Remittances, Labour Supply and Activity of Household Members Left-Behind[†]

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This paper analyses the role of remittances on labour supply and activity of household members left behind, by explicitly distinguishing between different types of self-employment. Contrary to the existing evidence, we find no 'dependency' effect of remittances. Our results show that remittances received by households in Tajikistan decrease the probability of wage employment and increase that of small-scale self-employment activities of men staying behind, without affecting the number of job-specific hours worked. Any positive effect on economic development would be, however, limited, as self-employment is in rather small-scale activities that do not generate a regular income stream.

1. Introduction

Many empirical studies have underlined the interrelationship between migration and development. One stream of research in this area is focused on occupational outcomes, especially the possible entrepreneurial tendencies, of return migrants. Given the financial constraints in the country of origin, which hinder the development of entrepreneurial activities, remittances and repatriated savings are a way to finance new projects (Dustmann & Kirchkamp, 2002; Ilahi, 1999; Mesnard, 2004). Furthermore, compared to non-migrants, return migrants or those living in households with return migrants are more likely to be self-employed and, thus, help create employment opportunities in the home country's labour market with positive consequences for growth and development (Démurger & Xu, 2011; Giulietti, Wahba, & Zimmermann, 2013; Piracha & Vadean, 2010).

While a number of recent papers have explored the impact of migration, return migration and remittances on the labour markets of sending countries, the effect of remittances on the labour market activity of non-migrant household members has received less attention. Nevertheless, there are a number of ways in which migration and remittances could affect those remaining in the home country.[1] For instance, since remittances from migrants usually take place under conditions of asymmetric information, there could be a possible moral hazard problem in which the relative in the home country exerts minimal effort, which is not observable by the migrant (Chami, Fullenkamp, & Jahjah, 2005). This could, in the extreme, mean that the relative remaining in the country of origin enjoys leisure at the expense of the migrant, and chooses not to work at all. On the upside, remittances can be used by household members in entrepreneurial activities and, thus, generate wealth and employment, especially in the presence of credit constraints (Woodruff & Zenteno, 2007).

Acosta (2007) examines the effect of 'access to remittances' and 'living in a migrant household' on labour force participation, hours worked and occupational choice of those left behind. He uses a nationally representative household survey from El Salvador and implements an instrumental variable approach to correct for bias due to endogeneity of remittances and migration variables. He finds gender differences in the use of remittances across households: access to remittances produces a disincentive effect on participation and number of hours worked for women, but not for men. Regarding occupational choice, Acosta shows that remittances increase the probability to be self-employed among men, while recipient females are more likely to be microenterprise owners. Across gender, the effect is much stronger in rural areas. The results suggest that international transfers can help boost business and overcome liquidity constraints, particularly in underdeveloped areas. The hypothesis that remittances create access to self-employment activities in the presence of capital constraints is supported, for example, by empirical findings for Pakistan (Adams Jr., 1998), Thailand

(Paulson & Townsend, 2004), Mexico (Woodruff & Zenteno, 2007), and the Philippines (Yang, 2008).

A somewhat related literature covers the impact of remittances on the labour market participation of those left behind. A number of papers have shown that remittance receiving households have a lower tendency to participate in the labour market or tend to reduce the number of hours worked, concluding that remittances generate a dependency effect (Acosta, 2007; Funkhouser, 2006; Justino & Shemyakina, 2012; Kim, 2007). In particular, Justino and Shemyakina (2012) find that adults in remittance receiving households in Tajikistan are less likely to participate in the labour market and supply fewer working hours, with the effect much stronger for men. A different conclusion is supported by Cox-Edwards and Rodríguez-Oreggia (2009) who, in the context of Mexico, find that international remittances have no significant effect on the labour participation of those left-behind.[2] Furthermore, Amuedo-Dorantes and Pozo (2006), also using data from Mexico, showed that while women in rural areas seem to reduce labour supply, men tend to shift their labour supply from the formal to informal employment. They argue that this might be due to a 'disruptive effect' from the out-migration of family members that counteracts the 'income effect' from migrants' remittances. Finally, Mendola and Carletto (2012) provide empirical evidence, using Albanian data, on the gender-differentiated impact of current and past migration on the home labour market. They find that having a migrant abroad results in a decrease in female paid labour supply while increasing unpaid work. Moreover, past international migration experience of household members increases the probability to supply labour in self-employment as well as the number of hours worked in the same occupation, again for women only.

An important aspect that has received little attention in the existing literature is the distinction between different types of self-employment. This distinction is, however, important as some forms of self-employment would have no or little labour market impact outside the

own household, as for example own account work (that is, self-employment without paid employees). Own account work, sometimes, does not even generate a regular income stream and is used to provide subsistence for the family and/or bide time until paid employment is found and/or hide unemployment to avid stigma (Harris & Todaro, 1970). Moreover, as pointed out by other studies, self-employment activities in developing countries are mostly under the form of own account work.[3]

Our paper adds to the existing literature by explicitly distinguishing in the analysis of the impact of remittances on the labour market activity among three forms of self-employment: a) own account work without pay (that is, self-employment with no employees and no regular income from the activity); b) own account work with pay (that is, self-employment with no employees, but drawing a regular income from the activity); and c) entrepreneurship (that is, a self-employed person with a larger business who employs from outside the own household). These three self-employment activities are included in addition to activities usually considered in previous studies, that is, not working, unpaid work in farm or non-farm business, and wage employment.

We analyse the labour market impact of remittances in Tajikistan, a country experiencing significant flows of temporary labour migration as well as a sizable migrants' remittances inflow stream (that is, about 50 percent of GDP in 2008) (Riester, 2012). Due to the rather 'traditional' role women assume in the Tajik society – with participation rates under 40 percent – the count of women in the 2007 Tajikistan Living Standards Survey (TLSS) sample was quite low in the self-employment categories considered, making the analysis unreliable. We, therefore, restrict the analysis to a sample of men only. For a study on the labour market participation of women in Tajikistan see Justino and Shemyakina (2012).

We find that remittances are negatively related to working as wage employee. Moreover, when endogeneity is not controlled for, our results confirm findings from previous

studies that living in a remittance-receiving household has a positive effect on either not working or doing unpaid family work. However, after controlling for endogeneity, the positive effect of receiving remittances on not working and unpaid family work disappears, but the effect on working as an own account worker without pay turns from nil into positive and significant. This reveals a link between remittances and engagement in small scale, mostly farming, activities. Any labour market and developmental impact of migrants' remittances in the case of Tajikistan would probably be rather limited.

The remainder of the paper is organized as follows. Section 2 provides some background on the migration and labour market situation in Tajikistan. Section 3 presents the descriptive statistics, while Section 4 describes the empirical approach. Results are discussed in Section 5, and the concluding remarks in the last section.

2. Labour market and migration in Tajikistan

Tajikistan is classified as one of the poorest countries in the world. Instability after the collapse of the Soviet Union contributed to the slowdown of the development process with a significant consequence on the standard of living. The 1992-1998 civil war compromised the poor physical infrastructure and destroyed much of human and social capital of this already beleaguered economy.

Despite the economic reforms in the last decade, the country has not achieved substantial welfare improvements and poverty is still a threat for majority of Tajiks.[4] The World Bank reports that 41 per cent of the population was living below the poverty line at the end of 2007. The most affected by poverty are the rural areas that host about 75 per cent of the population (World Bank, 2009). The lack of employment opportunities is a pressing issue in Tajikistan as the labour market has failed to respond to the rapid population growth. According to the official statistics, the labour force participation rate was 51.7 per cent (2,201,000 people)

in 2007 and is much lower among females and in the urban areas (European Training Foundation, 2010). The main sector of employment is agriculture, whereas the industrial production is weak and concentrated in few regional centres.

The migration trends in Tajikistan reflect the history of the country and one can identify different phases. The early 1990s were characterized by a refugee flow due to political instability and the civil war (1992-1997), which led to a significant change in the ethnic composition of the population. The census conducted in Tajikistan in 2000 revealed that between 1989 and 2000 the share of ethnic Tajiks in the population increased from 62.3 to 79.9 per cent, while those of other ethnic groups decreased substantially (Erlich, 2006). Russians were the largest group that left the country, as the civil war in Tajikistan made it dangerous for them to stay. Many of them returned to Russia or moved to other ex-Soviet Republics. Also, many ethnic Turkmen, Kyrgyz and Uzbek fled the country during the civil war and the majority of them did not return or reclassified themselves as ethnic Arabs or Tajiks.

