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Doubling Up or Moving Out? The Effect of International Labor Migration on Household Size

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Abstract

Previous literature suggests that households may react to wealth fluctuations by increasing or decreasing the number of members sharing the same residence. We use unique three-wave household panel data from Tajikistan to explore the change in household size as a response to income shifts related to international labor migration. In addition, we analyze the interaction between the effects of idiosyncratic income increase resulted from a successful migration episode and the one of an aggregate shock – the global financial crisis – and show how different households adjust their household size during times of financial hardship. The empirical evidence indicates that while current migration was shown to be associated with increase in household size, a completed migration episode two years before the interview was associated with a decrease in household size due to some of the family members' moving out. At the same time, people were more likely to live in larger households during the crisis year than before and after the crisis. Empirical analysis yields that migrant families were not different from non-migrant families with respect to the doubling up as a response to financial crisis, which suggests that labor migration in Tajikistan does not insure against economic shocks in the long run.

Keywords: migration, remittances, household size, living arrangements, Tajikistan

JEL Codes: F22, D1, J1

1. Introduction

Temporary international labor migration from developing to more developed countries belongs to one of the most widely used strategies for poor households to cope with poverty and improve their living standards. Although a relatively large body of research focuses on the impacts of return migration on household- and individual-level socio-economic outcomes (e.g., McKenzie, Rapoport 2011; Wahba, Zenou 2012; Kveder, Beauchemin 2015), the literature on demographic behavior of migrant households beyond childbearing is relatively sparse. At the same time, the relationship between temporary labor migration and household composition constitutes an innovative and promising field of research, which is very relevant for policy advice and strategic management. For instance, understanding of the link between migration and change in household size may serve to better forecast the trends on the real estate market in regions with high emigration rates. As another example, household composition was shown to be important for human capital accumulation of children. Grogan (2007) founds that living in a three generation household in Tajikistan as compared to two generation households is associated with less school enrolment and educational spending. In turn, decrease in human capital may hamper the attainment of long-term strategic development goals of the country such as poverty reduction and inclusive economic growth.

Our study provides a comprehensive analysis of the effect of temporary migration on household size and composition in the context of a low-income developing country. We examine the case of predominantly male labor migration from Tajikistan, a post-Soviet state with a markedly high incidence of international labor migration and exceptionally large remittance-dependency. The intensity of migration and the size of the remittances flows directed to this Central Asian country make it an ideal setting to examine the effect of returned and circular labor migration on the households staying behind.

Our study builds upon theoretical approaches and latest empirical findings coming from several strands of literature including studies that examine the change of household size in the context of youth's transition to adulthood and research on coping strategies of households as response to economic shocks. Surprisingly, there is very little empirical evidence available on how families respond to income shifts related to migration of their members. Our study provides insights into research on demographic consequences of migration to better address many questions that are not sufficiently treated in the literature, such as: Do people tend to live in larger households (double up) when migrants go for work abroad or, on the contrary, do family members move out for some time until migrant returns? Does completed returned migration lead to family nuclearization or rather to an increased chance of living in a multigenerational household? Are migrant families financially less vulnerable than non-migrant families so that they are less likely to double up with others as response to unexpected economic shocks such as financial crises?

The primary goal of our paper is to explore the patterns of household size fluctuations depending on the migration experience of household's members. Our interest in not in establishing a causal relationship between migration and change in living arrangements but rather in exploring the general patterns of the association between labor migration and changes in household size and composition. In other words, we are not asking if household members go for work abroad in order to earn money for a new housing but we rather trace how living arrangements change from the point in time when a family sends a migrant abroad to 2 years after the return of a migrant. The question in focus is: Are migrant families able to lift the budget constraint during or after a labor migration episode and does this lead to a realization of the preference for private housing?

Our second goal is to examine the interaction of the returned migration experience and the global financial crisis and identify the role of labor migration in mitigating the effect of the crisis on the household size. We seek answer to the question: Does improved financial situation as a result of returned migration make households less vulnerable during the financial crisis? In our paper, we focus explicitly on the household size related to living arrangements and investigate in which cases household members of different generations choose to share a common housing rather than living separately.

We proceed from the theoretical approach of the New Economics of Labor Migration (NELM) which regards migration as a calculated strategy of a household in which people act collectively in order to maximize household income and minimize consumption risks (Taylor 1999, Massey et al. 1993, Stark, Bloom 1985, Stark Levhari 1982). Households may opt for migration in order to diversify different sorts of objective and subjective risks (e.g., crop price fluctuations, unemployment etc.) especially in a developing country setting due to the lack of insurance institutions that ensure stability in consumption. On the one hand, a successful labor migration helps to generate additional income in form of remittances and to increase the wellbeing of the household. On the other hand, the early stage of the migration episode is associated with an uncertainty because it may take time for a migrant to acquire employment abroad and start sending money back home. Given this uncertainty, the households are

likely to employ additional coping strategies in order to cope with temporary consumption-related risks originating from the absence of a breadwinner. One of such coping strategies may be doubling up with other relatives.

To the best of our knowledge, our article is the first one to explore the relationship between returned migration and household size fluctuations due to change in living arrangements and, in addition, focuses on a transition economy. By distinguishing between returned and current migratory experiences of households our study provides a more nuanced analysis of the household decisions on living arrangements. Moreover, we contribute to the existing literature by analyzing the interaction between effects of idiosyncratic income shock related to migration and the one of an aggregate shock – the global financial crisis – and show how households adjust their household size during the times of financial hardship. The latter contribution, among others, allows to conclude more generally about the middle and long-term effect of returned labor migration on the wellbeing of households in Tajikistan.

