

Gatskova, Kseniia; Kozlov, Vladimir

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

Kseniia Gatskova\*and Vladimir Kozlov\*\*

## ABSTRACT

We use household panel data from Tajikistan to explore the change in living arrangements as a response to income shifts related to international labour migration. In addition, we analyse the interaction between the effect of idiosyncratic income increase resulting from a completed migration episode, and the effect 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 is associated with an increase in household size, a completed migration episode two years before the interview was followed by family members moving out. At the same time, our empirical analysis demonstrates that migrant families doubled up in response to a financial crisis to the same extent as non-migrant families, which suggests that labour migration in Tajikistan does not insure against economic shocks in the long run.

## INTRODUCTION

Temporary international labour migration from developing to more developed countries is 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 and Rapoport, 2011; Wahba and Zenou, 2012; Kveder and Beauchemin, 2015), the literature on the demographic behaviour of migrant households beyond childbearing is relatively sparse. At the same time, the relationship between temporary labour migration and household composition constitutes an innovative and promising field of research, which is very relevant for strategic management. For instance, a better understanding of the link between migration and change in household size may serve to better forecast 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) found that living in a three-generation household in Tajikistan is associated with less school enrolment and educational spending, compared to two-generation households. In turn, this 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 focus explicitly on

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\* Leibniz Institute for East and Southeast European Studies

\*\* National Research University Higher School of Economics

the household size related to living arrangements and investigate in which cases household members of different generations choose to share common housing rather than living separately. The mechanisms in focus, theory, and methodological approach used in our article are of wider relevance for demographic and migration studies.

The primary goal of our article is to explore patterns of household size fluctuation depending on the migration experience of households' members. Our interest is not in establishing a causal relationship between migration and change in living arrangements, but rather in exploring the general patterns of the association between labour migration and changes in household size and composition. Our second goal is to examine the interaction of the returned migration experience and the global financial crisis, and identify the role of labour migration in mitigating the effect of the crisis on household size. By examining these two research questions our study allows us to evaluate the size of the migration-induced effect of income change on household size in a broader context. In other words, we check if monetary gains from returned migration can outweigh the negative income shock related to a financial crisis.

We examine the case of predominantly male labour migration from Tajikistan, a post-Soviet state with a markedly high incidence of international labour migration and exceptionally large remittance-dependency. The intensity of migration and the size of the remittance flows directed to this Central Asian country make it an ideal setting to examine the effect of returned and circular labour migration on the households staying behind.

Drawing on arguments from the New Economics of Labour Migration (NELM), the theory of household size and the concept of economies of scale, we formulate and test hypotheses on the link between change in household size and household income shifts induced by returned labour migration. We proceed from the theoretical approach of the New Economics of Labour 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 (Stark and Levhari, 1982; Stark and Bloom, 1985; Massey et al., 1993; Taylor, 1999; de Haas, 2010). Households may opt for migration in order to diversify different sorts of objective and subjective risks (e.g., crop price fluctuations, unemployment etc.), particularly in a developing country setting due to the lack of insurance institutions that secure stability in consumption. On the one hand, a successful labour migration helps to generate additional income in the form of remittances and increases the wellbeing of the household. On the other hand, the early stage of the migration episode is associated with uncertainty, because it may take a lot of time for a migrant to acquire employment abroad and start sending money back home. Given this uncertainty, households are likely to employ additional coping strategies in order to deal with the temporary consumption-related risks originating from the absence of a breadwinner. One of those 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 a change in living arrangements. Moreover, we contribute to the existing literature by analysing the interaction between the effects of idiosyncratic income shock related to migration and those of an aggregate shock – the global financial crisis – and show how households adjust their household size during times of financial hardship. The latter contribution, among others, allows us to conclude more generally about the middle- and long-term effects of returned labour migration on the well-being of households in Tajikistan.

## INTERNATIONAL LABOUR 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

economic motives started to dominate the reasons for increased migration from the poorest Central Asian states to the far more economically developed Russian Federation. In the years since independence Tajikistan and Uzbekistan have become the two largest suppliers of regular foreign labour force in Russia (Zayonchkovskaya et al., 2016).

