# Exploring the Impact of Conflict Exposure during Formative Years on Labor Market Outcomes in Tajikistan

**August 8, 2014**

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Abstract:
This study explores the effect of the 1992-1998 armed conflict in Tajikistan on the labor market outcomes by gender. The focus is on cohorts that were of school age during the conflict or recently entered the labor force. The regression analysis controls for the cohort and district-level exposure to conflict. Younger women but not men who also lived in regions more affected by conflict, were about ten percentage points more likely to be employed than similarly aged women from lesser affected districts. These results suggest a change in female employment patterns potentially induced by war.

*JEL codes:* J22 - Time Allocation and Labor Supply, O12 Microeconomics Analyses of Household Behavior

*Keywords: Labor Markets, Tajikistan, Armed Conflict, Gender*

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## 1. Introduction

In the post-world war II period about 30 per cent of low income-countries have been affected by a violent armed conflict. The effect of armed conflict shock on the labor market behavior of individuals has not been extensively explored in the literature. Related studies on the economics of the households in developing countries show that households often adjust their labor supply to accommodate for unexpected shocks (Rose 2001). Armed conflict can be considered as such a shock but with additional hardships imposed on the population, such as breakdown of social networks, trust and social order (Cassar et al. 2011; Rohner et al. 2011), instability, increased burden of disease, loss in assets and physical destruction. Conflicts also cause high mortality and morbidity and impose negative effects on neighboring countries (Montalvo and Reynal-Queroll 2007). In these situations, it is important to understand household and individual behavior as such insights could be used in targeting affected populations with social and economic policies.

This study contributes to the growing literature on effects of armed conflict on labor market outcomes of individuals affected by armed conflict (Blattman and Annan 2010; Kondylis, 2010; Fernández et. al. 2011; Kecmanovic, 2013; Menon and Rodgers forthcoming) by focusing on the experience of Tajikistan, a former Soviet Union republic which suffered from a violent armed conflict from 1992 to 1998. While armed conflicts have been common in the Eastern and Central Europe and post-Soviet space, their impacts on population have not yet been studied extensively, with exceptions of Bosnia and Herzegovina and Kosovo (Bhaumik et al. 2006; Kondylis 2010; Do and Iyer 2012; Shemyakina and Plagnol 2013). This study is most closely related to the study by Menon and Rodgers (forthcoming) who explored the effect of Maoist insurgency in Nepal on female employment. This study seeks to quantify the long-term effect of

the Tajik armed conflict on the labor market outcomes of men and women with an especial focus on the performance of the cohorts who were of school age during the conflict or just entered the labor force at the start of the war.

The study combines individual data from the 2007 Tajik Living Standards Survey (henceforth, TLSS 2007) with the district of residence during war level information on conflict exposure that is based on conflict related events in Tajik press, publications by non-governmental organizations, books, and also on two volumes by Nazriev and Sattorov (2005, 2006). The results suggest that by 2007 young women from cohort born in 1970-1985 and who also lived in 'conflict regions' were more likely to be employed than women of similar age who lived in lesser conflict affected regions. Similar tests, using labor hours worked as an extensive measure of labor force participation suggest that the exposure to conflict had affected the labor force participation but not hours worked. Male and female wages do not differ significantly by their residence in more or lesser affected region and by their cohort of birth. These results are robust to the introduction of additional covariates and controls for migration. The analysis that uses a narrower definition of region of residence as a measure of conflict exposure shows that higher female labor force participation is driven by women from Kurgan-Tube region and Raions of Republican Subordination (RRS), which were the hardest hit by the war. These results are conditional on surviving the conflict, and on staying within country's borders.

## 2. Conceptual Framework and Background on Tajikistan

### 2.1 Prior literature

This paper contributes to several strands of studies in development economics and labor. First, it adds to the literature studying the effect of income shocks on household behavior in

developing countries. Second, it adds to the literature on the added worker effect in developing countries where women enter labor markets when men are not available for work. Third, it contributes to the literature on coping strategies used by households in countries affected by violent civil conflict. Fourth, it sheds light on the transmission of shocks to human capital during one's childhood on labor market participation and wages.

Recent studies show that the specific types of shocks experienced by households may have a differential impact on human capital accumulation and labor market outcomes. The Chinese Cultural Revolution had a large negative impact on the earnings of the affected cohort (Meng and Gregory 2007). In northern Uganda, formerly abducted child soldiers had lower educational attainment and were less likely to be employed in capital intensive occupations, suggesting that time away while in insurgent forces had a negative impact on one's long-term life outcomes (Blattman and Annan 2010). In rural India, household-specific shocks led to an increase in male off-farm labor market participation to protect household's consumption level (Kochar 1999).

Exposure to armed conflict may also affect labor supply in the following ways. First, if the conflict affected areas were significantly damaged during the war, employment opportunities may also have vanished, increasing the unemployment rate. This increase may lead to two effects (Killingsworth 1983). The first is the "discouraged-worker effect" where the overall labor force participation rate falls partially due to an increase in numbers of unemployed, working-age individuals who are not looking for jobs. The second effect is an "added worker effect" (AWE) where married women enter the labor market when their husbands become unemployed. An extensive literature finds a sizable AWE in analyses of women's transition in and out of the labor force in response to the husband's unemployment in the presence of borrowing constraints

(Lundberg 1985; Finegan and Margo 1994; Fernandes and de Felicio 2005). Labor supply of women adjusts to temporary changes in their husband's employment, while household's consumption responds to permanent changes in income, for example, persistent unemployment.

During shocks such as conflict we may also observe gender-differentiated labor market outcomes. First, the labor force participation rate may increase among women and children in as men may not be there for household production or labor market activities (Buvinic´ et al. 2012). Such effects on female labor supply may persist even after the conflict ends (Acemoglu et al. 2004), as women learn about job opportunities and acquire employment experience that changes their preferences regarding work. Second, labor force participation rates and/or wages may be higher among males in conflict affected communities. Scarcity of male labor may increase male wages. This increase may have a two-fold impact on labor hours supplied. A substitution effect may be observed where men exchange leisure for labor. There could be also an income effect, when men do not have to work as long to earn the same income due to higher wages. If the two effects offset each other, we would not observe significant differences in hours supplied across more and less conflict-affected regions.[1] Furthermore, an increase in male wages may be short lived, as an influx of migrants drawn in by higher wages would equalize wages across regions. However, the premium may remain intact if people are deterred from migration by potential recurrence of violence. If women enter employment in large numbers, this influx will lower female wages. However, if women take on jobs previously filled by men, we should expect to see on an average higher female wages in conflict affected areas, and lower wages for males in these regions and occupations (Acemoglu et. al. 2004).

The analysis in this paper focuses on the supply side of labor market. However, the conflict could have also affected the demand side of the labor market by destroying labor market

opportunities or by restructuring employment. Post-conflict reconstruction may also affect employment opportunities by gender, if it targets ex-combatants.

### 2.2 The 1992-1998 armed conflict in Tajikistan

Soon after its independence in 1991 Tajikistan was afflicted by a violent civil war that was followed by a protracted armed conflict ending in 1998. The capital, Dushanbe, and southern region Khatlon and the Raions of Republican Subordination (RRS) were severely affected by the war and its aftermath.

The consequences of the 1992-1998 armed conflict in Tajikistan were staggering. According to official government sources, 80 per cent of the country's industry was destroyed by the end of 1992.[2] In agricultural areas, livestock and equipment were often stolen or destroyed, and there were labor shortages due to migration. About 600,000 or close to 10 per cent of the then population were internally displaced and one percent migrated abroad. 500,000 people, especially those of Slavic origin, emigrated permanently to Russia or other countries in the Former Soviet Union space (Falkingham 2000).

The largest loss of life attributed to fighting occurred in 1992-1993 with estimates varying between 50,000 and 100,000 people. Figure 1.1 illustrates a spike in mortality rate for men aged 20-59 in 1992-1993, with the sharpest increase for men aged 20-24 and 25-39. Female mortality rate also increased in 1992 and 1993, by 1.2 (for women aged 40-50) to 1.4 (women aged 25-39) times compared to 1989 (Figure 1.2). A disproportionate number of deaths among young men created many widows. The percentage of widows ages 20-29 and 30-39 substantially increased between 1989 and 2000 (Table 1), with particularly large increases for women from Dushanbe, Khatlon and RRS, that experienced the most fighting. Further, the war and the

resultant instability disrupted children's schooling, and had a negative effect of school enrollment of young girls (Shemyakina 2011).

Exposure to conflict induced some changes in gender roles. The southern regions of Tajikistan that were more affected by the conflict were also reported to have become more conservative due to Islamic influence from Afghanistan, with an increase in hijab wearing and a requirement of chaperones to accompany young women (Falkinham 2000). At the same time, many women became more engaged in economic activities. For example, older women were more likely to travel to markets as they had better chances to pass through security checkpoints without a serious trouble compared to men who were afraid to leave their villages (Human Rights Watch 1995; Gomart 2003). Many women engaged in various income generating activities because men were either in hiding to avoid being drafted into fighting forces, had migrated or were dead (Tadjbakhsh 1996).

A natural question arises: how did Tajikistan deal with the post-war reconstruction? Information on post-war reconstruction processes in Tajikistan is limited and we base our discussion on World Bank (2001). Between 1997 and 2001, a series of post-conflict recovery programs was implemented by the World Bank in collaboration with multiple international and non-governmental organizations in Karategin-Tavildara valley in RRS region of Tajikistan (World Bank 2001). Most of these projects were approved for funding in 1997 but often their implementation was delayed by the ongoing security problems in the region.

The reconstruction project in Karategin-Tavildara valley included three components. First, it aimed to support the agriculture through purchase and distribution of seeds and fertilizer. Second, it committed funds to the reconstruction of bridges and roads. Third, a small works reconstruction component included constructing and repairing schools, hospitals and other

community facilities in the region, and performing other repair of the war-damaged infrastructure in power and agriculture sectors. This project aimed to facilitate the peace process and engage former ex-combatants in a productive way. During the project, 112 local contractors were engaged through 154 contracts for small community works. The local population also "contributed in-kind assistance and labor" (World Bank 2001).

The small works component was expected to benefit 106 schools, 40 health care facilities and 25 public buildings and to create temporary employment for about 2,000 people (World Bank 2001: page 13). The infrastructure repair project provided temporary jobs for 590 persons. About one sixth of them were ex-combatants. The irrigation projects benefited about 770 farmers (World Bank, 2001: page 6).

In 1997, a reconstruction project in agriculture was proposed for the Karategin Valley and Tavildara districts. The project also included Saghidasht Jamoyat of Darvaz district (GBAO). More than 3,500 hectares of land were given for cultivation to 5,356 private farmers. 645 farmers were former combatants and/or refugees (World Bank, 2001, Annex 8, p. 28). The reconstruction project helped to create more than 35,000 temporary jobs and to restore 4,138 permanent jobs in the social sector. The engaged about 1,100 ex-combatants (World Bank, 2001: Annex 8, page 29).

We attempt to address the effect of reconstruction projects in this region on employment of residents in the additional robustness checks discussed in section 4.

## 3. Data, Main Variables and Identification Strategy

### 3.1 Data

To explore the effect of conflict on labor force participation by men and women who were of school age during or just before the conflict started in 1992, the study uses data for the 2007 Living Standards Measurement Study for Tajikistan prepared by the World Bank in collaboration with UNICEF and carried out by the National Committee for Statistics.[3] The sampling frame is based on the 2000 Census of Tajikistan. .

The survey includes data on household consumption; the socio-demographic composition of the household; labor market activities, such as participation in the labor force during the last 14 days and number of hours worked; health and education of household members, migration and sources of household income such as individual wages, both cash and in-kind, and remittances. Appendix Table A1 reports summary statistics.

The empirical analysis in this study is based on a sample of 10,583 men and women aged 22-49 in 2007. The employment is defined as having had a job in the last 14 days which is consistent with the definition of employment by the International Labor Organization's (ILO) (see Online Appendix for details). The analysis of wages is based on monetary wages received by an individual from the occupation in which an individual was employed the longest number of hours ("main occupation").[4]

### 3.2 Conflict exposure variable

To identify areas that were more exposed to the conflict, this study employs a district-level conflict variable based on compilation of conflict-related reports in two main Tajik newspapers published in Russian language for the 1992-1998 period, reports by Human Rights Watch (1993, 1995), mentions of conflict in Tajikistan by non-governmental organizations (such as the Crisis Group, the Open Society Institute), and accounts of conflict events in Nazriev and

Sattorov (2005, 2006). Most of the sources refer to districts or groups of districts (for example. Gharm group of raions) as event locations. When sources cited specific locations, for example. Kolkhoz Haghighat in Vaksh district (Human Rights Watch 1995), the conflict exposure was assigned to the district itself. More detail on the regional impact of the conflict could be found in Online Appendix and in Shemyakina (2013).

