

Meier, Kristina

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DIW Berlin
German Institute for Economic Research
Mohrenstr. 58
10117 Berlin

Tel. +49 (30) 897 89-0
Fax +49 (30) 897 89-200
<http://www.diw.de>

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Low-skilled labor migration in Tajikistan: Determinants and effects on expenditure patterns

Kristina Meier*

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Abstract: It is often assumed that international labor migration from Tajikistan, while having no noticeable effects on investment (usually defined as medium and long-term consumption, such as education, or investment into housing or business), on average leads to an increase in short-term consumption, mostly food. In this paper, a simple household-level model determining the migration decision is developed and tested empirically. In a second step, the effect of low-skilled labor migration on household expenditure shares is analyzed using 2SLS. While only weak effects of migration measured by a simple dummy are visible, repeating the analysis using the length of the migration spell instead, as well as its squared term, reveals that labor migration apparently takes a while to "kick in" and become profitable to those remaining at home. The observed long-term effects on household consumption patterns, albeit being rather small, actually speak in favour of investment of remittances, with the respective shares increasing over time, while the budget share spent on food slowly decreases.

Keywords: labor migration, remittances, consumption shares, Tajikistan

JEL-classification: J61, F22, I31

*DIW Berlin, Mohrenstr.58, 10117 Berlin, Germany, kmeier@diw.de

1 Introduction

The impact of remittances from labor migration in developing countries is the topic of extensive research. The question of how they influence overall poverty outcomes (see, for example, Adams and Page [2005], Gupta et al. [2009]), as well as the income distribution of the recipient country is of central interest (e.g. Adams [1989], Barham and Boucher [1998], Acosta et al. [2008], Shen et al. [2010]). However, some studies also take a more micro-oriented approach and investigate the effects on well-being of the household members remaining at home. Results of these studies are mixed, some concluding that remittances are mostly used to cover day-to-day needs, rather than being invested productively (see, for example Lipton, 1980, Orozco et al., 2005, Cohen, 2005, Clement, 2011), while others find significant increases in household investments (e.g. Adams, 1989, Adams and Page, 2005, Acosta et al., 2007, Woodruff and Zenteno, 2007). Of great importance in this context are the determinants of labor migration. Since leaving one's home country is usually quite costly both financially and emotionally, the driving factors must be substantial to justify such a big step. It is straightforward to assume that unemployment at home plays a role, or, if that is not the case, that earning prospects abroad are significantly better. Further, the decision to migrate most likely is not an individual one, but is made at the household level (see, for example Stark, 1984, Taylor, 1987, Kainaiaupuni, 2000). If a household member is to go abroad, the necessary financial means for the journey etc. have to be available, and there might be a need to shift both the responsibilities and the work burden within the household, especially if the family member leaving was previously unemployed and doing chores at home. This might lead to a reduction in labor supply offered domestically, for which the literature finds some evidence. (see Justino and Shemyakina, 2010 for Tajikistan, as well as Amuedo-Dorantes and Pozo, 2006 and Funkhouser,

1992 for the Latin American context). Finally, the existence of migrant networks seems to play an important role, facilitating orientation in the foreign job market (Carrington and Vishwanath, 1996, Bauer et al., 2002, Woodruff and Zenteno, 2007, McKenzie and Rapoport, 2010).

Somewhat less attention is given to the question of whether a difference between short and long-term effects of remittances from labor migration exists. Most existing work (see, for example, Taylor, 1992) base the (assumed positive) long-term effects mainly on productive asset accumulation. In this paper, an alternative hypothesis is introduced. It is assumed that the early effects of labor migration might be almost non-existent or in some cases even negative, since the initial costs of migration, which especially for Tajikistan seem substantial, first have to be recovered by inflowing remittances. This process is slowed down by the fact that new migrants need some time to establish themselves in their new working environment and find profitable jobs. This paper contributes to the existing literature in two ways: First, the determinants of low-skilled¹ labor migration in the Tajik context are theoretically modelled and tested empirically. Using the results to control for the selectivity of migration, the impact of migration on household expenditure shares is then estimated. Finally, this analysis is extended to include the length of the migration spell, rather than a simple dummy or the amount currently remitted, to gauge possible long-term effects. To the author's best knowledge, this is the first time this is attempted for the case of Tajikistan.

The remainder of this paper is structured as follows: Section two gives some background on Tajikistan, section three briefly introduces the data. The model of the determinants of labor migration is introduced in section four, while section

¹ Since the majority of labor migrants takes on low-skilled jobs, such as construction work, abroad (even if the amount of people with secondary education is quite high among migrants), the analysis is limited to the effects of such types of employment. It needs to be noted, however, that the inclusion of high-skilled labor migrants does not significantly change the results, because the number of observations is very low.

five outlines the methodology used. Descriptive results are presented in section six, results of the model estimations can be found in section seven. Section eight concludes.

