# Can labor emigration affect education of girls? Evidence from Tajikistan

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**Abstract**

We study how large-scale, predominantly male, emigration affects the education of girls staying in Tajikistan – the poorest post-Soviet state and one of the most remittance-dependent economies in the world. Using data from a three-wave household panel survey conducted in 2007, 2009 and 2011, we find that the net effect of migration on girls' schooling turns from positive to negative with girls' age. This implies that migration can be detrimental to women's empowerment and casts doubt on whether migration is an appropriate long-term development strategy for Tajikistan. Our results support various channels through which the emigration of household members may affect girls' education, including the relaxation of budget constraints, a change of the household head, and an increase in household work.

**Keywords:** girls' education, migration, remittances, female empowerment, Tajikistan

JEL codes: F22, J16, J24

## 1. INTRODUCTION

The education and skill formation of women are important resources for the economic and social advancement of developing economies (World Bank, 2012; Hanushek, 2013). It is well documented that better educated women have higher rates of labor market participation, earn more income and provide better education and health care for their children. In this context, equal education opportunities are crucial for women's economic participation and empowerment. Yet across the developing world girls' access to education continues to be hampered by a number of factors, ranging from household income constraints and involvement in household tasks, to restrictive cultural and social norms.

Recent literature has suggested that the migration of family members and migrant remittances are important factors affecting girls' educational outcomes (Giannelli and Mangiavacchi, 2010; McKenzie and Rapoport, 2011; Antman, 2012; 2015). While a considerable number of empirical studies have uncovered significant effects of migration and remittances on female education (Giannelli and Mangiavacchi, 2010; McKenzie and Rapoport, 2011; Antman, 2012), the observed relationships are often context-specific and may not be explained through a single conceptual mechanism.

Focusing on Tajikistan – the poorest post-Soviet Central Asian state and one of the most remittance-dependent economies in the world[1] – the main objectives of this paper are to identify the net effect of migration on the educational outcomes of girls staying behind and to discuss the likely channels that are responsible for this. We distinguish between current and

[1] Remittances in Tajikistan were equivalent to 29% of its GDP in 2015 (World Bank, 2016).

return migration as well as parental and siblings' migration, since previous literature suggests that different types of migration may have opposing effects on the education of children (Bennett, Clifford, and Falkingham, 2013; Cebotari, 2018). Our analysis is based on household survey data from a unique three-wave panel study conducted in Tajikistan in 2007, 2009 and 2011. Large out-migration – predominantly of men – and the increasing gender disparities in educational outcomes that Tajikistan has witnessed in the last 20 years make the country particularly suitable for an examination of the link between migration and the schooling of girls.

The lack of appropriate data for the Central Asian region has so far prevented scholars from intensively studying this important and complex link. Our paper makes two main contributions to the field of research that examines the long-term consequences of migration. First, based on panel data, we provide empirical evidence on the effect of different kinds of international labor migration on the educational outcomes of young and teenage girls in Tajikistan. Compared to other studies on this topic (Bennett, Clifford, and Falkingham, 2013; Yamada, 2016; 2017; Cebotari, 2018) the use of panel data is unique so far. Second, while Bennett, Clifford, and Falkingham (2013) and Yamada (2016) examine the impact of household members' migration on the school enrollment of children staying behind, our study focusses particularly on girls. But other than Cebotari (2018) who takes a gender perspective into consideration when estimating the risk of experiencing an educational lag in Tajikistan, we expand the study on the effect of migration on girls' schooling to discuss the most likely channels through which the migration of household members may affect girls' education. Given the similarity of migration patterns in Central Asia – characterized by a large-scale, low-skilled, predominantly male labor migration to Russia – our results have important implications for the whole region.

## 2. MIGRATION, REMITTANCES AND GIRLS' EDUCATION: LITERATURE REVIEW

The literature has identified various channels through which migration and remittances may affect the educational attainment of girls left behind (see, for example, Hanson and Woodruff, 2003; Giannelli and Mangiavacchi, 2010; McKenzie and Rapoport, 2011; Antman, 2012; 2015). From an economic perspective, migration and its associated remittances may have a positive impact on girls' education, as migrant remittances relax household budget constraints and additional resources are invested in girls' schooling (Hanson and Woodruff, 2003). For example, children in migrant households in Mexico complete more years of schooling than children in non-migrant households, and girls in families with low levels of education benefit from parental migration more than boys (Hanson and Woodruff, 2003). That study argues that in lower educated households, which tend to have lower financial resources, migrant remittances are a crucial source of finance for girls' schooling. Similarly, Calero, Bedi, and Sparrow (2009) show that, in Ecuador, the receipt of remittances increases the rate of school enrolment for children, especially for girls in rural areas. Interestingly, a higher investment of additional household resources in girls' education was not observed in the case of Jordan (Mansour, Chaaban, and Litchfield 2011). Although Mansour, Chaaban, and Litchfield (2011) found that remittances in migrant households alleviated budget constraints and had a positive impact on education, boys' schooling was a higher priority. Vogel and Korinek (2012) obtain a similar result in Nepal, where remittances sent by migrants were spent on the education of children, but disproportionately so on boys. The exception is higher-income remittance-recipient households, which allocated greater resources to girls' schooling. In a more recent study on Nepal, Shresta (2017) reveals a positive impact of migration on girls' –

but not on boys' – education. According to this study, boys in migrant households increasingly choose low-skilled migration instead of schooling (Shresta, 2017).