For the purposes of this analysis 'conflict region' includes all districts in RRS group, Dushanbe, Kurgan-Tube group of districts and the southern districts of Kulob zone (see Shemyakina 2013, Figure 2). Districts in Sugd region, GBAO and northern Kulob are defined as less affected districts. Since the conflict affected most of the country in some way, this definition of conflict regions is likely to underestimate the true impact of the war on the variables of interest. For this reason and as the specific exposure to war differed for different administrative regions of Tajikistan, the empirical analysis is also performed with a set of regional dummy variables that replaced the 'conflict' variable.

Selection into violence and selective migration are two major concerns in studies that analyze the effect of armed conflict on population. One potential source of selection is forced resettlement during the 1930s, where population was brought into valleys from the mountains to increase available labor. Since areas with more resettlement were more heterogeneous they suffered from a higher level of conflict (Tadjbakhsh 1996; Gomart 2003). Unfortunately, we are not aware of any district-level data on forced resettlement that could be used to test for selection into conflict. The 2007 TLSS does not include information on the pre-war characteristics of households and districts. A related study by Shemyakina (2011) shows that damage to household's dwelling during the Tajik civil war was not statistically significantly associated with several reported pre- and post-war characteristics of the households, suggesting that selection

into violence on observable characteristics is unlikely to be of a concern. To address the potential concern of selective migration on labor market participation, where migrants may receive worse outcome when long-term residents (Kondylis 2010), I account for one's migration status using two definitions. The first one is based on an individual's migration during the war and the second one on migration at some point in an individual's life.

### 3.3 Identification strategy

To identify an individual's exposure to the conflict, their labor market outcomes are matched to the district-level exposure to the conflict based on their district of residence in 1992. As migration was widespread during the conflict, the baseline regressions based on Eq. 1 are augmented with controls for one's migration status.

$$(1) \qquad L_{ijk} = \alpha_{1j} + \beta_{1k} + (\sum_{n=1}^{4} P_j K_n)\gamma_n + \delta * C_i + \varepsilon_{ijk}$$

In Equation 1 the dependent variable $L_{ijk}$ denotes a specific labor market outcome. Subscripts on the dependent variable denote individual $i$ residing in the district $j$ and born in year $k$. $\alpha_{1j}$ is a fixed effect for an individual's district of residence in 1992. $\beta_{1k}$ is a year of birth fixed effect. $P_j$ is a dummy variable that controls for the intensity of the conflict in the district of residence. $K_n$ is a dummy variable indicating whether the individual $i$ belongs to one of the four birth cohorts as defined below. $C_i$ is a vector of individual and household specific characteristics. The individual level controls include ethnicity, educational attainment, rural residence and marital status. Household level controls include household size and composition, access to land, non-labor income and female headship.

The sample for the analysis of labor market outcomes is limited to those who were 22-49 year old in 2007. This group rather closely matches the 16-49 age limits used in Menon and

Rogers (forthcoming), but excludes younger individuals who are still likely to be in school. The main coefficients of interest in these regressions are those estimated on the interaction terms between an individual's residence in 'conflict region' in 1992 and a set of four birth cohort dummies (born in 1965-1969, 1970-1975, 1976-1980 and 1981-1985) with the cohort born in 1958-1964 serving as a reference category. The labor market performance of the cohort born between 1970 and 1985 is of a particular interest to this study. This cohort is composed of individuals those early labor market experiences may have been disrupted by the war (born in 1970-1975), while the cohorts born in 1976-1985 include individuals who were of school age during the 1992-1998, and for them, both schooling and labor market experiences were likely to have been disrupted by the war. Recent studies shown that individuals who were of school age during the war obtained less education than individuals with similar characteristics but who were not affected by the conflict during their formative years (Ichino and Winter-Ebmer 2004; Meng and Gregory 2007; Blattman and Annan 2010; Akresh and de Walque 2011; Shemyakina 2011; Akbulut-Yuksel 2014) and some linked the decrease in education and work experience to reduced earnings and employment in less capital intensive industries as adults (Meng and Gregory 2007; Blattman and Annan 2010). Some of the labor market experiences of the older cohorts are likely to have been affected as well, for example, by destruction of industries. The effect on the older cohorts stems more from the conflict-related disruptions to their employment but not from the impact of conflict on their early labor market or education experiences.

The regression analysis is performed separately for men and women as factors driving their employment experiences are very different in Tajikistan which is evident from their labor force participation rates (Figure 2 and Table 2). It is important to note that we do not directly compare labor market outcomes of men to women[5], but focus on comparing these outcomes for

men (women) in ‘conflict regions’ to the labor market outcomes of men (women) of similar age in less affected districts. A comparison of the coefficients across cohorts shows the cohort-specific impact. For example, the estimated coefficient on the stand-alone cohort term will demonstrate whether a specific cohort in ‘conflict-region’ is more likely to be employed than the ‘older’ cohort. We perform F-tests for the equality of the cohort specific coefficients in most of the estimations.

The correct estimation of Eq. 1 is based on the following assumptions. First, in the absence of conflict activity in the exposed regions, all districts were on a similar time trend prior to 1992 and would have remained on the same trend after 1992 in the absence of the civil war (parallel trend assumption). The “parallel trend” is a strong assumption as the civil war coincided with the timing of transition period to independence from the Soviet Union. The collapse of the Soviet Union exposed the formerly economy to forces of market economy that are likely to have affected different sectors and regions differentially.[6] This is a caveat to the analysis. Figure 2 presents labor force participation rates by birth cohort and gender. An examination of trends suggests that labor force participation rates were similar in the more and less affected regions for the older cohorts, born in 1958-1969, both men and women. The labor force participation rates were lower for women from younger cohorts, with a larger decline observed for women in less affected areas who had 6.4 to 10.6 percentage points lower rates of labor force participation than women of the same age in the more affected regions (the differences are statistically significant at the 1 per cent level).

Second, we assume that there are no omitted time-varying and region specific effects correlated with the conflict measure. Including district fixed effects in all specifications allows us to control for common time-invariant factors specific to each district[7].

## 4. Empirical Results

### 4.1 Labor market participation

This paper examines labor market outcomes for individuals aged 22-49 in 2007, which have higher employment rates compared to the 16-21 age group who may be still in school and older individuals, who may have retired. Table 2 presents information on the types of employment held by birth cohort and gender. Older men and women are more likely to be employed. 50.17 and 48.49 per cent of working men and women respectively were employed by a non-household member. Younger men were less likely to be employed by a non-household member than older men, while there was no such difference for women. 27.74 and 12.56 per cent of men and women worked on their own account or in a family business. 20.30 and 36.58 per cent of working men and women worked on a farm owned by themselves or by a household member. Younger men and women were more likely to find employment in agriculture and less likely to work for their own business. A small number of men and women had occasional jobs or were on a leave from their permanent job.

Table 3 presents results from the OLS regressions where the dependent variable is equal to one if an individual reported to have worked in the last 14 days.[8] The analytical sample consists of individuals born during 1958-1985. The main independent variables of interest are the interactions of the residence in the 'conflict region' with a set of birth cohort dummies, estimated separately for men and women. The baseline model includes the interaction terms, 'rural' dummy variable, and year of birth and district fixed effects (Column 1). The second model also includes controls for individual characteristics such as marital status, education and ethnicity.

The third model also controls for household characteristics such as household size and composition, female headship, access to land and non-wage income.

The results of baseline model in Table 3 suggest that men born in 1965-1969 who resided in conflict regions were about 10 percentage points (statistically significant at the 5 per cent level) less likely to be employed compared to the rest of the sample. Younger women, born between 1970 and 1985 were about 10-14 percentage points more likely to be employed compared to the rest of the sample (significant at least at the 5 per cent level). The interaction coefficients are jointly statistically significantly different from zero in Panel B for women in all models. The standalone coefficients for the three cohorts born in 1970-1985 are not statistically significantly different from each other in the regressions for women as shown by the tests for the equality between regression coefficients, but they are statistically different from the coefficient estimated for cohort born in 1965-1969.

Other coefficients have expected signs. An increase in education level has a significant and positive effect on employment for men and women. Married men (women) are more (less) likely to work. Women from larger households are significantly less likely to be employed. Household composition has a strong effect on employment of women. Having young children in the household significantly increases (decreases) chances of employment for men (women). An increase in the number of elderly age 65 and above and in the number of adult males in a household has a negative effect and statistically significant effect on female employment. Non-wage income[9] has a negative impact on the employment of males (significant at the 5 per cent level), but no significant effect on the employment of women. An increase in the amount of land used by a household is associated with higher employment chances for men and women, with a

greater effect observed for women, which is consistent with a larger share of women employed in agriculture noted in Table 2 and with other studies of post-conflict countries (Kumar 2001).

As a robustness check, I also estimated a set of regressions that included early period district level covariates such as the 1991 population density and the 1993 employment levels (Appendix Table A4).[10] The estimated coefficients on the interaction terms are similar in size but less precisely estimated than these in the baseline regressions in Table 3 that include district level fixed effects, suggesting that it is important to account for district level fixed effects to remove variation that is common to all individuals from the same district.[11] The estimated coefficients on the regional covariates are close to zero. Among these regional controls, only the coefficient estimated on the 1993 employment levels is statistically significant from zero at the 5 per cent level in regressions for men. This coefficient has a positive (negative) sign in the regressions for men (women). It is possible that women, who lived in districts with low employment in 1993, were drawn to employment to support their families, a behavior that is consistent with an "added worker effect".

**4.2 Robustness checks**

Table 4 presents results of the baseline models where we also include controls for migration status as it may have affected employment through the loss of social connections (Kondylis 2010). First, we add interactions between cohort terms and an individual having migrated ("moved") during the 1992-1998 war. Second, we add interactions between cohort terms and an indicator for having "ever moved" to a different raion.

In both sets of results for women presented in Table 4, Panels A and B, col. 4-6, the estimated coefficients on the interactive terms for cohorts born in 1970-1985, are positive and

statistically significantly different from zero at least at the 5 per cent level, and are somewhat higher in size relative to the reference coefficients in the baseline regressions. The coefficients estimated on interaction terms between "Moved between 1992 and 1998", cohort terms and 'conflict' dummy variable are jointly not statistically significantly different from zero in any of the estimations for women (Col. 4-6). The interaction terms between cohort dummies and an indicator for having moved during the war, are jointly statistically significantly different from zero at the 10 per cent level in the regressions with individual and household controls and at a higher level in the regressions without controls. The estimated coefficients on these terms are negative for two youngest cohorts and positive for the rest but are imprecisely estimated. In Table 4, Panel A, the only strong and negative effect of migration during the war is observed on the employment of the 1965-1969 birth cohort of women who also lived in conflict exposed region. In the regressions in Panel B, the estimated coefficients on the interactions between birth cohort terms and conflict variable are similar to the baseline results in Table 3, and the effects of migration during one's lifetime only have a consistent negative effect on employment of women born in 1970-1975 who also lived in conflict areas (statistically significant at the 10 per cent level). Thus, it appears that migration had some effect on one's employment but this effect does not appear to be systematically associated with cohort of birth or region of residence during the war.

The impact of conflict differed across regions of Tajikistan, and a catch-all 'conflict region' dummy variable cannot control for the different types of war experiences in regions of Tajikistan. Thus, we perform an additional set of regressions (Table 5) where we replace conflict dummy variable with a set of indicator variables for one's residence in one of five regions of Tajikistan: Sugd, GBAO, RRS, Kulob and Kurgan Tube with a separate dummy variable for the

capital Dushanbe. Residence in Sugd is used as a baseline. Higher employment among younger women from 'conflict region' appears to be driven by women from the conflict-affected Kurgan-Tube and RRS regions suggest results. Kurgan-Tube experienced the most physical destruction during the war. In both RRS and Kurgan-Tube residents were often suspected to be affiliated with the opposition and were labeled "vovchiki' or the opposition supporters. Consequently, from these regions men often had difficulty in working outside their communities as they were beaten or physically threatened in the years following the war (Human Rights Watch 1995). In such communities, women had to take on jobs (Human Rights Watch 1995; Tadjbakhsh 1996) to support their families and they may have continued working after the war.

It is possible that reconstruction activity in some of the regions created additional demand for employment, thus temporarily raising employment rates. Since our data were collected in 2007 and most of the reconstruction activity was completed in 2001, a temporary increase in employment is not a concern for us. If the reconstruction activity had a permanent effect on employment, then we may be picking up the post-war investment results and not the effects of the conflict. To evaluate this possibility, we perform an additional robustness check where we exclude from the sample geographical areas that received substantial reconstruction assistance after the war. Appendix Table A5 reports results of baseline regressions for sub-sample that excludes individuals living in Karategin valley[12] and Appendix Table A6 for the sub-sample that excludes Karategin valley and Darvoz district. The regressions results are similar to the baseline estimates in Table 3, suggesting that higher employment rates of younger women were not confined to areas that received substantial reconstruction assistance.