2. International labor migration from Tajikistan and global financial crisis

After the collapse of the Soviet Union, population movements between the post-Soviet republics were mostly driven by ethnic and family reunion considerations. However, in the early 2000s the economic motives started to dominate the reasons of increased emigration from the poorest Central Asian states to economically much more developed Russian Federation. Over the years since independence Tajikistan and Uzbekistan became two largest suppliers of regular foreign labor force in Russia (Zayonchkovskaya et al. 2016).

The massive labor migration from Tajikistan to Russia[1] in the last two decades had a seasonal and circular character. The median migration spell amounted to 7 months (Danzer et al. 2013a), while only one fifth of migrants stayed abroad for over one year (Marat 2009). Migrants are predominantly young males who work in low-skilled jobs in the construction sector, retail trade and services (Chudinovskih et al. 2013, Florinskaya, Zayonchkovskaya 2014, Zayonchkovskaya et al. 2015, 2016). Remittances to families staying in Tajikistan play a crucial role. For instance, in 2011, 99% of the returned migrants sent money home, while among those still living abroad 78% remitted money (Danzer et al. 2013a). Tajikistan is one of the most remittance dependent countries in the world. Starting from 2006 personal remittances constituted over 35% of the country's GDP. In 2008, their level reached 49% of GDP (table 1). According to the THPS 2011, most of remittances are used for consumption of food and basic necessities (60%), house renovations and construction (27%), and ceremonial consumption such as organization of weddings or other ceremonies (7%). An almost negligent percentage of remittances was used for investments into child education or family business (Danzer et al. 2013a).

Table 1. Indicators of economic and demographic development of Tajikistan

	Personal remittances, received (% of GDP)	Personal remittances, received (mln. current US$)	Unemployment, youth total (modeled ILO estimate)	GDP per capita, PPP (constant 2011 international $)	GDP per capita growth (annual %)	Popula-tion (mln)	Total fertility rate
2002	6.43	78.56	18.29	1388.92	8.73	6.4	3.675

[1] According to Danzer et al. (2013) more than half of the Tajik households had international labor migration experience since 1991 and every fifth household had current migrants in 2011.

2003	9.40	146.02	17.65	1511.41	8.82	6.6	3.591
2004	12.14	252.00	17.77	1633.32	8.07	6.7	3.533
2005	20.18	466.65	17.54	1706.82	4.5	6.9	3.498
2006	36.00	1018.84	17.48	1788.11	4.76	7.0	3.485
2007	45.46	1690.76	16.72	1886.67	5.51	7.2	3.486
2008	49.29	2544.02	15.67	1991.89	5.58	7.3	3.493
2009	35.11	1748.15	16.87	2002.46	1.53	7.5	3.502
2010	35.81	2020.50	17.24	2106.34	4.15	7.6	3.507
2011	41.74	2722.46	16.12	2211.75	5.00	7.8	3.504
2012	42.22	3222.35	14.95	2324.37	5.09	8.0	3.492
2013	43.47	3697.73	14.91	2440.59	5.00	8.2	3.472
2014	36.64	3384.06	15.21	2546.50	4.34	8.4	3.442
2015	28.76	2258.64	15.58	2640.59	3.69	8.6	3.404
2016	28.86	1867.39	15.82	2762.59	4.62	8.7	3.360

Source: World Bank (2018)

In general, migrants do not usually accumulate large savings in order to bring them home after migration episode is completed. They rather transfer their earnings instantly through the banks or financial services organizations, while working abroad. Migrant workers prefer not to carry large sums of money while returning back home, because of the high risks of theft, intimidation and physical abuse, among others, from the side of the customs officials, border guards and police (Olimova, Bosc 2003). Anecdotal evidence suggests that there are mainly two reasons for not remitting money while working abroad. The first reason is the absence of earnings, which is typical in the beginning of a migration episode – a recent migrant has not yet found a job – or in the case of a fraud, if a worker did not get paid for his job. The second reason is the disruption of the connection with the family, which may happen if a migrant has found a new partner in Russia and decided not to return to Tajikistan (IWPR 2017).

Since proclaiming the state independence in 1991 citizens of Tajikistan, as citizens of a former Soviet republic, were eligible to enter Russia without a visa. The issue of work permits was, however, regulated through a complicated scheme which made acquiring of a work permit a costly and time consuming procedure (Olimova, Bosc 2003). Mostly due to this fact the informal work was very popular among the migrants. In 2014, more than 60% of Tajik migrants worked in Russia without any contract (Denisova 2015). Being not properly protected by the law, many migrants regularly fall victims to fraud and experience different sorts of discrimination, including exploitation and police abuse (Olimova, Bosc 2003). Social surveys indicate that the average salaries of the Tajik migrants are from 15% to 30% lower than that of Russians occupying similar positions (Zayonchkovskaya et al. 2015, Florinskaya, Zayonchkovskaya 2014, Denisova 2015). Despite the labor market discrimination, migration to Russia remains one of the popular income generating practices of households in Tajikistan because the salary in Russia still remains much higher than in Tajikistan. The average salary in Russia compared to Tajikistan was 11.2 times higher in 2007, and 8.3 times higher in 2011 (CIS Statistical Committee 2018).

Together with economic development of Russia, labor migration from Tajikistan was gradually gaining in popularity since 2000. In 2009, the global financial crisis hit the economy of Tajikistan mostly through two different channels: the commodity price shock and the spillover effect on the households through migrants working in Russia. The sharp decline in prices for the top two export goods of Tajikistan –

aluminum and cotton – happened in the period between the second half of 2008 and the beginning of 2010. The raw cotton prices declined from the peak of about $0.8 per pound in March 2008 to $0.36 by the end of the year[2]. The price of aluminum dropped dramatically from about $3200 per metric ton to about $1300 by the first quarter of 2009. As a result, the total export dropped from more than $1B to $844M in 2009 and recovered only in 2010. The official statistics, however, does not demonstrate any significant changes in registered unemployment, which remained at approximately 11.5% between 2007 and 2010 (World Bank 2018). Interestingly, data provide no evidence on reduced fertility during the crisis (World Bank 2018).