The late 1990s and 2000s saw an increase in labour migration to an unprecedented scale. The International Labour Organisation reports that an estimated 500,000 to 800,000 Tajik nationals (or about 10 per cent of the total population) have left the country to work abroad, the majority (over 95 per cent) to Russia (ILO, 2010). Most migration flows are temporary/seasonal, mainly from the lower skilled and informal sectors in agriculture, construction, trade and communal services. Migrants are predominantly young men from rural areas, many of them with completed secondary or vocational education.[5] The majority of migrants are married, but they seldom migrate with their family, partly because migration is temporary and partly because their wages are low and insufficient to meet family needs in the host country. Nevertheless, their incomes are sufficient for sustaining the family in Tajikistan, where the cost of living is significantly lower.

Migrants' remittances represent an important source of income for many households in Tajikistan. For a considerable number of Tajiks the income abroad is the only way to provide for the basic needs of their families. Migration, therefore, can be seen as a survival strategy for dealing with poverty. According to the State Statistical Committee, only 30 per cent of households with at least one member abroad consider themselves poor compared to 65 per cent of the overall population (Olimova & Bosc, 2003). According to Riester (2012), remittances amounted to $2.5 billion in 2008 and represented 49.6 per cent of the country's GDP.

3. Data

We analyse the impact of remittances and migration on individual labour market activities and the number of job-specific hours worked using cross-sectional data from the Tajikistan Living Standards Survey 2007 (henceforth TLSS 2007). The data has been collected in two stages from September to November 2007 involving the National Statistical Committee of Tajikistan, the World Bank and the United Nations Children's Fund. The survey, designed mainly to allow for a reliable assessment of poverty and living standards in Tajikistan, considers different aspects of individual and household characteristics and covers a wide range of topics such as migration, employment, income, expenditure, health and nutritional status, and agriculture. The goal of the survey was to stimulate the wider use of household data for the implementation of policies aimed at reducing poverty in a country in which a large part of the population is not able to meet its basic needs (World Bank, 2009). The total sample, representative at the national level, contains 4,860 households.

The working population in Tajikistan (15 to 62 for men and 15 to 57 for women) consists of 4.2 million individuals, though only half of them are part of the labour force, the other half being inactive (World Bank, 2009). Housewife is the category that dominates the

inactive group (47 per cent) and a further 26 per cent report to be students. The rest of the inactive individuals are either retired, discouraged in finding a job or working seasonally.

For the purpose of our study we restrict the analysis to working age men, that is, aged 15 to 62. After dropping individuals outside the labour force (that is, disabled, students, individuals in retirement and military service) as well as observations with missing values for the variables of interest, we end up with a sample of 5,717 men.

Under the hypothesis that remittances can affect the labour market decisions of those left behind, we consider six possible activities: not working, unpaid family work, wage employment (that is, working for a non-family business), own account work without pay (that is, self-employed with no outside employment and no regular pay), own account work with pay (that is, self-employed with no outside employment, but drawing a regular income from the activity), and entrepreneurship (that is, self-employed with at least one additional employee). The 'not working' category includes those who at the time of the survey were either unemployed, waiting for a recall by the employer, discouraged because of not finding a job, or waiting for a busy season.

The analysis is focused exclusively on international remittances, defined as monetary and in kind transfers received by the household from abroad during the past 12 months. The information on remittances is collected in two different sections of the questionnaire. The first section contains questions on household members who are abroad at the time of survey, including the amount of remittances received from them. The second includes questions about transfers received from all sources including relatives, friends and institutions based in or outside Tajikistan, but the amount of remittances is reported only for those received from abroad.[6]

Descriptive statistics in Table 1 show that about 15 per cent of working age men live in households receiving international remittances. The average amount of yearly remittances

received by these households is about TJS 2,835 (or USD 819).[7] There is a very strong correlation between living in a remittance receiving household and having household members abroad: 77.2 per cent of men living in a remittance receiving households have a household member abroad, revealing that remittances are predominantly received from very close family members.

(Table 1 about here)

We observe that, compared to those living in a non-receiving household, a larger share of men living in a remittance receiving household is not working (+8.5 percentage points) or working as an unpaid family worker (+6.6 percentage points), while a smaller share is wage employees (-12.0 percentage points) and entrepreneurs (-3.1 percentage points). The larger share of not working men in remittance receiving households could be explained by the fact that some of them are potentially temporary/circular migrants and mainly work abroad and enjoy leisure while at home, though indeed it is possible that they are living off remittances. The larger share of wage employees and entrepreneurs among non-remittance receiving men could possibly be explained by the higher tertiary education level in this population group.

Regarding hours worked, men engaged in an unpaid family activity work on average fewer hours per week (-4.9 hours) if they live in a remittance receiving household compared to non-remittance receiving household. However, men engaged in own account work without a monthly pay worked about 8 hours per week more if they were living in a remittance receiving households. Fewer hours in the case of family activity could be due to the fact that in remittance receiving households the unpaid workload is shared among a number of family members, hence relieving the load on individual members of the household. On the other side, the high number of hours worked by own account owners without pay could be due to lower productivity, but also due to increased effort related to assumed responsibility for a family investment.

A larger share of men living in remittance receiving households is secondary educated (+4 percentage points), but a relatively smaller share is tertiary educated (-6 percentage points) compared to those living in non-receiving households. Better educated men are more likely to face better opportunities in the labour market in terms of jobs and wages and, therefore, their families are less dependent on remittances. As expected, a larger share of the men living in remittance receiving households is ethnic Tajik (86.5 vs. 77.6 per cent in non-receiving households) and lives in rural areas (78.4 vs. 69.7 per cent).[8] Furthermore, the wealth index, constructed using principle components analysis (see Filmer and Pritchett, 2001), shows that the individuals living in a remittance receiving household are poorer compared to the non-receivers.[9]

Differences also exist with respect to region of origin. Those from the Region of Republican Subordination and Gorno-Badakhshan are strongly represented in the labour migrant group (Olimova & Bosc, 2003), which is why there is a higher share of individuals in remittance receiving households living in those regions (+5.7 and +13.4 percentage points, respectively).

With respect to the household structure, those receiving remittances seem to have on average a lower proportion of children and elderly. This could be due to the fact that the more recent emigration cohorts consisted of relatively young men (below the age of 30), who are more likely to have fewer children and perhaps working age parents. Moreover, a little over 92 percent of households receiving remittances have at least two male adults. Intuitively, it shows that the household structure, and in particular the presence of more than one adult male in the household, maybe an important determinant of the migrant status of households.

As illustrated in Tables 2 and 3, the three self-employment activities differ substantially in terms of occupation and place of activity. Over 2/3rds of own account work activities without pay are in farming and take place in the own/household house or farm. This is rather similar to

unpaid family work, probably showing that the main difference between unpaid family workers and own account workers without pay is that the latter are the household members effectively owning/renting the farm and/or other assets. This assumption would also be supported by the fact that there are about 2.5 more unpaid family workers in the sample than own account workers without pay (see Table 1).

(Table 2 about here)

(Table 3 about here)

On the other hand, own account workers with pay are mainly service workers (39 percent) and plant and machinery operators (24 percent), operating retail trade on a marketplace and/or other small-scale services from a vehicle. Finally, entrepreneurs have broader distribution of occupations, including service workers (25 percent), farmers (22 percent), craft and related workers (19 percent) and plant and machinery operators (17 percent).

