The Impact of Migration on Well-Being in a Remittances Dependent Economy

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Abstract

The aim of this study is to examine the impact of migration on migrant-sending communities. The particular attention is drawn to the well-being of households residing in Central Asia, where migration is a crucial issue due to constant and high outflow of labor force. More specifically, in an attempt to determine the extent to which international migration influences subjective well-being of household members left behind, the research uses panel data collected in Tajikistan from 2007 to 2011. The results indicate that, on average, there is a positive relationship between migration of a family member and improvements in satisfaction with life as-a-whole and current financial situation of those who are staying behind. The positive effects are even more pronounced when the sample is restricted to migrant-sending households that receive remittances. The further split-sample analysis also documents that the impact of migration appears to be heterogeneous across different economic and geographic contexts.

Keywords

International migration, remittances, subjective well-being, life satisfaction, financial satisfaction

JEL code

F22, F24, I31

INTRODUCTION

Internal market distortions all over the world force many individuals to migrate in search of better life conditions and to escape different types of deprivation. The statistics show that international migration stock of nearly 272 million people accounts for 3.5% of the world population (United Nations, 2019). Due to constraints to move freely between countries in the form of strict immigration policies and transportation costs, international migrants in most of the cases not only leave their communities but also family members behind (Démurger and Wang, 2016). Migrant transfers of money and goods, commonly referred as remittances, therefore, have become one of the main sources of household income in increasing number of developing countries. In many cases, remittances are not determined after the process of migration, but the prospect of remitting might significantly affect the decision to migrate. Hence, it is not surprising that the volume of remittances to developing countries had significantly increased over the last years: from USD 228.6 billion in 2006 to USD 529 billion in 2018 (World Bank, 2016; World Bank, 2019). At the household level, the share of remittances might even reach 50% of the income

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(Duval and Wolff, 2010). Moreover, migrant-sending communities receive not only financial remittances, but there are also social changes brought about by migrants, usually defined in rather intangible terms (e.g. ideas, behaviors, values) and referred as social remittances (Bailey et al., 2018; Cingolani and Vietti, 2019). Given the considerable number of migrants, there is an important question regarding the well-being of those staying behind: whether cross-border transfers can compensate emotional and financial losses connected with the absence of household members?

The answer for this query cannot be found in the literature because there is no theoretical consensus on the direction of the development impacts of migration on migrant-sending communities. Historically, classical (Ravenstien, 1885) and neoclassical (Harris and Todaro, 1970) paradigms emphasized the positive contribution of migration to economic development of source communities through relocation of excessive capital and labor. This point of view is in line with the generally accepted theory of labor migration proposed by Stark and Bloom (1985), where migration is regarded as a joint utility maximizing decision between migrants and other family members undertaken with the aim of diversifying risks perpetual to domestic environment. On the contrary, there is an alternative school of thought which emphasizes that negative effects of migration would prevail over positive ones, and that "migration leads to economic dependency and stunted development in migrant-sending societies" (Bohra-Mishra, 2013, p. 173).

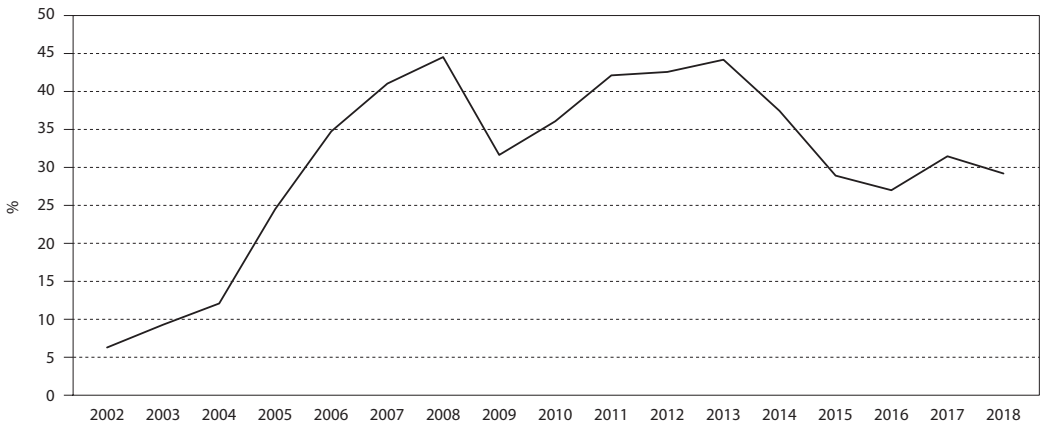
Along with theoretical studies, a significant number of empirical papers were dedicated to examination of how migration in general and migrants' remittances in particular affect the well-being of those who are left behind. Though, these researches tend to explore changes in the well-being of migrant-sending families indirectly based on economic indicators at the individual or household levels. Among them, we can mention, for example, consumption and investment (Adams and Cuecuecha, 2010), education (Gyimah-Brempong and Asiedu, 2015), fertility decision-making (Šimková and Langhamrová, 2015), health (Lu, 2013), housing (Strielkowski and Weyskrabová, 2013), income (De and Ratha, 2012), labor supply (Justino and Shemyakina, 2012) or poverty (Esquivel and Huerta-Pineda, 2007). The standard approach to infer welfare from observed behavior is not a sole empirical option. Another, less explored approach is related to personal judgments of people (Syrovátka, 2007). Well-being indicators in this case are usually derived from answers of individuals to general and specific questions about their life satisfaction or happiness levels. However, the area of direct evaluation of well-being by members of migrant-sending households be they children, seniors or spouses is relatively new and consequently, less investigated (Nguyen et al., 2007).

