H i C N   Households in Conflict Network

Remittances and Labor Supply in Post-Conflict Tajikistan[*]

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HiCN Working Paper 83

October 2010

Abstract: This paper analyzes the impact of remittances on the labor supply of men and women in post-conflict Tajikistan. We find that on average men and women from remittance-receiving households are less likely to participate in the labor market and supply fewer hours when they do. The negative effect of remittances on labor supply is smaller for women, which is an intriguing result as other studies on remittances and labor supply (primarily focused on Latin America) have shown that female labor supply is more responsive to remittances. The results are robust to using different measures of remittances and inclusion of variables measuring migration of household members. We estimate a joint effect of remittances and an individual's residence in a conflict-affected area during the Tajik civil war. Remittances had a larger impact on the labor supply of men living in conflict-affected areas compared to men in less conflict-affected areas. The impact of remittances on the labor supply of women does not differ by their residence in both the more or less conflict affected area.

JEL codes: J22 - Time Allocation and Labor Supply, F22 - International Migration, F24 – Remittances, O12 Microeconomics Analyses of Household Behavior

Keywords: International Migration, Remittances, Labor Markets, Tajikistan

1. Introduction and motivation

Labor migration has become an important component of household coping strategies in countries affected by armed conflict. Violent outbreaks are typically associated with large population movements when individuals, households and sometimes whole communities are forced into displacement (Moore and Shellman 2004). While displacement is in most cases involuntary, economic incentives can be an important factor in decisions to migrate, either as an ex-ante reaction to the threat of conflict, or an ex-post response to unstable economic and political conditions (Engel and Ibanez 2007, Czaikas and Kis-Katos 2009). The significance of labor migration in conflict-affected countries is reflected in the large increase in remittances to migrant and refugee exporting countries that have experienced recent political crises (Goldring 2003).

In this paper, we investigate the impact of remittances on individual labor supply in post-conflict Tajikistan. We analyze the differentiated impact of remittances on the decision to participate in the labor market and on the number of work hours supplied by men and women living in both conflict affected areas and the areas less affected by the civil war. To study this question, we use individual and household-level data from the 2003 Tajik Living Standards Measurement Survey. We combine these data with the raion (district) level data on the conflict events that was collected by one of the authors (see Shemyakina 2007). We then evaluate the joint effect of remittances and household exposure to armed conflict on individual labor supply.

The development literature has long recognized the importance of migration (and resulting remittances) as a mechanism used by households in peacetime to secure income and improve welfare. The impact of remittances in conflict settings is largely under-researched. Researchers and policymakers have focused on understanding the impact of violent conflict on internally displaced and refugee populations while limited attention has been paid to populations remaining in areas of conflict and the mechanisms they develop to cope with violence (Justino 2009). This area of research is hindered by lack of data, insufficient official information on the flow of transfers in conflict areas and difficulties in tracking remittances that are made through informal channels (Lindley 2007).

Remittances have, however, the potential to be important mechanisms of household security both during and after conflict. Lindley (2007) shows that large-scale migration in Hargeisa, Somalia, triggered by armed conflict, resulted in a valuable source of income for those left behind. Remittances were used for general living expenses and human capital investments

and contributed to mitigating the economic and social effects of the conflict such as lack of access to markets, loss of livelihoods, and the removal of children from school. Remittances played a particularly important role in woman-led households where the breadwinner was lost to conflict or migrated. Justino and Shemyakina (2008) show that, following the 1992-1998 Tajikistan civil war, households receiving remittances from relatives who lived abroad had higher overall consumption expenditure, but did not differ from households without remittances in the allocation of household expenditure towards food, education and medical expenses.

While remittances often serve as important source of income for households that stayed behind, this additional income may have a negative effect on the labor supply of non-migrant family members. Remittances are a form of non-labor income for those who stayed behind. An increase in the non-labor income available to a household leads to an increase in reservation wages of household members and a decrease in the opportunity cost of leisure (Killingsworth 1983), which may cause a decrease in labor supply of members of households that receive remittances.

The literature on the microeconomic effects of remittances has focused primarily on peaceful contexts. When data from the conflict-affected countries are used, the effect of conflict is rarely taken into account. However, violent conflict may affect the very structure of labor markets, as well as fundamental individual incentives, tastes and preferences, leading households to make decisions in very different ways compared to what they would have done in a peaceful setting (see Blattman and Miguel 2010, Justino 2009, 2010).

The contribution of this paper is threefold. First, we attempt to advance current understanding of the role of remittances in post-conflict settings by looking at the differentiated ways in which individual labor supply responds to remittance flows in conflict and non-conflict affected communities.

Second, we contribute to the emerging literature on the economic impact of armed conflict by analyzing important labor market effects. While the literature on the economic consequences of violent conflict has advanced understanding of the impact of armed violence on household composition (through deaths, injuries and so forth) and household human capital (through effects on health and education; see review in Justino, forthcoming), only recently have researchers started studying the impact of civil war on labor market outcomes of civilians (Galdo 2010; Menon and van der Meulen 2010; Shemyakina 2010).

Third, we revisit the literature on the impact of remittances on individual labor supply using the case of Tajikistan. The country has experienced some of the most significant migration flows in its recent history,[1] but remains largely under-researched as a case study. The 2003 Tajik Living Standards Measurement Survey (henceforth, TLSS 2003) is used to fill this gap. The TLSS survey is one of the few nationally representative micro-level surveys that attempts to trace remittance flows in a post-conflict setting (the data was collected a few years after the 1992-1998 civil war in Tajikistan). Our analysis focuses on men and women aged 16-65.

Similar to previous literature, we find that the amount of remittances received by a given household has an overall negative impact on the number of labor hours supplied by men and women in the household. The effect of remittances is found to be stronger for men than for women. Such a result is intriguing as previous research on the effects of remittances on labor supply has shown female labor supply is typically more responsive to changes in remittances (Funkhouser 1992; Amuedo-Dorantes and Pozo 2006; Hanson 2007).

We argue that our results are explained largely by the exposure of certain communities to the civil war. Remittances are found to have a negative and significant effect on the labor supply of males in conflict affected areas, but no significant effect on the labor supply by women in those areas. This effect could be explained by changes in attitudes and preferences of individuals, in particular women, during the period of the conflict.

In the next section, we review findings from studies on the effects of remittances on the labor market participation of household members who stayed behind. We then discuss recent trends in conflict, labor migration and remittances in Tajikistan, and put forward the relevant data and descriptive statistics (Section 3). In Section 4, an empirical specification is presented and we employ and discuss the theoretical expectations. In Section 5, the main empirical results are explored. The last section concludes the paper.

2. Literature review

Prior studies on the economic effects of remittances have found significant changes in labor force participation, labor hours and allocation of labor supply across sectors, in response to

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[1] In the dataset, remittances from family members and other relatives in Tajikistan constitute about 23 percent of total household expenditure for those households that report receiving remittances (authors' calculations using TLSS 2003 data). Remittances are the second largest source of income for these households after wages (World Bank 2003).

increases in remittances (Amuedo-Dorantes and Pozo 2006; Damon 2007; Funkhouser 1992; Rodriguez and Tiongson 2001). Overall, these studies find that remittances result in a decrease in the number of labor hours supplied and in the labor force participation of working age men and women. These effects are typically greater for women. While men are found to reallocate their labor hours from formal employment towards potentially riskier activities, such as self-employment, women tend to withdraw from the labor force (often informal labor market activities). The authors argue that the impact of remittances is similar to an increase in non-labor income received by a household (for instance an inheritance). An increase in non-labor income is often associated with a decrease in the opportunity cost of leisure and the relaxation of credit constraints. These effects in turn allow for a greater tolerance of risk and increased participation in self-employment.

Funkhouser (1992) examined the relationship between migration, remittances, labor force and self-employment participation using cross-sectional data from post-conflict Nicaragua. He finds that an increase in remittances has a positive impact on self-employment and a negative effect on labor force participation. The first result is attributed to less restrictive credit constraints and the second to an increase in non-wage income. He finds that for each $100 increase in remittance income (from 0) the probability of labor force participation decreases by 2.1 percentage points for males and 5.0 percentage points for females.

Rodriguez and Tiongson (2001) study the effect of having a migrant amongst household members on the individual probability of labor force participation in urban Philippines. They find that having a migrant member in the household decreases the probability of male labor force participation by 9.4 percentage points. For women, this effect is almost twice as large (18.1 percent).

Amuedo-Dorantes and Pozo (2006) examine differences in hours worked in different types of employment by men and women in Mexico. Once endogeneity of remittances is corrected for, remittances are found to be associated with variation of male labor supply across various categories of employment. Men in particular supply fewer hours to the formal sector and increase their participation in the informal sector. In contrast, women in rural areas work fewer hours in response to increases in remittances. Typically, they withdraw their participation from the informal labor sector and from unpaid work.

Damon (2007) uses panel data from El-Salvador to study the effect of migration on the allocation of labor hours within households. She finds that the decision to migrate affects household labor allocation amongst agricultural households. The amount of remittances received does not have a significant impact. As the household engages in migration, it increases the number of labor hours committed to on-farm work and decreases the number of hours spent in off-farm employment. The effect is the same for adult men and women and children.

The effects of remittances in conflict affected countries are so far largely unknown. While some of the studies reviewed above (e.g. Funkhouser 1992; Acosta 2006; Damon 2007) use data from countries recovering from conflict, they do not explicitly control for the effects of armed conflict in their studies. Some households in conflict affected settings may protect their welfare through migration. Employment markets are also likely to be affected by armed conflict in ways that affect the response of households to changes in income transfers. Ibáñez and Moya (2006) find that unemployment is prevalent amongst displaced populations. Kondylis (2010) shows that displaced populations are less likely to work in the post-conflict period and the productivity levels of returnees tend to be lower than those that stayed. One important effect is the death of males in working age that may lead to changes in the household reallocation of labor with women and children replacing lost male workers (Justino 2009, Rodriguez and Sanchez 2009).

A large literature in labor economics has studied the added worker effects (AWE) of economic shocks, where women join the workforce in response to unemployment of other household members, particularly husbands (for example, Lundberg 1985; Finegan and Margo 1994; Fernandes and de Felicio 2005). This body of research argues that female labor supply is the most responsive to male unemployment in the short run when women join the workforce to replace temporarily lost income. In the long-run, the research shows that it is household consumption rather than female labor supply that adjusts to a permanent drop in income. It is possible that this effect may be present in post-conflict settings. However, this has not been yet studied.

In the following section, we describe trends in migration and remittances flows and provide background on the 1992-1998 armed conflict in Tajikistan. We investigate the joint impact of remittances and conflict exposure amongst Tajik households in sections 4 and 5.

