew 2004; Wallensteen and Sollenberg 2000). Thus, I create a dichotomous variable ‘during war’ that is be coded as ‘1’ for the period from September 2000 until the end of my study in January 2006. From 1997 through August 2000, when there was little generalized violence, this variable is coded ‘0’

### ***Migration***

My measure of migration during the study period comes from the CVFS prospective demographic event registry. This is a panel study where interviewers visited each household in the study sample on a monthly basis from 1996 through the present. Thus the CVFS registry has residence records for each individual in the sample on a monthly basis. I define a migration as a one month or longer absence from an individual’s original 1996 residence. This measure captures short- as well as long-term migration. This is especially important in the case of conflict, where research has shown that much of migration is temporary. Over the 104 month period of this study, 59% of the sample population migrated at least once. Table 3.1 shows the descriptive statistics for this and all other variables used in this study.

[Table 3.1 about here]

### ***Location Specific Assets and Employment***

My measure of land ownership is from the CVFS Agriculture and Consumption surveys. These are household based surveys that were undertaken in 1997 and again in 2001. Respondents were asked how much land their household owned. Answers were coded in

kattha, a standard Nepali unit of measurement that is equal to 0.0338 hectares. For the years 1997-2000, I used the measure of land ownership from the 1996 survey; for the years 2001-2006, I used the measure from the 2001 survey. 43% of households owned some land. The average amount of land owned was 4.63 kattha (0.16 hectares) and the range was from 0 to 35 kattha.

My measure of working a salaried job comes from the CVFS Life History Calendar in 1996. Respondents were asked if they were working a salaried job at any time during that year. I use a dichotomous measure that is coded ‘1’ if an individual worked a salaried job at any time during 1996, and ‘0’ if not. 11% of respondents were working a salaried job.

### ***Saleable Assets***

I use livestock ownership as a measure of saleable assets in this context. Depending upon the context, livestock may or may not be saleable during periods of armed conflict. For example, research has shown that the sale of livestock during the Rwandan genocide of 1994 was very difficult due to plummeting prices (Verpoorten 2008). During the Maoist insurrection in the Chitwan Valley however, the violence was much less intense, and normal market sale of livestock was possible.

My measure of ownership of livestock also comes from the CVFS Agriculture and Consumption Surveys. To measure livestock ownership respondents were asked how many cows, water buffaloes, sheep, goats, and pigs their household owned. I created a single measure of livestock ownership by using standard livestock unit conversions for each type of animal and then summing the total number of livestock units that each household owned. I used the following conversions: 1 livestock unit = 1 water buffalo =

$0.83 \text{ cows} = 3.33 \text{ pigs} = 4 \text{ goats} = 5 \text{ sheep}$  (Agrawal and Gupta 2005). For the years 1997-2000, I used the measure of livestock ownership from the 1996 survey; for the years 2001-2006, I used the measure from the 2001 survey. 84% of households owned some livestock. The average livestock ownership was 2.97 livestock units and the range was from 0 to a maximum of 15.

Similarly, I created a summary measure of saleable household and farm goods that is used as a control variable. This measure includes: motorcycles, bicycles, carts, tractors, farm implements (such as threshers, chaffers, or other farm tools), refrigerators, televisions, radios, phones, rice cookers, fans, and sewing machines. In the 2001 survey, respondents were asked if their household owned each of these items, and then they were asked “How many years ago did you first get X?” Thus from 1997-2001, my measure of household goods is updated annually; for the years 2001-2006 I used the measure from the 2001 survey. I weighted each type of item according to its relative worth as follows: 1 household good unit = 1 motorcycle, farm implement, or refrigerator = 2 carts, televisions, or sewing machines = 4 radios, phones, rice cookers, or fans. The average household goods ownership was 1.25 and the range was from 0 to a maximum of 6.

### ***Individual Characteristics***

In order to accurately estimate the effects of violence and household assets on migration, I include in my models a variety of individual characteristics that may confound the relationship I am studying. Many of these measures have been shown to affect regular migration patterns in this setting and in other countries. These measures include age, sex, ethnicity, marital status, children, urban proximity, past migration experience, education, and months of the year. Most of these measures come from the CVFS Individual

Interview in 1996; only the time-varying measure of marital status comes from the prospective panel study.

I use a spline function to measure age that allows my models to be sensitive to rates of migration that change non-linearly with age. I use six age categories as follows: 15-20, 21-25, 26-30, 31-40, 41-50, and 51 years and older. I use dichotomous variables for sex, and to measure if an individual has ever migrated before 1997 or had any children in 1996. I use a series of dichotomous variables to control for the five functional ethnic groups in this area: Upper-Caste Hindu, Lower-Caste Hindu, Newar, Hill Tibeto-Burmese, and Terai Tibeto-Burmese. Similarly, I measure marital status with four time-varying dichotomous variables including never married, married and living with spouse, married and not living with spouse, and post married (divorced, separated, or widowed). I use an interval level variable for educational attainment that records the number of years of education an individual has completed by 1996. I also use an interval level variable for urban proximity that records the distance of an individual's community from the urban area of Narayanghat. Finally, in order to control for regular seasonal migration patterns in the Chitwan Valley, particularly in relation to the harvesting and planting cycles, I use a series of twelve dichotomous variables for each month of the year.

## **ANALYTIC STRATEGY**

I use a series of discrete-time event history models to predict out-migration from the Chitwan Valley in any given month. I use person-months as the unit of exposure to risk. The models test the monthly hazard of moving out of the Chitwan Valley neighborhood after June 1997, contingent upon violent events and individual and household characteristics. I lag all both violent event variables by one month in order to assure that

the result I am measuring (migration) occurred chronologically after the event. For example, the models test the effect of a bomb blast in April on out-migration in May.

I use the logistic regression equation given below:

$$\ln\left(\frac{p}{1-p}\right) = a + \sum(B_k)(X_k)$$

where  $p$  is the probability of migrating out of the Chitwan neighborhood,  $\frac{p}{(1-p)}$  is the odds of migrating out,  $a$  is a constant term,  $B_k$  is the effect of independent variables in the model, and  $X_k$  is the value of these independent variables.

Model 1 (presented in Table 3.2) tests the effects of violent events and household characteristics on out-migration. It includes all control variables. Because this model controls for violent events, it tests the effects of employment and ownership of land, livestock, and household goods independent of violent events. In other words, we can say that this model approximates the effects of these measures on migration during times of relative peace.

Models 2-5 (presented in Tables 3.3 and 3.4) test the moderating effects of household characteristics on the relationship between conflict and migration. Each of these models includes variables for major gun battles, bomb blasts, all household characteristics, all control variables, and one interaction variable. I test the interaction of employment, land ownership, and ownership of livestock with major gun battles and bomb blasts in separate models. For example, I test the interaction of livestock ownership with bomb blasts in one model, and the interaction of livestock ownership and gun battles in a separate model. However not all of these interactions produced statistically significant results. I present only the models that produce statistically

significant interactions. The interaction terms in these models test how individuals with or without each of these characteristics responded to violent events differently.

Functionally, these models approximate the effects of these measures on migration during times of conflict.

## **RESULTS**

The effects of violent events, gun battles and bomb blasts, on migration are similar to past studies in this research area (Williams 2007, 2008). As shown in Table 3.2 the odds ratio of 1.14 indicates a 14% higher likelihood of migration in any month following a gun battle. Odds ratios are multiplicative, so that in a month following two major gun battles there was a 30%<sup>16</sup> higher rate of migration. Bomb blasts, had the opposite effect of gun battles; they decreased the likelihood of migration. The odds ratio of 0.96 for bomb blasts indicates a slightly lower rate of migration in the month following a bomb blast. Again, these effects are multiplicative, so that with increasing numbers of bomb blasts, we would expect a progressively decreasing rate of migration. For example, in a month following five bomb blasts, we would expect 0.81 odds of migration, and for ten bomb blasts 0.66 odds. Similar to bomb blasts, the general period of conflict had a negative effect on migration. During the conflict the rate of migration was reduced by about 44% compared to before the conflict (see Williams 2008 for further discussion on this topic).

[Table 3.2 about here.]

These results confirm that specific violent events affected out-migration. The negative effects of bomb blasts and the general period of conflict, both of which indicate relatively low levels of violence in this context, are opposite of what we would expect

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<sup>16</sup> Calculated by squaring the odds ratio for gun battles:  $1.14 * 1.14 = 1.30$ .

given the threat-based decision model most commonly used in forced migration studies. However, they support the argument that given the desire to avoid exposure to violent events, people faced with low levels of violence could consciously decide not to migrate, choosing instead the relative safety of their own homes. However, when faced with high levels of violence that might threaten them in their own homes and daily lives, people might then decide to migrate. For further discussion on this issue, please see Williams 2006 and Williams 2008.

### ***Employment***

The effects of working a salaried job in 1996 are also as expected. Model 1 (in Table 3.2) shows the effect of working a salaried job on migration, controlling for violent events and other asset indicators. In other words, this model tests the effect of working a salaried job, independent of violent events, and we would expect the result to approximate the effect of this measure on migration during times of relative peace. This is what happened in this model; those who were working a salaried job in 1996 had about 85% higher likelihood of migration than those who were not. In this context, a salaried job indicates that an individual possesses a specific (and not common) set of skills and experience that could be used to get a salaried job elsewhere. Salaried jobs in Chitwan, and especially rural parts of the study area, are likely to pay much less than salaried jobs in Kathmandu and other urban areas of the country. This higher likelihood of migration for salaried workers is consistent with past research in other countries and the neo-classical economic theory of migration.

[Table 3.3 about here.]

Tables 3.3 and 3.4 show the results of models that include interaction terms for salaried job and gun battles and salaried job and bomb blasts. The interaction terms test how working a salaried job in 1996 moderates the effect of violent events on migration, or how individuals with a salaried job may react differently to violent events than those without a salaried job. As expected, working a salaried job produced a significant and negative interaction with both gun battles and bomb blasts. In the case of gun battles, the negative interaction term (0.78) is stronger than the positive effect of gun battles (1.18). Thus, individuals with a salaried job experienced progressively decreasing rates of migration with increasing numbers of gun battles per month. This effect is shown in Figure 3.2 which presents the predicted probability of migration after gun battles for those with and without salaried jobs.

[Figure 3.2 about here.]

In the case of bomb blasts, both the effect of bomb blasts and the interaction of bomb blasts and salaried jobs were negative. As shown in Figure 3.3 which presents the predicted probability of migration after bomb blasts, those without salaried jobs had a progressively decreasing rate of migration after bomb blasts, but the rate of migration decreased even quicker for those with salaried jobs. The negative effects of both of these interaction terms provide evidence that individuals who are working salaried jobs are less likely to migrate in response to violent events than those who are not working salaried jobs. This supports the theory that even in times of armed conflict, people make cost benefit calculations and sometimes choose to not migrate and to face possible future danger in order to keep their salaried jobs.

[Table 3.4 about here.]

[Figure 3.3 about here.]

### ***Land Ownership***

The results for land ownership follow a similar pattern. As shown in Model 1 which tests the effect of land ownership on migration independent of violent events, there was a negative effect of land ownership. The more land that a household owned the less likely was any one individual in the household to migrate away. This is consistent with past research in the context of relative peace and supports theories that view land ownership as both a form of investment and employment (Durand and Massey 1992, Stark and Taylor 1991, VanWey 2005, Zhao).

In addition, land ownership also moderated the effect of gun battles on migration. As shown in Table 3.3, the interaction between these two measures was negative. Figure 3.4, shows the predicted probability of migration after gun battles for those who owned 0, 10, 20, and 30 kattha of land (0, 0.338, 0.676, and 1.014 hectares). For those who owned no land, the effect of gun battles on migration progressively increased. For those who owned 10 kattha of land, there was almost no effect of gun battles on migration, and for those who owned more than 10 kattha, there was a progressively negative effect of gun battles on migration. Similar to the moderating effect of salaried jobs, this provides evidence that during times of armed conflict, land ownership might enter into the cost benefit calculation, with individuals choosing not to migrate away from possible danger in order not to lose their land.

[Figure 3.4 about here.]

### ***Livestock***

As shown in Model 1, ownership of livestock had a negative effect on out-migration, independent of violent events. The more livestock a household owned, the less likely was any one individual in the household to migrate. This is consistent with past research on migration during times of relative peace (VanWey 2003; Massey, Axinn, and Ghimire 2007; Zhao 1999) and predictions of the new economics theory of migration.

In addition, livestock had a positive moderating effect on migration after violent events. The interaction term for livestock and gun battles is positive, indicating that while the likelihood of migration increased with increasing numbers of gun battles, it increased even more for those who owned more livestock<sup>17</sup>. Again, this positive interaction is consistent with predictions. These results provide evidence that because it is possible to sell livestock, ownership does not discourage migration and in fact may encourage migration through providing the means to undertake the journey and resettlement at a destination.

[Figure 3.5 about here.]

## **CONCLUSION**

Prior research on forced migration has shown that periods of armed conflict increase migration on an aggregate level. However, this subject is more complex than previous models reveal. Armed conflict is rarely a single or homogenous event and migration streams are composed of individuals who experience these conflict events in diverse

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<sup>17</sup> I also tested the interaction of the household goods index with gun battles and bomb blasts. There was a positive and statistically significant interaction with bomb blasts, providing further evidence to support the hypothesis that moveable or saleable goods increase the likelihood of migration after violent events.

ways. The main contribution of this paper is the construction and empirical evaluation of a theoretical model of *individual* migration during armed conflict, taking into account *specific conflict events* that constitute a period of armed conflict and individual characteristics that affect how people make migration decisions.

Using data from the Chitwan Valley of Nepal, this study provides evidence that not everyone has the same likelihood of migrating (or not migrating) when faced with the same violent events. Specific characteristics of individuals and their households systematically altered the propensity of individuals to migrate in response to violent events. For example, characteristics such as working a salaried job and owning land, both of which are location-specific and non-saleable, decreased the likelihood of migration after violent events. These results support the theory that potential migrants undertake cost benefit calculations, weighing the expected danger to their lives against the expected likelihood of losing their livelihood and investments if they move. In other words, they are betting their lives against their livelihoods. The fact that livelihood factors actually decreased migration rates indicates that not only do potential migrants consider their livelihoods, but in many cases they are prioritizing their livelihoods over the expected danger to their lives. These results highlight an important and often ignored factor in the study of conflict-induced migration – the costs of migration. In our conceptualization of migration during conflict, the possible benefits of migration (reducing the threat to one's life) are so clear that it is all too easy to forget the possible costs, which in many cases can also have significant affects on an individual's future survival.

In addition, results from this study show that characteristics such as owning livestock also moderate the relationship between violent events and migration. These saleable items actually increase the likelihood of migrating in response to violence. Potential migrants are able to sell these items, not only recouping their investment but also gaining the liquid cash that provides them greater *ability* to undertake a migration. These results highlight another dimension of conflict migration that is often ignored- the ability to migrate. Independent of an individual's desire to migrate, they must also have the ability, in this case the financial means, to do so. Without the ability, one cannot migrate.

This argument, that both the cost of migration and the ability to do so are important factors in the migration decision is not new in the conceptualization of new behavior choices. This argument draws directly from Coale (1973) and Lesthaeghe and Vanderhoeft (2001) who propose that in order to adopt a new behavior, an individual must be ready, willing, and able to do so. Lesthaeghe and Vanderhoeft write “Readiness refers to the fact that the new forms of behavior must be advantageous to the actor; that is, their utility must be evident and outweigh their disutility ... The notion of ability then refers to the accessibility of these innovations... this access may have a cost that reduces ability...” (Lesthaeghe and Vanderhoeft 2001:240-241). While Coale first developed this model for the study of fertility transition, evidence in this study indicates that it is also pertinent to the study of migration.

This highlights a need to extend the theories we work with to include a more comprehensive understanding of the mechanisms through which conflict affects behavior changes in the general population. New theories must acknowledge that even when

faced with high levels of violence, individuals are strategic and knowledgeable actors and the behavioral choices they make are complex, involving considerations of their future economic wellbeing as well as physical safety. In this regard, a multi-dimensional approach has much to offer in advancing our understanding of the full range of consequences of armed conflict on people's lives and livelihoods and how these consequences interact with the broader context within which people live.