On the other hand, the out-migration of household members may result in a reduction in the supervision of children and/or more work at home for children staying behind (Giannelli and Mangiavacchi, 2010). Typically, girls have to take over domestic chores and the burden of caring duties, which might negatively affect their school attendance (McKenzie and Rapoport, 2011; Davalos et al., 2017).[2] McKenzie and Rapoport (2011), for example, report a significant negative effect of migration on the school attendance of 16 to 18 year old girls in Mexico, which they complement with a further finding that girls in migrant households take on more household chores. Chang, Dong, and MacPhail (2011) corroborate the latter observation, showing that in China parental migration leads to a greater increase in domestic and farm work among girls (and elderly women) than boys (and elderly men). The same holds true for Kyrgyzstan where Davalos et al., (2017) show that girls are disproportionately more inclined to perform unpaid family work in migrant households. Similarly, a study on Georgia points out that male migration widens gender differences with respect to the division of household tasks (Torosyan, Gerber, and Goñalons-Pons, 2016). This study revealed that left-behind women not only do more housework when the migrant is abroad, but they also

[2] The theoretical model of household decision making, originally formulated by Becker (1965), supports this consideration. In the framework of household decision making, it argues that adult household members decide on the schooling of children to maximize household utility. Typically, girls are taken out of school if their contribution to household chores or farm work is expected to produce higher benefits than further education.

become accustomed to these new tasks and persist in doing them even after the migrant returns.

Finally, the change of household head following migration has been shown to influence girls' schooling. Antman (2012, 2015) uncovers a significant positive effect of parental (mostly, fathers') migration from Mexico to the US on girls' education. She attributes this beneficial effect of migration on girls' education to the greater influence of women on household decision making and resource allocation after male household heads migrate (Antman, 2015). Considerably bigger expenditures on children's education are also observed in households in which women are the primary recipient of remittances (Pickborn, 2016). However, the change of the household head following migration may also have a negative effect on girls' education. In the case of Albania, Giannelli and Mangiavacchi (2010) show that parental migration increases the probability of children dropping out of school, especially among girls. One of the explanations is that in traditional Albanian society the decision making power in migrant households passes to older men (e.g. grandfathers) who attach a lower value to girls' than boys' education.

Only recently it has been discussed that the impact of family members' migration on children's schooling might also depend on the child-migrant relationship, i.e. whether it is the parents or siblings who move abroad (Kandel, 2003; Bennett, Clifford, and Falkingham, 2013). The migration of parents as compared to siblings is expected to result in larger remittances towards children at home, thus potentially supporting the education of children staying behind more strongly. Furthermore, the negative effect of higher household chores on the education of left-behind children might be higher in the case of emigrating siblings, as their work is typically passed on to (teenage) children in the family, while the household chores of emigrating parents are often delegated to adult household members (Kandel, 2003;

Bennett, Clifford, and Falkingham, 2013). Consistent with this conceptualization, Bennett, Clifford, and Falkingham (2013) find that children's school enrolment in Tajikistan is positively associated with parental migration, but negatively with the migration of siblings. In the case of low-skilled, male dominated labor migration, girls staying behind may be particularly exposed to higher household chores at the expense of schooling. This is not only consistent with the female role model but also reflects a situation where male youth tends to follow the example of emigrating family members and drop out of education to move abroad for work (Yamada, 2016; Shresta, 2017).

Summing up, there are three major mechanisms through which the migration of household members can affect girls' education specifically: the relaxation of financial constraints through remittances, an increase in domestic work for girls staying behind, and a change in the head of household with a related shift of the decision making power. Importantly, these mechanisms are contingent on the type of migration (e.g. male vs female) and the migrant-child relationship as well as on the social and cultural norms prevailing in the migrant's country of origin.

## 3. MIGRATION AND GIRLS' EDUCATION IN POST-SOCIALIST TAJIKISTAN

Tajikistan is a small, landlocked country in post-Soviet Central Asia with a population of little more than 8.5 million people in 2015. After the country proclaimed its independence in 1991, external labor migration and the inflow remittances started to play a dominant role in sustaining its economy. Because labor migration from Tajikistan is often short-term or circular official data do not capture the full extent of this movement. Drawing on a representative survey it was found that 20 percent of all households included at least one migrant in 2011 (Danzer, Dietz, and Gatskova, 2013a). This high labor migration activity is

corroborated by remittances data. According to official statistics, the inflow of remittances to Tajikistan amounted to 3.06 billion US$ in 2011, or about 47 percent of the country's GDP (World Bank, 2016).

Education and gender equality were actively promoted in Tajikistan in Soviet times, but the Soviet achievements have been eroding since the country's independence in 1991 (Silova and Abdushukurova, 2009; Olimova, 2010). At the same time, traditional norms have gained ground, in rural areas especially, partially facilitated by the Islamic revival. Traditional gender norms have been strengthening, manifesting themselves in earlier marriages, higher levels of domestic violence, and higher fertility (Amjad, n.d.; Qodir, 2012; Meurs and Giddings, 2012). Women in Tajikistan are expected to be primarily devoted to household chores and child rearing (Hegland, 2010; Harris, 2011; Popova and Plulikova, 2012).