Multiple studies point to a strong external economic dependency of Tajikistan and a large vulnerability of households to external shocks (Gang et al. 2017, Danzer, Ivaschenko 2010). In 2009, economic returns from labor migration dropped dramatically as a response to the global financial crisis, which led to a short-term but steep recession in Russia featured, among others, by a massive reduction in industrial output, an increase of unemployment rate, and a substantial fall in wages. Remittances flow to Tajikistan dropped by roughly 30% compared to the pre-crisis level. Using the in-depth interviews, Olimova and Olimov (2010) investigated the strategies of Tajik labor migrants during the crisis and found that those migrants in Russia, who were better qualified and had an active attitude towards managing their life, changed places of work or upgraded skills and qualifications in order to find new opportunities to earn money. On the contrary, those migrants who were lower qualified or less experienced and younger were more often returning to their home countries or staying in Russia without work. Although the decreased demand for international workers forced many migrants to return back to Tajikistan and despite generally lower gains from work abroad compared to previous year, a larger number of households in Tajikistan engaged in labor migration in 2009 compared to 2007 (Danzer, Ivaschenko 2010). At the same time, families increased the number of persons per household whom they sent to Russia for work (Danzer et al. 2013a). This trend may well be explained by the NELM, which suggests that migration decision is taken by the households in order to diversify income-associated risks and ensure stable consumption (Massey et al. 1993).

3. Previous research on living arrangements

Literature argues that households respond to income and consumption shocks by applying certain coping strategies such as relying on informal networks of family members and friends, cutting expenditures on clothing and foodstuffs, selling belongings, taking an additional job etc. One of the widespread practices to cope with financial hardship is to move in with others in order to reduce the living costs and to exploit the benefits of the scale economies in consumption. Kaplan (2012) lists among the benefits of shared housing the following: access to in-kind transfers, greater returns to scale in household production, and smaller consumption responses to shocks. At the same time, he points to a certain penalty for the household members which is reflected in psychic costs of shared residence due to lack of independence and limited privacy.

Most of the evidence on the impact of economic situation on the household size was collected within the research on young adults' leaving parental home. This research was largely devoted to testing the two competing hypotheses. The first hypothesis postulates that higher resources provide greater comfort for

[2] Source: http://www.macrotrends.net (open information - indicators collected by Macrotrends LLC in 2010-2017), [Accessed 28 November 2017]

children and therefore discourage their early leaving of parental home. The second hypothesis states that access to higher resources enables parents to subsidize their children's independence and helps to realize their preference for privacy. A large body of empirical literature provides an explicit support to the second hypothesis. For instance, Avery et al. (1992) find out that parental income increases leaving home among American young adults. Ermisch (1999) shows that young people with larger current income in the UK are more likely to leave and are less likely to return to the parental home. In line with these findings, the study of Aassve et al. (2002) reveals that employment and income are the most important factors that affect decision of young adults in Europe to live separately from their parents. Studies on developing countries confirm this general pattern (e.g., Foster 1993, Johnson, DaVanzo 1998).

Complementing research on transition to adulthood, several studies examine the return of young adults to the parental home after certain period of living separately – a phenomenon often referred to as "boomerang kids" (Kaplan 2009). Scholars suggest that children's return to parental home is often related to negative income shocks such as, for example, unemployment or divorce (e.g., Matsudaira 2010, Kaplan 2012, Wiemers 2014). In this cases, sharing residence with parents is a widely used strategy to cope with financial difficulties during periods of decreased or missing earnings or, in other words, a channel of insurance for young people against labor market risks and poverty. Interestingly, sharing residence with others as a response to unemployment is more popular among less educated individuals (Wiemers 2014). Apparently, the strategy of doubling up during times of uncertainty and financial instability is typical for vulnerable and poor households.

A related strand of literature focuses on the coping strategies of the households as response to economic shocks (McKenzie 2003, Lokshin, Yemtsov 2004, Abanokova, Lokshin 2015, Lennartz et al. 2016). Studies examining the immediate effects of the economic crises point to a widespread mechanism of consumption smoothing – an increase in the number of household members sharing the same residence. For example, Frankenberg et al. (2003) show that household size in Indonesia increased during Asian crisis in the late 90ies, due to change in living arrangements. This finding is interpreted by the authors as a strategy of households to smooth out the effects of unanticipated shock on consumption. Similarly, Dyrda et al. (2012) document large cyclical fluctuations in the average size of US households depending on the economic situation: while during economic expansions households shrink, they tend to expand during recessions. Similar patterns were uncovered in other studies in the U.S. (e.g., Mykyta, Macartney 2011, Lee, Painter 2013, Matsudaira 2010).

Several studies demonstrate that economic recession is associated with doubling up in Russia. Using the data of the Russian Longitudinal Survey, Abanokova and Lokshin (2015) show that people who experienced negative income shocks during latest two crises in Russia (1998 and 2008) are more likely to move in with others compared to individuals residing in households whose income remained the same or increased. The findings suggest that households may effectively reduce their costs by increasing their size as response to fall in real wages, worsening of the employment opportunities, or higher housing rents. Lokshin et al. (2000) finds that in order to cope with financial difficulties during recession, single-mother households in Russia chose to co-reside with relatives and other adults.

All mentioned studies create a consistent picture of a relationship between income fluctuations and household size which may be summarized in a more abstract and general form. An attempt to formalize this relationship was undertaken by Salcedo et al. (2012), who develop a theory of household size, according to which living with others is beneficial because the costs of household public goods can be shared. When the incomes grow, the share spent on the public goods decreases and the preference for

privacy is becoming more attractive. The scholars analyze a decline in household size in the U.S. since 1850 and conclude that this decline in cohabitation is an optimal response to growing incomes.