The massive labour migration from Tajikistan to Russia in the last two decades has had a seasonal and circular character. The median migration spell amounted to seven months (Danzer et al., 2013a), while only one fifth of migrants stayed abroad for more than one year (Marat, 2009). Tajik migrants in Russia are predominantly young males<sup>1</sup> who work in low-skilled jobs in the construction sector, retail trade and services (Chudinovskih et al., 2013; Florinskaya and Zayonchkovskaya, 2014; Zayonchkovskaya et al, 2016). Remittances to families staying in Tajikistan play a crucial role. For instance, in 2011, 99 per cent of the returned migrants sent money home, while among those still living abroad 78 per cent 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 per cent of the country's GDP. In 2008, their level reached 49 per cent of GDP (Table 1). According to the THPS 2011, most of these remittances were used for the consumption of food and necessities (60%), house renovations and construction (27%), and ceremonial consumption such as the organisation of weddings or other ceremonies (7%). An almost negligent percentage of remittances was used for investments into child education or family businesses (Danzer et al., 2013a).

Usually, migrants do not accumulate savings but transfer their earnings instantly through banks or financial services organizations, while working abroad. The reason for this is the high risk of theft, intimidation and physical abuse, among other things, from customs officials, border guards and police (Olimova and Bosc, 2003).

Since Tajikistan proclaimed state independence in 1991, its citizens, as citizens of a former Soviet republic, were eligible to enter Russia without a visa. The issue of work permits, however, was regulated through a complicated scheme, which made the acquiring of a work permit a costly and time-consuming procedure (Olimova and Bosc, 2003). Mostly due to this fact, informal work was very popular among migrants. In 2014, more than 60 per cent of Tajik migrants worked in Russia without any contract (Denisova, 2015). Social surveys indicate that the average salaries of

TABLE 1  
BASIC DEVELOPMENT INDICATORS, TAJIKISTAN

	Personal remittances, received (% of GDP)	Personal remittances, received (mln. current US\$)	Unemployment, youth total (modelled ILO estimate)	GDP per capita, PPP (constant 2011 international \$)	GDP per capita growth (annual %)	Population (mln)	Total fertility rate
2004	12.14	252.00	17.77	1,633.32	8.07	6.7	3.533
2005	20.18	466.65	17.54	1,706.82	4.5	6.9	3.498
2006	36.00	1,018.84	17.48	1,788.11	4.76	7.0	3.485
2007	45.46	1,690.76	16.72	1,886.67	5.51	7.2	3.486
2008	49.29	2,544.02	15.67	1,991.89	5.58	7.3	3.493
2009	35.11	1,748.15	16.87	2,002.46	1.53	7.5	3.502
2010	35.81	2,020.50	17.24	2,106.34	4.15	7.6	3.507
2011	41.74	2,722.46	16.12	2,211.75	5.00	7.8	3.504
2012	42.22	3,222.35	14.95	2,324.37	5.09	8.0	3.492
2013	43.47	3,697.73	14.91	2,440.59	5.00	8.2	3.472
2014	36.64	3,384.06	15.21	2,546.50	4.34	8.4	3.442
2015	28.76	2,258.64	15.58	2,640.59	3.69	8.6	3.404
2016	28.86	1,867.39	15.82	2,762.59	4.62	8.7	3.360

Source: World Bank (2018)

the Tajik migrants are between 15 and 30 per cent lower than those of Russians occupying similar positions (Denisova, 2015). Despite this labour market discrimination, migration to Russia remains one of the most popular income generating practices of households in Tajikistan because of the large difference in earnings between the countries. 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).

Multiple studies point to the strong external economic dependency of Tajikistan and the large vulnerability of households to external shocks (Danzer and Ivaschenko, 2010; Gang et al., 2017). In 2009, the global financial crisis hit the economy of Tajikistan mostly through two different channels: the commodity price shock and the spill over effect on households through migrants working in Russia. The official statistics, however, do not show any significant changes in registered unemployment, which remained at approximately 11.5% between 2007 and 2010 (World Bank, 2018).

Although the decreased demand for international workers during the crisis forced many migrants to return to Tajikistan, a larger number of households in Tajikistan engaged in labour migration in 2009 than in 2007 (Danzer and Ivaschenko, 2010). At the same time, families increased the number of persons per household who were sent to Russia for work (Danzer et al., 2013a).

