

The Long-Term Consequences of Civil War for Migration: The Case of Tajikistan

Michelle L. O'Brien*

ORCID [0000-0002-3216-6289](https://orcid.org/0000-0002-3216-6289)

obri.michelle@gmail.com

*Corresponding author

Abstract

Armed conflict is socially transformative. Although migration research has established the proximate relationship between armed conflict and increases in migration, much less attention has been paid to the long-term, or distal relationship. This research leverages the case of the 1992-1997 Tajikistani Civil War to examine the distal relationship between armed conflict and migration decisions nearly a decade after the war had ended. Using a series of logistic regression models and a selection-based endogeneity correction, I estimate the likelihood of migrating in 2006, given the intensity of conflict experience at the district level. I find that, controlling for individual, household, and district-level indicators, the legacy of conflict continues to influence migration – for men and for ‘stayers’ – nearly a decade after the peace accord was signed. Some evidence suggests that certain kinds of development projects can moderate this relationship. In conflict-affected countries, incorporating the legacy of conflict into empirical research can help scholars and policy-makers better understand migration in the aftermath of war.

Keywords

Migration, civil war, development, Eurasia

Abbreviations

GBAO	Gorno-Badakhshan Autonomous Oblast
UNDP	United Nations Development Programme
JRC	Jamoat Resource Center
AKF	Aga Khan Foundation
GED	Georeferenced Event Dataset
UCDP	Uppsala Conflict Data Program

Acknowledgments

The author wishes to acknowledge Steve Pfaff, Nathalie Williams, Stew Tolnay, Sara Curran, and Scott Radnitz for their guidance on multiple drafts of this manuscript. Partial support for this research came from a Eunice Kennedy Shriver National Institute of Child Health and Human Development research infrastructure grant, P2C HD042828, to the Center for Studies in Demography & Ecology at the University of Washington.

1. Introduction

Violent conflict creates uncertainty, endangers one's physical safety, and threatens destruction of infrastructure and institutions. Social science research has demonstrated that during violent conflict, refugee migration increases (Davenport, Moore, and Poe 2003; Lundquist and Massey 2005; Melander and Öberg 2006; Moore and Shellman 2004; Morrison and May 1994; Schmeidl 1997, 2001; Stanley 1987; Williams et al. 2012). Yet the literature has so far largely neglected migration dynamics in the *aftermath* of conflict. Weakened institutions and reconstruction projects may drive increases in migration after a conflict ends. These effects can persist after conflict events have ceased. Examining the influence of historical conflict on contemporary migration is critical to understanding mobility in conflict-affected countries, and to more effectively distribute aid and rebuild institutions. This study attempts to fill this gap in examining the long-term consequences of armed conflict on contemporary migration using the case of Tajikistan.

Tajikistan is an important case for understanding the long-term consequences of armed conflict on migration. It represents the most common type of armed conflict, an internal civil war in which opposing sides battled for control of the state (Pettersson and Wallensteen 2015). Migration is common in Tajikistan, making it an appropriate case to study this specific process. Even among Central Asian countries, migration from Tajikistan to Russia has been exceptionally strong. In 2002, remittances from migrants constituted only 6% of Tajikistan's GDP, whereas a mere four years later, remittances accounted for 36% of GDP. For perspective, the percentage of GDP constituted by remittances was approximately 17% in 2006 for Kyrgyzstan, approximately 5% for Uzbekistan, and less than 1% for Kazakhstan¹.

Most research on migration in Tajikistan considers it to be a labor and livelihood decision (Abdulloev, Gang, and Landon-Lane 2012; Mughal 2007; Olimova and Bosc 2003). There are many economic reasons why one might migrate from Tajikistan. In this study, I demonstrate that for some, *in addition to* those economic reasons, migration continues to be influenced by the legacy of conflict. I term

¹ No reliable data exists for Turkmenistan.

this the distal relationship between conflict and migration to distinguish it from more proximate causal relationships between violence and migration.

2. Theoretical Framework

Much of the research examining the effects of armed conflict on migration favors proximate causes. (Castles 2003; Czaika and Kis-Katos 2009; Davenport et al. 2003; Ibáñez and Vélez 2008; Jones 1989; Lindley 2010; Melander and Öberg 2006; Moore and Shellman 2004; Richmond 1988; Schmeidl 1997, 2001; Stanley 1987; Williams 2013; Williams et al. 2012). Proximate causes are those closest to the effect – the most immediate forces driving some decision or outcome – whereas distal causes are much more long-term underlying causal mechanisms. Both proximate and distal causes are important for understanding demographic change.

The tendency to favor proximate causes is often the case for research on migration from developing countries. However, research on other outcomes has provided a great deal of evidence that conflict can affect institutions and behaviors for years and even decades after the end of the war. From its effects on long-term economic investment and growth (Besley and Mueller 2012; Brakman, Garretsen, and Schramm 2004; Guidolin and La Ferrara 2007; Miguel and Roland 2011; Singh 2012), and human capital accumulation (Akresh and de Walque 2008; Leon 2012; Shemyakina 2011), to uncertainty and crime rates (Moodie 2011), marriage and fertility (Agadjanian and Prata 2002; Lindskog 2016; Urdal and Che 2013; Williams, O'Brien, and Yao 2016), and public health (Akresh, Lucchetti, and Thirumurthy 2012; Ghobarah, Huth, and Russett 2003; Pedersen 2002; Teerawichitchainan and Korinek 2012), it is clear that armed conflict can be transformative over the long run.

Armed conflict may well be transformative for migration over the long run, as well. Institutional and organizational change in response to collective violence can drive short- and long-term changes in individual behavior. For example, a bomb blast in a town may generate a short-term fear-based migration response. The same bomb blast can also affect long-term migration through the destruction of infrastructure, such as schools, hospitals, or markets, and their corresponding institutions.

The institutional changes in the aftermath of war are a key focus of this research. There are many plausible reasons we could anticipate population change in the aftermath of armed conflict. Uncertainty about security, retaliation from the state, uneven reconstruction efforts, and limited access to economic institutions all may play a role. The intertwined relationship between politics and economics makes it difficult to tease out long-term processes in the aftermath of war. Tracing the processes that emerge within an armed conflict and after requires the identification of a multitude of actors with their own goals and motivations, and an analysis of the spending of time and resources to rebuild (or not) certain areas, and both a conceptualization and an operationalization of complex variables that overlap and interact.

Thus, this research takes a broad perspective on the ways in which conflict can transform institutions and change the context in which migration decisions are made. While the immediate threats of the war may dissipate in subsequent years, changes to organizations, institutions, and the nature of social relationships have the potential to linger for years and decades after the conflict ends. Because of this lingering effect, I hypothesize that 1) residents living in districts which had more conflict events will demonstrate a higher propensity to migrate, *years after the war ended*.

The processes that unfold after war are complex. Reconstruction efforts after war can alter the relationship between conflict and migration, among other economic and demographic outcomes. The multifaceted challenges of reconstruction are often more costly than can be shouldered by relatively new states which often simultaneously have depleted resources and an urgent need to mitigate the risk of recurring violence (Collier, Hoeffler, and Soderbom 2008). The winners of the war are sometimes absent from the development process altogether, allowing instead for international intervention (Heathershaw and Lambach 2008).

One way we might interpret the role of the development projects in conflict zones is that they facilitate two different kinds of capital that have opposite effects on the propensity to migrate. On the one hand, development can bolster human capital gains, as individuals develop work experience and training that can provide a comparative advantage in foreign labor markets. This change in human capital increases the likelihood of migrating. On the other hand, reconstruction projects often involve the