The micro-level data about individual characteristics used here provides a detailed and nuanced documentation of variations in migration behavior in response to conflict. To date, the study of the causes of conflict-induced migration has been heavily influenced by aggregate, often country-level, studies, which has hampered the ability to understand systematic micro-level variation in migration rates. The analyses presented here demonstrate that such micro-level documentation can substantially advance the study of both conflict-induced migration, and also inquiries into other consequences of conflict on individuals, families, and communities.

In addition to the theoretical and empirical contributions of this article to understanding migration decisions on an individual level, these micro-level results also point towards key macro-level long term consequences of conflict in the general population. In this case, evidence shows that migration patterns during the Maoist insurrection in the Chitwan Valley were not random. Instead there was a systematic redistribution of the population, partially contingent upon the resources available to each individual and household. Specifically, individuals with the financial ability to leave were more likely to do so. As a result, it is likely that following the conflict, rural communities lost some of their capital and resources and were left further disadvantaged than before.

This result is not altogether different from the city to suburb ‘flight’ of people and capital in the second half of the 1900’s that so crippled many older US cities (Cullen and Levitt 1999; Frey 1979l; Massey and Denton 1993; Wilson 1987). Just as in the US, this population redistribution will likely shape the social context of post-conflict Nepal, affecting future security, poverty, livelihood strategies, and social and economic networks, and (Castles 2003; Donato 1993; Durand et al. 1996; Jacobsen 1997; Massey 1988; Stark and Lucas 1988; Weiner 1996). This is an important example of how the responsive behaviors of the general population, regardless of their participation or leadership in a conflict process, can play a significant role in determining the future course of a post-conflict society.

**Table 3.1 Descriptive Statistics**

VARIABLE		Mean/Median	Std dev
<b>Violent Events</b>			
Gun battles	(0,1)	0.19 / 0	0.62
Bomb blasts		0.97 / 0	2.17
<b>Employment and Household Economic Status</b>			
Salary Job	(0,1)	0.11	0.32
Amount of Farmland Owned	(0-35 kattha)	4.63	7.00
Amount of Livestock Owned	(0-15 LU)	2.97	2.51
Household Goods Index	(0-6)	1.25	1.06
<b>Individual Characteristics</b>		Mean	Std dev
Migration (during study period)		0.59	0.49
Ever migrated (before 1996)		0.25	0.43
Female		0.54	0.50
Distance to Narayanghat		8.59	4.05
Educational Attainment	(0-16)	3.86	4.45
Have any children		0.81	0.39
<b>Marital Status</b>			
Never married		0.08	0.27
Married, living with spouse		0.54	0.50
Married, not living with spouse		0.31	0.46
Divorced, Separated, Widowed		0.06	0.24
<b>Age (in 1997)</b>			
18-20 years old		0.09	0.28
21-25 years old		0.15	0.36
26-30 years old		0.16	0.36
31-40 years old		0.26	0.44
41-50 years old		0.21	0.40
51 + years old		0.14	0.35
<b>Ethnicity</b>			
Upper Caste Hindu		0.47	0.50
Lower Caste Hindu		0.10	0.29
Hill Tibeto-Burmese		0.15	0.36
Terai Tibeto-Burmese		0.21	0.41
Newar		0.06	0.24

**Table 3.2 Violent Events and Migration. Logistic Regression Estimates of Discrete-Time Hazard Models of Out-Migration from Chitwan Valley**

MODEL 1		ODDS RATIO	Z - Statistic
<b>Violent Events</b>			
Gun Battles	(# per month)	1.14 **	(2.49)
Bomb Blasts	(# per month)	0.96 *	(2.24)
During War	(0,1)	0.56 ***	(9.01)
<b>Employment and Household Economic Status</b>			
Salary Job	(0,1)	1.85 ***	(8.02)
Amount of farmland owned		0.99 *	(2.21)
Livestock (# livestock units)		0.97 ***	(3.11)
Household goods Index		0.99	(.30)
<b>Individual Characteristics</b>			
Ever Migrated		1.58 ***	(7.83)
Female		0.87 **	(2.32)
Distance to Narayanghat		1.02 **	(2.38)
Education		1.03 ***	(3.90)
Have Any Children		0.53 ***	(7.49)
<b>Marital Status</b>			
Unmarried		0.77 **	(2.66)
Married, living w/ spouse		Reference	
Married, not living w/ spouse		1.34 ***	(3.89)
Divorced, widowed, separated		1.40 **	(2.82)
<b>Age (in 1997)</b>			
18-20 years old		0.86	(1.07)
21-25 years old		0.90 ***	(3.76)
26-30 years old		0.92 ***	(3.69)
31-40 years old		0.95 ***	(4.79)
41-50 years old		1.02 ^	(1.54)
51+ years old		1.00	(.00)
<b>Ethnicity</b>			
Upper Caste Hindu		Reference	
Lower Caste Hindu		0.90	(1.13)
Hill Tibeto-Burmese		1.23 **	(2.94)
Terai Tibeto-Burmese		0.73 ***	(4.42)
Newar		0.77 **	(2.44)
<b>Months of the Year</b>			
January		0.92	(.71)
February		0.79 *	(1.97)
March		0.99	(.09)
April		0.90	(.90)
May		1.04	(.33)
June		Reference	
July		0.92	(.77)
August		1.13	(1.15)
September		1.15	(1.28)
October		0.69 ***	(3.05)
November		0.98	(.22)
December		0.82 *	(1.70)
-2 log likelihood		18551	
No. of Observations (person-months)		179384	
^p<.10    *p<.05    **p<.01    ***p<.001 (one-tailed tests)			

**Table 3.3 Gun Battles, Employment and Assets, and Migration. Logistic Regression Estimates of Discrete-Time Hazard Models of Out-Migration from Chitwan Valley, Including Interactions with Employment and Asset Measures**

INTERACTIONS W/ GUN BATTLES	Model 2- Salary Job	Model 3- Farmland	Model 4- Livestock
Interaction- Gun Battles* (Salary, Land, or Livestock)	0.78 ^ (1.56)	0.99 ^ (1.48)	1.03 * (1.70)
Gun Battles (# per month)	1.18 ** (2.94)	1.19 ** (2.97)	1.04 (.54)
Salary Job (0,1)	1.90 *** (8.22)		
Amount of Farmland Owned		0.99 * (1.966)	
Livestock			0.96 *** (3.37)
-2 log likelihood	18548	18549	18549
No. of Observations (person-months):		179384	

Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.

<sup>^</sup>p<.10    \*p<.05    \*\*p<.01    \*\*\*p<.001 (one-tailed tests)

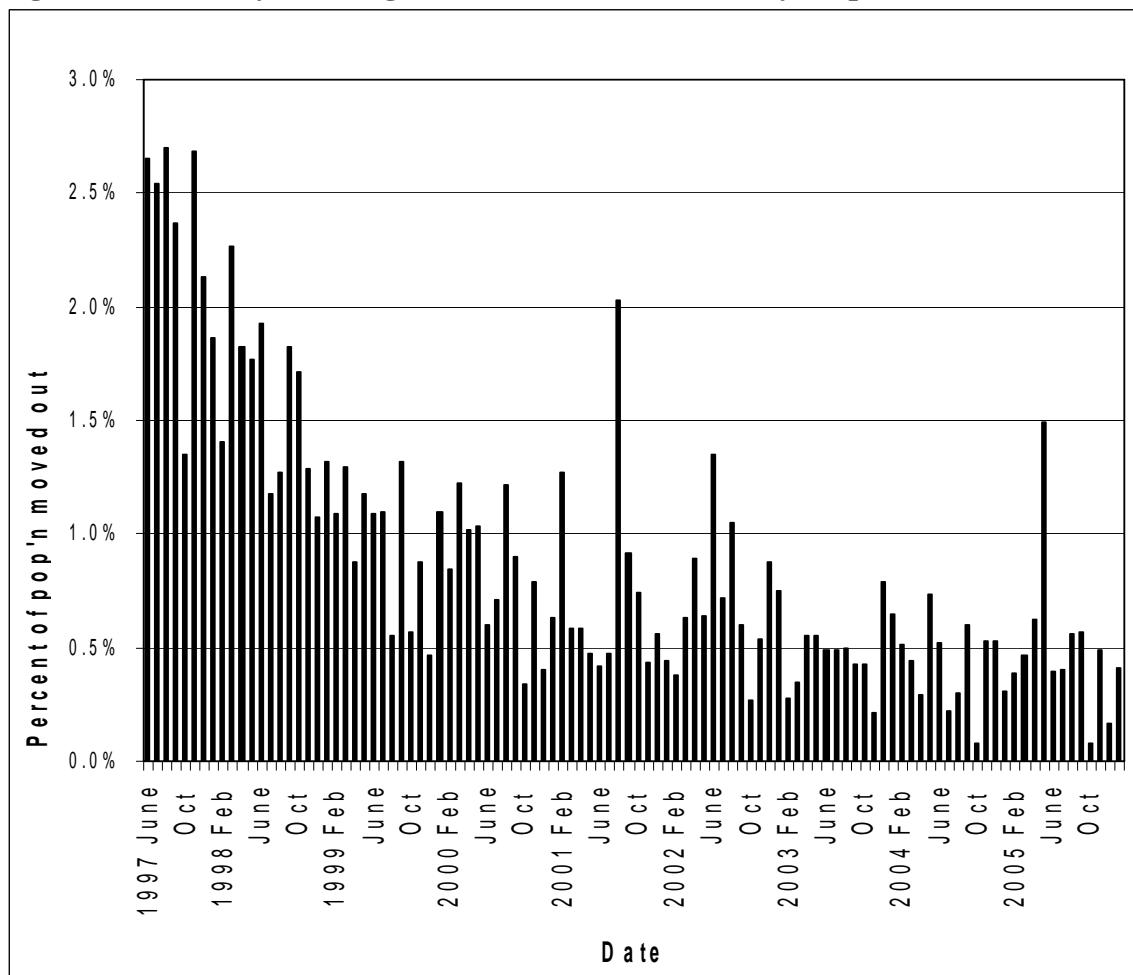
**Table 3.4 Bomb Blasts, Employment and Assets, and Migration. Logistic Regression Estimates of Discrete-Time Hazard Models of Out-Migration from Chitwan Valley, Including Interactions with Employment and Asset Measures**

<b>INTERACTION W/ BOMB BLASTS</b>	<b>Model 5- Salary Job</b>
Interaction- Bomb Blasts* Salary Job	0.83 ** (2.38)
Bomb Blasts (# per month)	0.97 ^ (1.53)
Salary Job (0,1)	1.94 *** (8.48)
-2 log likelihood	18543
No. of Observations (person-months)	179384

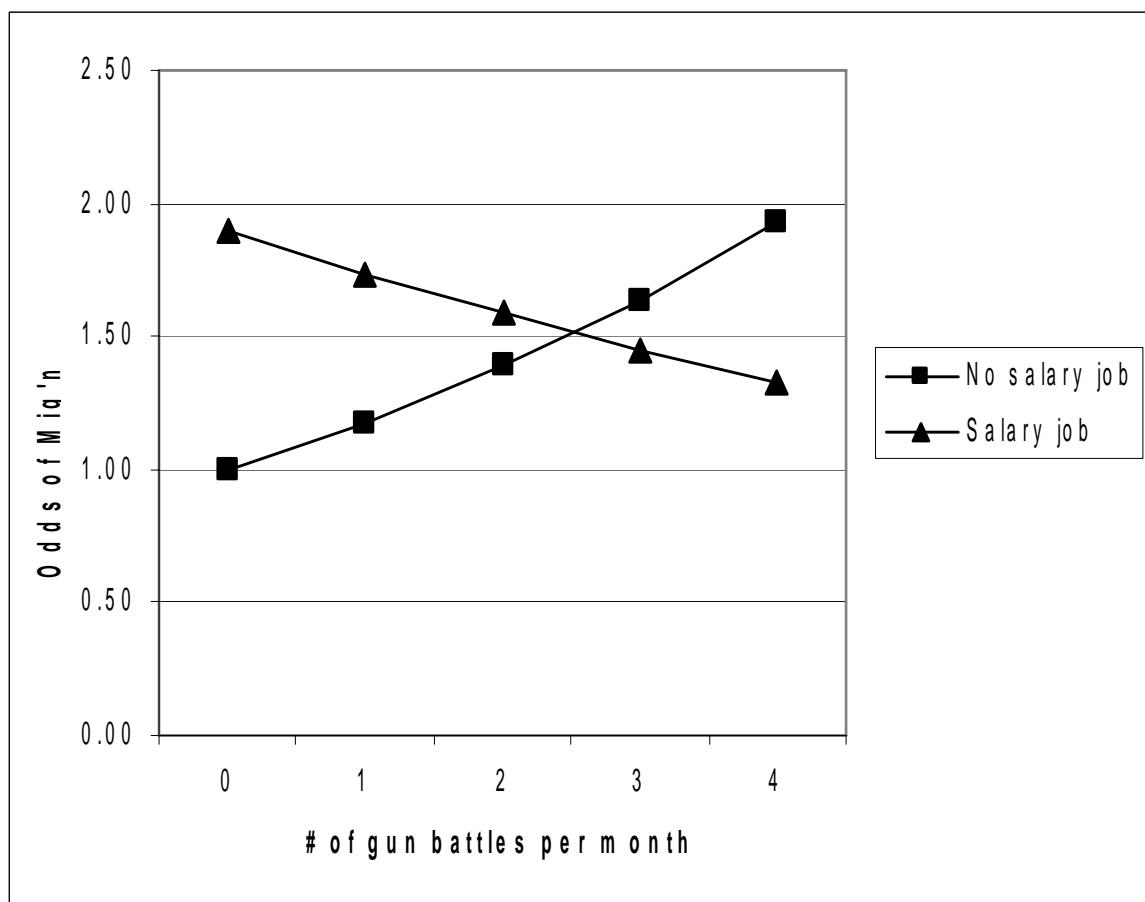
Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.