3. The Tajikistan case study

3.1 Overview

The 1992-1998 Tajik armed conflict claimed at least 100,000 lives. About 18 percent of the country's population was displaced in the first few years of the war. The majority of displaced and refugees returned to their homes by 1995. While fighting during the conflict triggered temporary displacement, the destruction of industries and agricultural assets motivated a large labor migration of Tajiks to other parts of the Former Soviet Union (FSU) as borders between the Former Soviet Union Republics were still relatively open. Migration to this region was facilitated by the shared Soviet culture, similarities between education systems and fluency in Russian language. These temporary migration movements presented many Tajiks with an opportunity to establish social and economic networks outside of Tajikistan. Recent research has shown that access to migrant networks in the recipient countries is associated with higher incomes for migrants and access to better jobs (Munshi 2003; Beaman 2009).

Since 1991, labor migration from Tajikistan and the influx of migrant remittances to Tajikistan have become very common. By 2005, almost every family in Tajikistan had sent at least one family member abroad as a migrant worker (IMF 2005). Based on the official data for Tajikistan (Table 1), 492.2 thousand people left the country between 1991 and 2005, which constitutes about eight percent of the population. About 83.8% of the migrants left during the civil war period between 1991 and 1998. Estimates on the number of Tajik migrants vary however within wide margins. Between 2002 and 2005, the estimated number of Tajik migrants in neighboring countries varied from 64,000 to 600,000 registered Tajik migrants and from 26,000 to 800,000 temporary visitors (Kireyev 2006). More reliable estimates show that more than 620,000 seasonal migrant workers (about 18% of adult population) annually travel from Tajikistan to Russia, Uzbekistan, Kazakhstan and Kyrgyzstan (Kireyev 2006).

In the first years of the migration movement, migrants were predominantly middle-age males who often took low skilled jobs in agriculture or construction. However, in recent years, the demographic composition of migrants has started to change. The proportion of young unmarried men, married older women who leave children behind, and younger women with higher education, has increased (Olimova and Bosc 2003).

Tajik migrant workers send home amounts that correspond to a higher share of country's GDP as compared to remittances sent by workers in traditionally high remittance countries. For

example, private remittances to Bangladesh, Egypt and Morocco do not exceed 10 percent of total GDP, while remittances to Tajikistan are estimated to fall within the range of US$400 million to US$1 billion a year, or to 20 to almost 50 percent of total GDP (Kireyev 2006).

Remittances from temporary and permanent migrants have significantly contributed to reducing poverty rates in Tajikistan in the post-war period between 1999 and 2003 (World Bank 2004). In 2003, remittances and other transfers to households ranked as a second largest income source after wages, and constituted about 10 percent of average household income (World Bank 2004). Table 2 provides details on the size of remittances in relation to various items in the balance of payments of Tajikistan.

Despite the large extent of labor migration from Tajikistan since the 1990s, the significance of remittances for the local economy was noticed only recently due to a sudden surge in registered remittances after 2002 (Table 2), when migrants began using banks to send funds to their families (Kireyev 2006). Official figures are nonetheless likely to misrepresent the true level of remittances in Tajikistan as it is difficult to separate migrant remittances from private transfers (between households) or estimate remittances from informal flows of money. It is estimated that only 25 percent of remittances go through formal channels, excluding foreign goods (Olimova and Bosc 2003). The estimates of remittances from household surveys such as the TLSS 2003 are more likely to record remittances received by households through most channels not captured in other official sources (Kireyev 2006). In this study, we rely on household data to analyze the impact of remittances on household labor allocation decisions. One important limitation of the remittance data from the surveys is that remittances brought home by migrants themselves are not likely to be recorded in the category of "remittances received from other household members". Therefore, we employ several measures of remittances and migration to account for potential measurement error in remittances.

3.2 Descriptive statistics: migration and remittances

To study remittances and their impact on household labor supply, we use household data from the 2003 Tajik Living Standards Measurement Survey. The survey was conducted by the State Statistical Agency of Tajikistan in cooperation with the World Bank and several Tajik and international agencies. It contains detailed information on household composition, employment, consumption and expenditure, migration, and private and public transfers for a sample of 4,160

households. The survey also has detailed information on monetary and in-kind transfers received by each household from family members and institutions, such as NGOs. Transfers from government, such as various pensions and allowances, are accounted for in a separate section of the survey and are used for calculation of non-wage income received by the household.

In this paper, we focus on the analysis of remittances in the form of monetary and in-kind transfers sent by family members (household members and other relatives) living abroad or in Tajikistan. 20.7 percent of 4,160 households interviewed in 2003 indicated that they received either a monetary or in-kind remittances from a family member in the last 12 months. About 9.6% indicated that they received remittances from a family member located abroad. 93 percent of the remitters who live abroad live in Russia, while the rest resides in Kazakhstan, Uzbekistan, and other countries. The 2003 data do not contain socio-demographic information on the migrants who are currently abroad and who send remittances and thus we are not able to control for these in our analysis.[2]

The summary statistics for remittance-receiving and non-remittance receiving households from the 2003 TLSS are presented in Table 3. Remittance-receiving households are defined as households that received monetary and in-kind transfers from household members and other relatives in the 12 months prior to being interviewed. Overall, remittance-receiving and non-receiving households report very similar total and per capita household expenditure in the 30 days before the survey. 68% of household monthly expenditure is spent on food items.

Remittance-receiving households are slightly smaller than non-receiving households. 26% of remittance-receiving households are headed by women, in comparison to 18% for non-receiving households (significant at 1% level). Further, household heads in remittance-receiving households are less likely to be currently married, have a lower educational level and are less likely to having been employed in the 14 days prior to the interview. 43% of remittance-receiving households have a household member who lived abroad in the last 12 months as compared to 13% of households who did not report to receive remittances. The average amount of annual remittances is about 700 somoni or 258.30 USD (2.71 somoni per 1USD was the exchange rate for July 2003, IMF 2005).

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[2] The only information available on individual migrants is the relationship of each to the household head. Most migrants fall into one of three categories: the household head himself or herself, and spouses and children of household heads.

Households in the conflict affected areas are more likely to have migrants who are currently in the household (21.3 vs. 15.8 percent) in comparison to households in the lesser affected areas. The average values of annual remittances received vary slightly, with households in conflict affected areas receiving about 156 somoni per year as compared to 128 somoni for households in the lesser affected areas.

3.3 Descriptive statistics: labor force participation and hours worked

The analysis of descriptive data that follows indicates that the receipt of remittances appears to have a significant impact on labor supply of men and women aged 16-65. Men from remittance receiving households are less likely to work (Figure 1, top panel). Further, conditional on employment, men and women in remittance-receiving households work fewer hours than those in the households that do not receive remittances (Figure 2).

In remittance receiving households 39.5 percent of men and 54.1 percent of women aged 16-65 reported zero hours worked in the last two weeks as compared to 29.1 percent of men and 51.1 percent of women in households not receiving remittances (Table 4). Among those who reported non-zero labor hours in the two weeks prior to the survey (Table 5), men and women in remittance receiving households supplied about three hours less than those from households that do not receive remittances (the difference is significant at 1 percent level). According to Fig. 3, there is a larger variation in the number of labor hours worked per week in the 14 days before the interview by men and women from the remittance-receiving households. The particularly high variation for men in labor hours may be due to remittances providing households with security and allowing them to engage in the riskier activities or to wait longer for a better job to come along.

Table 6 lists the reasons why the respondent did not look for work in the last 30 days by gender and household remittance-receiving status. In overall, these reasons are similar across households by remittance-receiving status. For both, men and women, the top two reasons were "student" and "housewife".[3] A higher proportion of men from non-remittance receiving households reported that they were students (28.6 vs. 23.8%). About 19% of men and 4.6% of

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[3] The answer category in the English and Russian questionnaires for 2003 and 2007 of the TLSS translates as "housewife", however this response is a highly peculiar choice for men in Tajikistan. We are planning to obtain questionnaires in Tajik to check the accuracy of translation as it is unlikely that Tajik men would refer to themselves or other men as housewives.

women did not look for work because they believed that there are "no jobs". 7.6% of men and 8.4% of women were retired.

Non-working males (age group 16-65) in remittance-receiving households are on average 29.4 years old or 1.7 years older (significant at 5 percent level) than males from households that do not receive remittances. Non-working females (age group 16-65) in the remittance-receiving households are on average 33.1 years old or 1.2 years older (significant at 5 percent level) than females in the same age group from the households that do not receive remittances.

71.0 percent of men and 47.8 percent of women in conflict affected areas were working or looking for work as compared to 73.6 percent of men and 52.3 percent of women in the lesser affected areas (the differences are significant at 5 and 1 percent levels respectively). Conditional on employment, men and women in conflict-affected communities worked 1.96 and 2.79 hours respectively (significant at 1 percent level) more in the 14 days prior to the survey in comparison to men and women in the lesser affected areas.

Thus, the descriptive analysis suggests that there are significant differences in individual's labor force participation and labor hours supplied across both household-remittance receiving status and residence in conflict-affected areas. The following section explores the channels through which remittances and armed conflict, together and separately, can influence individual labor supply.

4. Theoretical hypotheses and econometric specification

4.1. Theoretical hypotheses

Remittances can have opposing effects on individual labor supply. In line with previous findings in the literature, we expect that an increase in non-wage household income will decrease the labor force participation of both men and women. In the neoclassical model of labor-leisure choice developed by Killingsworth (1983), remittances can be interpreted as non-labor income. Theoretically, an increase in non-labor income should increase household purchasing power and reservation wages, therefore reducing the chance of employment and the number of hours supplied by remittance-receiving individuals (Killingsworth 1983). However, households may initially have to finance the move of household members elsewhere in the country or abroad. The initial investment may force household members that stayed behind into the workforce if the labor inputs of migrants and the labor inputs of those individuals that stay are substitutes

(Amuedo-Dorantes and Pozo 2006). If remittances sent by migrant household members increase over time or are sent on a regular basis, the households can become accustomed to the extra income. It is possible that the family members who stayed behind (even those that increased labor supply initially) may decrease labor participation since increases in non-labor income is associated with a rise in reservation wages, and a decrease in the cost of the leisure. This impact, however, will depend on the type of labor available and may result in changes in patterns of employment (for instance, changes between types of employment or in the number of hours in paid work) rather than changes in the decision to work (Amuendo-Dorantes and Pozo 2006).

What happens among migrant households in conflict affected areas? Exposure to conflict increases the likelihood of death, injury and asset loss by household members. The loss of household members or injury to workers in the household may be compensated by the receipt of remittances. In that case, it is possible that remittances will not yield any effects on the labor supply of household members that stayed behind if the level of remittances sent by the migrant household member may substitute for the loss of household adult workers. Remittances may, however, be accompanied by increases in labor participation if they cannot entirely substitute for the loss of income.