### 4.3 Wages and conflict

Table 6 presents results from the OLS regressions that examine the link between exposure to conflict and wages. The dependent variable is the natural logarithm of an individual's monetary wages from the main occupation. We add 'one' to the actual wages to account for zero wages. The independent variables include the interaction terms between the birth cohort dummies and the 'conflict region' indicator, rural residence and education level. All models include year of birth and district fixed effects. The estimated coefficients on the interaction terms are not statistically significantly different from zero as stand-alone coefficients or jointly in all models. Positive (negative) signs on the interactive terms for men (women) suggest that that younger men (women) in 'conflict regions' commanded somewhat higher (lower) wages than similarly aged men (women) in less affected areas. Although the coefficients of interest are imprecisely estimated, the pattern in their signs suggests a relative scarcity of men and a relative abundance of women in labor market in areas devastated by war. With respect to other covariates, as it was expected, individuals in rural areas earned less than urban dwellers. Education has a positive effect on earnings of men and women. Married women earn significantly lower wages compared to non-married women. There is no 'marriage' penalty observed for men.

As a robustness check, we also included interactions terms between cohort terms and their interactions with conflict dummy and having "moved between 1992-1998" or "ever moved". The patterns in the coefficient signs suggest that men who "ever moved" and who lived in conflict regions in 1992, earned somewhat lower wages (the set of interaction terms is statistically significantly different from zero at the 10 per cent level, col. 3-6). The pattern in coefficients is not so clear for women, with women from conflict regions and born in 1970-1985 earning lower wages if they moved during the war, while women born in 1981-1985 earned

higher wages (statistically significant at the 10 per cent level) (Col. 9-10). The standalone coefficient estimated on having moved at some point in life is positive for men and women. It is statistically significant at least at the 5 per cent level in the regressions for men who migrated during the war (Col. 3-4) and women who migrated at some point in their life (Col. 11-12), suggesting that timing of migration may have a differential effect on earning patterns of men and women in Tajikistan.

## 5. Potential labor market pathways of the effect of conflict

This section explores several potential pathways that may have led to higher employment observed among younger females from regions more affected by war. First, young women may have been drawn into the labor force during the conflict to replace the labor of men who were either dead, fighting or absent and remained employed once the conflict got over. This result is consistent with earlier studies (Finegan and Margo 1994; Acemoglu et al. 2004).

Second, it is possible that some characteristics of 'conflict regions' may explain higher female labor force participation. For example, it could be that large cities which are less conservative such as Dushanbe may be driving employment results. However, as we saw in Table 5 that includes controls for region of residence, the country's capital, Dushanbe is not responsible for higher employment rates among younger women in 'conflict regions'. Further, all employment regressions include district level fixed effects that allow purging from the estimation time-invariant district specific factors that may be correlated with employment effects.

Third, it is possible that expectations of delayed marriage by younger women in 'conflict regions' of Tajikistan induced these women to enter the labor market (Shemyakina 2013). These

women now are expected to support themselves (and possibly their families) for a longer period of time than women in less affected areas. Additionally, female household heads may have to be employed to support their families. To check if the sample of household heads or non-married women is driving our results, we estimated a set of regressions that include an indicator for being a household head (Table 7, Panel A) and an individual being married (Table 7, Panel B) and their interactions with the cohort terms and conflict region variables. The estimates on the interactions between cohort terms and conflict variable remain of the same size and significance level as in the baseline regressions (Table 7, Panel A). The estimated coefficient on the stand-alone household headship is positive and rather large in the regressions for men, indicating a 12 percentage points increase in employment (significant at least at the 5 per cent level). This variable does not have a consistent statistically significant effect on employment of women, suggesting that in female sub-sample, the increased employment for younger cohort is not driven by the subset of household heads. Panel B presents regression results where we add interactions between "married" and cohort terms. The coefficients on the original cohort terms are almost two times greater than the coefficients in the baseline models in Table 3 and are significantly different from zero at least at the 5 per cent level. The interaction terms between "born in "1970-1985", "married" and "conflict" indicator variables are negative and jointly statistically significantly different from zero at the 1 per cent level. The interactions between cohort terms and "married" dummy are mostly negative but much smaller in size and not jointly statistically significantly different from zero. Thus, marriage has a particular large and negative effect on labor force participation rate for women in conflict areas, and high employment rates observed in the full sample could be attributed to women who are not currently married. The pattern of lower employment rates by younger married women is not common across Tajikistan as we can see

from the coefficients estimated on interaction terms between cohorts and 'married' dummy. Thus, marriage is a particularly important factor in determining female labor force participation rates for conflict-affected areas, potentially indicating a lower bargaining power of women in these locations assuming that outside employment is valued by women.

Another question that comes to mind is whether during the war women actually took the jobs that were previously filled by men and then stayed on, attracted by higher wages. Unfortunately, we do not have access to gender and district disaggregated data on employment by industry over time as State Statistical Committee publications aggregate these statistics across men and women. It is likely that a comparison of pre-and post- war employment rates of males and females by industry would provide us with a distorted view anyway. Possible differences (if found) could not be entirely attributed to shifts in male and female employment due to conflict, but rather to the destruction of various industries during the war or changes in the industrial orientation due to transition processes. Further, if women entered 'male' occupations, average female wages may be higher in the regions that lost more men, while males in such regions states earn lower wages on an average (Acemoglu et al. 2004). However, the regression results presented in Table 6 (Panel B, Col. 7 and 8) do not indicate that female wages differ across regions as the coefficients estimated on the interactions between cohorts and "conflict" variable are not jointly statistically significantly different from zero. Wages are also not different across birth cohorts since none of the estimated coefficients is statistically different from zero.

Further, a return of males from army may displace female employment especially in the formal sector jobs (Bouta et al. 2005). If Tajikistan's experience has been similar, than women who entered "male" jobs during the war, are likely to leave them once the war gets over.

Figure 3 examines whether there are more women in typically male occupations in ‘conflict’ regions. It presents a measure of occupational segregation by gender and region of residence which is a proportion of all working women in the region in a particular industry divided by the proportion of all employed men working in the same industry (based on the industry of main occupation). If the ratio exceeds one, it means that women are overrepresented in that industry and the other way around (Meier and Rauch, 2005: p. 263). The industries are ranked by the overall share of total employment from highest to lowest. For the most part, Figure 3 suggests that women tend to work in ‘female’ and men in ‘male’ occupations. The ratios of women to men in traditionally "male" occupations such as “sale, maintenance and repair of motor vehicles and motorcycles”, "land transportation, transport via pipeline", "electricity, gas, steam and water" are similar across more and less conflict-affected regions. Women are well represented in the industries of “education”, “health and social work” and “manufacture of textiles”. The proportion of women in “agriculture, hunting and forestry” in regions more affected by war is greater than in lesser affected regions, possibly indicating that in war-torn areas, women who had to provide for themselves and their families turned to subsistence agriculture. This survival strategy is not uncommon for countries affected by civil war (Bruck 2004; Menon and Rodgers forthcoming).

Also, as we see from Table 2, younger men and women are more likely to work in agriculture and less likely to work on their own account or in a business owned by a family member than older cohorts. This finding may be explained by a typically lower education level and lack of work experience of younger people. It could also reflect a shift in the overall employment patterns, as the aggregate data for Tajikistan suggest that employment in industries steadily declined from 13.0 per cent in 1991 to 5.7 per cent in 2005, while employment in

agriculture (including personal plots) increased from 44.7 per cent to 67.5 per cent over the same period (State Statistical Committee of Tajikistan 2006). Table 8 presents baseline regression models by type of employment. Both, younger men and women in conflict-exposed areas are more likely to be employed by non-household members than men and women of same age from lesser affected districts (Panel A). The interactive terms are jointly statistically significantly different from zero for men (at the 10 per cent level) but not for women. Next, young men (born in 1976-1985) and women (born in 1970-1975, 1976-1980, 1980-1985) from more conflict exposed areas are more likely to participate in agricultural employment (option: "have you worked on a farm owned by self or a household member") (Panel B). The strongest relationship is observed for self-employment. Men from the more affected districts were about 12 percentage points less likely to work on their own account or a business owned by themselves or a household member than their counterparts in less affected areas. The interactions terms are jointly statistically different from zero at the 1 per cent level, while the individual coefficients are not statistically significantly different from each other. No such relationship is observed for women. Exposure to war is likely to alter tolerance to risk taking activities such as being self-employed or owning a business. Lower-risk taking by individuals may lead to lower but more certain returns in conflict ridden environments (Bruck 2003).

## 6. Discussion and conclusion

The study uses data from the 2007 TLSS survey to evaluate the long-term impact of the 1992-1998 armed conflict in Tajikistan on labor market outcomes for men and women. The regression results suggest that residence in a region more affected by conflict during an individual's formative years had a significant and positive impact on female labor force

participation. The results are robust to alternative specifications, inclusion of additional household and community controls and different sub-samples. Labor income of women (or men) in conflict affected regions is not statistically significantly different from income earned by women of older age or young women who lived in lesser conflict affected regions. Marriage has a large negative effect on employment and wages of women.

The higher employment rates among young women in areas severely affected by the 1992-1998 armed conflict in Tajikistan eight years after the end of the war potentially could be explained by some 'persistence' factor. It is possible that entry into the labor force is rather costly. The main share of the cost is not necessarily in terms of money or investment in acquiring education (as younger women received lower education in the conflict affected areas) but an intrinsic cost of adjusting to employment and securing permission to work from other family members which is non-trivial in the context of Tajikistan. In addition to income from employment, women also experience other gains such as increased autonomy, access to social networks and a break from drudgery of housework. However lower education and wages traditionally received by women suggest that women do not necessarily get the best outcomes.

What are the implications of the higher female employment? On the positive side, we should observe greater female empowerment, financial independence and an acquisition of labor market experience. On the negative side, studies suggest that women who work outside their household spend similar amount of time in non-market activities such as preparing food, fetching water, taking care of children and elderly as women who do not hold outside jobs. Both, market and non-market employment contribute to exhaustion and decrease time spent with children.

While regions that were more affected by the conflict were reported to have become more conservative, the statistical evidence in this study allows us to question the consistency between

what families would want their young women to do (presumably stay at home and raise a family) and what they allow them to do, when the need for survival is greater than the benefit of adhering to traditional values. We should also note, that most of the employment gains in regions more affected by conflict are observed for women who are not currently married, with marriage being a significant deterrent to female employment, especially among younger women.

The results have important policy implications. The increased workforce participation among younger women signals that they may positively respond to new local employment opportunities as on an average younger women in Tajikistan are less geographically mobile than men due to societal constraints (Tett, 1994; Olimova and Bosc, 2003) and childcare duties. A promising research area would be to combine quantitative and qualitative techniques to understand better the implications of increased female employment in Tajikistan on the well-being of their families, and female bargaining power within household.

**References**


Acemoglu, D.; Autor, D.Â.H and Lyle, D.. 2004. "Women, War, and Wages: The Effect of Female Labor Supply on the Wage Structure at Midcentury." *Journal of Political Economy*, 112: 497-551.

Akbulut-Yuksel, M.. 2014. "Children of War: The Long-Run Effects of Large-Scale Physical Destruction and Warfare on Children," *Journal of Human Resources*, 2014, 49: 634-662.

Akresh, R. and D. de Walque. 2011. "Armed Conflict and Schooling: Evidence from the 1994 Rwandan Genocide," IZA Discussion Paper No. 3516.

Bhaumik, S. K.; Gang, I. N. and Yun, M.-S. 2006. "Ethnic Conflict and Economic Disparity: Serbians and Albanians in Kosovo." *Journal of Comparative Economics, 34*: 754-73.

Blattman, C. and Annan, J. 2010. "The Consequences of Child Soldiering." Review of Economics and Statistics, 92: 882-98.

Bliss, F. (2010). *Social and Economic Change in the Pamirs (Gorno-Badakhshan, Tajikistan)*. London and New York: Routledge: Taylor and Francis Group, 2010.

Buvinic´, M., M. Das Gupta, U. Casabonne, and P. Verwimp. 2013. "Violent Conflict and Gender Inequality: An Overview." *The World Bank Research Observer* 28(1): 110–38.

Cassar, A., P. Grosjean and S. Whitt. 2011. "Civil War, Social Capital and Market Development: Experimental and Survey Evidence on the Negative Consequences of Violence," SSRN.

Do, Q.-T. and Iyer, L. 2012. "Mental Health in the Aftermath of Conflict," M. Garfinkel and S. Skaperdas, *Oxford Handbook of the Economics of Peace and Conflict.* New York: Oxford University Press.