4. Empirical approach

4.1 Activity outcomes

We use a discrete occupational choice model to assess individual activity outcomes and consider six mutually exclusive alternatives: not working, working in an unpaid family activity, working as a wage employee, working as an own account worker without pay, working as an own account worker with pay, and being an entrepreneur. The utility that individual n obtains from alternative j is given by:

$$U_{nj} = V_{nj}(rem_n, X_n) + \varepsilon_{nj} \quad (1)$$

where V_{nj} is the utility that depends on observed factors (that is, representative utility), rem_n is an indicator variable that equals to 1 if the individual lives in a remittance receiving

household,[10] X_n is a vector of exogenous variables relating to individual, household and regional characteristics, and ε_{nj} is the disturbance term capturing unobserved factors that affect the utility. Assuming that ε_{nj} is random, the probability that individual n chooses alternative j is:

$$\begin{aligned} \mathrm{P}_{nj} &= \mathrm{Prob}\left(\mathrm{U}_{nj} > \mathrm{U}_{ni}\ \forall\, j \neq i\right) \\ &= \mathrm{Prob}\left(\mathrm{V}_{nj} + \varepsilon_{nj} > \mathrm{V}_{ni} + \varepsilon_{ni}\ \forall\, j \neq i\right) \\ &= \mathrm{Prob}\left(\varepsilon_{ni} - \varepsilon_{nj} < \mathrm{V}_{nj} - \mathrm{V}_{ni} +\ \forall\, j \neq i\right) \end{aligned} \tag{2}$$

The indicator variable rem_n is likely, however, to be endogenous. Migration is a selective process and the decisions to migrate and then send remittances back home are likely to be related to unobserved individual and household characteristics that affect labour market decisions as well. For example, less risk averse households are more likely to send migrants abroad who then send remittances home. However, the level of risk aversion is also likely to influence business start-up decisions. Consequently, the unobserved term ε_{nj} is not independent of rem_n.

We use an instrumental variable approach to correct for the potential endogeneity bias of remittances. The system of equations is as follows:

$$Y_{nj} = \beta_0 + \beta_1 rem_n + \beta_2 X_n + \varepsilon_n \tag{3}$$

$$rem_n = \alpha_0 + \alpha_1 X_n + \alpha_2 Z_n + \mu_n \tag{4}$$

where Y_{nj} is the individual employment outcome, X_n denotes a vector of exogenous variables, and the vector of covariates Z_n contains a set of instrumental variables that are correlated with

rem_n, but not with the employment outcome (Y_{nj}). The error terms ε_n and μ_n are independent of Z_n and X_n, but are correlated with each other.

Following Mendola and Carletto (2012), we estimate a system of linear probability equations using a 3SLS estimator, which allows the simultaneous estimation of the coefficients for the entire system and accounts for the correlation structure in the disturbances across the activity outcomes and the indicator equations, producing consistent estimates (see Zellner and Theil, 1962). We run the 3SLS estimation using the user written command cmp in Stata 13.0.[11]

The set of exogenous variables (X_n) includes characteristics that control for individual labour market potential (for example, age and education) as well as individual and household characteristics capturing family attributes and opportunity costs of participating in the labour market (for example, marital status, household size, and the proportion of children and elderly in the household). We also control for the local economic conditions and labour demand using a dummy for rural/urban residence, the district level unemployment rate, and regional dummies. The wealth position of the household is proxied by a wealth index, constructed using the principal components analysis (see Filmer and Pritchett, 2001).[12]

In order to identify the model, we need to include in the first stage equation variables that are correlated with the living in a remittance receiving household dummy, but are not directly affecting the employment outcomes. The instrumental variable chosen are: a dummy equal to 1 if there are at least two men in the household (including members currently abroad), and a municipality-level weighted average measure of regional wages in Russia[13]. As argued by Mendola and Carletto (2012) in the context of patriarchal societies, on the one hand, migration is mainly a male phenomenon and, on the other hand, men have specific economic obligations within the household. Therefore, the family gender composition can represent a constraint to the migration choice, without directly affecting the individual occupational outcomes. They argue that if there is only one man in the household he will not be able to

abandon male-specific roles within the household, and consequently will be less likely to migrate. However, the presence of more than one man in the household relaxes the gender-specific constraint to migration, without affecting the labour market behaviour of the rest of the household. The exclusion restriction is satisfied as long as controls for household structure are included in the first stage equation. Any impact of the household structure on labour supply decisions would be in this case captured by these controls (Mendola & Carletto, 2012).

Following Anzoategui, Demirgüç-Kunt and Martínez Pería (2014), the municipality-level weighted average measure of regional wages in Russia is constructed as:

$$lnWrus_p = ln\left(\sum_i s_{ji}\overline{Wr_i}\right) \quad (5)$$

where s_{ji} is the share of migrants from municipality j in Tajikistan (out of the total migrants from that municipality) residing in the region i in Russia, $\overline{Wr_i}$ denotes the average wage in the Russian region i in the year 2003. A similar approach is pursued by Amuedo-Dorantes and Pozo (2014), Mckenzie and Rapoport (2007), and Orrenius, Zavodny, Cañas and Coronado (2010). The basic intuition behind this instrument is that labour market conditions at destination are likely to act as a pull effect on migration and the capacity of migrants to remit, but are unlikely to affect the activity outcomes of non-migrants, except through the migration/remittances channel.

4.2 Hours worked

Receipt of remittances may affect not only activity outcomes but also the number of hours worked. For example, self-employed individuals who have used remittances received from migrant household members may feel more under pressure to show results and consequently work relatively more hours per week, as suggested by descriptive statistics (see Table 1). We,

therefore, assess the impact of living in a remittance receiving household on the number of job-specific hours worked as well.

To estimate these effects one cannot use simple treatment-control differences. This is because the number of job-related hours worked by an individual are only observed by the researcher when the individual is participates in a certain activity. This gives rise to a polychotomous sample selection problem (Dubin & McFadden, 1984; Lee, 1983). To overcome this limitation one needs to control for selection into a particular activity. The decision on the number of hours worked if in activity 1 is modelled as follows:

$$H_{n1}^{*} = \gamma_0 + \gamma_1 rem_n + \gamma_2 X_{1n} + \epsilon_{nj} \quad (6)$$

where the hours worked outcome (H_{n1}^{*}) is observed if and only if the individual n is in a particular activity 1 (that is, $Y_{n1} = max_{j \neq 1}(Y_{nj})$); the disturbance ϵ_{nj} and ε_{nj} are correlated given that the number of hours worked in activity j (H_{nj}^{*}) is conditional on choosing that activity; and X_{1n} is a subset of the exogenous controls X_n (see Eq. 3). The variables used to identify the selection process into a particular occupation (that is, included in X_n but not in X_{n1}) are the controls used for capturing for the local economic conditions and labour demand (that is, a dummy for rural/urban residence, the district level unemployment rate, and regional dummies)[14].

As for the estimation of activity outcomes, we use a system of linear probability equations using a 3SLS estimator, which allows the simultaneous estimation of the coefficients for the entire system (that is, Eqs. 3, 4, and 6) and accounts for the correlation structure in the disturbances across the hours worked, activity outcome and the indicator equations, producing consistent estimates.

5. Results

5.1 Labour market activities

We present the summary of all estimation results in Table 4, including the coefficients of the main variable of interest only, that is 'living in a remittance receiving household'; the full set of results are included in Appendix A in the Supplementary Materials. We first run a multinomial logit estimation as a baseline for the analysis of the effect of remittances on labour market activities (Row 1, Table 4). When the endogeneity of receiving remittances is not taken into account, we find a negative impact of receiving remittances on labour market participation. Everything else equal, living in a remittance receiving household increases the probability of not working by 5.3 per cent and working in an unpaid family job by 3.6 per cent, while it decreases the probability of working as a wage employee by 6.7 per cent and being an entrepreneur by 2.3 per cent.

(Table 4 about here)

The estimated marginal effects of the other covariates included are in line with the results from previous studies (Démurger & Xu, 2011; Giulietti et al., 2013; Mendola & Carletto, 2012; Piracha & Vadean, 2010); see Table A1 in Appendix A in the Supplementary Materials. Everything else equal, we find a positive relationship between age and working as a wage employee but no effect on own account work and entrepreneurial activity. The possibility of being a wage earner, in a country with high level of unemployment, increases with age because individuals accumulate human capital (Démurger & Xu, 2011). Conversely, either not working or being involved in an unpaid family activity is negatively related to age, confirming the fact that young adults in Tajikistan are the group mostly affected by lack of employment opportunities (Mughal, 2007).