Bongaarts (2001) reveals that the overall trend of change in household size in developing world is from large multiple-generation households towards smaller and predominantly nuclear households. In general, empirical findings from different parts of the world imply that preference for privacy in terms of residential independence is a ubiquitous feature of people and the budget constraint is the major restriction for the realization of this preference.

Although in Tajikistan the nuclear household norms were promoted during the Soviet period, after the state independence religious and traditional norms experienced a revival and as a result the society witnessed the popularization of the patrilocality as a dominant household structure (Grogan 2007). In particular, this means that the daughters after marriage usually leave parental home and move to the families of their husbands and parents-in-law, while families of married sons stay in the household until they get opportunity to move to their own housing. Specifically in the case of Tajikistan, there is a traditional norm, according to which the youngest son with his spouse and children are not supposed to move out from the parental home. As a rule, he stays with his parents and is supposed to take care of them and consequently to inherit the house (Borisova 2017).

Although the Tajikistan's Soviet legacy and the problem of poverty gave strong incentives for many women to join the labor market, traditional gender roles are clearly dominating in Tajikistan. The commonly accepted family norm is that a husband is a main breadwinner and the head of the family who is responsible for decision taking, while a wife is a housekeeper and a caregiver who is playing a submissive role and is primarily focused on the private sphere of the family (Falkingham, Bashieri 2009, Harris, 2004). These role models might have implications for the decisions on doubling up or moving out.

4. Hypotheses

Based on the theoretical considerations and empirical findings described above we formulate and test three following hypotheses:

Hypothesis 1 (H1): While a migrant is working abroad the household size is likely to increase due to doubling up.

We expect the household size to increase when migrant is away, because of the temporary absence of a breadwinner and because sending a migrant abroad implies considerable travel costs. Both factors encourage members of the migrant's family to move in with parents or relatives in order to smooth consumption and rely on their support during migrant's absence.

Hypothesis 2 (H2): If a household recently experienced a completed migration episode, the household size will reduce due to moving out of family members.

The improved wellbeing of the family as a result of labor migration will lead to moving out of family members and consequently to a decrease in household size. Usually members of the younger generation (children) move out of the parental home. In the case of Tajikistan, the economic effect of the migration-related increase in wellbeing is intertwined with the cultural effect of the gender norms on the household living arrangements. It is likely that such important step as moving to a new place of residence will not be taken in the absence of a migrant, even if the remittances he sends would improve

the wellbeing of the household. Rather this decision would be postponed until the return of a migrant. In addition, moving to a separate residence is related to either construction, search for or acquisition of a new housing, therefore we argue that the decrease in household size is likely to happen not during the migrant's absence and not exactly after his return but after a certain period of time since the end of a migration episode.

Hypothesis 3 (H3): The effect of the global financial crisis on the household size will be offset by the completed migratory experience.

During crises people tend to live in larger households, however, we conjecture that migrant households who recently experienced completed migration episode and improved their wellbeing will be more resilient to the crisis and will be less prone to double up with others to smoothen consumption and overcome financial hardships.

5. Empirical strategy and descriptive statistics

5.1. Tajikistan Household Panel Data

In order to test our hypotheses we use a three-wave panel dataset which consists of the data from TLSS 2007, TLSS 2009 and the THPS 2011. The first two surveys were implemented by the World Bank and UNICEF to collect information on migration and living conditions of households in Tajikistan. In 2011, the Institute for East and Southeast European Studies in Regensburg conducted a follow-up wave.

Initially, 4860 households were interviewed on different topics including education, health, labor market and migration. The household selection was based on a representative probability sampling procedure, following the urban/rural and the regional distribution of population in Tajikistan. In 2009, a random subsample of 1503 households was drawn from the sample of the TLSS 2007. In 2011 it was possible to re-interview 1458 households that participated in the two previous waves (Danzer et al. 2013b).

All three waves were collected in autumn of a respective year in order to take account of the seasonality patterns in agriculture and migration flows. The TLSS 2009 and the THPS 2011 questionnaires largely reproduced the TLSS questionnaire used in 2007, with a small number of questions changed and added. The surveys provide extensive information on household size, composition, female marriage age and fertility, migration, remittances, household income and consumption.

The attrition rate is very low: only 45 households (3% of the sample) were found missing in the primary sampling units in 2011 compared to 2009. This points to the fact that despite high rates of labor emigration from Tajikistan a vast majority of these moves is temporary and does not result in settling down of migrant families in destination places for permanent residence. The estimation sample in our study includes a balanced panel of 1336 households.

Our data enable us not only to capture the effect of migration on the household size in Tajikistan, but also to observe the effect of the external shock of the global financial crisis, which had a considerable effect on the welfare of the households in Tajikistan (Danzer, Ivaschenko 2010).

5.2. Variables and empirical strategy

Analysis of fluctuations in household size and structure across years may be approached from different angles. In our study we focus on two complementing measures: the change in number of household

members and the change in number of generations living together within the same household over time. These dynamic variables are computed respectively as a difference in number of persons or generations between the survey waves:

$$D_j = F_{j,t} - F_{j,t-1}$$

Where *D* denotes the change in household size or in number of generations within the household *j* and *F* indicates respectively the number of household members or the number of generations living together in a household in the year *t*. Because our interest is not in the amount of members who enter or leave the household between the waves but in occurrence of increase or decrease in household size in general we construct our dependent variables as four dummy variables[3]: Increase (a dummy variable, which takes on the value 1 if $D_j > 0$) and decrease (if $D_j < 0$) in the number of family members as well as increase ($D_j > 0$) and decrease (if $D_j < 0$) in number of generations[4] living together in the same household.

