Migration, Remittances, and the Human Capital of Children Left Behind: A Case Study of Tajikistan, 2007

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I. Introduction and historical background

The Central Asian region is a "cultural mosaic" (Pomfret, 1995, pg. 5) and historically a region of significant population movement. Turkic groups including Kazakhs and Kyrgyz were nomadic peoples, following rivers and mountain pastures and trading along the Silk Road. Other Turkic groups – Uzbeks and Turkmen – were more sedentary, formed large cities in arid regions, and developed modern agriculture. The Tajiks were Persian descendants. The region was historically associated with great change and division. Regional boundaries dividing one state from the other changed many times over the centuries. Arab conquerors in the 8th century brought Islam to Central Asia, and the Persians developed the great cities of Samarkand and Bukhara. In the 13th century, Genghis Khan united the region and reopened the Silk Road trading route. In the 14th century, Tamarlane created a new regional empire with Samarkand as its center of Islamic culture and science. The Great Game between the Britain and Russia over the territory of Central Asia ended in the early 20th century. With the overthrow of the Tsar and his family and the establishment of the Soviet Union, the British were marginalized in Central Asia and left the region in the hands of the USSR in the 1920s.

The borders of the five countries of Central Asia reverted to old international borders. The Uzbek and Turkmen republics were established in 1924, Tajikistan was carved out of Uzbekistan in 1929, and in 1936, the nomadic Kyrgyz and Kazakh states officially became republics in the USSR. While each republic was comprised primarily of its titular ethnicity, the USSR forced migration to the region from countries outside of Central Asia and mixed Central Asian ethnicities within the region. (Korobkov, 2007) The Soviet hierarchy restructured the economies of the region. Tashkent became the industrial and transport center for Central Asia, agriculture was collectivized, and nomadic herders – primarily Krygyz and Kazakhs – were less free to roam. During the Great Patriotic War of 1941-1945, Stalin forced Volga Germans from the west and Koreans from the east to move to Central Asia, primarily to Kazakhstan and Kyrgyzstan. After the War, the Virgin Lands campaign turned large areas of the steppes into the breadbasket of the Soviet Union. Russians were encouraged or forced to move to the agricultural regions of Central Asia to manage collective farms and provide skilled labor needed for industrial development. Large financial incentives and free land were used as carrots to draw Russian nationals to the region. By the end of the 1980s, Central Asia was a mixture of titular ethnicities with nomadic and sedentary roots as well as large populations of Slavics, Europeans, and Koreans. (Pomfret, 1995)

With the breakup of the Soviet Union, non-native ethnic groups were no longer tied to Central Asia. In the period of 1991-1995, a large outmigration from Central Asia of Russians, Germans, Koreans, and other groups occurred. For example, in Tajikistan the rate of natural population increase fell from 32.3 per 1000 population in 1989 to 28 in 1995 and the net outmigration rate (emigrants-immigrants) rose from 19.1 to 39.8 over the same period. "With the achievement of independence in 1991, 'ethnic succession' became the major element of state- and nation-building policies in most newly

independent states. Considering the fact that 54.3 million or 19% of the USSR citizens lived outside their titular states, these policies became the major factor triggering the first post-dissolution migration wave…. The result was the increasing population homogenization and the growing shares of titular majorities in the post-Soviet states …" (Korobkov, 2007, pg.174)

The history of Central Asian migration after the dissolution of the USSR can be divided into five distinct periods. (Korobkov, 2007) From 1991-1992, political and ethnic concerns dominated population movements. Ethnic minorities within Russia and other countries of the CIS were no longer controlled from Moscow. Violence erupted in Kazakhstan, Kyrgyzstan, and Tajikistan. In Tajikistan, a civil war began in 1991 and pitted the Soviet-based government against conservative Islamic clans in the district of Gharm and Ismaili Shi'ites in the remote Gorno-Badakhshan oblast. The war ended in 1998, but the Badakhstan region remained marginalized by the new government.

The new governments in Kazakhstan and Kyrgyzstan granted citizenship to ethnic Kazakhs and Kyrgyz who left Russia and returned to their homeland. The Russian Federation lost population during this two year period. However, beginning in 1993 the second migration period began; the outmigration of Central Asians from Russia ended, and Russians in Central Asia began to return to Russia. The flow of return migrants to Russia slowed from 1993-1995. From 1996-1999 (the third period), emigration for political or ethnic reconciliation was less important than emigration for socioeconomic gain. The large deposits of oil and natural gas in Russia, Kazakhstan, and Azerbaijan increased the demand for labor in resource extraction or construction, and a large wave of immigrants from Tajikistan, Uzbekistan and Kyrgyzstan crossed the borders for temporary jobs or permanent residence in these countries.

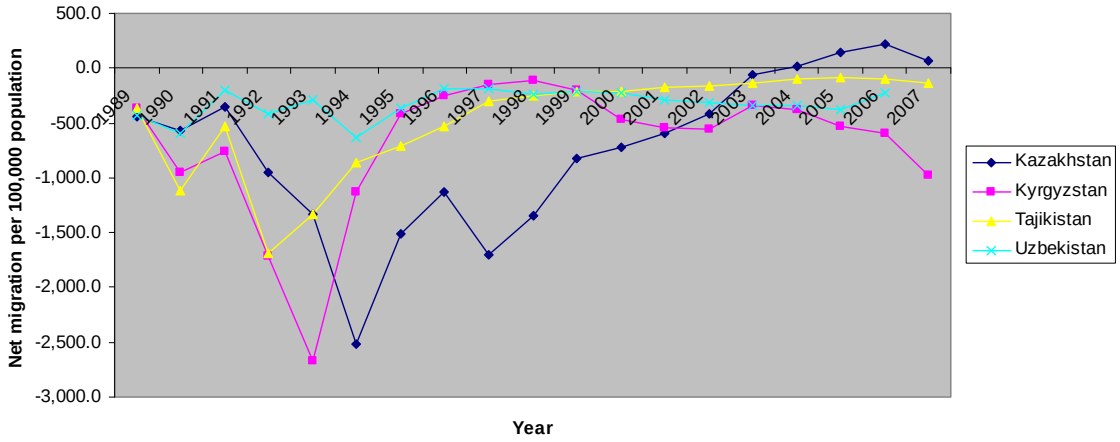
From 2000-2005 (the fourth period), President Putin attempted to develop an institutional and legal framework for future migrations from the south. These included passage of the Law on Citizenship of the Russian Federation (RF), the Law on the Legal Status of Foreign Citizens, and the Law on Entrance and Exit. The ultimate goal of these policy changes was to reduce the presence and rights of refugees and illegal immigrants most of whom came from Central Asia. In March 2005 the fifth period of migration began and continued until the global recession of 2008. Russia's low birthrate had created a demographic imbalance between the elderly and the young, working age population. There were too many jobs that needed to be filled but insufficient Russian labor to do them. New laws simplified the registration and immigration process, making it easier for Central Asian workers to move to the RF and find work. Penalties were imposed on employers for hiring illegal immigrants, but these penalties were rarely enforced. The outmigration from Tajikistan to Russia before 2008 was one of the largest in the region. (Korobkov, 2007)

The global financial crisis that began in 2008 reduced the demand for labor in general and the demand for immigrant workers in Russia. Migration to Russia for work

declined, but opportunities for work were still more available in Russia than in the depressed economic and corrupt political environment of Tajikistan. [1] (Korobkov, 2007)

Figure 1 below displays the distinct periods of migration among the countries of Central Asia from 1991 to the present. The data on migration are obtained from the Transmonee 2009 database and are assimilated from national statistics which understate the true extent of population mobility. We exclude the migration statistics for the closed country of Turkmenistan. All four of the countries in Figure 1 experienced significant outmigration until 2004. At that point in time, Kazakhstan imported more labor from abroad than it sent to other countries. Outmigration from Kyrgyzstan and Tajikistan intensified after 2004.

Figure 1. Net external migration from Central Asia.



Migration into and out of Tajikistan has strong historical roots, but the causes of these population movements rapidly changed over the last century. Today emigration from Tajikistan to other countries and migration within Tajikistan from rural to urban centers are almost entirely motivated by economics. During the first and second migration waves after dissolution of the USSR, families moved together; the reasons for the move were not economic but were based on ethnic and political reconciliation. The recent emigration primarily to Russia is economic, not political. Now some families do move together and set up permanent residence abroad, but the more usual pattern is for one or more members of the household – usually young, male members – to leave the country for work. They return home during winter, and leave for Russia in the spring when construction begins again. Under these conditions, many young men delay marriage and family formation, or married men leave their wives and children for long periods of time. In a minority of households, both parents move for work and leave

[1] The Corruption Perceptions Index for 2010 ranks Tajikistan 154th most corrupt country out of 178 countries in the survey. Tajikistan is tied with Russia in the CPI rankings. Kyrgyzstan ranks 164, and Turkmenistan and Uzbekistan are tied at 172. Kazakhstan is the least corrupt country in Central Asia at 105.

children in the care of parents or other relatives. Migration provides income to households in regions that are economically deprived, but family is disrupted, and this may have negative consequences for the growth and development of children. (Thieme, 2007)

It is these social issues associated with migration that are the focus of this paper. We examine the regional migration patterns in Tajikistan using survey data from 2007 – prior to the global recession. We then examine the health and education of children left in Tajikistan when at least one household member migrates for work and compare their human capital outcomes to the human capital of children in non-migrant households. We also compare the human capital of children in households that receive remittances from abroad to the human capital of other children. The literature on the impact of migration on children in Central Asia is thin, and there is no analytical work to our knowledge on health outcomes. We find some evidence that migration and remittances do affect human capital investment in children, and we also find some evidence of gender differences in investments. These results comprise the first part of a larger project comparing migration and human capital development in Tajikistan to Kyrgyzstan and Uzbekistan which are also important net exporters of labor to the Russian and Kazakhstan markets.

The paper is organized as follows. First, we describe interviews with migrants in one oblast of Tajikistan. The purpose of these interviews was to obtain personal information on the costs and benefits of frequent emigration to Russia for work. Second, we review the literature on migration and education and health, and outline our analytical model and empirical strategy. We then present our results for 2007, discuss the implications of our analysis, and outline our direction for future research.

2. Case Study in Badakhshan

In the summer of 2009, I visited the Badakhshan region of Tajikistan and was hosted by the University of Central Asia. I visited several villages within 30 kilometers of the oblast center, Khorog. Within these villages, my assistant, Azam Qiyobekov, and I visited several households that were migrant households. The purpose of these visits was to find out the conditions under which residents of these villages were living, why they migrated (almost exclusively to Russia), how they were treated as emigrants, and how they supported their households in Tajikistan. We visited seven villages and interviewed at least two households in each village. Friends of the household members we were talking to frequently joined into our conversations and provided information on their experiences in Russia. The following is a summary of what we learned from these migrants.

First, the only reason for leaving Badakhstan for Russia was economic. Table 1 below shows the difference in wages paid in Russia and Tajikistan in 2005 (International Labour Organization) and explains the motivation to leave. Even adjusting for differences in the

standard of living, wages for each job category are significantly higher on average in Russia than in Tajikistan.

Table 1. Monthly wage gap in US dollars, 2005, men.

Men	Russia	Tajikistan
Total	305	33
Construction	323	78
Transport	405	71
Agriculture	130	15
Health	212	16

In our sample of migrants, men migrants worked primarily in construction, warehouses, cafes or occasionally in professional or technical jobs. The migrants holding professional jobs were more likely to be permanent residents in Russia and to return to Badakhshan to visit family but not to live there. Most of these men were also educated in Russia.

Among the non-professional migrants, the average salary in Russia was $1000 a month, working 6 days a week, 12 hours per day. They often held more than one job, such as construction and warehouse work. To stay in Tajikistan, they, across the board, required at least $500 a month in salary, which was not possible in the Badakhshan region or any other region of Tajikistan.

Living expenses in Russia were high. A typical arrangement for Badakhshan emigrants was that four people would share an apartment. We were told that Tajik migrants (not from the Badakhshan region) resided with more than four people in one flat. In some cases, it was common to see two shifts of residents – those with day jobs and those with night jobs – sharing the same living space. The average rent paid for an apartment shared by four people was $1000 a month with utilities and other living expenses of $500-600 a month. In addition, few of these migrants had legal work permits. They bought permits on the black market and budgeted about $750 every three months for bribes paid to police who inspected their documents. On average, each person would pay about $650 a month in expenses and bribes, leaving $350 a month to spend, save or send home. If the migrant had children, he regularly remitted $100-200 a month to his family. Remittances to parents were less regular and more often for emergencies. The $100-200 a month received by their families made a big difference in the standard of living of their households. They all had televisions and satellite dishes, and much of the remittance money was used to improve their living conditions. None of the men we interviewed said that their children had experienced any negative effects from their absence since most households were blended, and there were other men in the household to help maintain discipline in the family.

These migrants regularly experienced discrimination particularly in Moscow. One young man was beaten up several times and vowed never to return to Moscow to work; he would however migrate to Siberia where discrimination was less of a problem. The second big problem they all experienced was corruption among the police and employers. The third major problem among the migrants from Badakhshan was health. In one small village alone, 12 migrants returned with tuberculosis, the result of cold and unsanitary living conditions in dormitories on worksites. Several migrants said they had to return to Badakhshan regularly to regain their health but planned to return to Russia for the next construction season.

In conclusion, these interviews provided personal insight into the living conditions and responsibilities of migrants at home and abroad. These migrants were highly motivated and hard working individuals. In one household, migration was a generational pattern. An older man had just returned from his last trip to Russia to work; he was retired from migration, but it was now his sons' turn to emigrate and help support him.

3. Literature review

There is a large literature on the impact of migration and remittances on wages, employment, and occupation in both sending and receiving countries. The literature on the impact of this mobility on those left behind, particularly children and the elderly, is much thinner. Appendix Table A1a summarizes some of the recent literature on the impact of migration and remittances on education and health and is organized by region. The education literature focuses on enrollment in school, absences from school, and educational attainment, and the results vary widely. In Latin America, migration or receipt of remittances increases schooling or the probability of staying in school in Ecuador, El Salvador and Haiti, but studies by McKenzie and Rapaport (2006) and by Miranda (2007) for Mexico find a lower probability of completing high school in migrant households. One study on migration from Cape Verde found that expected migration is associated with more education of children, but the absence of parents lowers educational attainment. In rural China, migration lowers high school enrollment, but migration increases school attainment especially for girls in Pakistan.

To our knowledge only one study has examined education and migration in Central Asia. Using Asian Development Bank remittance survey data for Tajikistan in 2007, Brown, Olimova, and Boboev (2008) find that absences from school and expenditures on education are higher in remittance receiving households than in other households. The remittance survey in Kyrgyzstan did not examine educational attainment.

The literature on health and migration in the CIS region is thin (Appendix Table A1b). The ADB remittance studies in Tajikistan and Kyrgyzstan did not link remittances to health status, but found important effects of remittances on work of children and on poverty, both of which can contribute to health. One descriptive study of migration from Moldova (Hristev et al., 2009) found positive correlations between remittances

and expenditures on health (share of total household expenditures) in migrant households. In other regions of the world, the impact of migration on health was generally positive. Mansuri (2006) examined height and weight of children in migrant households in Pakistan and found that both increased for girls in migrant households. Several studies from Africa and Latin America reached contradictory conclusions about the impact of migration on health. Two studies on the slums of Nairobi, Kenya found that children were sicker and mortality was higher when parents migrated, but a 2002 study of urban to urban migration in Uganda found that migration increased survival of those left behind. Acosta (2007) found a positive impact of remittances on weight and vaccinations in Guatemala and an increase in hospital births in Guatemala and Nicaragua. Hildebrandt and McKenzie (2005) also found an increase in hospital births and associated increases in birthweight, survival, and breastfeeding when the Mexican household had at least one migrant. In contrast, Kanaiaupuni and Donato (1999) found for Mexico lower survival with frequent trips abroad but higher survival with increasing experience in the United States. Overall, most studies seem to find positive spillovers from migration onto health. Little is known however about the impact of migration on health in Central Asia from quantitative analysis.