Not surprisingly, education plays an important role in the labour market activity as well. Ceteris paribus, tertiary education strongly increases the probability of working as a wage

employee (28.1 per cent) and decreases the probability of all other alternatives: working in an unpaid family job (-9.9 per cent), not working (-7.9 per cent), working in an own account activity without pay (-2.9 per cent), working in an own account activity with pay (-4.8 per cent), and being an entrepreneur (-2.5 per cent). Secondary education has a similar effect on occupation, but to a smaller extent: it increases the probability of wage employment by 5.5 per cent and decreases the probability of working in an unpaid family activity by 4.0 per cent. These results are in line with findings from previous studies on occupational outcomes in developing countries. Piracha and Vadean (2010) find that better educated individuals in the Albanian labour market are less likely not to work or work on own account compared to being wage employees. Similarly, Mendola and Carletto (2012) find that years of education increase the probability of working as wage employee and decrease the probability of being self-employed. Ilahi (1999), using data from Pakistan, also finds that unskilled workers are often left outside the labour market and choose to engage in own account activities that do not require labour market skills, for example, small trade or workshops. Another possible explanation for these results is that employment in a family business and self-employment might be used by the less skilled as a safety net or as a flexible employment opportunity between migration trips.

Both the head of the household and married men are more likely to work on own account with pay (+4.2 per cent and + 4.5 per cent respectively) and less likely not to work (-8.2 per cent and -6.5 per cent respectively), revealing that family responsibilities are an important incentive for taking up employment (see Démurger and Xu, 2011, and Giulietti et al., 2013). Surprisingly, the household size and structure has only limited effect on the individuals' activity: the increase in household size by one member decreases the probability of wage employment by less than 1 per cent, while a 1 per cent increase in the proportion of either women or elderly in the household decreases the probability of being an entrepreneur by 6.6 and 13.9 per cent respectively. Given the risky nature of setting up an entrepreneurial

activity, especially in the country like Tajikistan, it might be necessary that more than one household member is involved in setting up and running the business. As mentioned earlier, since most economic activities are performed by men in Tajikistan, it is possible that a larger proportion of either women or elderly in the household represents a disincentive to invest in a household business.

In order to correct for the potential endogeneity bias of the remittance variable, we estimate the system of equations (3) and (4) using 3SLS. The instruments used to identify the model are: a) a dummy for living in a household with at least two adult men; and b) a municipality-level weighted average measure of regional wages in Russia. Overall, the model performed well satisfying IV estimation diagnostics of over-identification and weak instruments (F-tests > 10). The results are summarized in Row 2, Table 4; the full results are presented in Table A2 (in Appendix A in the Supplementary Materials).

We find that the effect of living in a remittance receiving household on not working and working in an unpaid family activity disappears after controlling for endogeneity. However, the negative effect on working as a wage employee becomes stronger, from -6.7 to -30.8 per cent. On the other hand, the effect of working as an own account worker without pay becomes positive and significant (+19.3 per cent). A possible explanation for this effect is that to start and run an entrepreneurial activity a large and stable source of income is needed. Most of the remittances in Tajikistan reflect the seasonal nature of migration, and given the consistent proportion of population living below the poverty line (see Section 2), remittances help the recipient households to achieve a basic level of consumption (Clement, 2011). Therefore, it is likely that the proportion of remittances going into investments is quite small and not enough to support an entrepreneurial activity.

As illustrated in Tables 2 and 3, own account activities without pay were predominantly in farming own land and small services that could be offered from home. As these activities do

not generate a regular income stream, they might be small investments into subsistence farming. On the other hand, the positive effect of remittances on own account activities without pay might be evidence of a 'disruption' effect, with those left-behind taking over responsibility for farmland (or other assets or household activities) from the member abroad, so that the household assets remain fully utilized (Amuedo-Dorantes & Pozo, 2006). Furthermore, remittances might loosen constraints for household members to pursue formal (paid) work and enable them to engage in (informal) activities that are possibly more beneficial for the household, as suggested by the findings of several other studies (Binzel & Assaad, 2011; Cabegin, 2006; Görlich, Mahmoud, & Trebesch, 2007; Ivlevs, 2016). Similarly, Damon (2010) showed that remittances allowed left behind households to shift from intensive farming (that is, cash crops) to more sustainable subsistence farming.

So, contrary to the findings of Justino and Shemyakina (2012), we find no 'dependency' effect of remittances on those left behind.[15] Nonetheless, we do not find any effects on employment generation activities either. Our results rather show that remittances received by households in Tajikistan result in left behind members to shift labour supply from formal wage employment to informal labour market activities such as own account self-employment. These findings are consistent with the notion that remittances ensure a basic level of income, which then help remove the constraint on the household members left behind to work in, most likely, low wage employment. This then allows them to engage in perhaps more risky activities that could generate higher but only occasional income or otherwise producing goods and services for the family.

5.2 Number of hours worked

When looking at the impact of living in a remittance receiving household on the number of job-specific hours worked (see Row 3, Table 4 for a summary and Table A3 in Appendix A in

the Supplementary Materials for the full set of results), our results seem to contradict the findings from previous studies, which showed that remittances lead to a reduction in the labour supply of recipients (Acosta, 2007; Funkhouser, 2006; Justino & Shemyakina, 2012; Kim, 2007). For instance, even though the effect of living in a remittances receiving household on weekly working hours for unpaid family workers, own account workers, and entrepreneurs was negative, it was not statistically significant at 5 per cent level.

5.3 Robustness check

As a robustness check for potential bias due to underreporting of receiving remittances, we also run estimations with a dummy for 'living in a migrant household' as alternative to 'living in a remittances receiving household'.[16] The intuition behind this is that a household with migrants abroad is quite likely to receive remittances, and there is no obvious reason why households should underreport having migrants abroad. In order to deal with the potential endogeneity of the 'living in a migrant household' indicator, we use the same IV strategy as for the models with 'living in a remittances receiving household' as covariate.

The results obtained with 'living in a migrant household' as covariate are very similar to the ones presented above, showing the results are rather robust. The results are presented in a summarised form in Table 4 (rows 4, 5 and 6). The full set of results are presented in Tables A4, A5 and A6 (in Appendix A in the Supplementary Materials).

6. Conclusions

The aim of this paper was to explore the impact of remittances on the labour market activity of household members left-behind, while explicitly distinguishing between different types of self-employment. In particular, the economic activity of non-migrant household members could be positively affected if remittances are seen as an investment opportunity in the presence of credit

constraints. However, it could have a detrimental effect as well if the remaining relatives consider this a simple non-labour income, hence causing them to substitute work for leisure.

We assessed the role of remittances on the labour market activity in Tajikistan using the Living Standards Survey 2007. We implemented a 3SLS model to estimate a system of equations using an IV approach to address the issue of endogeneity of receiving remittances and found that the remittances significantly increased the probability for men to work on own account without pay and decreased the probability of working as wage employee. As the vast majority of activities own account without pay are in farming, our results show that remittances could possibly help mainly poor migrant households in rural areas acquiring own farmland, which they work probably to produce mainly for their own consumption. However, it is also possible that the income effect from remittances is strong enough that the households simply switch from perhaps formal low wage jobs to exerting more efforts on their existing farmland or engage in informal activities generating only occasional, but potentially higher income.

When looking at the effect on the number of job-specific hours worked, we didn't find any statistically significant evidence that remittance recipients reduce their labour supply. These results withstand a robustness check, with remittances being replaced by the (potential) remitters, that is, living in a migrant household.

Migration and remittances can theoretically help the development process of local economies. However, as our findings suggest and as often argued in the literature, they are usually channelled (besides consumption) into small-scale family investments, which are likely to have limited positive effects beyond the household. Nevertheless, remittances seem to contribute to alleviate important household income constraints, allowing the left-behind members to engage in activities they derive more utility from.

[1] For a review of the related literature, see (Antman, 2013).

[2] See (Adams Jr., 2011) for a more in-depth discussion on remittances, labour supply and participation.

[3] For example, Ilahi (1999) argues that most self-employment activities in Pakistan are of small scale and mainly in the informal sector; Dustmann and Kirchkamp (2002), using survey data of return migrants from Germany to Turkey show that only about 40 percent of the self-employed returnees had paid employees, and only 24 percent employed individuals from outside the family; Piracha and Vadean (2010) report that about 80 percent of self-employment activities in Albania were on own-account (that is, without paid employees).

[4] The average monthly per capita income increased in real terms from 119 somoni (about USD 40) in 2003 to 150 somoni (about USD 43) in 2007.