As a post-Soviet country, Tajikistan inherited the Soviet educational system, where compulsory school is by state law free of charge. Compulsory education embraces four years of primary school (grades 1 to 4; age 7 to 10 years) and five years of basic secondary education (grades 5 to 9; age 11 to 15). Moreover there are two years of upper secondary education (grades 10 to 11; age 16 to 17). Although compulsory education is guaranteed, several studies have pointed out that public education in Tajikistan has become costly in recent years. Due to underfunding, schools charge fees for textbooks, extra-curricular classes, and school maintenance (Whitsel, 2011; Yamada, 2017).

Since independence, there has been a continuous decline in girls' school enrolment rates, especially at the higher levels of schooling (Silova and Abdushukurova, 2009). According to UNICEF (2011), 20% of girls in Tajikistan drop out of school without completing a full course of basic secondary education, i.e. up to grade 9. Official data conform that in 2011, the gross enrollment rate for secondary education was 90% for boys, but only 79% for girls

(UNESCO, 2013). It is argued that public awareness of the advantages of girls' education is still low, especially in rural and remote areas. Many girls have to carry out chores at home instead of attending school. A recent survey study reported that 69% of the girls in grades 7 to 9 attended school irregularly because they had to work at home (UNICEF, 2013, p. 47). Girls are mostly engaged in cleaning, washing dishes, doing laundry and cooking. In addition, they have an important role as caretakers, looking after younger siblings and sick relatives. Girls are also active in agriculture, for example in working in the fields (Baschieri and Falkingham, 2007; UNICEF, 2013, p. 48). This is consistent with a traditionally high female participation in agricultural work in Tajikistan: according to the World Bank, in 2009 nearly 70% of all agricultural employees in the country were women (World Bank, 2016).

Furthermore, there is a cultural dimension which may affect girls' dropping out of school. Girls in traditional, religious families are not supposed to walk alone to school after reaching puberty (Haarr, 2005; Asian Development Bank, 2016). Older brothers or cousins have to accompany their female relatives. Many girls in rural or remote areas stop schooling at the level provided in their village rather than walk unaccompanied to a school which provides further levels of education but is farther away from home (UNICEF, 2013).

Drawing on the reviewed literature, various – potentially conflicting – effects of migration and remittances on the education of girls staying behind may be expected in the context of Tajikistan (Bennett, Clifford, and Falkingham, 2013; Yamada, 2016; 2017; Cebotari, 2018). On the one hand, the effect of remittances on education is likely to be positive where liquidity constraints are binding. A higher household income might improve the school attendance of girls whose families are otherwise not able to afford their education and who have to take on household chores or work at the expense of schooling. On the other hand, the effect of having a migrant in the household – mainly fathers and elder brothers – is likely to leave many girls

with less supervision and bring additional responsibilities at home, potentially resulting in increased drop-out rates. The risk of having to leave school early increases with girls' age. When fathers are away and mothers have to work to make a living, teenage girls often take on the household chores of their mothers (UNICEF, 2013).[3] Besides a higher workload, in the case of the migration of male siblings, the education of teenage girls might additionally be hampered in families where traditional norms do not allow teenage girls to walk alone to school. The impact of migration and remittances on girls' schooling that can be attributed to the change of the household head after migration may also be different from that outlined in the literature (i.e. women taking over the head of household role and allocating more resources to daughters' education). Anthropological and sociological evidence suggests that labor migration in Tajikistan has strengthened gender and generational hierarchies (Whitsel, 2009; Hegland, 2010; Popova and Plulikova, 2012). In multi-generational households, the decision making power, including control over remittances, often passes to the migrant's parents (for example, to mothers-in-law) rather than the spouse (Whitsel, 2009; Hegland, 2010). If women, or family members who are supportive of female education, have a greater say in household decision-making and resource allocation after male household heads migrate, a greater share of resources might be allocated to girls' schooling.

## 4. DATA, VARIABLES AND ESTIMATION STRATEGY

[3] A similar transmission of the workload of mothers onto their daughters has been discovered in the case of maternal illness in Ethiopia (Dinku, Fielding, and Genç. 2017). While maternal illness reduces the time children spent in play, girls tend to be more engaged in domestic work than boys.

### 4.1. Data

Data for our empirical analysis come from a large household panel survey carried out in Tajikistan in 2007, 2009 and 2011: the first two waves of the Tajikistan Living Standards Measurement Survey (TLSS) (TLSS, 2007; TLSS, 2009) were administered by the World Bank and UNICEF, and the third wave of the panel, the Tajikistan Household Panel Survey 2011 (THPS, 2011), was designed and implemented by the Institute for East and Southeast European Studies as a follow-up to the TLSS (Danzer, Dietz, and Gatskova, 2013a; 2013b).

The first TLSS wave in 2007 contained a representative sample of 4,860 households, and the second and third waves included a representative subset of 1,503 households. In 2011, only 45 households from the list of households interviewed in 2009 were not reached, while 1,458 households that participated in the two previous waves were re-interviewed (Danzer, Dietz, and Gatskova, 2013a). The panel attrition rate is, therefore, very low. This indicates that although labor emigration from Tajikistan is very intense, these moves are temporary – migrants work abroad and return, rather than permanently relocate their families to the destination country.