The variety of seemingly contradictory theoretical and empirical predictions suggests that a dilemma over the relationship between migration and well-being will not be solved in the foreseeable future. Moreover, the available research is mostly based on the data from Latin American, African and Southeastern Asian countries with relatively few empirical studies concentrating on the impact of migration on households in Central Asia, one of the vulnerable regions as identified by Collier (2008), which lies on the cross-roads of active migratory movements. This study aims to address indeterminacy in the literature by analyzing the extent to which migration of a family member affects subjective well-being of those staying behind by applying the latest data from nationally-representative surveys conducted all over Tajikistan.

The choice of the country is not arbitrary. Due to severe consequences of the Soviet Union collapse and prolonged transitory period, many Tajik households chose to migrate as a coping strategy. For many years, Tajikistan was the world leader in terms of dependence on migrant financial transfers measured by a considerable margin of personal remittances in the country's national income (Danzer and Ivaschenko, 2010). The issue of persistent labor emigration had also been acknowledged at the governmental level of Tajikistan by the establishment of the migration service agency (International Labour Organization, 2011). As it can be seen from Figure 1, over the last years, the value of received personal remittances constantly accounted for approximately 30% of Tajikistan's gross domestic product (GDP), with the lowest observed value being far higher than the unweighted global average value.

The overall increasing trend is explained by local economic deficiencies pushing people to become migrants (Clément, 2011), while abrupt downturns in 2009 and 2014 can be attributed to external economic crises (Danzer and Ivaschenko, 2010; Petrović et al., 2017).

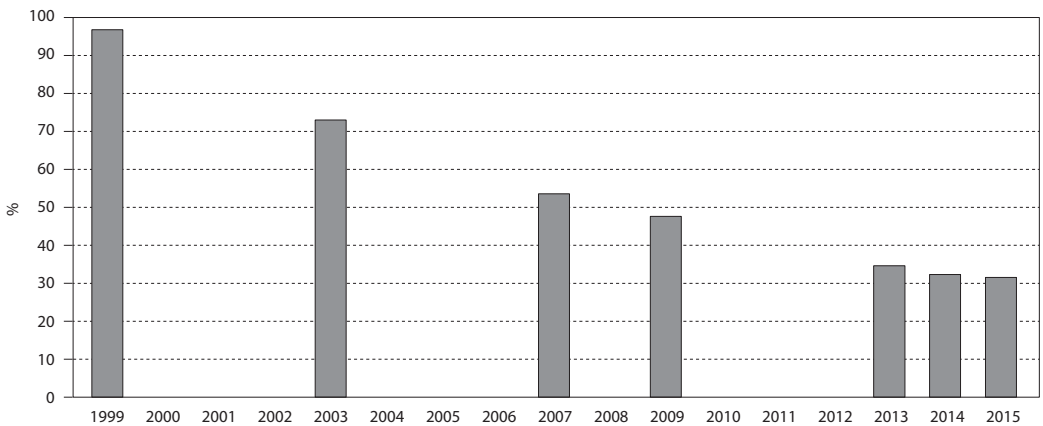
Figure 1 Personal remittances received (% of GDP) by Tajikistan



Source: WDI (2019)

Despite high remittance inflows, the country is characterized by considerable number of households experiencing financial difficulties. Based on the latest available estimations, more than 30% of the population was below the national poverty line (Figure 2). This economic situation is nothing new, Tajikistan was also among the poorest states of the former Soviet Union (Clément, 2011).