Importantly, the total household size is computed as a sum of household members including those, who lived in the household at the moment of interview as well as migrants, who were living abroad. Similarly, migrants were taken into account while computing the number of generations living within the household. This approach allows us to capture more clearly the fluctuations in the household size due to change in living arrangements.

Furthermore, we look at the change in number of members within each of the generations separately in order to capture the "horizontal" movements of family members. It is important to take the movements of persons within the same generation into account, because in case of Tajikistan households often are large and horizontally extended. Looking at the generations instead of the household types, such as "nuclear family", "horizontally extended family", "vertically extended family" etc., we are likely to analyze qualitatively very different households. Nevertheless, we opt for the generational perspective, because it allows us to approach the mobility of family members in a general way and to focus on the prevalent patterns of household size fluctuations related to migration experience of households.

We employ the difference-in-differences approach in order to compare the living arrangements in *pre* and *post* crisis years with the one during 2009 across households with or without migrant experience. To estimate the effect of migration experience on the change in household size and composition we estimate several specifications of dynamic probit and OLS models. The basic model is as follows:

$$Y_{j,t} = \alpha + \beta_1 retmig_{j,t-1} + \beta_2 crisis_t + \beta_3 crisis_t * retmig_{j,t-1} + \beta_4 M'_{j,t-\tau} + \beta_5 X'_{j,t} + \varepsilon_{j,t}$$

where $\tau = \{0,1\}$.

$Y_{j,t}$ is a dependent variable, which is one of the following: Increase/decrease in household size (dummy variables); increase/decrease in number of generations living together in the same household (dummy

[3] In addition, we perform a fixed-effects analysis with a continuous dependent variable in the robustness checks section.

[4] Number of generations was computed based on our knowledge about the relationship of each of the household member to the head of household. We were able to classify the individuals into five generations: 1. Grandparents, 2. Father/mother, father/mother-in-law, 3. Head/Spouse or partner, sister/brother, 4. Son/daughter, son/dauther-in-law, niece/nephew, 5. Grandchild.

variables); difference in number of family members within one generation compared to previous wave (a continuous variable).

Independent dummy variable $retmig_{j,t-1}$ is equal to 1 if a household had a returned migrant within last 12 month in the previous survey wave. The variable $crisis$ is a dummy variable which takes the value of 1 if the year is 2009 and 0 otherwise. $M'_{j,t-\tau}$ is a vector of migration related characteristics including presence of a migrant who returned from labor migration within the last 12 months in a household, presence of a current migrant, receipt of remittances from a current migrant, receipt of remittances from a current migrant in the previous period (survey wave). Finally, $X'_{j,t}$ is a vector of household characteristics such as wellbeing related controls (expenditures per capita[5], share of employed household members); dummy variables for demographic events including birth of a child, marriage, and divorce; education of the household head; region; structural characteristics of the household[6] including shares of married women aged 15-49, of children aged 0-15, of elderly aged 60+, and of single girls aged 12-30. We include the variables related to the structure of the household, because they are potentially important for the change of the household size. For example, the higher number of elderly persons can be associated with the higher mortality risks, while the number of women in reproductive age could lead to the higher probability of childbearing or marriage and moving to the husband's house. We also add a continuous household size variable (total number of household members including migrants) as a control variable, since changes in the household size are more likely to happen in larger households. The summary statistics of the dependent and independent variables are presented in table 2.

The error term $\varepsilon_{j,t}$ is clustered at the household level.

Table 2. Summary statistics: Household characteristics

Variable	N	Mean	Std. Dev.	Min	Max
Household size	4008	6.569	3.001	1	26
Number of generations living together	4008	2.389	0.576	1	4
Household size reduced	2672	0.280	0.449	0	1
Household size increased	2672	0.335	0.472	0	1
Number of generations reduced	2672	0.087	0.282	0	1
Number of generations increased	2672	0.111	0.314	0	1
Change in first generation	1760	-0.018	0.263	-2	2
Change in second generation	1662	-0.145	1.309	-6	7
Change in third generation	617	0.402	1.565	-6	8
Returned migrant	4008	0.166	0.373	0	1
Returned migrant lag	2672	0.173	0.379	0	1
Current migrant	4008	0.178	0.383	0	1
Receipt of remittances	4008	0.156	0.363	0	1

[5] We computed the expenditure per capita using the "Oxford" equivalence scale known also as "Old OECD equivalence scale" (described here: http://www.oecd.org/eco/growth/OECD-Note-EquivalenceScales.pdf [Accessed 19 June 2018]), where the first individual is weighted as 1, every next adult as 0.7 and every child younger than 17 years old as 0.5.

[6] Variables related to the structure of household are thought to be important for the change in household size. For instance, households with a large share of elderly may have less changes, while households with a large share of women in marriageable age are likely

Receipt of remittances lag	2672	0.119	0.324	0	1
Expenditures per capita	4008	585.804	886.701	7.917	35654.890
Proportion of employed	4008	0.143	0.179	0	1
Baby born	4008	0.325	0.468	0	1
Marriage	2672	0.108	0.310	0	1
Divorce	2672	0.054	0.226	0	1
Sogd	4008	0.263	0.441	0	1
Khatlon	4008	0.263	0.440	0	1
RRP	4008	0.212	0.409	0	1
GBAO	4008	0.099	0.298	0	1
Urban	4008	0.334	0.472	0	1
Education of the head: Basic secondary	3916	0.128	0.335	0	1
Education of the head: Secondary	3916	0.380	0.485	0	1
Education of the head: Vocational	3916	0.231	0.421	0	1
Education of the head: Higher	3916	0.188	0.391	0	1
Proportion of married women aged 15-49	4008	0.162	0.101	0	1
Proportion of children aged 0-15	4008	0.320	0.209	0	0.833
Proportion of elderly aged 60+	4008	0.086	0.181	0	1
Proportion of single girls aged 12-30	4008	0.099	0.135	0	1

Source: Authors' computations from the Tajikistan Household Panel Survey 2007-2011.