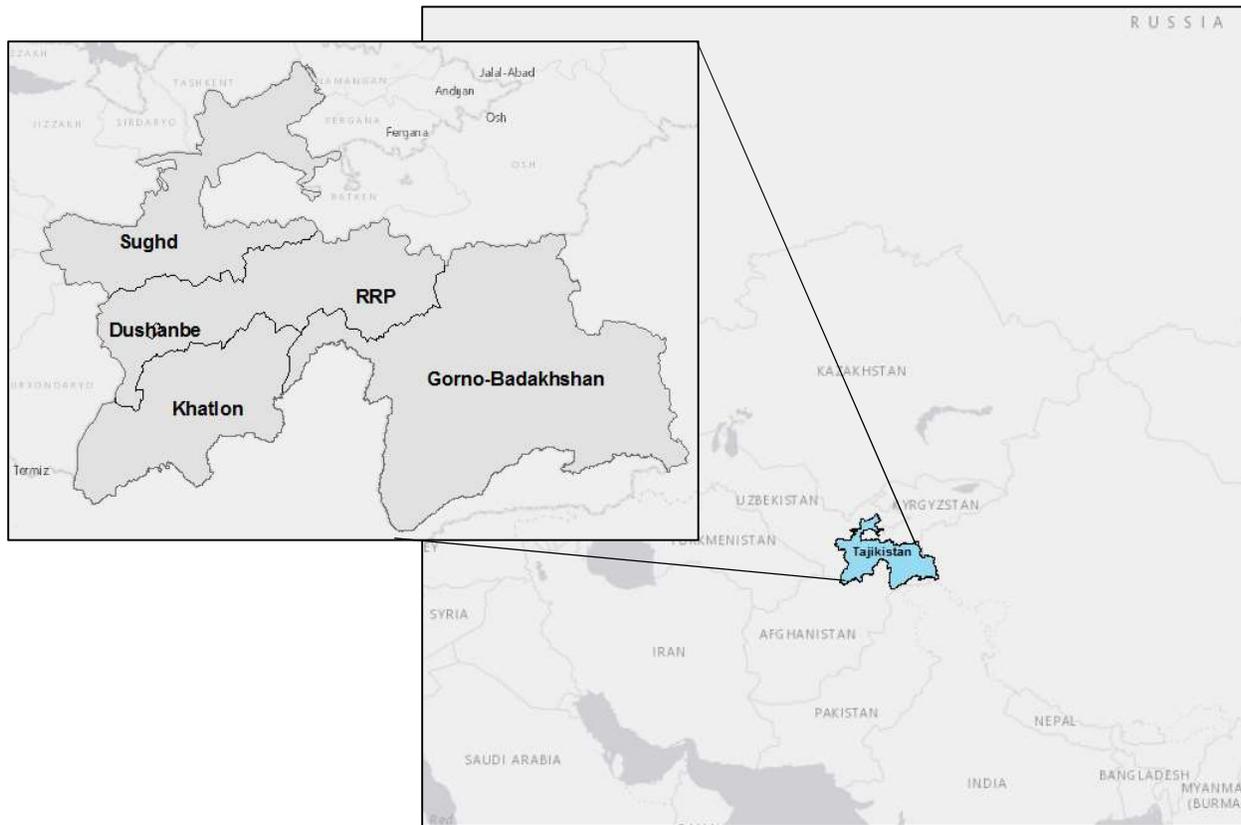
refurbishing or rebuilding of a school, hospital, or market, or perhaps the reconstruction of roads and other infrastructure. In places where conflict was the most intense, we expect to see a greater need for the reconstruction of damaged infrastructure. In responding to these needs, development projects invest new resources into communities. Large projects create a demand for construction and manual labor. This influx of demand may incentivize potential migrants to stay in their home districts, decreasing the likelihood of migration. However, development projects may, by the very act of bringing together community leaders, strengthen bridging social capital. These social relations may facilitate migration with information about work opportunities and migrant-friendly employers abroad (Garip 2008), increasing the likelihood of migration from these areas.

Because of the plausible mechanisms operating in either direction, I consider competing hypotheses for the relationship between development, conflict, and migration – 1) that development will moderate the relationship between conflict and migration by incentivizing potential migrants to stay in their home districts through major development projects; or 2) that development projects which foster changes in social relations can facilitate migration, exacerbating the predicted relationship between conflict and migration.

3. The Case of Tajikistan

Located at the south end of Central Asia, Tajikistan is a small, land-locked country that was once part of the Soviet Union. It shares borders with Afghanistan to the south, with China to the east, and with Kyrgyzstan and Uzbekistan in the north. This case is a good one for testing the theoretical propositions above for several reasons.

Figure 1. Regional map of Tajikistan



First, Tajikistan sustained a geographically varied, regionally-based civil war from 1992-1997. Second, labor migration in Tajikistan is widely prevalent and the country is the most remittance-dependent in the world. Finally, development in Tajikistan has also been geographically varied, and not necessarily aligned with the humanitarian need caused by the events of the war. This case, then, provides subnational variation along both the expected outcome (migration), conflict events, and development projects.

Migration is a common livelihood strategy in post-Communist Tajikistan, with an estimated 10% of the population working abroad (Heleniak 2008). In the immediate aftermath of the war, remittances constituted between 4 and 7% of GDP in Tajikistan. Since then, however, there has been a massive growth in the role of remittances, swelling to 36% of national GDP by 2006 (World Bank). Nearly all the migrants from Tajikistan go to Russia for work, and much of the research on migration in Tajikistan after

the civil war has focused on remittances and the left-behind household members (Bennett, Clifford, and Falkingham 2013; Clement 2011; Justino and Shemyakina 2012; Mughal 2007; Olimova and Bosc 2003).

3.1 Civil War

The Tajikistani Civil War began a few short months after independence from the USSR, as Soviet subsidies fell away, diminishing the already scarce resources that were insufficient for the growing population (Lynch 2001). After declaring independence in December 1991, along with many other Soviet Socialist Republics, the interim government lasted only a few months before opposition protests began, and martial law was declared in Dushanbe (Nourzhanov and Bleuer 2013). Widespread discontent over institutionalized corruption had provoked unexpected alliances, such as between the moderate Ismaili sect in Gorno-Badakhshan and the then-banned Islamist political party called the Islamic Renaissance Party of Tajikistan (IRPT) (Driscoll 2015; Dudoignon 1997). These unexpected alliances were distinctly anti-Soviet, and positioned themselves against the northern elites, who rallied around the incumbent (and Soviet backed) Rahmon Nabiev. The economic shock of the collapse of the Soviet Union brought with it hunger and job scarcity. By April 1992, an estimated 100,000 protestors filled the main square in Dushanbe, demanding that Nabiev resign (Nourzhanov and Bleuer 2013:300). Violence in Dushanbe began in May as the IRPT began arming demonstrators (2013:316). Violent events were widespread through 1993, primarily in Qurgonteppa in the southwest, the home base of United Tajik Opposition (UTO), Qurgonteppa, in the Rasht Valley, home to the Gharmi opposition, and in the Gorno-Badakhshan Autonomous Oblast. Violence peaked in 1993, but continued on for the next four years, until a peace agreement was finally signed in 1997, between the new president, Emomali Rahmon, and the leaders of the opposition.

The conflict resulted in substantial human and material losses. In a country with a population then of a little more than 5 million, experts estimate that between 20,000 and 60,000 were killed, and up to a million people were displaced within Tajikistan and to neighboring countries (Olcott 2012). The conflict caused widespread damage to infrastructure, institutions, and private dwellings. UNICEF estimates that

nearly 200 primary schools were destroyed. Estimates of the proportion of household structures damaged in the conflict vary regionally, from 2-12% (Shemyakina 2011). During the conflict, foreign and domestic investment in the economically important mining industry in Tajikistan practically came to a standstill (Levine 1996). Both during and after the conflict, regional divides were salient, producing “a highly regionalized pattern of politics... [and] an unusually high degree of congruence between patronal networks and territorially defined populations,” (Hale 2014:154). This regionality is an important factor during the post-conflict reconstruction period, in which Rahmon’s closest allies were rewarded and the territories that supported the major opposition groups were penalized.

4. Materials and Methods

I examine the long-term consequences of the Tajikistani Civil War on migration using multiple sources of data: 1) the 2007 Tajikistan Living Standards Survey; 2) the Georeferenced Event Dataset from the Uppsala Conflict Data Program; and 3) data on the establishment of specific development projects from the United Nations Development Programme. For individual and household characteristics as well as the dependent variable of migration, I use the 2007 Tajikistan Living Standards Survey (LSS), conducted through a partnership between the World Bank and UNICEF. Approximately 4,800 households constituted by over 21,000 individuals were interviewed in November 2007 for the LSS. Table 1 describes the sample, which includes four regions and Dushanbe, as well as approximately 270 *jamoats*. Both Dushanbe and the remote region of Gorno-Badakhshan (GBAO) were oversampled, with Dushanbe representing 10% of the population of Tajikistan and 14% of the sample, and GBAO representing 3% of the population and 13% of the sample. As in the population overall, most of the sample resides outside of Dushanbe. The average age of respondents is 34 years, with a minimum age of 14 years. Most respondents are married, with secondary education. Many more women than men have only primary education, and more men than women have completed higher education.

	Men	Women	Total Number of Respondents	% Respondents	% overall population
Dushanbe	1,401	1,634	3,035	13.95	9.86
Sughd	2,320	2,644	4,964	22.83	30.39
Khatlon	2,959	3,194	6,153	28.30	36.43
Districts of Republican Subordination	2,272	2,442	4,714	21.68	23.44
Gorno-Badakhshan	1,353	1,525	2,878	13.24	2.80

4.1 Key Variables of Interest

The dependent variable of this study is whether an individual had migrated internationally for at least one month in 2006, the year before the LSS survey, whether or not they were in the household at the time of data collection. To construct this variable, I use the monthly migration history for each individual in the household roster. Regardless of current resident, individuals are considered to have migrated in the last year if they migrated out at any point in 2006. Approximately 3% of individuals in interviewed households had migrated in 2006. Men were far more likely to migrate than women in this sample. Nearly all of the migrants went to Russia. A quarter of the migrants said they went to their destination country because they had been there before, another quarter had a job pre-arranged for them, and about 40% said that they went because they had friends, relatives, or acquaintances there. Around 80% of the migrants said that they started or found work while abroad, and of those workers, half were employed in the construction sector.

The key independent variable of interest is the number of conflict events endured by the district in which LSS respondents currently reside. This operationalization focuses on the distal relationship between conflict and migration – that is, instead of examining individual exposure and the subsequent changes to decision-making based on fear and uncertainty, this research focuses on institutional change at the community level. Thus, the district in which the respondent currently resides is used instead of the one

in which they resided during the war. For most, this measure is the same – internal mobility in Tajikistan is low. Further robustness testing is provided after the main results are presented.