Figure 2 Poverty headcount ratio at national poverty lines (% of population) in Tajikistan

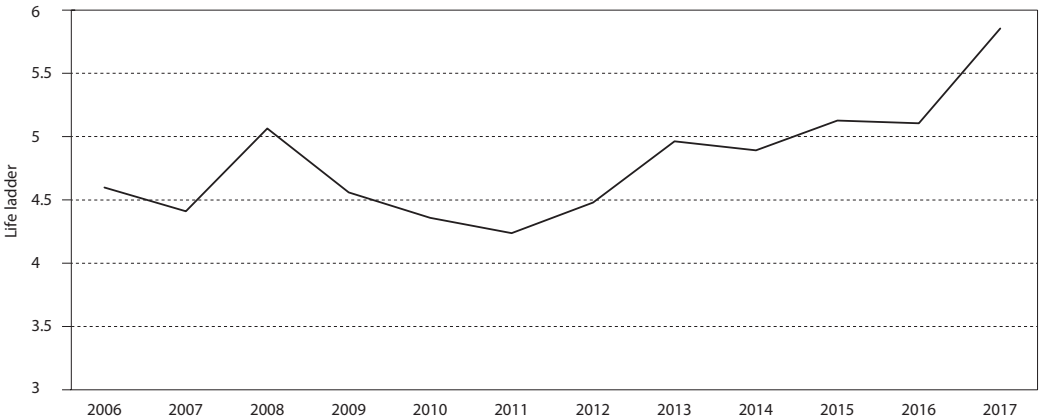


Source: Trading Economics (2015)

With respect to subjective well-being measures, Tajikistan's country-average happiness score (Figure 3) was ranked only 74th out of 156 countries in the 2016–2018 Ranking of Happiness; however,

when the increase of 0.764 in the index for the period between 2005–2008 and 2016–2018 is considered the country was among the top 18 nations (Helliwell et al., 2019).

Figure 3 Happiness score of Tajikistan



Source: Sustainable Development Solutions Network (2019)

Given interconnectivity between the previous three indicators, they can be viewed at the same time; it should be noted that because the data are derived from different sources, the coverage is not identical. Firstly, we can say that the percentage of Tajikistan's population living in poverty decreased by three times from 1999 to 2015. Over this period, the country's dependence on remittances and happiness score noticeably increased. The data also suggest that the positive changes in the poverty rates were steady, while the latter indicators fluctuated noticeably.

Taking into consideration economic situation in Tajikistan, it is important to obtain a comprehensive overview of household migration experience. Despite the importance of international migration for the economy of Tajikistan, only relatively few studies have attempted to investigate the well-being of migrant-sending households residing in this country. The studies mainly concentrated on "objective" well-being measures. Therefore, the aim of this research is to explore additional ways through which migration could possibly affect households in Tajikistan, so that to contribute to the understanding of the impact of migration on regions with high outflows of people. In this context, evaluative well-being is chosen to be the outcome variable. Based on Graham and Nikolova (2015), it is assumed that life evaluations are more appropriate measure of choice and opportunities than other categories of subjective well-being (hedonic or eudaimonic); and might represent actual capabilities and means that individuals have, allowing policymakers to better target poor and socially deprived people. This type of well-being is less considerably affected by short-term fluctuations and expected to capture economic consequences of migration. Accordingly, research conclusions can contribute to the existing economic knowledge of whether migration can promote development or not.

1 DATA DESCRIPTION

The study draws on the Tajikistan Living Standards Survey (TLSS) conducted under auspices of the World Bank in 2007 and in 2009, and the Tajikistan Household Panel Survey (THPS) collected by the Institute for East- and Southeast European Studies in 2011. The representative data were collected from urban and rural areas of the country's each administrative region. Initially, 4 860 households were randomly

selected to participate in the survey connected with measuring the quality of life in Tajikistan (Gang et al., 2018). After 2 years, the survey organizers, motivated by the same purpose, re-interviewed a random subsample of 1 503 households within the 2007 TLSS (Danzer and Ivaschenko, 2010). In 2011, another large-scale questionnaire was distributed to 1 503 households, most of them being from the 2007 TLSS and the 2009 TLSS, to investigate the migration patterns in Tajikistan (Danzer et al., 2013).

Ideally, the analysis should be based on the random sub-sample of 1 503 households. There are several practical issues that reduce the actual number of households. Firstly, the information about only 1 458 households was updated in 2011. In addition to the panel attrition, variables describing various household characteristics have missing values across surveys. As a result, the sample with complete information about households tracked over each survey wave comprises 1 283 data points. The number of households is comparable to the recent research in the similar settings by Gang et al. (2018), where the analysis is based on the balanced panel of 1 257 households.