Most of the analytical studies of migration and education and health estimate multivariate models and attempt to separately identify migration or remittances from the education and health outcomes. Identification in most of these studies was based on measurement of migration networks, wage returns in the destination, and the risk aversion of the household. The strategies employed to identify migration are summarized in Appendix Tables A1a and A1b. The majority of these studies used an instrumental variables approach or controlled for unobservable differences in motivation and skill with panel data analysis. A few studies of survival or duration in school used hazard modeling. The results of these studies were sensitive to the methods and identification strategies employed.

4. Model

We assume that parents make the health and education decisions for their children when the parents are at home and to a lesser extent when they are living abroad and separate from their children. These human capital decisions vary by the sex and age of the child and can be affected by the birth order of the child, particularly sons. In Tajikistan, for example, the oldest son is expected to take care of parents when they are elderly, and it is common for the oldest son and his family to live with his parents and other family members. Investment in the education of the oldest son may yield a higher return to parents than investment in the education of other children. The extended family is common among Tajiks, Uzbeks, and Kyrgyz living throughout Tajikistan; it is a less common family arrangement among Russian households.

Parents invest in the human capital of their children if they perceive positive net benefits from the investment in the future. These benefits include higher income, lower

poverty, and greater intergenerational transfers and sharing. The costs are the expenses of sending children to school (fees, tuition, transportation, and other expenses) or for health care and the lost wages or home production and child care while children are attending school. Parents are also affected by their own experiences and knowledge, and the power arrangement within the household (the decision-making hierarchy) can influence how scarce household resources are used. Many studies of household bargaining in developing country settings find that the more household resources under the control of women, the more likely will children attend school and receive health care and vaccinations. (Duflo, 2003) Conditional cash transfer programs in Mexico and many other countries transfer money through the mother under the assumption that she is more likely to spend it appropriately on her children. (Parker, Rubalcava, and Terval, 2008)

We assume that the education and health of children are affected by four categories of variables: child characterisitics; parent characterisitics; household characterisitics; and community access to services. One household characteristic of interest is the household's migration status. If migration brings additional income into the household, then it can provide resources needed to keep children in school and to provide for their health care. However, migration, usually of prime age workers, means that the household loses workers. In agricultural communities, there are fewer persons to work on farm plots or to care for livestock. In urban areas, family businesses may suffer from the lack of adult family labor. In these situations, children and the elderly may substitute for migrant labor. Recent work by Mu and Van de Walle (2010) finds for rural China more female and elderly labor is used on family farms when young adult household members migrate to the cities. This increase in work can negatively affect education and the health of household members. The impact of migration or receipt of remittances from migrant household members can therefore have positive or negative effects on education and health of children left behind.

5. Data

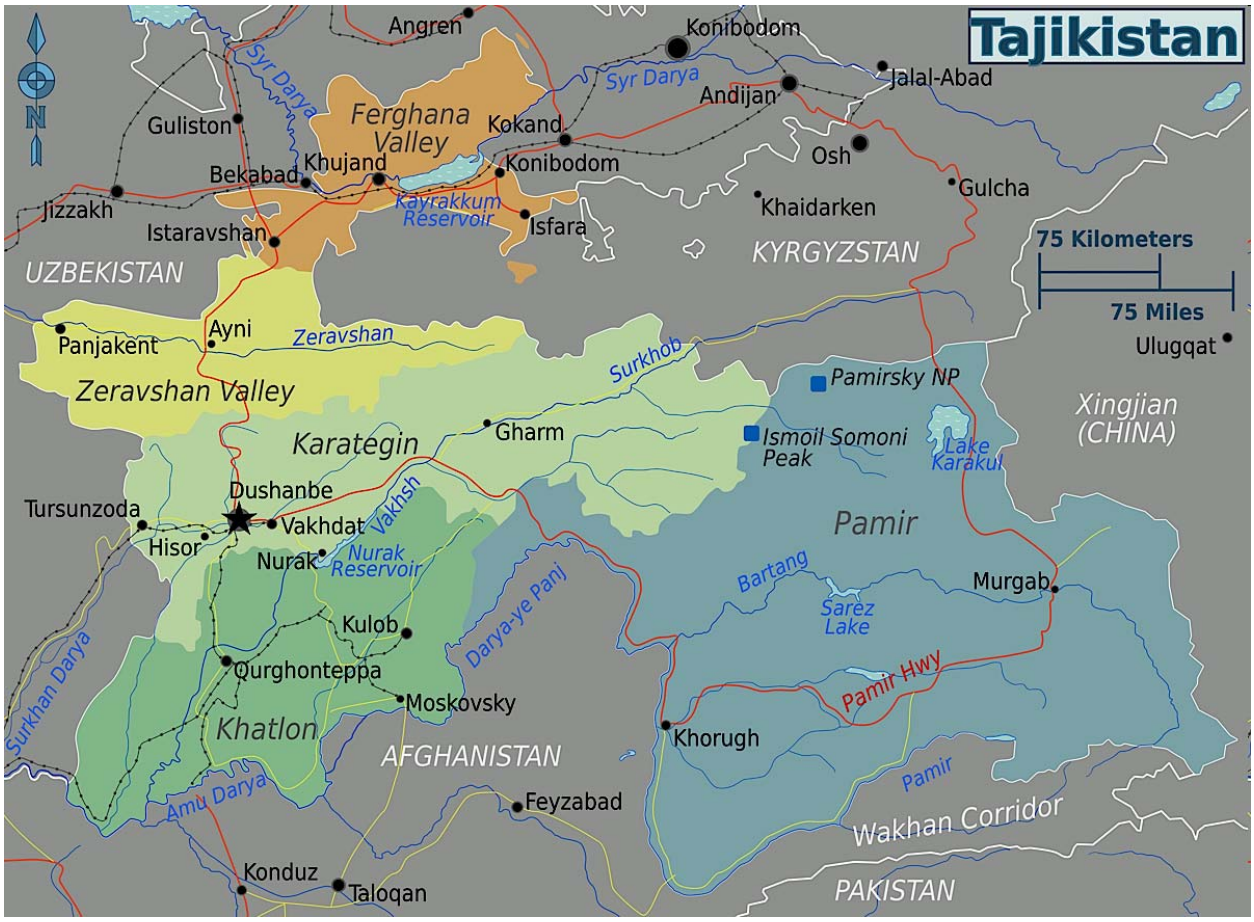
The data are from the Tajikistan Living Standards Measurement Survey for 2007. A 2009 partial panel TLSS data have recently become available, and future research will include analysis of these more recent data. The 2007 data were collected during a period of economic growth in Russia and Kazakhstan, the primary receiving countries for migrants from Tajikistan; the 2009 data are representative of the period of global recession. The 2007 TLSS are not representative of the migration behavior of households during the recession.

The first round of data in 2007 was collected in September and October during Ramadan. The sample design was based on the 2000 Census. All five oblasts or administrative regions of the country were covered. This included the capital city Dushanbe; the rural Rayons of Republican Subordination (RRS or RRP) surrounding Dushanbe; Sogd (formerly Leninabad) and Khatlon; and the semi-autonomous Pamiri

region of Gorno-Badakhshan (GBAO). Unlike the other regions of Tajikistan, the majority religion in GBAO is Ismaili Shi'ite. The majority language in GBAO Shughni, and there is a significant and poor cluster of Kyrgyz in the Murghab district of GBAO. Two highways connect GBAO to Dushanbe and to Osh, Kyrgyzstan.

Each oblast was divided into enumeration sectors. 270 sectors were included in the 2007 TLSS. The sectors were randomly selected except for an oversampling of districts in Khatlon oblast. Each cluster was either rural or urban. Eighteen households were selected from each cluster for a final sample size of 4860 households.

The map below indicates the location of Tajikistan in Central Asia and the location of the five distinct regions. The Ferghana Valley is located in the Sogd oblast.



Our sample includes households in all five regions. We did however restrict the working sample to only Tajik and Uzbek households; this meant dropping Russian, Kyrgyz, and other minor ethnicities from the study. Tajiks and Uzbeks are the largest ethnic groups in Tajikistan. Future research will include the other smaller groups, although in some

models, the groups cannot be included because they lack variation in key outcome variables.

We further restricted our sample to include only households in which the mother was present; we lost less than 10 percent of households with this restriction. We also included households in which the mother was at least 15 years older than her children. Several women reported unbelievably low ages, and these outliers were deleted from the sample.

The education outcomes in which we were interested vary by the age of the child. For children under the age of 6, we looked at enrollment in preschool. For older children our education measures are the following:

(1) enrollment in primary or basic education, ages 7-14
(2) enrollment in secondary school, ages 15-17
(3) completion of secondary education (general, special or technical), ages 18-22
(4) enrollment in or completion of higher education, ages 18-22
(5) absences from school if enrolled in school
(6) absences from school for work if enrolled in school
(7) absences from school for work in family business if enrolled in school
(8) education expenditures on:

a. tutoring
b. tuition/fees
c. cash or in-kind gifts to the school or teachers
d. school building
e. textbooks
f. school supplies
g. uniforms
h. food
i. other school items.

The health outcomes of interest vary by age of the child. For children under the age of 7, the health variables are:

(1) vaccinations for polio & measles
(2) number of injections of vitamin A
(3) illness or injury last month
(4) in good health
(5) health improved over the last year.

For older children, we do not have any information on vaccinations. Our health measures (all dummy variables) are:

(1) Illness or injury last month
(2) In good health
(3) health improved over the last year
(4) has a chronic health condition such as asthma.

The explanatory variables include child, parent, household, and community characteristics. The child characteristics include the age, sex, and ethnicity of the child. We interact sex and ethnicity in the models for young children and in at least one version of the model, control for whether the son is the oldest son. This variable never had any impact on the education or health outcomes.

The parent characteristics include the ages and education of the mother and father (basic, general secondary, special secondary, technical secondary, and higher education), and a dummy variable indicating if there are no data on education for the father. The household characteristics measure the economic and demographic status of the household. We include variables that measure the number of children aged 2 and younger and children aged 3-22, the number of elderly men and women (over the age of 60), and the number of women aged 23-59 in the household. We assume that these variables are exogenous to the migration decision although household structure can change when men migrate for work in Russia or Kazakhstan. To measure the household's standard of living we include two variables: the value of state benefits (not associated with employment) received by the household and whether the household is frequently without electricity during the winter. We assume that the household is better off with additional cash benefits and if it has regular access to electricity.

The community characteristics differ in the education and health models. In all models, we control for oblast and whether the community is rural or urban. In the education models for young children, we control for the distance to the nearest preschool or kindergarten in the community; for the older child models we include the distance to the nearest higher education and secondary education institutions in the community. In the health models, we include distance to a polyclinic and distance to a pediatrician. In all models, we measure whether the primary source of drinking water is a river and whether the community has a sewage system (both dummy variables).

Finally we define the household's migration status and whether the household receives remittances. The household is considered a migrant household if anyone migrated from the community abroad or elsewhere in Tajikistan during the last year (dummy variable). The household is defined as remittance receiving if any internal or external migrant sent remittances to the household during the last year (dummy variable). We also looked at the amount of remittances received by the household but do not report these results in this paper.

Table 2 below shows the extent of migration and receipt of remittances in Tajikistan by oblast. These statistics are adjusted with population weights. About 25 percent of

households in our sample report migration; 24 percent is external migration. Most migrants have secondary education; the brain drain of highly educated labor is small, only 3.6 percent. The receipt of remittances is higher than the migration rate at 27 percent. This is because remittances can be sent by non-household members who are living abroad as well as by migrants. Table 2 also indicates the wide variation in migration and remittance receipt throughout the country. The lowest rates are in the capital Dushanbe; the highest rates are in the surrounding rural RRP where 30 percent of households are migrant and 33 percent receive remittances. RRP also has the highest rate of migration of those with higher education. The Gorno-Badakhshan oblast has the second highest migration and remittance rates and also has over four percent of migrants with higher education.

Table 2. Descriptive statistics, household migration (n=4644)

Region	Migrant HH	Remittance HH	External Migrant	Migrant with Higher Educ.
Total	.251	.273	.240	.036
Dushanbe	.158	.174	.148	.033
RRP	.300	.326	.294	.043
Khatlon	.264	.290	.248	.030
Sogd	.258	.275	.242	.034
Badakhshan	.272	.286	.265	.041
Location:				
Rural	.290	.205	.170	.036
Urban	.181	.312	.278	.035

Summary statistics for the other variables included in our models are given in Appendix Tables A2a – A2d.

6. Results

We estimate the model with regression. Most of our outcomes are dummy variables so we estimate linear probability models with robust standard errors. In the first version of our model, we assume that migration and remittances are exogenous variables. We estimate two models: one with a migration dummy variable and one with a receipt of remittances dummy variable. These results are given in Appendix Tables A3a and A3b for preschool children, Tables A3c-A3j for the education of older children, and Tables A3k-A3l for the health of older children. We then estimate instrumental variables versions of these models. Our instruments include the migration network in the community (migration rate in the community excluding the specific household from the calculation of its network), the percentage of households receiving remittances in the community (excluding the specific household's data in the calculation of its community

remittance rate), the presence of someone in the household with health care needs (a dummy variable), and a measure of the average risk in the community.[2]

We report regression models of migration and remittance status in Table 3 below. The R-squared are low in both the models with and without the regional variables. The network variables are strongly related to migration and receipt of remittances, and the household health needs variable is also significant. Risk has no impact on migration or receipt of remittances. The instruments are weak, and this will cause problems with the identification of the models.

Table 3. Migration and remittance models.

Variable	Migrant Household IVs only	Migrant Household Household variables added	Remittance receiving household IVs only	Remittance receiving household Household variables added
Community risk (avg)	-0.000	-0.000	-0.000	-0.000
Health care need in hh	-0.026	-0.031*	-0.031*	-0.039**
Community & migrating	0.022***	0.019***		
Community % remitting			0.005***	0.005***
Oblast:				
RRP		0.019		0.045*
Sogd		-0.020		-0.016
Khatlon		0.012		0.012
Badakshan		-0.100*		-0.068
Urban community		-0.044**		-0.038**
Altitude of community		0.000		0.000
Head works in agriculture		-0.048*		-0.025
Head works in manufacturing		-0.070*		-0.105***
Head works in service		-0.075		-0.092*
Head is male		-0.094***		-0.104***
Head is uzbek		-0.021		-0.003
Head: higher ed		0.039		0.026
Head: secondary ed		0.086***		0.081***
Head: basic ed		0.093**		0.085**
Community: distance to capital		0.000		0.000
Constant	0.152***	0.158***	0.148***	0.174***

[2] The most knowledgable member of the household was asked the following: Suppose you are given the opportunity of participating in a game. You have to choose between two closed boxes. If you are lucky and you choose the right one, you will win 1000 soumoni; otherwise you will get nothing. Another person wants to give you money in order to take your place and participate in the game. What is the minimum amount that you would ask for to give away your chance? The response to this question is aggregated to the community level, excluding the household in the calculation of its expected risk. This is our measure of community risk.