Armed conflict may also lead to changes in gender relations as women that would typically have stayed at home adopt different roles to cope with the absence of males or changes in the structure of society (see Annan et al. 2009). During armed conflict, women often assume the role of household heads when adult males volunteer or are forced into armed groups. High levels of female-headed households are often observed in communities affected by violent conflict (Brück and Schindler 2009, Annan et al. 2009, Bavel and Verwimp 2005). These new roles may contribute to changes in women's preferences and attitudes whereby women will be reluctant to leave the labor market for fear of losing their newly found autonomy even in response to flows of non-wage income to the household (such as remittances).

Conflict may also affect risk perceptions (Voors et al. 2010) and shorten people's planning horizons (Bozzoli and Muller 2010), even in the post-conflict period, due to the danger of conflict re-igniting. These factors may provide incentives for people to remain employed even if remittances could substitute for wage employment.

4.2 Econometric specification

We start the analysis of labor market outcomes by estimating key factors that may affect an individual's decision to participate in the labor market. The participation category includes individuals who have been employed in the 14 days prior to the 2003 TLSS and individuals who were not employed but were actively looking for work (henceforth, "workforce participation"). We use an OLS model with fixed effects at the raion level to estimate Equation 1.

(1) $$WP_{ij} = \alpha_j + R_i\eta_1 + Z_i\eta_2 + C_j\eta_3 + u_{ij}$$

where WP_{ij} is a binary variable indicating whether an individual i living in raion j reported to be working or looking for work in the last 14 days.[4] R_i is the main independent variable, measuring the impact of remittances and migration on labor hours supplied by men and women in Tajikistan. We make use of the following variables: natural log of annual remittances received by a household in Tajikistan, a dummy variable for the household having a returned migrant (someone who lived abroad in the last 5 years), a dummy variable for the household receiving remittances and the household level number of remitters who live abroad or in Tajikistan. These variables are discussed in the next section. Z_{ij} is a vector of household characteristics, such as age, gender of and years of education completed by household head, dependency ratio (number of dependents to number of adults ages 16-65), and household size. Finally, C_j is the vector of community of residence specific characteristics that vary at the raion level.

To control for unobserved correlations in the observations within communities, equation (1) is estimated with fixed effects at the raion level. Using fixed effects at the raion level allows the use of community (primary sampling unit) characteristics that vary within raions, such as rural/urban location and proportion of households in the community that have return migrants. All regressions are estimated with robust standard errors to control for the effect of unobserved heterogeneity. The fixed-effects model eliminates all observed and unobserved community characteristics that are constant across individuals from the same community, removing the bias in the estimation of labor supply that is caused by individual-invariant community characteristics if these community effects do not interact with household and individual characteristics. Since it is possible that some unobservable data on local characteristics, such as availability of jobs, are correlated with the remittances (particularly in communities more affected by the armed

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[4] We also estimated regressions with "have worked in the last 14 days" as a dependent variable and the results are similar to those reported for "workforce participation" in Tables 7 and 9.

conflict), the fixed effects specification helps us to control for this correlation. It is assumed that there are no omitted time-varying and region specific effects correlated with the remittances. If there are such omitted variables and they are positively correlated with remittances, then the estimate of η_1 will be lower in the absolute value, and the impact of remittances on labor supply will be underestimated.

One of the challenges in migration research is that some factors that affect migration and remittance decisions may also influence labor market decisions of those who stay behind. For example, people may migrate away from areas with poor labor market conditions. In the case of conflict, people may migrate from areas where infrastructure was most destroyed and the likelihood of further investment in local industry and other forms of employment is lower. This joint determination causes explanatory variables that measure migration and remittances to be correlated with the error term when we use a standard OLS approach. Some of the studies mentioned above use an instrumental variables approach to address this problem. Amuedo-Dorantes and Pozo (2006) used per capita count of Western Union offices in the Mexican states interacted with household level education characteristics to increase variability of the instrument at the household level. Damon (2006) used community level migration and variables correlated with remittances to tackle this problem. In the case of Tajikistan, some of the potential instruments that are available to us from the data, such as the size of Tajik migrant networks abroad, can also affect the labor supply of household members who stay at home. We think therefore that it is more appropriate to included these variables in the main equations rather than use them as instruments.[5]

As a robustness check, we also estimate regressions where the dependent variable is the number of labor hours supplied in the last 14 days. We use a Tobit model to estimate the relationship between the amount of remittances received by a household and the supply of labor hours by individual household members. The Tobit model allows us to account for the zero-values of labor hours.

We estimate the following equation for the labor hours regression:

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[5] We also estimated an instrumental variables model using the migrant network size as an instrument for ln(remittances). The results are strong and the effect of remittances on the labor force participation by males is significantly higher (the estimated coefficient =-0.0697; significant at 1% level) than in the OLS regression (-0.0146; significant at 5% level) results of which are presented in Section 5. Thus, the results presented are conservative estimates of the effect of remittances on individual labor supply in Tajikistan.

(2) $Y_{ij} = \alpha_0 + \alpha_1 R_i + \alpha_2 Z_{ij} + C_j \eta + v_j + \varepsilon_i$

with $\varepsilon_i \sim Normal(0, \delta^2)$ and

$Y_{ij} = \max(0, Y_{ij}^*)$,

where Y_{ij} is the number of labor hours worked in the last week by a household member aged 16-65. The variables in vectors R_i, Z_{ij} and C_j are the same as those listed above. The regressions are estimated separately for men and women. All regressions are estimated using a Tobit model with random effects specified at the raion level to account for the effects that may be common for all individuals who live in the same raion.

4.3 Measures of remittances, migration and conflict

We use three measures of remittances to account for possible measurement error in the self-reporting of the amount of remittances received. The first measure is the natural logarithm of the amount of remittances received by the household in the past 12 months. The second is a dummy variable that is equal to one if a household receives remittances. The third measure is a set of two variables that represent the number of donors (family members and other relatives) who live in Tajikistan or abroad. These variables include all donors that a household identified as sending remittances, including those donors for whom the household failed to provide the amount received. The last two measures should capture a possible recall bias and measurement error in the amount of remittances received reported by the households as some households may not recall all remittance receipts or fail to estimate the total amount correctly.

In addition to measuring the direct impact of remittances, we explore the effect of having a former migrant in the household on individual labor supply. As we do not have information on the household members who are currently abroad for work-related migration, a dummy variable is created that is equal to one if a household has "a former labor migrant currently living in the household" that is not an individual him/herself. Having a migrant in a household may have a positive or negative effect on the individual labor supply. The direction of the effect would be determined by the complementarity or substitutability of the labor effort of those who stayed behind and that of migrants as discussed previously.

Some households are expected to have either access to remittances or some expectation of future remittances if there are many former migrants in the community. To proxy for that, we

use a variable that denotes "a proportion of households in the community that have a former labor migrant". Remittances can be brought back by neighbors and household members who are heading home for good. As explained above, remittances are expected to negatively affect individual labor supply. Also, former migrants may have higher reservation wages and thus either they would not work for a lower pay or would wait until they can migrate again.[6, 7]

We acknowledge the fact that even if a negative effect of access to migrant network on the labor supply is found, it would be difficult to attribute this effect specifically to remittances. A large size of a migration network in the sending community may also signal a weak local labor market or indicate a small workforce in the community. These two factors will have an opposite impact on the labor supply of the remaining household members. In the first case, they may stay at home as they will rely more on the support of migrants. In the second case, they may be pulled into workforce by higher wages or based on the need to contribute to the local labor market. It is still common in Tajikistan, especially in the rural-cotton growing areas to call people into agricultural work at the collective farms when the need arises.

The TLSS provides valuable information on individual migration within Tajikistan and on periods of time individuals aged 14 and above lived outside Tajikistan. Based on this data, 6.4 percent of a total of 16,847 individuals reported that they lived abroad for 3 months or more between 1998 and 2003. On average, they spent 11.7 months abroad. Over 95 percent of such migrants report going abroad to look for a better paid job or start a business (89.1 and 5.8 percent, respectively). To construct a variable that serves as a proxy for the migrant network outside of Tajikistan, we divided the number of households that have at least one household member who lived abroad for at least three months between 1998 and 2003 by the number of

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[6] Between 1998 and 2003, an average monthly wage in Tajikistan was between 7 and 21 USD, and an average wage in Russia was between 66 and 306 U.S. dollars (IMF 2001, IMF 2005).

[7] A third (164 out of 483, or 34%) of former male migrants indicated they were neither working or had looked for a job in the past 30 days. 25.0% indicated that they are "housewives", 20.1% - that there were no jobs, 20.1% - "other reason", 12.2% said that they do not want to work and 6.7% said that they were in school. Among the 49 former female migrants, 22 did not work or look for work at the time of the survey. Among them 81% were housewives, and the rest indicated that they were either in school or did not want to work (the number is equally split between the two categories).

We also estimated an effect of an individual being a former migrant on their workforce participation while controlling for other covariates. A large negative effect of this variable was found on labor force participation. Males who migrated abroad for at least 3 months since 1998 were 13.6 percentage points less likely to participate in the labor market (significant at 1% level) than males who did not migrate in the past 5 years. The effect of past migration on the workforce participation of women is positive but not statistically significant (results not reported).

surveyed households (usually 20) in each primary sampling unit. A similar variable was used by Damon (2007, 2010) and Acosta (2006) to proxy for the size of migrant network.

The impact of remittances and access to migrant networks on individual labor supply is expected to be greater in conflict affected areas. As mentioned above, mass out-migration first occurred from the conflict affected areas. Thus, although these areas were affected by the war to a greater extent, individuals who lived there had greater access to the migrant networks abroad in the post-conflict period. Recent research suggests that such individuals who had access to an established migrant network in the migrant-receiving countries are more likely to have access to jobs or earn higher wages than individuals who did not have access to such networks (Munshi 2003; Beaman 2009). It is also possible that since the migration for work from these regions started earlier, households were able to adjust their labor supply over time at different rates in comparison to those living in communities less affected by the conflict.

To investigate the impact of living in the areas affected by armed conflict and the possible changes in the labor market environment, we introduce a dummy variable that is equal to one if an area was severely affected by civil war events in 1992-1998. The assignment of the raion to the group that was more or less severely affected by the conflict is based on the analysis of reports of conflict related events by major Tajikistan newspapers, reports published by various non-governmental organizations and the U.S. Department of State. The variable is equal to one if the above mentioned sources reported that a particular raion experienced a repeated abuse of civilians, a large number of conflict-related deaths, bombing or was a place of the major battles during the war. The variable is described in more detail in Shemyakina (forthcoming).

5. Empirical results

5.1 OLS regressions – workforce participation

Table 7 reports results of the OLS regressions where the dependent variable is whether an individual has participated in the work force in the 14 days prior to the survey. The regressions are estimated with fixed effects at the raion level to control for factors that are constant at the raion level, for example, labor market structures.