2 The case of Tajikistan

The Republic of Tajikistan is a small, landlocked country in Central Asia, the poorest among the states of the former Soviet Union.² A number of factors make the economic development of Tajikistan problematic. First, over 90% of its territory is mountainous, with about 50% as high as (or higher than) 3000 meters above sea level, and only approximately 7% of it suitable for farming. Natural resources are limited. Both agriculture and industry are almost exclusively centered on cotton production and aluminum,³ which reflects Tajikistan's role in a centrally planing Soviet Union, leaving the economy very vulnerable to fluctuations in demand for these commodities. To add to this, the country suffered a devastating civil war (1992-1997), following the break-up of the Soviet Union, that further inhibited Tajikistan's economic development. In such a setting, labor migration seems like a natural mitigation strategy, and, indeed, Tajikistan has one of the highest (if not the highest) percentage of remittances to GDP in the world.⁴ The most popular country of destination is Russia, since many Tajiks still have at least a working knowledge of the Russian language, and are allowed to enter the country without visa.⁵

²In 2010 it had a HDI of 0.58 and therefore ranked 112th among 169 countries (see UNDP, 2010).

³Another branch of industry gaining in importance, but still comparatively small is hydropower electricity generation through.

⁴Some estimates yield figures as high as 45% in 2008 (see Ratha et al., 2008).

⁵While entering Russia is easy for Tajik citizens, obtaining legal residence and work permits is often significantly more difficult, giving rise to large numbers of illegal workers and the associated problems. Following the recent financial crisis, Russian immigration laws were tightened, making legal labor migration harder for Tajiks.

2.1 Tajik labor migration

While the effect of labor migration on the households at home is the topic of various research, the case of Tajikistan, which is one (if not the) leading country in terms of labor migration, has so far been somewhat neglected. The (to the author’s knowledge) only paper attempting a methodologically rigorous impact evaluation of labor migration on consumption and investment patterns in Tajikistan is the work by Clement [2011]. Using propensity score matching on the 2003 Tajikistan Living Standard Survey (TLSS), he finds a positive significant effect of external remittances on per capita food consumption, while ”investment” expenditures (in his definition those include expenditures on health, education, agriculture, rent, utilities, as well as transfers to others) are negatively affected. Olimova and Olimov, 2007 reach the same conclusion doing a descriptive analysis of migrant families, with focus on the high-altitude regions of Tajikistan. They assume that remittances from labor migrants are mostly used to cover day-to-day needs, and do not lead to significant capital accumulation or investment. Comparable results are obtained by Buckley and Hofmann [2012] in their predominantly descriptive analysis of the 1997, 2003 and 2007 LSMS data for Tajikistan. A number of other articles (e.g Mughal, 2007, Olimova and Bosc, 2003) support this theory, albeit without empirically testing it.

3 Data

The data source used is the 2007 Tajikistan Living Standard Survey (TLSS 2007), prepared by the World Bank in collaboration with UNICEF and carried out by the National Committee for Statistics (formerly Goskomstat; now Tajs-tat). The survey is representative on the national, rural/urban, as well as the

district (oblast⁶) level, with the sampling frame based on the 2000 Census of Tajikistan.

The survey has a complex survey design, with a total of 270 clusters, where each cluster is either fully urban or fully rural and contains 18 households. The total number of households is 4860. Due to missings in some needed variables, the final estimation sample comprises of 4715 households. The survey includes data on the socio-demographic composition of the household, labor market activities, the health and education of individuals, transfers to the household from various sources and a very detailed module on migration.

4 Modeling determinants of labor migration

Since labor migration is a highly selective process, further analysis of its impacts needs to be preceded by a solid investigation of its determinants. In the following, a simple, one-period income optimization model on the household level⁷ is derived, similar to the one used by McKenzie and Rapoport, 2007.

Assume that the household's disposable income π is given by

$$\pi = bL * \log(F - K - m) - [(F - m)I - A] + m(w - c)$$

where

- L = Farmable land available to HH
- F = Number of HH members
- K = Number of dependent HH members (either too young/old to work or disabled)

⁶Tajikistan is divided into 5 administrative regions or oblasts: Dushanbe, RRS, Soghd, Khatlon, and GBAO.

⁷Sending a migrant away is not only costly, but also has significant implications for family life, such as intra-household organization and sharing of work burden. Therefore it is argued that the decision to migrate is made on the household, rather than on the individual level.