The study mainly concentrates on a single binary regressor, which is equal to 1 if a household had at least one current member residing abroad when the survey data were collected. Table 1 summarizes information about the number of households with and without migrants in every wave of the surveys. The values suggest that from the total number of observations, 726 of them are identified as being a migrant-sending household. It should be noted that the survey probability to observe households with migrants was much higher in 2011, whereas the difference in the number of migrant-sending households between the years 2007 and 2009 is less significant. When we explicitly consider whether migrant-sending households received cash or in-kind transfers over the course of the year, we can see that in the context of Tajikistan, migration is mostly motivated by remittances. The correlation between "migration" and "remittances" is positive and strong (0.9).

Table 1 Distribution of sampled households by decision to migrate and send remittances

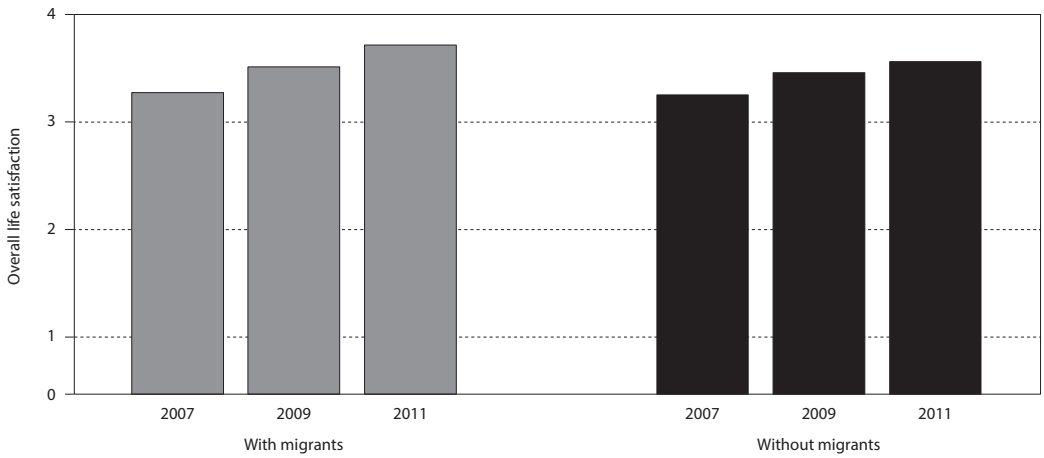
	Without migrants 2007	With migrants 2007	Remittance-receiving
Without migrants 2009	966	145	
With migrants 2009	113	59	151
Without migrants 2011	836	97	
With migrants 2011	243	107	305
Remittance-receiving		179	

Source: TLSS (2007), TLSS (2009), THPS (2011)

For the outcome variables, the study considers the survey answers of the most informed household member to the two following Likert scale questions: (1) Overall how satisfied are you with your life? and (2) How satisfied are you with your current financial situation? Following the new economics of labor migration, it is assumed that migration is a joint household decision and its impacts affect all household members. Therefore, we can consider the opinion of household head as a proxy for overall household well-being. Although, the wording of questions remained the same across surveys, the division of answers into categories was changed from 4 to 5 between the waves of the survey. With the aim of enabling a comparison between periods, two ordinal variables with 4 categories are constructed by merging interim categories; particularly, the answers are categorized ascendingly as: not at all satisfied, less than satisfied, rather satisfied or satisfied.

Given the specifications of treatment and outcome variables, now we can consider their joint progression over five years: Figure 4 illustrates the changes in household satisfaction with overall life conditions, while Figure 5 shows the evolution of household satisfaction with current financial situation.

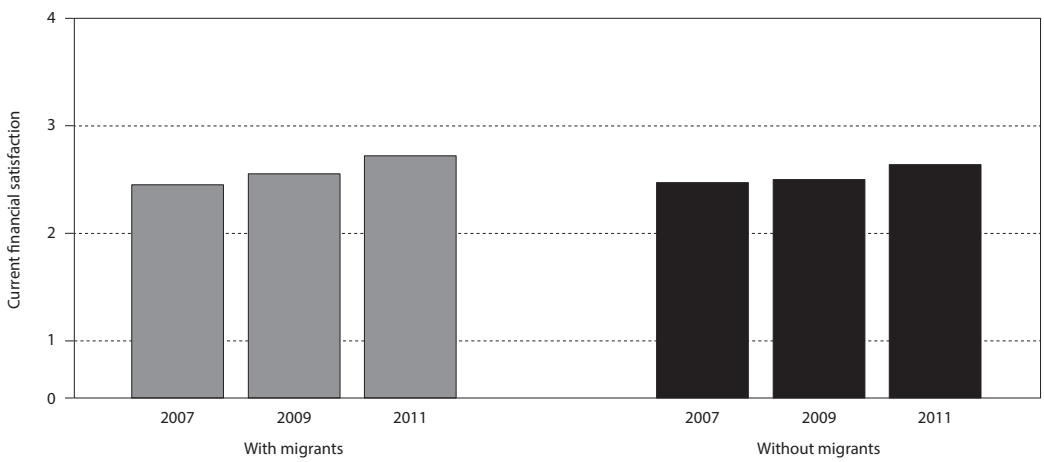
Figure 4 Distribution of sampled Tajik households by overall well-being