Column 1 in Table 7 presents the results from the base model. The estimated coefficients on explanatory variables have the expected signs. Married men/women are more/less likely to be in the workforce. Labor force participation increases with age, and is higher for more educated

people and those who live in rural areas. Rural men and rural women are more likely to participate in the labor force (9.2 and 21.6 percentage points, respectively, significant at 1 percent level). Women and men from larger households are less likely to be employed. The estimated coefficients on the dummy for a female household head and dependency ratio are not statistically significant. The results show further that non-labor income has a negative and significant impact on labor force participation of men and has a positive but not significant impact on the labor supply of women.

In Columns 2-6 we test the impact of our remittance and migration variables on the labor supply of men and women in Tajikistan. The estimated coefficients on the dummy variable for household receiving remittances and the natural logarithm of annual remittances are negative and statistically significant for both men and women (Columns 2 and 3). The effect of both variables is higher for men. Men living in remittance-receiving households have 7.6 percentage points lower workforce participation rate as compared to men who live in households that do not receive remittances. Women from remittance-receiving households are 4.9 percentage points less likely to participate in the labor market. Both effects are significant at 1% level.

Individuals from households who have family members and relatives abroad and in Tajikistan who remit money are also less likely to participate in the labor force. The effect is higher for men than for women (Column 4). Male workforce participation declines by 5.4 percentage points for each donor who lives abroad. Each additional donor living abroad reduces women's workforce participation by 3.9 percentage points. The estimated coefficients for having an additional donor who lives abroad or in Tajikistan (Column 4) are not statistically different from each other in the regressions for both men and women. However, we present separate results for donors who live in Tajikistan and abroad, so we can compare the estimated coefficients on the variable denoting number of *donors who live abroad at the present time* (Column 4)[8] and on the dummy variable for household having a *former migrant who lived abroad* (that is not an individual him/herself) for more than 3 months between 1998 and 2003 (Column 5). The results in Column 5 suggest that past migration of other household members

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[8] We use an actual number of donors instead of dummy variables for having a donor because the actual number allows us to exploit a variation in the number of donors in the analysis. Replacing the number of donors abroad or in Tajikistan with dummy variables for household having a donor abroad or in Tajikistan does not affect the significance of the estimates. In the regressions for males, the estimated coefficients on the dummy terms for household having a donor abroad is -0.685 and for having a donor in Tajikistan is -0.702. Both are significant at 1% level. In the regressions for women, the estimated coefficients are -0.0515 (significant at 1% level) and -0.0486 (significant at 5% level) respectively.

has no significant impact on the decision to participate in the labor market for men and women. Thus, current access to remittances has a greater impact on the labor supply of individuals than household access to remittances in the past.

Column 6 presents results from a model that includes a proxy for the access of the household to a network of migrants in the community (henceforth, migrant network). The estimated coefficient on this variable in the regressions for men is almost three times greater than the estimated coefficient in the regressions for women. A one percent increase in the proportion of households in the community that have former migrants decreases labor force participation of men and women by 1.77 and 0.67 percentage points respectively. The result is however only statistically significant for men.

In line with other findings in the relevant literature surveyed in section 2, we observe that remittances have a significant negative impact in the participation of men and women in the labor market. The impact on female labor market participation is however smaller than the impact on male labor participation. This result contradicts previous findings that report a larger negative impact of remittances – and other non-labor income – on female labor market participation.

5.2 Tobit regressions – labor hours supply

Table 8 reports results from Tobit regressions where the dependent variable is the number of hours worked by an individual in the 14 days prior to the survey. In the regressions presented, we control for various family and individual characteristics, such as age, education level, household size, proportion of households in the community that have migrants who lived abroad in the last 5 years. As before, we also control for the set of migration and remittance variables discussed previously: the natural logarithm of the total amount of remittances sent by household members and relatives, a dummy variable indicating whether a household has received remittances from a relative or a household member in the last 12 months, a dummy variable for the household having a returned migrant (someone who lived abroad in the past 5 years) and the proportion of households in the community that have at least one returned migrant. The results are reported separately for men and women in the 16-65 age range.

The sign and significance of the estimated regression coefficients on the set of control variables in Table 8 are similar to the ones we observed in the previous regression estimates

reported in Table 7. The number of labor hours supplied increases with age, education and residence in the rural area. Women from larger households supply fewer hours of work. Married men/women work longer/shorter hours respectively. Non-wage income has a significant negative impact on the labor hours supplied by men and no significant effect on the hours supplied by women.

The estimated coefficients reported in Table 9 on the three measures of remittances are almost two times larger for men than for women (Columns 2, 3 and 4). Having a former migrant in the household reduces hours of work supplied by women, but not by men (Column 5). As before, the number of labor hours supplied by men and women are highly negatively affected by the size of the migrant network in the community. The estimated coefficient is almost three times greater in the regressions for men.

The main difference between Tables 7 and 8 is the impact of having a former migrant in the household (Column 5). Similar to the results in Table 7, this variable has no statistically significant impact on the number of labor hours supplied by men, but has a negative and statistically significant impact on the number of labor hours supplied by women. The results suggest that women from households with former migrants may not stop working but are more likely to reduce their number of hours worked.

The estimates reported on the other remittance variables in Table 8 confirm the results discussed in the previous section: remittances have a stronger effect the labor supply of men than that of women. This is a puzzling result as previous literature on impact of remittances on labor supply has consistently found that women's labor supply is more elastic to the receipt of remittances than the labor supply of men. One possible explanation for this result may lie in the civil war that took place in Tajikistan a few years before the survey, and that resulted in substantial increases in migration outflows from Tajikistan. In the next section, we test for the joint impact of remittances and impact of the armed conflict on individual labor supply.

5.3 Labor supply and conflict exposure

Table 9 reports results where migration and remittance variables are interacted with a dummy for a household living in the conflict-affected area. The results indicate that men and women living in households that receive remittances and who also live in conflict affected regions are significantly less likely to participate in the labor market as compared to men and women from

households that receive remittances and live in the lesser affected areas (Column 1). The direction of effect is the same for men and women, but the magnitude is higher for men (Table 9, Panels A and B, Column 1).

The amount of remittances received (Column 2) and a number of remitters to household who live abroad (Column 3) have a strong negative impact on the labor supply of males (but not females) in the more conflict affected areas. We do not observe a statistically significant impact of any other migration variable on the labor market participation of men or women in conflict affected areas. We obtain similar results in the estimation of Tobit models with the number of labor hours as a dependent variable. The estimation results suggest that the negative impact of remittances on the number of hours supplied by men is greater in the conflict affected areas (Table 10, Panel A, Column 1-3), while the impact of remittances on labor supply of women is greater in the lesser affected areas (Table 10, Panel B, Column 1-3). As in Table 9, the migration variables do not have any statistically significant impact on the number of labor hours supplied by women in conflict affected communities.

Tables 9 and 10 suggest two important results. First, the impact of remittances of the labor market participation of both men and women is more strongly affected in areas that were previously more exposed to fighting during the 1992-1998 civil war. We believe that this result follows from the timing of the process of out-migration in Tajikistan, which started much earlier in the areas more affected by the civil war. People started to migrate after the outbreak of violence from areas that were likely to experience more fighting. Only afterwards did migration outflows increased in other areas of Tajikistan, as the benefits of remittances started to be recognized more widely. The negative impact we observe on individual labor participation and work hours supplied in conflict areas indicates a possible substitution effect between wages and remittances in these areas. We suspect that the lack of significant effects of remittances on the labor market participation of individuals in areas less affected by the civil war indicate the short-term experience of migration in these areas.

Our second and most puzzling result is that the impact of remittances on the labor market participation of men is much more significant than that of women in conflict affected areas. In fact, the labor market participation of women in conflict areas seems to respond hardly at all to flows of remittances. We suggest some possible explanations, most related to possible critical changes in social structures after the civil war. First, women in conflict affected areas remain

employed because either they do not want to leave the labor market or because they cannot. The civil war in Tajikistan – as other civil wars – may have resulted in an increase of female labor market participation to replace for the loss in male labor (when men joined armed forces or were killed). Some of these women may not be willing to return to their homes into their traditional roles even in the event of additional household income. Women who joined the labor force during the civil war in Tajikistan are likely to have faced difficulties when joining paid work as this was not very common. So once they have paid the fixed costs of entering the labor market, such as convincing their families and their husbands' families or convincing employers in accepting them, they may be unwilling to leave. This explanation is very plausible in the context of Tajikistan where in 2003 less than 50% of women reported working in the last 14 days. A similar effect of permanent attachment to the labor force was found by Acemoglu, Autor and Lyle (2004) who studied the effect of female labor supply on the wage structure in the United States after the World War II. Further, Majbouri (2009) in his study of women' workforce participation in Iran has found that urban married women were reluctant to exit the labor market even when the real wages fell by 16% given the difficulties they faced in joining the labor market in the first place.

Another explanation is that remittances in households where women work may not be sufficient to compensate for a loss of wages if women remove themselves from the labor market. These may well be poorer households or simply receive lower amounts of remittances. Testing this hypothesis has found that the differences in consumption expenditure between households that receive remittances and those that do not are small and insignificant (294 and 297 somoni respectively). Additionally there is not much difference observed in the distribution of expenditures by deciles across household remittance-receiving status. Alternatively, there could be an issue with respect to who controls the distribution of remittances. If women do not have access to them, then we should not observe changes in the labor supply of women in response to remittances. Unfortunately available data does not allow us to test this hypothesis further.

Another set of possible explanations is related to conflict-induced changes in individual attitudes and preferences towards risk: the lower response of women's labor supply to remittances may have to do with women in conflict areas being more risk averse. Because they were exposed to conflict, some women may be afraid of what can happen in the future and therefore remain in the labor market making the average response of women's labor supply less

elastic than that of men. There is a large literature that studies economic decision making and risk attitudes of men and women, suggesting that women are more risk averse than men with respect to making investments and thus they earn lower returns. Ammon Jianakoplos and Bernasek (1998) find that single women invest a smaller fraction of their wealth in the riskier assets than single men of comparable economic status. Sunden and Surette (1998) also support such finding of higher risk aversion by women, while Schubert et. al. (1999) suggest that risk preferences of men and women depend of the specific setting of financial goals. At the moment there is no data available to test this hypothesis explicitly in the case of Tajikistan as this would require an experimental research design. This area of research should be explored for further work on individual behavior in conflict settings. For instance, Voors et al. (2010) have reported significant changes in tastes, preferences and risk aversion in conflict situations.

6. Discussion

In this paper we estimate the impact of remittances on the labor supply of working age men and women in post-conflict Tajikistan. Similarly to previous literature, we find that the amount of remittances received by a household has an overall negative impact on the number of labor hours supplied by men and women aged 16-65. We find however that the effect of remittances is stronger for men than for women. This is an intriguing result as previous research on the effects of remittances on labor supply has shown that female labor supply is typically more responsive to changes in remittances (Funkhouser 1992; Amuedo-Dorantes and Pozo 2006; Hanson 2007). This result may be due to the timing of the process of labor-migration in Tajikistan, where migration outside of Tajikistan first occurred from the conflict affected areas and where most of the labor migrants were men. Thus men may reduce their labor supply in the local market as they expect to migrate in the near future. The regression results where we include a dummy variable for an individual being a former labor migrant support this interpretation.