- m = Number of migrants currently abroad
- I = Subsistence cost per HH member
- A = Amount of additional financial means (e.g. transfers from other family members, friends, etc.)
- w = Wage earned by migrant abroad
- c = Cost of sending a migrant abroad
- b = Some parameter ($0 < b < 1$)

Now maximize π with respect to m , the number of migrants to be sent abroad, subject to the constraint that additional financial means A must cover all migration costs c .⁸

$$\text{Max}_m \pi, \text{ s.t. } A \geq mc$$

If the restriction is not binding (i.e. $\lambda = 0$):

$$m^* = \frac{-bL}{(I + w - c)} + (F - K)$$

The implications of this equation are straightforward and not surprising: A negative impact of farmable land on labor migration emerges, which makes sense in a predominantly rural country such as Tajikistan. If the household has enough land, more working age family members are needed to farm it. An increase in money needed to send a migrant away has the same effect. The decision to send a migrant is positively influenced by the amount of working age

⁸It can be argued that this is somewhat artificial, since migration could also be financed using, for example, regular income. However, the implicit assumption made here is that migrant households are generally too poor to fully fund migration through income and therefore have to rely on external financing. If it were possible for them to cover the substantial sum needed to send a migrant fully with regular work income, migration most likely would not be economically necessary for the household.

household members, the wage earned abroad, as well as the subsistence costs at home.

If, on the other hand, the restriction is binding, the above equation becomes

$$m^* = A/c$$

meaning that the additional means needed to finance the departure of a migrant become the bottleneck and therefore the sole determinant of the decision to migrate. In the following, these theoretical results will be empirically tested, where the estimation serves as the first stage equation of the 2SLS approach to determine the impact of labor migration on expenditure patterns. The following section outlines the econometric strategy in more detail.

5 Methodology

When analyzing the effects of labor migration on household-level expenditures, it has to be taken into account that there most likely also exists a reversed causality: Not only are expenditures influenced by migration, but they might also have an effect on the decision to migrate. A household has to have a certain amount of income in order to be able to afford sending a migrant. Also, if the income situation of the household is already satisfactory, migration might not be needed at all. To account for the endogeneity of labor migration, a 2SLS model is used. Following the related literature on network effects, the percentage of neighboring households with at least one migrant is used as an instrument in both cases.⁹ As already mentioned in the introduction, the exogeneity of the instrument cannot be tested, and is motivated using the network

⁹For each household, this value is calculated as the percentage of households with at least one migrant in the respective sampling cluster, excluding the household in question.

hypothesis. And indeed it makes intuitive sense to argue that the density of migrants surrounding a household does have an effect on its income situation only through the enhanced chance of sending its own migrant abroad, making use of knowledge and contacts already established by others. The literature also finds evidence in favour of this (see, for example Carrington and Vishwanath, 1996, Bauer et al., 2002, Woodruff and Zenteno, 2007, McKenzie and Rapoport, 2010). Some critics of such cluster-percentage instruments however claim that these variables only reflect regional disparities. To check for this, the analysis was repeated including oblast dummies. Since they were never significant, one can conclude that systematic regional differences are not problematic here. The lack of significance is also the reason why they are omitted from the results shown in this paper.

To investigate the impact of the length of the migration spell, the 2SLS approach is slightly modified. It is assumed that the endogenous regressor (i.e. the length of the migration spell in months) enters the estimation equation once linearly, and once as its square, to capture possible reversing effects over time.¹⁰

6 Descriptives

Before the results of the analysis are presented, a short descriptive overview of the data is given. All figures are estimated proportions within the population. N is the sample size in households or individuals, respectively.

Table 1: Proportion of HHs with and without migrants

	Proportion
No migrant	0.886
At least 1 migrant	0.114
N	4715

¹⁰The first and second stage for this model are estimated manually, and are then bootstrapped with 200 repetitions to receive corrected standard errors.

Table 1 shows the distribution of migration households. In Tajikistan, around 11% of households have at least one migrant. Note that for the purpose of this analysis, only migrants currently abroad, who remit either cash and/or in kind are counted.

Tables 2 -3 give some more information about personal characteristics of the migrant. As can be seen, most migrants are male (96%), have at least secondary education (84%) and are relatively young, with a mean age of 28.

Table 2: Gender distribution among migrants

	Proportion
Female	0.0421
Male	0.958
<i>N</i>	734

Table 3: Proportion of secondary education or higher among migrants

	Proportion
No sec. educ.	0.157
Sec. educ. or higher	0.843
<i>N</i>	734

It is also interesting to see that a substantial part (about 65%) of those currently working abroad were unemployed prior to migration (table 4), which lends some evidence to the theory that labor migration might be a mitigation strategy for unemployment at home.