[5] In 2005, among those who travelled abroad to earn a living for the first time, 88 per cent were younger than 30 (Mughal, 2007).

[6] Amounts of internal remittances are not reported in the survey.

[7] The average amount of annual remittances per household (including receiving and non-receiving households), estimated using TLSS2007, is about USD 139. This average amount is significantly lower compared to a simple estimate based on the total amount of international remittances reported by the National Bank of Tajikistan for 2007 (USD 1.8 billion) and the total number of households reported by the 2010 census (1.2 million), giving an amount of yearly remittances received by the average Tajik household of about USD 1,500. This reveals that the amount of remittances in the TLSS2007 is underreported by a factor of about 10.

[8] This is primarily due to the fact that after the 1990's civil war, a large majority of the population consisted of ethnic Tajiks and hence most of the economic migrants were from that group – those of other ethnicities had fled the country during the civil war, eventually losing all contact with their former homeland.

[9] The asset ownership indicators used to construct the wealth index are: separate kitchen; high quality dwelling (if wall, roof and floor are of high quality); type of toilet; gas or electric hob; gas and electric oven; refrigerator; washing machine; sewing machine; television; radio; motorcycle; car; and bicycle.

[10] We use an indicator variable for 'living in a remittances receiving household' instead of the amount of remittances received by the household, as monetary variables in survey data collection are often underreported (Meyer, Wallace, & Sullivan, 2009).

[11] For more information about the cmp module see Roodman (2009).

[12] See Endnote 9 for more details on the components used to construct the wealth index.

[13] Russia is the main destination of Tajik labour migrants, with over 95% of migrants from the households sampled by the TLSS residing in Russia.

[14] Local economy variables are usually not considered among the determinants of number of hours worked, as they are assumed to affect the number of hours worked only through the occupational choice (Borjas, 1980; Finegan, 1962).

[15] As labour market participation in Tajikistan is rather low, it might be actually not that surprising that remittance receipt does not drive it significantly lower.

[16] Similar to other monetary transfers, remittances receipt may be underreported in household surveys. This would cause an outcome that is in fact determined by 'living in a remittance receiving household' to be attributed to other factor(s), making the remittances effects to be downward biased (Meyer et al., 2009).

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Table 1: Descriptive Statistics – men, aged 15 to 62

	All		
Living in a remittance receiving household	0.150		
Living in a migrant household	0.134		
Amount of mean yearly HH remittances – TJS	428.48 (USD 123.66)[1]		
Amount of mean yearly HH remittances (if>0) – TJS	2,835.24 (USD 819.27)[1]		
	Living in remittance receiving household	Living in non-remittance receiving household	P-value
Activity: not working	0.245	0.160	0.000
Activity: unpaid family work	0.159	0.093	0.000
Activity: wage employment	0.451	0.572	0.000
Activity: own account work without pay[2]	0.055	0.041	0.069
Activity: own account work with pay[2]	0.058	0.071	0.157
Activity: entrepreneurship[2]	0.031	0.062	0.000
No. of average hours per week worked if unpaid family worker	34.029	38.874	0.004
No. of average hours per week worked if wage employed	47.074	47.129	0.944
No. of average hours per week worked if own account worker without pay	60.745	52.819	0.003
No. of average hours per week worked if own account worker with pay	42.700	46.573	0.147
No. of average hours per week worked if entrepreneur	46.481	43.302	0.339
Age	36.200	35.480	0.108
Marital Status	0.712	0.763	0.001
Education: primary or less	0.158	0.139	0.129
Education: secondary	0.712	0.672	0.023
Education: tertiary	0.130	0.189	0.000
Ethnicity: Tajik	0.865	0.776	0.000
Household size	7.490	7.412	0.494
Share of children in the household	0.267	0.301	0.000
Share of women in the household	0.358	0.315	0.000
Share of elderly in the household	0.027	0.035	0.004
Wealth index[3]	-0.149	-0.030	0.000
Rural	0.784	0.697	0.000
Unemployment rate	0.173	0.155	0.000
Region: Dushanbe	0.100	0.151	0.000
Region: Sughd	0.102	0.184	0.000
Region: Khatlon	0.263	0.319	0.000
Region: Reg. of Republican Subordination	0.288	0.231	0.000
Region: Gorno-Badakhshan	0.247	0.113	0.000
Living in migrant household	0.772	0.021	0.000
Two or more men in the household (at home or abroad)	0.924	0.716	0.000
Average wage in Russian region of residence for migrants living abroad – average at Tajik community level (RUB)	5057.18	4907.08	0.000
Observations	860	4,857	

Notes: 1) Exchange rate as at 30 Dec 2007: 1 USD = 3.4649 TJP. 2) 'Own account workers' are self-employed individuals who have no paid employees, while 'entrepreneurs' are self-employed individuals with paid employees. 3) The wealth index is a composite measure of a household's cumulative living standard and it is constructed using the following assets: separate kitchen, high quality dwelling (if wall, roof and floor are of high quality), type of toilet, gas or electric hob, gas and electric oven, refrigerator, washing machine, sewing machine, television, radio, motorcycle, car, and bicycle.

Table 2: Labour market activity by occupation (percent)

Occupation	Unpaid Family Work	Wage Employment	Own Account Work w/o pay	Own Account Work w/ pay	Entrepre-neurship
Legislators, senior officials and managers	0.34	5.72	1.63	0.25	1.83
Professionals	0.34	13.49	0.00	1.26	0.91
Technicians and associate professionals	0.34	8.34	0.00	1.51	1.52
Clerks	0.00	1.30	0.00	0.50	0.00
Service workers	14.04	6.76	16.26	38.54	24.70
Skilled agricultural and fishery worker	66.33	17.88	66.67	11.08	22.26
Craft and related workers	4.40	25.09	2.85	13.35	19.21
Plant and machine operators and assemblers	7.45	8.72	4.07	24.43	17.07
Elementary occupation	6.77	12.70	8.54	9.07	12.50
Total	100.00	100.00	100.00	100.00	100.00

Table 3: Labour market activity by place of activity (percent)

Place of activity	Unpaid Family Work	Wage Employment	Own Account Work w/o pay	Own Account Work w/ pay	Entrepre-neurship
Farm owned or rented by household member	30.46	3.48	26.42	4.53	14.33
Other farm	4.4	14.98	1.63	3.53	9.45
Your home	36.55	0.88	33.74	8.06	3.35
Other home	1.86	12.04	2.44	7.81	17.07
Vehicle	3.89	2.88	4.07	19.65	10.06
From door to door	0.17	3.67	0	1.01	3.35
In the street, fixed place	5.25	7.87	10.98	7.3	9.76
In the street, no fixed place	2.03	1.42	0	3.27	3.35
Fixed building	2.71	45.72	2.85	11.34	9.15
In a market	8.8	4.96	11.79	32.49	17.07
Other	3.89	2.12	6.1	1.01	3.05
Total	100	100	100	100	100

Table 4: Impact of remittances/migration on labour market activity and hours worked of household members left behind

Model	Outcome	Not Working	Unpaid Family Work	Wage Employment	Own Account Work w/o pay	Own Account Work w/ pay	Entrepre-neurship
		Model specification: Living in a rem. receiving HH					
(1) Mlogit	Labour market activity	0.053***	0.036***	-0.067***	-0.002	0.003	-0.023*
		(0.013)	(0.011)	(0.023)	(0.005)	(0.011)	(0.013)
(2) 3SLS	Labour market activity	0.066	0.064	-0.308***	0.193***	0.017	-0.033
		(0.074)	(0.067)	(0.106)	(0.042)	(0.052)	(0.047)
(3) 3SLS	Hours worked		-0.323	-0.013	-0.542	0.407	-0.951
			(0.633)	(0.176)	(0.830)	(0.623)	(0.672)
		Model specification: Living in a migrant HH					
(4) Mlogit	Labour market activity	0.043***	0.034***	-0.040	0.000	-0.013	-0.019
		(0.014)	(0.012)	(0.026)	(0.005)	(0.013)	(0.014)
(5) 3SLS	Labour market activity	0.062	0.046	-0.248***	0.157***	0.013	-0.030
		(0.060)	(0.057)	(0.088)	(0.034)	(0.044)	(0.041)
(6) 3SLS	Hours worked		-0.269	-0.019	-0.344	0.434	-0.754
			(0.579)	(0.152)	(0.756)	(0.498)	(0.531)

Robust standard errors in parentheses adjusted for 267 clusters (panel sampling units)
*** p<0.01, ** p<0.05, * p<0.1
Notes: The table summarizes the estimation results presented in Tables A1 to A6 in Appendix A available in the Supplementary Materials.