When considering the joint impact of conflict and migration, we find that remittances have a negative and significant effect on the labor supply of males in conflict affected areas, but no significant effect on the labor supply by women in those areas. We suggest that this effect may be caused by changes in attitudes and preferences of individuals – particularly women – during the conflict period. Although the data we have available does not allow us to test directly for the channels underlying this result, we suggest two possible explanations. The first is that

women in the conflict affected areas entered the workforce in response to the needs of the households and the demand for labor in the local labor markets. These women remained employed even after the conflict ended because the fixed costs of joining the labor market in the first place were sufficiently high. Thus, many women may have been permanently drawn into the workforce.

The second explanation for the lower impact of remittances on female labor supply is that women may be more risk averse. By maintaining their jobs and thereby access to wages, women diversify their sources of income. We are not able to test this hypothesis with the data available, nor is there any other research available that has looked at whether women and men will differ in terms of economic decision-making in politically unstable environments, suggesting a promising area for future research.

The results presented in the paper offer two important contributions to the development economics literature. Firstly, the results show strong evidence for the differential way in which men and women respond to remittances and migration of household members with respect to their labor supply decisions. This provides further evidence for the importance of research on intra-household decision-making processes, as well as the impact of gender-differentiated behavior on economic outcomes. Secondly, the study illustrates how migration and conflict taken together may affect individual labor supply by gender. Analyses using only remittances or only conflict data would provide an incomplete picture of the labor supply decisions. Although the paper does not offer a general equilibrium labor supply model, it does provide empirical evidence for the need for further research on how households respond to multiple events.

References

Acemoglu, Daron; Autor, David H. and Lyle, David. "Women, War, and Wages: The Effect of Female Labor Supply on the Wage Structure at Midcentury." Journal of Political Economy, 2004, 112(3), pp. 497-551.

Acosta, Pablo. "Labor Supply, School Attendance, and Remittances from International Migration: The Case of El Salvador," *World Bank Policy Research Working Paper 3903*. World Bank, 2006.

Amuedo-Dorantes, Catalina and Susan Pozo. "Migration, Remittances, and Male and Female Employment Patterns." *American Economic Review: Papers and Proceedings*, 2006, *96*(2), pp. 222-26.

Annan, J., Blattman, C., Mazurana, D. and Carlson, K. 2009. "Women and Girls at War: 'Wives', Mothers and Fighters in the Lord's Resistance Army" HiCN Working Paper no. 63, Households in Conflict Network (www.hicn.org).

Beaman, Lori. "Social Networks and the Dynamics of Labor Market Outcomes: Evidence from Refugees Resettled in the U.S." January 2008. Working Paper. Northwestern University.

Blattman, C. and Miguel, E., 2010 "Civil War" *Journal of Economic Literature* 48 (1): 3-57.

Bozzoli, C. and Muller, C. 2010. "The Impact of Violence on Income Expectations", unpublished manuscript, DIW Berlin.

Czaika, M. and Kis-Katos, K. 2009. "Civil Conflict and Displacement: Village-Level Determinants of Forced Migration in Aceh", *Journal of Peace Research*, 46 (3), May.

Damon, Amy Lynne. "Household Labor Allocation in Remittance-Receiving Households: The Case of El Salvador," Department of Economics, University of Minnesota, 2007.

Damon, Amy Lynne. "Agricultural Land Use and Asset Accumulation in Migrant Households: The Case of El Salvador." *Journal of Development Studies*, 2010, *46*(1), pp. 162-89.

Engel, S. and Ibáñez, A. M. (2007), "Displacement Due to Violence in Colombia: A Household-Level Analysis", *Economic Development and Cultural Change* 55: 335-365.

Fernandes, Reynaldo and Fabiana De Felicio. "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*, 2005, *53*(4), pp. 887-911.

Finegan, T. Aldrich, and Robert A. Margo. 1994. "Work Relief and the Labor Force Participation of Married Women in 1940," *Journal of Economic History* 54 (1): 64-84.

Funkhouser, Edward. "Migration from Nicaragua: Some Recent Evidence." *World Development*, 1992, *20*(8), pp. 1209-18.

Goldring, Luin, Rethinking Remittances: Social and Political Dimensions of Individual and Collective Remittances, CERLAC Working Paper Series, University of York. 2002.

Hanson, Gordon H. "Emigration, Remittances, and Labor Force Participation in Mexico." *Integration and Trade Journal*, 27: 73-103. 2007

House of Commons. *Migration and Development: How to Make Migration Work for Poverty Reduction*. Sixth Report of Session 2003-4, International Development Committee, House of Commons, UK. 2004.

International Monetary Fund**.** "IMF Country Report No. 01/69. Republic of Tajikistan: Statistical Appendix," 2001.

International Monetary Fund**.** "IMF Country Report No. 05/131. Republic of Tajikistan: Selected Issues and Statistical Appendix," April 2005.

International Monetary Fund. Republic of Tajikistan: Recent Economic Developments and Statistical Appendix. Washington, D.C.: International Monetary Fund. 2006.

Jianakoplos, Nancy A.; Bernasek, Alexandra. "Are Women More Risk Averse?" Economic Inquiry, 36, October 1998, pp. 620-30.

Justino, P. "War and Poverty", in *Handbook of the Economics of Peace and Security*, Oxford University Press. Edited by Michelle Garfinkel and Stergios Skaperdas, forthcoming 2010.

Justino, P. "Poverty and Violent Conflict: A Micro-Level Perspective on the Causes and Duration of Warfare", *Journal of Peace Research* 46 (3), May 2009.

Justino, Patricia and Olga Shemyakina. "Private and Public Transfers as a Coping Strategy under Armed Conflict: the Case of Tajikistan". Working Paper. March 2008.

Killingsworth, Mark R. *Labour Supply*. Cambridge: Cambridge University Press, 1983.

Kireyev, Alexei. The Macroeconomics of Remittances: The Case of Tajikistan. IMF Working Paper. Policy Development and Review Department. [Washington, D.C.]: International Monetary Fund. 2006.

Lundberg, Shelly. "The Added Worker Effect." *Journal of Labor Economics*, 1985, *3*(11), pp. 11-37.

Munshi, Kaivan. "Networks in the Modern Economy: Mexican Migrants in the U.S. Labor Market." 2003. *Quarterly Journal of Economics* . 118(2): 549-597.

Olimova, Saodat and Igor Bosc. Labour Migration from Tajikistan. July 2003. International Organization for Migration.

Rodriguez, Edgard R. and Erwin R. Tiongson. "Temporary Migration Overseas and Household Labor Supply: Evidence from Urban Philippines." *International Migration Review*, 2001, *35*(3), pp. 709-25.

Rodriguez, C. and Sanchez, F. 2009. "Armed Conflict Exposure, Human Capital Investments and Child Labour: Evidence from Colombia" HiCN Working Paper no. 68, Households in Conflict Network (www.hicn.org).

Schubert, Renate; Brown, Martin; Gysler, Matthias; Brachinger, Hans Wolfgang. "Financial Decision-Making: Are Women Really More Risk-Averse," American Economic Review, 89, May 1999, pp. 381-5.

Shemyakina, Olga N.. "*Armed Conflict, Education and the Marriage Market: Evidence from Tajikistan*", Ph.D. Dissertation, University of Southern California, 2007.

Shemyakina, Olga N. "The Effect of Armed Conflict on the Marriage Market for Women: Results from Tajikistan", Households in Conflict Network, Working Paper 66, 2009.

State Statistical Committee of the Republic of Tajikistan. "Tajikistan: 15 years of the State's Independence", Dushanbe, 2006.

Sunden, Annika E.; Surette, Brian J. "Gender Differences in the Allocation of Assets in Retirement Savings Plans," American Economic Review, 88, May 1998, pp. 207-11.

Voors, M., Nillesen, E., Verwimp, P., Lensink, R. and van Soest, D. 2010. "Does Conflict Affect Preferences? Results from Field Experiments in Burundi", MICROCON Working Paper no. 21. MICROCON, EU Integrated Project on Micro-Level Analysis of Violent Conflicts, Institute of Development Studies, Brighton (www.microconflict.eu).

World Bank. Tajikistan Policy Note: Enhancing the Development Impact of Remittances. June 2006. Report No. 35771-TJ. Poverty Reduction and Economic Management Unit, Europe and Central Asia.

Fig 1–Mean workforce participation rate in the last 14 days by gender and household remittance-receiving status. Age 16-65.

Note: Top graph: Men. Bottom graph: Women.
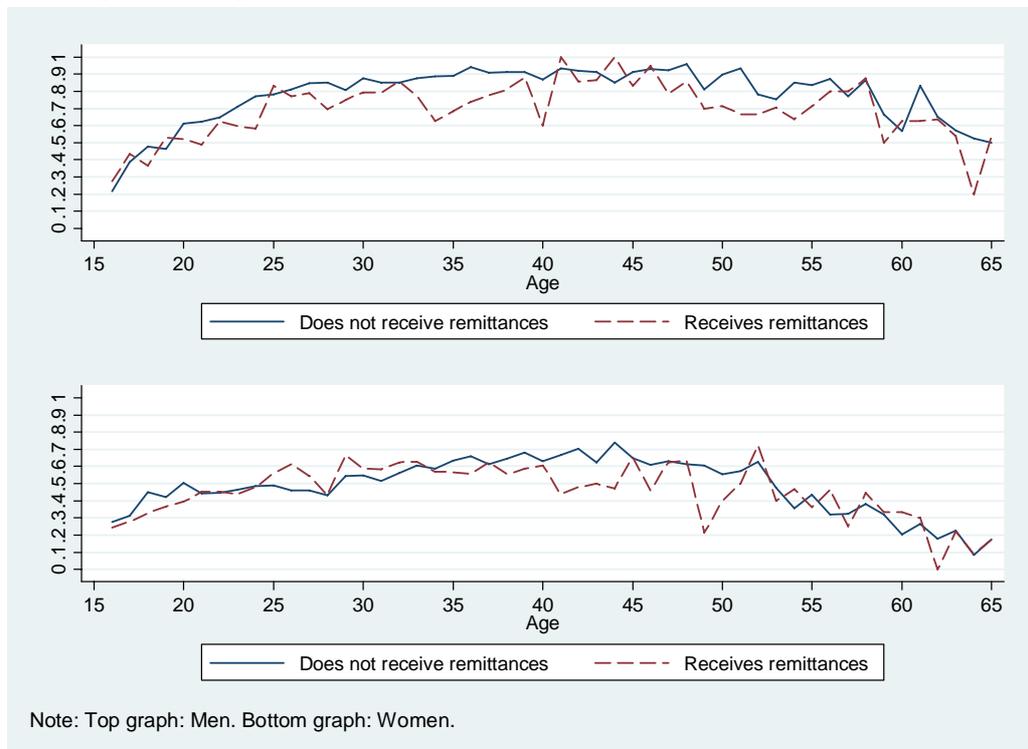
Source: Authors' calculations using TLSS 2003.