Falkingham, J.. 2000. Women and gender relations in Tajikistan. [Manila]: Asian Development Bank Programs Dept. East and Office of Environment and Social Development.

Fernandes, R. and F. De Felicio. 2005. "The Entry of Wife into the Labor Force in Response to the Husband's Unemployment: A Study of the Added Worker Effect in Brazilian Metropolitan Areas." *Economic Development and Cultural Change*, 53: 887-911.

Fernández, M.; A.-M. Ibáñez and X. Peña. 2011. "Adjusting the Labor Supply to Mitigate Violent Shocks: Evidence from Rural Colombia," Policy Research Working Paper. Washington, DC: World Bank.

Finegan, T. Aldrich, and R. A. Margo. 1994. "Work Relief and the Labor Force Participation of Married Women in 1940," *Journal of Economic History* 54: 64-84.

Fridman, L. A. 1994. "Economic crisis as a factor of building up socio-political and ethno-national tensions in the countries of Central Asia and Transcaucasia." in *Central Asia and Transcaucasia: ethnicity and conflict*, edited by Vitalii V. Naumkin. Westport, Conn.: Greenwood Press.

Gomart, E.. 2003. "Between Civil War and Land Reform: Among the Poorest of the Poor in Tajikistan." in *When things fall apart: qualitative studies of poverty in the former Soviet Union*, edited by Nora Dudwick, Elizabeth Gomart, and Alexandre Marc. Washington, D.C.: World Bank.

Greene, W.. 2001. *"Estimating Econometric Models with Fixed Effects"*, New York: NYU.

Human Rights Watch (HRW). (1993). "Human Rights in Tajikistan: In the Wake of Civil War," New York: Human Rights Watch.

Human Rights Watch (HRW). (1995). "Return to Tajikistan: Continued Regional and Ethnic Tensions," Helsinki, Finland: Human Rights Watch. May 1995, Vol. 7, No 9.

Ichino, A. and R. Winter-Ebmer. "The Long-Run Educational Cost of World War II." *Journal of Labor Economics*, 2004, 22: 57-86.
Kecmanovic, M. 2013. "The Short-Run Effects of the Croatian War on Education, Employment, and Earnings." Journal of Conflict Resolution, *Journal of Conflict Resolution, December, 57: 991-1010*.
Killingsworth, M. R. 1983. *Labour Supply*. Cambridge: Cambridge University Press.
Kondylis, F. 2010. "Conflict Displacement and Labor Market Outcomes in Post-War Bosnia & Herzegovina." *Journal of Development Economics, 93*: 235-48.
Kumar, K.. 2001. Aftermath: Women and Women's Organizations in Postconflict Societies: The Role of International Assistance,Washington: U.S. Agency for International Development: Center for Development Information and Evaluation.
Lokshin, M., and E. Glinskaya. 2009. "The Effect of Male Migration on Employment Patterns of Women in Nepal," *World Bank Economic Review* 23: 481-507.
Lundberg, S. 1985. "The Added Worker Effect." *Journal of Labor Economics*, 3(11): 11-37.
Meier, Gerald M. and James E. Rauch. 2005. "*Leading Issues in Economic Development*", Oxford University Press, USA; 8 edition (January 6, 2005)
Meng, X. and R. Gregory. 2007. Exploring the Impact of Interrupted Education on Earnings: The Educational Cost of the Chinese Cultural Revolution. IZA Discussion Paper No. 2548.
Menon, N. and Y. Rodgers. Forthcoming. "War and Women's Work: Evidence from the Conflict in Nepal". *Journal of Conflict Resolution.*
Montalvo, J. G. and M. Reynal-Querol. 2007. "Fighting against Malaria: Prevent Wars While Waiting for The "Miraculous" Vaccine." *Review of Economics and Statistics, 89*: 165-77.
Nazriev, D. and I. Sattorov. 2005. *Respublika Tadzhikistan: Istorya Nezavisimosti. God 1992. [Republic of Tajikistan: History of Independence. Year 1992.]*. Dushanbe: Irfon.
Nazriev, D. and I. Sattorov. 2006. *Respublika Tadzhikistan: Istorya Nezavisimosti. God 1993. [Republic of Tajikistan: History of Independence. Year 1993.]*. Dushanbe: Irfon.
Rohner, D., Thoenig, M., and F. Zilibotti, 2011, "Seeds of Distrust: Conflict in Uganda," Department of Economics, Center for Institutions, Policy and Culture in the Development Process Working Paper No. 417 (Zurich: University of Zurich).
Shemyakina, O. 2011. "The Effect of Armed Conflict on Accumulation of Schooling: Results from Tajikistan." *Journal of Development Economics*, 95: 186-200.
Shemyakina, O. 2013. "Patterns in Female Age at First Marriage and Tajik Armed Conflict". *European Journal of Population*. Volume 29: 303-343.
Shemyakina, O. and Plagnol, A. 2013. "Subjective Well-Being and Armed Conflict: Evidence from Bosnia-Herzegovina." *Social Indicators Research*, 113: 1129-1152.
State Statistical Committee of Tajikistan. 2003. "Regions of the Republic of Tajikistan", Dushanbe.
State Statistical Committee of Tajikistan. 2006. "Regions of the Republic of Tajikistan", Dushanbe.
Tadjbakhsh, S.. 1996. "The Women's Economic Survey of Tajikistan," Dushanbe, Tajikistan: UNIICR and Relief International.
Tett, G. 1994. "'Guardians of the Faith?' Gender and Religion in an (Ex) Soviet Tajik Village," edited by C. Fawzi El-Sohl and J. Mabro, *Muslim Women's Choices: Religious Belief and Social Reality*. Providence/Oxford: Berg.

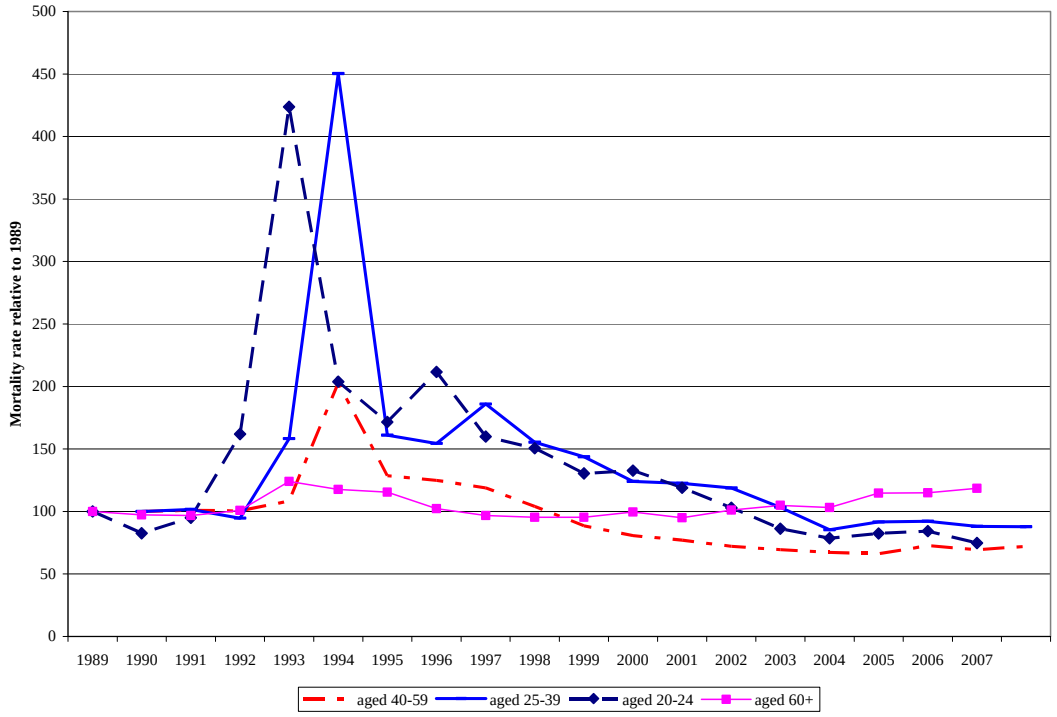
Torjesen, S.; C. Wille and S. N. MacFarlane. 2005. "Tajikistan's Road to Stability: Reduction in Small Arms Proliferation and Remaining Challenges," *Occasional Paper 17.* Geneva: The Small Arms Survey.

TransMonEE 2012. Database. UNICEF Regional Office for CEECIS.

World Bank. 2001. Implementation Completion Report (IDA-30370; TF-23473; TF-21299) on a credit in the amount of SDR7.4 million to the Republic of Tajikistan for a Post-Conflict Emergency Reconstruction Project Infrastructure Sector Unit, Europe and Central Asia Region. http://wwwwds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2001/06/29/000094946_01062004021643/Rendered/INDEX/multi0page.txt (Last Accessed: December 16, 2013).

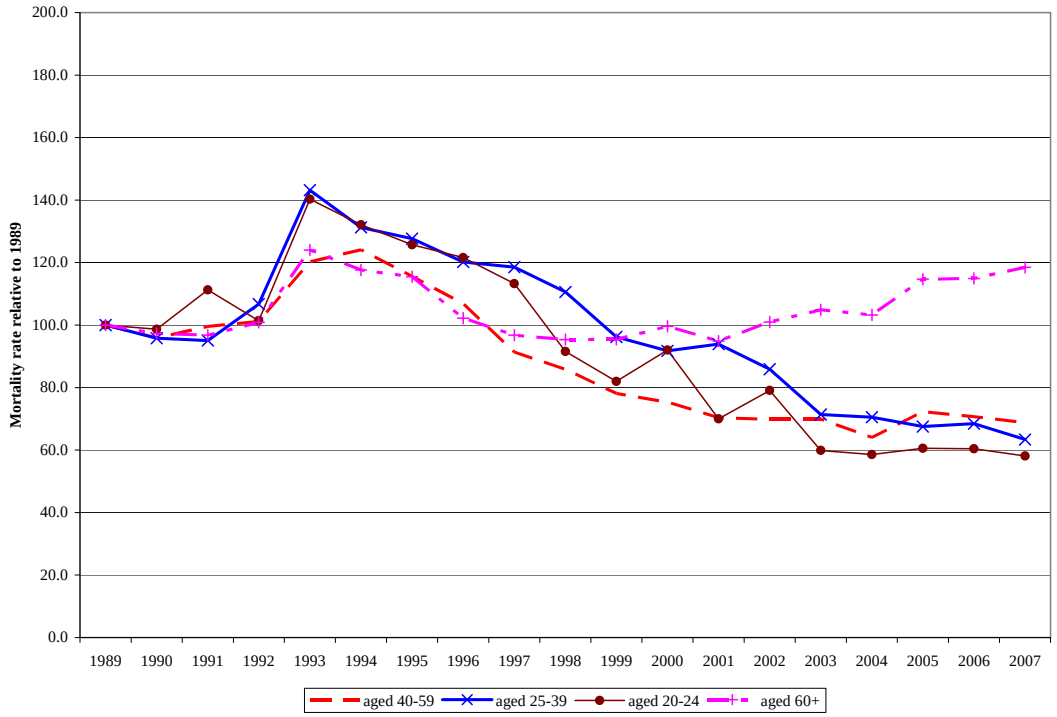
World Bank, 2008. Basic Information Document. Tajikistan Living Standards Measurement Survey 2007. July.

Figure 1.1 – Trends in male mortality: 1989-2007



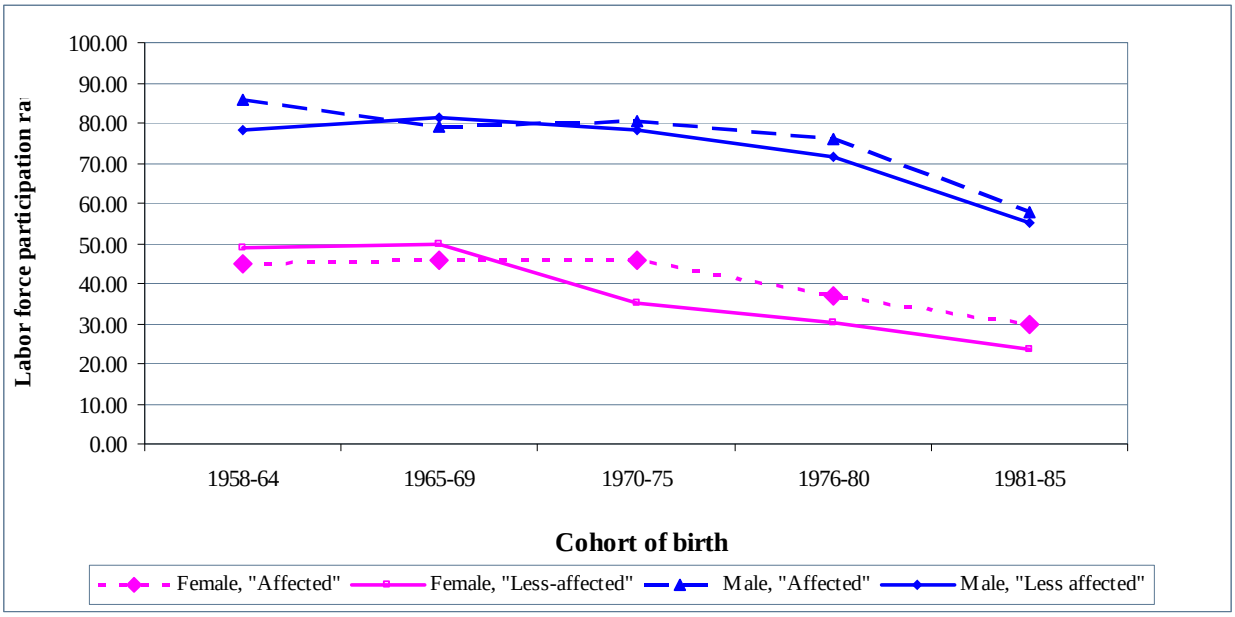

Source: Based on the death rate per 100,000 of relevant population in TransMonEE 2012 Database.