Source: TLSS (2007), TLSS (2009) and THPS (2011)

Based on the graphs, we can see that both subjective well-being measures experienced a growth during the period under observation. The average value of overall life satisfaction increased from 3.21 to 3.46 and then to 3.64, while the average values of satisfaction with current financial situation were 2.45, 2.53 and 2.72 in 2007, 2009 and 2011 respectively. In addition to the time-related changes, the indicators also diverge with respect to migration decision. When the indicators are disaggregated, in almost all periods, migrant-sending households had higher satisfaction levels than households without migrants.

Figure 5 Distribution of sampled Tajik households by financial well-being



Source: TLSS (2007), TLSS (2009) and THPS (2011)

To allow comparability with the previous literature, in addition to migration, the study estimates household subjective well-being as a function of several covariates. To avoid the possibility of endogeneity, the chosen variables should affect the outcome variables; and not be systematically influenced by the treatment status. Mostly, individual and regional household characteristics satisfy these requirements and are proposed by the literature on the typical changes associated with migrant-sending households; given the recommendations; information related to household head is not considered due to possibility of endogeneity (Démurger and Wang, 2016). Table 2 presents a summary of variables selected to be used for the analysis.

Table 2 Descriptive statistics

	Mean	St dev	Mean	St dev	Mean	St dev
	2007		2009		2011	
Household size	6.37	2.83	6.78	3	6.42	3.14
Household composition						
Share of children below the age of 6	0.10	0.13	0.107	0.13	0.111	0.14
Share of children aged between 6 and 15	0.234	0.19	0.21	0.19	0.195	0.19
Share of adults aged between 16 and 65	0.61	0.24	0.631	0.23	0.635	0.23
Share of elderly over the age of 65	0.056	0.15	0.052	0.15	0.059	0.16
Share of female adults	0.33	0.18	0.33	0.17	0.346	0.18
Household education level						
Average education of household members	2.56	0.88	2.62	0.89	2.68	0.95
Number of household members with tertiary education	0.27	0.45	0.29	0.45	0.29	0.45
Household location						
Urban	0.34	0.47	0.34	0.47	0.33	0.47
Districts of Republican Subordination	0.207	0.41	0.207	0.41	0.207	0.41
Dushanbe	0.162	0.37	0.162	0.37	0.162	0.37
Gorno-Badakhshan Autonomous	0.102	0.3	0.102	0.3	0.102	0.3
Khatlon	0.264	0.44	0.264	0.44	0.264	0.44
Sughd	0.265	0.44	0.265	0.44	0.265	0.44
Migration network						
Proportion of households with migrants in primary sampling unit	0.15	0.15	0.13	0.13	0.27	0.24

Source: TLSS (2007), TLSS (2009), THPS (2011)

Overall, characteristics of households are comparable across surveys with expected time-induced changes. The average household size slightly increased from 2007 to 2011 with a small upsurge in 2009. As for the household composition: the share of adults increased resulting from the decline of the share of teenagers, while the share of children and elderly stayed almost at the same percentage. The household educational level experienced a growth based on the increase in the average years of schooling and number of people with higher education. Given the previously mentioned increase in the number of migrant-sending households in 2011, it is not surprising to observe a notable increase in the relative size of the existing migration network of this period. In relation to the areal distribution, nearly twice as many households were residing in rural area than in urban agglomeration. Finally, we can notice that there were no considerable changes with respect to the aggregate regional distribution of households, which might signify that main household units are spatially immobile.

2 EMPIRICAL SPECIFICATION

This section briefly reviews several regression techniques which are applied to determine the well-being effects of migration. The first option is to disregard the fact that selected subjective well-being measures are ordinal and treat them as they are continuous. In this case, we can assume that there is a linear relationship between the variable representing subjective well-being and selected household characteristics, and evaluate the respective model with the ordinary least squares (OLS) estimator based on pooled data.