<sup>a</sup>p<.10    \*p<.05    \*\*p<.01    \*\*\*p<.001 (one-tailed tests)

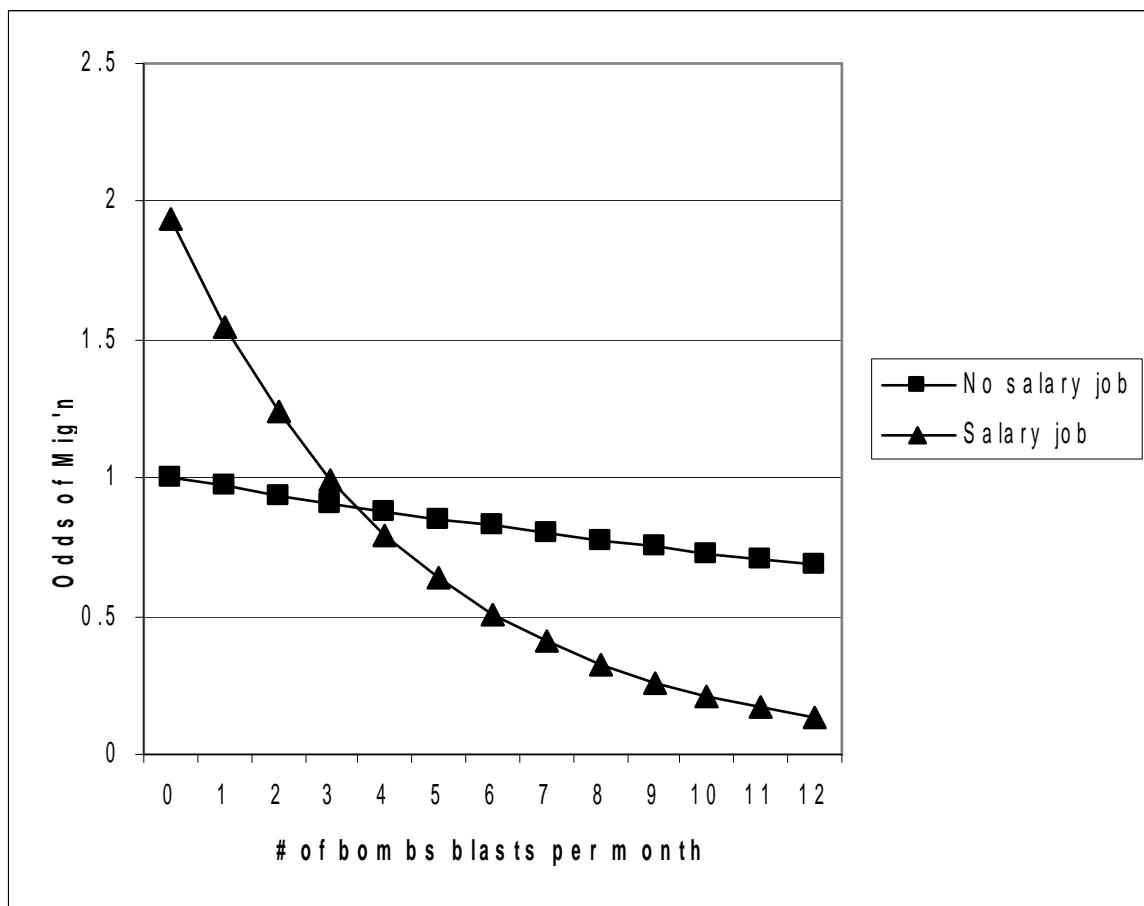
**Figure 3.1 Monthly Out-Migration Rates, Chitwan Valley, Nepal**



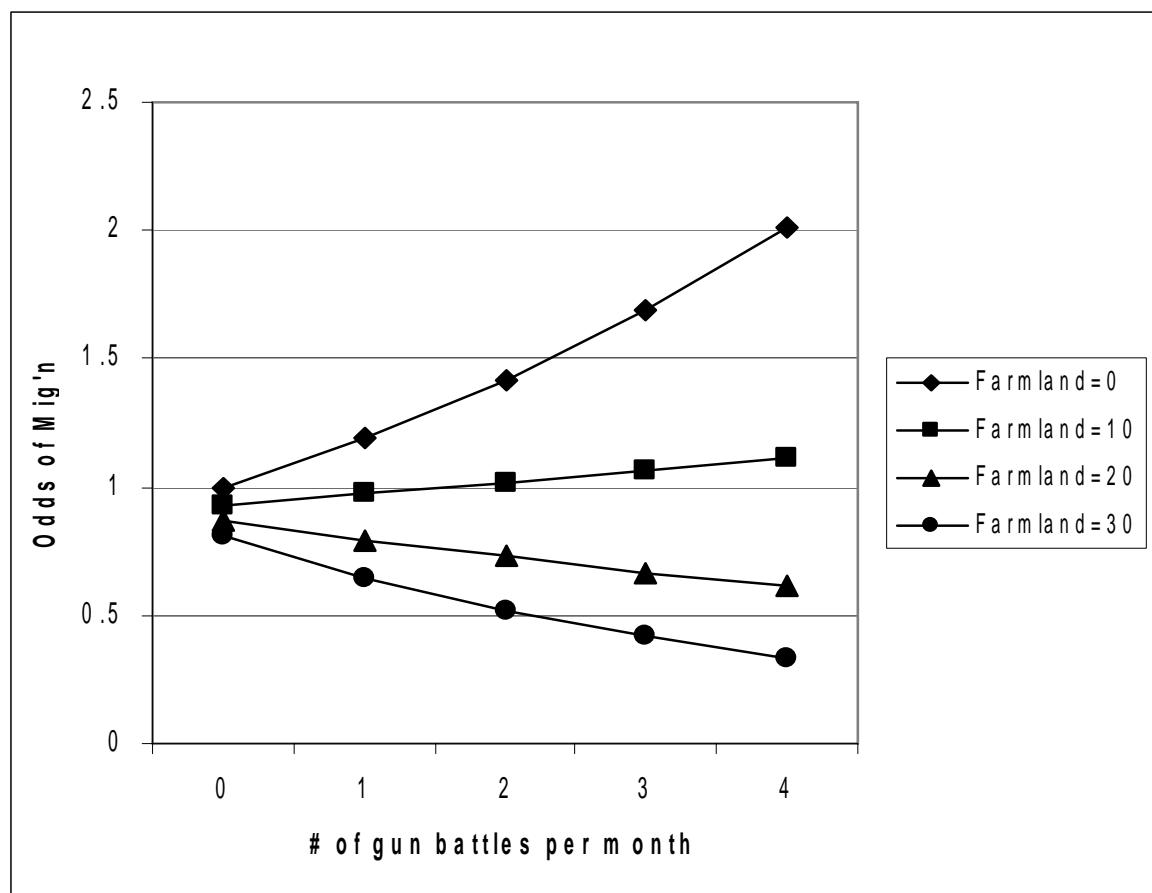
**Figure 3.2 Predicted Probability of Migration Following Gun Battles, Interacted with Salaried Job**



**Figure 3.3 Predicted Probability of Migration Following Bomb Blasts, Interacted with Salaried Job**



**Figure 3.4 Predicted Probability of Migration Following Gun Battles, Interacted with Ownership of Farmland**



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## **CHAPTER 4**

### **Armed Conflict, Media, and Migration: A Micro-Level Sociological Approach**

Migration during armed conflict, resulting in millions of refugees and internally displaced persons, is a significant and persistent problem around the globe, not just in poor countries bordering conflict zones, but affecting almost every country in the world today. Research has shown that large and sudden influxes of migrants fleeing armed conflict can affect long-term political stability, economic change, environmental degradation, nationalism, and persistent poverty (Castles 2003; Jacobsen 1997; Kibreab 1997; Richmond 1994; Weiner 1996). Given several recent and on-going conflicts in Africa and Asia, porous borders, and improved transportation networks, the migration consequences of these problems are not likely to subside in the near future. A scientific based understanding of migration patterns during conflict, including who, when, and how many people are likely to migrate, is important for advising humanitarian relief programs, for legal decisions on provision of asylum, for international security, and migration policies. Detailed empirical investigation of these patterns and the relationships that underlie them also provides an unprecedented opportunity to advance sociological reasoning regarding processes of change in human behavior.

Although the study of migration during armed conflict has advanced significantly in the past several decades, this has been largely due to the contributions of political scientists and economists and focused on the macro-level. Sociology has unfortunately played a small role in this area of study. As Castles states, “[T]here is little sociological

literature on forced migration and one certainly cannot find a developed body of empirical work and theory.” (Castles 2003:14). Nevertheless, this area of study has much to gain from sociological insights into the nature of the influences of macro-level context on micro-level behaviors and the recognition that these relationships are contingent upon individual characteristics and local context (Mazur 1988). Although understanding macro-level patterns of migration is important, migration is in essence a micro-level individual or family decision (Richmond 1988). Classic sociological theory on the relationship between structural constraints and structural opportunities, and the diverse meanings of rational choice has much to offer the study of what is still termed ‘forced’ migration (Giddens 1976, 1984; Parsons 1937). Likewise, sociology, with its enduring emphasis on social change, has much to learn from the phenomenon of conflict, how it affects individual behaviors such as migration, and how these patterns of new behaviors in turn affect long-term macro-level social, ideational, economic, and political changes.

In this study, I address migration during armed conflict from a sociological perspective and take a micro-level approach, focusing on the behavioral decisions of individuals<sup>18</sup>. This approach allows me to disregard the traditional but unrealistic dichotomies of ‘forced’ versus ‘voluntary’ or ‘economic’ versus ‘political’ migration upon which many macro-level studies are based (Dowty 1987, Richmond 1988). By focusing on individuals, I am able to show that people who are exposed to the same levels of violence do not all react in the same way. In fact, there is evidence that non-

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<sup>18</sup> Migration decisions are likely most often made by individuals and families together. Even in cases of a single individual migrating alone, the decision to do so is often as much a family as an individual decision (Massey 1987). Throughout this paper I use the terms ‘individual’ and ‘micro-level’ for the sake of brevity to refer decisions made by the individual person in consultation with family members.

migration is prevalent even in severe conflicts<sup>19</sup>. The micro-level approach to analysis allows us to investigate *why* some people migrate and others choose to stay where they are in the face of danger (Castles 2003, Arango 2000)

Investigation of these micro-level questions provides the means to significantly advance our understanding of both responses to violence and causes of migration. First, by integrating social psychological theories of fear of crime and subsequent behavioral responses into the study of migration, this investigation provides new theoretical tools for studying both. Second, these new theoretical tools highlight the fundamental role of individual perceptions of risk and the power of macro-level forces such as the media to shape these perceptions. Third, explicit consideration of the media provides a key example of how macro-level factors condition individual responses to abrupt, widespread, violent shocks. Together, these three advances provide a powerful new framework for understanding the variation in individual reactions to large-scale violence or other similar disasters.

My empirical analyses are based in the recent Maoist insurrection in Nepal. I use a unique combination of data, including records of violent events such as gun battles and bomb blasts, and a prospective panel survey of individuals that make direct documentation of the relationship between violent events, consumption of the news media, and migration possible. The individual surveys from Nepal that span the entire period of conflict provide records of individuals' migrations on a monthly basis, thereby allowing precise comparisons between violent events each month and out-migration.

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<sup>19</sup> For example, in the severe on-going conflicts in Afghanistan, Iraq, and Darfur, large proportions of the population have not migrated. According to UN data sources, about 90% of the Afghan population, 82% of Iraqis, and 43% of the population of Darfur are not officially displaced (OCHA 2006; UNFPA 2003; UNHCR 2006, 2007).

Because these data cover the period of time from three years before the insurrection began through the six years of the violence, it provides an unprecedented opportunity to investigate individual-level differences in migration patterns during times characterized by armed conflict and by relative peace.

## **THEORY**

In this section, I briefly discuss the standard threat-based decision model of forced migration studies. Building on this model, I use the extensive bodies of literature on fear of crime and violence and the role of the media in altering perceptions of violence to develop a model of how individuals process messages from the media and subsequently make migration decisions in the context of armed conflict. The objective is a simple initial model of individual variability in migration (and non-migration) during conflict.

The threat-based decision model is the dominant explanatory model of forced migration and the only theory that has been empirically tested in the literature. This model argues that potential migrants base their decision to migrate away from a conflict on the perceived threat to their personal security. When the perceived threat to their security increases beyond an acceptable level, they migrate away. Implicit in this model are a series of steps that comprise the migration decision: individuals are exposed to conflict, they perceive threat to their safety, and finally make migration decisions based on their perception of threat. This model is explained in further detail in Davenport, Moore, and Poe (2003) and Moore and Shellman (2004). Recent empirical studies have found strong support for this theory. Several country-level comparative studies have found that a variety of types of generalized violence result in large increases in migration out of the afflicted area (i.e. refugee flight), including civil war, international war,

genocide and politicide, and human rights violations (Apodaca 1998; Clark 1989; Davenport et al. 2003; Edmonston 1992; Gibney, Apodaca, and McCann 1996; Melander and Oberg 2006; Moore and Shellman 2004; Schmeidl 1997; Stanley 1987; Weiner 1996; Zolberg, Suhrke, and Aguayo 1989). These studies provide strong and consistent evidence that many people flee from generalized violence.

Drawing from and adapting this theory for micro-level sociological analysis, the model of individual migration behaviors that I develop here incorporates several key components. First, moving beyond the general perception that armed conflict places absolute constraint on individuals' behavioral choices, this model allows for individual agency in migration decision making. Second, it allows for a number of rational behavioral options from which individuals might choose, including the option to migrate or the option to not migrate. Third, it acknowledges the complexity of the migration decision, based on individuals' experience of violence, the threat that they perceive from this violence, and their individual, family, and community circumstances that affect the utility and ability to migrate.

Another theoretical addition to this model of migration behavior during conflict is attention to background levels of migration. In any context, during periods of relative peace, migration is a reasonably common behavior. In fact, in many countries, such as Nepal, temporary migration is a common livelihood strategy employed by significant proportions of the population every year. Thus, before any given conflict, we can expect a notable amount of 'background' migration. This means that when examining migration decisions during conflict, we must consider two groups of people. One includes those who would not have otherwise migrated; for these people, migration would be considered

a behavioral change. The other group is those who would have otherwise migrated; in this case, migration would not be a behavioral change. Instead, consciously choosing not to migrate would be a notable change of behavior that warrants study. Exclusion of the latter group of people from consideration can lead to misleading evidence of exaggerated rates of migration during armed conflict. In fact, as I show in this study, when pre-conflict migration patterns are taken into account, rates of migration during conflict can actually be comparatively lower, a phenomenon that requires theoretical attention.

### ***Exposure to Different Levels of Violence and Migration***

As described above, previous evidence shows that many people migrate during armed conflict. Theoretically, we believe that these people use migration as a strategy to decrease their exposure to violence. Consider an alternate perspective: migration itself involves uncertainty and risk. Especially in the context of armed conflict, travelling and resettling in unfamiliar areas can increase the exposure to violence that people are seeking to escape. Thus, in seeking to decrease their exposure to violence, people could choose not to migrate. There is evidence of a similar type of precautionary behavior in dangerous neighborhoods in the US. Several studies find that when faced with increased danger in the neighborhood, adults remain within their own homes more often, participate in community activities less, and children spend less time playing outside (Mesch 2000; Keane 1998; Rountree and Land 1996; Liska, Sanchirico, and Reed 1988; Warr 1984), thereby decreasing their exposure to violence. Given these two perspectives, it is theoretically reasonable to believe that migration or non-migration can be used as precautionary behaviors in the context of conflict. There is evidence that people adopt

both of these behaviors when exposed to violence; however it is unclear what circumstances would encourage individuals to choose one behavior over the other.

I propose that the level of violence is one such contextual factor that could explain variations in migration during periods of violence. When faced with relatively low levels of violence, the safest option could be to remain within one's own home and familiar community, rather than travel outside where the violence is mainly occurring. However, at higher levels of violence, people could feel threatened even in their own homes and communities. In this case, the safest option would be to migrate away. Hurricanes provide a useful analogy to this discussion. When a low to medium strength hurricane is predicted, people are advised to stay within the protection of their own homes, rather than to be outside where they will be exposed to the storm. However, when a very large hurricane is expected, people are advised that they will not be safe within their homes and that it is safer to evacuate the area.

Thus, in a context of low levels of violence, we could expect lower levels of migration compared to periods of relative peace. This means that individuals who would not have migrated during periods of peace are also unlikely to migrate during periods of violence. In addition, those who would have otherwise migrated, would also be unlikely to do so during periods of violence. Alternately, in the context of high levels of violence, we would expect higher levels of migration compared to periods of relative peace. In this case, both groups of people would be more likely to migrate.

#### ***News Media, Perceptions of Violence, and Migration***

Individuals' responses to the level of violence to which they are exposed depend not just on the actual level of violence (including the type and intensity of violent events) but also

on their perceptions of the threat that this violence constitutes to their safety. Even if individuals are exposed to the same violent events they can cognitively process their experiences differently and as a result perceive different levels of threat to their safety. A fundamental contextual factor that can alter how individuals process and then perceive violence is the news media.

The news media can affect perceptions of threat in two ways. First, the news media provides information about specific violent events, such as bomb blasts and gun battles, when and where they happened, and the intensity of these events. Thus, individuals who consume the news media are more likely to know about events that could constitute a threat to their safety than those who do not consume the news media.

Second, the news media can affect how individuals perceive these events. The media do not just provide information, they also guide individuals in how they should think about the information and the importance they should attach to particular events. Research on agenda setting in the news media has shown that the images, stories, and events that are more prominent in the news become more prominent in their audience's perceptions of reality (Iyengar and Simon 1993, McCombs and Shaw 1972). In the case of armed conflict, or even violent crime in general, the media often report heavily on these events, often out of proportion with the actual reality of the events and more so than other less dramatic stories (Iyengar and Simon 1993; Chiricos, Padgett, and Gertz 2000, Tyler 1984). Media sources are reliant on subscriptions and advertisements for revenue, thus they are likely to report more heavily on dramatic events (such as violence) in any given context because these stories generate larger audiences (Vishwanath et al 2007).