Fig 2–Mean weekly labor hours (excluding zeros) by gender and household remittance-receiving status. Age 16-65.

Note: Top graph: Men. Bottom graph: Women.
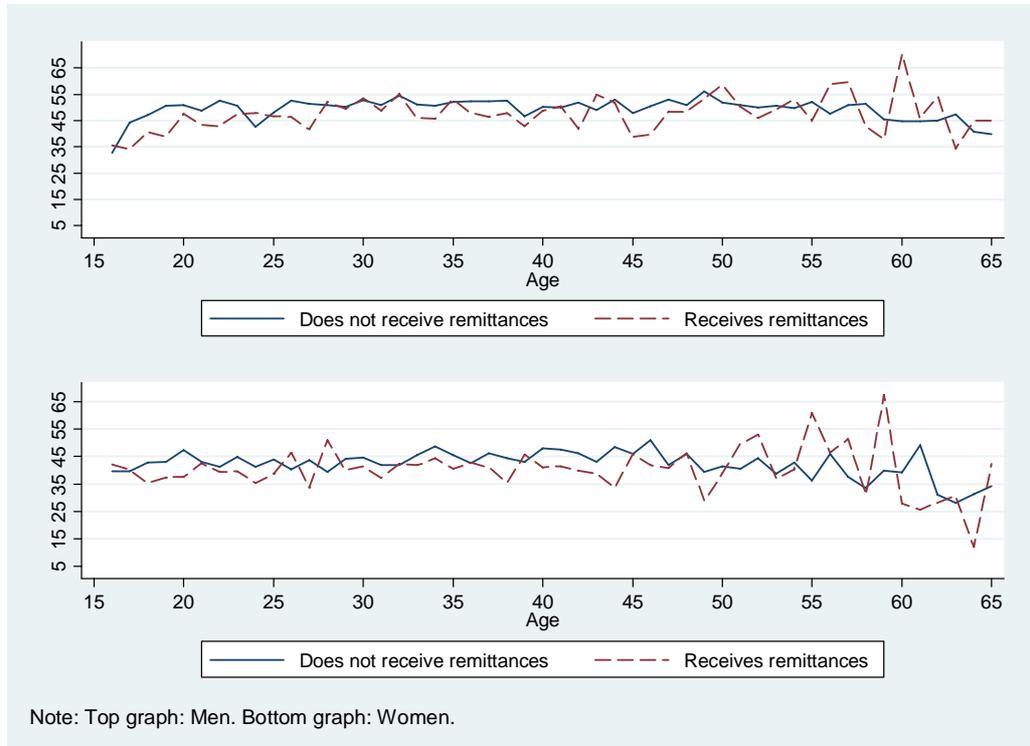
Source: Authors' calculations using TLSS 2003.

Fig 3–Distribution of weekly labor hours (excluding 0) by gender and household remittance-receiving status.

Note: Top graph: Men. Bottom graph: Women.
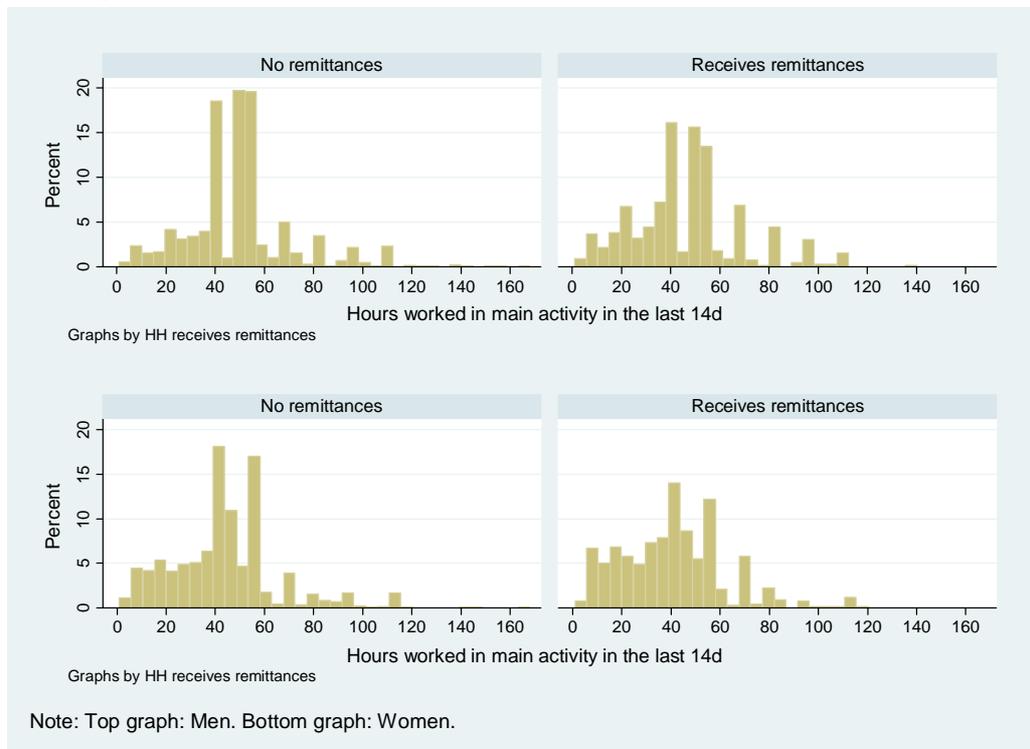
Source: Authors' calculations using TLSS (2003). Age group: 16-65.

Table 1 - Migration Flows, Tajikistan 1991-2005 (thousand persons)

Year	Arrived	Departed	Migration inflows (+)/ outflows (-)	Including: arrived from abroad	Including: left for abroad	International migration inflows (+)/ outflows (-)
1991	74.9	101.3	-26.4	20	48.6	-28.6
1992	51.3	146	-94.7	11.3	104.7	-93.4
1993	71.4	146.1	-74.7	12	86.3	-74.3
1994	43.3	88.8	-45.5	6.6	55.1	-48.5
1995	37.1	74.9	-37.8	5.5	45.3	-39.8
1996	26.1	53.7	-27.6	3.7	34.1	-30.4
1997	20.2	37	-16.8	3.3	21.1	-17.8
1998	16.9	32.3	-15.4	2.7	17.6	-14.9
1999	14.7	28.8	-14.1	1.8	14.7	-12.9
2000	14.5	28.2	-13.7	1.7	14.6	-12.9
2001	16.7	29.1	-12.4	1.7	12.9	-11.2
2002	17.7	30.2	-12.5	1.4	12	-10.6
2003	16.9	27.9	-11	1.4	10.2	-8.8
2004	15.2	24.6	-9.4	1.1	7.9	-6.8
2005	18	27.3	-9.3	1.1	7.3	-6.2

Source: State Statistical Committee (2006).

Table 2 - Migrant Remittances and Their Relative Size in Tajikistan Balance of Payments

	2000	2001	2002	2003	2004	2005
Net Migrant Remittances	0	-1	65	82	133	321
Inflows	1	4	78	146	252	465
Outflows	-1	-5	-13	-64	-119	-144
Gross remittances/ Exports (%)	0	1	11	18	23	42
Gross remittances/ Trade Deficit (%)	3	3	63	72	167	146
Gross remittances/ FDI (%)	3	47	356	456	93	852
Gross remittances/ Net Borrowing (%)	2	70	560	456	-149	932
Gross remittances/ Gross Reserves (%)	1	4	82	108	133	207

Source: IMF and National Bank of Tajikistan (as quoted in World Bank, 2006).

Table 3 - Summary statistics by household remittance-receiving status.

Variable	Remittance Receiving			Remittance non-receiving			Diff. p-value
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	
Characteristics of the household head							
Age	864	48.58	(15.417)	3296	49.07	(14.691)	(0.387)
Female	864	0.26	(0.437)	3296	0.18	(0.386)	(0.000)
Married	864	0.72	(0.448)	3296	0.78	(0.412)	(0.000)
Educational level	728	11.00	(3.246)	3092	11.22	(3.104)	(0.079)
Not employed in the last 14 days	864	0.39	(0.487)	3296	0.29	(0.454)	(0.000)
Household size	864	6.06	(3.226)	3296	6.34	(3.077)	(0.019)
Dependency ratio (under 16+66&above)/Adults 16-65)	828	1.01	(0.853)	3233	1.00	(0.820)	(0.839)
Total Expenditure (somoni)	864	294.42	(246.504)	3296	297.95	(211.692)	(0.674)
Total Expenditure per capita (somoni)	864	56.09	(47.153)	3296	53.42	(41.959)	(0.105)
Average decile based on total expenditure	864	5.71	(2.864)	3296	5.57	(2.860)	(0.177)
Share of food expenses	864	0.68	(0.148)	3295	0.68	(0.152)	(0.554)
Non-wage income (somoni)	864	6.90	(14.153)	3296	6.77	(17.970)	(0.835)
Migration/ remittances variables							
Household has at least one household member who migrated abroad in the last 5 years	864	0.43	(0.495)	3296	0.13	(0.336)	(0.000)
Number of donors-relatives who send money to the household	864	1.18	(0.550)	3296	0.00		
Donors abroad	864	0.55	(0.595)	3296	0.00		
Donors in Tajikistan	864	0.63	(0.760)	3296	0.00		
Donors abroad-dummy	864	0.50	(0.500)	3296	0.00		
Donors in Tajikistan-dummy	864	0.52	(0.500)	3296	0.00		
Total amount sent by donors	864	700.05	(1233.717)	3296	0.00		
Monetary remittances	864	631.89	(1212.204)	3296	0.00		
In-kind remittances	864	68.16	(149.983)	3296	0.00		
Head of household or spouse of the head are away	864	0.23	(0.421)	3296	0.01	(0.076)	(0.000)
Rural location	864	0.59	(0.492)	3296	0.65	(0.478)	(0.001)
Proportion of households that had at least one migrant in a psu	864	0.16	(0.233)	3296	0.05	(0.149)	(0.000)

Source: Authors' calculations (TLSS 2003).

Table 4 – Individual's employment status in the last 14 days by gender and household remittance-receiving status. Ages 16-65.