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           N       4288           4288           4286           4286
 Adjusted R²       0.052          0.066          0.040          0.055
------------------------------------------------------------------------------
                                  legend: * p<0.05; ** p<0.01; *** p<0.001
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We estimate instrumental variables regression versions of the regression models in the appendix using GMM. We test for the exogeneity of the migration and remittance variables. If exogeneity is rejected, we then test the validity of the overidentifying restrictions using Hansen's J statistic. If we reject the null hypothesis, we conclude that the instruments are not valid; the instruments are weak. The IV models are presented in the appendix in Tables A4a-A4l.

We summarize our results in the tables below. Each table has four columns: regression with exogenous migration variable; IV regression (GMM) with instruments for migration; regression with exogenous remittances variable; IV regression (GMM) with instrument for receipt of remittances. If the exogeneity test suggests that the migration or remittance variable is exogenous to the outcome, we only include the regression result in the table; if we reject exogeneity we include the IV result in the table. If migration or remittances seems to be endogenous but the instruments are weak, we include both the regression and the IV results. --- indicates that migration or remittances had no impact on the outcome.

Table 4a contains the models for young children, boys and girls combined. The dependent variables are preschool enrollment, vitamin A vaccinations, polio vaccination (at least one), measles vaccination, illness or injury in the last month, good health in the last month, and health improvement in the last year.

Table 4a. Models of education and health: small children, migrant household effect.[a,b]

	Migrant HH, Regression	Migrant HH, IV Regression	Remittance HH, Regression	Remittance HH, IV Regression
Preschool				
Health:				
Vitamin A (#)		-1.393		-1.576
Polio (dv)	0.032	0.329[t]	0.032	0.533[t]
Measles (dv)				0.193
Ill health (dv)	-0.023			
Good health (dv)	0.024		0.026	0.139
Health improve (dv)				

[a]Exogenous variables: mother and father's education, missing data on the father, age of the mother; age, gender, and ethnicity of the child; oblast, urban residence of the household; household's eligibility for

non-work related benefits and access to electricity in the winter; preschool in the community and source of water and sewage disposal.
[b]Instruments for migration or receipt of remittances: community migration or remittance rate, community risk aversion, and health care need in the household.
[c]Children aged 3-5 for preschool model, children aged 0-6 for health models. Estimated over Tajik and Uzbek children only.
[t]Endogenous variable (migration or remittances) but the instruments are weak. We report both OLS and IV results.

We find that migration and remittances have no impact on preschool enrollment or improvement in health of young children. Migration and remittances both increase the probability of polio vaccine from .03-.33 for migration and .03-.53 for remittances. The IVS are weak for this model. We also find an increase in the probability of vaccination for measles with remittances but a reduction in the number of vitamin A shots (1.4 -1.5 fewer shots than for other children). The reason for this is unknown unless the requirement of so many shots for effectiveness places a significant time constraint on households with migrant members. We also find that children in migrant households or remittance receiving households are in better overall health than other children.

Tables 4b and 4c below present the same models but for separate samples of boys (Table 4b) and girls (Table 4c). Some gender differences are apparent. Only girls experience an increase in measles vaccination with remittance receipt, and boys are liss likely to report having an illness or injury in the last month if they are in migrant households. There is weak evidence that children in migrant households are in better health, but girls report that their health did not improve if they were in migrant households or received remittances. Girls are also slightly less likely to go to preschool if the household receives remittances.[3]

Table 4b. Models of education and health: small boys, migrant household effect.[a,b,c]

	Migrant HH, Regression	Migrant HH, IV Regression	Remittance HH, Regression	Remittance HH, IV Regression
Preschool				
Health:				
Vitamin A (#)		-1.786		-1.534
Polio (dv)	---	0.348[t]	---	0.574[t]
Measles (dv)				
Ill health (dv)	-0.027			
Good health (dv)	0.036		---	0.285[t]
Health improve (dv)				

[3] The full regression and IV models are available from the authors on request.

[a]Exogenous variables: mother and father's education, missing data on the father, age of the mother; age, gender, and ethnicity of the child; oblast, urban residence of the household; household's eligibility for non-work related benefits and access to electricity in the winter; preschool in the community and source of water and sewage disposal.
[b]Instruments for migration or receipt of remittances: community migration or remittance rate, community risk aversion, and health care need in the household.
[c]Children aged 3-5 for preschool model, children aged 0-6 for health models. Estimated over Tajik and Uzbek children only.
[t]Endogenous variable (migration or remittances) but the instruments are weak. We report both OLS and IV results.

Table 4c. Models of education and health: small girls, migrant household effect.[a,b,d]

	Migrant HH, Regression	Migrant HH, IV Regression	Remittance HH, Regression	Remittance HH, IV Regression
Preschool			-0.030	
Health:				
Vitamin A (#)		-1.164		-1.714
Polio (dv)	---	0.333[t]	---	0.463[t]
Measles (dv)				0.294
Ill health (dv)				
Good health (dv)			0.038	
Health improve (dv)	-.058		-0.080	

[a]Exogenous variables: mother and father's education, missing data on the father, age of the mother; age, gender, and ethnicity of the child; oblast, urban residence of the household; household's eligibility for non-work related benefits and access to electricity in the winter; preschool in the community and source of water and sewage disposal.
[b]Instruments for migration or receipt of remittances: community migration or remittance rate, community risk aversion, and health care need in the household.
[c]Children aged 3-5 for preschool model, children aged 0-6 for health models. Estimated over Tajik and Uzbek children only.
[t]Endogenous variable (migration or remittances) but the instruments are weak. We report both OLS and IV results.

We turn next to the models for older children. First, Table 5a shows that remittances have no effect on enrollment in school, but older children (18-22) in migrant households are more likely to complete secondary school and enroll in higher education. Children 15-17 are also less likely to attend school. However, they are more likely to be absent from school and to be absent for work; they reduce time in family business but increase time in wage employment. These results are consistent across migration and remittances models.

We also find effects on expenditures on education. Migrant households reduce their cash contributions to schools: cash/kind gifts, and fees, but they are more likely to

increase expenditures on books, food, and the school building. Overall, expenditures on education increase per child.

Health effects are less strong. Older children are less likely to be in poor health in migrant households or remittance receiving households, but they also report that their health did not improve over the year if they were in a migrant household. There is weak evidence that chronic conditions are less likely in migrant households, but the instruments do not appear to be valid in this model. and the regression model finds no effect on chronic conditions.

We present the models in Table 5a separately for boys and girls. These models are reported in Tables 5b and 5c.[4]

Table 5a. Models of education and health: older children, migrant household effect.

	Migrant HH, Regression	Migrant HH, IV Regression	Remittance HH, Regression	Remittance HH, IV Regression
Enrollment:				
Ages 7-14				
Ages 15-17	-0.040			
Education level:				
Secondary (18-22)		0.208		
Higher (18-22); completed or enrolled		0.077		-
Expenditures (dv), all children in school:				
Fees		-0.328		-0.329
Gifts: cash/kind		-0.157		-0.114
Uniforms				
Books	---	0.117[t]	0.017	
Food	0.019		0.015	
Building	0.055	0.313[t]	0.046	0.185[t]
Other			---	-0.133[t]
Total		0.050		0.060
Tutoring	---			-0.031
Health (dv), all children over age 6:				
Chronic condition	---	-0.071[t]		
Illness/injury			---	-0.091[t]
Health poor	---	-0.020[t]	---	-0.021[t]
Health improve	-0.045	-0.028[t]	-0.048	-0.042[t]
Work & absences, children over age 15:				

[4] Full regression and IV models for boys and girls are available from the authors on demand.

Absent (wk) if enrolled	0.156		0.194	
Absent for work (dv)	0.027		0.020	
Work in family bus.(dv)	-0.026		-0.020	

[a]Exogenous variables: mother and father's education, missing data on the father, age of the mother; age, gender, and ethnicity of the child; oblast, urban residence of the household; household's eligibility for non-work related benefits and access to electricity in the winter; preschool in the community and source of water and sewage disposal.

[b]Instruments for migration or receipt of remittances: community migration or remittance rate, community risk aversion, and health care need in the household.

[c]Estimated over Tajik and Uzbek children only.

[t]Endogenous variable (migration or remittances) but the instruments are weak. Report both OLS and IV results.

Table 5b. Models of education and health: older boys, migration effect.

	Migrant HH, Regression	Migrant HH, IV Regression	Remittance HH, Regression	Remittance HH, IV Regression
Enrollment:				
Ages 7-14				
Ages 15-17	-0.044			
Education level:				
Secondary (18-23)	0.044	0.366[t]	0.041	0.339[t]
Higher (18-23); completed or enrolled		0.159	0.015	
Expenditures (dv):				
Fees		-0.359		0.301
Cash/kind gifts		-0.147		-0.101
Uniforms				
Books	---	0.147[t]		
Food				
Building	0.051	0.308[t]	0.050	
Other			---	-0.124[t]
Total		0.049		0.047
Tutoring				
Health (dv)				
Chronic condition	---	-0.071[t]	---	-0.067[t]
Illness/injury	---	-0.083[t]	---	-0.117[t]
Health poor	---	-0.003[t]		
Health improve	-0.040	-0.305[t]	-0.035	-0.390[t]
Work & absences, children over age 15:				
Absent (wk) if enrolled	0.175		0.181	
Absent for work (dv)				
Work in family business (dv)				

[a]Exogenous variables: mother and father's education, missing data on the father, age of the mother; age, gender, and ethnicity of the child; oblast, urban residence of the household; household's eligibility for

non-work related benefits and access to electricity in the winter; preschool in the community and source of water and sewage disposal.
[b]Instruments for migration or receipt of remittances: community migration or remittance rate, community risk aversion, and health care need in the household.
[c]Estimated over Tajik and Uzbek children only.
[t]Endogenous variable (migration or remittances) but the instruments are weak. Report both OLS and IV results.

Table 5c. Models of education and health: large girls, migration effect.

	Migrant HH, Regression	Migrant HH, IV Regression	Remittance HH, Regression	Remittance HH, IV Regression
Enrollment:				
Ages 7-14				
Ages 15-17				
Education level:				
Secondary (18-23)				
Higher (18-23); completed or enrolled				
Expenditures (dv):				
Fees		-0.304		-0.363
Cash/kind gifts	---	-0.167		-0.131
Uniforms				0.124
Books			0.145	
Food				
Building	0.058	0.281[t]	0.038	0.310[t]
Other	---	-0.136[t]	---	-0.139[t]
Total		0.052		0.075
Tutoring				-0.046
Health (dv)				
Chronic condition	---	-0.084[t]	0.012	
Illness/injury				
Health poor	---	-0.025[t]		
Health improve	-0.055	-0.259[t]	-0.064	-0.433[t]
Work & absences, children over age 15:				
Absent (wk) if enrolled	0.142		0.211	
Absent for work (dv)	0.040			
Work in family business (dv)	-0.039			

[a]Exogenous variables: mother and father's education, missing data on the father, age of the mother; age, gender, and ethnicity of the child; oblast, urban residence of the household; household's eligibility for non-work related benefits and access to electricity in the winter; preschool in the community and source of water and sewage disposal.
[b]Instruments for migration or receipt of remittances: community migration or remittance rate, community risk aversion, and health care need in the household.
[c]Estimated over Tajik and Uzbek children only.

[t]Endogenous variable (migration or remittances) but the instruments are weak. Report both OLS and IV results.

Migration and remittances only affect the education of older boys; boys are more likely to complete secondary education and enroll in higher education if they are in migrant households. They are also less likely to be enrolled in school at ages 15-17. Boys in migrant households report more absences from school but not necessarily for work; girls also report higher absences in migrant households, but this is from increase in paid labor and a decrease in work in a family business. Expenditure results are similar for boys and girls with some evidence that remittances are partially used for uniforms for girls but not boys. Health results are also similar with the exception that in migrant and remittance receiving households, boys are less likely to have a chronic condition and are less likely to report an illness or injury.

Overall, migration or remittances do change education and health of young and older children. Education effects are only found for boys, but health effects are found for both boys and girls. These results indicate that migration has had positive effects on human capital investment of children. These results hold up in the short run. With the 2009 data, we can determine if these effects are more long run.

7. Conclusion

Historically, migration is common in Central Asia. During the Soviet period, migration was forced and usually for political reasons. With independence, considerable mobility within the region occurred in the earlier years as ethnic groups moved back to their titular homelands and ethnic tensions intensified. The early large outmigration from Tajikistan was partly the result of ethnic reunification and partly to escape the violence of the civil war. With the end of the war and the beginning of political stability for the most part, migration stabilized but then increased after 2000 for economic reasons. The demographic imbalance in Russia along with the need for manual labor in the oil industry and in construction increased wages in Russia relative to wages in most of Central Asia. Wages in Tajikistan, as reported by the ILO, were significantly less than a third of the wages for similar jobs in Russia, so many men left Tajikistan for work. Most left for temporary, seasonal jobs, but many of the more skilled workers left permanently. Jobs for skilled labor were scarce in Tajikistan, and wages were well below market.

The large migration from Tajikistan left families without young, prime aged workers in many households. Many children were raised without at least one of their parents, but they benefited from remittances transferred home. Currently and according to World Bank statistics, Tajikistan is the most remittance dependent country in the world in 2010 with remittances comprising 35 percent of GDP. (World Bank, 2010) How these remittances are used is important for the long run development of communities and the human capital development of families.

In this study, we analyze household data from Tajikistan for 2007 and compare the human capital investments in children in migrant and non-migrant households. We find some evidence that children do benefit from migration of at least one household member and from remittances, but not all indicators are positive. Older children are more likely to complete secondary school and to enroll in higher education, but younger teens are less likely to enroll in secondary school and are more likely to be absent from school. For girls, absence is associated with an increase in market work but less work in family businesses. For boys, we find no link between absences and work. We also find that households that receive remittances or that migrate spend more on education for both girls and boys, but these expenditures are on tangible items – books, uniforms, building needs – and not on fees or side payments to teachers or administrators. Why the cash payments decline is not clear but is an interesting reallocation of resources targeted for education.

Health is also affected by migration but not always in a positive direction. Small children are more likely to get vaccinated, but receive fewer injections of vitamin A than other children. On average, children in migrant households are in better health but their health does not seem to improve over the year in comparison to others.

While migration and remittances do matter to health and education, they are less important than the education of parents (appendix tables of complete regressions) and region. Children in the Badakhshan region are more educated and healthier than other children and are less likely to be absent from school. However, their expenditure patterns differ from the average. Parental education is also positively related to the health and education of children. Interestingly, it is usually the father's education that has the greater impact on children. However, when it comes to expenditure decisions, the mother's education seems to carry more weight.

We are not yet comfortable with the identification of the model. We have preliminary results from propensity score matching models, but these results are not robust to the model estimated. Our future research will include more work on the matching models as well as the use of the panel data from 2009.

Finally, we have preliminary results for Uzbekistan, 2006, but the migration measures are not comparable. We find no impact of migration on education or health in the models we have estimated to date. We continue to work on the identification problem and will incorporate data from round 2 of the survey in our next version of the models.

Appendix: Literature review tables

Table A1a. Literature on migration and education.