Appropriate statistical treatment of ordinal data would be to consider non-linear models. In this case, we should start by introducing a latent measure (Y^*) of the indirect utility for a group of representative agents living together (i) in period (t):

$$Y_{it}^{*}=x_{it}^{*}\beta+\varepsilon_{it}, \tag{1}$$

where x represents a set of observable characteristics, including a "migration" variable (M), which define household well-being, with a vector of coefficients (β) and an error term (ε).

However, we can only observe y with k discrete categories and individual intercept terms (μ) specified as follows:

$$y_{it}=k \;\; if\, \mu_k \le Y^{*} \le \mu_{k+1}, \quad k=1, 2, ..., K. \tag{2}$$

Depending on the assumptions regarding the distribution of the error term, the probability of observing outcome k can be estimated by different methods, such as ordinal logit or probit regression.

It should be noted that we cannot include all household characteristics into Formula (1). Therefore, the previously discussed regression estimates might be biased due to the presence of unobserved heterogeneity. To solve this issue, we can use the panel structure of data and re-define ε_{it} by explicitly introducing unobserved household traits, which might be affecting household well-being, to the model:

$$Y_{it}^{*}=x_{it}^{*}\beta+\alpha_i+u_{it}. \tag{3}$$

If we assume that selected covariates are not correlated with unobserved household characteristics, we can estimate Formula (3) with a Random Effects (RE) model. Conversely, if we think that $E(\alpha_i \mid x_{it}^{*}, M_{it}) \neq 0$, we should consider a Fixed Effects (FE) model. Given the structural differences between models, by applying both of them we can verify robustness of the findings. For the former case, the study considers a random effects ordered probit model (described by Alsakka and Ap Gwilym, 2010), while for the latter case, the study considers a fixed effects ordered logit model ('blow-up and cluster' (BUC) estimator introduced by Baetschmann et al., 2015); both estimated by a conditional maximum likelihood method.

Yet, when we are examining the well-being, characteristics of households with respect to their intention to migrate may be a reason for the possible divergences. In other words, we should also take the possibility of selection bias into account. McKenzie et al. (2006) tested the major methods to address endogeneity in migration studies by conducting a natural experiment in New Zealand. Based on their results that instrumental variable (IV) regressions with valid instruments provide the most accurate results, this method is chosen for the current setup with migration network as an instrumental variable. The study considers a community-level measure of migration network proposed by Justino and Shemyakina (2012), which is a proportion of households with migrants in a primary sampling unit. Given the nature of the Tajik immigration, the decision to migrate depends significantly on external economic and political situation, and the information about current and historical migration density rates should ideally capture this constantly changing environment. The composite instrumental variable is expected to comply with both exogeneity and relevance assumptions because migrant networks should positively affect the probability to migrate without directly affecting household well-being. The foremost argumentation is that social ties tend to direct future migrants providing them instructions on the ways of possible migration destinations (Démurger and Wang, 2016); while, clustering households based on the respective primary sampling units should tackle possible well-being changes induced by the instrument. Due to specificity of the variable (i.e. it is generated by aggregating migration network variable of each period) and to restore original distribution of the outcome variables (5 categories), a one-period version of the estimation based on the THPS 2011 is applied. Particularly, using a two-stage extended ordered probit regression, we can attempt to uncover exogenous variation of the treatment variable with additional probit model for migration decision (M):

$$M_i = 1(z_i\beta + u_i > 0), \tag{4}$$

where a vector z contains variables from Formula (2) and other strictly exogenous covariates which determine the treatment variable, and u_i – unobserved errors, which are multivariate normal with mean 0.

3 BASELINE RESULTS

Columns 1–4 of Table 3 report the panel analysis for the determinants of overall life satisfaction of households over the whole period under consideration. The overall number of observations are same for the pooled OLS and RE ordered probit regressions, while additional artificial observations are created for the FE ordered logit regression. The results are derived based on the clustered standard errors at primary sampling units, which can be considered as a common practice for the studies based on Living Standard Measurement Surveys (Kan and Aytimur, 2018). Due to methodological considerations, the BUC estimator requires clustering at the household level.