5.3 Household size and composition: descriptive evidence

Large multigenerational households are typical in Tajikistan, especially in rural areas. Usually they consist of a married couple, their elderly parents and children, and may also include siblings with their spouses and children (Olimova, Bosc 2003). In our sample household size varies between 1 and 26 members with an average size of about 7 members (table 3). On average, households with migration experience are larger than those without migration experience (which might be explained by the composition effect: there are more labor migrants coming from rural areas, where families are larger). Average household size during the crisis year was larger than before and after the crisis.

Table 3. Household size and structure in Tajikistan over 2007-2011

	2007	2009	2011
Average household size	6.69	6.96	6.83
Average household size (households with migration experience*)	7.32	7.67	7.55
Average household size (households without migration experience)	6.32	6.56	6.42
Average number of generations	2.36	2.42	2.42
Average number of generations (with migration experience*)	2.46	2.52	2.54
Average number of generations (without migration experience)	2.30	2.36	2.35

1 generation family (in %)	4.12	3.44	3.74
2 generations family (in %)	56.44	51.80	50.75
3 generations family (in %)	38.85	44.46	45.06
4 generations family (in %)	0.6	0.3	0.45

Source: Authors' computations from the Tajikistan Household Panel Survey 2007-2011.
* Households with migration experience include those having current migrants, returned migrants within the last 12 months and returned migrants within the last 12 months in the previous survey wave.

The average number of generations sharing the same residence increased from 2.36 in 2007 to 2.43 in the crisis year. This change may be attributed to the decrease of the share of people living in one and two generation households in 2009 and simultaneous increase of the share of three generation households in 2009 and 2011. Although the household size reduced after the crisis the number of generations living together remained as large as during the crisis. This probably indicates that by 2011 households only partially recovered from the economic downturn.

6. Results

As a first step we analyze the effect of migration related variables on the change in household size and on the number of generations living together. Then, we look at the change in number of family members within each of the generations for each generation separately.

Do we observe an effect of returned migration on the household size in Tajikistan? The estimation results reveal an interesting pattern: while lagged returned migration and lagged remittances receipt increase the probability that household size will reduce, the recently returned migrant and current migrant have the opposite effect (table 4). This findings support the H1 and H2 hypotheses: when a migrant goes abroad families experience a temporary reduction in the labor supply and have to carry migration costs, as a result they become economically more vulnerable and consequently are more likely to live in larger households. When a migrant returns home, usually, it means that the migration episode is successfully finished. The households by that time have accumulated the remittances that were sent from abroad and these savings must have improved the wellbeing of the households. But only after a period of 1-2 years since migrant's return the household size reduces due to moving out of family members.

Table 4. Parameter estimates of the dynamic probit regressions for change in household size and change in number of generations living together

	HH size reduction		HH size increase		Num. of generations reduction		Num. of generations increase	
	Marg. eff.	Robust std.err.	Marg. eff.	Robust std.err.	Marg. eff.	Robust std.err.	Marg. eff.	Robust std.err.
Crisis	-0.071 ***	0.021	0.097 ***	0.024	-0.019 *	0.010	0.031 **	0.014
Interaction	0.039	0.049	0.000	0.059	0.023	0.026	-0.042	0.029
Returned migrant lag	0.078 ***	0.029	-0.103 ***	0.036	-0.015	0.015	0.001	0.018
Returned migrant	-0.058 **	0.025	0.037	0.028	-0.003	0.013	-0.008	0.013
Current migrant	-0.079	0.061	0.153 **	0.067	0.030	0.028	0.044	0.030
Remittances	-0.014	0.064	-0.032	0.070	-0.053 *	0.030	-0.001	0.031
Remittances lag	0.148 ***	0.027	-0.107 ***	0.034	0.018	0.014	0.008	0.015

Household size	-0.027	***	0.004	0.054	***	0.004	-0.008	***	0.002	-0.003		0.002
Expenditures per capita	0.000	*	0.000	-0.000		0.000	0.000		0.000	-0.000		0.000
Share of employed	-0.025		0.053	0.122	*	0.063	0.014		0.024	0.021		0.030
Marriage	-0.043		0.032	0.192	***	0.038	0.001		0.017	0.063	***	0.015
Divorce	0.300	***	0.037	-0.194	***	0.054	0.024		0.019	0.021		0.023
Baby born	-0.118	***	0.023	0.404	***	0.024	-0.052	***	0.013	0.169	***	0.012
Basic secondary[1]	0.028		0.043	-0.051		0.049	0.012		0.019	-0.057	**	0.028
Secondary general[1]	-0.010		0.038	0.016		0.046	0.026		0.017	-0.030		0.027
Vocational[1]	0.003		0.040	-0.030		0.047	0.033	*	0.018	-0.029		0.028
Higher[1]	0.013		0.041	-0.062		0.048	0.018		0.018	-0.045		0.029
Sogd[2]	0.006		0.032	-0.080	**	0.039	-0.022		0.019	-0.027		0.020
Khatlon[2]	0.046		0.034	-0.119	***	0.040	-0.006		0.021	-0.025		0.021
RRP[2]	0.099	***	0.038	-0.145	***	0.040	0.001		0.023	-0.027		0.022
GBAO[2]	-0.045		0.038	0.084		0.052	-0.050	***	0.019	-0.036		0.024
Urban	-0.073	***	0.026	0.027		0.028	-0.043	***	0.014	0.020		0.014
Share of women 15-49	-0.056		0.095	0.007		0.122	-0.050		0.047	0.070		0.055
Share of children	-0.185	***	0.052	-0.194	***	0.059	-0.101	***	0.027	-0.194	***	0.031
Share of elderly	-0.062		0.056	-0.077		0.075	0.026		0.024	0.036		0.029
Share of girls	-0.132	*	0.076	-0.278	***	0.087	-0.085	**	0.036	0.029		0.042
Observations	2,631			2,631			2,631			2,631		

Note: Marginal effects from probit estimation, evaluated at sample means. Robust standard errors, *** p<0.01, ** p<0.05, * p<0.1. Reference categories: [1]Primary education or less; [2] Dushanbe.