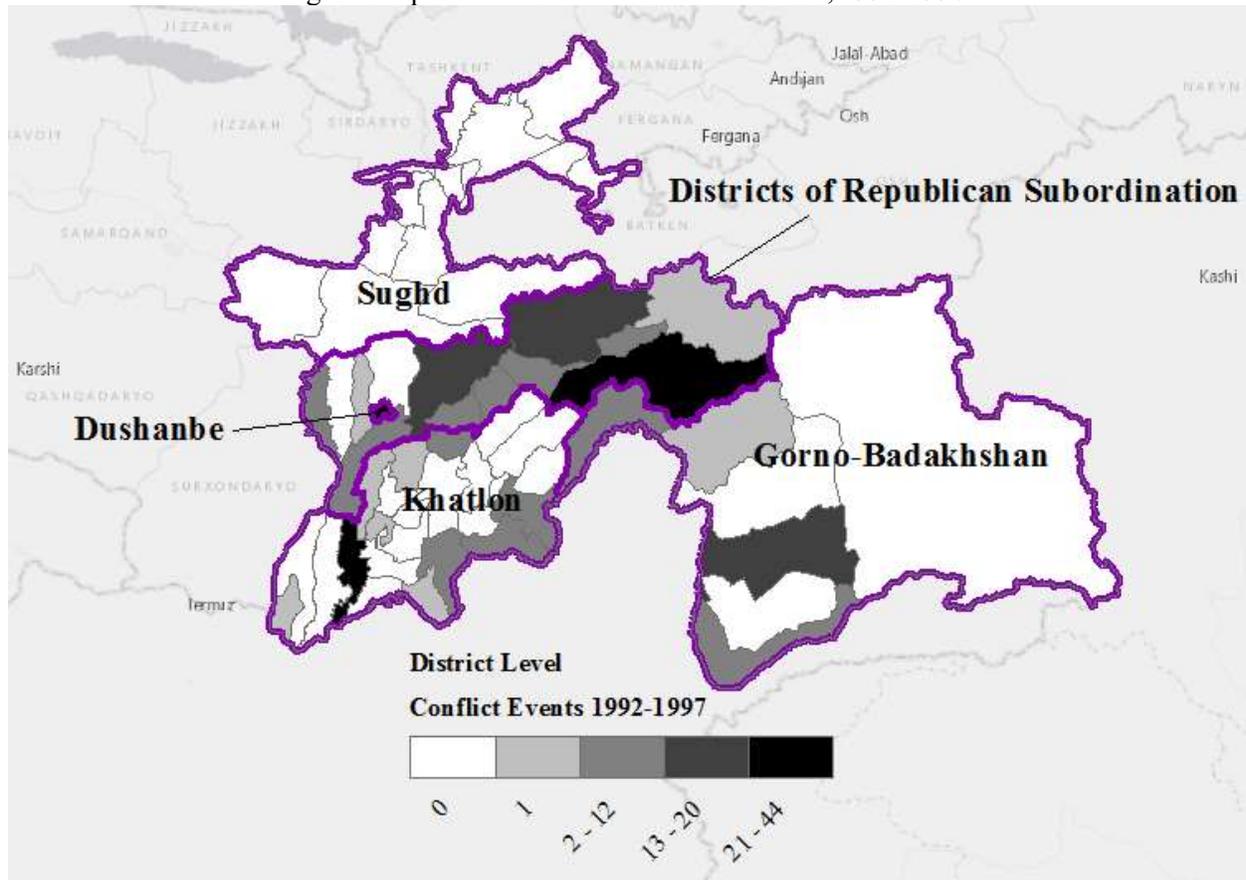
Conflict event data were obtained from the Georeferenced Event Dataset (GED) compiled and managed by the Uppsala Conflict Data Program (UCDP) at Uppsala University (Croicu and Sundberg 2017; Sundberg and Melander 2013). This unique dataset contains individual events of violence by organized actors against other organized actors, the state, or against civilians, which result in at least one fatality. Events are coded from three sets of sources: global newswire reporting; global monitoring and translation of local news provided by the BBC and; secondary local or specialized sources. The process of identifying an event is two-step, where the first step is to consider the global newswire sources and the second step is to consult the local and specialized sources based on the information obtained in the first step. Quality is assured through a series of automatic tests, followed by manual checks, and inconsistencies are reconciled through the consultation of professional coders and subject matter experts. The UCDP errs on the side of moderation, and tends to underestimate, particularly when dealing with unreliable reports.

Leveraging the subnational variation of these conflict events², I aggregate the UCDP event data into a single continuous count measure for each of the 62 districts (Tajik: *nohiya* or Russian: *rayon*) in Tajikistan, representing all events from 1992-1997, shown in Figure 2. The vast majority of events occurred between 1992 and 1993, with decreasing intensity through 1997, when the peace accord was signed. The events were not spatially equally distributed and instead were clustered around centers of political power and opposition stronghold. Many districts had no recorded events, including the entirety of the Sughd oblast. It is important here to reiterate that the timing of the conflict events is approximately 10-15 years before the migration occurs. While I cannot measure the building of social and human capital over those intervening years, the models in this analysis attempt to shed light onto the subsequent migration decisions in conflict-affected areas. I topcode the continuous count measure in order to reduce

² See Nyseth Brehm 2017; Williams et al. 2012 on the operationalization of armed conflict not as a single continuous 'event', but as a varied set of events that take place at the subnational level.

some of the irregular variation in the variable (see Figure A1 in the appendix). This measure provides a measure of intensity, so that the coefficients for conflict events can be interpreted as *for each additional conflict event this region experienced*, current residents will be β more likely to migrate, all else considered.

Figure 2. Spatial distribution of conflict events, 1992-1997.



Source: Uppsala Conflict Data Program. Aggregated to district by author.
 Note: Darker colors represent more events in that district.

In considering reconstruction processes as important to the distal relationship between conflict and migration in Tajikistan, I focus on the United Nations Development Programme (UNDP). The UNDP was an important international development organization in Tajikistan after independence from the Soviet Union in 1991. The UNDP began establishing community resource centers (Jamoat Resource Centers or

JRCs) in 1996 – after the peak violence had subsided but before the peace accord was signed³. With the state’s attention squarely focused on the war and, in later years, on the reintegration of ex-combatants, local governance became critical in international aid distribution and the institutional landscape of Tajikistan, and the UNDP was the one of the only international organizations invested in development at the *jamoat* (municipality) level (Heathershaw 2009; Olcott 2012).

JRCs were central to the UNDP’s mission in post-conflict Tajikistan. By 2006, there were a total of 100 JRCs across Tajikistan, which employed a total of around 700 people (Pillay 2006). They were the center of development and reconstruction activity in many *jamoats*, providing a gathering space for community leaders, basic offices, equipment, and furniture, as well as training in project management, planning and accounting. In addition, JRCs were “allocated grants to establish a revolving fund to dispense micro loans to community members” (Pillay 2006:21).

JRCs were, at least until 2008, so heavily focused on local issues that the UNDP developed new goals to explicitly address the challenge ahead of scaling up development efforts (Linn 2012). Explicitly designed to parallel weak local authorities, JRCs differed between *jamoats* based on the urgency of development needs, including intensive reconstruction of homes, schools, hospitals and water pipes that were destroyed in conflict zones. Years later, when JRCs expanded into the Sughd province in the north, which did not sustain direct exposure to the conflict, the type of development projects changed. The infrastructure projects in the north focused on refurbishment of neglected buildings and roads that had deteriorated since independence. Focusing on refurbishment rather than repair and rebuilding meant that these projects required less time, labor, and capital than those in the conflict-affected areas.

In considering the specific kinds of development programs in Tajikistan that would potentially mitigate migration decision-making, JRCs are well-suited to study because of the level of involvement (at the community level) and their relative detachment from the centralized government of Tajikistan. Thus,

³ See Table A1 in the appendix for exact districts and dates of establishment.

in the polarized post-war setting, JRCs were more likely to be equitably distributed and less likely to be politically motivated.

In July and August of 2017, I conducted interviews with key informants in development organizations in Tajikistan⁴. The data on the date and exact location of the JRCs established by the UNDP were collected during these interviews (see Table A1 in the appendix), as well as retrospective accounts about the nature of work embarked upon by JRCs⁵. These data were likewise aggregated to the district level, so that within each of the 62 districts of Tajikistan, multiple *jamoat* resource centers may exist. I interact the JRC variable and the measures of conflict, to capture differences between development projects in conflict zones and non-conflict zones. One-third of the sample live in regions that had established a JRC by 2006, the year immediately preceding the survey, while nearly 60% live in a region that experienced at least one conflict event.

4.2 Control Variables

Table 2 describes the data sources and summary statistics for each variable used in this study. I control for factors that may affect both the probability that an individual might migrate and the probability that they may be affected by conflict. These factors may be self-reported or reported by the head of the household.

- **Age and age-squared.** The median age is 30 years old, while the 25th percentile is 20 years old.