## THEORETICAL BACKGROUND OF THE STUDY

We proceed from the theoretical approach of the NELM, which regards migration as a calculated strategy of a household in which people act collectively in order to maximise household income and minimise consumption risks (Stark and Levhari, 1982; Stark and Bloom, 1985; Massey et al., 1993; Taylor, 1999; de Haas, 2010). Households may opt for migration in order to diversify different sorts of objective and subjective risks (e.g., crop price fluctuations, unemployment etc.), particularly in a developing country setting due to the lack of insurance institutions that secure stability in consumption. Moreover, international migration in developing countries is an attractive option for households that wish to accumulate savings for large purchases such as new housing, if there is a large difference in returns to labour in local and foreign labour markets. Yet sending a migrant abroad implies monetary investment to cover migration-related costs such as travel, accommodation and administrative costs for issuing a work permit or visa etc. That is why a household which sends a migrant abroad experiences a negative income shock at the initial stage of migration. Only after the migrant finds a job and starts sending remittances back home, does the financial well-being of the household improve. Furthermore, the early stage of the migration episode is associated with uncertainty because it may take a lot of time for a migrant to acquire employment abroad. Given this uncertainty, households are likely to employ additional coping strategies to deal with the temporary consumption-related risks originating from the absence of a breadwinner. One of those coping strategies may be doubling up with other relatives to decrease the cost of maintaining a certain standard of living for household members staying behind. The benefits related to a shared residence arise from the presence of household economies of scale in consumption.

The concept of household economies of scale in consumption was widely used in research on the relationship between poverty and household size (e.g., Lanjouw and Ravallion, 1995). Assuming that the goods consumed by members of household can be either private, for example food, or public, for example shelter and household appliances, it is expected that larger households have a consumption advantage over smaller households because the consumption of public goods by one member does not diminish their availability to other members (Lazear and Michael, 1980). By reducing their expenditure on public goods households are able to reallocate the released resources to private goods consumption and in this way improve their well-being. However, sharing public goods is only one of the sources of household economies of scale in consumption. Other sources

include increasing returns in household production of goods and services and taking advantage of bulk discounts in purchasing (Nelson, 1988). Using data from the U.S. Consumer Expenditure Survey, Nelson (1988) shows that economies of scale in consumption exist for all goods including food, shelter, clothing, household furnishings and operations, and transportation, and are especially pronounced in the consumption of shelter.

If labour migration is related to income fluctuations and so is the household size, we argue that the link between migration and household size is mediated through income change. At the beginning of a migration episode the household income decreases due to migration costs, and after the migrant finds a job abroad the household income increases due to receipt of remittances. As far as the relationship between income fluctuations and household size is concerned, it was formalised by Salcedo et al. (2012), who developed a theory of household size, according to which living with others is beneficial because the costs of household public goods can be shared. Salcedo et al. regard a household as a collection of roommates and describe a mechanism through which income affects household size in the following way:

The mechanism we propose is based on the idea that private goods have a higher income elasticity than public goods. Therefore, as people get richer, the household public goods become relatively less important. This changing consumption pattern reduces the economies of scale of living with other people and endogenously decreases the optimal household size. Hence, optimally changing consumption bundles provide the link from income to household size. In other words, the optimal number of roommates is decided through a simple cost–benefit analysis, with costs and benefits changing endogenously as income changes. (Salcedo et al., 2012, p.134)

According to this theory, when household income grows, the share spent on public goods decreases and the preference for privacy becomes more attractive. As a result, the probability increases that a multi-person household will split. Of course, the application of this theory has certain restrictions. It is clear that not every household has an equal probability to split, when the household income grows. A nuclear household with small children, or a married couple, are expected to behave differently from a multigenerational horizontally extended household where many adult household members share one housing unit. We may expect members moving out of the household only in those where (young) adults co-reside with their parents, siblings, or other adult relatives. On the other hand, if a young nuclear household sends a male migrant abroad, his wife and children are likely to move in temporarily with other relatives. In the case of Tajikistan, for cultural reasons as a rule these would be the parents-in-law (Haarr, 2007; Grogan, 2007).