All three waves were collected in autumn, following seasonality patterns in agriculture and migration. Household selection followed representative probability sampling, corresponding to the urban/rural and regional population distribution in Tajikistan. The 2009 TLSS and the 2011 THPS 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 characteristics, migration, education, health, labor market status and consumption. The item non-response rate is uniformly low for the variables we use in the analysis.[4]

We focus on a sample of school-aged children (7 to 17 years old): 911 girls and 944 boys. On average, each child appeared in 2.2 waves of the survey, providing us with a working sample of 4,152 child-wave observations.

### 4.2. Variables

Outcome variable

The objective of our empirical analysis is to provide a nuanced analysis of the effect of household migration on girls' education. To ensure comparability, the full sample of children – boys and girls – is used. We construct a dummy variable for school attendance information based on whether the child was enrolled in an educational institution in the last academic year or not. [5] Although basic secondary education (up to grade 9) is compulsory in Tajikistan, many girls drop out of school before its completion. In our data 9% of all girls (7-17 years old) did not attend school. While 5% of girls dropped out between the ages of 7 and 11, 12% did not attend school between the ages of 12 and 17. This indicates that school attendance is decreasing with age.

Regressors of interest

[4] In fact, the response rate is 100% for all variables, except satisfaction with household finances where information is not available in 0.46% of cases.

[5] In designing the dummy variable, we checked whether in some cases girls dropped out if school but returned later. We found that 4% of all girls had left education at some point in time and re-entered.

Following our theoretical discussion of migration impacts on education, the focal regressors include the incidence of migration at the household level, parental migration, sibling migration and the receipt of remittances[6] (all dummy variables). Due to the seasonal and circular nature of labor migration in Tajikistan, we consider both the migrants working abroad at the time of the interview and those who have recently (in the 12 months prior to the interview) returned. The minimum migration spell for a person to be considered as a labor migrant is one month.[7]

Literature on labor migration from Tajikistan suggests that migrants are mostly young men - the average age of return and current migrants is 31.6 and 28.9 years, respectively (Danzer, Dietz, and Gatskova, 2013a) – and it is the fathers and/or eldest sons who are most likely to move abroad (Olimova and Bosc, 2003; Olimova, 2010; Khuseynova, 2013). We therefore construct two variables: 'parent migrant' and 'sibling migrant'. Sibling migrants are defined in a broad sense, including both siblings of the child (typically, brothers) and other migrant household members, whose age difference with the child does not exceed 15 years (typically,

[6] The information on receipt of remittances is available for current migrants in all waves and for returned migrants in the 2011 wave, however, it is not available for the returned migrants in 2007 and 2009 waves. In our analyses we use the information on receipt of remittances from current migrants only. The dummy variable *remittances* captures the receipt of remittances from at least one international labor migrant.

[7] Note that our reference group – children from non-migrant households – includes children whose parent died (which could also affect school attendance). Parental death information is only available for year 2007; it suggests that 12 children (0.80% of the sample) had lost their mother prior to the interview and 46 children (3.55% of the sample had lost their father. Given that parental death information is available only for the first wave of the survey, we cannot control for it in our longitudinal analysis.

cousins and young uncles).[8] We include other household members in the siblings category as they may have an influence on the educational choices of girls staying behind similar to that of migrating brothers.

Control variables

We only include time-variant individual and household-level characteristics as control variables. This is because the model to be estimated includes individual-fixed effects, which will capture all time-invariant influences. Individual-level controls include the child's health status (whether a child needed hospitalization or ambulatory assistance in the four weeks prior to the interview).[9] Household-level controls include household size, share of children in the household, share of elderly in the household, share of household members in employment, income net of remittances, and subjective financial satisfaction measured on a 1 to 5 scale (from (1) "not at all satisfied" to (5) "fully satisfied" ). Means of individual and household controls are presented in Table 1.

### 4.3. Descriptive statistics

Before specifying our econometric model, in this section we briefly comment on the means of variables included in the analysis (Table 1), and report the school attendance rates by

[8] The age difference of 15 years was chosen because this is a minimum difference between the age of a typical parent and a child. Our results do not change substantially if the age difference is reduced to 10 years or if the cousins/uncles are excluded from this category.

[9] Note that we do not include the child's age as an individual control, as the age effect will be captured by year-fixed effects.

migrant status and type (Table 2). In both cases, we present the statistics for the whole sample of children (age 7-17), as well as for the subsamples of girls and boys.