⁴ This fieldwork involved semi-structured interviews with key informants (Lynch 2013) at the United Nations Development Programme, UNICEF, the Sharq Scientific Research Center, as well as independent researchers and scholars who did not want to be identified with their institutions. Fieldwork was undertaken primarily in Dushanbe, where NGOs are most likely to be headquartered, in July and August 2017.

⁵ During these interviews, representatives from the United Nations' Communities Program responsible for the JRC initiative told me that in the beginning of the project in the 1990s, officers visited each village and facilitated the election of village representatives who would then meet at the *jamoat* center. Each representative generated a list of needs specific to his or her village. The representatives collectively prioritized the needs of the *jamoat* based on urgency and expected gains. Then with the help of the umbrella organization, the UNDP, they engaged in writing proposals and securing funding (sometimes from the UNDP and sometimes from outside donors such as USAID) for these projects. According to my informants, this model was at first informal, but became formalized around 2008 in the JRCs and by 2010 the state had adopted this method as a legal requirement for each *jamoat*. These are now termed *Jamoat Development Plans*.

- **Marital status.** Around 60% of men and 57% of women in the sample are married. I use a simplified dichotomous measure, so that a code of 0 might mean single (32% of the sample), widowed (5%), divorced (<1%), separated (<1%), or living together (<1%).
- **Educational attainment (categorical).** This indicator includes four levels of education: Through basic (mandatory) education, secondary education (includes technical schools), and higher education, including graduate school. More than half the sample has completed secondary education. Approximately 17% of the sample have completed higher education. In this sample, men are more likely than women to complete higher education⁶.
- **Altitude** is measured at the household level by The World Bank at the time of the survey. In Tajikistan, districts that are geographically close by may be isolated in reality, due to the logistical challenges of traveling over mountainous terrain. High altitudes hinder agricultural development and may exacerbate poverty for areas that development organizations have difficulty reaching. In this sample, higher altitude is significantly weakly negatively associated with a JRC in the district. Although in cross-national studies, “rough terrain” has been modeled as favorable to civil wars (Fearon and Laitin 2003), when comparing districts within Tajikistan, altitude did not seem to be strongly correlated with conflict events in bivariate correlations. Altitude is weakly correlated with the establishment of JRCs. Importantly, it cannot be said that altitude has been caused by either conflict or the JRCs, and this makes altitude a helpful control in reducing bias.
- **Residence in Gorno-Badakhshan.** This dummy variable indicates residence in the autonomous oblast that is home to the Pamiri ethnic group. This group differs from the rest of Tajikistan in a

⁶ In some contexts it may be appropriate to consider a categorical variable with the reference as “no education” or “primary only”. In Tajikistan, however, the legacy of the Soviet Union reinforced a strong educational policy, and the vast majority of residents complete at least the mandatory education, through grade 8 (or 9, depending on cohort). Less than 1% of this sample have no education, a mere 11% have through grade 4, and a whopping 70% complete a degree beyond basic (secondary, college, or graduate degrees). Thus, I combine the none, primary, and basic to provide a better comparative category that is relevant to this context.

few important ways, including religious and cultural beliefs. Pamiri ascribe to the Ismaili branch of Islam, distinguished by its living imam, the Aga Khan.

	Level of Analysis	Timeline	Data Source	Sample percentage	Sample Mean (Median)
Migration	Individual	2006	LSS	2.95	---
Conflict Events	District	1992-1997	Uppsala		
Jamoat Resource Centers	Jamoat (municipality)	1996-2006	United Nations Development Programme	33.37	---
Age	Individual	2007	LSS	---	34.52
Gender	Individual	2007	LSS	(% female) 52.71	---
Marital Status	Individual	2007	LSS	(% married) 58.51	---
Education	Individual	2007	LSS		
Primary				30.69	---
Secondary				52.51	---
Higher				16.80	---
Altitude (in meters)	Jamoat	2007	LSS	---	1004.09
Current residence in Gorno-Badakhshan	Individual	2007	LSS	(% yes) 13.24	---

4.3 Empirical Strategy

I estimate logistic regression models to examine whether residents living in a district that sustained more conflict events will demonstrate a higher probability to emigrate in the aftermath of conflict (Hypothesis 1). I stratify each model by sex, given that in Tajikistan the rates of both employment and migration are starkly different for men and women. I anticipate that factors influencing migration, including both conflict and development, will affect men and women differently.

Below, I first present a bivariate and then a multivariate model, controlling for common migration selection characteristics at the individual level, such as the respondent's age, marital status, and education as well as at the district level with altitude and residence in Gorno-Badakhshan. Third, I fit an interactive model to examine the role of the *jamoat* resource centers (JRCs) in conflict-affected areas. Finally, I fit an

interactive model using the linear predictions for the presence of a JRC as an additional endogeneity control. The full equation for the final model is presented below.

$$\text{Ln}\left(\frac{P(\text{mig})}{1 - P(\text{mig})}\right) = \beta_0 + (\beta_{\text{conflict}} * \beta_{\text{JRC}}) + \beta_{\text{age}} + \beta_{\text{age}^2} + \beta_{\text{married}} + \beta_{\text{educ}} + \beta_{\text{altitude}} + \beta_{\text{GBAO}} + \beta_p + \epsilon$$

$$\text{where } p = \text{PR}(Y = 1 | \beta_{\text{pop}} + \beta_{\text{urban}})$$

In this estimation of p , I use maximum likelihood estimation to determine the parameters of the district-level factors that may determine whether a district receives a JRC. Results from the full set of probit models used to both examine endogeneity and to generate the linear predictors for p are presented in Table A4 in the appendix.

The linear predictions (p) derived from the probit model are included in the full interactive models as an endogeneity control⁷. The purpose of including the predictions in the final model is to, at least partially, correct for potential endogeneity between the conflict events, the establishment of the JRC, and migration⁸. As shown in Table A3 in the appendix, the correlation between conflict events and JRCs is not statistically significant. Further, in Table A4 in the appendix, we find that the number of conflict events is not significantly associated with the placement of a JRC in the same district. This is perhaps contrary to expectations, in which we might assume that where more conflict events occurred, more humanitarian aid and development resources would be directed. This does not seem to be the case for

⁷ With the exception of three variables - the average household consumption, due to the issue of temporal ordering in which the household reports the consumption patterns *after* the observed migration incident, the variable for conflict events, due to its inclusion in the main model, and the altitude variable, also due to its inclusion in the main model. Results from all probit models used for robustness testing and for predicting p are included in Table A4 in the appendix.

⁸ Endogeneity in this case could lead to bias due to an omitted variable, bias due to simultaneity – in which two or more processes are simultaneously occurring, or bias due to reverse causality. Additional steps taken to reduce these biases through temporal ordering in this study are as follows: (1) no JRC was established before the last conflict event in a district; and (2) no JRC was included that was established before the *reported* migration events. This does not ensure that no *unobserved* migration events occur before the JRCs are established or before conflict events occurred, but these events are not observed in the survey.

JRCs. Additionally, results from this model indicate that the district-level percentage of population change from 1989-2000 is not significantly associated with the placement of a JRC ($\beta = .007$, NS in Table A4). This is a promising finding, if we can expect that some previous population mobility should be tied to future migration. Nevertheless, I present the findings both with and without p included. Table 3 presents the findings of all of the models described above, stratified by sex.

Table 3. Logistic regression results, dependent variable = migrated this year								
Stratified by sex								
	Bivariate model	Std error	Multivariate Model	Std error	Interactive Model with JRCs	Std error	Interactive model with endogeneity control	Std error
Subsample of men only								
Conflict events	.012**	.005	.012**	.006	.023***	.007	.083	.258
Jamoat Resource Center (1 = yes)	---	---	---	---	.370***	.124	.298**	.130
JRC (yes) x Conflict	---	---	---	---	-.047**	.029	-.046**	.022
Age	---	---	.407***	.040	.405***	.039	.405***	.039
Age squared	---	---	-.006***	.001	-.005***	.001	-.005***	.001
Married (1 = yes)	---	---	-.052	.169	-.046	.169	-.045	.169
Education (dummy variables)								
Primary			-.436	.457	-.449	.457	-.450	.457
Secondary	---	---	.564***	.201	.554***	.201	.552***	.201
Higher Education	---	---	-.421*	.236	-.427*	.237	-.432*	.237
Altitude	---	---	.000	.000	.000	.000	.000	.000
Residence in Gorno-Badakhshan	---	---	-.434	.296	-.395	.307	-.387	.308
Linear predictions for presence of Jamoat Resource Center	---	---	---	---	---	---	3.00	17.26
Intercept	-2.93***	.054	-9.74***	.638	-9.96***	.643	-12.02	8.73
AIC	3666		3261		3256		3741	
N	8680		8680		8680		8680	
Subsample of women only								
Conflict events	.039**	.018	.050**	.020	.029	.021	.006	.043
Jamoat Resource Center (1 = yes)	---	---	---	---	-1.05	.715	-1.00	.720
JRC (yes) x Conflict	---	---	---	---	-.053	.767	-.522	.756
Age	---	---	.245***	.088	.242***	.088	.241***	.088
Age squared	---	---	-.003***	.001	-.003***	.001	-.003***	.001
Married (1 = yes)	---	---	-1.18***	.368	-1.17***	.368	-1.16***	.369
Education (dummy variables)								
Primary	---	---	-14.86	.835	-14.77	.814	-14.78	.814
Secondary	---	---	.714	.555	.708	.555	.699	.556
Higher Education	---	---	.550	.661	.455	.660	.424	.663
Altitude	---	---	.000	.000	.000	.000	.000	.000
Residence in Gorno-Badakhshan	---	---	1.466*	.860	.872	.908	.806	.921
Linear predictions for presence of Jamoat Resource Center	---	---	---	---	---	---	-1.17	1.95
Intercept	-5.84***	.229	-10.02***	1.51	-9.46***	1.52	-8.70***	1.97