Furthermore, the content of media stories is also important. Just as the media often extensively report dramatic stories, the way in which they present these stories is often overdramatized, showing powerful visual images of injured or dead people, destroyed buildings, piles of concrete, and twisted rebar. This is especially the case in many countries outside the US, where pictures of bloody corpses on the front page of the newspaper are not uncommon. These powerful and dramatic images of events can lead an audience to perceive an event as more dangerous than they otherwise would have.

For these reasons, the news media can shape reality in the minds of its audience; individuals who consume the news media might be more likely to perceive any given violent event as more salient and more threatening to their safety, out of proportion with the actual reality of the threat. Research on fear of crime in the United States has consistently found this to be the case- that those who watch television news, listen to the radio, and read newspapers are more fearful of crime (Chiricos, Eschholz, and Gertz 1997).

Understanding how the news media shapes perceptions of the level of violence to which people are exposed is integral for understanding migration. As discussed earlier, individuals' perceptions of levels of violence affect their migration decisions: comparatively high levels of violence will theoretically result in higher likelihoods of migration, and comparatively low levels of violence will result in lower likelihoods of migration than during periods of relative peace. Thus, if the news media increases the perceived level of violence, then we would expect it to subsequently increase the underlying likelihood of migration. More specifically, under any level of contextual

violence, we would expect that individuals who consume the news media would have a higher likelihood of migrating than those who do not consume the news media,

## SETTING

### *The Maoist Insurrection*

The context of this study is the Maoist insurrection in Nepal which began in 1996.

Following a relatively unsuccessful political campaign, the Communist Party of Nepal (Maoist) made a formal declaration of “People’s War” on February 13, 1996, with the aim to unseat the current constitutional monarchy and install a democratic republic. They charged the government with poor administration, corruption, unfair taxation, and neglect of poor rural areas of the country.

The earlier stages of the insurrection were contained primarily in several mid-western districts and aimed at damage to government installations and communication infrastructure, capturing weapons, and threatening government security forces. From mid-2000 however, the Maoists progressively expanded their campaign nationwide. In January 2001, the Nepalese government responded by creating a special armed police force to fight the Maoists. After that, the government generally maintained control of cities and large towns, and the Maoists had a significant presence in the majority of the rugged countryside in 68 of Nepal’s 75 districts, where communication and transportation were difficult (South Asia Terrorism Portal 2006a). In June 2006 serious peace talks commenced and on November 21, 2006, the government and Maoists signed a comprehensive peace agreement declaring an end to the conflict.

Because this conflict was staged mainly as a guerrilla war, there was generally no ‘frontline’, it was largely unknown where fighting would break out, and civilians were

often unintentionally caught up in firefights and bomb blasts. In addition, both Maoists and government forces intentionally used civilians for political purposes. Reported violent acts by the Maoists and Nepalese government security forces against civilians include torture, extra-judicial killings (both discriminate<sup>20</sup> and indiscriminate), bombings, gun fights, abductions, forced conscription, billeting, taxing, and general strikes (South Asia Terrorism Portal 2006b; Hutt 2004; Pettigrew 2004). From 2000 until the end of 2006, the Maoists were responsible for a total of 4312 deaths and the government forces were responsible for 7544 deaths (Informal Sector Service Center 2006).

### ***The Chitwan Valley of Nepal***

My data analysis is based in the Chitwan Valley of south-central Nepal. The administrative district of Chitwan borders India and is about 100 miles from Kathmandu. There is one large city, Narayanghat, and the rest of Chitwan's population, like much of Nepal, lives in small, rural villages. The valley is dominated by agriculture; 82% of households in the study area of the Chitwan Valley Family Study<sup>21</sup> are involved in farming or animal husbandry and operate on a subsistence level.

Throughout the Maoist insurrection, the Chitwan Valley was one of the less violent districts in Nepal, mainly because it is located far from the western regions of the country where the Maoist insurrection raged the strongest and far from the capital and government stronghold of Kathmandu. Between 1996 and April 2006, Chitwan experienced 194 conflict related fatalities (Informal Sector Service Center 2006). This is

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<sup>20</sup> There is no evidence that individuals who were educated, literate, or used the news media were specifically targeted for abduction or extra-judicial assassination. In some areas of the country (not including the Chitwan district), teachers were targeted. However, for the purposes of this study teachers are a very small proportion of the population, thus this targeting is not likely to produce spurious empirical results.

<sup>21</sup> Further details about the Chitwan Valley Family Study are provided in the Data and Measures section below.

just higher than the average number of fatalities of all districts, but much lower than the fatality toll of the most-affected western districts that have experienced from 300 to 950 deaths throughout this same time period (Informal Sector Service Center 2006).

Historically, there has been a large amount of migration from the Chitwan Valley to other areas of Nepal, but also notably to nearby areas of India. Nepal and India share an open border, so there are no restrictions on Nepalese cross-border travel to India, making this international migration no more difficult than migration to other areas of Nepal. The 2001 census estimated that 2.5-5% of Chitwan residents were living abroad in 2001 (HMG et al 2002) and 77% of them were in India. Data from a nationally representative sample survey allow us to estimate that about as many Chitwan residents were internal migrants (HMG et al 2004). Much of the migration is seasonal and is viewed as a strategy to supplement regular farm and household incomes during low periods of the harvest and planting cycle (Kollmair et al 2006; Thieme and Wyss 2005).

Figure 4.1 shows the monthly out-migration, including internal and international migration, from the Chitwan Valley from June 1997 through January 2006. Out-migration steadily declines from a high of about 3% per month in early 1997 until about the middle of 2000. After this time, the percent of the population that moved out of the area in each month remains at a relatively stable, but low rate of around 0.6% per month, with occasional large spikes.

[Figure 4.1 about here]

### ***Media and Censorship in Nepal***

While access to mass media, from both public and private sources, in the general population is relatively new (within the last few decades) it is now widespread and a

large number of people regularly use various types of media for news and entertainment. Radio is the major source of information for much of Nepal, especially in isolated areas where access to newspapers is limited. Radio is of particular importance for those who are not literate and thus have no functional access to print media. Radio Nepal, the official state broadcaster, continues to be the most prominent, with the ability to broadcast into most areas of the country (Barber and Axinn 2004; International Federation of Journalists 2005; Radio Nepal 2009; Thapa and Mishra 2003). By 1996 there were 56 radio licenses issued, increasing the diversity of radio programming from different private and public perspectives, including the BBC Nepali language world service (International Federation of Journalists 2005). In the survey sample used in this study, 51% of all men listened to the radio on at least a weekly basis.

By 2005 there were eight government daily newspapers, a number of weekly tabloids, and hundreds of local weekly or monthly papers being published (International Federation of Journalists 2005). Most of these publications are inexpensive, but limited to a literate audience. In the survey sample used in this study, 57% of literate men read newspapers on a weekly basis in 1996.

During the insurrection, access to these media was not always consistent, and at times the news presented had a distinct political slant. Of particular note, in February 2005, King Gyanendra declared a state of emergency, cut off communications with the rest of the world, and suspended freedom of the press with the proclamation “His Majesty’s Government has banned for six months any interview, article, news, notice, view or personal opinion that goes against the letter and spirit of the Royal Proclamation on 1 Feb 2005 and that directly or indirectly supports destruction and terrorism.” Further,

on March 1, 2005, the government announced new regulations prohibiting dissemination of any information related to security matters without the prior permission of the government security forces (International Federation of Journalists 2005; Lim 2006). Subsequently various newspapers and radio broadcasters around the country were seized and closed by security forces, and others significantly curtailed the information they provided. The one source of independent radio news that continued during this period of censorship was the BBC's Nepali language world service (International Federation of Journalists 2005). Newspapers were affected to a varying extent. The censorship during this period resulted in primarily pro-government news and increasing criticism of Maoist activities and violence. However, for the purposes of this study, it is important to note that while the information provided by the media during this period was likely biased, there was continual news service about violent events that reached the general populace. Despite protests from within Nepal and the international community, this censorship of the media continued through May 2006.

### ***Gender and Decision-Making in Nepal***

Nepali society is strictly stratified by sex. Men and women experience very different opportunities and expectations regarding education, work, relationships, and personal autonomy. In general, men are responsible for much of the decisions about the household and household members, leaving women with restricted personal autonomy and little decision-making power (Fricke, Axinn, and Thornton, 1993; Niraula and Morgan, 1996; Yabiku, 2005). Thus women likely contribute little to the migration decision-making process, with regard to either their own individual migration or that of the household.

In this case, if women cannot make migration decisions based on their own experiences or desires, questions of what kind of violence they are exposed to, how they perceive it, and whether or not this affects their desires to move are then irrelevant. Furthermore, empirical evidence suggests that independent of media consumption, women experience and perceive violence differently than their male counterparts (Williams and Sainju-Pradhan 2009). Thus, in this study, I empirically analyze the effects of violence and media consumption on men's migration. I do not present an analysis of women's migration as this is likely affected by different causal pathways which are more related to men's experiences and family decision-making roles and would be best addressed in a different study. Preliminary empirical results suggest that this is the case<sup>22</sup>.

## **EMPIRICAL PREDICTIONS**

In this setting and the context of varying levels of violence during the Maoist insurrection, I expect both the level of violence and consumption of the news media to affect an individuals' likelihood of migration.

### ***Levels of Violence***

As in almost any conflict, the Maoist insurrection was characterized by different kinds of violent events and varying levels of violence over time. Gun battles for example represent a high level of violence or threat. On average, 31 people died in each major gun battle in Nepal (South Asia Terrorism Portal 2006b). Gun battles tended to last for a

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<sup>22</sup> I analyzed women's migration with a similar set of models as I use in this paper to analyze men's migration. Results from this preliminary analysis do not show similarly statistically significant relationships between violence, women's media use, and migration.

significant period of time, up to several hours. In addition, reports indicate that nearby civilians were used as human shields and forced to clear dead and wounded bodies.

In comparison, during this period bomb blasts represent a much lower level of violence. Bombs were small devices, often made from pipes, coke bottles, or pressure cookers. As such, they had much less destructive power than the bombs used in other current conflicts such as Iraq or Afghanistan. In Nepal, bomb blasts killed or injured an average of just three people (South Asia Terrorism Portal 2006b).

Therefore, I hypothesize that in any month following one or more gun battles, people will perceive a high level of threat, and the likelihood of migration will be higher than in times of relative peace (or any month when there were no gun battles). In any month following one or more bomb blasts, people will perceive a low level of threat, and the likelihood of migration will be lower than in times of relative peace.

### ***Media Access and Consumption***

A variety of types of news media are generally accessible in Nepal. However, personal characteristics such as literacy, affect whether each type of media is actually accessible to each individual, whether they choose to use it to obtain information, and the amount of trust they place in it as a source of information. Specifically, those who are not literate do not have functional access to newspapers. They are thus dependent on the radio as a main source of media for information.

Literacy is of particular importance in the Nepali context, where a significant proportion of the population is not functionally literate. In particular, in the Chitwan Valley Family Study, 21% of the men were illiterate. As shown in Table 4.1, illiteracy is particularly associated with older age groups, ethnic minorities, and residence in rural

areas. Although individuals who are not literate generally differ from those who are literate in several ways that could affect their migration propensities, there is little theoretical reason to believe that the news media would alter their perceptions of violence any more or less than among those who are literate. As a result, I hypothesize that of those who are not literate, individuals who listen to the radio will be more likely to migrate after any violent event (gun battles or bomb blasts) compared to individuals who do not listen to the radio.

[Table 4.1 about here.]

Literate individuals, on the other hand, have functional access to both the radio and newspapers. I hypothesize that of those who are literate, individuals who listen to the radio will be more likely to migrate after any violent events, compared to those who do not listen to the radio. Furthermore, those who read the newspaper will also be more likely to migrate after any given violent event, compared to those who do not.

However, even if literate individuals have access to more than one type of news media, this does not mean that they will choose to use or trust all sources of media. For example, an individual may use the radio to listen to music, and the newspaper to read about current events. In this case, we would expect the radio to have no effect and the newspaper to have a positive effect on his perception of violence or subsequent likelihood of migration. This situation is quite possible, given that the most popular radio station in Nepal, Radio Nepal, plays a mix of news and entertainment programs, and the programming on FM stations which are also very popular is heavily weighted towards entertainment (Thapa and Mishra 2003).

Another individual might use both the radio and newspaper to learn about current events. However he might find the newspaper a more credible source of information. Furthermore, newspapers provide not just a statement of the news, but also powerful visual images that can additionally affect individuals' perceptions of threat. Thus for individuals who use both sources of media for news, we would expect the newspaper to have a greater effect than the radio on their perception of threat and subsequent likelihood of migration. Literature from the United States shows that amongst news sources, newspapers are considered credible sources of information, and in a comparative study, they were considered more credible than radio news (Kiousis 2001, Johnson and Kaye 2004). Although there is no comparable research on media credibility in Nepal, a recent in-depth interview in the Chitwan Valley with a man who listened to the radio and read various newspapers throughout the conflict period indicates a similar distrust in radio news, "The radio brought out one-sided news. I used to listen to the BBC and I believed in that. BBC is better than Radio Nepal. I don't believe Nepal's radio."

Based on the above, it is likely that in this context, newspapers are used to gain information to a much larger extent than radios, and they are considered to be a more credible source of information. Therefore, I hypothesize that for literate men who have access to both radio and newspapers, newspapers will increase individuals' perceptions of violence more than the radio, and will thereby have a larger positive impact on migration.

## **DATA AND MEASURES**

I use two kinds of data in this study- survey data about individuals, and data about violent events involved with the conflict. For measures of violent events, I use the South Asia Terrorism Portal (SATP), an Indian-based NGO that compiles records of all violent

events in Nepal and other south Asian countries. For measures of individual and household characteristics, I use the Chitwan Valley Family Study (CVFS), a large-scale multidisciplinary study of the western part of the Chitwan Valley of Nepal, designed to investigate the impact of macro-level socioeconomic changes on micro-level individual behavior (Axinn, Barber, and Ghimire 1997; Axinn, Pearce, and Ghimire 1999; Barber et al. 1997).

The CVFS includes a variety of data sets, including an individual interview and life history calendar that were collected in the end of 1996, a prospective demographic event registry that has been collected monthly, beginning in 1996 and continuing through 2008, and household agriculture and consumption surveys in 1996 and 2001. Overall, the CVFS includes 171 separate neighborhoods that were selected with an equal probability, systematic sample. All individuals between the ages of 15 and 59 and their spouses within these neighborhoods were included in the survey. At 97% of the original sample, the response rates are exceptional.

Although 171 communities were sampled for the 1996 individual and life history calendar surveys, only 151 of these communities were included in the prospective demographic event registry. I use data from this registry; therefore my sample includes those men who were resident in these 151 neighborhoods of the Chitwan Valley survey area in 1996. Furthermore, I restrict my sample to those who were between the ages of 18 and 59 at the beginning of this study in June 1997<sup>23</sup>. This age range excludes those

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<sup>23</sup> This period of time that this study covers begins in June 1997. Although the prospective demographic event registry (which I use to measure migration) began in February 1996, the migration data during the first few months of data collection is likely biased. The initial interviews were collected in the latter half of 1996. Several months after this, the prospective demographic event registry was started. Thus those individuals who migrated during the several months between the time they were initially interviewed and

who are likely too young or too old to be living independently and have significant power to make migration decisions for themselves. It also excludes the vast majority of young people who might still be enrolled in school, which past research in this area has shown to be a strong and significant predictor of migration (Williams 2006).

### ***Measures of Violent Events***

I use two measures of violent events—major gun battles and bomb blasts. The South Asia Terrorism Portal provides records of the date and place of each major gun battle and bomb blast in Nepal. The data for major gun battles covers 51 months, from November 2001 through January 2006. The data for bomb blasts covers 49 months, from January 2002 through January 2006. With these data, I create variables for the number of major gun battles and the number of major bomb blasts per month in the local area. I define the local area that can influence Chitwan residents' perceptions of threat as Chitwan district and the six neighboring districts (Nawalparasi, Tanahu, Gorkha, Dhading, Makwanpur, and Parsa).