Figure 1.2 – Trends in female mortality: 1989-2007



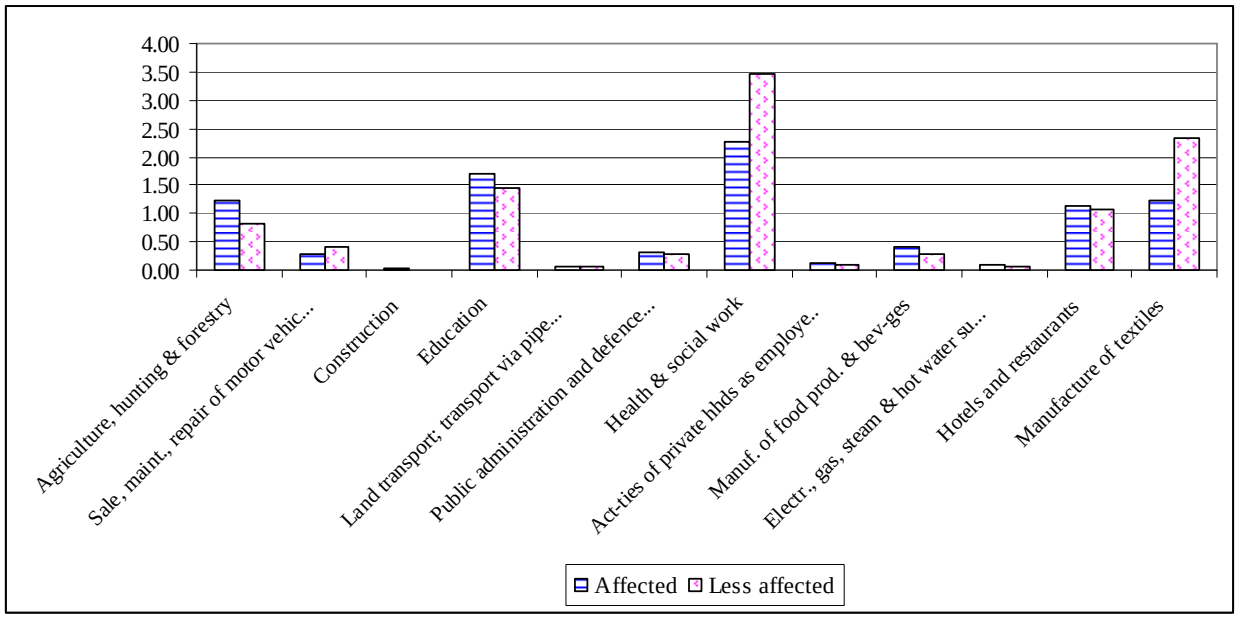

Source: Based on the death rate per 100,000 of relevant population in TransMonEE 2012 Database.

Figure 2 – Labor force participation rates by cohort of birth and region of residence




Source: Author's calculations using TLSS (2007). 'Affected" stands for "more conflict-affected region" and "less affected" stands for "less conflict-affected region". Both are defined in Section 3. Year of birth: 1958-1985.

Figure 3 – Female to male ratio: employment by industry and residence.




Source: Author's calculations using TLSS 2007 data.
Notes: Age group: 22-49 in 2007. Sample of 5,774 employed individuals with non-missing information on the industry of main employment (calculated as the industry with a largest amount of hours worked). The figure presents female to male ratio of employment in each of 12 industries with more than 1 per cent of total employment in Tajikistan. Industries are ranked by their share in total employment: from 38.24 per cent in agriculture and 13.56 per cent in "sale, maintenance and repair of motor vehicles and motorcycles" to 1.09 per cent employed in "manufacture of textiles".

Table 1 - Widows as a percentage of relevant age group. 1989 vs 2000.

| Age groups | GBAO | | Sugd | | Dushanbe | | Khatlon | | RRS | | Overall | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1989 | 2000 | 1989 | 2000 | 1989 | 2000 | 1989 | 2000 | 1989 | 2000 | 1989 | 2000 |
| 15-19 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.1 | 0.2 | 0.1 | 0.2 |
| 20-29 | 0.8 | 1.4 | 0.8 | 1.5 | 0.6 | 2.0 | 0.9 | 3.4 | 0.8 | 3.0 | 0.8 | 2.5 |
| 30-39 | 3.1 | 3.8 | 2.5 | 3.6 | 2.1 | 5.5 | 2.1 | 6.4 | 2.2 | 5.7 | 2.3 | 5.2 |
| 40-49 | 7.8 | 8.7 | 7.9 | 8.3 | 7.3 | 10.7 | 6.3 | 9.7 | 6.3 | 9.0 | 7.0 | 9.1 |
| 50-59 | 19.1 | 19.9 | 18.7 | 20.1 | 18.9 | 22.1 | 15.6 | 19.4 | 14.7 | 19.3 | 17.1 | 20.0 |
| 60-69 | 38.0 | 37.5 | 47.0 | 38.4 | 43.3 | 40.7 | 39.2 | 35.8 | 39.1 | 35.4 | 42.5 | 37.2 |
| 70+ | 66.5 | 69.6 | 80.5 | 75.5 | 77.5 | 68.6 | 69.8 | 70.1 | 69.7 | 70.7 | 74.7 | 72.0 |

Source: Based on State Statistical Committee of Republic of Tajikistan (2003).

Table 2 - Work status in the last 14 days by gender and age. Age: 16-65 in 2007.

| Panel A: Men | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Employment categories | | | | | |
| Birth cohort | Did not work | Worked | Worked for non-hhd member | Worked on farm owned self/ hhd member | Worked on own account/ business owned by self/ family members | Occasional job | On leave from permanent job | N |
| 1958-64 | 17.06 | 82.94 | 51.82 | 18.57 | 27.50 | 0.35 | 1.76 | 1,026 |
| 1965-69 | 19.84 | 80.16 | 52.82 | 19.27 | 25.91 | 0.00 | 1.99 | 751 |
| 1970-75 | 20.20 | 79.80 | 50.78 | 19.22 | 28.13 | 0.16 | 1.72 | 802 |
| 1976-80 | 25.45 | 74.55 | 47.82 | 20.34 | 30.15 | 0.61 | 1.09 | 1,108 |
| 1981-85 | 43.15 | 56.85 | 48.06 | 24.25 | 26.40 | 0.29 | 1.00 | 1,226 |
| Total | 26.40 | 73.60 | 50.17 | 20.30 | 27.74 | 0.30 | 1.49 | 100 |
| N obs | 1,297 | 3,616 | 1,814 | 734 | 1003 | 11 | 54 | 4,913 |
| Panel B: Women | | | | | | | | |
| | | | Employment categories | | | | | |
| Birth cohort | Did not work | Worked | Worked for non-hhd member | Worked on farm owned self/ hhd member | Worked on own account/ business owned by self/ family members | Occasional job | On leave from permanent job | N |
| 1958-64 | 53.55 | 46.45 | 48.09 | 33.20 | 16.90 | 0.40 | 1.41 | 1,070 |
| 1965-69 | 52.84 | 47.16 | 46.02 | 36.63 | 14.70 | 0.00 | 2.65 | 880 |
| 1970-75 | 58.03 | 41.97 | 51.89 | 34.51 | 12.09 | 0.00 | 1.51 | 946 |
| 1976-80 | 65.83 | 34.17 | 48.05 | 38.16 | 11.26 | 0.23 | 2.30 | 1,273 |
| 1981-85 | 72.49 | 27.51 | 48.67 | 40.92 | 7.02 | 0.24 | 3.15 | 1,501 |
| Total | 61.96 | 38.04 | 48.49 | 36.58 | 12.56 | 0.19 | 2.18 | 100 |
| N obs | 3,513 | 2,157 | 1,046 | 789 | 271 | 4 | 47 | 5,670 |

Data source: Author’s calculations using TLSS (2007).

Table 3 – Estimating effect of conflict exposure on employment status.

| | Panel A: Males | | | Panel B: Females | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Conflict region * Born 1965-1969 | -0.101** | -0.103** | -0.104** | 0.005 | 0.014 | 0.026 |
| | (0.040) | (0.039) | (0.039) | (0.047) | (0.045) | (0.044) |
| Conflict region * Born 1970-1975 | -0.027 | -0.027 | -0.032 | 0.146*** | 0.136*** | 0.145*** |
| | (0.042) | (0.039) | (0.038) | (0.047) | (0.045) | (0.046) |
| Conflict region * Born 1976-1980 | -0.012 | -0.016 | -0.015 | 0.120** | 0.127** | 0.132** |
| | (0.044) | (0.042) | (0.042) | (0.054) | (0.051) | (0.052) |
| Conflict region * Born 1981-1985 | -0.028 | -0.016 | -0.015 | 0.102** | 0.138*** | 0.138*** |
| | (0.060) | (0.057) | (0.057) | (0.050) | (0.049) | (0.050) |
| Rural | -0.006 | 0.001 | -0.026 | 0.093*** | 0.107*** | 0.035 |
| | (0.025) | (0.024) | (0.022) | (0.027) | (0.026) | (0.024) |
| **Individual Controls** | | | | | | |
| Married | | 0.158*** | 0.153*** | | -0.171*** | -0.128*** |
| | | (0.025) | (0.027) | | (0.020) | (0.021) |
| Years of education completed | | 0.019*** | 0.018*** | | 0.031*** | 0.030*** |
| | | (0.003) | (0.003) | | (0.003) | (0.003) |
| Uzbek | | 0.003 | -0.003 | | 0.035 | 0.024 |
| | | (0.021) | (0.021) | | (0.024) | (0.021) |
| Russian | | 0.148 | 0.156 | | 0.237** | 0.229** |
| | | (0.094) | (0.105) | | (0.092) | (0.099) |
| Other ethnic group | | -0.117 | -0.107 | | 0.237*** | 0.259*** |
| | | (0.126) | (0.119) | | (0.079) | (0.094) |
| **Household controls** | | | | | | |
| Household size | | | -0.005 | | | -0.006** |
| | | | (0.003) | | | (0.002) |
| Household head is female | | | -0.007 | | | 0.008 |
| | | | (0.020) | | | (0.018) |
| Share of children age 0-6 | | | 0.185*** | | | -0.301*** |
| | | | (0.067) | | | (0.062) |
| Share of children age 7-15 | | | 0.136** | | | -0.059 |
| | | | (0.068) | | | (0.058) |
| Share of elderly, age 65 plus | | | 0.194* | | | -0.338*** |
| | | | (0.115) | | | (0.107) |
| Share of adult males in a hh | | | 0.119 | | | -0.341*** |
| | | | (0.079) | | | (0.061) |
| access to 1-10 sotkas of land | | | 0.061* | | | 0.075*** |
| | | | (0.033) | | | (0.028) |
| access to 11-20 sotkas of land | | | 0.085*** | | | 0.159*** |
| | | | (0.032) | | | (0.033) |
| access to 21 plus sotkas of land | | | 0.093*** | | | 0.185*** |
| | | | (0.035) | | | (0.036) |
| ln_nonwage | | | -0.015** | | | 0.006 |
| | | | (0.006) | | | (0.004) |
| Constant | 0.868*** | 0.483*** | 0.420*** | 0.416*** | 0.204*** | 0.332*** |
| | (0.043) | (0.061) | (0.078) | (0.044) | (0.051) | (0.067) |
| N | 4902 | 4901 | 4901 | 5644 | 5644 | 5644 |
| R squared | 0.07 | 0.09 | 0.10 | 0.04 | 0.09 | 0.11 |

Table 3 - continued

| | Panel A: Males | | | Panel B: Females | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| F-test: Birth Cohorts*Conflict=0, p-values | | | | | | |
| Interactions with "conflict" | 0.14 | 0.10 | 0.09 | 0.01 | 0.01 | 0.01 |
| Born 1970-1975=Born 1976-1980 | 0.70 | 0.77 | 0.65 | 0.49 | 0.79 | 0.69 |
| Born 1970-1975=Born 1981-1985 | 0.98 | 0.81 | 0.70 | 0.29 | 0.96 | 0.86 |
| Born 1976-1980=Born 1981-1985 | 0.68 | 0.99 | 0.98 | 0.68 | 0.79 | 0.88 |
| Born 1965-1969=Born 1970-1975 | 0.10 | 0.07 | 0.08 | 0.00 | 0.01 | 0.01 |
| Born 1965-1969=Born 1976-1980 | 0.06 | 0.04 | 0.03 | 0.01 | 0.01 | 0.02 |
| Born 1965-1969=Born 1981-1985 | 0.21 | 0.10 | 0.10 | 0.02 | 0.01 | 0.01 |

* p<0.10, ** p<0.05, *** p<0.01

Data source: Author's calculations using TLSS (2007).