## EMPIRICAL RESEARCH ON LIVING ARRANGEMENTS

The literature argues that households respond to income and consumption shocks by applying certain coping strategies such as relying on informal networks of relatives and friends, cutting expenditure on clothing and foodstuffs, selling belongings etc. One of the most widespread practices to cope with financial hardship is to move in with others in order to reduce living costs and exploit the benefits of economies of scale 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 psychological costs of shared residence due to lack of independence and limited privacy.

Most of the evidence on the impact of the economic situation on household size was collected within the research on young adults leaving the parental home. This research was largely devoted

to testing two competing hypotheses. The first hypothesis postulates that higher resources provide greater comfort for children and therefore discourage their early leaving of the parental home. The second hypothesis states that access to higher resources enables parents to subsidise their children's independence and helps to realise their preference for privacy. A large body of empirical literature provides explicit support to the second hypothesis. For instance, Avery et al. (1992) find 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 the decision of young adults in Europe to live separately from their parents. Studies on developing countries confirm this general pattern (e.g., Johnson and DaVanzo, 1998).

Complementing research on the transition to adulthood, several studies examine the return of young adults to the parental home after a certain period of living separately – a phenomenon often referred to as “boomerang kids” (Kaplan, 2009). Scholars suggest that the return of children to the 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 these 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 labour market risks and poverty.

A related strand of literature focuses on the coping strategies of households as a response to economic shocks (McKenzie, 2003; Lokshin and Yemtsov, 2004; Abanokova and Lokshin, 2015; Lenartz et al., 2016). Studies examining the immediate effects of 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 the Asian crisis in the late 1990s, due to a change in living arrangements. Similarly, Dyrda et al. (2012) document large cyclical fluctuations in the average size of US households depending on the economic situation: households shrink during economic expansions, and tend to expand during recessions. Similar patterns were uncovered in other studies in the U.S. (e.g. Matsudaira, 2010; Mykyta and Macartney, 2011; Lee and Painter, 2013). Using data from the Russian Longitudinal Survey, Abanokova and Lokshin (2015) show that people who experienced negative income shocks during the last two crises in Russia (1998 and 2008) are more likely to move in with others than are 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 a response to a fall in real wages, the worsening of employment opportunities, or higher housing rents. Lokshin et al. (2000) find that in order to cope with financial difficulties during recessions, single-mother households in Russia chose to co-reside with relatives and other adults.

Bongaarts (2001) reveals that the overall trend of change in household size in the developing world is from large multiple-generation households towards smaller and predominantly nuclear households. Nuclear household norms were promoted in Tajikistan during the Soviet period but after state independence, religious and traditional norms experienced a revival. As a result, society witnessed the popularization of the patrilocality as a dominant household structure (Grogan, 2007). In particular, this means that daughters, after marriage, usually leave the parental home and move in with the families of their husbands and parents-in-law, while the families of married sons stay in the household until they get the opportunity to move to their own housing. Specifically, in the case of Tajikistan there is a cultural norm according to which the youngest son with his spouse and children are not supposed to move out of 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). Accordingly, the number of generations living together is more stable than the number of household members.

Although Tajikistan's Soviet legacy and the problem of poverty were strong incentives for many women to join the labour market, traditional gender roles are still dominant in Tajikistan. The

commonly accepted norms prescribe that the husband is the main breadwinner and the head of the family who is responsible for decision making, while the wife is the housekeeper and caregiver who plays a submissive role and is primarily focused on the private sphere of the family (Harris, 2004; Falkingham and Bashieri, 2009). These traditional gender norms restrict women's empowerment and prevent them from taking the roles of autonomous decision-makers. This may have implications for decisions on doubling up or moving out. For example, it implies that wives are not likely to decide on the investment of remittances received from abroad into new housing. This decision is expected to be made by their migrant husbands upon their return.

## 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, household size is likely to increase due to doubling up.

While the initial stage of the migration episode is associated with monetary costs, sharing housing with relatives may help to reduce the costs of public goods and in this way compensate for the negative income shock related to migration. We expect the household size to increase when the migrant is away, because of the temporary absence of a breadwinner and the uncertainty associated with the migrant's employment and remittances. These factors encourage members of the migrant's family to move in with parents, parents-in-law or other relatives in order to smooth consumption and rely on their support during the migrant's absence.