In the group of all children, 93% attend school, while only 91% of girls are in education (Table 1). As can be expected, in most cases the father of the children is the household head (68%), followed by the grandfather (13%), the mother (9%) and the grandmother (9%). Most children live in a household where the head has secondary education (62%), 16% belong to a household where the head has basic education, and another 17% are part of a household where the head has tertiary education. Compared to boys, girls are more likely to be from households whose heads are educated to a secondary level and less likely to be from households whose heads are educated to a basic or tertiary level. 81% of children in our sample are Tajik, while 19% belong to the Uzbek minority, which reflects the current ethnic composition in Tajikistan. The ethnic structure of boys and girls is similar. More than two thirds of children (boys as well as girls) live in rural areas (69%), which is close to the share of the rural population in Tajikistan (74%). On average, children's household size is seven members, approximately half of household members are children and one household member is working. This household structure is nearly the same for boys and girls. Almost a third of all children live in a migrant household; in half of these families migrants are currently away, while in the others migrants have recently returned. Typically for labor migration in Tajikistan, nearly all migrants are male. In 64% of migrant households, a parent left home to work abroad; in the others, siblings emigrated.[10] With respect to household migration status,

[10] There are children living in households that have both current and returned migrants (3%) or parent and sibling migrants (2%).

boys and girls are similar. The inclination to send remittances is high: 86% of current migrants send money home.

In the whole sample, children in non-migrant households have on average a slightly higher school attendance rate than children in migrant households (Table 2). This pattern prevails for girls and boys. This said, in the case of parental migration we observe higher school attendance rate of both girls and boys relative to non-migrant households, and the migration of siblings is associated with a lower school attendance for both girls and boys. For all migrant types, girls' school attendance rates are below those of boys.

**Table 1. Means of variables included in the analysis, for children aged aged 7-17, for full sample and by gender**

| | Full sample (n=1,855) | Girls (n=911) | Boys (n=944) |
|---|---|---|---|
| Attending school | 0.934 | 0.911 | 0.956 |
| Age | 12.275 | 12.269 | 12.281 |
| Head of household is child's father | 0.680 | 0.687 | 0.673 |
| Head of household is child's mother | 0.089 | 0.096 | 0.083 |
| Head of household is child's grandfather | 0.128 | 0.111 | 0.144 |
| Head of household is child's grandmother | 0.089 | 0.091 | 0.087 |
| Head of household is child's other relative | 0.014 | 0.015 | 0.013 |
| Head of household: basic education | 0.164 | 0.155 | 0.172 |
| Head of household: secondary education | 0.620 | 0.660 | 0.581 |
| Head of household: tertiary education | 0.168 | 0.144 | 0.191 |
| Tajik | 0.813 | 0.799 | 0.825 |
| Uzbek | 0.186 | 0.198 | 0.175 |
| Rural | 0.685 | 0.689 | 0.682 |
| Urban | 0.315 | 0.311 | 0.318 |
| Number of household members | 7.216 | 7.278 | 7.157 |
| Proportion of children in the household | 0.518 | 0.525 | 0.511 |
| Proportion of elderly in the household | 0.030 | 0.029 | 0.032 |
| Proportion of working members in the household | 0.122 | 0.124 | 0.120 |
| HH monthly income net of remittances (in Somoni) | 656.161 | 621.173 | 689.729 |
| Financial satisfaction | 3.508 | 3.514 | 3.504 |
| Hospitalized in the past month | 0.022 | 0.018 | 0.026 |
| Ambulatory assistance in the past month | 0.042 | 0.042 | 0.041 |
| Migrant in the household (currently away or returned in the last 12 months) | 0.302 | 0.300 | 0.304 |
| Migrant currently away | 0.160 | 0.159 | 0.161 |
| Returned migrant (in the last 12 months) | 0.168 | 0.166 | 0.169 |
| Male migrant | 0.296 | 0.293 | 0.300 |
| Female migrant | 0.019 | 0.018 | 0.020 |
| Parent migrant | 0.195 | 0.194 | 0.196 |
| Sibling migrant | 0.107 | 0.106 | 0.108 |
| Current migrant sending remittances | 0.138 | 0.139 | 0.138 |
| Current migrant in the household, no remittances | 0.022 | 0.020 | 0.024 |

Source: Authors' calculations based on TLSS 2007 and 2009, and THPS 2011.

**Table 2. Proportion of children aged 7-17 attending school, by migrant status/type and child's gender**

| | Full sample | Girls | Boys |
|---|---|---|---|
| Non-migrant household | 0.937 | 0.913 | 0.959 |
| Migrant in the household (currently away or returned) | 0.927 | 0.907 | 0.948 |
| Migrant currently away | 0.925 | 0.898 | 0.950 |
| Returned migrant | 0.928 | 0.908 | 0.947 |
| Male migrant | 0.929 | 0.908 | 0.948 |
| Female migrant | 0.900 | 0.865 | 0.930 |
| Parent migrant | 0.948 | 0.934 | 0.962 |
| Sibling migrant | 0.889 | 0.856 | 0.921 |
| Current migrant sending remittances | 0.923 | 0.898 | 0.949 |
| Current migrant in the household, no remittances | 0.933 | 0.900 | 0.960 |

Source: Authors' calculations based on TLSS 2007 and 2009, and THPS 2011.

### 4.4. Estimation strategy

Following our theoretical discussion, we want to estimate the effect of migration-related variables (explanatory variables) on the likelihood of attending school (outcome/dependent variable). At the outset, we emphasize that our estimates will show the net effect of a particular migration-related variable on child's school attendance. Due to data constraints we are not able to provide explicit tests of the conceptual channels discussed in Section 2. Having said this, we will try to interpret our estimated results in the light of the theoretical discussion provided earlier.