	Male		Female	
	Receives remittances	Does not receive remittances	Receives remittances	Does not receive remittances
No work last 14d	**39.45**	**29.12**	**54.09**	**51.16**
Looking for work	4.45	2.6	1.23	1.42
Not looking for work	35.00	26.52	52.67	49.93
Worked last 14 days	**60.55**	**70.87**	**45.92**	**48.84**
Worked for non household member	25.02	32.36	14.85	17.27
Worked on farm owned self/household member	25.38	29.91	24.92	27.14
On own account/business owned by self or household member	7.21	7.72	3.85	3.02
Occasional job	0.45	0.11	0.68	0.2
On leave from permanent job	2.49	0.77	1.62	1.21
Total	100	100	100	100
N	1,123	5,429	1,481	5,870

Source: Authors' calculations using TLSS (2003).

Table 5 – Distribution of labor hours worked last 14 days, ages 16-65, by household-remittance receiving status.

	Panel A: Males (16-65)					
Mean hours worked in the last 14 days	Does not receive remittances	N	Receives remittances	N	Diff hours	p-value
Including zero	33.38	5697	21.38	1422	12.00	0.000
Greater than 0	49.97	3806	46.64	652	3.33	0.000
Total						
% with zero hours		33%		54%		
	Panel B: Females (16-65)					
Mean hours worked in the last 14 days	Does not receive remittances	N	Receives remittances	N	Diff hours	p-value
Including zero	20.73	5897	17.79	1505	2.95	0.000
Greater than 0	43.73	2796	40.74	657	2.98	0.002
Total						
% with zero hours		53%		56%		

Source: Authors' calculations using TLSS (2003).

Table 6 - Reasons the respondent did not look for work in the last month, ages 16-65.

Main reason did not look for job past month	Males			Females		
	Does not receive remittances	Receives remittances	Total	Does not receive remittances	Receives remittances	Total
Student	28.6	23.9	27.6	9.7	8.6	9.5
Housewife	23.8	23.2	23.7	72.0	68.0	71.2
Retired	7.3	8.7	7.6	8.0	9.8	8.4
Handicapped	6.3	6.9	6.4	2.3	3.0	2.5
Military	1.7	1.0	1.6	0.0	0.1	0.1
Found job, start late	2.4	1.5	2.2	0.1	0.3	0.1
Awaiting recall by employer	0.6	0.3	0.5	0.1	0.0	0.1
Waiting for busy season	1.0	0.8	0.9	0.2	0.1	0.2
Do not want to work	6.3	7.1	6.5	2.9	3.5	3.1
Believe no chance for job	1.0	0.8	0.9	0.2	0.0	0.1
No jobs	18.8	19.3	18.9	4.2	6.3	4.6
Other	2.2	6.6	3.2	0.3	0.4	0.3
Total	100	100	100	100	100	100
N	1,440	393	1,833	2,930	779	3,709

Source: Authors' calculations using TLSS (2003).

Table 7 - OLS models. Dependent variable: workforce participation in the last 14 days.

	Panel A: Men					
	1	2	3	4	5	6
Age	0.054***	0.053***	0.053***	0.053***	0.054***	0.053***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Age squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Years of education completed	0.011***	0.011***	0.011***	0.011***	0.011***	0.011***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Married	0.120***	0.121***	0.121***	0.120***	0.120***	0.122***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.020)
Rural	0.092***	0.084***	0.084***	0.086***	0.092***	0.090***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
Household size	-0.004**	-0.004**	-0.004*	-0.004**	-0.004*	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Dependents (under 16+66&above)/Adults 16-65)	0.006	0.007	0.006	0.006	0.006	0.003
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Household head is female	-0.029	-0.026	-0.026	-0.027	-0.029	-0.031
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
ln(nonwage income)	-0.019***	-0.019***	-0.019***	-0.019***	-0.019***	-0.020***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
HH receives remittances from hh members&other relatives		-0.076***				
		(0.017)				
Ln total remittances received by household			-0.012***			
			(0.003)			
N of relatives-donors who live abroad				-0.054**		
				(0.025)		
N of relatives-donors who live in Tajikistan				-0.051***		
				(0.015)		
Migrant in a household (not him/herself)					-0.011	
					(0.016)	
Proportion of households with migrants in psu						-0.177***
						(0.044)
Constant	-0.425***	-0.398***	-0.399***	-0.407***	-0.422***	-0.410***
	(0.081)	(0.083)	(0.084)	(0.083)	(0.082)	(0.082)
N	6486	6486	6486	6486	6486	6486
R squared	0.20	0.20	0.20	0.20	0.20	0.20

Note: * significant at 0.05, ** significant at 0.01, *** significant at 0.001 level. All regressions are estimated with fixed effects at the raion level. Robust standard errors in parenthesis.
Source: Authors' calculations using TLSS 2003.

Table 7 (cont-ed) - OLS models. Dependent variable: workforce participation in the last 14 days.

	Panel B: Women					
	1	2	3	4	5	6
Age	0.058***	0.058***	0.058***	0.058***	0.058***	0.058***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Age squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Years of education completed	0.021***	0.021***	0.021***	0.021***	0.021***	0.021***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Married	-0.132***	-0.132***	-0.131***	-0.132***	-0.131***	-0.130***
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
Rural	0.216***	0.211***	0.210***	0.211***	0.216***	0.216***
	(0.047)	(0.046)	(0.046)	(0.046)	(0.047)	(0.047)
Household size	-0.009***	-0.009***	-0.009***	-0.009***	-0.009***	-0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Dependents (under 16+66&above)/Adults 16-65)	0.005	0.005	0.004	0.004	0.004	0.003
	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.009)
Household head is female	0.034	0.037	0.038	0.037	0.034	0.034
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
ln(nonwage income)	0.002	0.002	0.002	0.002	0.002	0.002
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
HH receives remittances from hh members&other relatives		-0.049***				
		(0.015)				
Ln total remittances received by household			-0.009***			
			(0.002)			
N of relatives-donors who live abroad				-0.039***		
				(0.015)		
N of relatives-donors who live in Tajikistan				-0.035**		
				(0.014)		
Migrant in a household (not him/herself)					-0.016	
					(0.018)	
Proportion of households with migrants in psu						-0.067
						(0.044)
Constant	-0.716***	-0.705***	-0.704***	-0.705***	-0.714***	-0.713***
	(0.078)	(0.079)	(0.078)	(0.078)	(0.079)	(0.079)
N	7159	7159	7159	7159	7159	7159
R squared	0.10	0.10	0.10	0.10	0.10	0.10

Note: * significant at 0.05, ** significant at 0.01, *** significant at 0.001 level. All regressions are estimated with fixed effects at the raion level. Robust standard errors in parenthesis.
Source: Authors' calculations using TLSS 2003.

Table 8 - Tobit models. Dependent variable: hours worked in the last 14 days.

	Panel A: Men					
	1	2	3	4	5	6
Age	3.028***	2.990***	2.989***	3.004***	3.031***	2.996***
	(0.193)	(0.192)	(0.192)	(0.192)	(0.193)	(0.192)
Age squared	-0.037***	-0.037***	-0.037***	-0.037***	-0.037***	-0.037***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Years of education completed	0.270*	0.262*	0.269*	0.274*	0.269*	0.269*
	(0.158)	(0.158)	(0.158)	(0.158)	(0.158)	(0.158)
Married	6.105***	6.181***	6.165***	6.091***	6.104***	6.313***
	(1.084)	(1.080)	(1.081)	(1.081)	(1.084)	(1.078)
Rural	6.370***	5.825***	5.865***	6.030***	6.372***	6.301***
	(1.184)	(1.182)	(1.183)	(1.182)	(1.184)	(1.174)
Household size	-0.127	-0.123	-0.111	-0.108	-0.132	-0.014
	(0.102)	(0.101)	(0.101)	(0.102)	(0.104)	(0.102)
Dependents (under 16+66&above)/Adults 16-65)	-0.033	-0.014	-0.067	-0.043	-0.019	-0.409
	(0.552)	(0.550)	(0.550)	(0.551)	(0.556)	(0.551)
Household head is female	-1.878*	-1.631	-1.651*	-1.711*	-1.878*	-2.064**
	(1.001)	(0.998)	(0.998)	(0.999)	(1.001)	(0.996)
ln(nonwage income)	-0.807***	-0.768***	-0.767***	-0.765***	-0.806***	-0.826***
	(0.255)	(0.254)	(0.254)	(0.255)	(0.255)	(0.254)
HH receives remittances from hh members&other relatives		-5.807***				
		(0.875)				
Ln total remittances received by household			-0.895***			
			(0.142)			
N of relatives-donors who live abroad				-4.458***		
				(0.929)		
N of relatives-donors who live in Tajikistan				-2.932***		
				(0.822)		
Migrant in a household (not him/herself)					0.242	
					(1.025)	
Proportion of households with migrants in psu						-17.739***
						(2.065)
Constant	-28.718***	-26.723***	-26.937***	-27.543***	-28.772***	-27.411***
	(3.532)	(3.530)	(3.530)	(3.525)	(3.539)	(3.500)
Constant- sigma_u	9.295***	9.199***	9.206***	9.201***	9.301***	8.887***
	(0.925)	(0.916)	(0.916)	(0.916)	(0.926)	(0.888)
Constant- sigma_e	25.502***	25.417***	25.425***	25.436***	25.502***	25.367***
	(0.225)	(0.224)	(0.224)	(0.224)	(0.225)	(0.224)
N	6491	6491	6491	6491	6491	6491
chi2	1081.9	1133.2	1128.4	1122.3	1082.0	1167.6
p	0.000	0.000	0.000	0.000	0.000	0.000

Note: * significant at 0.05, ** significant at 0.01, *** significant at 0.001 level. All regressions are estimated with random effects at the raion level. Standard errors in parenthesis.
Source: Authors' calculations using TLSS 2003.

Table 8 (cont-ed) - Tobit models. Dependent variable: hours worked in the last 14 days.