### **Hypothesis 2 (H2)**

If a household recently experienced a completed migration episode, the household size will reduce due to the moving out of family members.

The improved wellbeing of the family as a result of labour migration will lead to the moving out of family members and consequently a decrease in household size. Usually, members of the younger generation 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 an 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 the migrant. In addition, moving to a separate residence is related to either the construction, search for or acquisition of new housing, therefore we argue that the decrease in household size is likely to happen not during the migrant's absence and not immediately 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 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 a completed migration episode and improved their well-being will be more resilient to the crisis and will be less prone to double up with others to smooth consumption and overcome financial hardships.



## EMPIRICAL STRATEGY AND DESCRIPTIVE STATISTICS

### Tajikistan household panel survey (THPS)

For our analyses we use a three-wave panel data set, 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. All three waves were collected in the autumn of their respective year in order to take account of the seasonality patterns in agriculture and migration flows.

Initially, 4860 households were interviewed on different topics including education, health, the labour 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 had participated in the two previous waves (Danzer et al., 2013b). 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 labour emigration from Tajikistan, the vast majority of these moves are temporary and do not result in the settling down of migrant families in their 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 household size in Tajikistan, but also to observe the effect of the external shock of the global financial crisis, which considerably affected the welfare of the households (Danzer and Ivaschenko, 2010).

### Variables and empirical strategy

The 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 the number of household members and the change in the number of generations living together within the same household over time. These dynamic variables are computed respectively as a difference in the 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 the 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 the occurrence of increase or decrease in household size in general, we construct our dependent variables as four dummy variables<sup>2</sup>: 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 the increase ( $D_j > 0$ ) and decrease (if  $D_j < 0$ ) in the number of generations<sup>3</sup> living together in the same household.

Importantly, the total household size is computed as the 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 the change in living arrangements.

Furthermore, we look at the change in the 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 Tajikistan households are often large and horizontally extended. Looking at the generations (instead of household types, such as “nuclear family”, “horizontally extended family”, “vertically extended family” etc.) we are likely to analyse 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 the migration experience of households.

In order to test the third hypothesis, we employ the difference-in-differences approach. Accordingly, we compare the living arrangements in *pre* and *post* crisis years with those 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:

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

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 the number of generations living together in the same household (dummy variables); difference in the number of family members within one generation compared to the previous wave (a continuous variable).

Independent dummy variable  $\text{retmig}_{j,t-1}$  is equal to 1 if a household had a returned migrant within the last 12 months in the previous survey wave. The variable  $\text{crisis}$  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 the presence of a migrant who returned from labour migration within the last 12 months in a household, the presence of a current migrant, the receipt of remittances from a current migrant, and the receipt of remittances from a current migrant in the previous survey wave. Finally,  $X'_{j,t}$  is a vector of household characteristics such as well-being-related controls (expenditures per capita,<sup>4</sup> share of employed household members); dummy variables for demographic events including the birth of a child, marriage, and divorce; education of the household head; region; structural characteristics of the household 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 in the household size. For example, a higher number of elderly persons can be associated with a higher mortality risk, while the number of women of 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.

### 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 their children, and may also include siblings with their spouses and children (Olimova and Bosc, 2003). In our sample, household size varies between one and 26 members with an average size of about seven members (Table 3). On average, households with migration experience are larger compared to those without migration experience (which might be explained by the composition effect: there are more labour 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 2  
SUMMARY STATISTICS: HOUSEHOLD CHARACTERISTICS