Region/ country	Author(s), year of publica-tion	Years studied	Education measures	Method and IVs	Results
Asia					
Tajikistan	Brown, Olimova, and Boboev, 2008	2007, ADB survey	education expenditures ; absences; attainment	OLS and 2SLS, IV probit; iv=community migration network	remittances increase absenteeism and expenditures
China	DeBrauw and Giles, 2006	2001, Urban Survey	middle school child enrolls in hs	linear probability with IV (national ID card)	outmigration lowers hs enrollment
Pakistan	Mansuri, 2006	2001-02, Rural Survey	school enrollment, accumulated education, retention	IV models (IVs= village migrant network & land Gini)	migration increases school attainment, esp. for girls
Philippines	Yang, 2006	Labor Force Survey, 1997-98	Education expenditure, children in school not work	first differences regression, exchange rate shocks	lg. shocks to income increase ed. investment, reduce work
Vietnam	Booth and Tamura, 2009	LSMS, 1992-93, 1997-98	school attendance, hh expenditure on educ.	first-differenced regression	no impact of parent absence on education; more work for boys
Other CIS:					
Moldova	Hristev et al., 2009	IOM surveys, 2006 and 2008; CASE survey	education expenditure share	descriptive; OLS	expenditures increase with remittances
Africa:					
Cape Verde	Batista, Lacuesta, Vicente, 2007	2005-06 migration survey	attainment secondary education	bivariate probit, ivs =local mig. history, confidence, educated migration rate	expected mig. increases ed.; absent parent lowers ed.; brain gain
Latin America:					

Ecuador	Leon, Bedi, and Sparrow, 2007	living standard hh survey, 2005-06	school enrollment and attendance	IV probit, ivs=W. union offices, source countries	higher enrollment among poor, less work among non-poor; remittances finance education
El Salvador	Edwards & Ureta, 2003	1997 hh survey	dropping out of school	hazard model	remittances lower probability of leaving school
Haiti	Amuedo-Dorantes, Georges, and Pozo, 2008	2000 & 2002 hh surveys	school attendance	probit & IV linear probability models, ivs=weekly US earnings & Unemploy. rate	migration increases schooling
Mexico	Kandal and Kao, 2001	student surveys, Zacatecas, 1995-96	aspirations to attend college, GPA	logistic regression	migration to US improves GPA; lowers aspirations
Mexico	McKenzie & Rapaport	rural survey of demo. dynamics	school attendance & attainment	bivariate probit, iv= historic state level migration rate	migration lowers probability of completing jr. high (boys) & hs (boys & girls)
Mexico	Miranda, 2007	Mexico Migration Project, 1982-2005	high school graduation	maximum simulated likelihood, dynamic probit model	family & community networks lower probability of completing hs

Table A1b. Literature on migration and health.

Region/ country	Author(s) & year of publication	Years studied	Health measures	Method and IVs	Results
Asia/Pacific					
Pakistan	Mansuri, 2006	Rural survey, 2001-02	height/weight for age, malnutrition	IV models, Ivs= village migration rate, no. adult males,	positive effect of migration on height and weight for age of girls
Tonga	Gibson, McKenzie, and Stillman, 2008	2002-05, New Zealand lottery for migrants	diet, good health, smoking, drinking, BMI, blood pressure	IV regression: IV = lottery winner	increase rice, root consumption, decrease fruits & vegetables; long stayers are in worse health
Other CIS:					
Moldova	Hristev et al., 2009	IOM surveys, 2006 and 2008; CASE survey	health expenditure share	descriptive; OLS	expenditures increase with remittances
Africa					
Kenya	Konseiga, 2008	Nairobi slums, 2004	hh had sick child last month	Heckman selection model	health is worse with joint migrants
Kenya	Konseiga, Zulu, and Ye, 2006	Nairobi slums, 2002-04	child mortality	hazard model	migration increases probability of death
Uganda	Ssengonzi, DeJong, and Stokes, 2002	DHS, 1996	child < 60 months is alive	logistic regression	urban-urban migration increases survival
Latin America:					
Guatemala	Acosta,	2000 &	weight for	Heckman	positive

& Nicaragua	2007	2001 hh surveys	height; dr. delivery; vaccinations	remittances model; regression	effect of remittances on weight and vaccinations in Guatemala; hosp. delivery in both
Mexico	Hildebrandt & McKenzie, 2005	1997 hh survey	infant mortality, birthweight, health knowledge and inputs	2SLS and bivariate probit; ivs=1924 state level migration rate	Migration yields: higher birthweight, more hosp. delivery, lower mortality, better knowledge; less prevention and breastfeeding
Mexico	Kanaiaupuni & Donato, 1999	1987-88 and 1992-93	infant survival	HLM	lower survival with frequent trips, longer survival with US experience

Table A2a. Descriptive statistics, parent characteristics.

	Large child sample: means	Large child sample: range	Small child sample: means	Small child sample: range
Sample size	11,052		4211	
Mother's ed:		0, 1		0,1
Primary	0.035		.036	
Basic	0.186		0.213	
Secondary general	0.614		0.604	
Secondary special	0.065		0.059	
Secondary technical	0.020		0.015	
Higher	0.060		0.058	
Mother's age	42.200	15 to 88	30.252	16 to 88
Father's ed:		0, 1		0, 1
Primary	0.024		0.015	
Basic	0.067		0.089	
Secondary general	0.382		0.482	
Secondary special	0.139		0.109	
Secondary technical	0.126		0.085	
Higher	0.182		0.183	
No data	0.065		0.015	
Father's age	45.989	15 to 88	34.704	16 to 82

Table A2b. Descriptive statistics: household characteristics.

	Large child sample: means	Large child sample: range	Small child sample: means	Small child sample: range
Sample size	10,029		4219	
Oblast:				
Dushanbe	0.144		0.169	
RRP	0.248		0.255	
Sogd	0.143		0.152	
Khatlon	0.346		0.353	
Badakhshan	0.119		0.071	
Community:				
Urban	0.284	0, 1		
Distance to kindergarten			9.745	0 to 320
Distance to high school	4.732	0 to 353		
Distance to higher educ.	47.532	0 to 320		
Distance to health clinic	8.86	0 to 110	7.315	0 to 102
Distance to pediatrician	5.634	0 to 300	5.594	0 to 300
Water from river	0.510	0, 1	.484	0, 1
Sewage system	0.183	0, 1	.200	0, 1
Average no. migrants abroad	6.150	0 to 24		
Remittances, % hh receive	28.372	0 to 84.615		
Household:	42.200	16 to 88		
Ethnicity Uzbek	0.183	0, 1	0.186	0, 1
HH size	7.452	0 to 21	8.339	2 to 21
Children < 2	0.364	0 to 8	0.963	0 to 8
Children 3-22	2.935	0 to 14	2.956	0 to 14
No. elderly	0.325	0 to 4	0.484	0 to 2
No. wom 23-59	1.443	0 to 6	1.687	0 to 6
Elec. disrupted winter	0.814	0, 1	0.809	0, 1
Elig. benefits (soumoni)	21.323	0 to 900	27.500	0 to 831

Table A2c. Descriptive statistics: large children (age 7-22).

	Boys, means	Boys, range	Girls, means	Girls, range
Education level:		10, 1		0, 1
None	0.176		0.183	
Primary	0.289		0.318	
Basic	0.188		0.216	
Secondary gen.	0.253		0.199	
Secondary spe.	0.011		0.010	
Secondary tech	0.011		0.003	
Higher	0.027		0.007	
No data	0.055		0.063	
Enrollment:		0, 1		0, 1
Current	0.670		0.632	
Primary	0.281		0.267	
Basic	0.328		0.305	
Secondary gen.	0.141		0.101	
Secondary spe.	0.054		0.031	
Secondary tech	0.055		0.029	
Higher	0.047		0.025	
No data	0.094		0.241	
Costs (proportion):				
Transport	5.140 (.059)	0 to 1200	2.657 (.033)	0 to 2800
Fees	33.994 (.118)	0 to 8000	12.733 (.096)	0 to 4500
Uniforms	66.531 (.616)	0 to 5000	59.813 (.580)	0 to 7012
Books	12.419 (.545)	0 to 2030	12.324 (.520)	0 to 5000
Supplies	14.183 (.635)	0 to 4700	16.565 (.600)	0 to 8000
Food	16.761 (.084)	0 to 3500	7.874 (.068)	0 to 4800
Building	6.069 (.433)	0 to 2760	6.094 (.409)	0 to 1350
Other	3.214 (.088)	0 to 656	3.011 (.077)	0 to 3400
Total	188.397 (.659)	0 to 54,000	220.524 (.620)	0 to 163,875
Tutoring	0.913 (.009)	0 to 999	0.809 (.009)	0 to 950
Health:				
Chronic dv	0.037	0, 1	0.038	0, 1
Days chronic	0.167	0 to 30	0.190	0 to 31
Illness/injury dv	0.037	0, 1	0.051	0, 1
Days ill	0.163	0 to 30	0.225	0 to 20
Health good	0.909	0, 1	0.908	0, 1
Health poor	0.005	0, 1	0.005	0, 1
Health improve	0.437	0, 1	0.410	0, 1
Has a job	0.157	0, 1	0.119	0, 1
Job: fam.business	0.425	0, 1	0.447	0, 1

Table A2d. Descriptive statistics: small children (ages 0-6).

	Boys, means	Boys, range	Girls, means	Girls, range
Sample size	2196			
Education level:				
Enrolled in preschool/ kindergarten ages 3-6	0.083	0, 1	0.071	0, 1
Vaccinations:				
Vitamin A	0.841 (.372)	0 to 10	0.882 (.401)	0 to 10
Polio	2.178 (.798)	0 to 9	2.214 (.806)	0 to 9
Measles	0.470	0, 1	0.501	0, 1
Health:	n=2169		n=2042	
Illness/injury dv	0.090	0, 1	0.083	0, 1
Days ill	0.416	0 to 20	0.316	0 to 20
Health good	0.892	0, 1	0.904	0, 1
Health improve	0.413	0, 1	0.418	0, 1

Appendix: definitions of variables included in the models.

Younger children

Migrant hh: =1 if migrant in the last year, =0 otherwise
Receive remit: =1 if received remittances in the last year, =0 if did not

Community variables:
comm_dc: =1 if day care in the community, =0 if not
comm._kn=1 if kindergarten in the community, =0 if not
comm._pc=1 if polyclinic in the community, =0 if not
comm._pd=1 if pediatrician in the community,=0 if not
comm._hlthriv = 1 if community gets water from a river, =0 if not
comm._sewage = 1 if community has public sewage system, =0 if not

Child variables:
smch_age: child's age in years
age4 = 1 if child is age 4, 0 otherwise
age5 = 1 if child is age 5, 0 otherwise
smch_oldboy=1 if oldest son, =0 if not
boyuz = 1 if boy is uzbek, =0 if not
girluz = 1 if girl is uzbek, =0 if not
girltaj = 1 if girl is tajik, =0 if not

Household variables:
hh_child2: number of children aged 2 and younger
hh_child3: number of children aged 3-22
hh_elder: number of adults aged 60 and over
hh_wom2359: number of women aged 23-59
hh_khatlon = 1 if household lives in Khatlon oblast, =0 if not
hh_sogd=1 if household lives in Sogd oblast, =0 if not
hh_rrp = 1 if household lives in RRP oblast, =0 if not
hh_gbao = 1 if household lives in Gorno-Badakshan oblast, =0 if not
hh_urban = 1 if household lives in urban center, =0 if not
hh_elwinter = 1 if household frequently loses electricity in winter, =0 if not
hh_benelig = value of state benefits received by household (not related to employment)

Parent characteristics:
mom_age: mother's age in years
mom_edsec = 1 if mother completed secondary education, =0 if not
mom_edhe=1 if mother completed higher education, =0 if not
dad_noed = 1 if father has no education data, =0 if has data

dad_edsec = 1 if father has secondary education, =0 if not
dad_edhe = 1 if father has higher education, =0 if not

Older children:

Migrant hh: =1 if migrant in the last year, =0 otherwise
Receive remit: =1 if received remittances in the last year, =0 if did not

Community variables:
comm_disthe: distance from community to nearest higher education institution
comm._distpc: distance from community to polyclinic
comm._distpd: distance from community to pediatrician
comm._hlthriv = 1 if community gets water from a river, =0 if not
comm._sewage = 1 if community has public sewage system, =0 if not

Child variables:
lgch_age: child's age in years; lgch_agesq is lgch_age squared.
lgch_age610 = 1 if child is aged 6-10, =0 otherwise
lgch_age1114=1 if child is aged 11-14, =0 otherwise
lgch_ethuz = 1 if child is uzbek, =0 otherwise
boyuz = 1 if boy is uzbek, =0 if not
girluz = 1 if girl is uzbek, =0 if not
girltaj = 1 if girl is tajik, =0 if not

Household variables:
hh_child2: number of children aged 2 and younger
hh_child3: number of children aged 3-22
hh_elder: number of adults aged 60 and over
hh_wom2359: number of women aged 23-59
hh_khatlon = 1 if household lives in Khatlon oblast, =0 if not
hh_sogd=1 if household lives in Sogd oblast, =0 if not
hh_rrp = 1 if household lives in RRP oblast, =0 if not
hh_gbao = 1 if household lives in Gorno-Badakshan oblast, =0 if not
hh_urban = 1 if household lives in urban center, =0 if not
hh_elwinter = 1 if household frequently loses electricity in winter, =0 if not
hh_benelig = value of state benefits received by household (not related to employment)

Parent characteristics:
mom_age: mother's age in years
mom_edsec = 1 if mother completed secondary education, =0 if not
mom_edhe=1 if mother completed higher education, =0 if not
dad_noed = 1 if father has no education data, =0 if has data
dad_edsec = 1 if father has secondary education, =0 if not
dad_edhe = 1 if father has higher education, =0 if not

Table A3a. Preschool, health, migration of children less than age 7: regression.

Variable	PRESCHOOL	VITAMIN A	POLIO	MEASLES	ILLNESS	POOR HEALTH	IMPROVE
Migrant hh	-0.011	-0.277***	0.032*	0.023	-0.023*	0.024*	-0.029
comm_dc	0.134***						
comm_kn	0.054*						
age4	0.016						
age5	0.033*						
smch_oldboy	-0.008	0.022	0.013	0.009	0.014	0.002	-0.030
boyuz	0.066**	0.206	-0.004	0.029	0.009	0.007	0.071*
girluz	0.008	0.064	0.017	0.062*	0.001	0.022	0.041
girltaj	0.006	0.073	0.016	0.010	0.004	0.027*	-0.005
hh_child2	-0.001	-0.042	-0.008	0.004	-0.005	-0.003	0.000
hh_child3	-0.006*	-0.025*	-0.005	-0.004	-0.000	-0.004	0.002
hh_elder	-0.007	0.017	0.001	-0.001	-0.011*	0.002	-0.024*
hh_wom2359	0.001	0.029	0.007	-0.000	-0.002	-0.006	-0.008
mom_edsec	0.004	-0.007	0.049**	0.025	-0.001	0.004	-0.021
mom_edhe	0.175***	0.156	0.035	-0.036	0.003	0.051*	-0.050
mom_age	-0.001	-0.007	0.003*	0.000	-0.001	-0.001	-0.002
dad_noed	0.032	0.329	-0.109	-0.035	0.038	0.040	0.115
dad_edsec	0.010	0.217**	0.017	0.042	0.002	0.051**	0.080**
dad_edhe	0.061**	0.465***	0.020	0.095**	0.031	0.046*	0.044
hh_khatlon	0.057	0.844***	0.170***	0.081*	-0.062**	0.097***	0.236***
hh_sogd	0.059	1.909***	0.219***	0.247***	-0.080***	0.145***	0.090*
hh_rrp	0.048	0.259*	0.057	-0.077*	-0.046	0.114***	0.067
hh_gbao	0.104*	1.442***	0.007	0.135**	-0.042	0.106***	0.336***
hh_urban	0.125***	0.399***	0.006	-0.012	-0.016	0.003	-0.021
comm_hlthriv	0.018	-0.045	0.017	0.041*	0.027**	-0.033**	-0.070***
comm_sewage	0.001	0.199*	0.099***	0.097***	0.020	-0.021	0.060*
hh_elwinter	-0.053*	0.335***	-0.035	-0.038	0.041*	-0.015	-0.001
hh_benelig	-0.000	0.000	0.000	0.000	-0.000	0.000	0.000
comm_pc		0.300***	0.012	0.070***	0.005	-0.017	-0.041*
comm_pd		-0.286***	-0.017	-0.022	0.018	-0.033**	0.010
smch_age		0.146***	0.009*	0.102***	-0.008***	0.006*	-0.002
_cons	0.010	-0.492*	0.535***	0.146*	0.133***	0.824***	0.349***
N	1747	3625	3625	3625	4219	4219	3536

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A3b. Preschool, health, remittances of children less than age 7: regression.