Notes: Dependent variable: "Worked in the last 14 days". OLS regressions, sample: age 22-49 in 2007.
All regressions include year of birth and district of residence fixed effects. Reference categories: cohort born in 1958-1964, share of adult females in a household, marital status other than 'married', 'Tajik' ethnic group, and access to 0 (zero) sotkas of land. Robust standard errors clustered at the district level are in parenthesis.
Note: Sotka (translated as *are*) is a metric unit of area equal to 100 square meters.
http://www.unc.edu/~rowlett/units/dictS.html (Accessed: October 11, 2010.)

Table 4. Panel A – Interactions of birth cohorts with "moved between 1992-1998" Estimating effect of conflict exposure on employment status.

| | Panel A: Males | | | Panel B: Females | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Conflict region * Born 1965-1969 | -0.101** | -0.105** | -0.105** | 0.017 | 0.024 | 0.036 |
| | (0.041) | (0.040) | (0.040) | (0.047) | (0.045) | (0.044) |
| Conflict region * Born 1970-1975 | -0.023 | -0.024 | -0.029 | 0.169*** | 0.156*** | 0.164*** |
| | (0.042) | (0.039) | (0.038) | (0.047) | (0.046) | (0.047) |
| Conflict region * Born 1976-1980 | -0.007 | -0.012 | -0.011 | 0.128** | 0.129** | 0.136** |
| | (0.045) | (0.043) | (0.043) | (0.054) | (0.051) | (0.053) |
| Conflict region * Born 1981-1985 | -0.016 | -0.005 | -0.004 | 0.105** | 0.140*** | 0.140*** |
| | (0.060) | (0.058) | (0.058) | (0.051) | (0.050) | (0.051) |
| Born 1965-1969*Moved *Conflict | -0.149 | -0.096 | -0.096 | -0.380** | -0.326** | -0.336** |
| | (0.117) | (0.105) | (0.103) | (0.174) | (0.156) | (0.156) |
| Born 1970-1975*Moved *Conflict | -0.066 | -0.053 | -0.048 | -0.233 | -0.215 | -0.198 |
| | (0.164) | (0.170) | (0.170) | (0.167) | (0.158) | (0.151) |
| Born 1976-1980*Moved *Conflict | -0.051 | -0.043 | -0.07 | 0.097 | 0.104 | 0.046 |
| | (0.236) | (0.232) | (0.248) | (0.176) | (0.179) | (0.170) |
| Born 1981-1985*Moved *Conflict | -0.267 | -0.251 | -0.224 | 0.115 | 0.047 | 0.069 |
| | (0.209) | (0.206) | (0.218) | (0.169) | (0.179) | (0.180) |
| Born 1965-1969*Moved | 0.145 | 0.115 | 0.102 | 0.254 | 0.218 | 0.241 |
| | (0.115) | (0.102) | (0.103) | (0.172) | (0.157) | (0.153) |
| Born 1970-1975*Moved | 0.02 | 0.019 | -0.008 | 0.012 | 0.033 | 0.023 |
| | (0.139) | (0.144) | (0.141) | (0.179) | (0.171) | (0.166) |
| Born 1976-1980*Moved | -0.087 | -0.047 | -0.031 | -0.269 | -0.202 | -0.149 |
| | (0.196) | (0.197) | (0.215) | (0.177) | (0.183) | (0.176) |
| Born 1981-1985*Moved | -0.078 | -0.071 | -0.098 | -0.193 | -0.116 | -0.148 |
| | (0.194) | (0.191) | (0.204) | (0.169) | (0.178) | (0.184) |
| Moved within Tajikistan 1992-1998 | 0.059 | 0.034 | 0.049 | 0.101 | 0.082 | 0.082 |
| | (0.051) | (0.052) | (0.051) | (0.076) | (0.074) | (0.077) |
| Rural | -0.004 | 0.001 | -0.024 | 0.093*** | 0.107*** | 0.037 |
| | (0.026) | (0.025) | (0.023) | (0.026) | (0.025) | (0.024) |
| Individual controls | No | Yes | Yes | No | Yes | Yes |
| Household controls | No | No | Yes | No | No | Yes |
| N | 4901 | 4900 | 4900 | 5643 | 5643 | 5643 |
| R squared | 0.07 | 0.10 | 0.11 | 0.05 | 0.09 | 0.11 |
| F-test, p-values | | | | | | |
| Birth cohort*Conflict=0 | 0.14 | 0.09 | 0.08 | 0.00 | 0.00 | 0.00 |
| Birth cohort*Moved_92-98*Conflict=0 | 0.56 | 0.72 | 0.80 | 0.08 | 0.13 | 0.15 |
| Birth cohort*Moved_92-98=0 | 0.34 | 0.51 | 0.64 | 0.02 | 0.09 | 0.10 |

Table 4. Panel B – Interactions of birth cohorts with "moved during lifetime". Estimating effect of conflict exposure on employment status.

| | Panel A: Males | | | Panel B: Females | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Conflict region * Born 1965-1969 | -0.119*** | -0.122*** | -0.121*** | 0.022 | 0.028 | 0.038 |
| | (0.040) | (0.040) | (0.039) | (0.055) | (0.052) | (0.051) |
| Conflict region * Born 1970-1975 | -0.022 | -0.022 | -0.024 | 0.193*** | 0.176*** | 0.186*** |
| | (0.044) | (0.041) | (0.040) | (0.048) | (0.047) | (0.048) |
| Conflict region * Born 1976-1980 | -0.008 | -0.014 | -0.011 | 0.139** | 0.130** | 0.137** |
| | (0.046) | (0.044) | (0.044) | (0.055) | (0.052) | (0.054) |
| Conflict region * Born 1981-1985 | -0.016 | -0.007 | -0.006 | 0.120** | 0.145*** | 0.143*** |
| | (0.061) | (0.058) | (0.058) | (0.053) | (0.053) | (0.054) |
| Born 1965-1969*Moved*Conflict | 0.221 | 0.223 | 0.221 | -0.14 | -0.155* | -0.149 |
| | (0.188) | (0.183) | (0.184) | (0.095) | (0.093) | (0.093) |
| Born 1970-1975*Moved*Conflict | -0.043 | -0.033 | -0.04 | -0.185* | -0.177* | -0.180* |
| | (0.093) | (0.090) | (0.093) | (0.106) | (0.105) | (0.099) |
| Born 1976-1980*Moved*Conflict | -0.088 | -0.073 | -0.097 | 0.016 | 0.041 | 0.009 |
| | (0.116) | (0.118) | (0.126) | (0.071) | (0.066) | (0.063) |
| Born 1981-1985*Moved*Conflict | -0.079 | -0.058 | -0.042 | -0.05 | -0.043 | -0.021 |
| | (0.119) | (0.119) | (0.120) | (0.075) | (0.069) | (0.063) |
| Born 1965-1969*Moved | -0.178 | -0.174 | -0.189 | 0.119 | 0.156* | 0.154* |
| | (0.184) | (0.178) | (0.179) | (0.087) | (0.085) | (0.085) |
| Born 1970-1975*Moved | 0.017 | 0.002 | -0.016 | 0.044 | 0.073 | 0.073 |
| | (0.079) | (0.077) | (0.078) | (0.105) | (0.106) | (0.101) |
| Born 1976-1980*Moved | 0.081 | 0.088 | 0.095 | -0.120* | -0.076 | -0.041 |
| | (0.104) | (0.108) | (0.119) | (0.065) | (0.061) | (0.057) |
| Born 1981-1985*Moved | -0.027 | -0.032 | -0.051 | -0.055 | -0.001 | -0.015 |
| | (0.103) | (0.103) | (0.107) | (0.075) | (0.069) | (0.065) |
| Moved to another raion during lifetime | 0.053 | 0.037 | 0.048 | -0.008 | -0.025 | -0.022 |
| | (0.036) | (0.035) | (0.034) | (0.036) | (0.036) | (0.035) |
| Rural | 0.006 | 0.009 | -0.02 | 0.072*** | 0.092*** | 0.027 |
| | (0.025) | (0.024) | (0.022) | (0.024) | (0.023) | (0.024) |
| Individual controls | No | Yes | Yes | No | Yes | Yes |
| Household controls | No | No | Yes | No | No | Yes |
| N | 4902 | 4901 | 4901 | 5644 | 5644 | 5644 |
| R squared | 0.07 | 0.10 | 0.10 | 0.05 | 0.09 | 0.11 |
| F-test, p-values | | | | | | |
| Birth cohort*Conflict=0 | 0.05 | 0.03 | 0.03 | 0.00 | 0.00 | 0.00 |
| Birth cohort*Moved*Conflict=0 | 0.71 | 0.75 | 0.74 | 0.11 | 0.07 | 0.12 |
| Birth cohort*Moved=0 | 0.77 | 0.74 | 0.65 | 0.12 | 0.08 | 0.18 |

* p<0.10, ** p<0.05, *** p<0.01

Data source: Author's calculations using TLSS (2007).

Notes: Dependent variable: "Worked in the last 14 days". OLS regressions, sample: age 22-49 in 2007.

All regressions include year of birth and district of residence fixed effects, an indicator for residence in rural region and a constant term. Reference category: born in 1958-1964. Individual and household level controls are defined in Table 3. Robust standard errors clustered at the district level are in parenthesis.

Table 5 - Robustness – different definition of conflict variable: employment

| Panel A: Men, regression with full set of controls | | | | | |
|---|---|---|---|---|---|
| | Kulob | Kurgan-Tube | Dushanbe | RRS | GBAO |
| | (1) | (2) | (3) | (4) | (5) |
| Born 1965-1969 | -0.058 | -0.114* | -0.213*** | -0.046 | 0.009 |
| | (0.063) | (0.060) | (0.050) | (0.057) | (0.060) |
| Born 1970-1975 | -0.158*** | -0.090** | -0.220*** | -0.084 | -0.165*** |
| | (0.047) | (0.043) | (0.041) | (0.052) | (0.053) |
| Born 1976-1980 | -0.122 | -0.062 | -0.146** | -0.060 | -0.183** |
| | (0.075) | (0.050) | (0.058) | (0.048) | (0.073) |
| Born 1981-1985 | -0.118 | -0.074 | -0.216** | -0.097 | -0.289*** |
| | (0.077) | (0.071) | (0.093) | (0.074) | (0.085) |
| N | 4912 | | | | |
| R squared | 0.11 | | | | |
| F-test, interactive terms=0 | 0.03 | 0.21 | 0.00 | 0.55 | 0.00 |

| Panel B: Women, regression with full set of controls | | | | | |
|---|---|---|---|---|---|
| | Kulob | Kurgan-Tube | Dushanbe | RRS | GBAO |
| | (1) | (2) | (3) | (4) | (5) |
| Born 1965-1969 | -0.137* | 0.075 | -0.184*** | 0.023 | -0.106 |
| | (0.077) | (0.066) | (0.067) | (0.057) | (0.065) |
| Born 1970-1975 | 0.085 | 0.168** | 0.013 | 0.137*** | -0.108 |
| | (0.091) | (0.065) | (0.055) | (0.049) | (0.072) |
| Born 1976-1980 | 0.086 | 0.120 | -0.025 | 0.129** | -0.087 |
| | (0.095) | (0.087) | (0.057) | (0.063) | (0.083) |
| Born 1981-1985 | 0.077 | 0.198*** | -0.149*** | 0.100*** | -0.230*** |
| | (0.068) | (0.072) | (0.047) | (0.037) | (0.067) |
| N | 5670 | | | | |
| R squared | 0.12 | | | | |
| F-test, interactive terms=0 | 0.02 | 0.05 | 0.00 | 0.00 | 0.01 |

Notes: each panel presents results from a separate regression of models 3 and 6 from Table 3 for men and women respectively. Each column contains a set of interaction terms between birth cohort and region of residence in 1992. All regressions include year of birth and district of residence fixed effects, an indicator for residence in rural region and a constant term. Reference category: born in 1958-1964, a resident of Sugd. Individual and household level controls are include in all regressions and defined in Table 3. Robust standard errors clustered at the district level are in parenthesis.