Variable	N	Mean	Std. Dev.	Min	Max
Household size	4,008	6.569	3.001	1	26
Number of generations living together	4,008	2.389	0.576	1	4
Household size reduced	2,672	0.280	0.449	0	1
Household size increased	2,672	0.335	0.472	0	1
Number of generations reduced	2,672	0.087	0.282	0	1
Number of generations increased	2,672	0.111	0.314	0	1
Change in first generation	1,760	-0.018	0.263	-2	2
Change in second generation	1,662	-0.145	1.309	-6	7
Change in third generation	617	0.402	1.565	-6	8
Returned migrant	4,008	0.166	0.373	0	1
Returned migrant lag	2,672	0.173	0.379	0	1
Current migrant	4,008	0.178	0.383	0	1
Receipt of remittances	4,008	0.156	0.363	0	1
Receipt of remittances lag	2,672	0.119	0.324	0	1
Expenditures per capita	4,008	585.804	886.701	7.917	35654.890
Proportion of employed	4,008	0.143	0.179	0	1
Baby born	4,008	0.325	0.468	0	1
Marriage	2,672	0.108	0.310	0	1
Divorce	2,672	0.054	0.226	0	1
Sogd	4,008	0.263	0.441	0	1
Khatlon	4,008	0.263	0.440	0	1
RRP	4,008	0.212	0.409	0	1
GBAO	4,008	0.099	0.298	0	1
Urban	4,008	0.334	0.472	0	1
Education of the head: Basic secondary	3,916	0.128	0.335	0	1
Education of the head: Secondary	3,916	0.380	0.485	0	1
Education of the head: Vocational	3,916	0.231	0.421	0	1
Education of the head: Higher	3,916	0.188	0.391	0	1
Proportion of married women aged 15–49	4,008	0.162	0.101	0	1
Proportion of children aged 0–15	4,008	0.320	0.209	0	0.833
Proportion of elderly aged 60+	4,008	0.086	0.181	0	1
Proportion of single girls aged 12–30	4,008	0.099	0.135	0	1

Source: THPS 2007–2011.

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 the simultaneous increase of the share of three-generation households in 2009 and 2011. Although 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 had only partially recovered from the economic downturn.

## RESULTS

As a first step, we analyse 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 the number of family members within each of the generations, for each generation separately.

The estimation results reveal that while lagged returned migration and lagged remittance receipt increase the probability that household size will reduce, the presence of a recently returned migrant

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 (with migration experience*)	7.32	7.67	7.55
Average household size (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

\*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.  
Source: THPS 2007–2011.

or a current migrant in the household has the opposite effect (Table 4).<sup>5</sup> This finding supports the H1 and H2 hypotheses: when a migrant goes abroad their family experiences a temporary reduction in labour supply and has to carry migration costs; as a result they become economically more vulnerable and consequently are more likely to live in a larger household. When a migrant returns home, it usually means that the migration episode is successfully finished. Their household by that time has accumulated the remittances that were sent from abroad and these savings have improved the wellbeing of the household. Only after a period of one or two years after the migrant's return does the household size reduce, due to the moving out of family members.

In all specifications, we observe a significant effect of the crisis year on the household size and the number of generations living together in a household. This effect is in the expected direction: during the global financial crisis, people in Tajikistan were living in larger households with a larger number of generations compared to pre- and post-crisis years. These household size fluctuations reflect the trend in developed countries: when times are economically tough, people move in together to take advantage of the economies of scale and reduce expenditures on household public goods. This finding is important, since one could have expected that households in low-income developing countries might already have exhausted this mechanism 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.<sup>6</sup> It means that we do not find empirical support for the hypothesis 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 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 labour 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 the number of generations living together, no effects of the migration-related variables may be discerned (except for current remittance receipt, which is significant at the 10% level and is in the 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

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 <sup>1</sup>	0.028	0.043	-0.051	0.049	0.012	0.019	-0.057**	0.028
Secondary general <sup>1</sup>	-0.010	0.038	0.016	0.046	0.026	0.017	-0.030	0.027
Vocational <sup>1</sup>	0.003	0.040	-0.030	0.047	0.033*	0.018	-0.029	0.028
Higher <sup>1</sup>	0.013	0.041	-0.062	0.048	0.018	0.018	-0.045	0.029
Urban	-0.073***	0.026	0.027	0.028	-0.043***	0.014	0.020	0.014
Regional controls	yes		yes		yes		yes	
Household structure controls	yes		yes		yes		yes	
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 category:

<sup>1</sup>Primary education or less.