Variable	PRESCHOOL	VITAMIN A	POLIO	MEASLES	ILLNESS	POOR HEALTH	IMPROVE
Receive remit	-0.021	-0.077	0.032*	0.026	-0.008	0.026*	-0.014
comm_dc	0.133***						
comm_kn	0.054*						
age4	0.017						
age5	0.033*						
smch_oldboy	-0.008	0.016	0.013	0.009	0.014	0.002	-0.030
boyuz	0.065**	0.209	-0.003	0.030	0.009	0.008	0.071*
girluz	0.008	0.062	0.017	0.062*	0.001	0.022	0.041
girltaj	0.005	0.067	0.016	0.010	0.004	0.028*	-0.005
hh_child2	-0.001	-0.037	-0.008	0.004	-0.005	-0.003	0.001
hh_child3	-0.006**	-0.025*	-0.005	-0.004	-0.000	-0.004	0.002
hh_elder	-0.006	0.014	0.001	-0.001	-0.012*	0.002	-0.024*
hh_wom2359	0.003	0.019	0.007	-0.001	-0.003	-0.006	-0.009
mom_edsec	0.005	-0.004	0.049**	0.025	-0.001	0.003	-0.021
mom_edhe	0.174***	0.143	0.036	-0.035	0.003	0.052*	-0.051
mom_age	-0.001	-0.006	0.003*	0.000	-0.001	-0.001	-0.002
dad_noed	0.032	0.318	-0.109	-0.035	0.037	0.040	0.114
dad_edsec	0.011	0.226**	0.016	0.042	0.002	0.051**	0.081**
dad_edhe	0.061**	0.487***	0.020	0.095**	0.033	0.046*	0.045
hh_khatlon	0.058	0.845***	0.170***	0.080*	-0.063**	0.097***	0.236***
hh_sogd	0.061	1.924***	0.216***	0.245***	-0.079**	0.143***	0.091*
hh_rrp	0.049	0.246	0.057	-0.077*	-0.047*	0.114***	0.066
hh_gbao	0.105*	1.423***	0.008	0.136**	-0.043	0.106***	0.335***
hh_urban	0.127***	0.422***	0.004	-0.013	-0.014	0.002	-0.019
comm_hlthriv	0.021	-0.031	0.014	0.038*	0.028**	-0.035**	-0.068***
comm_sewage	0.002	0.198*	0.098***	0.097***	0.020	-0.021	0.060*
hh_elwinter	-0.053*	0.335***	-0.035	-0.038	0.041*	-0.016	-0.001
hh_benelig	-0.000	0.000	0.000	0.000	-0.000	0.000	0.000
comm_pc		0.300***	0.012	0.071***	0.005	-0.016	-0.041*
comm_pd		-0.304***	-0.015	-0.020	0.017	-0.031**	0.008
smch_age		0.148***	0.009*	0.102***	-0.008***	0.006*	-0.001
boyoth		-0.476	-0.168	-0.107	0.087	0.074	-0.232**
girloth		-0.501*	-0.054	-0.270***	-0.002	0.052	-0.006
_cons	0.008	-0.563**	0.538***	0.148*	0.129***	0.825***	0.345***
N	1747	3625	3625	3625	4219	4219	3536

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A3c. Enrollment in school by age and migration: regression

Variable	7-14	15-17	COMPLETE SEC 18-22	HIGHER ED 18-22
Migrant hh	0.003	-0.040*	0.015	-0.007
comm_disthe	-0.000	-0.000	-0.000	-0.000
lgch_age610	0.144***			
lgch_age1114	0.110***			
boyuz	-0.015	-0.025	-0.016	
girluz	-0.035*	-0.148***	-0.086*	
girltaj	-0.025**	-0.171***	-0.159***	-0.017**
hh_child2	-0.008	0.010	-0.024*	-0.004
hh_child3	0.001	-0.004	-0.001	-0.000
hh_elder	-0.001	-0.006	0.027	0.001
hh_wom2359	-0.010	0.007	-0.001	-0.004
mom_edsec	0.035**	0.039	0.116***	0.006
mom_edhe	0.045*	0.091*	0.196***	0.032
mom_age	0.004	-0.006	0.003	-0.004
mom_agesq	-0.000	0.000	0.000	0.000
dad_noed	0.031	-0.049	0.070	-0.009
dad_edsec	0.012	0.038	0.125***	0.006
dad_edhe	0.012	0.094**	0.189***	0.016
hh_khatlon	0.022	-0.007	0.028	0.011
hh_sogd	0.030	-0.084	0.038	0.001
hh_rrp	-0.002	-0.032	-0.011	-0.000
hh_gbao	0.037	0.157***	0.160***	0.017
hh_urban	0.005	-0.005	0.051	0.001
comm_hlthriv	-0.016	0.001	-0.024	-0.011
comm_sewage	-0.019	0.036	-0.001	0.001
hh_elwinter	-0.002	0.089**	-0.001	-0.011
hh_benelig	-0.000	-0.000	0.000	-0.000
lgch_age		-0.129***	0.790***	-0.171*
lgch_agesq			-0.019***	0.005*
lgch_ethuz				-0.015
_cons	-0.510***	3.012***	-7.880***	1.676*
N	5291	2244	2494	2494

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A3d. Enrollment in school by age and receipt of remittances: regression

Variable	7-14	15-17	COMPLETE SEC 18-22	HIGHER ED 18-22
Receive remit	0.003	-0.035	0.015	-0.011
comm_disthe	-0.000	-0.000	-0.000	-0.000
lgch_age610	0.144***			
lgch_age1114	0.110***			
boyuz	-0.015	-0.024	-0.016	
girluz	-0.035*	-0.147***	-0.085*	
girltaj	-0.025**	-0.170***	-0.158***	-0.017**
hh_child2	-0.008	0.010	-0.024*	-0.004
hh_child3	0.001	-0.004	-0.001	-0.000
hh_elder	-0.001	-0.006	0.027	0.000
hh_wom2359	-0.010	0.007	-0.001	-0.004
mom_edsec	0.035**	0.039	0.116***	0.006
mom_edhe	0.045*	0.091*	0.196***	0.031
mom_age	0.004	-0.007	0.003	-0.004
mom_agesq	-0.000	0.000	0.000	0.000
dad_noed	0.031	-0.049	0.070	-0.009
dad_edsec	0.012	0.039	0.125***	0.006
dad_edhe	0.012	0.094**	0.189***	0.016
hh_khatlon	0.022	-0.003	0.027	0.011
hh_sogd	0.030	-0.081	0.037	0.001
hh_rrp	-0.002	-0.028	-0.012	0.000
hh_gbao	0.037	0.160***	0.159***	0.018
hh_urban	0.005	-0.003	0.051	0.001
comm_hlthriv	-0.016	0.003	-0.025	-0.011
comm_sewage	-0.019	0.037	-0.002	0.001
hh_elwinter	-0.002	0.087**	-0.000	-0.012
hh_benelig	-0.000	-0.000	0.000	-0.000
lgch_age		-0.129***	0.787***	-0.169*
lgch_agesq			-0.019***	0.005*
lgch_ethuz				-0.015
_cons	-0.510***	3.030***	-7.864***	1.659*
N	5291	2244	2494	2494

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A3e. Absences from school, marriage and migration: regression

Variable	WEEKS MISSSED	MISS,WORK	MISS,FAMILY BUSINESS	MARRIED
Migrant hh	0.156***	0.027*	-0.027*	-0.002
comm_disthe	0.002***	0.000***	-0.000***	0.000
lgch_age610	0.033			
lgch_age1114	0.030			
lgch_age1517	0.027*	0.041***	-0.041***	0.025***
lgch_age1822	0.009	0.043***	-0.043***	0.023***
boyuz	-0.015	0.043	-0.043	-0.020*
girluz	-0.082	0.052*	-0.052*	-0.033***
girltaj	0.086*	-0.010	0.010	-0.027***
hh_child2	0.021	0.008	-0.008	0.013**
hh_child3	-0.028**	0.006	-0.006	0.000
hh_elder	0.080**	-0.014	0.014	0.006
hh_wom2359	0.023	0.001	-0.001	-0.016***
mom_edsec	0.005	-0.063***	0.062***	0.008
mom_edhe	-0.016	-0.063*	0.063*	0.019
mom_age	0.013	-0.014	0.015	-0.006
mom_agesq	-0.000	0.000	-0.000	0.000
dad_noed	-0.386***	-0.070*	0.070*	-0.011
dad_edsec	-0.277***	-0.061**	0.061**	-0.012
dad_edhe	-0.386***	-0.077**	0.077**	-0.008
hh_khatlon	-0.103	0.092***	-0.093***	0.010
hh_sogd	0.038	0.151***	-0.151***	0.023**
hh_rrp	0.107			
hh_gbao	-0.519***	-0.139***	0.139***	-0.020**
hh_urban	0.195**	-0.060***	0.061***	-0.010
comm_hlthriv	-0.012	0.088***	-0.087***	-0.010
comm_sewage	-0.087	-0.015	0.015	0.007
hh_elwinter	0.137*	0.012	-0.013	0.011*
hh_benelig	0.001	0.000	-0.000	0.000
comm_distmkt		-0.001***	0.001***	0.000
comm_roadbd		-0.025*	0.025*	-0.012*
_cons	-0.082	-0.156	1.156***	-0.237*
N	7085	4738	4738	4738

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A3f. Absences from school, marriage and receipt of remittances: regression

Variable	WEEKS MISSSED	MISS,WORK	MISS,FAMILY BUSINESS	MARRIED
Receive remit	0.156***	0.027*	-0.027*	-0.002
comm_disthe	0.002***	0.000***	-0.000***	0.000
lgch_age610	0.033			
lgch_age1114	0.029			
lgch_age1517	0.027	0.041***	-0.041***	0.025***
lgch_age1822	0.008	0.043***	-0.043***	0.023***
boyuz	-0.017	0.043	-0.042	-0.020*
girluz	-0.080	0.054*	-0.054*	-0.033***
girltaj	0.087*	-0.011	0.010	-0.027***
hh_child2	0.018	0.009	-0.009	0.013**
hh_child3	-0.028**	0.005	-0.006	0.000
hh_elder	0.081**	-0.015	0.015	0.005
hh_wom2359	0.020	0.002	-0.002	-0.016***
mom_edsec	0.001	-0.062***	0.062***	0.008
mom_edhe	-0.011	-0.066**	0.066**	0.019
mom_age	0.015	-0.013	0.013	-0.006
mom_agesq	-0.000	0.000	-0.000	0.000
dad_noed	-0.394***	-0.071*	0.071*	-0.011
dad_edsec	-0.281***	-0.062**	0.061**	-0.012
dad_edhe	-0.387***	-0.081***	0.081***	-0.008
hh_khatlon	-0.106	-0.008	0.007	0.005
hh_sogd	0.036	0.057*	-0.057*	0.019
hh_rrp	0.100	-0.119***	0.119***	-0.006
hh_gbao	-0.525***	-0.233***	0.233***	-0.025*
hh_urban	0.192**	-0.081***	0.082***	-0.011
comm_hlthriv	-0.025	0.091***	-0.090***	-0.010
comm_sewage	-0.096	-0.029	0.029	0.007
hh_elwinter	0.135*	0.059**	-0.059**	0.014*
hh_benelig	0.001	0.000	-0.000	0.000
comm_distmkt		-0.001***	0.001***	0.000
comm_roadbd		-0.020	0.020	-0.011*
_cons	-0.123	-0.135	1.135***	-0.234*
N	7085	4738	4738	4738

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A3g. School expenses and migration: regression

Variable	BOOKS	SUPPLIES	UNIFORMS	FOOD	BUILDING	OTHER
Migrant hh	0.004	0.000	0.005	0.019*	0.055***	0.006
comm_disthe	-0.000	-0.000	0.000*	-0.000***	-0.001***	-0.000***
lgch_age610	-0.000	0.001	-0.009*	0.012**	-0.009	-0.001
lgch_age1114	-0.000	0.001	-0.006*	0.007*	-0.005	0.001
lgch_age1517	0.000	0.001	-0.005*	0.006*	-0.003	-0.000
lgch_age1822	-0.007*	-0.002	-0.018***	0.015***	-0.021***	0.000
boyuz	-0.099***	-0.008	-0.023*	0.027	0.004	-0.035**
girluz	-0.058**	0.004	-0.016	0.034*	0.022	-0.027
girltaj	-0.000	0.007	-0.012	-0.002	-0.024*	-0.008
hh_child2	-0.003	0.000	0.004	0.007	-0.003	0.001
hh_child3	-0.002	-0.005***	-0.002	-0.005**	-0.004	-0.003
hh_elder	-0.010	-0.004	0.002	-0.001	0.007	0.005
hh_wom2359	0.009	-0.013**	-0.009*	0.010	0.002	0.022**
mom_edsec	0.021	0.017*	0.028**	-0.010	0.049***	-0.001
mom_edhe	0.031	0.040***	0.052***	-0.012	0.034	0.012
mom_age	0.002	-0.008**	-0.004	-0.010*	0.007	0.003
mom_agesq	-0.000	0.000**	0.000	0.000*	-0.000	-0.000
dad_noed	0.014	-0.012	-0.000	0.012	-0.062*	-0.056*
dad_edsec	-0.021	-0.012	-0.021*	0.025*	0.015	-0.035*
dad_edhe	-0.048*	-0.010	-0.015	0.067***	0.019	-0.042*
hh_khatlon	0.083***	-0.010	0.010	-0.057***	-0.145***	-0.066***
hh_sogd	-0.014	-0.022*	0.002	0.109***	0.116***	0.011
hh_gbao	0.111***	-0.004	-0.001	-0.037**	-0.082***	-0.057***
hh_urban	-0.076***	-0.007	-0.031**	0.042***	0.046**	0.043**
comm_hlthriv	-0.041***	-0.023***	-0.022**	-0.039***	-0.034**	-0.011
comm_sewage	0.026	-0.027**	-0.050***	-0.041**	-0.003	-0.012
hh_elwinter	0.005	0.009	0.000	0.016	0.026	0.010
hh_benelig	-0.000	-0.000	-0.000	0.000	0.000	0.000
mig_dvros2c	0.004	0.000	0.005	0.019*	0.055***	0.006
_cons	0.846***	1.169***	1.157***	0.205*	0.666***	0.136
N	7085	7085	7085	7085	7085	7085

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A3h. School expenses and receipt of remittances: regression