Table 4: Activity prior to migration

	Proportion
Working	0.286
Unemployed	0.646
Studying or other	0.0679
<i>N</i>	734

Also, about 80% of migrants come from rural areas, which is not surprising considering the fact that Tajikistan is a predominantly rural country, with only about 32% of the population classified as living in urban areas. As already noted, the main country of destination is Russia (97%, see table 5):

Table 5: Country of destination

	Proportion
Russia	0.972
Other CIS	0.0108
Rest of the world	0.0167
<i>N</i>	734

7 Results

7.1 Testing the model

First, the validity of the migration model is tested, which will then serve as the first stage of the 2SLS impact regression. The outcome is a binary variable, that takes the value one if the household currently has at least one remitting migrant abroad, and zero otherwise.¹¹ A probit model with the following covariates is fitted:

- farmable land per capita
- the intra-household dependency ratio¹²
- a dummy indicating access to additional cash (e.g. possibility to borrow from friends/relatives, etc)
- the intra-cluster percentage of households with at least one migrant
- a dummy indicating whether the household head has secondary (or higher) education
- the age of the household head, as well as the age squared
- a dummy indicating whether the household head is currently unemployed
- a continuous variable measuring the altitude
- a dummy indicating whether the household is rural or urban

The first three covariates are directly derived from our model. The intra-cluster percentage of migrant-households is added as a proxy for migration networks. Since it will be used as an instrument in the following analysis, this

¹¹In addition to this specification, the model was also tested using a categorical outcome (0, 1, 2 or more migrants). Results are very similar and are omitted here.

¹²Calculated as $\frac{\text{hh members younger than 14 or older than 65}}{\text{working age hh members}}$.

regression can be seen as a relevance test. Finally, some additional household characteristics are added, in accordance to the related literature. Altitude is assumed to influence the migration decision, since job opportunities are hard to come by in the high-altitude regions of the country, thus increasing the incentive to look for work elsewhere. In the Tajik context, the altitude variable can also be interpreted as an indicator for general infrastructure, such as transport, proximity to banks or post offices, which become increasingly scarce with altitude. Also, a location dummy is included to indicate whether the household is rural or urban.

Looking at the results in table 6, we see a confirmation of our model: The lower the relative number of working age household members, the lower the probability to send a migrant abroad (which is strictly logical). Also, a significant positive impact on migration is observed for access to additional financing.¹³ Farmable land per capita has the expected negative sign, however, the effect seems quite small and is just short of being significant on conventional levels. The network proxy has a strong, positive and significant effect on the probability to send a migrant abroad, and therefore meets the relevance criterion of a suitable instrument. If the household head has at least secondary education, the propensity to migrate is reduced, assuming that the family is relatively wealthy and might not need to send a member abroad to work and remit. The financial pressure of having an unemployed household head increases the chance of having a migrant, which is not surprising, while the age of the household head does not seem to influence migration.¹⁴ As already expected, coming from urban areas

¹³Note that no endogeneity problem should arise with this variable, since additional financing is defined as coming from outside the household and should therefore not be influenced by the household's labor migrants.

¹⁴The model included also the squared age of the household head. However, since table 6 displays the marginal effects (at the mean of continuous variables), this is already accounted for.

reduces the probability of having a migrant.

Table 6: Marginal effects of the probit model

	(1)
land per capita	-0.00227 (-1.63)
tajik (d)	0.00600 (0.53)
dep. ratio	-0.0390*** (-4.05)
access to cash (d)	0.0849*** (4.55)
head sec. (d)	-0.0366*** (-3.02)
migrant hh cluster perc.	0.426*** (16.25)
altitude	0.00000830 (1.36)
head age	0.000476 (0.97)
location (d)	-0.0375*** (-3.43)
head unemp (d)	0.0449*** (3.20)
<i>N</i>	4715

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

7.2 Impact on expenditure shares

The descriptive comparison of mean expenditure shares in table 7 shows almost no difference between migrant and non-migrant households. However, the

endogeneity of migration has not yet been controlled for.¹⁵

Table 7: Average expenditure shares for HHs with and without migrants

	(1)	(2)	
	Mean share for non-migrant hhs	Mean share for migrant hhs	N
food	0.691	0.697	4715
non-food	0.188	0.182	4715
medical exp	0.03	0.039	4715
utilities	0.051	0.051	4715
education	0.049	0.043	3589