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 <sup>1</sup>	0.027	0.025	0.106	0.164	0.168	0.229
Secondary general <sup>1</sup>	0.016	0.024	0.168	0.141	0.282	0.201
Vocational <sup>1</sup>	0.007	0.023	0.083	0.147	0.311	0.219
Higher <sup>1</sup>	0.005	0.024	0.045	0.147	0.329	0.204
Urban	-0.007	0.012	0.205***	0.071	-0.010	0.133
Regional controls	yes		yes		yes	
Household structure controls	yes		yes		yes	
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 category:  
<sup>1</sup>Primary education or less.

same generation, move out: for example, when a family of one of the siblings moves out to separate housing while the family of another 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 the 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<sup>7</sup> to ensure that we are looking at the same generations in different survey years. The first column of the table includes 1732 household-years; these are all the households which 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. In each case we analyse the change in the absolute number of household members within each of the generations: oldest generation, second generation and third generation.

A completed migration episode two years before the survey reduces the number of family members of the second and third generations. Similarly, remittance receipt two years before the survey

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
Other controls	Yes		
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.

negatively affects the number of household members of the second generation. That is, the members of the youngest generations are those who move out. The presence of recently returned and current migrants in a household is associated with a larger number of members of the second generation.

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

## ROBUSTNESS CHECKS

For the purpose of robustness checks, we estimated several specifications by a stepwise inclusion of the groups of control variables related to the characteristics of the household head, regional dummies and household structure. The direction of main coefficients of interest remains stable and the interpretation of results does not change.

Furthermore, we employ a fixed effects model, which allows controlling for the time invariant heterogeneity. The dependent variable is a continuous variable measuring the change in household size between the waves of the survey in absolute terms. We include the whole range of controls from the previous estimations but add an interaction term of the crisis year and the presence of a current migrant in the household (Table 6). This approach is an alternative one to test our first hypothesis.

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 the current migration and crisis is positive and significant at the one per cent level, which 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 crisis-related incentives to double up we observe a migration-related effect on the household size.

## CONCLUSION

Our article contributes empirically to the literature on the impacts of returned labour migration on household size and composition due to the change in living arrangements such as nuclearization and doubling up. In general, empirical research reaches consensus on the positive effect of income on the decision of young adults to move out of the parental home, while income decrease is associated with doubling up and delays in moving to a separate residence. Using dynamic panel models, we test three hypotheses on the adjustment of household size related to income fluctuations induced by labour migration.

Our analysis reveals three general insights into patterns of household size fluctuations in response to low-skilled returned labour migration. First, families tend to increase their size during migrants' 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 public goods when the financial situation of the household is tough. We argue that a temporary decrease in labour supply as a result of migrants' absence as well as the costs associated with sending a migrant abroad make households more vulnerable to poverty and provide incentives to share residence with relatives.

Second, after a completed migration episode, family members of the 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 or 2 years. We explain this finding by the fact that looking for suitable housing or the construction of a new house takes time. Given the seasonal nature of labour 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, using the difference-in-differences technique, we found no significant difference in the behaviour of migrant and non-migrant families with respect to applying the doubling up coping strategy as a response to the financial crisis. This finding implies that labour migration does not insure against aggregate economic shocks in the middle- or long-run and families of migrants who usually improve their well-being through the labour migration channel are just as vulnerable to such shocks as non-migrant families. This finding also addresses a broader question of the consequences of labour migration for the sending country and their relevance for poverty alleviation and economic development. On the one hand, return labour migration becomes a popular way to improve the financial well-being of households, which allows them to realise their preference for private housing. On the other hand, this type of labour migration – returned and circular movements of low-skilled workers – appears to be only a short-term solution to the problem of population impoverishment.

## NOTES

1. Roughly 90% of labour migrants were male and their mean age amounted to 30 years in 2011 (Danzer et al., 2013a).
2. In addition, we perform a fixed effects analysis with a continuous dependent variable in the robustness checks section.
3. Number of generations was computed based on our knowledge about the relationship of each of the household members to the head of household.
4. 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.



5. Table 4 presents the estimation results of probit regression models. In addition, we estimated an OLS model using a continuous dependent variable, which reflects a change in household size in absolute terms, and the same list of independent variables. Our conclusions are robust to the choice of estimation approach and the interpretation of the coefficients of interest remains the same. Further robustness checks are presented in section 8.
6. We interpret this finding based on the analysis of marginal and multiplicative effects as described by Buis (2010).
7. We excluded families where the oldest person disappeared from the panel, most likely due to 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.

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