Variable	BOOKS	SUPPLIES	UNIFORMS	FOOD	BUILDING	OTHER
Receive remit	0.017	-0.004	0.003	0.015	0.046***	0.005
comm_disthe	-0.000	-0.000	0.000*	-0.000***	-0.001***	-0.000***
lgch_age610	-0.000	0.001	-0.009*	0.012*	-0.010	-0.002
lgch_age1114	-0.000	0.001	-0.006*	0.007*	-0.006	0.001
lgch_age1517	0.000	0.001	-0.005*	0.005*	-0.003	-0.000
lgch_age1822	-0.007*	-0.002	-0.018***	0.015***	-0.022***	0.000
boyuz	-0.099***	-0.006	-0.024*	0.029*	0.006	-0.034*
girluz	-0.058**	0.006	-0.017	0.035*	0.026	-0.025
girltaj	-0.001	0.008	-0.012	-0.001	-0.022	-0.008
hh_child2	-0.003	0.001	0.004	0.008	-0.002	0.002
hh_child3	-0.002	-0.005***	-0.002	-0.005**	-0.004	-0.003
hh_elder	-0.010	-0.004	0.002	-0.001	0.007	0.005
hh_wom2359	0.009	-0.013**	-0.009	0.010	0.002	0.021**
mom_edsec	0.020	0.017*	0.028**	-0.010	0.049***	-0.001
mom_edhe	0.032	0.038***	0.052***	-0.013	0.033	0.011
mom_age	0.002	-0.007**	-0.004	-0.009*	0.009	0.003
mom_agesq	-0.000	0.000**	0.000	0.000*	-0.000	-0.000
dad_noed	0.014	-0.014	0.001	0.008	-0.071*	-0.059**
dad_edsec	-0.021	-0.013	-0.021*	0.023	0.010	-0.036*
dad_edhe	-0.046*	-0.015	-0.013	0.061***	0.008	-0.045*
hh_khatlon	0.104***	-0.068***	0.039*	-0.129***	-0.283***	-0.114***
hh_sogd	0.006	-0.077***	0.029	0.042	-0.014	-0.034
hh_rrp	0.025	-0.070***	0.035	-0.086***	-0.166***	-0.057*
hh_gbao	0.131***	-0.061***	0.028	-0.107***	-0.218***	-0.104***
hh_urban	-0.070***	-0.020*	-0.025*	0.026*	0.014	0.032*
comm_hlthriv	-0.043***	-0.020**	-0.024***	-0.037***	-0.031*	-0.009
comm_sewage	0.029	-0.037***	-0.046***	-0.053***	-0.028	-0.020
hh_elwinter	-0.006	0.036**	-0.013	0.049***	0.089***	0.032*
hh_benelig	-0.000	-0.000	-0.000	0.000	0.000	0.000
_cons	0.832***	1.196***	1.144***	0.233*	0.718***	0.156
N	7085	7085	7085	7085	7085	7085

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A3i. School expenses, tutoring and migration: regression

Variable	TUTORING	CASH/KIND GIFTS	FEES	TOTAL
Migrant hh	-0.003	-0.017*	-0.001	0.002
comm_disthe	-0.000	-0.000***	-0.000***	0.000
lgch_age610	-0.000	-0.000	0.017**	0.001
lgch_age1114	0.000	-0.001	0.012**	0.001
lgch_age1517	0.001	-0.001	0.009**	0.001
lgch_age1822	0.001	-0.003	0.014***	-0.000
boyuz	-0.002	0.030*	-0.006	0.007
girluz	0.003	0.060***	-0.030*	0.001
girltaj	-0.001	0.012	-0.014	-0.002
hh_child2	0.003	-0.004	0.009	0.003*
hh_child3	0.001	-0.005**	-0.002	-0.000
hh_elder	0.003	0.001	-0.016**	-0.003
hh_wom2359	-0.004*	0.005	-0.010	-0.002
mom_edsec	-0.004	0.023**	0.014	-0.005
mom_edhe	0.048***	0.064***	0.044	-0.017
mom_age	-0.000	-0.002	-0.018***	-0.003
mom_agesq	-0.000	0.000	0.000***	0.000
dad_noed	0.013	0.007	0.009	0.030***
dad_edsec	0.006*	-0.022	0.002	0.018*
dad_edhe	0.011*	-0.022	0.041*	0.018*
hh_khatlon	-0.002	-0.040***	-0.102***	-0.007
hh_sogd	0.007	-0.034**	-0.069***	0.003
hh_gbao	-0.004	-0.049***	-0.095***	0.012**
hh_urban	0.017**	-0.002	0.132***	0.002
comm_hlthriv	0.005	-0.047***	-0.017	-0.002
comm_sewage	0.003	0.005	0.061***	-0.002
hh_elwinter	0.006	-0.025*	-0.047**	0.007
hh_benelig	-0.000	-0.000	0.000	-0.000
_cons	0.005	0.229**	0.508***	1.014***
N	7085	7085	7085	7085

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A3j. School expenses, tutoring and receipt of remittances: regression

Variable	TUTORING	CASH/KIND GIFTS	FEES	TOTAL
Receive remit	0.004	0.006	0.008	0.003
comm_disthe	-0.000	-0.000***	-0.000***	0.000
lgch_age610	-0.000	-0.000	0.016**	0.001
lgch_age1114	0.000	-0.001	0.011**	0.001
lgch_age1517	0.001	-0.001	0.009**	0.001
lgch_age1822	0.001	-0.003	0.013***	-0.000
boyuz	-0.002	0.032*	-0.003	0.007
girluz	0.003	0.062***	-0.026	0.001
girltaj	-0.001	0.013	-0.013	-0.002
hh_child2	0.003	-0.004	0.009	0.003
hh_child3	0.001	-0.005**	-0.002	-0.000
hh_elder	0.003	0.001	-0.016**	-0.003
hh_wom2359	-0.004*	0.003	-0.012	-0.002
mom_edsec	-0.004	0.022**	0.014	-0.005
mom_edhe	0.048***	0.063***	0.042	-0.017
mom_age	-0.000	-0.001	-0.017***	-0.003
mom_agesq	-0.000	0.000	0.000***	0.000
dad_noed	0.013	0.003	0.002	0.030***
dad_edsec	0.007*	-0.024	-0.001	0.018*
dad_edhe	0.012*	-0.026	0.031	0.019*
hh_khatlon	0.006	-0.111***	-0.245***	-0.003
hh_sogd	0.015	-0.100***	-0.202***	0.007
hh_rrp	0.010	-0.085***	-0.171***	0.005
hh_gbao	0.004	-0.119***	-0.235***	0.016*
hh_urban	0.020**	-0.016	0.102***	0.003
comm_hlthriv	0.004	-0.043***	-0.011	-0.003
comm_sewage	0.004	-0.008	0.037*	-0.001
hh_elwinter	0.002	0.007	0.018	0.005
hh_benelig	-0.000	-0.000	0.000	-0.000
_cons	0.000	0.257**	0.567***	1.012***
N	7085	7085	7085	7085

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A3k. Health and migration: regression

Variable	ILLNESS	GOOD HEALTH	POOR HEALTH	IMPROVE	CHRONIC
Migrant hh	0.001	-0.001	-0.002	-0.045***	-0.002
comm_distpc	-0.000	0.000	0.000	0.004	0.009
comm_distpd	-0.000*	-0.000	-0.000	-0.001	-0.010*
lgch_age610	0.001	-0.004	-0.000	-0.001	0.000
lgch_age1114	0.000	-0.003	-0.000	-0.002	0.000
lgch_age1517	0.001	-0.003	0.000	-0.001	0.001
lgch_age1822	-0.000	-0.003	0.000	-0.002	0.002
boyuz	0.000	0.007	-0.001	0.035	-0.004
girluz	0.006	0.020*	0.000	-0.007	-0.008
girltaj	0.015**	-0.007	0.002	-0.028**	0.005
hh_child2	-0.004*	-0.002	0.000	-0.012*	-0.001
hh_child3	-0.002*	-0.001	-0.001**	-0.003	-0.001
hh_elder	-0.010***	-0.009*	-0.000	-0.009	-0.005
hh_wom2359	-0.005	0.005	-0.000	0.001	-0.001
mom_edsec	0.007	0.029***	0.003	-0.001	-0.007
mom_edhe	-0.008	0.051***	0.001	0.005	-0.021*
mom_age	-0.004*	-0.001	-0.001	-0.002*	-0.000
mom_agesq	0.000	0.000	0.000		
dad_noed	0.002	-0.004	-0.008	0.029	0.001
dad_edsec	-0.001	-0.000	-0.010*	0.021	0.005
dad_edhe	-0.003	0.002	-0.011**	0.040*	-0.001
hh_rrp				-0.064*	-0.019
hh_khatlon	0.000	-0.014	-0.001	0.163***	-0.036***
hh_sogd	-0.021***	0.022**	-0.003	-0.049	-0.015
hh_gbao	0.007	-0.003	-0.003	0.222***	-0.031**
hh_urban	-0.003	-0.020*	0.004	-0.060***	-0.007
comm_hlthriv	-0.000	-0.006	0.002	-0.067***	-0.003
comm_sewage	0.003	-0.009	0.000	0.024	0.003
hh_elwinter	0.012*	0.037***	0.003	0.009	0.015*
hh_benelig	0.000	-0.000	0.000	0.000*	0.000**
_cons	0.143**	0.914***	0.038*	0.510***	0.057*
N	10029	10029	10029	10026	10029

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A3l. Health and receipt of remittances: regression

Variable	ILLNESS	GOOD HEALTH	POOR HEALTH	IMPROVE	CHRONIC
Receive remit	0.001	-0.003	0.001	-0.048***	0.004
comm_distpc	-0.000	0.000	-0.000	0.005	0.009
comm_distpd	-0.000*	-0.000	-0.000	-0.003	-0.010*
lgch_age610	0.001	-0.004	-0.000	-0.001	0.000
lgch_age1114	0.000	-0.003	-0.000	-0.002	0.000
lgch_age1517	0.001	-0.003	0.000	-0.001	0.001
lgch_age1822	-0.000	-0.003	0.000	-0.001	0.002
boyuz	0.001	0.006	-0.001	0.036*	-0.003
girluz	0.007	0.019	0.000	-0.008	-0.008
girltaj	0.015**	-0.007	0.002	-0.028**	0.005
hh_child2	-0.004*	-0.003	0.000	-0.011	-0.001
hh_child3	-0.002*	-0.001	-0.001**	-0.003	-0.001
hh_elder	-0.010***	-0.009*	-0.000	-0.009	-0.005
hh_wom2359	-0.005	0.005	-0.000	0.002	-0.001
mom_edsec	0.007	0.029***	0.003	-0.001	-0.008
mom_edhe	-0.009	0.053***	0.001	0.004	-0.021*
mom_age	-0.004	-0.002	-0.001	-0.002*	-0.000
mom_agesq	0.000	0.000	0.000		
dad_noed	0.001	-0.002	-0.009	0.030	0.000
dad_edsec	-0.002	0.001	-0.010*	0.021	0.005
dad_edhe	-0.005	0.006	-0.012**	0.040*	-0.001
hh_khatlon	-0.025*	0.051**	-0.005	0.165***	-0.036***
hh_sogd	-0.045***	0.085***	-0.007	-0.048	-0.015
hh_rrp	-0.031**	0.078***	-0.005	-0.061*	-0.020
hh_gbao	-0.018	0.059**	-0.008	0.223***	-0.031**
hh_urban	-0.009	-0.005	0.003	-0.058***	-0.007
comm_hlthriv	0.001	-0.009	0.002	-0.064***	-0.003
comm_sewage	-0.001	0.001	-0.000	0.026	0.002
hh_elwinter	0.023***	0.008	0.005**	0.009	0.015*
hh_benelig	0.000	-0.000	0.000	0.000*	0.000**
_cons	0.154**	0.887***	0.040*	0.506***	0.057*
N	10029	10029	10029	10026	10029

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A4a. Preschool, health, migration of children less than age 7: IV regression.

Variable	PRESCHOOL	VITAMIN A	POLIO	MEASLES	ILLNESS	POOR HEALTH	IMPROVE
Migrant hh	-0.083	-1.393***	0.329***	0.153	-0.023	0.076	-0.054
comm_dc	0.121***						
comm_kn	0.053*						
age4	0.017						
age5	0.033*						
boyuz	0.058*	0.159	0.010	0.033	0.008	0.007	0.071*
girluz	0.012	0.061	0.020	0.063*	0.004	0.020	0.042
girltaj	0.010	0.098	0.007	0.006	0.006	0.026	-0.004
hh_child2	-0.002	-0.061**	-0.002	0.006	-0.005	-0.003	-0.000
hh_child3	-0.007**	-0.027*	-0.004	-0.004	0.000	-0.003	0.002
hh_elder	-0.004	0.038	-0.004	-0.003	-0.009	-0.000	-0.023*
hh_wom2359	0.007	0.098**	-0.013	-0.008	-0.001	-0.012	-0.008
mom_edsec	0.005	-0.010	0.052**	0.026	-0.001	0.003	-0.021
mom_edhe	0.176***	0.201	0.025	-0.043	0.003	0.048*	-0.057
mom_age	-0.002	-0.010*	0.003**	0.001	-0.000	-0.001	-0.002
dad_noed	0.031	0.411	-0.139*	-0.041	0.031	0.038	0.120
dad_edsec	0.011	0.179*	0.017	0.047	0.001	0.057***	0.081**
dad_edhe	0.057**	0.356**	0.039	0.109***	0.030	0.054**	0.044
hh_khatlon	0.063	0.821***	0.162***	0.079*	-0.048*	0.083***	0.232***
hh_sogd	0.069	1.823***	0.220***	0.251***	-0.068**	0.139***	0.085*
hh_rrp	0.061	0.309*	0.027	-0.087*	-0.033	0.109***	0.058
hh_gbao	0.110*	1.516***	-0.021	0.124**	-0.030	0.085**	0.334***
hh_urban	0.124***	0.270**	0.030	0.002	-0.005	0.003	-0.025
comm_hlthriv	0.020	-0.090	0.021	0.044*	0.020	-0.031**	-0.072***
comm_sewage	0.006	0.213*	0.092***	0.094***	0.011	-0.020	0.065*
hh_elwinter	-0.052*	0.345***	-0.028	-0.038	0.039*	-0.012	0.006
hh_benelig	-0.000	0.000	0.000	0.000	-0.000	0.000	0.000
comm_pc		0.287***	0.016	0.070***	-0.002	-0.016	-0.044*
comm_pd		-0.204**	-0.037*	-0.029	0.028**	-0.039***	0.015
smch_age		0.136***	0.011**	0.103***	-0.008***	0.005	-0.002
smch_oldboy		0.046	0.005	0.006	0.020	0.000	-0.029
_cons	0.009	-0.105	0.467***	0.105	0.105**	0.832***	0.352***
N	1747	3625	3625	3625	4219	4219	3536

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A4b. Preschool, health, remittances of children less than age 7: IV regression.