As already outlined in the methodology section, this is done with a 2SLS approach, using the intra-cluster percentage of migrant households as instrument. The estimation equation is specified based on the approach used by Working, 1943 to estimate Engel curves. As in any Engel curve estimation, expenditure shares are linked to total expenditures. A myriad of suggested functional forms for this relationship exist in the literature (See, for example, Prais and Houthakker, 1971 for experiments with various forms). The specification postulated by Working assumes a linear relationship between expenditure shares and the log of total consumption. As is shown in Deaton and Muellbauer, 1980, such a relationship satisfies the requirements of a utility function. The estimation equation is further extended to accommodate possible economies of scale for different household sizes (see Deaton, 1997, p.231), and thus takes the form:

$$w_i = \alpha + \beta_1 \log(x_i/n_i) + \beta_2 \log(n_i) + \beta_3 m_i + \gamma' z_i + \epsilon$$

¹⁵ The displayed shares are exclusive categories and add up to 100%. Non-food expenditures comprise clothing, toiletries and other small items for daily use, while utilities are the costs for rent, heating, water and the like. It should be noted that this category does not include the estimated rent of owned housing.

where w_i is the respective expenditure share for household i , x_i are total expenditures, n_i is household size (excluding migrants currently absent), m_i is a dummy variable to indicate whether the household has migrants, and z_i is a vector of additional covariates. Following Taylor and Mora, 2006, an alternative specification was also tested, which included an additional interaction term of the migration variable with the log of total expenditures, to allow for migration to also affect the influence of total expenditures on the shares. However, this interaction term was never significant, which is why the above specification is used instead. This suggests that having a migrant in the household only influences expenditure directly, and that it does not affect the impact of overall income. This is a somewhat surprising result, which contradicts the findings of Adams, 2005 and Taylor and Mora, 2006. It is often argued that the effect of labor migration on consumption goes beyond simple income increase, and that, for example, exposure to different goods and lifestyles through the family migrant causes a change in spending decisions of those remaining at home. However, we do not find evidence for this in the Tajik data. A possible explanation for this could be that Tajik labor migration is often seasonal, meaning that migrants frequently return home for longer stays, thus keeping strong ties with their families and hindering immersion into the culture of the host country.

Following the literature, shares are analyzed separately for food, non-food, medical, utilities and educational expenditures. This allows a distinction (admittedly somewhat crude) between short-term consumption (food and most non-food items) and more long-term spending, which might be regarded as investments. Education is the best example here. Medical expenditures could also be viewed as an investment into human health and therefore productivity. Utilities such as fuel for cooking and heating, as well as water and electricity, are probably best categorized as medium-term expenditures. Unfortunately, the consump-

tion aggregate of the TLSS 2007, which is at the basis of this analysis, does not include expenditures on housing such as rent or home improvement, which should be counted as investments, and play an important role in the Central Asian context. The same is true for agricultural expenditures and the purchase of durable assets. Other than spending on housing, these last two categories can be constructed from the data. However, separate analysis of these shares yielded no significant effects. They are omitted here, since distributions are quite lumpy around zero, with the majority of households claiming no expenditures, which makes the results somewhat doubtful. The results are shown in table 8 below.

As already anticipated by the descriptive results, the effect of the migration dummy¹⁶ on expenditure shares does not seem very prominent. The expected effects associated with an increase in wealth, namely a decrease in the expenditure share on food, as well as an increase in the other, less basic categories, cannot be observed. Quite on the contrary, there seem to be significant decreases for both non-food items and, most worryingly, education.¹⁷

Before we move on to further investigate the somewhat counterintuitive observed effects of migration on the different expenditure categories, we will have a brief look at the remaining covariates of the analysis. As would be expected, a high dependency ratio, meaning that few work-age household members have to support relatively many non-work-age individuals significantly increases the food expenditure share, while it reduces all others. The impact of altitude also holds few surprises, however, it is a little more complex. The very small, yet highly significant increase in the non-food share is most likely an artifact of insuffi-

¹⁶As a robustness check, all regressions were repeated using remittances per capita, rather than the migration dummy as the treatment variable, as well as a broader migrant definition, also including already returned, as well as non-remitting migrants. Results are always equal in sign and usually also in significance.

¹⁷To avoid excessive censoring around zero, expenditure shares for education were analyzed on the subsample of households with at least one school age child. "School age" here is defined as being between 7 and 17 years of age, which in 2007 was the mandatory school age in Tajikistan.