AIC	485		464		460		462
N	9640		9640		9640		9640
*** p < .01 ** p < .05 * p < .10							

5. Findings and Discussion

5.1 *The Legacy of Conflict for Migration*

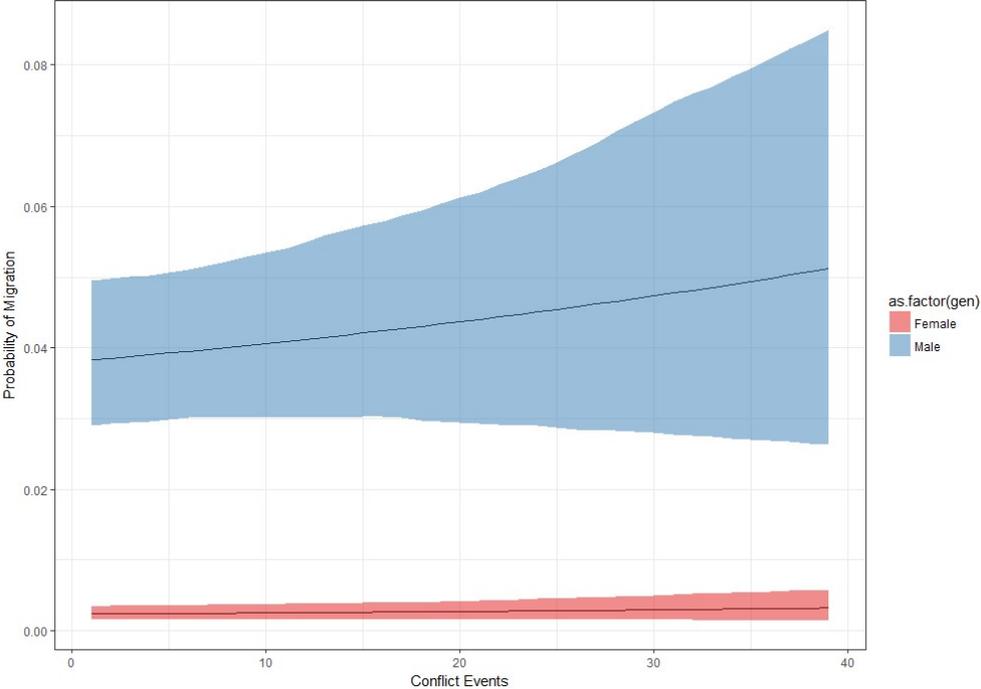
The results for the subsample of men suggest that there is a positive significant relationship between conflict events and migration. This relationship persists when controlling for the individual and household characteristics described above ($\beta = .006$, $\alpha < .05$ in the multivariate model and $\beta = .011$, $\alpha < .01$ in the interactive model). This is consistent for men across all models including the model with p for the presence of a JRC ($\beta = .010$, $\alpha < .05$). The presence of a JRC continues to be significantly associated with a higher likelihood of migration both with ($\beta = .329$, $\alpha < .05$) and without ($\beta = .324$, $\alpha < .01$) the linear predictor p . Without p , there appears to be a moderating effect of JRCs on the relationship between conflict and migration ($\beta = -.035$, $\alpha < .05$). However, with p included, this moderating effect is no longer significant.

For women, conflict does not appear to have a lasting impact on migration decisions. While the bivariate relationship is positive and significant, the significance disappears when the development indicators are incorporated and when the endogeneity control p is included. Other factors appear to be important for women, including age ($\beta = .252$, $\alpha < .01$), age-squared ($\beta = -.003$, $\alpha < .01$), and secondary education ($\beta = .964$, $\alpha < .10$). In contrast to men, being married significantly reduces the likelihood that women will migrate ($\beta = -1.13$, $\alpha < .01$), suggesting that married women are significantly less likely than their unmarried counterparts to migrate. The results for women are likely influenced by the extremely low proportion of women who migrate at all in Tajikistan (in this sample, 0.37% of the women and 5.7% of the men migrated out in the year before the survey).

Figure 3, below, shows the predicted probabilities (solid line) and prediction intervals (shaded area) from the multivariate model, which incorporates individual, household, and district-level controls. I have simulated separate probabilities for men and women, holding all other predictors at their mean, as

described in King et al. (2000). As is the case in most developing countries, men have a much higher probability to migrate than women, and men appear to be driving the general upward trend. Uncertainty continues to increase as conflict events do, even for women, although on a much smaller scale.

Figure 3. Simulated Probabilities of Out-Migration for Men and Women, with controls



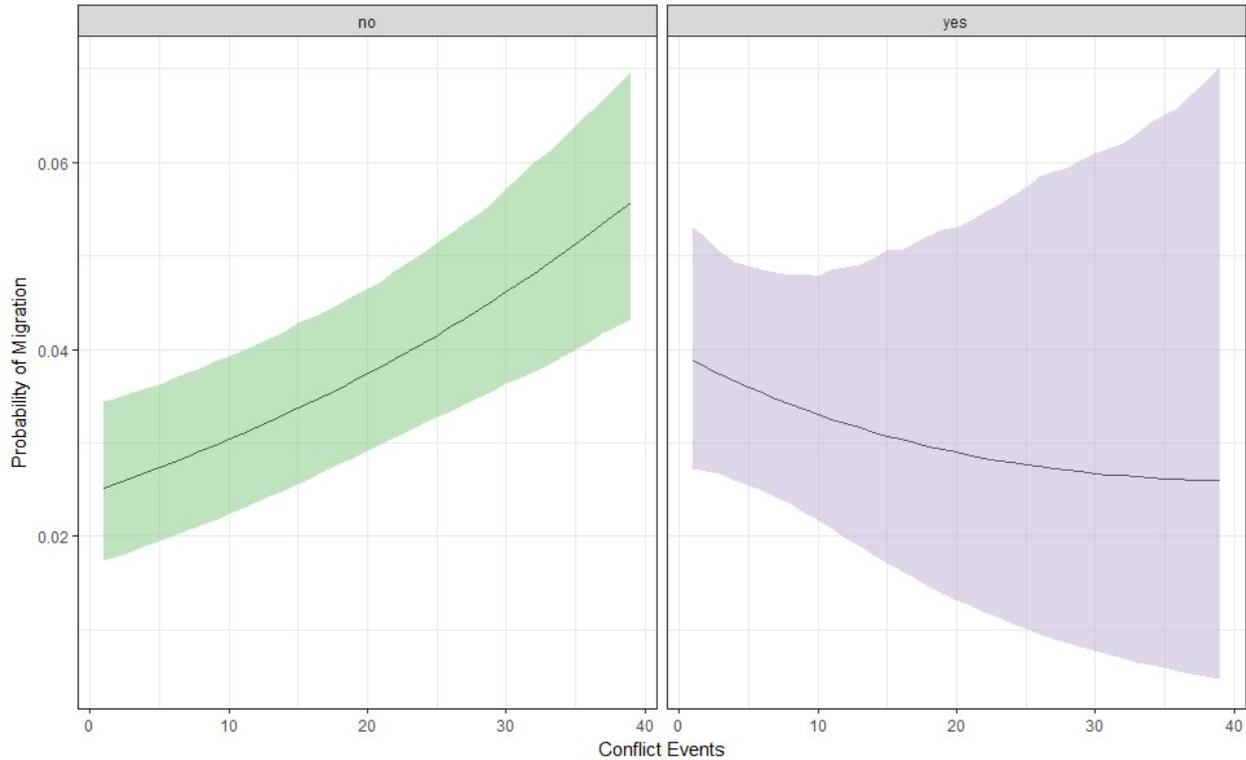
Overall, the findings for men suggest strong support for the distal relationship between conflict and migration - that residents in districts with more conflict events have higher probabilities to migrate out, even ten years after the war has ended. However, for women this relationship is much more tenuous, suggesting that this relationship does not hold equally for all residents.

5.2 Development as a Moderating Factor?

In reviewing the theoretical relationship between conflict, development, and migration, I posited that the relationship could either be migration-facilitating or migration-dampening. Examining the interaction terms in Table 3, men in districts that sustained no conflict events have a higher likelihood to migrate out with a JRC than without ($\beta = .329, \alpha < .05$), consistent with the idea that these resource centers foster the accumulation of human and social capital that can facilitate more migration. Without p , as conflict events increase, the probability to migrate out in a district with a JRC *decreases* ($\beta = -.035, \alpha < .05$). This finding suggests that JRCs moderate the positive effect of conflict on migration, supporting the idea that development projects such as JRCs may incentivize potential migrants to stay in their communities. However, when including p , this moderating effect is no longer significant. For women, JRCs are not significantly associated with migration, suggesting that this relationship between conflict, development, and migration does not hold for women.