Variable	PRESCHOOL	VITAMIN A	POLIO	MEASLES	ILLNESS	POOR HEALTH	IMPROVE
Receive remit	0.044	-1.576***	0.533***	0.193*	-0.045	0.139*	0.166
comm_dc	0.131***						
comm_kn	0.055*						
age4	0.017						
age5	0.032*						
boyuz	0.065**	0.106	0.033	0.041	0.007	0.013	0.080*
girluz	0.012	0.055	0.020	0.065*	0.006	0.020	0.044
girltaj	0.012	0.069	0.013	0.010	0.007	0.027*	-0.002
hh_child2	-0.000	-0.048*	-0.003	0.004	-0.005	-0.003	0.002
hh_child3	-0.006*	-0.025	-0.004	-0.004	0.001	-0.004	0.002
hh_elder	-0.007	0.044	-0.008	-0.004	-0.010	-0.001	-0.029**
hh_wom2359	-0.004	0.152**	-0.038**	-0.015	0.000	-0.018*	-0.025
mom_edsec	0.002	0.025	0.042*	0.022	-0.000	-0.000	-0.027
mom_edhe	0.178***	0.134	0.042	-0.035	0.003	0.050*	-0.053
mom_age	-0.001	-0.011*	0.004***	0.001	-0.001	-0.001	-0.001
dad_noed	0.028	0.445	-0.165*	-0.049	0.033	0.035	0.106
dad_edsec	0.010	0.202**	0.013	0.044	-0.000	0.056***	0.086**
dad_edhe	0.065**	0.354**	0.054	0.110***	0.028	0.058**	0.063
hh_khatlon	0.059	0.851***	0.154***	0.075*	-0.048*	0.083***	0.226***
hh_sogd	0.063	1.965***	0.185***	0.237***	-0.066**	0.135***	0.081
hh_rrp	0.046	0.333*	0.012	-0.090*	-0.033	0.105***	0.043
hh_gbao	0.101*	1.490***	-0.023	0.127**	-0.026	0.085**	0.318***
hh_urban	0.129***	0.341**	0.021	-0.004	-0.007	0.004	-0.014
comm_hlthriv	0.016	0.067	-0.029	0.026	0.023*	-0.042***	-0.079***
comm_sewage	0.001	0.235*	0.085***	0.091***	0.013	-0.021	0.058*
hh_elwinter	-0.052*	0.353***	-0.036	-0.039	0.039*	-0.016	0.004
hh_benelig	-0.000	0.001	0.000	-0.000	-0.000	0.000	0.000
comm_pc		0.274***	0.017	0.072***	-0.003	-0.015	-0.040*
comm_pd		-0.319***	-0.005	-0.017	0.028**	-0.031**	0.011
smch_age		0.136***	0.013**	0.103***	-0.008***	0.005	-0.002
smch_oldboy		0.026	0.010	0.008	0.022	0.000	-0.030
boyoth		-0.639	-0.120	-0.091	0.068	0.082	-0.208*
girloth		-0.825**	0.048	-0.232**	-0.006	0.069	0.026
_cons	-0.012	-0.215	0.445***	0.111	0.111**	0.822***	0.311***
N	1747	3625	3625	3625	4219	4219	3536

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A4c. Enrollment in school by age and migration: iv regression

Variable	7-14	15-17	COMPLETE SEC 18-22	HIGHER ED 18-22
Migrant hh	-0.001	0.003	0.208	0.077
comm_disthe	-0.000	-0.000	-0.000	-0.000
lgch_age610	0.144***			
lgch_age1114	0.110***			
boyuz	-0.016	-0.023	-0.007	
girluz	-0.035*	-0.151***	-0.091**	
girltaj	-0.025**	-0.169***	-0.163***	-0.019**
hh_child2	-0.008	0.010	-0.021	-0.003
hh_child3	0.001	-0.004	-0.002	-0.000
hh_elder	-0.001	-0.003	0.034*	0.004
hh_wom2359	-0.010	0.003	-0.010	-0.007
mom_edsec	0.035**	0.037	0.106***	0.003
mom_edhe	0.045*	0.096**	0.204***	0.032
mom_age	0.004	-0.007	-0.005	-0.008
mom_agesq	-0.000	0.000	0.000	0.000
dad_noed	0.031	-0.045	0.059	-0.015
dad_edsec	0.012	0.040	0.121***	0.003
dad_edhe	0.011	0.097**	0.182***	0.014
hh_khatlon	0.023	-0.005	0.036	0.015
hh_sogd	0.030	-0.080	0.048	-0.000
hh_rrp	-0.002	-0.030	-0.011	-0.002
hh_gbao	0.037	0.157***	0.152**	0.016
hh_urban	0.005	-0.002	0.062*	0.006
comm_hlthriv	-0.016	0.003	-0.010	-0.005
comm_sewage	-0.018	0.038	0.008	0.001
hh_elwinter	-0.002	0.086**	-0.008	-0.017
hh_benelig	-0.000	-0.000	0.000	0.000
lgch_age		-0.129***	0.790***	-0.174*
lgch_agesq			-0.019***	0.005*
lgch_ethuz				-0.011
_cons	-0.510***	3.007***	-7.696***	1.785*
N	5291	2244	2494	2494

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A4d. Enrollment in school by age and receipt of remittances: iv regression

Variable	7-14	15-17	COMPLETE SEC 18-22	HIGHER ED 18-22
Receive remit	-0.042	0.033	0.197	0.065
comm_disthe	-0.000	-0.000	-0.000	-0.000
lgch_age610	0.144***			
lgch_age1114	0.110***			
boyuz	-0.016	-0.022	-0.009	
girluz	-0.036*	-0.151***	-0.084*	
girltaj	-0.024**	-0.168***	-0.157***	-0.015*
hh_child2	-0.008	0.009	-0.025*	-0.004
hh_child3	0.001	-0.004	-0.000	0.000
hh_elder	-0.001	-0.002	0.037*	0.005
hh_wom2359	-0.007	0.002	-0.009	-0.007
mom_edsec	0.035**	0.036	0.109***	0.004
mom_edhe	0.044*	0.097**	0.213***	0.036
mom_age	0.004	-0.009	0.000	-0.005
mom_agesq	-0.000	0.000	0.000	0.000
dad_noed	0.034	-0.045	0.064	-0.014
dad_edsec	0.012	0.039	0.117***	0.002
dad_edhe	0.009	0.098**	0.189***	0.014
hh_khatlon	0.024	-0.007	0.024	0.013
hh_sogd	0.029	-0.081	0.033	-0.004
hh_rrp	0.001	-0.033	-0.029	-0.004
hh_gbao	0.040	0.155***	0.143**	0.016
hh_urban	0.003	-0.001	0.059*	0.006
comm_hlthriv	-0.015	0.002	-0.028	-0.011
comm_sewage	-0.016	0.036	-0.003	-0.002
hh_elwinter	-0.001	0.086**	-0.003	-0.017
hh_benelig	-0.000	-0.000	0.000	-0.000
lgch_age		-0.129***	0.740***	-0.197**
lgch_agesq			-0.017***	0.005**
lgch_ethuz				-0.009
_cons	-0.504***	3.063***	-7.316***	1.960**
N	5287	2242	2493	2493

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A4e. Absences from school, marriage and migration: iv regression

Variable	WEEKS MISSSED	MISS,WORK BUSINESS	MISS,FAMILY	MARRIED
Migrant hh	0.476*	0.122	-0.121	-0.044
comm_disthe	0.002***	0.000***	-0.000***	0.000
lgch_age610	0.034			
lgch_age1114	0.031			
lgch_age1517	0.026	0.041***	-0.041***	0.024***
lgch_age1822	0.011	0.043***	-0.043***	0.022***
boyuz	-0.003	0.049*	-0.049*	-0.024*
girluz	-0.074	0.055*	-0.055*	-0.034***
girltaj	0.061	-0.011	0.011	-0.027***
hh_child2	0.019	0.009	-0.009	0.013**
hh_child3	-0.020*	0.006	-0.006	0.000
hh_elder	0.052	-0.011	0.012	0.004
hh_wom2359	0.001	-0.003	0.003	-0.013**
mom_edsec	-0.009	-0.066***	0.065***	0.009
mom_edhe	-0.069	-0.062*	0.062*	0.019
mom_age	0.001	-0.016	0.016	-0.006
mom_agesq	-0.000	0.000	-0.000	0.000
dad_noed	-0.389***	-0.076**	0.076**	-0.011
dad_edsec	-0.296***	-0.064**	0.064**	-0.011
dad_edhe	-0.378***	-0.082***	0.082***	-0.009
hh_khatlon	-0.089	0.000	-0.001	0.000
hh_sogd	-0.001	0.060*	-0.060*	0.009
hh_rrp	0.126	-0.114***	0.114***	-0.010
hh_gbao	-0.490***	-0.229***	0.229***	-0.028*
hh_urban	0.224***	-0.074***	0.075***	-0.014
comm_hlthriv	-0.008	0.097***	-0.096***	-0.010
comm_sewage	-0.106	-0.027	0.027	0.004
hh_elwinter	0.116*	0.055**	-0.055**	0.015**
hh_benelig	0.001	0.000	-0.000	0.000
comm_distmkt		-0.001***	0.001***	0.000
comm_roadbd		-0.023	0.022	-0.010
_cons	0.099	-0.067	1.068***	-0.219*
N	7085	4738	4738	4738

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A4f. Absences from school, marriage and receipt of remittances: iv regression

Variable	WEEKS MISSSED	MISS,WORK BUSINESS	MISS,FAMILY	MARRIED
Receive remit	0.013	0.076	-0.074	-0.045
comm_disthe	0.002***	0.000***	-0.000***	0.000
lgch_age610	0.037			
lgch_age1114	0.032			
lgch_age1517	0.027*	0.041***	-0.041***	0.024***
lgch_age1822	0.012	0.044***	-0.044***	0.022***
boyuz	-0.018	0.045	-0.045	-0.024*
girluz	-0.084	0.056*	-0.056*	-0.035***
girltaj	0.070	-0.010	0.010	-0.027***
hh_child2	0.019	0.008	-0.008	0.013**
hh_child3	-0.023*	0.006	-0.006	-0.000
hh_elder	0.051	-0.012	0.012	0.003
hh_wom2359	0.032	0.000	-0.000	-0.013**
mom_edsec	0.002	-0.064***	0.063***	0.009
mom_edhe	-0.074	-0.062*	0.061*	0.017
mom_age	0.004	-0.013	0.013	-0.007
mom_agesq	-0.000	0.000	-0.000	0.000
dad_noed	-0.388***	-0.074**	0.074**	-0.011
dad_edsec	-0.309***	-0.065**	0.064**	-0.010
dad_edhe	-0.406***	-0.081***	0.082***	-0.009
hh_khatlon	-0.088	-0.007	0.006	0.003
hh_sogd	-0.009	0.053	-0.053	0.012
hh_rrp	0.134	-0.122***	0.122***	-0.005
hh_gbao	-0.491***	-0.231***	0.231***	-0.026*
hh_urban	0.181**	-0.078***	0.078***	-0.014
comm_hlthriv	-0.023	0.089***	-0.088***	-0.007
comm_sewage	-0.097	-0.029	0.029	0.006
hh_elwinter	0.129*	0.060**	-0.060**	0.014*
hh_benelig	0.001	0.000	-0.000	0.000
comm_distmkt		-0.001***	0.001***	0.000
comm_roadbd		-0.019	0.019	-0.011*
_cons	0.087	-0.140	1.140***	-0.191
N	7079	4735	4735	4735

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A4g. School expenses and migration: iv regression

Variable	BOOKS	SUPPLIES	UNIFORMS	FOOD	BUILDING	OTHER
Migrant hh	0.117*	0.033	0.034	0.018	0.314***	-0.060
comm_disthe	-0.000	-0.000	0.000*	-0.000***	-0.001***	-0.000***
lgch_age610	0.000	-0.000	-0.009*	0.013**	-0.009	-0.001
lgch_age1114	0.000	0.001	-0.005*	0.007*	-0.005	0.001
lgch_age1517	0.000	0.001	-0.004*	0.006*	-0.003	0.000
lgch_age1822	-0.006*	-0.003	-0.017***	0.015***	-0.021***	0.000
boyuz	-0.095***	-0.007	-0.022	0.028	0.014	-0.033*
girluz	-0.056**	0.007	-0.016	0.034*	0.029	-0.025
girltaj	-0.001	0.008	-0.012	-0.002	-0.026*	-0.006
hh_child2	-0.003	-0.000	0.004	0.008	-0.001	0.001
hh_child3	-0.001	-0.005***	-0.002	-0.005**	-0.003	-0.003
hh_elder	-0.008	-0.003	0.002	-0.002	0.009	0.003
hh_wom2359	0.003	-0.014**	-0.010*	0.010	-0.017	0.025***
mom_edsec	0.019	0.015*	0.027**	-0.009	0.046**	-0.001
mom_edhe	0.033	0.036**	0.050***	-0.013	0.035	0.005
mom_age	0.001	-0.008**	-0.004	-0.009*	0.007	0.003
mom_agesq	-0.000	0.000**	0.000	0.000*	-0.000	-0.000
dad_noed	0.012	-0.017	0.000	0.003	-0.071*	-0.052*
dad_edsec	-0.021	-0.011	-0.020*	0.021	0.014	-0.031*
dad_edhe	-0.043*	-0.013	-0.012	0.060***	0.023	-0.043*
hh_khatlon	0.103***	-0.061***	0.047**	-0.131***	-0.292***	-0.118***
hh_sogd	0.013	-0.072***	0.038*	0.039	-0.014	-0.038
hh_rrp	0.023	-0.063***	0.042*	-0.087***	-0.178***	-0.057*
hh_gbao	0.128***	-0.057***	0.034	-0.109***	-0.232***	-0.108***
hh_urban	-0.060***	-0.015	-0.019	0.026	0.037*	0.024
comm_hlthriv	-0.036***	-0.016**	-0.020**	-0.035***	-0.018	-0.013
comm_sewage	0.026	-0.032***	-0.043***	-0.052***	-0.035*	-0.024
hh_elwinter	-0.010	0.032**	-0.019	0.051***	0.085***	0.036*
hh_benelig	-0.000	-0.000	-0.000	0.000	0.000	0.000
_cons	0.821***	1.197***	1.145***	0.230*	0.710***	0.162
N	7085	7085	7085	7085	7085	7085

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A4h. School expenses and receipt of remittances: iv regression

Variable	BOOKS	SUPPLIES	UNIFORMS	FOOD	BUILDING	OTHER
Receive remit	0.106	0.051	0.063	-0.035	0.185**	-0.133*
comm_disthe	-0.000	-0.000	0.000*	-0.000***	-0.001***	-0.000***
lgch_age610	-0.000	-0.000	-0.009*	0.013**	-0.010	0.000
lgch_age1114	0.000	0.001	-0.006*	0.007*	-0.006	0.002
lgch_age1517	0.000	0.001	-0.005*	0.006*	-0.003	0.000
lgch_age1822	-0.006*	-0.003	-0.017***	0.015***	-0.022***	0.001
boyuz	-0.097***	-0.007	-0.023*	0.027	0.007	-0.033*
girluz	-0.056**	0.008	-0.016	0.033*	0.030	-0.027
girltaj	-0.001	0.008	-0.012	-0.001	-0.023	-0.005
hh_child2	-0.004	-0.001	0.003	0.008	-0.004	0.004
hh_child3	-0.002	-0.005**	-0.002	-0.006**	-0.004	-0.003
hh_elder	-0.008	-0.003	0.003	-0.002	0.009	0.003
hh_wom2359	0.003	-0.015**	-0.012*	0.013*	-0.008	0.030***
mom_edsec	0.017	0.014	0.026**	-0.007	0.044**	0.003
mom_edhe	0.035	0.037***	0.052***	-0.015	0.039	0.003
mom_age	0.003	-0.007**	-0.004	-0.009*	0.010*	0.001
mom_agesq	-0.000	0.000*	0.000	0.000*	-0.000*	-0.000
dad_noed	0.009	-0.019	-0.002	0.006	-0.079**	-0.048*
dad_edsec	-0.024	-0.012	-0.021*	0.021	0.006	-0.031
dad_edhe	-0.046*	-0.013	-0.011	0.058***	0.010	-0.048*
hh_khatlon	0.102***	-0.063***	0.044*	-0.129***	-0.290***	-0.115***
hh_sogd	0.010	-0.074***	0.036*	0.040	-0.017	-0.038
hh_rrp	0.019	-0.067***	0.038*	-0.084***	-0.177***	-0.051*
hh_gbao	0.125***	-0.060***	0.030	-0.106***	-0.231***	-0.102***
hh_urban	-0.064***	-0.015	-0.019	0.022	0.021	0.023
comm_hlthriv	-0.044***	-0.020**	-0.024***	-0.035***	-0.038**	-0.005
comm_sewage	0.023	-0.035***	-0.047***	-0.050***	-0.040*	-0.016
hh_elwinter	-0.009	0.032**	-0.019	0.052***	0.085***	0.038*
hh_benelig	-0.000	-0.000	-0.000	0.000	0.000	0.000
_cons	0.798***	1.186***	1.130***	0.245**	0.687***	0.183
N	7079	7079	7079	7079	7079	7079