Appendix A – Estimation results tables

The following tables present the full estimation results summarized in Table 4 in the Main Document. Table A1 includes the estimation results of the baseline multinomial logit estimation of labour market activity with 'living in a remittance receiving household' as main independent variable of interest.

As remittance receipt is likely to be endogenous – the decisions to migrate and then send remittances back home are likely to be related to unobserved individual and household characteristics that affect labour market decisions – we aimed to correct for omitted variable bias due to unobservable variables by estimating a system of linear probability equations using three stage last squares (3SLS). While remittances are instrumented for, the system accounts for the correlation structure in the disturbances across the activity outcomes and the remittances equations. The results and instrumental variable (IV) estimation diagnostics are presented in Table A2.

The effects of receiving remittances on hours worked are captured in Table A3. As above, we use a system of linear probability equations using a 3SLS estimator, in which additionally to instrumenting for remittances, we also account for sample selection into labour market activity.

Finally, the last three tables A4, A5 and A6 present similar estimations to the first three tables, but using 'living in a migrant household' as independent variable instead 'living in a remittances receiving household, in order to check for potential bias due to underreporting of receiving remittances.

The estimation results are discussed in Section 5 in the Main Document. Any further details are available from the authors upon request.

Table A1: Multinomial logit estimation results of labour market activity (marginal effects) – living in remittance receiving household

	Not Working	Unpaid Family Work	Wage Employment	Own Account Work w/o pay	Own Account Work w/ pay	Entrepre-neurship
Remittances receiving HH	0.053***	0.036***	-0.067***	-0.002	0.003	-0.023*
	(0.013)	(0.011)	(0.023)	(0.005)	(0.011)	(0.013)
Age	-0.015***	-0.005*	0.019***	0.001	0.001	-0.001
	(0.004)	(0.003)	(0.006)	(0.001)	(0.003)	(0.003)
Age squared x 100	0.017***	0.005	-0.018***	-0.001	-0.003	-0.000
	(0.005)	(0.003)	(0.007)	(0.002)	(0.004)	(0.003)
Head of the household	-0.082***	0.014	0.007	0.006	0.042***	0.014
	(0.018)	(0.013)	(0.026)	(0.006)	(0.012)	(0.012)
Married	-0.065***	0.016	-0.011	0.002	0.045***	0.013
	(0.016)	(0.011)	(0.024)	(0.006)	(0.014)	(0.010)
Educ level: secondary	-0.006	-0.040***	0.055***	-0.006	-0.006	0.002
	(0.014)	(0.008)	(0.020)	(0.005)	(0.011)	(0.009)
Educ level: tertiary	-0.079***	-0.099***	0.281***	-0.029***	-0.048***	-0.025**
	(0.020)	(0.016)	(0.028)	(0.008)	(0.015)	(0.012)
Ethnicity: Tajik	-0.005	0.021	-0.037	0.021**	-0.004	0.005
	(0.015)	(0.016)	(0.027)	(0.009)	(0.010)	(0.012)
Household size	0.003	0.002	-0.009***	0.001*	0.002	0.000
	(0.002)	(0.002)	(0.003)	(0.001)	(0.002)	(0.002)
Share of women	0.056	-0.041	0.095	-0.022	-0.022	-0.066**
	(0.048)	(0.040)	(0.077)	(0.017)	(0.036)	(0.033)
Share of children (<15)	-0.000	0.021	0.026	0.000	-0.018	-0.028
	(0.043)	(0.031)	(0.061)	(0.013)	(0.025)	(0.023)
Share of elderly (>62)	0.002	0.086	0.001	0.029	0.021	-0.139**
	(0.067)	(0.059)	(0.113)	(0.023)	(0.058)	(0.054)
Wealth index[1]	-0.019***	0.005	-0.006	-0.005*	0.017***	0.008
	(0.007)	(0.006)	(0.011)	(0.003)	(0.005)	(0.005)
Rural location	-0.058***	0.020	0.019	0.026***	-0.012	0.005
	(0.020)	(0.019)	(0.031)	(0.010)	(0.015)	(0.012)
Unemployment rate	0.963***	-0.484***	-0.496***	-0.147***	0.015	0.149**
	(0.066)	(0.095)	(0.149)	(0.045)	(0.068)	(0.065)
Regional controls[2]	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,717					
Wald chi-sq	1,475.96					
Pseudo R-sq	0.145					

Robust standard errors in parentheses adjusted for 267 clusters (panel sampling units)
*** p<0.01, ** p<0.05, * p<0.1
The Weath index

Notes: 1) The wealth index is a composite measure of a household's cumulative living standard and it is constructed using the following assets: separate kitchen, high quality dwelling (if wall, roof and floor are of high quality), type of toilet, gas or electric hob, gas and electric oven, refrigerator, washing machine, sewing machine, television, radio, motorcycle, car, and bicycle. 2) The regional controls includes dummies for the Sughd Region, the District of Republican Subordination, the Khatlon Region, Gorno-Badakhshan Autonomous Region, and the capital city Dushanbe.

Table A2: 3SLS estimation results of labour market activity – living in remittance receiving household

	Not Working	Unpaid Family Work	Wage Employment	Own Account Work w/o pay	Own Account Work w/ pay	Entrepre-neurship
Remittances receiving HH	0.066	0.064	-0.308***	0.193***	0.017	-0.033
	(0.074)	(0.067)	(0.106)	(0.042)	(0.052)	(0.047)
Age	-0.017***	-0.006	0.018***	0.004	0.001	-0.000
	(0.004)	(0.004)	(0.005)	(0.002)	(0.002)	(0.003)
Age squared x 100	0.018***	0.006	-0.014**	-0.005*	-0.004	-0.001
	(0.005)	(0.004)	(0.007)	(0.003)	(0.003)	(0.003)
Head of the household	-0.052***	0.016	-0.042	0.024*	0.046***	0.009
	(0.017)	(0.016)	(0.027)	(0.013)	(0.013)	(0.012)
Married	-0.101***	0.025*	0.006	0.015	0.040***	0.015
	(0.020)	(0.013)	(0.024)	(0.009)	(0.011)	(0.010)
Educ level: secondary	-0.003	-0.060***	0.064***	-0.005	-0.002	0.007
	(0.017)	(0.016)	(0.020)	(0.010)	(0.010)	(0.009)
Educ level: tertiary	-0.061***	-0.103***	0.260***	-0.026**	-0.049***	-0.021**
	(0.020)	(0.019)	(0.027)	(0.012)	(0.014)	(0.010)
Ethnicity: Tajik	-0.012	0.026	-0.028	0.012	-0.006	0.007
	(0.014)	(0.018)	(0.027)	(0.008)	(0.011)	(0.015)
Household size	0.003	0.003	-0.009***	0.002	0.001	0.000
	(0.002)	(0.002)	(0.003)	(0.001)	(0.002)	(0.002)
Share of women	0.082	-0.055	0.152*	-0.093***	-0.024	-0.062
	(0.051)	(0.043)	(0.081)	(0.035)	(0.037)	(0.038)
Share of children (<15)	0.016	0.014	0.043	-0.027	-0.014	-0.031
	(0.039)	(0.033)	(0.059)	(0.024)	(0.027)	(0.025)
Share of elderly (>62)	0.008	0.093	-0.091	0.089*	0.024	-0.124***
	(0.077)	(0.079)	(0.113)	(0.052)	(0.054)	(0.041)
Wealth index[1]	-0.018**	0.002	-0.003	-0.008	0.018***	0.009
	(0.007)	(0.007)	(0.011)	(0.005)	(0.005)	(0.005)
Rural location	-0.065***	0.027	0.021	0.024*	-0.012	0.006
	(0.021)	(0.021)	(0.029)	(0.015)	(0.015)	(0.013)
Unemployment rate	1.081***	-0.546***	-0.558***	-0.131**	0.008	0.147*
	(0.079)	(0.119)	(0.147)	(0.065)	(0.059)	(0.080)
Regional controls[2]	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.431***	0.239***	0.195*	-0.018	0.113**	0.041
	(0.076)	(0.080)	(0.106)	(0.038)	(0.046)	(0.068)
Observations			5,717			
F-test 1st stage			212.50			
P-value joint			0.000			
Over-identification Sargan test			6.187			
P-value			0.289			
Endog test			29.60			
P-value			0.000			

Robust standard errors in parentheses adjusted for 267 clusters (panel sampling units)
*** p<0.01, ** p<0.05, * p<0.1

Notes: 1) The wealth index is a composite measure of a household's cumulative living standard and it is constructed using the following assets: separate kitchen, high quality dwelling (if wall, roof and floor are of high quality), type of toilet, gas or electric hob, gas and electric oven, refrigerator, washing machine, sewing machine, television, radio, motorcycle, car, and bicycle. 2)) The regional controls includes dummies for the Sughd Region, the District of Republican Subordination, the Khatlon Region, Gorno-Badakhshan Autonomous Region, and the capital city Dushanbe.