For the time period that these data do not cover, from the beginning of my study in June 1997 until November 2001 or January 2002 (for gun battles and bomb blasts respectively), I impute the number of major gun battles and bomb blasts to be zero. While it is likely that there were some gun battles and bomb blasts during this time, news reports and research indicate that the conflict was at a very low intensity (Hutt 2004) and CVFS research staff who are resident in the area indicate that there were very few of these violent events before 2002. Furthermore, in 2002 there was exactly one bomb blast

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the beginning of the registry were recorded as migrants during the first few months of the registry. For this reason, migration rates during these first few months are likely biased. I present results in this paper of models that begin in June 1997, however I tested these models using February 1997 as a start date. Results from these tests were substantively equivalent to what I present here.

and one gun battle in the local area. Thus this imputation strategy for the period before 2002 is likely the closest representation of reality. It is also a conservative approach that is more likely to underestimate than overestimate the effect of violent events on migration.

Major gun battles in this area were sporadic. There were gun battles in 12 of the 51 months of records. The largest number of major gun battles in one month in this area was four, in April 2005. Bomb blasts occurred more routinely. For example, from September 2003 there was at least one bomb blast in almost every month until August 2005. Of the 49 months of data about bomb blasts, there were 24 months in which there was at least one bomb blast. The largest number of bomb blasts in any one month was 12, in July 2004.

All of these event records from SATP were “compiled from official sources and the English language media in Nepal.” (South Asia Terrorism Portal 2006b). The accuracy, or more to the point- the inaccuracy, of these news reports should be examined, particularly in the case of Nepal, a country that has been repeatedly accused of severely restricting freedom of the press (Amnesty International 2005; International Federation of Journalists 2006; United Nations Office of the High Commissioner for Human Rights 2005). The government has been accused of falsifying official figures of casualties from the insurgency (Dixit 2002; Hutt 2004). In fact, it is argued that “for greater precision government casualties be doubled and Maoist losses be halved against official figures.” (Mehta 2002). However, while news reports of the number of deaths or injuries are likely less accurate, reports that a violent event happened and the time and date of the event are likely to be more accurate. It is easier to misrepresent the size or impact of an event such

as a gun battle than it is to misrepresent that it happened at all. For this reason, I use records of events (bomb blasts and major gun battles) and not the number of people that were involved in each event.

I also use a measure that delineates the period of nationwide violence that affected the lives of civilians from the period before the outbreak of this violence. There is no official starting date for the violence of the Maoist insurrection. However September 2000 approximately marks a “turning point” in the insurrection (Hutt 2004), when the Maoists escalated their violent campaign and began to expand nationwide and the government created the armed police force specifically to fight the Maoists. The number of fatalities from this time on changed the insurrection from a low-intensity, to a high-intensity conflict (Pettigrew 2004; Wallensteen and Sollenberg 2000). Thus, I create a dichotomous variable ‘during war’ that is be coded as ‘1’ for the period from September 2000 until the end of my study in January 2006. From 1997 through August 2000, when there was little generalized violence, this variable is coded ‘0’

### ***Migration***

My measure of migration during the study period comes from the CVFS prospective demographic event registry. This is a panel study where interviewers visited each household in the study sample on a monthly basis from 1996 through the present. Thus the CVFS registry has residence records for each individual in the sample on a monthly basis. I define a migration as a one month or longer absence from an individual’s original 1996 residence. This measure captures short- as well as long-term migration. This is especially important in the case of conflict, where research has shown that much of migration is temporary. Over the 104 month period of this study, 59% of the sample

population migrated at least once. Table 4.2 shows the descriptive statistics for this and all other variables used in this study.

[Table 4.2 about here]

### ***Media Consumption***

As with all analyses of the effects of media exposure on individual behavior, my models face a common set of problems that could threaten the validity of the results. The primary issue in this case is the possible endogeneity of media exposure, ie the characteristics that influence certain individuals to consume the media can also affect their responses to media and subsequent migration. Thus, migration could be a result of consumption of the mass media, or a result of some other characteristic that made certain individuals more likely to use the media in the first place. In the case of armed conflict, the primary problem lies in that those who are more concerned about the conflict will be more likely to seek out information about it in the news media. Thus, if we find a positive association between consumption of the news media and migration after violent events, this could be a spurious relationship, resulting from an actual causal relationship between concern about conflict and subsequent migration.

In this study I use a unique set of measures that circumvent this selection problem. My measures of media consumption come from the CVFS Individual Interview in 1996, before the conflict started. Thus these are measures of each individual's pre-existing media consumption habits and are not subject to conflation for those who are more concerned about the conflict.

In the interview, respondents were asked how often they listened to the radio, read newspapers, and watched television. I coded their responses into dichotomous variables

that are coded ‘1’ if they use the radio, newspapers, or television at least once a week, and ‘0’ if they use these media less than once a week.

As a control, I also use a dichotomous measure of the period during which the media was heavily restricted by the Government of Nepal and generally perceived to be providing biased information. This variable is coded ‘1’ during the months between February 2005 and January 2006.

### ***Individual Characteristics***

In order to accurately estimate the effects of violence and household assets on migration, I include in my models a variety of individual characteristics that could confound the relationship I am studying. In studies of the effect of the media on behavior, it is particularly important to address the selection of those who are likely to have access and to consume media in the first place, which could be contingent on literacy, age, education, employment, and economic and social status. In addition, there are a number of characteristics that research has shown to heavily impact the likelihood of migration in this setting and in other countries. Therefore, I include measures of age, ethnicity, marital status, children, urban proximity, past migration experience, education, literacy, ownership of land, ownership of livestock, and months of the year. Most of these measures come from the CVFS Individual Interview in 1996; only the time-varying measure of marital status comes from the prospective panel study.

I use a dichotomous measure for literacy. Respondents were asked the highest grade of school that they had completed. All respondents that completed at least three years were assumed to have achieved basic literacy. Those who reported that they completed less than three years of school were asked if they could read a letter in Nepali.

Those who answered ‘No’, are defined as illiterate for this study. Those who answered ‘Yes’ to this question or had completed three or more years of school are defined as literate.

I use a spline function to measure age that allows my models to be sensitive to rates of migration that change non-linearly with age. I use six age categories as follows: 15-20, 21-25, 26-30, 31-40, 41-50, and 51 years and older. I use dichotomous variables to measure if an individual has ever migrated by 1996, had any children in 1996, was employed outside the home in a wage or salaried job in 1996 and could read. I use a series of dichotomous variables to control for the five functional ethnic groups in this area: Upper-Caste Hindu, Lower-Caste Hindu, Newar, Hill Tibeto-Burmese, and Terai Tibeto-Burmese. Similarly, I measure marital status with four time-varying dichotomous variables including never married, married and living with spouse, married and not living with spouse, and post married (divorced, separated, or widowed). I use an interval level variable for educational attainment that records the number of years of education an individual has completed by 1996. I also use an interval level variable for urban proximity that records the distance of an individual’s community from the urban area of Narayanghat.

My measures of household land and livestock ownership come from the CVFS Agriculture and Consumption surveys. These are household based surveys that were undertaken in 1997 and again in 2001. Respondents were asked how many parcels of land and how many cows, water buffaloes, sheep, goats, and pigs their household owned. My measure of land ownership is an interval level variable coded in kattha (a standard Nepali unit of measurement that is equal to 0.0338 hectares). My measure of livestock

ownership is an internal level variable coded in livestock units, where 1 livestock unit = 1 water buffalo = 0.83 cows = 3.33 pigs = 4 goats = 5 sheep (Agrawal and Gupta 2005).

For the years 1997-2000, I used the measures of land and livestock ownership from the 1996 survey; for the years 2001-2006, I used the measures from the 2001 survey.

Finally, in order to control for regular seasonal migration patterns in the Chitwan Valley, particularly in relation to the harvesting and planting cycles, I use a series of twelve dichotomous variables for each month of the year.

## **ANALYTIC STRATEGY**

I use a series of discrete-time event history models to predict men's out-migration from the Chitwan Valley in any given month. I use person-months as the unit of exposure to risk. The models test the monthly hazard of moving out of the Chitwan Valley neighborhood after June 1997, contingent upon violent events and media consumption. I lag both violent event variables by one month in order to assure that the result I am measuring (migration) occurred chronologically after the event. For example, the models test the effect of a bomb blast in April on out-migration in May.

I use the logistic regression equation given below:

$$\ln\left(\frac{p}{1-p}\right) = a + \sum(B_k)(X_k)$$

where  $p$  is the probability of migrating out of the Chitwan neighborhood,  $\frac{p}{(1-p)}$  is the odds of migrating out,  $a$  is a constant term,  $B_k$  is the effect of independent variables in the model, and  $X_k$  is the value of these independent variables.

As described above, my models are subject to a common set of endogeneity problems that affect all studies of mass media consumption. To address this issue, I take

several analytic precautions to assure that the associations I am observing are not the spurious product of an important unobserved factor. First, I use measures of media consumption that pre-date the conflict. Second, I statistically control for a rich set of other individual and household characteristics, such as age, education, employment, and two indicators of household wealth that could influence the likelihood that any given individual will consume the media. Third, I also include a measure of weekly use of television that provides another control for the selection effects of media consumption in general. Finally, I investigate the effects of two types of media exposure—radio and newspapers—on migration during conflict, each with its own criteria for access and self-selection, such as cost, literacy, and type of programming. This strengthens the argument for a causal effect of media exposure on migration, instead of a selection effect (Barber and Axinn 2004; Piotrowski forthcoming).

I analyze the effects of media consumption separately for literate and illiterate men, to account for the fact that these two groups of men have different options of media that they can access. Men who cannot read are obviously not exposed to the risk of reading the newspaper. Thus I analyze how radio use affects their responses to both bomb blasts and gun battles. On the other hand, literate men can access the newspaper, the radio, or both. Without knowing whether literate men use the newspaper or the radio as their primary source of information, or if they use both equally, I analyze the moderating effects of both these sources of information separately, and then together.

The first set of models, presented in Table 4.3, tests the direct effects of violence and media consumption on out-migration. Model 1 tests the effects of the war period and media consumption on the full sample of men. In Model 2, I add measures of gun battles

and bomb blasts. Model 3 tests this same set of measures on the migration of illiterate men, and Model 4 on literate men. Because these models control for violent events, they test the independent effects of weekly exposure to radio, newspapers, and television. In other words, these models approximate the effects of these measures on migration during times of relative peace.

Table 4.4 presents the results of models that test the moderating effect of radio consumption on migration after specific violent events on the sample of illiterate men. These models include all control variables. Model 5 tests the moderating effects of weekly exposure to the radio on the relationship between bomb blasts and migration. This model includes variables for major gun battles, bomb blasts, all types of media consumption, all control variables, and one interaction variable between bomb blasts and weekly radio use. The interaction term tests how individuals who listen to the radio on a weekly basis responded to bomb blasts differently from those who listen to the radio less often. Model 6 tests the moderating effects of weekly exposure to the radio on the relationship between gun battles and migration through including an interaction variable for gun battles and weekly radio use<sup>24</sup>.

The models in Table 4.5 for the sample of literate men test the independent and moderating effects of listening to the radio and reading the newspaper on migration after

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<sup>24</sup> I do not include in this paper models of the moderating effects of television or internet use. While news and information is presented on the television in Nepal, the main programming of interest is serials, movies, and music programs (Thapa and Mishra 2003). Thus a measure of those who watch television regularly is not a close proxy to those who watch news programs on television. However, I did test models for the interaction effect of television and violent events. The results were not significant, for both literate and illiterate men. Regarding the internet, there is currently no data from the Chitwan Valley Family Study on individual use of the internet. It is however unlikely that large numbers of people (especially in rural areas) used the internet in the period of study, given that the average distance to the nearest internet access was over one and a half hours walk.

bomb blasts. Model 7 includes an interaction variable between bomb blasts and weekly radio use that tests how individuals who read newspapers on a weekly basis responded to bomb blasts differently from those who read the newspaper less often. Model 8 tests the moderating effects of weekly newspaper use, and Model 9 includes interaction variables for both newspaper and radio use to test if one of these sources of information is driving the results more than the other. Models 10, 11, and 12 in Table 4.6 are for the sample of literate men and follow a similar progression, testing for the moderating effects of listening to the radio and reading the newspaper on migration after gun battles.

## **RESULTS AND DISCUSSION**

### *Violent Events and Migration*

Model 1 (shown in Table 4.3) tests the direct effects of the general period of conflict, and radio and newspaper consumption on out-migration on the full sample of men. As discussed earlier, in this context the general period of conflict can be characterized as a sustained low level of violence. As shown in Model 1, the odds ratio of 0.47 for the conflict period indicates that during the conflict there was a much lower likelihood (about half) of migration compared to before the conflict. Results for the effect of the general period of conflict on migration are similarly strong and negative in all subsequent models.

[Table 4.3 about here.]

Model 2, also for the full sample of men, tests the direct effects of the conflict period, bomb blasts, gun battles, and media consumption on out-migration. In this model, gun battles had a positive and significant effect on migration, with an odds ratio of 1.19, indicating that in a month following one major gun battle, there was a 19%

higher rate of migration than otherwise. Odds ratios are multiplicative, so that in a month following two major gun battles there was a 42% likelihood of migration, and following four major gun battles there was a 100% higher likelihood. This is presented in Figure 4.2 which shows the predicted probabilities of migration following different numbers of gun battles, bomb blasts, and during the conflict period from Model 2. In Model 3, which includes only illiterate men, the effect of gun battles is also positive, but much stronger, with an odds ratio of 1.92. The effect of gun battles for literate men (shown in Model 4) is positive, but not statistically significant.

[Figure 4.2 about here.]

Alternately, bomb blasts generally had a negative effect on migration. The odds ratio for bomb blasts in Model 2 (for all men) is 0.96, but not statistically significant. Bomb blasts produce a significant negative effect for illiterate men, with an odds ratio of 0.77 in Model 3. Again, these effects are multiplicative, so that with increasing numbers of bomb blasts, we would expect a progressively decreasing rate of migration. For literate men, the odds ratio for bomb blasts is also negative, but it is only statistically significant in Model 8 and 9, that include interaction terms for bomb blasts and radio and newspaper consumption.

These results confirm that specific violent events were related to out-migration. The negative effects of bomb blasts and the general period of conflict, both of which indicate relatively low levels of violence in this context, are opposite of what we would expect given the threat-based decision model. However, they support the argument that given the desire to avoid exposure to violent events, people faced with low levels of violence could consciously decide not to migrate, choosing instead the relative safety of

their own homes and communities. On the other hand, gun battles, which indicate a relatively high level of violence, had a positive effect on migration. This supports the proposition that individuals might perceive this type of violence to be a higher level of threat, such that migration becomes the safer choice.

The effect of both bomb blasts and gun battles is notably different for literate and illiterate men. These effects are much stronger and in all cases statistically significant for illiterate men. Only in some models were these effects statistically significant for literate men. Although it is possible that literacy conditions individuals' reactions to violent events, it is more likely that literacy serves as a proxy for a number of other factors, including education, occupation, wealth and income, age, or ethnicity and minority status that could heavily affect the likelihood of migration after violent events.

These results are clearly context specific. It is not necessarily the period of conflict, bomb blasts, and gun battles per se that affect lower and higher rates of migration. Instead, the important characteristic of these measures of violence is that gun battles represent a high level of violence and bomb blasts and the period of conflict represent relatively low levels of violence. In other contexts, different kinds of violence could represent different levels of threat. For example, in Iraq today, bombs are generally larger and more destructive devices that represent a much higher level of threat than they did in Nepal. Other types of violence or intimidation that are prevalent could represent lower levels of threat. In this case, we might actually expect bomb blasts to result in higher rates of migration and intimidation to result in lower levels of violence.