Table 6 –Effect on Wages from Employment by Region of Residence, Birth Cohort and Migration Status

| | Panel A: Men | | | | | | Panel B: Women | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Full sample | | Interactions with "Moved btw 1992-1998" | | Interaction with "Ever moved" | | Full sample | | Interactions with "Moved btw 1992-1998" | | Interaction with "Ever moved" | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Conflict region * Born 1965-1969 | 0.094 | 0.086 | 0.139 | 0.128 | 0.142 | 0.136 | 0.233 | 0.23 | 0.236 | 0.241 | 0.301 | 0.316 |
| | (0.219) | (0.222) | (0.224) | (0.227) | (0.239) | (0.242) | (0.246) | (0.235) | (0.243) | (0.233) | (0.246) | (0.232) |
| Conflict region * Born 1970-1975 | 0.222 | 0.224 | 0.28 | 0.279 | 0.227 | 0.228 | 0.059 | 0.021 | 0.077 | 0.04 | 0.095 | 0.056 |
| | (0.258) | (0.258) | (0.263) | (0.263) | (0.279) | (0.278) | (0.255) | (0.242) | (0.270) | (0.257) | (0.275) | (0.263) |
| Conflict region * Born 1976-1980 | 0.224 | 0.226 | 0.261 | 0.26 | 0.307 | 0.307 | -0.194 | -0.196 | -0.161 | -0.169 | -0.062 | -0.094 |
| | (0.287) | (0.289) | (0.294) | (0.295) | (0.306) | (0.306) | (0.254) | (0.251) | (0.254) | (0.252) | (0.262) | (0.258) |
| Conflict region * Born 1981-1985 | 0.099 | 0.109 | 0.15 | 0.156 | 0.175 | 0.178 | -0.091 | -0.04 | -0.127 | -0.072 | -0.108 | -0.067 |
| | (0.273) | (0.274) | (0.278) | (0.278) | (0.288) | (0.288) | (0.248) | (0.240) | (0.252) | (0.244) | (0.261) | (0.252) |
| Born 1965-1969*Moved*Conflict | | | -0.677* | -0.557 | 0.148 | 0.149 | | | -0.54 | -0.567 | -0.456 | -0.594 |
| | | | (0.377) | (0.400) | (0.626) | (0.606) | | | (0.853) | (0.840) | (0.523) | (0.534) |
| Born 1970-1975*Moved*Conflict | | | -1.074 | -1.052 | 0.075 | 0.083 | | | -1.171* | -1.131* | -0.209 | -0.223 |
| | | | (0.784) | (0.793) | (0.617) | (0.615) | | | (0.641) | (0.658) | (0.451) | (0.436) |
| Born 1976-1980*Moved*Conflict | | | -0.467 | -0.432 | -1.103*** | -1.100** | | | 0.361 | 0.242 | -0.24 | -0.031 |
| | | | (0.619) | (0.658) | (0.414) | (0.422) | | | (0.676) | (0.732) | (0.703) | (0.708) |
| Born 1981-1985*Moved*Conflict | | | -1.065 | -0.991 | -0.627 | -0.566 | | | 1.203* | 1.060* | 0.493 | 0.556 |
| | | | (0.794) | (0.799) | (0.609) | (0.591) | | | (0.659) | (0.599) | (0.434) | (0.451) |
| Born 1965-1969*Moved | | | -0.157 | -0.238 | -0.57 | -0.566 | | | 0.259 | 0.159 | 0.182 | 0.327 |
| | | | (0.451) | (0.458) | (0.593) | (0.578) | | | (0.841) | (0.798) | (0.500) | (0.514) |
| Born 1970-1975*Moved | | | 0.117 | 0.128 | -0.125 | -0.13 | | | 1.094 | 1.075 | 0.08 | 0.103 |
| | | | (0.724) | (0.746) | (0.630) | (0.627) | | | (0.684) | (0.674) | (0.452) | (0.430) |
| Born 1976-1980*Moved | | | -0.091 | -0.064 | 0.719** | 0.744** | | | -1.276** | -1.019 | -0.655 | -0.734 |
| | | | (0.492) | (0.538) | (0.348) | (0.359) | | | (0.579) | (0.627) | (0.583) | (0.559) |
| Born 1981-1985*Moved | | | 0.359 | 0.325 | 0.052 | 0.03 | | | -0.677 | -0.585 | -0.294 | -0.272 |
| | | | (0.432) | (0.391) | (0.551) | (0.529) | | | (0.567) | (0.531) | (0.333) | (0.348) |
| Moved within Tajikistan dummy | | | 0.854*** | 0.810** | 0.418 | 0.374 | | | 0.555 | 0.497 | 0.478*** | 0.444** |
| | | | (0.312) | (0.306) | (0.284) | (0.285) | | | (0.378) | (0.335) | (0.177) | (0.175) |
| Rural | -0.466** | -0.441** | -0.412* | -0.391* | -0.393* | -0.38 | -1.182*** | -1.049*** | -1.092*** | -0.975*** | -1.125*** | -0.994*** |
| | (0.212) | (0.210) | (0.222) | (0.221) | (0.234) | (0.234) | (0.280) | (0.284) | (0.295) | (0.299) | (0.288) | (0.294) |
| Married | | 0.064 | | 0.063 | | 0.062 | | -0.331** | | -0.330** | | -0.350** |
| | | (0.136) | | (0.137) | | (0.136) | | (0.126) | | (0.127) | | (0.132) |
| Years of education completed | | 0.057** | | 0.055* | | 0.054* | | 0.133*** | | 0.130*** | | 0.130*** |
| | | (0.027) | | (0.027) | | (0.027) | | (0.025) | | (0.025) | | (0.025) |
| N | 3612 | 3611 | 3611 | 3610 | 3612 | 3611 | 2146 | 2146 | 2146 | 2146 | 2146 | 2146 |
| R squared | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.04 | 0.07 | 0.05 | 0.07 | 0.05 | 0.08 |
| F-test, p-values | | | | | | | | | | | | |
| Birth cohort*Conflict=0 | 0.89 | 0.88 | 0.85 | 0.84 | 0.90 | 0.89 | 0.39 | 0.50 | 0.38 | 0.47 | 0.50 | 0.49 |
| Birth cohort*Moved_dummy*Conflict=0 | | | 0.13 | 0.23 | 0.07 | 0.08 | | | 0.09 | 0.13 | 0.63 | 0.43 |
| Birth cohort*Moved_dummy=0 | | | 0.86 | 0.80 | 0.05 | 0.03 | | | 0.03 | 0.11 | 0.43 | 0.16 |

* p<0.10, ** p<0.05, *** p<0.01.

Note: Dep. Var.: ln (monetary wages from main job received in the last 30 days+1). Sample: age 22-49 in 2007.

Reference group: cohort born in 1958-1964. Wages include monetary payments for work from main employment received in the last 30 days. All regressions include year of birth and district of residence in 1992 fixed effects. Robust standard errors clustered at the district level are in parenthesis.

Source: as for Table 3.

Table 7 - Alternative sub-samples. Panel A: Interactions with "household headship". OLS Regressions. Dep. Var.: Worked in the last 14 days. Sample: age 22-49 in 2007.

| | Panel A: Males | | | Panel B: Females | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Conflict region * Born 1965-1969 | -0.121** | -0.130** | -0.128** | 0.016 | 0.023 | 0.033 |
| | (0.059) | (0.057) | (0.058) | (0.043) | (0.042) | (0.041) |
| Conflict region * Born 1970-1975 | -0.036 | -0.036 | -0.039 | 0.148*** | 0.139*** | 0.147*** |
| | (0.049) | (0.046) | (0.046) | (0.048) | (0.046) | (0.047) |
| Conflict region * Born 1976-1980 | -0.021 | -0.025 | -0.027 | 0.123** | 0.129** | 0.133** |
| | (0.050) | (0.048) | (0.048) | (0.054) | (0.051) | (0.052) |
| Conflict region * Born 1981-1985 | -0.028 | -0.019 | -0.021 | 0.109** | 0.139*** | 0.139*** |
| | (0.062) | (0.059) | (0.059) | (0.048) | (0.049) | (0.050) |
| Born 1965-1969*HeadHH*Conflict | 0.031 | 0.041 | 0.036 | -0.074 | -0.081 | -0.058 |
| | (0.062) | (0.058) | (0.058) | (0.116) | (0.122) | (0.116) |
| Born 1970-1975*HeadHH*Conflict | 0.013 | 0.016 | 0.012 | 0.041 | -0.018 | -0.008 |
| | (0.052) | (0.050) | (0.051) | (0.080) | (0.085) | (0.083) |
| Born 1976-1980*HeadHH*Conflict | 0.04 | 0.048 | 0.039 | 0.091 | -0.004 | -0.061 |
| | (0.085) | (0.084) | (0.082) | (0.186) | (0.162) | (0.176) |
| Born 1981-1985*HeadHH*Conflict | 0.177 | 0.193* | 0.187 | -0.472* | -0.273 | -0.21 |
| | (0.112) | (0.112) | (0.114) | (0.251) | (0.213) | (0.215) |
| Born 1965-1969*HeadHH | -0.071 | -0.071 | -0.076 | 0.15 | 0.175* | 0.154 |
| | (0.054) | (0.054) | (0.054) | (0.096) | (0.100) | (0.095) |
| Born 1970-1975*HeadHH | -0.055 | -0.048 | -0.062 | -0.052 | 0.032 | 0.02 |
| | (0.050) | (0.049) | (0.051) | (0.086) | (0.089) | (0.086) |
| Born 1976-1980*HeadHH | -0.026 | -0.04 | -0.047 | 0.082 | 0.163 | 0.195 |
| | (0.084) | (0.084) | (0.085) | (0.178) | (0.163) | (0.169) |
| Born 1981-1985*HeadHH | 0.016 | -0.012 | -0.006 | 0.077 | 0.087 | 0.033 |
| | (0.108) | (0.108) | (0.108) | (0.244) | (0.209) | (0.198) |
| Head household | 0.128*** | 0.105*** | 0.108** | 0.145*** | 0.042 | 0.035 |
| | (0.039) | (0.038) | (0.041) | (0.052) | (0.053) | (0.053) |
| Rural | 0.01 | 0.013 | -0.026 | 0.100*** | 0.110*** | 0.034 |
| | (0.024) | (0.023) | (0.023) | (0.027) | (0.026) | (0.025) |
| N | 4902 | 4901 | 4901 | 5644 | 5644 | 5644 |
| R squared | 0.08 | 0.10 | 0.11 | 0.05 | 0.09 | 0.11 |
| F-test, p-values | | | | | | |
| Birth cohort*Conflict=0 | 0.38 | 0.24 | 0.26 | 0.01 | 0.01 | 0.02 |
| Birth cohort*HeadHH*Conflict=0 | 0.63 | 0.54 | 0.60 | 0.41 | 0.73 | 0.85 |
| Birth cohort*HeadHH=0 | 0.55 | 0.63 | 0.52 | 0.45 | 0.49 | 0.51 |

Table 7 - Alternative sub-samples: Panel B: Interactions with "married". OLS Regressions. Dep. Var.: Worked in the last 14 days. Sample: age 22-49 in 2007.