Table A3: 3SLS estimation results of log of hours worked with multivariate selection into labour market activity – living in remittance receiving household

	Unpaid Family Work	Wage Employment	Own Account Work w/o pay	Own Account Work w/ pay	Entrepre-neurship
Living in migrant HH	-0.323	-0.013	-0.542	0.407	-0.951
	(0.633)	(0.176)	(0.830)	(0.623)	(0.672)
Age	0.023	-0.016*	0.029	-0.012	-0.037
	(0.037)	(0.009)	(0.060)	(0.037)	(0.034)
Age squared x 100	-0.018	0.016	-0.009	0.022	0.030
	(0.037)	(0.010)	(0.062)	(0.040)	(0.037)
Head of the household	-0.309	-0.044	-0.476	-0.194	0.124
	(0.219)	(0.060)	(0.311)	(0.208)	(0.215)
Married	-0.317	-0.030	-0.196	-0.369*	0.200
	(0.215)	(0.057)	(0.311)	(0.206)	(0.219)
Educ level: secondary	-0.005	-0.043	0.158	0.229*	0.147
	(0.131)	(0.042)	(0.195)	(0.133)	(0.162)
Educ level: tertiary	0.526	-0.253**	0.921	0.699	-0.129
	(0.475)	(0.119)	(0.766)	(0.434)	(0.477)
Ethnicity: Tajik	-0.280**	0.056	-0.098	-0.249**	0.130
	(0.124)	(0.035)	(0.201)	(0.109)	(0.127)
Household size	-0.007	0.006	-0.029	0.019	0.014
	(0.018)	(0.005)	(0.028)	(0.017)	(0.022)
Share of women	0.615	-0.098	1.247	0.459	-0.115
	(0.592)	(0.148)	(0.889)	(0.554)	(0.546)
Share of children (<15)	0.266	-0.019	0.473	-0.039	0.064
	(0.301)	(0.083)	(0.422)	(0.291)	(0.312)
Share of elderly (>62)	0.463	-0.255	-0.223	0.626	-1.246*
	(0.608)	(0.187)	(0.846)	(0.645)	(0.675)
Wealth index[1]	-0.074	-0.005	-0.155	-0.096	0.163
	(0.102)	(0.029)	(0.154)	(0.093)	(0.104)
Constant	3.027***	4.482***	5.808**	8.716***	-0.911
	(0.682)	(0.322)	(2.733)	(1.855)	(2.849)
$\rho_{hours,UFW}$	0.053	0.457***	-0.171	-0.125	0.088
	(0.209)	(0.098)	(0.149)	(0.128)	(0.168)
$\rho_{hours,WE}$	0.562*	-0.552	0.950***	0.545**	-0.575**
	(0.300)	(0.353)	(0.235)	(0.254)	(0.254)
$\rho_{hours,OAWwp}$	-0.744**	-0.185	-0.388**	-0.908***	0.547**
	(0.295)	(0.331)	(0.184)	(0.284)	(0.266)
$\rho_{hours,OAWwop}$	-0.201	-0.103	-0.251	-0.036	-0.292
	(0.162)	(0.162)	(0.217)	(0.137)	(0.235)
$\rho_{hours,ENT}$	-0.743**	0.451	-1.008***	-0.574**	0.897***
	(0.315)	(0.361)	(0.226)	(0.286)	(0.298)
Observations	5,717	5,717	5,717	5,717	5,717
Wald chi-sq	3,583.84	3,018.88	3,099.52	3,690.02	3,074.79

Robust standard errors in parentheses adjusted for 267 clusters (panel sampling units)
*** p<0.01, ** p<0.05, * p<0.1

Notes: 1) The wealth index is a composite measure of a household's cumulative living standard and it is constructed using the following assets: separate kitchen, high quality dwelling (if wall, roof and floor are of high quality), type of toilet, gas or electric hob, gas and electric oven, refrigerator, washing machine, sewing machine, television, radio, motorcycle, car, and bicycle.

Table A4: Multinomial logit estimation results of labour market activity (marginal effects) – living in migrant household

	Not Working	Unpaid Family Work	Wage Employment	Own Account Work w/o pay	Own Account Work w/ pay	Entrepre-neurship
Living in migrant HH	0.043***	0.034***	-0.040	0.000	-0.013	-0.019
	(0.014)	(0.012)	(0.026)	(0.005)	(0.013)	(0.014)
Age	-0.015***	-0.005*	0.019***	0.001	0.001	-0.001
	(0.004)	(0.003)	(0.006)	(0.001)	(0.003)	(0.003)
Age squared x 100	0.017***	0.005	-0.018***	-0.001	-0.003	-0.000
	(0.005)	(0.003)	(0.007)	(0.002)	(0.004)	(0.003)
Head of the household	-0.082***	0.014	0.011	0.007	0.040***	0.014
	(0.018)	(0.013)	(0.025)	(0.006)	(0.012)	(0.012)
Married	-0.066***	0.016	-0.012	0.001	0.044***	0.014
	(0.016)	(0.011)	(0.024)	(0.006)	(0.014)	(0.010)
Educ level: secondary	-0.005	-0.036***	0.056***	-0.005	-0.006	0.002
	(0.014)	(0.008)	(0.020)	(0.006)	(0.011)	(0.009)
Educ level: tertiary	-0.080***	-0.095***	0.283***	-0.029***	-0.049***	-0.025**
	(0.020)	(0.016)	(0.028)	(0.009)	(0.014)	(0.012)
Ethnicity: Tajik	-0.004	0.018	-0.044	0.021**	-0.004	0.005
	(0.015)	(0.016)	(0.028)	(0.009)	(0.010)	(0.013)
Household size	0.003	0.002	-0.008**	0.002**	0.002	0.000
	(0.002)	(0.002)	(0.003)	(0.001)	(0.002)	(0.002)
Share of women	0.058	-0.042	0.077	-0.025	-0.019	-0.067**
	(0.048)	(0.040)	(0.077)	(0.018)	(0.036)	(0.033)
Share of children (<15)	0.001	0.020	0.022	0.001	-0.018	-0.029
	(0.043)	(0.030)	(0.061)	(0.014)	(0.025)	(0.023)
Share of elderly (>62)	-0.001	0.081	0.004	0.032	0.019	-0.139**
	(0.067)	(0.058)	(0.114)	(0.024)	(0.057)	(0.054)
Wealth index[1]	-0.019***	0.005	-0.008	-0.005*	0.016***	0.008
	(0.007)	(0.006)	(0.011)	(0.003)	(0.005)	(0.005)
Rural location	-0.059***	0.015	0.012	0.022**	-0.011	0.005
	(0.020)	(0.018)	(0.032)	(0.010)	(0.015)	(0.012)
Unemployment rate	0.953***	-0.905***	-0.543**	-0.193**	-0.046	0.233**
	(0.065)	(0.178)	(0.256)	(0.087)	(0.126)	(0.097)
Regional controls[2]	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,717					
Wald chi-sq	1474.25					
Pseudo R-sq	0.144					

Robust standard errors in parentheses adjusted for 267 clusters (panel sampling units)
*** p<0.01, ** p<0.05, * p<0.1

Notes: 1) The wealth index is a composite measure of a household's cumulative living standard and it is constructed using the following assets: separate kitchen, high quality dwelling (if wall, roof and floor are of high quality), type of toilet, gas or electric hob, gas and electric oven, refrigerator, washing machine, sewing machine, television, radio, motorcycle, car, and bicycle. 2)) The regional controls includes dummies for the Sughd Region, the District of Republican Subordination, the Khatlon Region, Gorno-Badakhshan Autonomous Region, and the capital city Dushanbe.