### ***Media Consumption, Violent Events, and Migration***

Results show that consumption of the news media moderated the relationship between violent events and migration as hypothesized. As shown in Model 5 (Table 4.4) for illiterate men, the interaction between bomb blasts and weekly use of the radio was statistically significant, with an odds ratio of 1.30. This indicates that illiterate men who listened to the radio on a weekly basis had about a 30% higher likelihood of migrating in the month following a bomb blast, compared to those who did not listen to the radio on a weekly basis. Similarly, as shown in Model 6, the interaction between gun battles and weekly use of the radio for illiterate men is positive, with an odds ratio of 1.73.

[Table 4.4 about here.]

These results are graphically presented in Figure 4.3 which shows that in all cases, after any number of gun battles or bomb blasts, illiterate men who listened to the radio were much more likely to migrate than those who did not listen to the radio.

[Figure 4.3 about here.]

In the case of literate men, the moderating effect of listening to the radio is also positive, but not statistically significant. As shown in Model 7 (Table 4.5), the odds ratio of the interaction term for bomb blasts and radio listening is 1.07. However, the effect of reading the newspaper is positive and statistically significant. The odds ratio for the interaction term is 1.14 (in Model 8), indicating that literate men who read the newspaper on a weekly basis had about a 14% higher likelihood of migrating after a bomb blast than those who did not read the newspaper so often. Model 9 includes interactions of both radio and newspapers with bomb blasts in an effort to test if both of these sources of information are important predictors of migration for literate men during conflict, or if

one of these sources is driving the migration of this group of men more than the other.

The results of this model are similar to Models 7 and 8: the interaction of both radio and newspaper use with bomb blasts produce positive effects on migration. Again, the effect newspaper use is statistically significant while the effect of radio use is not.

[Table 4.5 about here.]

A similar pattern of results occurs for Models 10 through 12 which test the moderating effects of radio and newspaper use on migration of literate men after gun battles. These results are shown in Table 4.6. In Model 10, the interaction between weekly radio use and gun battles is positive but not statistically significant. In Model 11, the interaction between weekly newspaper use and gun battles is positive and significant. In Model 12, the newspaper interaction is much the same and the radio interaction is still positive and not significant. These results are presented graphically in Figure 4.3, which shows the predicted probabilities of migration of literate men after gun battles and bomb blasts. As with illiterate men, literate men who listened to the radio or read the newspaper had a higher likelihood of migration after both types of violent events than those who did not consume these media sources regularly.

[Table 4.6 about here.]

These results provide evidence that for both literate and illiterate men, regular consumption of the media had significant and positive effects on the likelihood of migration after any kind of violent event (in this case, bomb blasts and gun battles). This evidence supports the theory that consuming these news media alters individuals' perceptions of violent events, such that they perceive a higher level of threat from any type of violent event and react accordingly. In the case of illiterate men, whose choice of

media is limited, listening to the radio produced this effect. However, in the case of literate men, whose choice of media includes the radio and newspapers, only newspapers produced this moderating effect. As described in the empirical predictions, there are two possible reasons for this. First, these men might choose the newspaper as their primary source of news while listening to other types of programming on the radio. Second, even if these men get news from both the radio and newspaper, they might trust the information in the print media more than that provided through the radio which was generally considered more biased and less credible in this setting.

[Figure 4.4 about here.]

## CONCLUSION

Prior research on forced migration has shown that periods of armed conflict increase migration on an aggregate level. However, this subject is more complex than previous models reveal. Armed conflict is rarely a single or homogenous event and migration streams are composed of individuals who experience and perceive these conflict events in diverse ways. The main contribution of this paper is the construction and empirical evaluation of an initial theoretical model of *individual* migration during armed conflict, taking into account differences in how individuals are exposed to, perceive, and subsequently respond to *specific conflict events* that constitute a period of armed conflict and how the mass media affects these relationships.

Using detailed data from the Chitwan Valley of Nepal during the recent Maoist insurrection, this study provides evidence that the relationship between violence and out-migration is not necessarily linear. When faced with high levels of violence (namely major gun battles in this context), individuals were more likely to migrate when

compared to periods with no violence. This is consistent with prior research and general assumptions about forced migration (Apodaca 1998; Clark 1989; Davenport et al. 2003; Edmonston 1992; Gibney, Apodaca, and McCann 1996; Melander and Oberg 2006; Moore and Shellman 2004; Schmeidl 1997; Stanley 1987; Weiner 1996; Zolberg, Suhrke, and Aguayo 1989). However, in this study I find that when faced with low levels of violence (such as the general period of conflict and individual bomb blasts in this context) individuals were less likely to migrate compared to periods with no violence.

This evidence supports the theory that when faced with relatively low levels of violence, people will feel safer staying at home instead of travelling which will increase their exposure to danger. This conclusion is similar to studies in several other countries showing that violent crime or perceptions of violent crime in people's neighborhoods leads to precautionary behaviors such as limiting spent time outside the home and changing locations and methods of travel (Gomez et al., 2004; Gordon-Larsen, McMurray, and Popkin, 2000; Piro, Næss, and Claussen, 2006; Warr and Ellison, 2000). By examining different levels of violence and providing evidence of a non-linear effect of violence on migration, this study provides a possible theoretical link between studies showing that violent conflict increases migration and studies showing that violent crime decreases activity and travel outside the home. Furthermore, it underscores the possibility that non-migration can be a rational choice for safety seeking individuals during periods of violence.

Why do I find evidence of decreased rates of migration during the general period of armed conflict, a result that is drastically different, in fact exactly opposite, of the majority of previous research that shows increased rates of forced migration during

conflict periods? One aspect of my theoretical model and analysis allow for this result.

First, I use a micro-level approach, focusing on the migration behavior of individuals, as opposed to aggregate groups. Second, I take background levels of migration into account. Similar to many other rural agricultural areas in the world, the Chitwan Valley is characterized by high levels of migration in the pre-conflict period. By acknowledging this background migration, I am able to compare pre-conflict migration rates with during conflict migration rates, showing that the latter is different and much lower.

This study also provides evidence that the mass media is an important macro-level factor that conditions individual responses to violence. In particular, consumption of the news media, specifically the radio and newspapers, systematically resulted in higher rates of migration for men following any type of violent event. This evidence suggests that the news media can provide information about and also alter perceptions of the salience of any given violent event such that men who consumed the news media perceived both bomb blasts and gun battles to be more dangerous than those who did not consume the news media on a regular basis. Clearly if an individual does not know about an event, we can expect that they will not change their behavior as a result. Furthermore, even if they know about a violent event but do not perceive it to be dangerous, they are also unlikely to change their behavior. Notably, these results are generally consistent with research on fear of crime and subsequent behavioral changes in the United States (Chiricos et al. 1997). These similar patterns of behavior in two very different settings further underscore the importance of the mass media in altering individuals' perceptions and experiences of the context within which they live.

While the empirical analyses in this study are based in one specific context, the theoretical approach and evidence in this paper should have substantial relevance to understanding migration during conflict in other parts of the world. Demographic, economic, and health indicators for Nepal are similar to other countries in South Asia, Southeast Asia, and many countries in Sub-Saharan Africa where the majority of the world's recent and on-going conflicts are now based. Living conditions and community context for the rural agricultural population on Nepal (on which this study is based) are also similar to much of the world's population in non-industrialized countries. In addition, the Maoist insurrection in Nepal was an intrastate civil war fought largely with guerilla tactics, with close parallels to most armed conflicts of the last several decades.

In interpreting how these results might relate to other contexts, several issues should be taken into account. Evidence in this study shows that bomb blasts and gun battles have opposite effects on migration. However in other contexts, different types of violent events should be considered, as well as how the level of threat of each event might be perceived. The political situation can also be important and might dictate what type of information is allowed to be broadcast, how much, and how it is presented in the media. Finally cultural norms, especially with regard to gender, should be considered for how they affect who can and cannot make decisions for themselves.

Through using a sociological perspective, this study contributes to theory building for the study of migration during conflict in several ways. First, a micro-level perspective in this area of study is important, both in its reflection of the individual nature of migration decision-making within the macro-level context of armed conflict, but also in opening up the capability to understand individual variability in migration patterns

during conflict. Second, I demonstrate that theoretical tools from social psychology, especially from the study of fear of crime, are important additions to the study of the effects of armed conflict in general and migration responses in particular. The behavioral choices that individuals make when faced with armed conflict are complex and contingent upon a variety of individual characteristics that condition their perceptions of the threat to which they are exposed. Third, I introduce the news media as a powerful macro-level factor that can moderate the effect on conflict on individual behavior.

**Table 4.1 Multi-Variate Associations with Literacy, Men Only. Logistic Regression Estimates from Chitwan Valley, Nepal**

	Literacy
Age	0.93 *** (10.09)
Salaried work in 1996	1.16 (0.65)
Wage work in 1996	0.34 *** (6.41)
Distance to Narayanghat	0.97 ^ (1.54)
Have any children	0.95 (0.20)
ETHNICITY	
Low-caste Hindu <sup>a</sup>	0.22 *** (5.96)
Hill Tibeto-Burmese	0.43 *** (3.68)
Terai Tibeto-Burmese	0.17 *** (8.55)
Newar	1.28 (0.55)
-2 log likelihood	1080
No. of Observations (people) =	1426
Percent of male population literate =	79

<sup>a</sup> Reference category is Upper Caste Hindu.

Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.

<sup>a</sup>p<.10    \*p<.05    \*\*p<.01    \*\*\*p<.001 (one-tailed tests).

**Table 4.2 Descriptive Statistics**

<b>VARIABLE</b>		Mean/ Median	Std dev		
				<b>Illiterate Men</b>	<b>Literate Men</b>
<b>Violent Events</b>				Mean	Std dev
Gun battles	(0,1)	0.19 / 0	0.62		
Bomb blasts	(0,1)	0.97 / 0	2.17		
<b>Employment &amp; Household Economic Status</b>					
Listened to radio weekly	(0,1)	0.23	0.42	0.58	0.49
Read newspapers weekly	(0,1)			0.57	0.49
Watched TV weekly	(0,1)	0.56	0.50	0.42	0.49
<b>Individual Characteristics</b>					
Migration (during study period)	(0,1)	0.47	0.50	0.69	0.46
Ever migrated by 1996	(0,1)	0.22	0.41	0.44	0.50
Employed in 1996	(0,1)	0.65	0.48	0.47	0.50
Amount of farmland owned in 1996	(0-35)	3.94	6.10	5.42	7.47
Amount of livestock owned in 1996	(0-15)	2.55	2.41	3.08	2.59
Educational Attainment in 1996	(0-16)	0.07	0.35	7.02	4.07
Have any children in 1996	(0,1)	0.91	0.29	0.73	0.45
Distance to Narayanghat	(0-18)	9.49	4.03	8.28	4.08
<b>Marital Status</b>					
Never married	(0,1)	0.02	0.14	0.14	0.34
Married, living with spouse	(0,1)	0.89	0.35	0.80	0.40
Married, not living with spouse	(0,1)	0.04	0.20	0.05	0.21
Divorced, Separated, Widowed	(0,1)	0.08	0.27	0.02	0.12
<b>Age (in 1997)</b>					
18-20 years old		0.01	0.08	0.11	0.31
21-25 years old		0.06	0.23	0.16	0.37
26-30 years old		0.08	0.28	0.17	0.37
31-40 years old		0.21	0.41	0.27	0.44
41-50 years old		0.32	0.47	0.18	0.38
51 + years old		0.32	0.47	0.11	0.32
<b>Ethnicity</b>					
Upper Caste Hindu	(0,1)	0.22	0.41	0.52	0.50
Lower Caste Hindu	(0,1)	0.18	0.38	0.08	0.27
Hill Tibeto-Burmese	(0,1)	0.16	0.37	0.16	0.36
Terai Tibeto-Burmese	(0,1)	0.41	0.49	0.17	0.38
Newar	(0,1)	0.02	0.15	0.06	0.24

**Table 4.3 Violent Events and Migration. Logistic Regression Estimates of Discrete-Time Hazard Models of Out-Migration from Chitwan Valley**

	Model 1 All men	Model 2 All men	Model 3 Illiterate men	Model 4 Literate men
<b>VIOLENT EVENTS</b>				
Gun Battles		1.19 *	1.92 ***	1.09
(# per month)		(2.22)	(3.18)	(0.96)
Bomb Blasts		0.96	0.77 *	0.99
(# per month)		(1.25)	(2.10)	(0.40)
During War	0.47 ***	0.48 ***	0.57 **	0.46 ***
	(8.33)	(7.74)	(2.47)	(7.27)
<b>MEDIA USE</b>				
Radio Weekly	0.89	0.89	1.08	0.85 *
	(1.62)	(1.61)	(0.35)	(2.14)
Newspaper Weekly	1.28 **	1.28 **		1.28 **
	(2.99)	(2.98)		(2.93)
TV Weekly	0.97	0.97	1.26	0.92
	(0.48)	(0.49)	(1.25)	(1.06)
Media ban	1.05	0.97	0.89	0.96
	(0.27)	(0.18)	(0.27)	(0.17)
<b>CONTROL VARIABLES</b>				
Ever migrated	1.62 ***	1.61 ***	1.18	1.69 ***
	(6.66)	(6.63)	(0.80)	(6.60)
Employed	1.08	1.08	1.11	1.06
	(1.11)	(1.10)	(0.49)	(0.75)
Amount of farmland owned	0.99 ^	0.99 ^	1.01	0.99 *
	(1.59)	(1.63)	(0.33)	(1.97)
Amount of livestock owned	0.95 ***	0.95 ***	0.90 *	0.96 **
	(3.36)	(3.36)	(2.10)	(2.75)
Educational attainment	1.02 *	1.02 *	0.90	1.02 ^
	(1.80)	(1.79)	(0.44)	(1.38)
Have any children	1.02	1.02	1.06	1.06
	(0.19)	(0.17)	(0.15)	(0.42)
Never married	1.25 *	1.26 *	1.12	1.30 *
	(1.68)	(1.76)	(0.19)	(1.93)
Married, living w/ spouse	Reference	Reference	Reference	Reference
Married, not living w/ spouse	1.80 ***	1.79 ***	2.71 **	1.68 ***
	(3.92)	(3.88)	(2.69)	(3.16)
Divorced/Separated/Widowed	1.49 *	1.46 ^	2.04 *	1.14
	(1.73)	(1.64)	(2.06)	(0.38)
Upper Caste Hindu	Reference	Reference	Reference	Reference
Lower Caste Hindu	0.97	0.97	1.08	0.96
	(0.22)	(0.22)	(0.26)	(0.28)
Hill Tibeto-Burmese	1.20 *	1.20 *	1.39	1.15 ^
	(1.83)	(1.83)	(1.16)	(1.30)
Terai Tibeto-Burmese	0.73 ***	0.73 ***	0.79	0.72 **
	(3.17)	(3.17)	(0.91)	(2.97)
Newar	0.54 ***	0.54 ***	0.27	0.56 ***
	(3.39)	(3.38)	(1.26)	(3.17)
18-20 years old <sup>a b</sup>	0.80	0.81		0.80
	(1.08)	(1.03)		(1.09)
21-25 years old	0.91 **	0.91 **	0.90	0.91 **

	(2.42)	(2.38)	(0.61)	(2.33)
26-30 years old	0.94 *	0.94 *	0.91	0.94 *
	(2.00)	(1.99)	(0.84)	(1.91)
31-40 years old	0.93 ***	0.93 ***	0.93 *	0.93 ***
	(4.51)	(4.49)	(1.70)	(4.11)
41-50 years old	0.97 *	0.97 *	0.98	0.97 ^
	(1.81)	(1.80)	(0.59)	(1.59)
51+ years old	1.00	1.00	0.98	1.02
	(0.17)	(0.19)	(0.78)	(0.71)
Distance to Narayanghat	1.03 ***	1.03 ***	0.98	1.05 ***
	(3.63)	(3.61)	(0.74)	(4.49)
<b>Months of the year not shown</b>				
-2 log likelihood	9086	9081	1564	7478
No. of Obs. (person-months)	72,606	72,605	20,050	52,555

<sup>a</sup> There were no illiterate individuals in the 18-21 year old category by the end of the study (last observation for each individual), thus this category was not used in Model 3.