Formally, the model estimating the relationship between household member migration and school attendance for child *i* from household *j* in year *t* takes the following form:

$$Model\ 1:\ Attending\ school_{i,j,t} = \beta_0 + \beta_1 Migration_{j,t} + \beta_2 I'_{i,j,t} + \beta_3 H'_{j,t} + v_i + \tau_t + u_{i,j,t} \qquad (1)$$

where $I'$ and $H'$ are vectors of individual and household-level characteristics, $v_i$ are child-fixed effects, $\tau_t$ are year-fixed effects and $u_{i,j,t}$ is the error term.

We estimate several model specifications that include various migration types (current/return; parent/sibling), the interactions of migration and the child's gender and a more complex three-way interaction of migration with gender and age. All specifications include household- and individual-level controls as well as individual- and year-fixed effects. Moreover we differentiate between remitting and non-remitting current migrants. Intergenerational mobility studies show that the educational background of families strongly affects the educational outcomes of children (Haveman and Wolfe, 1995). For this reason we separately estimate the effects of migration on schooling for households where household heads have primary, secondary or tertiary education.

## 5. RESULTS

Table 3 reports the results of the baseline fixed-effects OLS[11] estimation for the full sample of children (age 7-17) considering current and returned migrants in the household and adding interactions with gender and age.

**Table 3. Current and returned migration and school attendance of children age 7-17, interaction with child's gender and age**

| | Dependent variable: Attending school (0/1) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | All | | Education of head of household | | | | | |
| | | | Basic | | Secondary | | Tertiary | |
| Current migrant | 0.016 | (0.017) | 0.004 | (0.052) | 0.034 | (0.021) | 0.005 | (0.052) |

[11] Although our dependent variable is binary, the fixed-effects OLS estimation (linear probability model) is the only feasible option; the logit and probit models do not easily accommodate fixed effects.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Current migrant*female | 0.402*** | (0.114) | 0.281 | (0.243) | 0.428*** | (0.147) | 0.672** | (0.293) |
| Current migrant*female*age | -0.034*** | (0.009) | -0.025 | (0.021) | -0.037*** | (0.012) | -0.056** | (0.026) |
| Return migrant | -0.027* | (0.015) | -0.041 | (0.044) | -0.026 | (0.020) | -0.005 | (0.025) |
| Return migrant*female | 0.215** | (0.088) | 0.303 | (0.280) | 0.166* | (0.100) | 0.416 | (0.258) |
| Return migrant*female*age | -0.017** | (0.007) | -0.020 | (0.023) | -0.014* | (0.008) | -0.031* | (0.018) |
| *Individual and household controls* | Yes | | Yes | | Yes | | Yes | |
| *Child- and year-fixed effects* | Yes | | Yes | | Yes | | Yes | |
| *Observations* | 4,152 | | 680 | | 2,574 | | 697 | |
| *Number of children* | 1,855 | | 312 | | 1,146 | | 310 | |

Notes: *** - significant at 1%, ** - at 5%, * - at 10%; robust standard errors in parentheses.

Our findings indicate that migrants who are currently away have no significant influence on the education of all children aged from 7 to 17. But this picture changes fundamentally when interaction with gender is taken into account. According to our results, having a current migrant in the household significantly increases the probability of girls attending school. This finding is supported by a recent study which showed that girls in migrant households in Tajikistan have a lower risk of experiencing an educational lag compared to girls in non-migrant families (Cebotari, 2018). However, further interactions with age demonstrate that the positive effect of migration on education reverses after girls have reached 11.8 years of age (approximately grade 6) and turns negative thereafter. Related to the reviewed literature (Hanson and Woodruff, 2003; Antman, 2015) it can be assumed that young girls in households with current migrants benefit from the relaxation of budget constraints and potentially from a shift of the household head resulting in more support for their education.[12] In contrast, teenage girls seem to bear the costs of having a migrant from the household currently working abroad. A higher workload at home is likely to be behind the greater risk of teenage girls dropping out of school, and the absence of older male siblings who are

[12] Because our surveys contain no information on the decision making practices of the household head, the latter argument could not be tested but is discussed on a conceptual level.

supposed to accompany teenage girls to school in traditional families may amplify this negative effect. Interestingly, these consequences of current migration are observed in secondary and tertiary educated households – but not in lower educated ones.

Turning to the impact of returned migrants, we observe on average a slightly higher likelihood of 7-17 year old children leaving school early as compared to their peers in non-migrant households. We also obtain gender and age differences similar to the case of current migrants: up to the age of 12.6 years girls benefit from returned migrants in the household while in later years they face a higher likelihood of dropping out of school. Importantly, teenage girls in households with returned migrants may still have high workloads of domestic tasks – even when household members return from abroad. A similar situation has been discussed in the case of Georgia where women left behind get accustomed to a higher workload and continue carrying it out even after migrants come back (Torosyan, Gerber, and Goñalons-Pons, 2016). In Tajikistan, the readiness of females to take on the bulk of household chores in migrant families might also be interpreted in the light of a high percentage of repeated and seasonal migration, which implies that returning migrants are often only temporarily at home.

Next, empirical evidence suggests that the channels through which migration affects the schooling of girls may be different depending on who is absent – a girl's parent or a girl's sibling (Kandel, 2003; Bennett, Clifford, and Falkingham, 2013). Therefore, in the next step we add the distinction between parental and sibling migration to our analysis. Table 4 reports the estimation results for current and returned migrants who are either parents or siblings of children staying behind.