While the results for men suggest that JRCs perform some capital building, and that in conflict-affected areas they moderate the relationship between conflict and migration, it is important to note that as conflict events increase, uncertainty follows suit. Perhaps JRCs provide some resources that incentivize migration *and* some that incentivize staying in the origin. It is impossible to precisely identify these mechanisms with the data available. Figure 4 shows the simulated probabilities (solid line) and 95% prediction interval (shaded area) of out-migration for a typical male resident in districts *with* or *without* JRCs, holding all other indicators at their mean.

Figure 4. Simulated Probabilities for Out-Migration for Men, with controls and JRCs



The distal relationship between conflict and migration may be impacted by different development projects, and this study suggests that further research is needed. If migration is a commonly utilized livelihood strategy for young men in developing contexts, and if the likelihood of migrating is increased through conflict, development projects in conflict zones may be unintentionally creating local employment markets that resemble migrant employment opportunities abroad.

5.3 Robustness Testing

5.3.1 Examining the Role of Previous Mobility

One of the challenges to assessing the link between armed conflict and migration decisions nearly a decade later is the wide range of intervening variables, including previous mobility. One limitation of this survey is the lack of consistent information that we have about respondents' migration histories prior to

2006. Those who migrated in 2006 and are categorized as ‘migrants’ in this research, were not required to provide further information about previous migration episodes. However, the survey does require some information about residential mobility. All respondents are asked if they have *ever* lived in a different district (Tajik: *nohiya* or Russian: *rayon*).

For this test, I replicate the previous analyses, this time separating the sample into ‘movers’ – those who have ever lived in another district, and ‘stayers’ – those who have never lived in another district. While mobility is not the same as migration episodes, this stratification can provide some insight into whether the relationship between conflict and migration is driven primarily by the experiences of residents who are mobile, or who have never moved. The ‘movers’ subsample includes 2,756 individuals, while 16,454 reported never having lived in another district, and are considered ‘stayers’⁹. Table 4, below, presents the results from these models.

⁹ Note that I do not further stratify by sex in order to preserve a large enough sample size to estimate the models for the ‘mover’ subsample.

Table 4. Logistic regression results, dependent variable = migrated this year Stratified by Previous Mobility								
	Bivariate model	Std error	Multi-variate Model	Std error	Interactive Model with JRCs	Std error	Interactive model with endogeneity control	Std error
Subsample of 'Stayers' only								
Conflict events	.006	.004	.008*	.004	.012***	.004	.0002	.012
Jamoat Resource Center (1 = yes)	---	---	---	---	.277**	.130	.303**	.133
JRC (yes) x Conflict	---	---	---	---	-.043*	.023	-.054**	.025
Age	---	---	.421***	.040	.419***	.039	.420***	.040
Age squared	---	---	-.006***	.001	-.006***	.001	-.006***	.001
Gender (1 = female)	---	---	-2.81***	.197	-2.81***	.197	-2.81***	.197
Married (1 = yes)	---	---	-.298*	.163	-.294*	.163	-.292*	.162
Education (Ref = Basic or less)								
Secondary	---	---	.739***	.195	.732***	.195	.736***	.195
Higher Education	---	---	-.155	.236	-.161	.237	-.149	.237
Altitude	---	---	.000	.000	.000	.000	.000	.000
Residence in Gorno-Badakhshan	---	---	-.135	.288	-.135	.299	-.149	.299
Linear predictions for presence of Jamoat Resource Center	---	---	---	---	---	---	-1.44	1.43
Intercept	-3.55***	.053	-10.02***	.627	-10.17***	.631	-9.48***	.928
AIC	4334		3211		3209		3210	
N	16,454		16,454		16,454		16,454	
Subsample of 'Movers' only								
Conflict events	.021***	.007	.012	.008	.012	.012	-.011	.036
Jamoat Resource Center (1 = yes)	---	---	---	---	.013	.565	.126	.604
JRC (yes) x Conflict	---	---	---	---	-.013	.048	-.040	.064
Age	---	---	.324***	.089	.325***	.089	.327***	.090
Age squared	---	---	-.004***	.001	-.004***	.001	-.004***	.001
Gender (1 = female)	---	---	-2.77***	.369	-2.77***	.369	-2.79***	.370
Married (1 = yes)	---	---	.298	.443	.300	.443	.290	.444
Education (ref = Basic or less)								
Secondary			.367	.434	.373	.437	.381	.437
Higher Education	---	---	-.692	.513	-.706	.515	-.698	.516
Altitude	---	---	.000	.000	.000	.000	.000	.000
Residence in Gorno-Badakhshan	---	---	-1.32	1.30	-1.47	1.51	-1.38	1.51
Linear predictions for presence of Jamoat Resource Center	---	---	---	---	---	---	-3.24	5.03
Intercept	-4.15***	.242	-8.91***	1.50	-8.95***	1.52	-7.46***	2.73
AIC	662		546		549		551	
N								

*** p < .01 ** p < .05 * p < .10

The larger subsample of 'stayers' seems to be entirely driving the main findings. In the full model with the endogeneity control, the findings reflect those for men (albeit stronger in the model with p). Conflict is positive and significant ($\beta = .001$, $\alpha < .05$), the presence of a JRC is positive and significant ($\beta = .284$, $\alpha < .05$), and JRCs appear to moderate the positive relationship between conflict and migration ($\beta = -.040$, α

< .05). This is not the case for the ‘movers’. The only variables that are significant in the ‘movers’ subsample are age and gender. These findings suggest that for individuals with some previously established residential mobility, the influence of conflict and development on their subsequent migration decisions is non-significant.

Recognizing that the sample of ‘stayers’ is quite large relative to that of ‘movers,’ it is possible nevertheless to interpret this finding in two ways. First, selection into residential mobility may be similar to the selection into international migration. The same people who may have a propensity to migrate regardless of contextual factors may also be more likely to move domestically. Second, residential mobility may be an intermediate step that increases one’s confidence in moving as a livelihood strategy. For these movers, it is possible that regardless of institutional change, they would have migrated abroad. Stayers on the other hand, may be more influenced by contextual factors – such as conflict – than individual propensities or ambitions.

5.3.2 Gorno-Badakhshan Autonomous Oblast Models

The Gorno-Badakhshan Autonomous Oblast (GBO) is a special case within Tajikistan. The Aga Khan Foundation (AKF) provided basic humanitarian supplies and goods to GBO during and after the war. This humanitarian aid does not perform the same kind of capital development as the JRCs. No JRC was established in GBO. In interviews, officers recalled that the UNDP determined that the AKF was already active in the region, and focused resources on other parts of Tajikistan. If the distal relationship between conflict and migration is moderated by aid, broadly, including humanitarian aid, then we would expect the interaction between GBO residence and conflict events to be *negative and significant*. If the JRCs develop human and social capital as theorized in this research, then humanitarian aid would not interact with conflict events in the same way.

To test this aspect of the argument, I first replicate the previous analyses, using GBO residence as a reliable proxy for receiving humanitarian aid from the AKF. I find that conflict events are significantly positively associated with migration ($\beta = .008, \alpha < .05$), although with the endogeneity

control, this becomes non-significant. Critically, the interaction between GBAO and conflict is not significant in these models. These results suggest that it is not development, per se, that affects the distal relationship between conflict and migration, but rather that the nature of development project matters. Humanitarian aid in GBAO did not contribute to broader transformation of institutions or social relations the way that the JRCs did. This lends confidence to the interpretation of JRCs as a specific kind of capital-generating development project, operating as a moderating factor in conflict-affected areas.

Second, I replicate the previous analyses and simply exclude residents in GBAO. This reduces the sample size by approximately 2,800 individuals. The results from these models reveal no change in the variables of interest in direction, magnitude, or statistical significance (results presented in Table A2 in the Appendix).

	GBAO Model	Std error
Conflict events	.014**	.006
Jamoat Resource Center (1 = yes)	---	---
JRC (yes) x Conflict	---	---
Age	.406***	.004
Age squared	-.005***	.000
Gender (1 = Female)	-2.79***	.173
Married (1 = yes)	-.221	.152
Education (ref. Primary only)		
Secondary	.691***	.178
Higher Education	-.225	.214
Altitude	-.0001	.000
Residence in Gorno-Badakhshan	-.293	.297
Gorno-Badakhshan * Conflict events	.020	.026
Intercept	-9.80***	.574
AIC	3744.3	
N	18,321	
*** p < .01 ** p < .05 * p < .10		

6. Conclusion

Despite scholarship on the transformative nature of war, demographic research has largely neglected migration dynamics after conflict. My main finding is that, nearly a decade after the conflict has ended, there remains a significant association between armed conflict and migration. This finding is the strongest for men, and seems to be driven primarily by those without any previous established mobility. The

analysis suggests that the impacts of conflict on migration decision-making are longer lasting than previously considered. Establishing a distal causal relationship between historical conflict and contemporary migration is a difficult endeavor. From the onset of war to the point of measurement for this study, a great deal of change can and has occurred in Tajikistan. Nevertheless, I continue to find association with conflict events and migration for men, net of individual and household economic indicators, and community-level features.