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A4i. School expenses, tutoring and migration: iv regression

Variable	TUTORING	CASH/KIND GIFTS	FEES	TOTAL
Migrant hh	0.005	-0.157***	-0.328***	0.050**
comm_disthe	-0.000	-0.000***	-0.000***	0.000
lgch_age610	-0.000	-0.001	0.016**	0.001
lgch_age1114	0.000	-0.002	0.011**	0.002
lgch_age1517	0.001	-0.001	0.008*	0.001
lgch_age1822	0.001	-0.003	0.013***	-0.000
boyuz	-0.000	0.028*	-0.011	0.009
girluz	0.004	0.060***	-0.029	0.002
girltaj	-0.000	0.014	-0.009	-0.002
hh_child2	0.002	-0.004	0.010	0.003*
hh_child3	0.001	-0.006***	-0.005*	-0.000
hh_elder	0.002	-0.001	-0.018**	-0.002
hh_wom2359	-0.004*	0.014*	0.010	-0.005*
mom_edsec	-0.004	0.025**	0.021	-0.006
mom_edhe	0.045***	0.060***	0.038	-0.017
mom_age	-0.001	-0.001	-0.016**	-0.003
mom_agesq	0.000	0.000	0.000**	0.000
dad_noed	0.008	0.005	0.005	0.030***
dad_edsec	0.006	-0.025*	-0.007	0.019*
dad_edhe	0.012*	-0.034*	0.010	0.022*
hh_khatlon	0.001	-0.107***	-0.233***	-0.004
hh_sogd	0.009	-0.103***	-0.209***	0.008
hh_rrp	0.005	-0.079***	-0.156***	0.004
hh_gbao	-0.002	-0.112***	-0.219***	0.014*
hh_urban	0.017**	-0.029*	0.072***	0.007
comm_hlthriv	0.004	-0.051***	-0.026**	0.000
comm_sewage	0.004	-0.001	0.047**	-0.002
hh_elwinter	0.004	0.011	0.023	0.004
hh_benelig	-0.000	-0.000	0.000	-0.000
_cons	0.014	0.272**	0.593***	1.007***
N	7085	7085	7085	7085

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A4j. School expenses, tutoring and receipt of remittances: iv regression

Variable	TUTORING	CASH/KIND GIFTS	FEES	TOTAL
Receive remit	-0.032*	-0.115**	-0.329***	0.062**
comm_disthe	-0.000	-0.000***	-0.000***	0.000
lgch_age610	0.000	-0.000	0.017**	0.001
lgch_age1114	0.000	-0.001	0.011**	0.001
lgch_age1517	0.001	-0.001	0.009**	0.001
lgch_age1822	0.001	-0.003	0.013***	-0.000
boyuz	-0.001	0.031*	-0.006	0.008
girluz	0.003	0.060***	-0.032*	0.003
girltaj	-0.000	0.012	-0.011	-0.002
hh_child2	0.003	-0.002	0.014*	0.002
hh_child3	0.001	-0.005**	-0.004*	-0.000
hh_elder	0.002	-0.001	-0.020***	-0.002
hh_wom2359	-0.002	0.011	0.011	-0.006*
mom_edsec	-0.003	0.027**	0.027*	-0.007
mom_edhe	0.045***	0.060***	0.031	-0.015
mom_age	-0.001	-0.003	-0.021***	-0.002
mom_agesq	0.000	0.000	0.000***	0.000
dad_noed	0.012	0.009	0.018	0.027***
dad_edsec	0.007*	-0.022	0.000	0.017*
dad_edhe	0.010*	-0.032*	0.016	0.021*
hh_khatlon	0.004	-0.107***	-0.230***	-0.004
hh_sogd	0.012	-0.104***	-0.205***	0.009
hh_rrp	0.009	-0.077***	-0.146***	0.002
hh_gbao	0.002	-0.111***	-0.210***	0.012
hh_urban	0.016*	-0.022	0.082***	0.006
comm_hlthriv	0.005	-0.040***	-0.002	-0.004
comm_sewage	0.006	0.002	0.058**	-0.005
hh_elwinter	0.004	0.010	0.024	0.004
hh_benelig	-0.000	-0.000	0.000	-0.000
_cons	0.019	0.295***	0.667***	0.992***
N	7079	7079	7079	7079

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A4k. Health and migration: iv regression

Variable	ILLNESS	GOOD HEALTH	POOR HEALTH	IMPROVE	CHRONIC
Migrant hh	-0.048	0.007	-0.020*	-0.283***	-0.071**
comm_distpc	-0.000	0.000	-0.000	-0.002	0.004
comm_distpd	-0.000*	-0.000	-0.000	0.011	-0.006
lgch_age610	0.002	-0.005	0.001	-0.001	0.001
lgch_age1114	0.001	-0.004	0.000	-0.002	0.001
lgch_age1517	0.001	-0.003	0.000	-0.001	0.001
lgch_age1822	0.000	-0.003	0.000	-0.002	0.002*
boyuz	0.001	0.006	0.001	0.025	-0.008
girluz	0.002	0.018	-0.000	-0.009	-0.011
girltaj	0.015**	-0.006	0.002	-0.027*	0.005
hh_child2	-0.004	-0.001	-0.000	-0.014*	-0.001
hh_child3	-0.003**	-0.001	-0.001	-0.005	-0.000
hh_elder	-0.008**	-0.010*	-0.001	-0.011	-0.004
hh_wom2359	-0.000	0.003	0.002	0.015	0.002
mom_edsec	0.008	0.028***	0.002	0.005	-0.007
mom_edhe	-0.006	0.052***	-0.001	-0.003	-0.017*
mom_age	-0.002	-0.002	-0.000	-0.001	-0.000
mom_agesq	0.000	0.000	0.000		
dad_noed	0.003	0.000	-0.005	0.038	0.006
dad_edsec	0.000	-0.001	-0.005	0.023	0.006
dad_edhe	-0.003	0.002	-0.006	0.033	-0.001
hh_khatlon	-0.018	0.044**	-0.003	0.161***	-0.026**
hh_sogd	-0.042***	0.080***	-0.003	-0.063*	-0.006
hh_rrp	-0.022*	0.071***	-0.002	-0.068**	-0.012
hh_gbao	-0.013	0.048**	-0.002	0.227***	-0.014
hh_urban	-0.016*	-0.004	-0.001	-0.078***	-0.013*
comm_hlthriv	-0.004	-0.008	0.001	-0.079***	-0.004
comm_sewage	0.000	-0.002	-0.000	0.026	0.004
hh_elwinter	0.021**	0.008	0.003	0.016	0.015*
hh_benelig	0.000	-0.000	0.000	0.000*	0.000*
_cons	0.096	0.902***	0.010	0.530***	0.038
N	10029	10029	10029	10026	10029

legend: * p<0.05; ** p<0.01; *** p<0.001

Table A4l. Health and receipt of remittances: iv regression

Variable	ILLNESS	GOOD HEALTH	POOR HEALTH	IMPROVE	CHRONIC
Receive remit	-0.091**	0.044	-0.021*	-0.401***	-0.040
comm_distpc	-0.000	0.000	-0.000	0.005	0.006
comm_distpd	-0.000**	-0.000	-0.000	-0.004	-0.010*
lgch_age610	0.002	-0.005	0.000	0.000	0.001
lgch_age1114	0.001	-0.004	0.000	-0.002	0.001
lgch_age1517	0.001	-0.003	0.000	-0.001	0.001
lgch_age1822	0.000	-0.003	0.000	-0.001	0.002*
boyuz	-0.000	0.007	0.002	0.025	-0.005
girluz	-0.000	0.018	-0.000	-0.014	-0.011
girltaj	0.014**	-0.007	0.002	-0.028*	0.004
hh_child2	-0.003	-0.002	0.000	-0.009	0.000
hh_child3	-0.003**	-0.000	-0.001*	-0.006*	-0.000
hh_elder	-0.010***	-0.010*	-0.001	-0.015*	-0.004
hh_wom2359	0.002	0.001	0.002	0.025**	0.000
mom_edsec	0.009	0.027***	0.002	0.008	-0.006
mom_edhe	-0.010	0.054***	-0.002	-0.016	-0.015
mom_age	-0.003	-0.002	-0.001	-0.001	-0.000
mom_agesq	0.000	0.000	0.000		
dad_noed	0.004	-0.003	-0.005	0.054*	0.006
dad_edsec	0.002	-0.003	-0.004	0.033	0.007
dad_edhe	-0.004	0.002	-0.006	0.034	0.000
hh_khatlon	-0.017	0.042*	-0.002	0.174***	-0.022*
hh_sogd	-0.042***	0.080***	-0.002	-0.048	-0.003
hh_rrp	-0.020	0.069***	-0.001	-0.041	-0.010
hh_gbao	-0.012	0.047*	-0.002	0.240***	-0.012
hh_urban	-0.017*	-0.003	0.000	-0.075***	-0.008
comm_hlthriv	-0.001	-0.009	0.003*	-0.056***	0.000
comm_sewage	0.002	-0.001	0.001	0.041*	0.004
hh_elwinter	0.023**	0.008	0.003	0.017	0.014*
hh_benelig	0.000	-0.000	0.000	0.000**	0.000*
_cons	0.118*	0.896***	0.013	0.510***	0.026
N	10022	10022	10022	10019	10022

legend: * p<0.05; ** p<0.01; *** p<0.001

Bibliography

Acosta, Pablo, 2007. What is the impact of international remittances on poverty and inequality in Latin America? World Bank Policy Research Working Paper #4249. Washington, DC: The World Bank.

Adams, Richard H. 2006. International remittances and the household: Analysis and review of global evidence. *Journal of African Economies* v. 15 (AERC Supplement 2): pp.396-425.

Amuedo-Dorantes, Catalina, Annie Georges, and Susan Pozo, 2008.Migration, remittances, and children's schooling in Haiti. IZA Discussion Paper #3657. Bonn, Germany: IZA.

Batista, Catia, Aitor LaCuesta, and Pedro C. Vicente, 2007. Brain drain or brain gain? Micro evidence from an African success story. IZA Discussion Paper #3035. Bonn, Germany: IZA.

Booth, Alison and Yuji Tamura, 2009. Impact of paternal temporary absence on children left behind. Centre for Economic Policy Research Discussion Paper #617. Canberra, Australia: Australian National University.

Brown, Richard, Saodat Olimova, and Muhammadi Boboev, 2008. A study on international migrants' remittances in Central Asia and South Caucasus: Country report on remittances of international migrants in Tajikistan. Manila, the Philippines: Asian Development Bank.

DeBrauw, Alan and John Giles, 2006. Migrant opportunity and the educational attainment of youth in rural China. IZA Discussion Paper #2326. Bonn, Germany: IZA.

Duflo, Esther. 2003. Grandmothers and granddaughters: Old age pension and intra-household allocation in South Africa. *World Bank Economic Review* v.17(1): 1-25.

Edwards, Alejandra Cox and Manuelita Ureta, 2003. International migration, remittances, and schooling: Evidence from El Salvador. *Journal of Development Economics* v. 72: 429-461.

Gibson, John, David McKenzie, and Steven Stillman, 2008. The impact of international migration on remaining household members: Omnibus results from a migration lottery program. Mimeo.

Hildebrandt, Nicole and David J. McKenzie, 2005. The effects of migration on child health in Mexico. *Economia* Fall: 257-284.

Kanaiaupuni, Shawn M. and Katherine Donato, 1999.Migradollars and mortality: The effects of migration on infant mortality in Mexico. *Demography* v.36(3): 339-353.

Kandal, William and Grace Kao, 2001. The impact of temporary labor migration on Mexican children's educational aspirations and performance. *International Migration Review* v. 35(4): 1205-1231.

Konseiga, Adama, 2008. Family migration: A vehicle of child morbidity in the informal settlements in Nairobi, Kenya. IZA Discussion Paper #3567. Bonn, Germany: IZA.

Konseiga, Adama, Eliya M. Zulu, and Yazoume Ye, 2006. Assessing the effect of mother's migration on child mortality in informal settlements of Nairobi. IZA Discussion Paper #2295. Bonn, Germany: IZA.

Korobkov, Andrei, 2007. Migration trends in Central Eurasia: Politics versus economics. *Communist and Post-communist Studies* v. 40: 169-189.

Mansuri, Ghazala, 2006. Migration, sex bias, and child growth in rural Pakistan. World Bank Policy Research Working Paper # 3946. Washington, DC: The World Bank.

McKenzie, David and Hillel Rapaport, 2006. Can migration reduce educational attainment? Evidence from Mexico. World Bank Policy Research Working Paper # 3952. Washington, DC: The World Bank.

Miranda, Alfonso, 2007. Migrant networks, migrant selection, and high school graduation in Mexico. IZA Discussion Paper #3204. Bonn, Germany: IZA.

Mu, Ren and Dominique Van de Walle. 2010. Left behind to farm? Women's labor re-allocation in rural China. Paper presented at the 2010 meeting of the Southern Economic Association, Atlanta, GA.

Olimnova, Saodat and Muzaffar Olimov. 2007. Labor migration from mountainous areas in the Central Asian region: Good or evil? *Mountain Research and Development* v. 27(2): 104-108. [summary of IOM report, 2004]

Parker, Susan W., Luis Rubalcava and Graciela Teruel. 2008. Evaluating conditional schooling and health programs. In, T. Paul Schultz and John Strauss (eds.), *Handbook of Development Economics*, v. 4. Amsterdam: North Holland Press, pp. 3963-4024.

Pomfret, Richard. 1995. *The Economies of Central Asia.* Princeton, NJ: Princeton University Press.

Ssengonzi, Robert, Gordon F. DeJong, and C. Shannon Stokes, 2002. The effect of female migration on infant and child survival in Uganda. *Population Research and Policy Review* v.21: pp. 403-431.

Thieme, Susan. 2007. Osh-Bishkek-Almaty-Moscow and return? How different generations sustain their livelihoods in multilocal settings. Paper presented at the Social Research Center, American University of Central Asia, Bishkek, Kyrgyz Republic.

Transparency International, 2010. *Corruption Perceptions Index 2010*. www.transparency.org for complete report.

University of Central Asia, 2006. Analysis of remittance flows to GBAO. Khorog, Badakshan, Tajikistan.

World Bank, 2010. *Migration and Remittances, 2010*. Washington, DC: The World Bank. www.worldbank.org for online version.

World Bank, 2008. Tajikistan Living Standards Measurement Survey, 2007: Basic information document. Washington, DC.

Yang, Dean, 2006. International migration, remittances, and household investment: Evidence from Philippine migrants' exchange rate shocks. NBER Working Paper #12325. Cambridge, MA: National Bureau of Economic Research.