<sup>b</sup> Age is measured with spline variables. Therefore there is no omitted category.

Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.

\*p<.05    \*\*p<.01    \*\*\*p<.001

Two-tailed tests for media use variables, one-tailed tests for all other variables.

**Table 4.4 Violent Events, Media Use, and Migration for Illiterate Men. Logistic Regression Estimates of Discrete-Time Hazard Models of Out-Migration from Chitwan Valley**

	<b>Model 5</b> <b>Bomb and Radio Interaction</b>	<b>Model 6</b> <b>Gun Battle and Radio Interaction</b>
Interaction- Gun battles * Radio Weekly		1.73 * (2.23)
Interaction- Bomb Blasts* Radio Weekly	1.30 * (1.71)	
<b>VIOLENT EVENTS</b>		
Gun Battles (# per month)	1.95 *** (3.29)	1.57 * (1.86)
Bomb Blasts (# per month)	0.70 ** (2.46)	0.77 * (2.10)
During War	0.57 ** (2.46)	0.57 ** (2.44)
<b>MEDIA USE</b>		
Radio Weekly	0.98 (0.11)	0.94 (0.26)
TV Weekly	1.26 (1.27)	1.26 (1.27)
Media ban	0.89 (0.27)	0.86 (0.34)
Control variables not shown		
-2 log likelihood	1562	1560
No. of Observations (person-months) = 20,050		
No. of Individuals = 297		
<sup>a</sup> There were no one individuals in the 18-21 year old category by the end of the study (last observation for each individual), thus this category was not used in this analysis.		
<sup>b</sup> Age is measured with spline variables. Therefore there is no omitted category.		
Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.		
*p<.05    **p<.01    ***p<.001		
Two-tailed tests for media use variables, one-tailed tests for all other variables.		

**Table 4.5 Bomb Blasts, Media Use, and Migration for Literate Men. Logistic Regression Estimates of Discrete-Time Hazard Models of Out-Migration from Chitwan Valley**

	<b>Model 7 Bomb Radio Interaction</b>	<b>Model 8 Bomb Newspaper Interaction</b>	<b>Model 9 Radio &amp; Newspaper Interactions</b>
Interaction- Bomb Blasts*Reads News weekly		1.14 * (2.00)	1.13 * (1.83)
Interaction- Bomb Blasts*Listens to Radio weekly	1.07 (1.23)		1.05 (0.89)
VIOLENT EVENTS			
Gun Battles (# per month)	1.09 (0.98)	1.10 (1.04)	1.10 (1.05)
Bomb Blasts (# per month)	0.94 (1.13)	0.90 * (1.72)	0.88 ** (1.91)
During War (0,1)	0.46 *** (7.26)	0.46 *** (7.25)	0.46 *** (7.25)
MEDIA USE			
Radio Weekly	0.83 ** (2.38)	0.85 * (2.14)	0.83 * (2.30)
Newspaper weekly	1.28 ** (2.93)	1.22 ** (2.38)	1.23 ** (2.41)
TV Weekly	0.92 (1.05)	0.92 (1.09)	0.92 (1.08)
Media ban	0.96 (0.17)	0.97 (0.15)	0.97 (0.15)
Control variables not shown.			
-2 log likelihood	7477	7474	7473
No. of Observations (person-months) = 52,555			
No. of Individuals = 1129			

<sup>a</sup> Age is measured with spline variables. Therefore there is no omitted category.

Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.

<sup>a</sup>p<.10    \*p<.05    \*\*p<.01    \*\*\*p<.001

Two-tailed tests for media use variables, one-tailed tests for all other variables.

**Table 4.6 Gun Battles, Media Use, and Migration for Literate Men. Logistic Regression Estimates of Discrete-Time Hazard Models of Out-Migration from Chitwan Valley**

	<b>Model 10 Gun Battle Radio Interaction</b>	<b>Model 11 Gun Battle Newspaper Interaction</b>	<b>Model 12 Radio &amp; Newspaper Interactions</b>
Interaction- Gun Battles*Reads News weekly		1.45 * (1.93)	1.42 * (1.79)
Interaction- Gun Battles*Listens to Radio weekly	1.19 (1.03)		1.12 (0.68)
VIOLENT EVENTS			
Gun Battles (# per month)	0.98 (0.14)	0.84 (0.99)	0.79 (1.17)
Bomb Blasts (# per month)	0.99 (0.39)	0.99 (0.38)	0.99 (0.38)
During War (0,1)	0.46 *** (7.26)	0.46 *** (7.25)	0.46 *** (7.25)
MEDIA USE			
Radio Weekly	0.83 * (2.31)	0.85 * (2.14)	0.84 * (2.24)
Newspaper weekly	1.28 ** (2.93)	1.23 * (2.47)	1.23 * (2.49)
TV Weekly	0.92 (1.05)	0.92 (1.06)	0.92 (1.05)
Media ban	0.96 (0.17)	0.97 (0.15)	0.97 (0.15)
Control variables not shown.			
-2 log likelihood	7477	7474	7473
No. of Observations (person-months) = 52,555			
No. of Individuals = 1129			

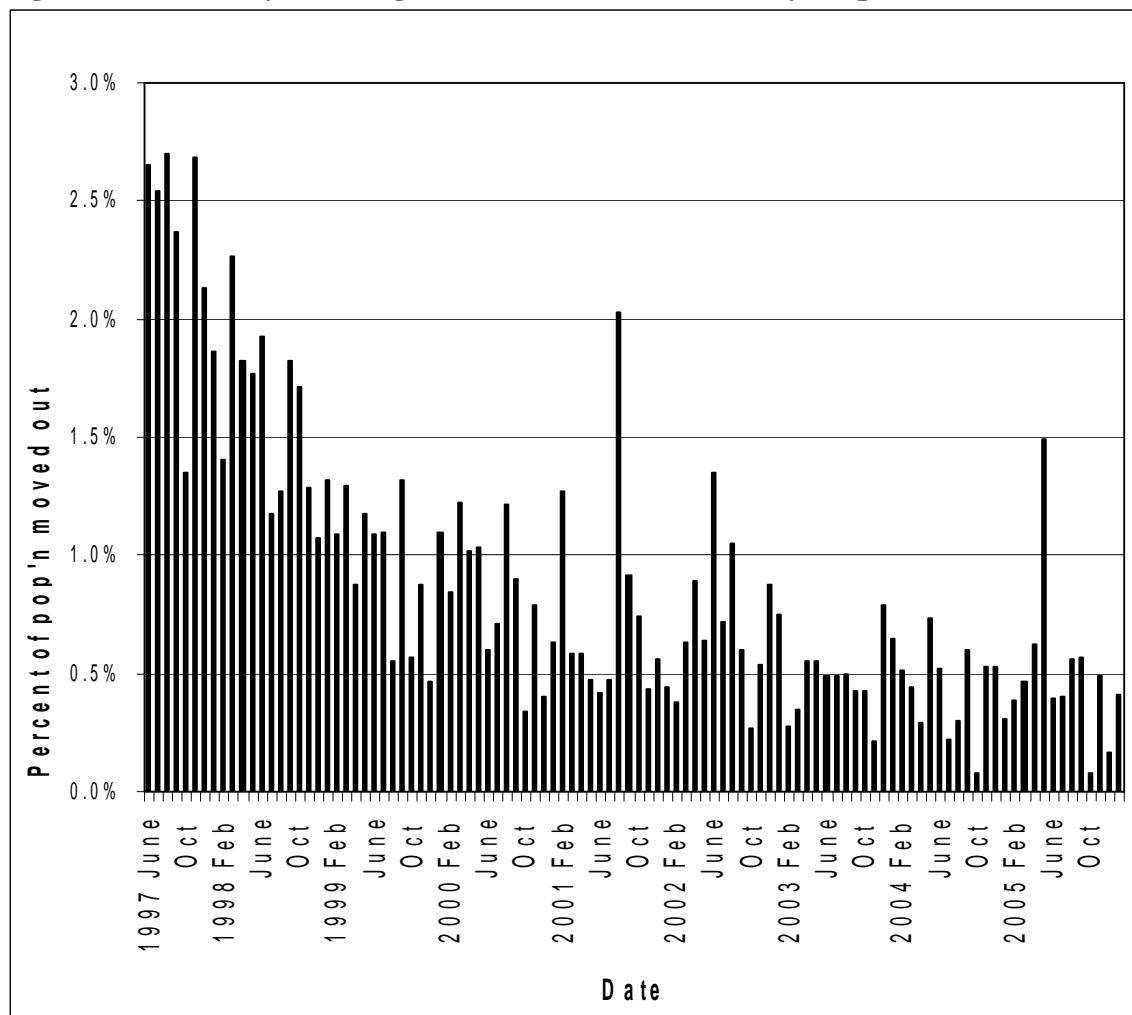
<sup>a</sup>Age is measured with spline variables. Therefore there is no omitted category.

Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.

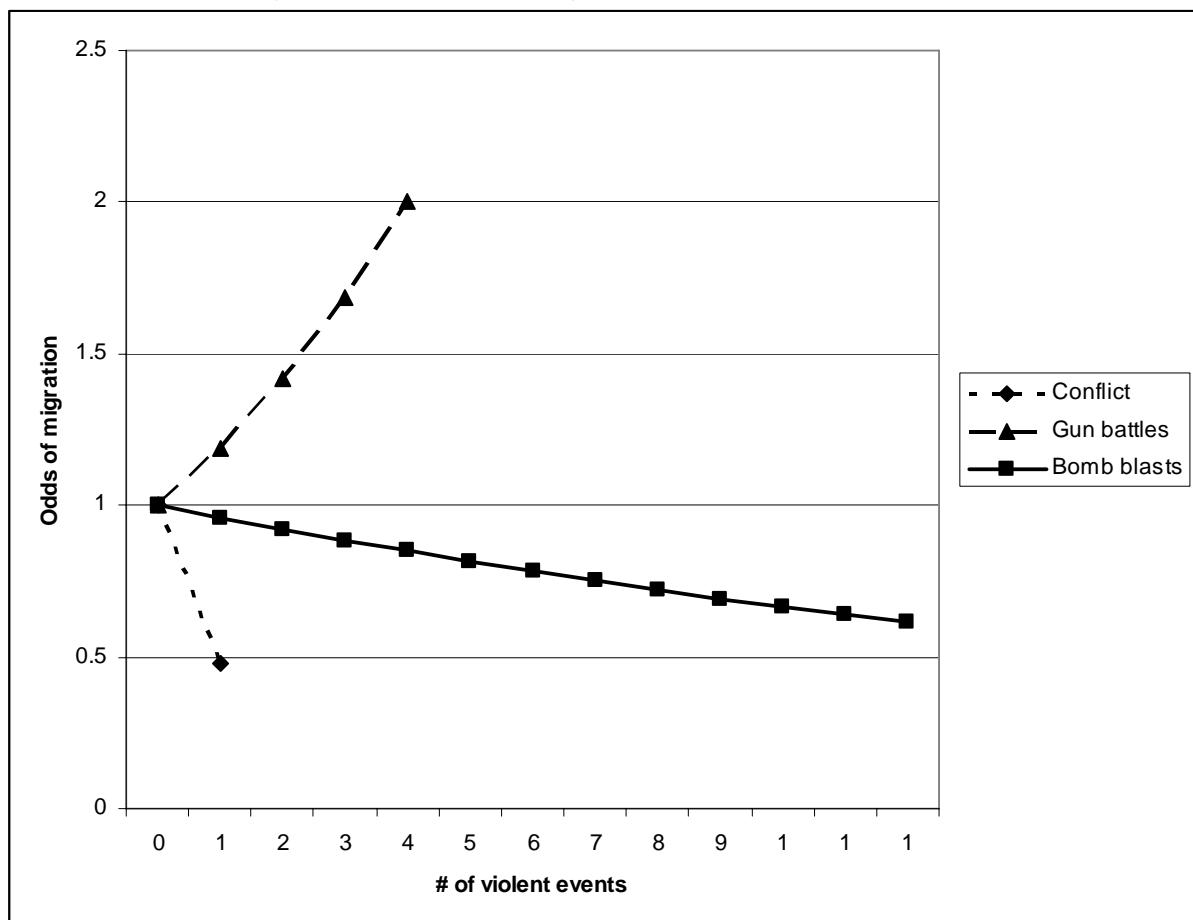
\*p<.05    \*\*p<.01    \*\*\*p<.001

Two-tailed tests for media use variables, one-tailed tests for all other variables.

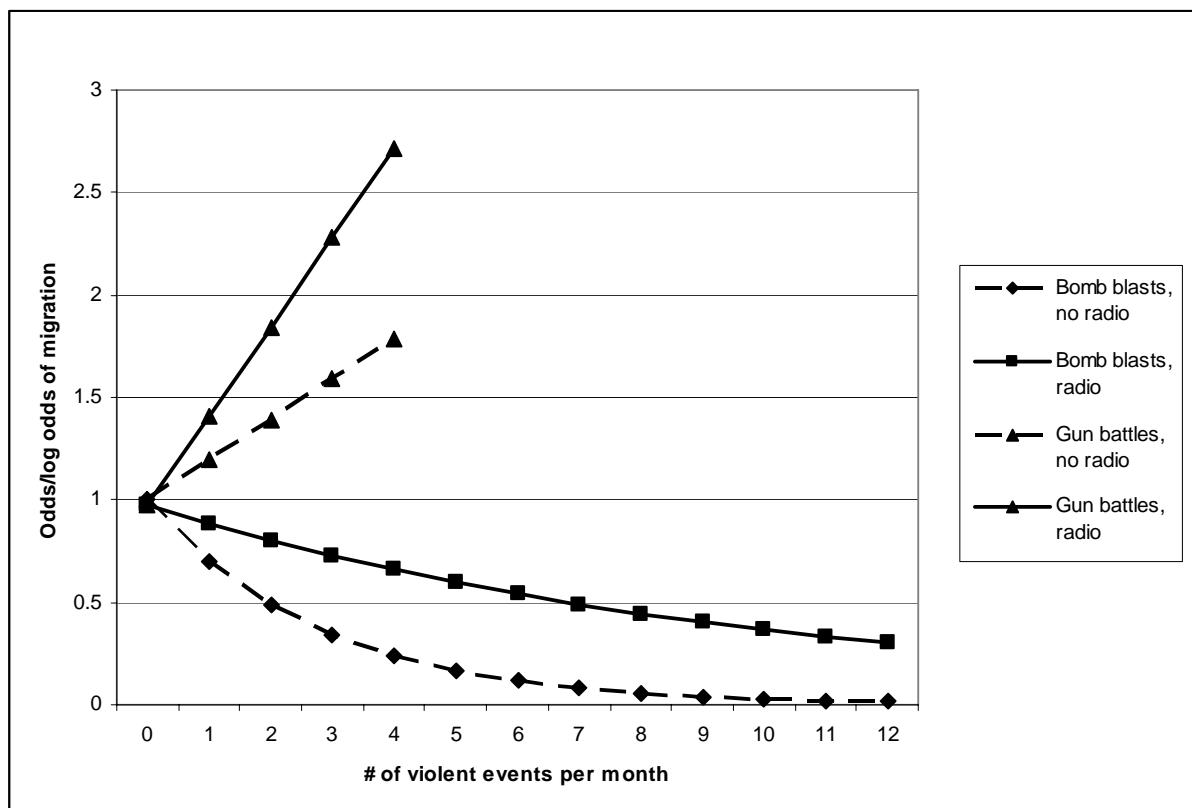
**Figure 4.1. Monthly Out-Migration Rates, Chitwan Valley, Nepal**