Table 3 Impact of migration on overall life satisfaction

	OLS	RE	BUC		IV	
	(1)	(2)	(3)	(4)	(5)	(6)
Relatives abroad	0.114 (3.07)***	0.179 (3.02)***	0.283 (2.07)**		0.932 (4.45)***	
Receive remittances				0.376 (2.56)**		0.998 (4.4)***

Table 3 (continuation)

	OLS	RE	BUC		IV	
	(1)	(2)	(3)	(4)	(5)	(6)
Needed medical assistance	–0.071	–0.104	–0.15	–0.151	–0.158	–0.158
	(3.38)***	(3.58)***	(2.53)**	(2.54)**	(3.08)***	(3.06)***
Employment status	0.041	0.06	0.104	0.105	0.079	0.083
	(3.08)***	(3.09)***	(2.31)**	(2.33)**	(2.65)***	(2.78)***
Experience financial difficulties	–0.267	–0.359	–0.498	–0.497	–0.338	–0.338
	(7.84)***	(7.76)***	(5.38)***	(5.37)***	(3.88)***	(3.84)***
Household size	0.053	0.078	0.116	0.128	0.085	0.088
	(2.63)***	(2.69)***	(1.18)	(1.3)	(1.81)*	(1.83)*
Household size^2	–0.002	–0.003	–0.002	–0.002	–0.005	–0.005
	(2.38)**	(2.45)**	(0.54)	(0.6)	(2.53)**	(2.52)**
Children (<6)	0.003	–0.001	–0.03	–0.038	–0.036	–0.038
	(0.15)	(0.03)	(0.32)	(0.41)	(0.72)	(0.75)
Children (6–15)	–0.001	–0.002	–0.208	–0.215	0.056	0.054
	(0.07)	(0.06)	(2.33)**	(2.43)**	(1.2)	(1.13)
Elderly (>65)	–0.083	–0.131	–0.239	–0.238	–0.136	–0.13
	(3.32)***	(3.64)***	(1.37)	(1.37)	(1.99)**	(1.9)*
Female adults	–0.074	–0.11	–0.077	–0.088	–0.056	–0.06
	(3.41)***	(3.47)***	(0.79)	(0.9)	(1.17)	(1.23)
Average education	0.04	0.077	0.132	0.135	0.143	0.143
	(1.55)	(2)**	(1.4)	(1.44)	(2.22)**	(2.2)**
Tertiary education	0.053	0.095	0.049	0.044	0.132	0.132
	(1.32)	(1.5)	(0.3)	(0.27)	(1.34)	(1.33)
First-stage: Migration network					4.976	4.972
					(13.11)	(13.23)
Urban/rural	Yes	Yes	No	No	Yes	Yes
Regions	Yes	Yes	No	No	Yes	Yes

Table 3 (continuation)

	OLS	RE	BUC		IV	
	(1)	(2)	(3)	(4)	(5)	(6)
Survey waves	Yes	Yes	Yes	Yes	No	No
Observations	3 849	3 849	4 548	4 548	1 283	1 283
Res. cross corr.					–0.506 (4.03)***	–0.499 (3.6)***
R^2	0.09					
Log likelihood		–3 748	–1 480	–1 478	–1 953	–1 909

Note: T- and z-scores are based on clustered standard errors and their absolute values are displayed in parentheses. * Significance at 10%, ** 5%, and *** 1% level.
Source: Author's own calculations

As it can be seen, the difference between conditional average well-being patterns of migrant-sending households and households without migrants is statistically significant within all specifications, which might suggest that there are structural changes caused by migration. As for direction of the relationship, the overall change is positive: migrant-sending households are expected to experience higher levels of overall life satisfaction than their non-migrant counterparts. As in Dickerson et al. (2014), the obtained findings indicate that linear and non-linear models yield comparable results. Therefore, we can consider the coefficients of the linear model because they can be interpreted as marginal effects without additional concerns about the underlying latent variables. Given the interval between 1 and 4 in which the outcome variable is bounded, the coefficient of 0.11 is somewhat small in terms of magnitude. However, in relative terms, the impact of migration is more pronounced than the effect of domestic employment status of household members. Moreover, once we exclude from the analysis migrant-sending households that do not receive remittances, the impact of migration increases nearly by 25%.

When the estimated coefficients of the control variables are considered, their values are in line with economic reasoning as well as previous empirical studies. The burden of health and financial issues has significant and adverse effects on household well-being. Conversely, overall life satisfaction is expected to improve as the number of working household members increases. The correlation between household educational level and overall evaluative well-being is also positive. The impact of household composition is negative with respect to the reference category, which is a share of children below the age of 6. The estimates capturing the effect of household size indicate that a relationship between household size and overall life satisfaction follows a U-shaped pattern.

The further regression results for the impact of migration on the alternative measure of subjective well-being of remaining household members are presented in columns 1–4 of Table 4. As anticipated, households that send out migrants have higher probability to be satisfied with current financial situation. The respective positive sign of the coefficient for migration variable is preserved across all panel regressions. Although, we cannot compare the regression coefficients, it should be stated that the changes brought about by migration is less prominent in the case of current financial satisfaction than overall life satisfaction. The signs and magnitudes of control variables are comparable between Table 3 and 4, as well as the tendency that the impact of remittances is greater than the gross effects of migration.