Table 8: Results of 2SLS regression on household expenditure shares

	(1)	(2)	(3)	(4)	(5)
	share_food	share_nonfood	share_med	share_housing	share_educ
hh has migrant (d)	0.145 (1.45)	-0.0944** (-2.38)	0.0451 (1.58)	-0.0503 (-1.30)	-0.0474* (-1.87)
land per capita	0.000183 (0.43)	0.000152 (0.43)	-0.000411*** (-3.81)	-0.0000428 (-0.25)	0.0000860 (0.45)
tajik (d)	0.00577 (0.56)	-0.00287 (-0.40)	-0.00531 (-1.24)	-0.000464 (-0.11)	0.000745 (0.15)
dep. ratio	0.0159*** (2.78)	-0.00985** (-2.36)	0.00269 (1.50)	-0.00419** (-2.31)	-0.00714*** (-3.03)
access to cash (d)	-0.0109 (-0.78)	0.00935 (0.82)	-0.00205 (-0.23)	0.00486 (1.09)	-0.00206 (-0.29)
altitude	-0.0000124 (-1.39)	0.0000200*** (3.59)	-0.00000954*** (-3.37)	0.0000163*** (3.02)	-0.00000134 (-0.39)
location (d)	-0.0167 (-1.56)	0.0161** (2.37)	0.00483 (1.13)	0.00159 (0.34)	0.0128*** (2.65)
head sec. (d)	-0.0196** (-2.44)	0.0132** (2.09)	-0.00125 (-0.36)	0.00196 (0.51)	0.0107*** (3.32)
head age squ.	0.00000251 (0.15)	0.0000162 (1.19)	-0.0000109* (-1.72)	0.00000617 (0.86)	0.00000114 (0.16)
head age	0.000182 (0.10)	-0.00199 (-1.36)	0.00124* (1.81)	-0.000737 (-0.92)	-0.000134 (-0.17)
head unemp. (d)	-0.0176* (-1.90)	0.000425 (0.07)	0.00805** (2.27)	0.00352 (0.87)	0.00677* (1.91)
log total pc exp.	-0.131*** (-13.28)	0.0707*** (9.21)	0.0166*** (3.77)	0.0118*** (3.71)	0.0341*** (3.63)
log hhsiz	-0.0683*** (-6.95)	0.0381*** (5.88)	0.00739** (2.00)	-0.00734** (-2.00)	0.00872** (2.08)
cons	1.454*** (21.35)	-0.190*** (-3.60)	-0.0947*** (-3.39)	0.0172 (0.74)	-0.136** (-2.59)
First stage F-test	82.87	82.87	82.87	82.87	85.22
N	4715	4715	4715	4715	3589

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

cient deflation. As already mentioned, infrastructure strongly deteriorates with increasing altitude, meaning that goods are more expensive due to excessive transportation costs. While this effect is accounted for for food expenditures by using regional price deflators, we cannot fully control for them in the case of non-food items, since the deflators are based on food prices. The same could be true for the increased spendings on utility, however, here the harsher climate with noticeably colder winters could also add to costs. A decrease in medical expenditures can also be explained with lack of infrastructure in the highlands, which makes receiving medical help difficult and probably often leads to self-medication, rather than visiting a facility. All in all, altitude seems to matter, although the magnitude of the effect is quite small.

Whether a household is rural or urban has the expected effects on expenditure shares, however, they are only significant for non-food spending and education. If the household head has secondary or higher education, food expenditure shares are relatively lower, while an increase is observed for non-food, as well as education spending, which is intuitive.

The most puzzling effect is the one observed for an unemployed household head, which seems to lead to a decrease in food expenditure shares, as well as an increase in spending on medication and education. One possible, yet somewhat unlikely, explanation could be that scarce funds are redirected into education, to avoid more household member unemployment in the long run. It could also be that causality is reversed, meaning that poor health leads to unemployment. Since this would bias the coefficient of the dummy indicating unemployment of the household head rather than the coefficient of interest (i.e. that of the migration dummy), it seems safe to ignore this possible endogeneity problem here.

The logarithm of total per capita expenditure is always highly significant and

shows the expected sign. With increasing income, households tend to spend less of their resources on food, and more on the other categories. Some economies of scale can be observed for household size, namely for food and utilities, which is what one would expect.¹⁸

The question remains as to why so few effects of labor migration on expenditure shares can be found for low-skilled labor in Tajikistan, and why for some sub-categories there actually seems to be a negative impact. When looking at the results of Clement, 2011, who does an analysis of per capita expenditure levels for 2003 Tajik data using propensity score matching, one finds this effect at least partly repeated. Although he observes a significant and positive effect on per capita expenditures on short-term consumption (defined as food and non-food items), a significant negative effect of almost equal magnitude emerges for the remaining, more long-term consumption categories, thus leading to an overall effect on expenditures somewhere close to zero.