In all specifications we observe a significant effect of the crisis year on the household size and number of generations living together in a household. This effect is in expected direction: during the global financial crisis people in Tajikistan were living in larger households with larger number of generations compared to pre and post crisis years. These household size fluctuations reflects the trend in the developed countries: whenever times are economically tough people move together in order to take advantage of the economies of scale and reduce expenditures on the household public goods. This finding is important, since one could have expected that households in low-income developing countries might have exhausted this mechanism already before the crisis.

It is striking that the effect of the interaction term between the lagged completed migration episode and the crisis year is not significant in any of the specifications. It means that we do not find empirical support for the hypotheses H3 that households with completed returned migration experience are different with respect to applying the doubling up coping strategy during the global financial crisis. In other words, all households irrespective of their migration story behaved similarly during the crisis and were equally likely to double up in order to smoothen consumption and overcome the difficult times. This piece of evidence may be interpreted in a broader sense as an indication that labor migration in Tajikistan may not be seen as an advantageous long-term solution of the poverty problem that insures against aggregate economic shocks.

In the model specifications, where the dependent variable is the change in number of generations living together, no effects of the migration related variables may be discerned (except for current remittances receipt, which is in expected direction). At first sight, it may seem puzzling that the household size reduces after a completed migration episode in the past and the number of generations living together remains the same. However, this outcome is likely to be the case when some members stay in the

household and others, within the same generation, move out. For example, when a family of one of the siblings moves out to a separate housing while the family of other sibling stays with the parents. Because of the traditional norm, which prescribes that the youngest son should not move out but stay with his parents, the number of generations is more stable over time than the household size.

Table 5 presents the results of the dynamic OLS regression estimations for change in number of household members within the generations. We restricted our analysis to the families in which the oldest person stayed in the panel over the survey waves[7] to ensure that we are looking at the same generations in different survey years. The first column of the table includes 1732 household-years, this are all the households that have provided information on the questions of interest. The second column refers to households where at least two generations live together, while the third column refers to households with at least three generations[8]. In each case we analyze the change in absolute number of household members within each of the generations: oldest generation, second generation and third generation.

Table 5. Parameter estimates of the dynamic OLS regression for change in number of household members within the generations

	Oldest generation		Second generation		Third generation	
	Coeff.	Robust Std. Err.	Coeff.	Robust Std. Err.	Coeff.	Robust Std. Err.
Crisis	-0.015	0.015	0.218 ***	0.072	0.174	0.155
Interaction	0.002	0.029	-0.006	0.170	0.158	0.336
Returned migrant lag	-0.036	0.024	-0.291 **	0.119	-0.455 **	0.180
Returned migrant	-0.007	0.015	0.151 *	0.089	0.154	0.140
Current migrant	0.050	0.065	0.411 **	0.195	0.504	0.311
Remittances	-0.035	0.070	-0.032	0.211	-0.604 *	0.320
Remittances lag	-0.041 *	0.023	-0.448 ***	0.120	0.070	0.150
Household size	0.009 ***	0.003	0.147 ***	0.022	0.198 ***	0.027
Expenditures per capita	0.000 ***	0.000	-0.000	0.000	0.000	0.000
Share of employed	-0.005	0.040	0.178	0.192	0.589	0.364
Marriage	0.106 ***	0.031	0.231 *	0.123	-0.098	0.200
Divorce	-0.449 ***	0.063	-0.359 *	0.191	-0.212	0.211
Baby born	-0.034 **	0.016	-0.012	0.097	0.451 ***	0.151
Basic secondary[1]	0.027	0.025	0.106	0.164	0.168	0.229
Secondary general[1]	0.016	0.024	0.168	0.141	0.282	0.201
Vocational[1]	0.007	0.023	0.083	0.147	0.311	0.219
Higher[1]	0.005	0.024	0.045	0.147	0.329	0.204
Sogd[2]	-0.003	0.020	-0.051	0.086	-0.012	0.191
Khatlon[2]	-0.019	0.019	-0.211 **	0.097	-0.388 *	0.209
RRP[2]	-0.017	0.020	-0.303 ***	0.111	-0.548 **	0.224
GBAO[2]	-0.025	0.025	0.318 ***	0.112	0.252	0.223
Urban	-0.007	0.012	0.205 ***	0.071	-0.010	0.133

[7] We excluded families, where oldest person disappeared from the panel due to, most likely, death. This step enabled us to see the changes within each of the generations (instead of comparing different generations if there is a shift due to the death of the oldest generation). According to anthropological research the oldest generation usually stays in the house and is less mobile than younger generations.

[8] The number of households with four generations living together was too small for a meaningful statistical analysis, therefore no results are presented for this case.

Share of women 15-49	-0.154 *	0.082	0.619 *	0.359	-0.931	0.919
Share of children	-0.044	0.044	-0.068	0.168	1.374 ***	0.514
Share of elderly	-0.006	0.037	-0.918 ***	0.299	-1.438 ***	0.548
Share of girls	-0.031	0.048	-0.153	0.242	0.646	0.708
Constant	-0.002	0.044	-1.331 ***	0.245	-2.124 ***	0.443
Observations	1,732		1,651		609	
R-squared	0.143		0.169		0.318	

Note: Robust standard errors, *** p<0.01, ** p<0.05, * p<0.1. Reference categories: [1] Primary education or less; [2] Dushanbe.