I have focused here on first establishing the direct effects of the armed conflict but have not tested many of the mechanisms. I have posited that these could include trauma, damaged trust, and changes in network structures. For cases of conflict-affected countries, there is a wealth of opportunity for future research to test these mechanisms.

The empirical inattention to the aftermath of conflict does not align with the lived experience of war. The effects of war are interrelated, and can have lasting economic, social, and political impacts. This study sheds light on migration decision-making in the decade after armed conflict in the case of Tajikistan. The 1992-1997 civil war was transformative for the people, social structures, and economy. The findings of this analysis suggest that the civil war was likewise transformative for the context in which people decide to migrate. Migration in developing contexts is commonly utilized as a livelihood strategy, but in this case, historical conflict influences migration even while controlling for the household economic and poverty indicators that are typically associated with migration. Incorporating the legacy of violence can help us better understand contemporary migration dynamics in conflict-affected countries.

Declaration of Interest

The author does not have any known or potential conflicts of interest to declare.

References

- Abdulloev, Ilhom, Ira N. Gang, and John Landon-Lane. 2012. "Migration as a Substitute for Informal Activities: Evidence from Tajikistan." Pp. 205–27 in *Informal Employment in Emerging and Transition Economies*. Vol. 34, *Research in Labor Economics*, edited by H. Lehmann and K. Tatsiramos. Emerald Group Publishing Limited.
- Agadjanian, Victor and Ndola Prata. 2002. "War, Peace, and Fertility in Angola." 39(2):17.
- Akresh, Richard, Leonardo Lucchetti, and Harsha Thirumurthy. 2012. "Wars and Child Health: Evidence from the Eritrean-Ethiopian Conflict." *Journal of Development Economics* 99:330–40.
- Akresh, Richard and Damien de Walque. 2008. "Armed Conflict and Schooling: Evidence from the 1994 Rwandan Genocide." *The World Bank Development Research Group Policy Research Working Paper* 4606.
- Bennett, Rachel, David Clifford, and Jane Falkingham. 2013. "Household Members' Migration and the Education of Children 'Left Behind': Empirical Findings from Tajikistan and Reflections for Research Practice." *Population, Space and Place* 19:1–14.
- Besley, Timothy and Hannes Mueller. 2012. "Estimating the Peace Dividend: The Impact of Violence on House Prices in Northern Ireland." *American Economic Review* 102(2):810–33.
- Brakman, Steven, Harry Garretsen, and Marc Schramm. 2004. "The Strategic Bombing of German Cities during World War II and Its Impact on City Growth." *Journal of Economic Geography* 4(2):201–18.
- Castles, S. 2003. "Towards a Sociology of Forced Migration and Social Transformation." *Sociology* 37(1):13–34.
- Clement, Matthieu. 2011. "Remittances and Household Expenditure Patterns in Tajikistan: A Propensity Score Matching Analysis." *Asian Development Review* 28(2):58–87.
- Collier, Paul, Anke Hoeffler, and Mans Soderbom. 2008. "Post-Conflict Risks." *Journal of Peace Research* 45(4):461–78.
- Croicu, Mihai and Ralph Sundberg. 2017. "UCDP GED Codebook Version 18.1."
- Czaika, M. and K. Kis-Katos. 2009. "Civil Conflict and Displacement: Village-Level Determinants of Forced Migration in Aceh." *Journal of Peace Research* 46(3):399–418.
- Davenport, Christina, Will Moore, and Steven Poe. 2003. "Sometimes You Just Have to Leave: Domestic Threats and Forced Migration, 1964-1989." *International Interactions* 29(1):27–55.

- Driscoll, Jesse. 2015. *Warlords and Coalition Politics in Post-Soviet States*. Cambridge; New York: Cambridge University Press.
- Dudoignon, Stephane A. 1997. "Political Parties and Forces in Tajikistan, 1989-1993." Pp. 52–85 in *Tajikistan: The Trials of Independence*, edited by M.-R. Djalili, F. Grare, and S. Akiner. New York: St. Martin's Press.
- Fearon, James D. and David D. Laitin. 2003. "Ethnicity, Insurgency, and Civil War." *The American Political Science Review* 97(1):75–90.
- Garip, Filiz. 2008. "Social Capital and Migration: How Do Similar Resources Lead to Divergent Outcomes?" *Demography* 45(3):591–617.
- Ghobarah, Hazem Adam, Paul Huth, and Bruce Russett. 2003. "Civil Wars Kill and Maim People - Long After the Shooting Stops." *American Political Science Review* 97(2):189–202.
- Guidolin, Massimo and Eliana La Ferrara. 2007. "Diamonds Are Forever, Wars Are Not: Is Conflict Bad for Private Firms?" *The American Economic Review* 97(5):1978–93.
- Hale, Henry E. 2014. *Patronal Politics: Eurasian Regime Dynamics in Comparative Perspective*. Cambridge: Cambridge University Press.
- Heathershaw, John. 2009. *Post-Conflict Tajikistan: The Politics of Peacebuilding and the Emergence of Legitimate Order*. London: Routledge.
- Heathershaw, John and Daniel Lambach. 2008. "Post-Conflict Spaces in International Relations." *Journal of Intervention and Statebuilding* 2(3):269–90.
- Heleniak, Timothy. 2008. "An Overview of Migration in the Post-Soviet Space." Pp. 29–68 in *Migration, Homeland, and Belonging*. Washington, DC: Woodrow Wilson Center Press.
- Ibáñez, Ana María and Carlos Eduardo Vélez. 2008. "Civil Conflict and Forced Migration: The Micro Determinants and Welfare Losses of Displacement in Colombia." *World Development* 36(4):659–76.
- Jones, Richard C. 1989. "Causes of Salvadoran Migration to the United States." *Geographical Review* 79(2):183.
- Justino, Patricia and Olga Shemyakina. 2012. "Remittances and Labor Supply in Post-Conflict Tajikistan." *IZA Journal of Labor & Development* 1(8).
- King, Gary, Michael Tomz, and Jason Wittenberg. 2000. "Making the Most of Statistical Analyses: Improving Interpretation and Presentation." *American Journal of Political Science* 44:341–55.
- Leon, Gianmarco. 2012. "Civil Conflict and Human Capital Accumulation: The Long-Term Effects of Political Violence in Peru." *Journal of Human Resources* 47(4):991–1022.
- Levine, Richard M. 1996. *The Mineral Industry of Tajikistan*. Washington, DC: U.S. Geological Survey.

- Lindley, Anna. 2010. "Leaving Mogadishu: Towards a Sociology of Conflict-Related Mobility." *Journal of Refugee Studies* 23(1):2–22.
- Lindskog, Elina Elveborg. 2016. "War Effect on Fertility Behavior in the Democratic Republic of Congo." *Stockholm Research Reports in Demography* 4:2–32.
- Linn, Johannes F. 2012. *Scaling Up Development Interventions: A Review of UNDP's Country Program in Tajikistan. Working Paper*. 50. Washington, DC: Brookings Institute.
- Lundquist, Jennifer and Douglas S. Massey. 2005. "Politics or Economics? International Migration during the Nicaraguan Contra War." *Journal of Latin American Studies* 37(1):29–53.
- Lynch, Don. 2001. "The Tajik Civil War and Peace Process." *Civil Wars* 4(4):49–72.
- Lynch, Julia. 2013. "Aligning Sampling Strategies to Analytical Goals." Pp. 31–44 in *Interview Research in Political Science*, edited by L. Mosley. Ithaca, NY: Cornell University Press.
- Melander, Erik and Magnus Öberg. 2006. "Time to Go? Duration Dependence in Forced Migration." *International Interactions* 32(2):129–52.
- Miguel, Edward and Gerard Roland. 2011. "The Long-Run Impact of Bombing Vietnam." *Journal of Development Economics* 96:1–15.
- Moodie, Ellen. 2011. *El Salvador in the Aftermath of Peace: Crime, Uncertainty, and the Transition to Democracy*. Philadelphia: University of Pennsylvania Press.
- Moore, W. H. and Stephen M. Shellman. 2004. "Fear of Persecution: Forced Migration, 1952-1995." *Journal of Conflict Resolution* 48(5):723–45.
- Morrison, Andrew R. and Rachel A. May. 1994. "Escape from Terror: Violence and Migration in Post-Revolutionary Guatemala." *Latin American Research Review* 29(2):111–32.
- Mughal, Abdul-Ghaffar. 2007. *Migration, Remittances, and Living Standards in Tajikistan: A Report Based on Khatlon Remittances and Living Standards Measurement Survey (KLSS 2005)*. Geneva; Dushanbe: International Organization for Migration.
- Nourzhanov, Kirill and Christian Bleuer. 2013. *Tajikistan: A Political and Social History*. ANU Press.
- Nyseth Brehm, Hollie. 2017. "Subnational Determinants of Killing in Rwanda." *Criminology* 55(1):5–31.
- Olcott, Martha Brill. 2012. *Tajikistan's Difficult Development Path*. Washington: Brookings Institution Press.
- Olimova, Saodat and Igor Bosc. 2003. *Labour Migration from Tajikistan*. Geneva; Dushanbe: International Organization for Migration and the Sharq Scientific Research Center.
- Pedersen, Duncan. 2002. "Political Violence, Ethnic Conflict, and Contemporary Wars: Broad Implications for Health and Social Well-Being." *Social Science & Medicine* 55:175–90.