Reduced labor supply of those remaining at home, and therefore reduced domestic income, could also be a reason why we do not immediately observe the expected effects of migration on expenditures. One could think of two main reasons for remaining household members to supply less labor domestically. The first is that the household misjudges the new income situation by simply overestimating the expected returns from migration. Less labor is supplied, since it is assumed that future remittances will overcompensate the foregone domestic income. However, such irrational behaviour seems somewhat unlikely. A second, more rational hypothesis is that the reduction in work income is caused by a reshuffling of labor inside the household. Especially if the migrant was unemployed prior to departure (which seems to be the majority of cases, as can

¹⁸The huge and highly significant effect of the constant in the regression for food share is somewhat surprising. However, similar results are obtained for the food share by Adams and Page, 2005 for Guatemala.

be seen in table 4), most likely he or she was doing some unpaid tasks at home. A replacement now has to be found among family members, which might lead to a reduction in working hours offered. There is some support for this in the literature (see, among others, Amuedo-Dorantes and Pozo, 2006 and Funkhouser, 1992 for the Latin American context). Work by Justino and Shemyakina, 2010, also confirms this finding for Tajikistan, observing a reduction in work hours for members of migrant households.

Another possible cause for the observed effects of migration on expenditure (or the lack thereof) exists. It could be that remittances are used to start up small enterprises at home. This has been observed for other countries (see, for example, Amuedo-Dorantes and Pozo, 2006 for Mexico, as well as Funkhouser, 1992 for Nicaragua). However, anecdotal evidence (see Mughal, 2007 and Olimova and Olimov, 2007), speak against this hypothesis for Tajikistan, as do the findings of Buckley and Hofmann [2012]. Unfortunately the TLSS 2007 data do not provide enough information to fully address this question.

This paper offers and tests the hypothesis that, as outlined above, labor migration in Tajikistan possibly needs some time to become profitable for those remaining at home.

7.3 Long-term effects of migration

It is easy to imagine that sending a family member abroad to find work has some initial costs, which can be substantial, relative to family income. Also, establishing oneself as a worker in a foreign country can take some time, during which returns will be modest, and possibly even negative. Anecdotal evidence for this is found in Kumo et al., 2011 and Ganguli, 2009, with both interviewing Tajik migrant workers in Russia. Not only are costs of travel rather high, but legal issues, such as work permits, also initially take up a lot of resources. Finding

and keeping lucrative work may further be hindered by employer exploitation, as well as harrassment of migrant workers by Russian officials, which seems to be quite common. So it is easy to imagine that the newly arrived migrant needs some time to install himself in a profitable working place. Additionally, since a substantial part of migration seems to be seasonal, frequent travel back and forth also drives costs. A first, descriptive confirmation of this hypothesis is the t-test of the mean monthly amount remitted both by recent and more long-term migrants. "Recent" here is defined as having been away no longer than 5 months.¹⁹ Table 9 shows significantly lower mean remittances for new migrants, thus lending first support to the time hypothesis.

Table 9: Mean comparison of remittances (in Tajik Somoni) between recent and long-term migrants

recent migrant (≤ 5 months)	long-term migrant (> 5 months)	mean difference	t-value
85.56	296.2	-210.64***	-7.63
<i>N</i>	734		

The t-test was repeated several times, gradually increasing the time span considered "recent." Differences between the two groups of migrants seem to disappear around a migration spell of 15 months. To further investigate this, the 2SLS analysis was repeated, using migration spell and migration spell squared (measured in months since departure) as endogenous variables, to see if initial negative effects might be reversed over time.

Looking at the results in table 10, we see some confirmation of the time hypothesis (Since the estimates for the covariates other than the migration spell and its square are very similiar to those in table 8, a discussion of them is omitted here). The expenditure share for food first significantly increases, and then starts to slowly decrease with migration duration. Shares for utilities, on the other hand, show long-term growth after initial decrease. There also seems to

¹⁹To accomodate seasonal migration, migration spells include returns to home of up to 3 months).