Table A5: 3SLS estimation results of labour market activity – living in migrant household

	Not Working	Unpaid Family Work	Wage Employment	Own Account Work w/o pay	Own Account Work w/ pay	Entrepre-neurship
Living in migrant HH	0.062	0.046	-0.248***	0.157***	0.013	-0.030
	(0.060)	(0.057)	(0.088)	(0.034)	(0.044)	(0.041)
Age	-0.017***	-0.006	0.018***	0.003	0.001	-0.000
	(0.004)	(0.004)	(0.005)	(0.002)	(0.002)	(0.003)
Age squared x 100	0.018***	0.006	-0.015**	-0.005*	-0.004	-0.000
	(0.005)	(0.004)	(0.007)	(0.003)	(0.003)	(0.003)
Head of the household	-0.052***	0.015	-0.039	0.022*	0.046***	0.009
	(0.017)	(0.015)	(0.026)	(0.012)	(0.013)	(0.012)
Married	-0.101***	0.025*	0.006	0.014	0.040***	0.015
	(0.020)	(0.013)	(0.024)	(0.009)	(0.011)	(0.010)
Educ level: secondary	-0.003	-0.060***	0.061***	-0.003	-0.002	0.006
	(0.017)	(0.016)	(0.021)	(0.010)	(0.010)	(0.009)
Educ level: tertiary	-0.062***	-0.104***	0.263***	-0.028**	-0.049***	-0.020*
	(0.019)	(0.019)	(0.027)	(0.012)	(0.014)	(0.010)
Ethnicity: Tajik	-0.010	0.028	-0.036	0.017**	-0.005	0.006
	(0.014)	(0.018)	(0.027)	(0.008)	(0.010)	(0.015)
Household size	0.003	0.003	-0.009***	0.002	0.001	0.000
	(0.002)	(0.002)	(0.003)	(0.001)	(0.002)	(0.002)
Share of women	0.083*	-0.050	0.139*	-0.085**	-0.023	-0.063*
	(0.050)	(0.042)	(0.079)	(0.034)	(0.037)	(0.038)
Share of children (<15)	0.018	0.017	0.030	-0.020	-0.013	-0.032
	(0.039)	(0.033)	(0.058)	(0.023)	(0.027)	(0.025)
Share of elderly (>62)	0.004	0.087	-0.066	0.073	0.023	-0.122***
	(0.076)	(0.077)	(0.111)	(0.050)	(0.053)	(0.040)
Wealth index[1]	-0.017**	0.002	-0.006	-0.005	0.018***	0.008
	(0.007)	(0.007)	(0.011)	(0.005)	(0.005)	(0.005)
Rural location	-0.066***	0.027	0.020	0.025*	-0.012	0.006
	(0.021)	(0.021)	(0.030)	(0.014)	(0.015)	(0.013)
Unemployment rate	1.068***	-0.559***	-0.497***	-0.170***	0.005	0.153*
	(0.079)	(0.119)	(0.150)	(0.063)	(0.057)	(0.081)
Regional controls[2]	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.432***	0.242***	0.184*	-0.012	0.114**	0.040
	(0.076)	(0.080)	(0.104)	(0.037)	(0.046)	(0.068)
Observations			5,717			
F-test 1st stage			349.97			
P-value joint			0.000			
Over-identification Sargan test			7.299			
P-value			0.199			
Endog test			29.45			
P-value			0.000			

Robust standard errors in parentheses adjusted for 267 clusters (panel sampling units)
*** p<0.01, ** p<0.05, * p<0.1

Notes: 1) The wealth index is a composite measure of a household's cumulative living standard and it is constructed using the following assets: separate kitchen, high quality dwelling (if wall, roof and floor are of high quality), type of toilet, gas or electric hob, gas and electric oven, refrigerator, washing machine, sewing machine, television, radio, motorcycle, car, and bicycle. 2)) The regional controls includes dummies for the Sughd Region, the District of Republican Subordination, the Khatlon Region, Gorno-Badakhshan Autonomous Region, and the capital city Dushanbe.

Table A6: 3SLS estimation results of log of hours worked with multivariate selection into labour market activity – living in migrant household

	Unpaid Family Work	Wage Employment	Own Account Work w/o pay	Own Account Work w/ pay	Entrepre-neurship
Remittance receiving HH	-0.269	-0.019	-0.344	0.434	-0.754
	(0.572)	(0.152)	(0.753)	(0.499)	(0.531)
Age	0.023	-0.016*	0.033	-0.013	-0.031
	(0.037)	(0.008)	(0.066)	(0.036)	(0.028)
Age squared x 100	-0.017	0.016*	-0.011	0.021	0.028
	(0.038)	(0.010)	(0.066)	(0.039)	(0.031)
Head of the household	-0.327	-0.046	-0.510	-0.168	0.068
	(0.236)	(0.064)	(0.354)	(0.207)	(0.209)
Married	-0.328	-0.032	-0.237	-0.347*	0.133
	(0.223)	(0.060)	(0.349)	(0.204)	(0.200)
Educ level: secondary	-0.001	-0.043	0.164	0.219*	0.157
	(0.132)	(0.042)	(0.212)	(0.125)	(0.149)
Educ level: tertiary	0.560	-0.248**	1.021	0.613	0.055
	(0.491)	(0.126)	(0.873)	(0.428)	(0.426)
Ethnicity: Tajik	-0.288**	0.055	-0.123	-0.232**	0.090
	(0.128)	(0.036)	(0.214)	(0.103)	(0.107)
Household size	-0.007	0.006	-0.030	0.021	0.011
	(0.019)	(0.005)	(0.030)	(0.016)	(0.019)
Share of women	0.643	-0.094	1.290	0.380	-0.030
	(0.627)	(0.157)	(1.009)	(0.547)	(0.487)
Share of children (<15)	0.264	-0.017	0.484	-0.078	0.066
	(0.308)	(0.084)	(0.457)	(0.272)	(0.276)
Share of elderly (>62)	0.499	-0.248	-0.110	0.535	-1.032*
	(0.603)	(0.176)	(0.888)	(0.587)	(0.558)
Wealth index[1]	-0.088	-0.006	-0.184	-0.077	0.120
	(0.105)	(0.030)	(0.173)	(0.093)	(0.095)
Constant	3.017***	4.469***	5.658**	8.377***	0.299
	(0.691)	(0.327)	(2.875)	(1.788)	(2.402)
$\rho_{hours,UFW}$	0.049	0.463***	-0.164	-0.114	0.071
	(0.203)	(0.099)	(0.144)	(0.133)	(0.204)
$\rho_{hours,WE}$	0.569*	-0.549	0.937***	0.507*	-0.509
	(0.297)	(0.396)	(0.217)	(0.294)	(0.337)
$\rho_{hours,OAWwp}$	-0.747**	-0.197	-0.421***	-0.927***	0.498
	(0.298)	(0.354)	(0.161)	(0.286)	(0.338)
$\rho_{hours,OAWwop}$	-0.185	-0.096	-0.220	-0.063	-0.359
	(0.137)	(0.159)	(0.190)	(0.129)	(0.315)
$\rho_{hours,ENT}$	-0.755**	0.428	-1.008***	-0.536*	0.861**
	(0.310)	(0.385)	(0.190)	(0.312)	(0.336)
Observations	5,717	5,717	5,717	5,717	5,717
Wald chi-sq	4233.86	3706.44	3708.68	4418.96	3593.43

Robust standard errors in parentheses adjusted for 267 clusters (panel sampling units)
*** p<0.01, ** p<0.05, * p<0.1

Notes: 1) The wealth index is a composite measure of a household's cumulative living standard and it is constructed using the following assets: separate kitchen, high quality dwelling (if wall, roof and floor are of high quality), type of toilet, gas or electric hob, gas and electric oven, refrigerator, washing machine, sewing machine, television, radio, motorcycle, car, and bicycle.