	Panel B: Women					
	1	2	3	4	5	6
Age	2.992***	3.000***	2.998***	2.995***	2.991***	2.993***
	(0.160)	(0.159)	(0.159)	(0.159)	(0.159)	(0.159)
Age squared	-0.038***	-0.038***	-0.038***	-0.038***	-0.038***	-0.038***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Years of education completed	0.556***	0.544***	0.546***	0.546***	0.553***	0.550***
	(0.143)	(0.142)	(0.142)	(0.143)	(0.143)	(0.143)
Married	-7.291***	-7.285***	-7.266***	-7.275***	-7.165***	-7.142***
	(0.750)	(0.749)	(0.749)	(0.750)	(0.752)	(0.751)
Rural	11.739***	11.482***	11.464***	11.527***	11.725***	11.771***
	(1.027)	(1.028)	(1.029)	(1.029)	(1.027)	(1.027)
Household size	-0.248***	-0.244***	-0.236***	-0.232***	-0.211**	-0.206**
	(0.088)	(0.088)	(0.088)	(0.088)	(0.089)	(0.089)
Dependents (under 16+66&above)/Adults 16-65)	-0.296	-0.286	-0.314	-0.313	-0.397	-0.407
	(0.430)	(0.429)	(0.429)	(0.430)	(0.432)	(0.431)
Household head is female	0.749	0.937	0.946	0.916	0.769	0.75
	(0.795)	(0.795)	(0.795)	(0.796)	(0.795)	(0.794)
ln(nonwage income)	0.173	0.189	0.189	0.181	0.162	0.156
	(0.224)	(0.223)	(0.223)	(0.224)	(0.224)	(0.224)
HH receives remittances from hh members&other relatives		-2.968***				
		(0.719)				
Ln total remittances received by household			-0.481***			
			(0.116)			
N of relatives-donors who live abroad				-2.337***		
				(0.767)		
N of relatives-donors who live in Tajikistan				-1.471**		
				(0.697)		
Migrant in a household (not him/herself)					-1.737**	
					(0.744)	
Proportion of households with migrants in psu						-5.943***
						(1.746)
Constant	-39.153***	-38.500***	-38.530***	-38.676***	-39.010***	-38.959***
	(2.884)	(2.885)	(2.884)	(2.885)	(2.884)	(2.882)
Constant- sigma_u	7.968***	7.961***	7.953***	7.958***	7.978***	7.957***
	(0.797)	(0.795)	(0.794)	(0.795)	(0.797)	(0.795)
Constant- sigma_e	23.577***	23.548***	23.549***	23.555***	23.567***	23.558***
	(0.198)	(0.198)	(0.198)	(0.198)	(0.198)	(0.198)
N	7161	7161	7161	7161	7160	7161
chi2	622.5	640.9	641.0	636.9	628.5	635.1
p	0.000	0.000	0.000	0.000	0.000	0.000

Note: * significant at 0.05, ** significant at 0.01, *** significant at 0.001 level. All regressions are estimated with random effects at the raion level. Standard errors in parenthesis.
Source: Authors' calculations using TLSS 2003.

Table 9 - OLS models. Dependent variable: workforce participation in the last 14 days. The effect of living in the conflict affected area.

	Panel A: Men				
	1	2	3	4	5
HH receives remittances from hh members&other relatives	-0.02				
	(0.021)				
RCA * HH receives remittances from hh members&other relatives	-0.103***				
	(0.029)				
Ln total remittances received by household		-0.002			
		(0.004)			
RCA * Ln total remittances received by household		-0.018***			
		(0.005)			
N of relatives-donors who live abroad			0.016		
			(0.024)		
RCA* N of relatives-donors who live abroad			-0.119***		
			(0.041)		
N of relatives-donors who live in Tajikistan			-0.026		
			(0.034)		
RCA * N of relatives-donors who live in Tajikistan			-0.035		
			(0.036)		
Migrant in a household (not him/herself)				-0.021	
				(0.026)	
RCA * Migrant in a household (not him/herself)				0.015	
				(0.032)	
Proportion of households with migrants in psu					-0.119*
					(0.069)
RCA* Proportion of households with migrants in psu					-0.077
					(0.087)
Constant	-0.394***	-0.396***	-0.407***	-0.422***	-0.409***
	(0.082)	(0.083)	(0.083)	(0.082)	(0.082)
N	6486	6486	6486	6486	6486
R squared	0.21	0.21	0.21	0.20	0.20

Note: * significant at 0.05, ** significant at 0.01, *** significant at 0.001 level. All regressions are estimated with fixed effects at the raion level. All regressions include the full set of household and individual level control variables as in Table 7, Col. 1. Robust standard errors in parenthesis.
Source: Authors' calculations using TLSS 2003.

Table 9 - OLS models. Dependent variable: workforce participation in the last 14 days. The effect of living in the conflict affected area.

	Panel B: Women				
	1	2	3	4	5
HH receives remittances from hh members&other relatives	-0.021 (0.021)				
RCA * HH receives remittances from hh members&other relatives	-0.047* (0.026)				
Ln total remittances received by household		-0.004 (0.003)			
RCA * Ln total remittances received by household		-0.007 (0.004)			
N of relatives-donors who live abroad			-0.039** (0.018)		
RCA* N of relatives-donors who live abroad			0.001 (0.028)		
N of relatives-donors who live in Tajikistan			-0.001 (0.025)		
RCA * N of relatives-donors who live in Tajikistan			-0.045 (0.028)		
Migrant in a household (not him/herself)				-0.019 (0.033)	
RCA * Migrant in a household (not him/herself)				0.004 (0.037)	
Proportion of households with migrants in psu					-0.054 (0.074)
RCA* Proportion of households with migrants in psu					-0.017 (0.090)
Constant	-0.703*** (0.078)	-0.703*** (0.078)	-0.704*** (0.078)	-0.714*** (0.079)	-0.713*** (0.079)
N	7159	7159	7159	7159	7159
R squared	0.10	0.10	0.10	0.10	0.10

Note: * significant at 0.05, ** significant at 0.01, *** significant at 0.001 level. All regressions are estimated with fixed effects at the raion level. All regressions include the full set of household and individual level control variables. Robust standard errors in parenthesis.
Source: Authors' calculations using TLSS 2003.

Table 10 - Tobit models. Dependent variable: hours worked in the last 14 days. Testing for the joint effect of remittances and migration in the conflict affected areas.

	Panel A: Men				
	1	2	3	4	5
HH receives remittances from hh members&other relatives	-4.015***				
	(1.283)				
RCA * HH receives remittances from hh members&other relatives	-3.300*				
	(1.729)				
Ln total remittances received by household		-0.551**			
		(0.214)			
RCA * Ln total remittances received by household		-0.605**			
		(0.282)			
N of relatives-donors who live abroad			-2.651*		
			(1.426)		
RCA* N of relatives-donors who live abroad			-3.120*		
			(1.868)		
N of relatives-donors who live in Tajikistan			-2.879*		
			(1.517)		
RCA * N of relatives-donors who live in Tajikistan			-0.056		
			(1.796)		
Migrant in a household (not him/herself)				0.096	
				(1.668)	
RCA * Migrant in a household (not him/herself)				0.229	
				(2.058)	
Proportion of households with migrants in psu					-24.986***
					(4.098)
RCA* Proportion of households with migrants in psu					9.600**
					(4.690)
Constant	-26.582***	-26.808***	-27.543***	-28.767***	-27.427***
	(3.529)	(3.528)	(3.525)	(3.540)	(3.499)
Constant- sigma_u	9.182***	9.193***	9.205***	9.302***	8.880***
	(0.914)	(0.915)	(0.916)	(0.926)	(0.888)
Constant- sigma_e	25.411***	25.416***	25.430***	25.502***	25.359***
	(0.224)	(0.224)	(0.224)	(0.225)	(0.224)
N	6491	6491	6491	6491	6491
chi2	1137.5	1133.8	1125.6	1082.0	1172.5
P	0.000	0.000	0.000	0.000	0.000

Note: * significant at 0.05, ** significant at 0.01, *** significant at 0.001 level. All regressions are estimated with random effects at the raion level. All regressions include a full set of individual and household controls as in Table 8 Col. 1. Standard errors in parenthesis.
Source: Authors' calculations using TLSS 2003.

Table 10 - Tobit models. Dependent variable: hours worked in the last 14 days. Testing for the joint effect of remittances and migration in the conflict affected areas.

	Panel B: Women				
	1	2	3	4	5
HH receives remittances from hh members&other relatives	-2.172* (1.115)				
RCA * HH receives remittances from hh members&other relatives	-1.342 (1.436)				
Ln total remittances received by household		-0.351* (0.186)			
RCA * Ln total remittances received by household		-0.21 (0.235)			
N of relatives-donors who live abroad			-3.274*** (1.193)		
RCA* N of relatives-donors who live abroad			1.629 (1.545)		
N of relatives-donors who live in Tajikistan			0.222 (1.355)		
RCA * N of relatives-donors who live in Tajikistan			-2.298 (1.568)		
Migrant in a household (not him/herself)				-1.989 (1.256)	
RCA * Migrant in a household (not him/herself)				0.38 (1.524)	
Proportion of households with migrants in psu					-8.012** (3.561)
RCA* Proportion of households with migrants in psu					2.685 (4.027)
Constant	-38.436*** (2.885)	-38.475*** (2.884)	-38.599*** (2.886)	-39.006*** (2.885)	-38.979*** (2.882)
Constant- sigma_u	7.942*** (0.793)	7.937*** (0.793)	7.976*** (0.797)	7.979*** (0.797)	7.957*** (0.796)
Constant- sigma_e	23.547*** (0.198)	23.548*** (0.198)	23.549*** (0.198)	23.566*** (0.198)	23.557*** (0.198)
N	7161	7161	7161	7160	7161
chi2	641.9	641.9	640.5	628.5	635.6
P	0.000	0.000	0.000	0.000	0.000

Note: * significant at 0.05, ** significant at 0.01, *** significant at 0.001 level. All regressions are estimated with random effects at the raion level. All regressions include a full set of individual and household controls as in Table 8 Col. 1. Standard errors in parenthesis.
Source: Authors' calculations using TLSS 2003.

Appendix A: Construction of labor hours variable

We use the following survey questions to determine whether an individual was currently employed (during the last 14 days), type of employment and to calculate the number of weekly hours supplied in the past 14 days.

A) Definition of "currently employed status" is based on the affirmative answer questions 1, 2 or 3 in Module 5, Part A (as listed below) indicates that an individual was employed during the last 14 days.

Module 5: Labor: Part A: Labor force participation

1. During the past 14 days, have you worked for someone who is not a member of your household, for example, a public or private enterprise or company, an NGO or any other individual?

2. During the past 14 days, have you worked on a farm owned or rented by you or a member of your household, whether in cultivating crops or in other farm maintenance tasks, or have you cared for livestock belonging to you or a member of your household?

3. During the past 14 days, have you worked on your own account or in a business enterprise belonging to you or someone in your household, for example, as a trader, shop-keeper, barber, dressmaker, carpenter, taxi driver, car wash, etc.?

B) The number of hours worked and the type of enterprise/employer is found from Module 5, Section B, questions 3 and 5.

Module 5, Section B: "Overview last 14 days"

a) information on the characteristics of the employer:

Question 3: "In this work were you working for:"

1. farm owned or rented by household member

2. own account/household enterprise

3. work for non-household member

b) The actual number of hours worked

Question 5: "How many hours a week in the last 14 days did you do this activity?"

Appendix Table 1 – Individual summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Working or looking for work in the last 14 days	13903	0.60	0.49		
Hours worked in the last 14 days	14521	25.45	28.38	0	168
Age	14521	32.71	13.03	16	65
Educational Level	13652	10.87	2.24	0	19
Married	14521	0.62	0.49		
Female	14521	0.51	0.50		

Source: Authors' calculations using TLSS 2003.