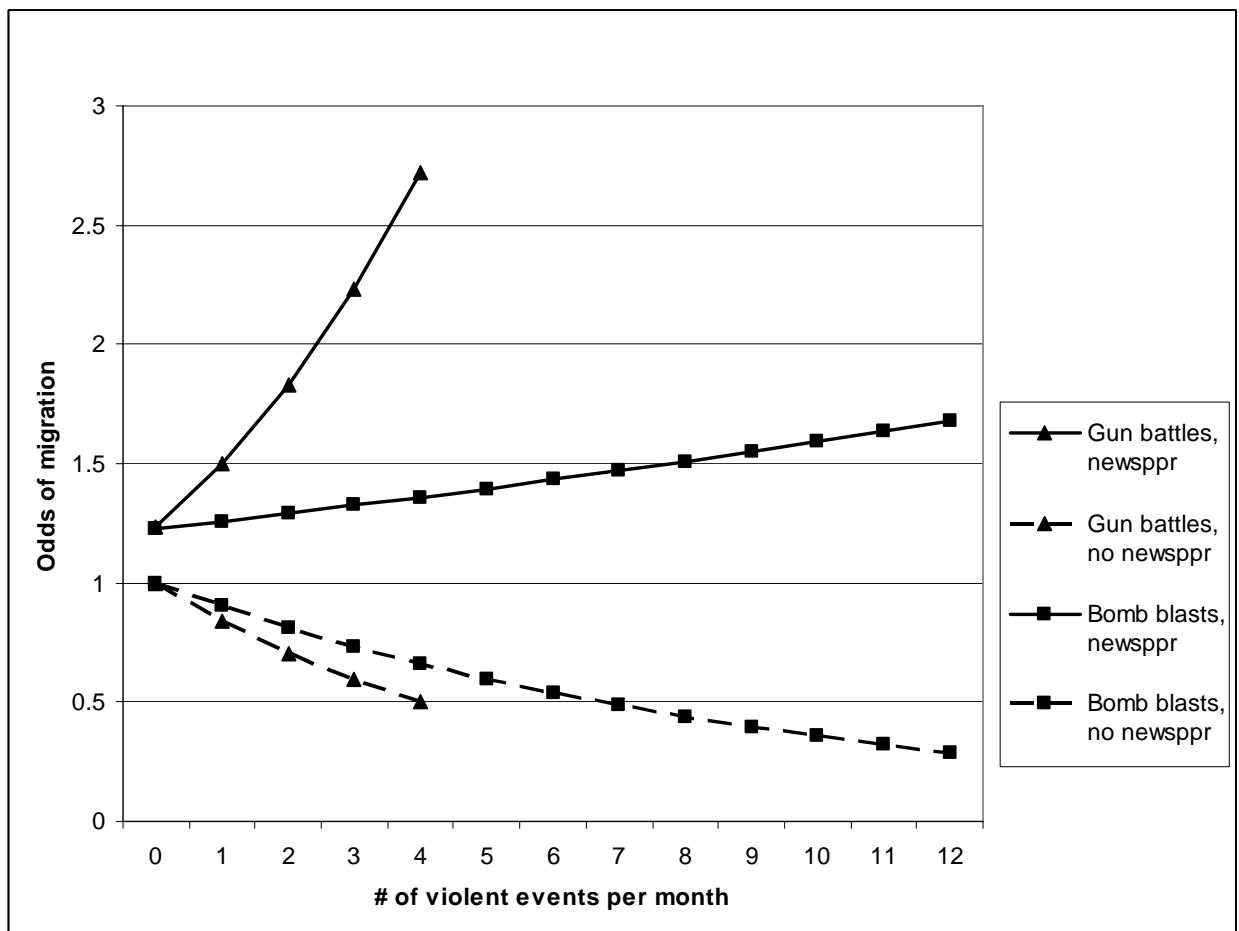
**Figure 4.2 Predicted Probability of Migration Following Violent Events and During the Conflict Period (Results from Model 2).**



**Figure 4.3 Predicted Probability of Migration Following Violent Events, for Illiterate Men.**



**Figure 4.4 Predicted Probability of Migration Following Violent Events, for Literate Men.**



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## **CHAPTER 5**

### **Conclusion**

This dissertation is an examination of individual migration decisions during armed conflict, and the individual and community characteristics that shape these decisions.

Migration during armed conflict is a common strategy around the world for those seeking safety and escape from violence. However, we also know that large proportions of populations that have been exposed to past conflicts have not migrated away from the violence. Previous literature does not address the possibility of non-migration as a behavioral choice, nor does it provide many insights into the micro-level decision making process with regard to migration. To address these gaps, in this dissertation the broad research questions I have sought to address are: why do some people migrate during armed conflict and some people do not migrate when faced with the same violence or threat? And, what are the factors that condition individuals' experience of conflict and lead to the decision to migrate or not migrate?

In addressing these questions, this dissertation presents evidence of a number of new findings in the area of migration during conflict. First, conflict is not one homogenous event, but a series of different specific events that have different and sometimes opposing consequences on individuals' lives and migration decisions. Second, a number of individual and community characteristics affect the relationship between violent events and migration. These include but are certainly not exclusive of, community social, religious, and financial organizations, employment, household assets,

and individual consumption of news on the radio and newspaper. I have discussed conclusions relating to each of these findings in the relevant chapter. In this final dissertation chapter, I discuss the broad conclusions of this work in terms of social change, their relevance for social science theory as well as policy and programming, and I suggest future directions for research on these subjects.

In this dissertation I address two of the important ways in which conflict affects social change. The first is through altering the context within which people live. I show that conflict affects context through imposing violence on everyday life. Adding an extra level of detail to previous research on conflict, I show that individual violent events that comprise a conflict, such as gun battles and bomb blasts, have important but different effects on individuals' lives. In addition to the physical threat, I elucidate some of the other consequences of conflict on the context of individuals' lives. These include: economic consequences such as property destruction, unemployment and difficulties in finding new jobs, decreased prices of goods, and problems selling goods and assets; psychological consequences such as fear and anxiety; and social consequences such as disruptions of personal relationships. All of these contextual changes are important of themselves and they affect new behaviors, such as migration.

The second type of social change that I demonstrate in this dissertation is the role of conflict in changing the meaning and value that people ascribe to specific aspects of their context. For example, access to religious institutions, employers, and other community organizations can play a different role in community life during conflict compared to before. In the second chapter I provide evidence that access to these organizations has a different effect on migration during conflict than during periods of

relative peace. Similarly in the third chapter, I show that conflict alters the economic value of salaried jobs, ownership of land, and ownership of livestock, and thus changes the relationship between these items and migration.

The main theoretical contribution of this dissertation is in the application of several theoretical tools from diverse areas of study to models of migration during armed conflict. Broadly, this dissertation uses a sociological perspective on the relationship between macro-level structures and micro-level behaviors. Instead of examining conflict as just one aspect of macro-level context, I draw from classic sociological theory and acknowledge that many macro-level structures comprise the context within which people live and provide opportunities as well as constraints on behavior (Giddens 1976, 1984). In the case of armed conflict, these other structural forces include the media, decreasing commodity prices, increasing unemployment rates, and changing accessibility of community support organizations, all of which can affect variability in how individuals experience, perceive, and subsequently behave during armed conflict.

Theories from social psychology and criminology have also proven to be important tools in this study. During armed conflict, the actual danger to which individual are exposed is likely less important than their perceptions of danger, in other words the danger to which they *think* they are exposed. Thus, as I show in the fourth chapter, understanding how individuals perceive the violence to which they are exposed, the threat that it entails to their safety, and the factors such as the news media that condition these perceptions are integral to understanding their behaviors. Social psychological theories from the study of fear of crime and how different people

cognitively process exposure to violence are thus integral to the study of any behavior during armed conflict.

In addition, I incorporate classic demographic tools in my analysis. A careful examination of exposure to risk allows me to include in this study all those who are resident in the study area at the beginning of the study as people who are exposed to the risk of migrating. This is different from classical forced migration studies that often limit their population of analysis to those individuals who are defined as ‘forced migrants’ or ‘refugees’, in other words those who meet a strict legal definition as having migrated primarily (and only) due to violence. Furthermore, I use a careful delineation of comparison. I compare migration patterns during conflict to those before the conflict and migration patterns in months when there were no specific violent incidents to months when there were gun battles or bomb blasts. As a consequence of these careful definitions of exposure to risk and comparison ‘groups’, I find very different results from previous studies of forced migration. Primarily, I find evidence that migration can actually decrease with exposure to certain violent events. This result contradicts much previous research that predicts higher rates of migration in all cases of violence, and it further highlights the importance of studying those who do not migrate in the context of armed conflict.

A demographic perspective is of further assistance in interpreting the value of the results of this study and the long-term consequences of armed conflict. Many social science inquiries into armed conflict focus on the leaders or instigators of conflicts. In this dissertation, I focus on the general population, most of whom had little to do with instigating the conflict. However, their behavioral and ideational changes within the

context of conflict constitute a broad social change, which can persist long after violence ends. In fact, these social changes might be very different from what the architects of the conflict originally intended to bring about. For example, the Maoist Insurrection in Nepal was originally intended to instigate political changes that would address resource allocation, poverty, and inequality in social and political power of traditionally underrepresented groups. Evidence in this dissertation shows that those who were already resource poor, those who had less access to liquid cash, and those who were illiterate and not able to access information resources, were less able and likely to migrate. In other words their decisions were constrained to a greater extent than their richer, better resourced, and more literate counterparts. As a result, we can predict that during and after the conflict, origin communities in rural areas will be increasingly comprised of poor, illiterate people. Likewise, there will likely be even fewer financial, social, and political resources remaining for these people. Thus, understanding the behavioral changes of the general population, the demographic and economic composition of communities, and new social relationships is key to understanding the character and stability of post-conflict societies.

In addition to the theoretical contributions, the results in this dissertation are relevant for policy and programming that aims to support migrants and origin communities during and after armed conflicts. We know that migration streams during conflict can be large, sudden, and comprised of individuals that are not well-prepared for life at their destinations. We also know that large groups of refugees and internally displaced persons can have considerable impacts on the social, economic, environmental, and political status of their hosts (Chambers 1986; Harrell-Bond 1986). Assisting these

people is important for their well-being and for mitigating their impacts on destination areas. However, there is very little information that can allow policy-makers and programmers to predict when, where, how many, and what kinds of people can be expected to arrive at migrant destinations (including refugee and internal displacement camps and urban areas). The results from this study show that migration responds to specific violent events, such as gun battles and bomb blasts in the case of Nepal. Furthermore, this study shows that selective groups of people are more likely to migrate following these events, including those who do not own land or have salaried jobs, and those who do own livestock. These results can help national governments and international agencies to better predict and prepare for the large and selective groups of migrants during armed conflict.

The results of this study can also contribute to programs that seek to mitigate the consequences of conflict and help individuals and families to make safe migration decisions. In particular, I show that some characteristics, such as lack of access to liquid cash, can decrease people's ability to migrate, whether they would like to or not. Other characteristics, such as ownership of land, can affect the utility of migrating and in some cases make migration so detrimental to one's future livelihood that they will choose not to do so. Attention to these specific characteristics and possible programs that could provide small cash loans or land titles could decrease the constraints on people's lives and allow them the opportunity to make migration decisions based on their safety desires.

As with any scientific study, this dissertation highlights several outstanding questions and subjects for future research. The analyses in this dissertation provide evidence of relationships between conflict, several specific individual and community-

level characteristics, and migration. The moderating factors that I address (community organizations, economic characteristics, and media consumption) are certainly not exclusive; numerous other factors are likely important in understanding how people perceive and respond to conflict, including age, sex, minority status, ethnicity, and religiosity, to name a few. Of the relationships that I study here, I suggest theoretical reasoning to explain the mechanisms that drive these relationships. However, given the available survey data, I am not able to test these mechanisms. Qualitative analysis of in-depth interviews and ethnographic research will be necessary to further elucidate the mechanisms that drive behaviors during conflict, including the psychology of fear of violence and how individuals process their experiences with conflict. Further attention also needs to be paid to the contextual changes that are likely induced by armed conflict, given the integral role that contextual changes play in altering individual behaviors and beliefs. In this dissertation, I mention several changes that have been identified by previous research. However, conflict likely impacts almost every aspect of daily life and this has not been comprehensively addressed in the literature.

For all of these questions, the answers will clearly depend heavily upon the context in which they are examined. We cannot expect the exact relationships to be similar in Nepal, Iraq, or Somalia for example. Thus it will be important for these topics to be studied in a variety of contexts, so that researchers can develop a better understanding of which general theoretical relationships are broadly relevant to human behaviors in any place, and how our theories need to be differently applied depending on the specific context.

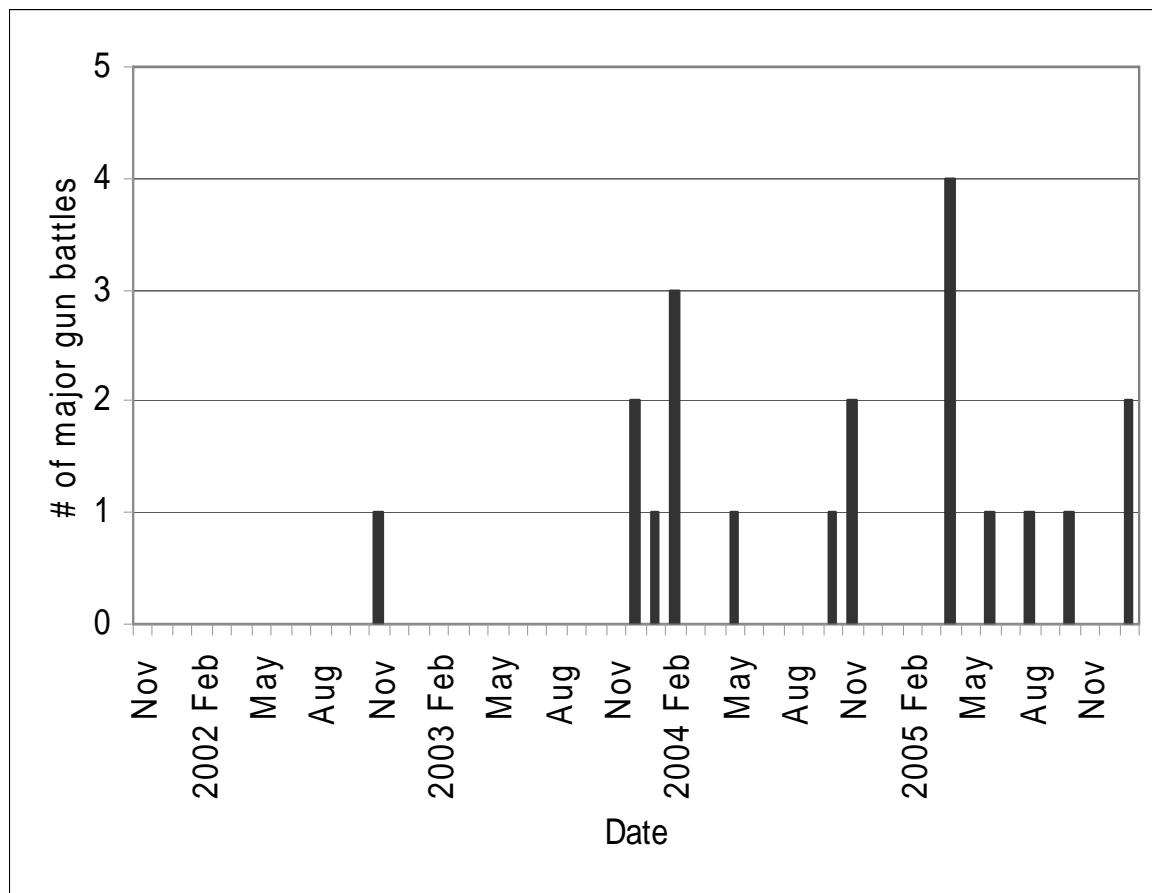
Finally, results from this study indicate that behavioral patterns of the general population are likely important drivers of long-term social change. I find that migration during conflict is selective of particular groups of individuals from particular communities. The exodus of selective groups of people from selective communities will undoubtedly contribute to the future demographic, economic, and social constitution of these communities. Careful research on these issues will be important for both the academic and policy communities to further understand the macro-level political stability and micro-level well-being of individuals in post-conflict societies.

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## APPENDIX A

**Figure A.1 Number of Major Gun Battles per month in Chitwan and Neighboring Districts**



**Figure A.2 Number of Bomb Blasts per month in Chitwan and Neighboring Districts**