**Table 4. Parental and sibling migration and school attendance of children aged 7-17, interaction with child's gender and age**

| | Dependent variable: Attending school (0/1) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | All | | Education of head of household | | | | | |
| | | | Basic | | Secondary | | Tertiary | |
| Parental current migration | 0.035 | (0.022) | 0.125** | (0.054) | 0.045* | (0.027) | -0.051 | (0.071) |
| Parental current migration*female | 0.350*** | (0.132) | 0.315 | (0.272) | 0.464*** | (0.173) | -0.311 | (0.228) |
| Parental current migration*female*age | -0.031*** | (0.011) | -0.038 | (0.024) | -0.040*** | (0.014) | 0.035* | (0.019) |
| Parental return migration | -0.024 | (0.015) | 0.018 | (0.028) | -0.032 | (0.022) | -0.015 | (0.029) |
| Parental return migration*female | 0.098 | (0.086) | -0.158 | (0.242) | 0.045 | (0.086) | 0.866*** | (0.329) |
| Parental return migration*female*age | -0.006 | (0.007) | 0.019 | (0.019) | -0.003 | (0.008) | -0.070*** | (0.026) |
| Sibling current migration | 0.013 | (0.014) | -0.054 | (0.038) | 0.027 | (0.018) | 0.054 | (0.036) |
| Sibling current migration*female | 0.136 | (0.092) | 0.087 | (0.222) | 0.169 | (0.104) | 0.015 | (0.301) |
| Sibling current migration*female*age | -0.014* | (0.008) | -0.006 | (0.019) | -0.016* | (0.009) | -0.010 | (0.027) |
| Sibling return migration | -0.042** | (0.021) | -0.124** | (0.055) | -0.039 | (0.025) | 0.059 | (0.051) |
| Sibling return migration*female | -0.004 | (0.121) | 0.005 | (0.299) | -0.010 | (0.155) | -0.068 | (0.110) |
| Sibling return migration*female*age | 0.001 | (0.010) | 0.008 | (0.026) | 0.002 | (0.013) | -0.002 | (0.007) |
| *Individual and household controls* | Yes | | Yes | | Yes | | Yes | |
| *Child- and year-fixed effects* | Yes | | Yes | | Yes | | Yes | |
| *Observations* | 4,152 | | 680 | | 2,574 | | 697 | |
| *Number of children* | 1,855 | | 312 | | 1,146 | | 310 | |

Notes: *** - significant at 1%, ** - at 5%, * - at 10%; robust standard errors in parentheses.

For all children aged 7-17, parental current migration has a positive effect on schooling in families with basic and secondary educated household heads. This indicates that in lower educated, most likely poorer households, remittances from parents currently away help enhance the education of children left behind. In contrast, the current migration of siblings has no overall influence on the education of children at home, confirming the argument that the migration of parents as compared to siblings leads to a larger support for children. Turning to gender differences, a positive effect of parental migration is observed for younger girls (below 11.3 years), while older girls face a higher likelihood of dropping out. As discussed earlier, young girls may benefit from a relaxation of budget constraints as remittances flow in or from a change of the household head, when the household decision making power is passed from the father going abroad to the children's mother. In the latter

case, a female household head may ascribe a higher priority to girls' education and therefore girls may have a better chance of attending school – at least up to a certain age. The negative impact of parental current migration on the education of teenage girls points again at the higher workload due to the loss of manpower in migrant families which keeps teenage girls from attending school.

Furthermore, current sibling migration increases the likelihood of dropping out of school in older girls in particular. Two mutually reinforcing mechanisms may be responsible for that: more household chores for older girls to compensate for the absence of siblings working abroad, and traditional norms that do not allow teenage girls to walk to school unaccompanied by older male siblings. Having a returned sibling migrant in the household has a strong negative effect on the education of all children – regardless of gender and age. This suggests that not only girls but also boys from households with returned sibling migrants have a higher risk of school dropout. This phenomenon, often observed in countries with low-skilled, male dominated labor migration, has been attributed to the signalling effect of migration, i.e. male migrants in the household send a strong signal to boys staying behind to drop out of school and prepare for migration; it has been argued that signalling takes place in various parts of the world, such as Mexico (McKenzie and Rapoport, 2011), Kyrgyzstan (Kroeger and Anderson, 2014) and Nepal (Shresta, 2017). In the case of Tajikistan, the remarkable difference between the effects of parental and sibling migration is that parental emigration can affect the education of children – especially younger girls – positively, while emigration of siblings is consistently negatively related with the school attendance of both boys and girls.

Next, we investigate the consequences of receiving remittances on the education of children staying behind (Table 5); recall that the information on remittances is only available for current migrants.