- Pettersson, Therese and Peter Wallensteen. 2015. "Armed Conflicts, 1946-2014." *Journal of Peace Research* 52(4):536–50.
- Pillay, Rajeev. 2006. *Human Security: Case Study Tajikistan*. New York: United Nations Development Programme Evaluation Office.
- Richmond, Anthony H. 1988. "Sociological Theories of International Migration: The Case of Refugees." *Current Sociology* 36(2):7–25.
- Schmeidl, Susan. 1997. "Exploring the Causes of Forced Migration: A Pooled Time-Series Analysis, 1971-1990." *Social Science Quarterly* 78(2):284–308.
- Schmeidl, Susanne. 2001. "Conflict and Forced Migration." in *Global migrants, global refugees*. New York: Berghahn Books.
- Shemyakina, Olga. 2011. "The Effect of Armed Conflict on Accumulation of Schooling: Results from Tajikistan." *Journal of Development Economics* 95(2):186–200.
- Singh, Prakarsh. 2012. "Impact of Terrorism on Investment Decisions of Farmers: Evidence from the Punjab Insurgency." *Journal of Conflict Resolution* 57(1):143–68.
- Stanley, William Deane. 1987. "Economic Migrants or Refugees from Violence? A Time-Series Analysis of Salvadoran Migration to the United States." *Latin American Research Review* 132–154.
- Sundberg, Ralph and Erik Melander. 2013. "Introducing the UCDP Georeferenced Event Dataset." *Journal of Peace Research* 50(4):523–32.
- Teerawichitchainan, Bussarawan and Kim Korinek. 2012. "The Long-Term Impact of War on Health and Wellbeing in Northern Vietnam: Some Glimpses from a Recent Survey." *Social Science & Medicine* 74:1995–2004.
- Urdal, Henrik and Chi Primus Che. 2013. "War and Gender Inequalities in Health: The Impact of Armed Conflict on Fertility and Maternal Mortality." *International Interactions* 39(4):489–510.
- Williams, Nathalie E. 2013. "How Community Organizations Moderate the Effect of Armed Conflict on Migration in Nepal." *Population Studies* 67(3):353–69.
- Williams, Nathalie E., Dirgha J. Ghimire, William G. Axinn, Elyse A. Jennings, and Meeta S. Pradhan. 2012. "A Micro-Level Event-Centered Approach to Investigating Armed Conflict and Population Responses." *Demography* 49(4):1521–46.
- Williams, Nathalie E., Michelle L. O'Brien, and Xiaozheng Yao. 2016. "Using Survey Data for Agent-Based Modeling: Design and Challenges in a Model of Armed Conflict and Population Change." Pp. 159–84 in *Agent-Based Modelling in Population Studies, The Springer Series on Demographic Methods and Population Analysis*, edited by A. Grow and J. Van Bavel. Springer.

Appendix

Tables A1-A4 present supplementary findings as detailed in the text.

Table A1. Districts and dates of establishment for all Jamoat Resource Centers (JRCs)			
Geographical Unit	Number of JRCs ever established	Earliest year a JRC was established	Number of years a JRC existed before survey year (2006)
<i>Sughd Oblast</i>			
Ajni	1	2005	1
Asht	3	2003	3
Zafarobod	3	2003	3
Isfara	4	2005	1
Pangakent	1	2005	1
Djabor Rasulov	3	2005	1
Bobojon Gafuroy	2	2005	1
<i>Khatlon Oblast</i>			
Kulob	2	2002	4
Bokhtar	2	2002	4
Vakhsh	2	2004	2
Vose	2	2001	5
Jilikul	2	2002	4
Kubodiyon (Kabodyen)	2	2001	5
Kumsangir	3	2002	4
Hamadoni (Moskovskiy)	2	2002	4
Muminobod	3	2002	4
Farkhor	4	2001	5
Pandj	1	2005	1
Sarband	1	2002	4
Khovaling	2	2002	4
Shahrtuz	3	2001	5
Shuroobod	2	2002	4
<i>Regions of Republican Subordination (RRS)</i>			
Rasht (Gharm)	12	1999	7
Nurobad (Darband)	7	2000	6
Jirgato'l	9	2000	6
Tojikobod	5	2000	6

Source: United Nations Development Programme in Dushanbe, Tajikistan

Table A2. Logistic regression models, excluding GBAO. Dependent Variable = Migration out last year						
	Bivariate Model	Std error	Multi-variate Model	Std error	Interactive Model with JRCs	Std error
Conflict events	.007	.005	.014**	.006	.023***	.0007
Jamoat Resource Center (1 = yes)	---	---	---	---	.285**	.131
JRC (yes) x Conflict	---	---	---	---	-.045**	.021
Age	---	---	.391***	.038	.391***	.038
Age squared	---	---	-.005***	.0004	-.005***	.0004
Gender (1 = Female)	---	---	-3.05***	.204	-3.06***	0.204
Married (1 = yes)	---	---	-.152	.167	-0.147	0.167
Education (ref. Primary only)	---	---	---	---	---	---
Secondary	---	---	.633***	.181	.623***	.181
Higher Education	---	---	-.300	.219	-.314	.221
Altitude	---	---	-.0002	.0001	.0001	.0002
Intercept	-3.52***	.057	-9.55***	.605	-9.75***	.611
AIC	4494.7		3300.1		3297.5	
N	16,685		15,772		15,772	
*** p < .01 ** p < .05 * p < .10						

	Mig this year	age	gender	married	ed_cat	Land_tot	poor	pcfood	JRC 0/1	Altitude	Conflict events	GBAO dummy
Mig this year	1.00											
age	0.001	1.00										
gender	-0.158	-0.015	1.00									
married	0.067	0.435	-0.026	1.00								
ed_cat	0.043	0.195	-0.111	0.265	1.00							
Land_tot	-0.026	0.000	-0.012	0.012	-0.041	1.00						
poor	0.004	0.002	-0.018	-0.004	0.029	0.007	1.00					
Pcfood	-0.013	0.047	-0.010	-0.019	0.066	-0.078	0.572	1.00				
JRC 0/1	0.012	-0.206	0.000	0.007	-0.074	0.291	-0.020	-0.109	1.00			
Altitude	-0.021	0.039	0.004	-0.036	0.042	0.162	0.049	0.123	-0.269	1.00		
Conflict events	0.016	-0.009	0.009	-0.016	0.024	-0.483	0.025	0.143	-0.352	-0.086	1.00	
GBAO dummy	-0.021	0.055	0.004	-0.038	0.034	0.122	0.064	0.146	-0.305	0.836	-0.164	1.00

Boldface indicates statistically significant at the 0.05 level

	Bivariate model	Std error	Multivariate model	Std error	Multivariate model for predicting p^a	Std error
Conflict events	-.042	.028	-.025	.034	---	---
Percent pop change in district	---	---	.016	.013	.007	.013
Altitude	---	---	-.0007*	.0004	---	---
Urban	---	---	-.991	.680	-.762	.573
Average household food consumption (in Tajik Rubles) in the district	---	---	.002	.010	-.007	.008
Intercept	.013	.045	.123	1.10	.555	1.05
N	62		62		62	
Chi-squared (p-value)	2.32 (.128)		9.39 (.094)		4.10 (.250)	

*** p < .01 ** p < .05 * p < .10

^aThe variables included as controls in the interactive models in the main body of the text (conflict events and altitude) are removed when predicting p to prevent issues of collinearity.

Other characteristics of the JRCs may affect the findings of this study. For instance, the number of years that a JRC has existed or the number of JRCs that have ever been established in that district. To that end, Table A5, below, presents findings from a subsample of the data in which only individuals with a JRC established in their district are included. I estimate two multivariate interactive models, the first with a variable indicating the years since the first JRC was established in that individual's district before the migration year (2006), and the second with a variable indicating how many JRCs were established before the migration year (2006). Because Gorno-Badakhshan had no JRCs whatsoever, I do not include an indicator for residence in that oblast. The findings from these alternative models are not significant, and thus are not included in the main body of the article.

	Model including years since first JRC established	Std error	Model including the number of JRCs ever established	Std error
Conflict events	-.088	.123	-.025	.055
JRC years of existence	-.010	.052	.023	.075
JRC years x Conflict events	.010	.018	-.001	.006
Age	.376***	.059	.375***	.059
Age squared	-.005***	.001	-.005***	.001
Gender (1 = Female)	-4.41***	.583	-4.41***	.583
Married (1 = yes)	.234	.267	.289	.268
Education (ref. less than basic attainment)				
Secondary	.629*	.275	.620*	.276
Higher Education	-.109	.347	-.098	.346
Altitude	.000	.000	.000	.000
Intercept	-9.38***	.947	-9.47***	.941
AIC	1397		1397	
N	6,910		6,910	

Finally, I test for nonlinearity in the relationship between conflict and migration using a general additive model, the results of which are presented in Figure A1, below. The results for conflict are fairly linear, and support the decision to topcode the variable at 20+ events.

Figure A1. Tests of nonlinearity with a general additive model