| | Panel A: Males | | | Panel B: Females | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Conflict region * Born 1965-1969 | -0.314 | -0.3 | -0.327 | 0.031 | 0.033 | 0.036 |
| | (0.235) | (0.233) | (0.208) | (0.144) | (0.136) | (0.130) |
| Conflict region * Born 1970-1975 | -0.096 | -0.084 | -0.085 | 0.388*** | 0.337*** | 0.332*** |
| | (0.114) | (0.108) | (0.106) | (0.074) | (0.074) | (0.074) |
| Conflict region * Born 1976-1980 | -0.031 | -0.023 | -0.024 | 0.213** | 0.192** | 0.205** |
| | (0.080) | (0.081) | (0.081) | (0.086) | (0.083) | (0.084) |
| Conflict region * Born 1981-1985 | -0.013 | -0.011 | -0.013 | 0.227*** | 0.227*** | 0.227*** |
| | (0.064) | (0.066) | (0.065) | (0.072) | (0.073) | (0.075) |
| Born 1965-1969*Married*Conflict | 0.216 | 0.203 | 0.23 | -0.025 | -0.025 | -0.016 |
| | (0.242) | (0.241) | (0.216) | (0.139) | (0.131) | (0.125) |
| Born 1970-1975*Married*Conflict | 0.067 | 0.059 | 0.055 | -0.283*** | -0.231*** | -0.217** |
| | (0.109) | (0.105) | (0.104) | (0.081) | (0.083) | (0.082) |
| Born 1976-1980*Married*Conflict | 0.015 | 0.01 | 0.012 | -0.132* | -0.092 | -0.104 |
| | (0.075) | (0.077) | (0.076) | (0.076) | (0.073) | (0.073) |
| Born 1981-1985*Married*Conflict | -0.019 | -0.012 | -0.006 | -0.175*** | -0.152** | -0.153** |
| | (0.057) | (0.058) | (0.058) | (0.061) | (0.063) | (0.064) |
| Born 1965-1969*Married | -0.074 | -0.12 | -0.148 | -0.074 | -0.091 | -0.118 |
| | (0.153) | (0.150) | (0.147) | (0.124) | (0.117) | (0.109) |
| Born 1970-1975*Married | -0.03 | -0.067 | -0.083 | 0.166** | 0.122 | 0.077 |
| | (0.092) | (0.090) | (0.090) | (0.080) | (0.077) | (0.075) |
| Born 1976-1980*Married | -0.109 | -0.117 | -0.122 | -0.048 | -0.06 | -0.064 |
| | (0.093) | (0.091) | (0.094) | (0.074) | (0.074) | (0.079) |
| Born 1981-1985*Married | -0.103 | -0.116 | -0.123 | -0.008 | -0.022 | -0.041 |
| | (0.087) | (0.087) | (0.090) | (0.068) | (0.068) | (0.066) |
| Married | 0.254*** | 0.257*** | 0.258*** | -0.079 | -0.081* | -0.02 |
| | (0.082) | (0.080) | (0.083) | (0.048) | (0.046) | (0.046) |
| Rural | -0.004 | 0.001 | -0.026 | 0.093*** | 0.105*** | 0.036 |
| | (0.025) | (0.024) | (0.022) | (0.027) | (0.026) | (0.025) |
| N | 4902 | 4901 | 4901 | 5644 | 5644 | 5644 |
| R squared | 0.09 | 0.10 | 0.10 | 0.07 | 0.09 | 0.11 |
| F-test, p-values | | | | | | |
| Birth cohort*Conflict=0 | 0.72 | 0.77 | 0.63 | 0.00 | 0.00 | 0.00 |
| Birth cohort*Married*Conflict=0 | 0.88 | 0.91 | 0.86 | 0.00 | 0.01 | 0.01 |
| Birth cohort*Married=0 | 0.54 | 0.63 | 0.67 | 0.22 | 0.39 | 0.57 |

* p<0.10, ** p<0.05, *** p<0.01

Data source: Author's calculations using TLSS (2007).

Notes: as for Table 4.

Table 8 – Conflict exposure and type of employment

| *Panel A: Dep variable: worked for non hh member* | Panel A: Males | | | Panel B: Females | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Conflict region * Born 1965-1969 | 0.056 | 0.056 | 0.058 | -0.006 | 0 | 0.015 |
| | (0.043) | (0.043) | (0.043) | (0.047) | (0.044) | (0.044) |
| Conflict region * Born 1970-1975 | 0.110*** | 0.115*** | 0.121*** | 0.078* | 0.068* | 0.080** |
| | (0.041) | (0.043) | (0.044) | (0.041) | (0.038) | (0.038) |
| Conflict region * Born 1976-1980 | 0.056 | 0.06 | 0.065 | 0.037 | 0.044 | 0.053 |
| | (0.049) | (0.048) | (0.048) | (0.037) | (0.035) | (0.036) |
| Conflict region * Born 1981-1985 | 0.078* | 0.090* | 0.095** | 0.04 | 0.073* | 0.079** |
| | (0.045) | (0.045) | (0.045) | (0.037) | (0.039) | (0.039) |
| Rural | -0.022 | -0.006 | 0.024 | -0.024 | -0.008 | -0.012 |
| | (0.025) | (0.024) | (0.027) | (0.021) | (0.021) | (0.023) |
| N | 4902 | 4901 | 4901 | 5645 | 5645 | 5645 |
| R squared | 0.03 | 0.06 | 0.07 | 0.02 | 0.09 | 0.10 |
| *All cohorts=0, F-test, p-value* | 0.10 | 0.08 | 0.07 | 0.22 | 0.11 | 0.10 |
| *Difference of coefficients: interactions* | | | | | | |
| Born 1970-1975= Born 1976-1980 | 0.15 | 0.15 | 0.13 | 0.21 | 0.43 | 0.40 |
| Born 1970-1975=Born 1981-1985 | 0.44 | 0.56 | 0.53 | 0.28 | 0.87 | 0.98 |
| Born 1976-1980=Born 1981-1985 | 0.61 | 0.50 | 0.50 | 0.91 | 0.37 | 0.44 |
| Born 1965-1969=Born 1970-1975 | 0.18 | 0.14 | 0.12 | 0.05 | 0.10 | 0.13 |
| Born 1965-1969=Born 1976-1980 | 1.00 | 0.91 | 0.86 | 0.31 | 0.24 | 0.30 |
| Born 1965-1969=Born 1981-1985 | 0.65 | 0.48 | 0.46 | 0.19 | 0.04 | 0.06 |
| *Panel B: Dep variable: worked on farm owned self/hhmem* | Panel A: Males | | | Panel B: Females | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Conflict region * Born 1965-1969 | -0.022 | -0.022 | -0.027 | 0.021 | 0.022 | 0.019 |
| | (0.033) | (0.034) | (0.034) | (0.036) | (0.037) | (0.036) |
| Conflict region * Born 1970-1975 | -0.004 | -0.005 | -0.017 | 0.061* | 0.063* | 0.059* |
| | (0.037) | (0.037) | (0.036) | (0.033) | (0.033) | (0.033) |
| Conflict region * Born 1976-1980 | 0.066* | 0.064* | 0.048 | 0.077** | 0.077** | 0.070** |
| | (0.035) | (0.036) | (0.035) | (0.033) | (0.033) | (0.033) |
| Conflict region * Born 1981-1985 | 0.037 | 0.038 | 0.029 | 0.063* | 0.061* | 0.053 |
| | (0.041) | (0.041) | (0.041) | (0.032) | (0.032) | (0.032) |
| Rural | 0.122*** | 0.117*** | 0.034* | 0.163*** | 0.160*** | 0.102*** |
| | (0.025) | (0.025) | (0.019) | (0.019) | (0.020) | (0.015) |
| N | 4902 | 4901 | 4901 | 5645 | 5645 | 5645 |
| R squared | 0.02 | 0.02 | 0.06 | 0.04 | 0.04 | 0.06 |
| *All cohorts=0, F-test, p-value* | 0.07 | 0.08 | 0.11 | 0.11 | 0.12 | 0.19 |
| *Difference of coefficients: interactions* | | | | | | |
| Born 1970-1975=Born 1976-1980 | 0.02 | 0.02 | 0.02 | 0.57 | 0.62 | 0.69 |
| Born 1970-1975=Born 1981-1985 | 0.27 | 0.25 | 0.21 | 0.94 | 0.95 | 0.84 |
| Born 1976-1980=Born 1981-1985 | 0.42 | 0.45 | 0.58 | 0.64 | 0.57 | 0.54 |
| Born 1965-1969=Born 1970-1975 | 0.61 | 0.62 | 0.77 | 0.19 | 0.18 | 0.19 |
| Born 1965-1969=Born 1976-1980 | 0.01 | 0.01 | 0.02 | 0.09 | 0.09 | 0.12 |
| Born 1965-1969=Born 1981-1985 | 0.21 | 0.20 | 0.23 | 0.20 | 0.23 | 0.30 |

Table 8 – continued

| *Panel C: Dep variable: worked on own account/business owned self/hhmem* | Panel A: Males | | | Panel B: Females | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Conflict region * Born 1965-1969 | -0.143*** | -0.144*** | -0.142*** | -0.019 | -0.017 | -0.016 |
| | (0.034) | (0.035) | (0.035) | (0.019) | (0.019) | (0.018) |
| Conflict region * Born 1970-1975 | -0.120*** | -0.124*** | -0.124*** | 0 | -0.001 | 0.001 |
| | (0.039) | (0.040) | (0.040) | (0.025) | (0.025) | (0.025) |
| Conflict region * Born 1976-1980 | -0.126** | -0.131*** | -0.120** | 0.002 | 0.001 | 0.004 |
| | (0.048) | (0.047) | (0.047) | (0.025) | (0.025) | (0.025) |
| Conflict region * Born 1981-1985 | -0.135*** | -0.135*** | -0.130*** | 0.002 | 0.007 | 0.01 |
| | (0.032) | (0.032) | (0.032) | (0.022) | (0.022) | (0.022) |
| Rural | -0.107*** | -0.111*** | -0.083*** | -0.044*** | -0.044*** | -0.048*** |
| | (0.028) | (0.029) | (0.031) | (0.010) | (0.010) | (0.011) |
| N | 4902 | 4901 | 4901 | 5645 | 5645 | 5645 |
| R squared | 0.03 | 0.03 | 0.04 | 0.02 | 0.03 | 0.03 |
| *All cohorts=0, F-test, p-value* | 0.00 | 0.00 | 0.00 | 0.86 | 0.85 | 0.82 |
| *Difference of coefficients: interactions* | | | | | | |
| Born 1970-1975=Born 1976-1980 | 0.85 | 0.82 | 0.91 | 0.94 | 0.92 | 0.89 |
| Born 1970-1975=Born 1981-1985 | 0.67 | 0.74 | 0.86 | 0.92 | 0.74 | 0.68 |
| Born 1976-1980=Born 1981-1985 | 0.85 | 0.93 | 0.82 | 0.97 | 0.70 | 0.67 |
| Born 1965-1969=Born 1970-1975 | 0.57 | 0.61 | 0.64 | 0.43 | 0.51 | 0.48 |
| Born 1965-1969=Born 1976-1980 | 0.72 | 0.78 | 0.62 | 0.43 | 0.49 | 0.44 |
| Born 1965-1969=Born 1981-1985 | 0.82 | 0.81 | 0.74 | 0.39 | 0.32 | 0.27 |
| Individual controls | No | Yes | Yes | No | Yes | Yes |
| Household controls | No | No | Yes | No | No | Yes |

* p<0.10, ** p<0.05, *** p<0.01
Data source: Author's calculations using TLSS (2007).
Notes: As for Table 4

[1] An increase in demand for male labor is likely to increase their actual and reservation wages. A decrease in changes of being married may decrease reservation wages for women.
[2] Nezavisimaja Gazeta, December 23, 1992 (as quoted in Fridman, 1994).
[3] http://www.worldbank.org/lsms/.
[4] We estimated regressions using total earnings from the main job, including monetary and non-monetary wages, and the results are similar.
[5] I also estimated regressions for the pooled data for men and women born in 1970-1985, with a reference category "born in 1970-1975". The regressions include a set of interactions between birth cohort indicators, a 'female' dummy variable and a 'conflict' indicator term (Appendix Table A2). These results suggest that women born in 1980-1985 were more likely to be employed than men of the same age. In overall, cohorts born after 1976 were less likely to be employed than the cohort born in 1970-1975. There was no statistical difference in employment of these cohorts when we added interactions between conflict and cohort terms and also added an interaction with 'female' dummy term. Additionally, I estimated a set of regressions for sub-samples of cohorts born after 1970, after 1976 and after 1985. This last set includes interactions between 'female' and 'conflict' dummy variables (Appendix Table A3). Women in 'conflict' regions were no less likely to participate in the labor market compared to men of the same age. The coefficients on the stand-alone 'female' dummy variable are negative and highly statistically significant in all of the estimations. The results hold when we introduce interactions with "moved in 1992-1998" (Panel B) and "ever moved" (Panel C). Further, men are significantly more likely to migrate abroad for work than women (Olimova and Bosc, 2003). This gender differentiated labor migration is likely have an impact on the sample composition of non-migrant men who remained in Tajikistan who would not be then directly comparable to non-migrant women.
[6] We would like to thank a referee for this observation.
[7] Depending on the specification, each regression includes data on individuals from 63 to 69 districts (territorial units).
[8] Another possible model choice would be a logit or a probit regression. I estimated the models above using probit specifications and the effects are similar to the reported results. When a model includes fixed effects, the LP model is preferable to probit model which produces inconsistent estimates of the regression coefficients (Greene 2001).
[9] Nonwage income is computed following Lokshin and Glinskaya (2009: p. 493, ft. 9).
[10] The year 1993 employment data includes 61compared to only 44 observations for 1991.
[11] Appendix Table 4 includes district level covariates and thus we cannot include district fixed effects at the same time.
[12] Karategin valley includes districts of Tavildara, Tojikobod, Jirgatol, Gharm, Rogun and Nurobod (formerly, Darband).