A completed migration episode two years before the survey reduces the number of family members of the second and third generations. Similarly, remittances receipt two years before the survey negatively affects the number of household members of the second generation. That is, the members of the youngest generations are those, who move out. Presence of recently returned and current migrants in a household is associated with larger number of members in these two generations.

In general, this additional analysis refines the previous results by showing that household members' mobility happens due to doubling up and moving out of the members of the second and third generations, even if such movements do not lead to the reduction or increase in total number of generations sharing the same residence.

7. Limitations and robustness checks

For the purpose of robustness checks we tested if the effects we observe are sensitive to other factors that might be potentially relevant for the change in household size. In additional specifications we add controls for religiosity[9], extreme poverty[10], coping strategies such as money borrowing, selling or pawning of personal goods, domestic animals or harvest in advance. The questions on religiosity and coping strategies are available only for the second and third waves of the panel. The results of these checks suggest that adding further controls does not change the interpretation of results.

As the next step, we apply another empirical approach and employ a fixed effects model which allows to control for the time invariant heterogeneity. The dependent variable is a continuous variable measuring the change in household size between the waves of the survey. We include the whole range of controls from the previous estimations and add an interaction term of the crisis year and presence of a current migrant in the household (table 6). This approach is an alternative one to test our hypothesis 1.

[9] The religious households could be more traditional and tend to live in larger households. As a proxy for religiosity we use a dummy variable which indicates if anyone in the household observed Ramadan, that is, was not eating meals from sunrise to sunset (85% of households observed Ramadan).

[10] We measure extreme poverty with a variable that captures incidence of hunger in the household. The question wording was: "In the past 4 weeks, did you or any household member go to sleep at night hungry because there was not enough food?" (4% of households).

Table 6. Change in the household size, fixed effects estimation

	Coeff.	Sig.	Robust std.err.
Crisis	0.143	**	0.071
Total household size	1.150	***	0.034
Crisis*current migrant	0.738	***	0.224
Current migrant	0.241		0.274
Returned migrant	0.088		0.163
Returned migrant lag	-0.406	***	0.151
Remittances receipt	-0.266		0.280
Remittances receipt lag	-0.063		0.170
Expenditures per capita	-0.000		0.000
Marriage	0.183		0.145
Divorce	-0.285		0.200
Baby born	0.562	***	0.136
Basic secondary[1]	-0.153		0.284
Secondary general[1]	-0.033		0.299
Vocational[1]	-0.039		0.306
Higher[1]	0.106		0.290
Share of women 15-49	0.071		0.546
Share of children	-1.563	***	0.485
Share of elderly	-0.053		0.555
Share of employed	-0.420		0.276
Share of girls	-0.314		0.436
Constant	-7.507	***	0.437
Observations	2,631		
R-squared	0.700		
Number of households	1,336		

Note: Robust standard errors, *** p<0.01, ** p<0.05, * p<0.1. Reference categories: [1] Primary education or less.

The results support our main findings and suggest that during the financial crisis people were living in larger households, while the household size is likely to decrease two years after a completed migration episode. Moreover, the interaction term of current migration and crisis is positive and significant at the 1% level. It means that the households having current migrants during the crisis were more likely to move in with other relatives. In other words, apart from the positive effect of the crisis-related incentives to double up we observe a positive migration-related effect on the household size.

8. Conclusion and discussion

Over past two decades labor migration became a crucial livelihood strategy for many households in Tajikistan. Being unable to find jobs in their own country many Tajik citizens are forced to look for work abroad. The growing intensity of migration and a larger dependence on remittances shifts the debates on consequences of migration to the high priority topics of the development agenda.

Our paper contributes empirically to the literature on impacts of returned labor migration on the household size and composition due to change in living arrangements such as nuclearization and doubling up. In general, empirical research reaches consensus on the positive effect of income on

decision of young adults to move out from the parental home, while income decrease is associated with doubling up and delays in moving to a separate residence. We test three hypotheses on the adjustment of household size related to income fluctuations in the households induced by labor migration.

Our analysis reveals three general insights into patterns of household size fluctuations as response to low-skilled returned labor migration. First, families tend to increase their size during migrant's absence. We find that people live in larger households when a migrant works abroad or when he or she returned home recently. We interpret this finding as a result of the application of the doubling up coping strategy, which allows household members to smooth consumption and share the costs for pubic goods when financial situation of the households is tough. We argue that a temporary decrease in labor force supply as a result of migrant's absence as well as costs associated with sending migrant abroad make households more vulnerable to poverty and provide incentives to apply this coping strategy.

Second, after successful migration episode family members of youngest generations are more likely to move out and this usually happens not directly after the return of a migrant, but with a time lag of 1-2 years. We explain this finding by the fact that looking for a suitable housing requires time. Moreover, many migrants spend money earned abroad for construction of new houses. Given the seasonal nature of the labor migration in Tajikistan, recently returned migrants – usually in the late autumn – from mountainous rural areas can start construction work only after the end of winter.

Third, we found no significant difference in the behavior of migrant and non-migrant families with respect to applying the doubling up coping strategy as response to financial crisis. This finding implies that labor migration does not insure against aggregate economic shocks in the middle run and families of migrants who usually improve their wellbeing through labor migration channel are just as vulnerable to such shocks as non-migrant families. This finding also addresses a broader question of the consequences of labor migration for the sending country and their relevance for the poverty alleviation and development dynamic. On the one hand, return labor migration becomes a popular way to improve financial wellbeing of households, which allows to realize their preference for private housing. On the other hand, this type of labor migration – returned and circular movements of low-skilled workers – appears to be only a short-term solution of the problem of the population impoverishment.

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