Table 10: Time effect of migration on household expenditures

	(1)	(2)	(3)	(4)	(5)
	share_food	share_nonfood	share_med	share_housing	share_educ
land per capita	0.000368 (0.90)	0.000190 (0.56)	-0.000491*** (-4.93)	-0.000151 (-0.88)	0.0000252 (0.14)
tajik (d)	0.00298 (0.43)	-0.00235 (-0.41)	-0.00505 (-1.43)	0.000864 (0.28)	0.00150 (0.39)
dep. ratio	0.0180*** (3.26)	-0.00920** (-2.23)	0.00159 (0.71)	-0.00544** (-2.45)	-0.00746*** (-3.13)
access to cash (d)	-0.0116 (-0.96)	0.00874 (0.79)	-0.00135 (-0.19)	0.00537 (1.06)	-0.00228 (-0.32)
altitude	-0.0000172*** (-3.02)	0.0000236*** (5.05)	-0.0000114*** (-4.63)	0.0000179*** (5.04)	0.000000211 (0.08)
location (d)	-0.0173** (-2.57)	0.0187*** (3.80)	0.00274 (0.98)	0.00117 (0.35)	0.0134*** (3.39)
head sec. (d)	-0.0160* (-1.86)	0.0128* (1.94)	-0.00181 (-0.50)	0.000164 (0.04)	0.00973** (2.50)
head unemp (d)	-0.0184*** (-2.64)	-0.00129 (-0.25)	0.00973*** (2.78)	0.00438 (1.26)	0.00694* (1.75)
head age sq.	0.00000418 (0.28)	0.0000184 (1.53)	-0.0000132** (-2.25)	0.00000468 (0.65)	0.00000210 (0.25)
head age	-0.000107 (-0.07)	-0.00220* (-1.71)	0.00150** (2.32)	-0.000526 (-0.70)	-0.000209 (-0.22)
log pc total exp.	-0.134*** (-18.96)	0.0716*** (10.79)	0.0166*** (4.37)	0.0131*** (4.42)	0.0354*** (4.34)
log hh size	-0.0680*** (-8.45)	0.0390*** (6.05)	0.00649* (1.84)	-0.00777** (-2.51)	0.00905** (2.09)
migration spell	0.0129*** (4.38)	-0.00237 (-1.01)	-0.00124 (-0.82)	-0.00615*** (-3.31)	-0.00321** (-2.16)
migration spell sq	-0.000775** (-2.38)	-0.000151 (-0.60)	0.000330* (1.64)	0.000451* (1.89)	0.000144 (1.13)
cons	1.471*** (26.53)	-0.197*** (-4.28)	-0.0929*** (-3.52)	0.0101 (0.41)	-0.141*** (-2.80)
First-stage F test	49.8	49.8	49.8	49.8	41.02
<i>N</i>	4715	4715	4715	4715	3589

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

exist a positive effect of migration time on medical expenditures, however, significance is quite weak here and can only be observed for the interaction term. The negative effect of migration on education expenditures apparently is not reversed over time, but actually exacerbated, which is cause for concern. A possible explanation could be negative signalling. Since most Tajik migrants work in low-skilled jobs abroad (although the majority of them has secondary education) this might send out the wrong message regarding the future usefulness of schooling. If even with higher education, working abroad on a construction site is the most lucrative option (which most likely could also be achieved without secondary education), then spending money on anything beyond basic schooling seems somewhat pointless. It also needs to be noted, however, that this effect is not robust to alternative estimation samples. If, for example, the definition of "school age" is broadened, this effect also reverses. From the present results it is therefore not possible to draw a final conclusion concerning the effect of migration on education spending. For all expenditure categories, the observed effects of the length of the migration spell are quite small, but it has to be kept in mind that duration is measured in months (ranging from 0 for non-migrant households to a maximum of 104). Finally, it goes without saying that longitudinal data are of course needed to fully gauge the intertemporal effects of labor migration on expenditures. Nevertheless, this analysis is a first step in the direction of analyzing such effects and gives some indication that the hypothesis of positive, but delayed effects of migration is valid.

8 Conclusion

In this paper, I shed some light on the impact of low-skilled labor migration on household expenditure shares. Results suggest that the impact is rather small. The main factor driving these results appears to be the fact that Tajik

migrants who are just starting work abroad usually need some time to install themselves in profitable positions. This can be seen in the continuous increase in average remittances sent home over time. This leads to the observed initial deterioration in household expenditure patterns, with rising food shares and decreasing shares for non-food items, education and utilities, which are usually associated with lesser wealth. However, with increasing length of the migration spell, these findings at least partly reverse to yield the expected results, namely more money spend on medical services and utilities (which could be counted as medium term or investment-type expenditures), while the expenditure share on food decreases. The long-term effect of migration on education remains unclear. Results actually indicate a worrying decrease over time; although these are somewhat sensitive to the sample, and vary with the chosen definition of "school age." Further research using longitudinal data is needed to explore the intertemporal effects of migration in general, and with respect to education in particular. In addition to this it would also be interesting to repeat the analysis with more comprehensive expenditure categories, including, for example, money spend on home improvement, which plays an important role in the Central Asian context. Also, the role remittances play in investment into start ups would be an interesting topic for further investigation.

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