**Table 5. Remittance and non-remittance sending current migrants and school attendance of children aged 7-17, interactions with child's gender and age**

| | Dependent variable: Attending school (0/1) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | All | | Education of head of household | | | | | |
| | | | Basic | | Secondary | | Tertiary | |
| Remittances | 0.007 | (0.019) | 0.018 | (0.053) | 0.016 | (0.022) | 0.008 | (0.053) |
| Remittances*female | 0.415*** | (0.121) | 0.321 | (0.273) | 0.425*** | (0.151) | 0.787*** | (0.291) |
| Remittances*female*age | -0.035*** | (0.010) | -0.029 | (0.024) | -0.035*** | (0.012) | -0.066*** | (0.025) |
| Migrant abroad no remittances | 0.092** | (0.043) | -0.048 | (0.094) | 0.181*** | (0.069) | 0.015 | (0.023) |
| Migrant abroad no remittances*female | 0.137 | (0.243) | 0.034 | (0.179) | 0.259 | (0.399) | 0.263* | (0.150) |
| Migrant abroad no remittances*female*age | -0.018 | (0.021) | 0.001 | (0.011) | -0.034 | (0.034) | -0.023* | (0.013) |
| *Individual and household controls* | Yes | | Yes | | Yes | | Yes | |
| *Child- and year-fixed effects* | Yes | | Yes | | Yes | | Yes | |
| *Observations* | 4,152 | | 680 | | 2,574 | | 697 | |
| *Number of children* | 1,855 | | 312 | | 1,146 | | 310 | |

Notes: *** - significant at 1%, ** - at 5%, * - at 10%; robust standard errors in parentheses. Dependent variable: whether the child attends school (0/1).

Unsurprisingly, the results of receiving remittances echo the findings of having a current migrant in the household. While no significant effect on school attendance is obtained for the full sample, receiving remittances increases the probability of girls attending school up to 11.8 years and decreases it thereafter. Again, for young girls this points to a relaxation of budget constraints and a possible change in the head of household. For teenage girls, the higher risk of dropping out of school is surely related to the greater workload resulting from the absence of household members which is neither compensated for by a higher household income nor by more support for girls' education, following a potential change in the head of household. Having a current migrant in the household but receiving no remittances generally has a positive impact on the school attendance of children, but it affects girls' education

specifically only in households whose heads are educated to tertiary level. The latter results – a positive effect on the education of young girls and a negative effect for teenage girls – have to be interpreted with caution, as tertiary-educated households with current migrants and no remittances comprise a very small group of families. Nevertheless, the positive effect on schooling for young girls in the absence of remittances points to a change of the household head as the reason for their higher school attendance, while additional household work might explain the negative impact on the schooling of teenage girls.

## 6. CONCLUSION AND POLICY RECOMMENDATIONS

Since 1991 girls in Tajikistan have experienced increasing school dropout rates, especially at higher levels of schooling. This paper has studied whether international labor emigration and remittances have contributed to this trend, using data from a unique three-wave household panel survey conducted in Tajikistan in 2007, 2009 and 2011.

Our results suggest that out-migration has a positive impact on the school attendance of young girls (age 7-11), but it is negatively associated with the school attendance of teenage girls (age 12-17). A more nuanced analysis shows that the schooling of young girls improves if parents (in the context of Tajikistan, mostly fathers) are currently abroad. However, in the case of teenage girls, current migration of both parents and siblings reduces school attendance. When the household starts receiving remittances, teenage girls experience higher dropout rates; in contrast, the school attendance of young girls increases. In sum, we find that the effect of household migration on girls' education differs by age, with the younger age groups benefiting from migration and older age groups becoming disadvantaged.

Previous – mostly qualitative – research described various channels through which the migration of household members in Tajikistan may affect girls' schooling. Our analysis provides empirical support for a number of them. For example, the positive effect of current parental migration on the education of young girls points to the relaxation of budget constraints due to remittances. In addition, current parental (typically, fathers) migration may lead to a change in household head, potentially bringing greater support for the education of girls. In the case of teenage girls, we attribute the negative effect of current migration to a greater amount of household chores that teenage girls staying behind have to take on. Thus, household work for girls in migrant households increases at the expense of schooling (an exception are very young girls who often lack physical strength to perform additional household duties). The negative effect of the current migration of male siblings on the education of teenage girls is likely to be related not only to a higher workload for girls but also to Tajik social norms, whereby girls (especially after puberty) are not allowed to go to school unaccompanied by male relatives.

The decreasing enrolment rate of girls in educational institutions and the resulting reduction in human capital may threaten the success of poverty alleviation policies and exacerbate gender inequality in Tajikistan. In the long run, it is likely to have negative implications for the economic development of the country. The empirical findings presented in our paper suggest that international labor migration does not help improve the educational outcomes of girls at the secondary education level. On the contrary, the educational level reached by teenage girls in migrant households is lower than that of those from non-migrant households.

These findings imply that governmental support programs[13] should focus on migrant families with children, in particular girls. Improving infrastructure in rural areas – for example, enhancing the quality of roads and introducing school buses – may partially eliminate the effect of traditional norms that discourage young girls from walking unaccompanied to and from school. Girls from migrant households will particularly benefit from such intervention since rural areas supply the majority of labor migrants. Furthermore, special emphasis should be put on policy measures that promote and enable the school attendance of teenage girls in Tajikistan, for example, through introduction of scholarships for teenage girls from poor households or information campaign on the importance of female education via the popular mass media channels.

[13] National Strategy of Educational Development 2012-2020 declares educational enhancement as one of the priority goals of Tajikistan: https://www.ilo.org/dyn/youthpol/en/equest.fileutils.dochandle?p_uploaded_file_id=511

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