Table 4 Impact of migration on satisfaction with current financial situation

	OLS	RE	BUC		IV	
	(1)	(2)	(3)	(4)	(5)	(6)
Relatives abroad	0.092 (2.95)***	0.147 (2.85)***	0.2 (1.66)*		0.84 (2.89)***	
Receive remittances				0.287 (2.25)**		0.89 (2.97)***
Needed medical assistance	–0.099 (5.4)***	–0.163 (5.21)***	–0.23 (3.84)***	–0.228 (3.83)***	–0.215 (4)***	–0.214 (3.97)***
Employment status	0.034 (3.15)***	0.053 (2.9)***	0.048 (1.26)	0.051 (1.33)	0.063 (2.13)**	0.065 (2.2)**
Experience financial difficulties	–0.277 (10.6)***	–0.444 (9.94)***	–0.577 (6.52)***	–0.576 (6.51)***	–0.406 (4.4)***	–0.406 (3.84)***
Household size	0.052 (3.19)***	0.082 (2.99)***	0.035 (0.4)	0.044 (0.52)	0.075 (1.61)	0.076 (1.61)
Household size^2	–0.002 (2.65)***	–0.003 (2.39)**	–0.000 (0.00)	–0.0001 (0.04)	–0.004 (2.05)**	–0.004 (2.05)**
Children (<6)	–0.009 (0.47)	–0.018 (0.53)	–0.044 (0.52)	–0.051 (0.61)	–0.032 (0.62)	–0.032 (0.62)
Children (6–15)	0.011 (0.64)	0.013 (0.45)	–0.044 (0.54)	0.051 (0.62)	0.034 (0.73)	0.032 (0.69)
Elderly (>65)	–0.05 (2.02)**	–0.079 (1.93)*	0.109 (0.69)	0.114 (0.73)	–0.084 (1.23)	–0.08 (1.16)
Female adults	–0.053 (2.97)***	–0.082 (2.73)***	–0.001 (0.01)	–0.011 (0.13)	–0.068 (1.4)	–0.069 (1.41)
Average education	0.08 (3.77)***	0.124 (3.44)***	0.05 (0.6)	0.052 (0.64)	0.101 (1.54)	0.1 (1.51)
Tertiary education	0.113 (3.56)***	0.184 (3.5)***	0.109 (0.78)	0.104 (0.74)	0.179 (2.1)**	0.178 (2.09)**

Table 4 (continuation)

	OLS	RE	BUC		IV	
	(1)	(2)	(3)	(4)	(5)	(6)
First-stage: Migration network					5.001 (13.3)***	5 (13.6)
Urban/rural	Yes	Yes	No	No	Yes	Yes
Regions	Yes	Yes	No	No	Yes	Yes
Survey waves	Yes	Yes	Yes	Yes	No	No
Observations	3 849	3 849	4 011	4 011	1 283	1 283
Res. cross corr.					–0.44 (2.5)***	–0.44 (2.4)***
R^2	0.1					
Log likelihood		–4 025	–1 367	–1 365	–1 978	–1 935

Note: T- and z-scores are based on clustered standard errors and their absolute values are displayed in parentheses. * significance at 10%, ** 5%, and *** 1% level.
Source: Author's own calculations

Robustness tests are performed in columns 5–6 of Tables 3 and 4 by explicitly accounting for the endogeneity of migration and remittance decision. The results of the first stage binary probit estimations are comparable with the previous literature (Démurger and Wang, 2016) and can signalize that the vector of instruments can properly explain household migration decision. Particularly because there is a strong and positive relationship between the size of migration network and probability to send migrants and subsequently, receive remittances. The estimated correlations between the errors from the first and second stage equations are negative and significantly different from zero, possibly indicating that the choice of sending migrants is indeed endogenous and unobserved factors affecting the selection are negatively associated with the higher levels of subjective well-being.

When the predicted values from the first stage regression are used, the migration and remittances variables retain their sign values and relative within-regression magnitudes. The estimates are comparable not only with respect to the variables of interest, but we can also find similarities in the way how confounding variables affect outcome variables. However, there is a noticeable difference in the cross-regression magnitudes. More specifically, the cross-sectional regressions yield much higher magnitude of estimates than the panel regressions due to the increase of outcome variable categories.

4 HETEROGENEITY ANALYSIS

In addition to migration, several exogenous factors might affect well-being patterns of households. In the case of satisfaction with current financial situation, household wealth might be an important element (Démurger and Wang, 2016). Although, all external surroundings might be relevant for overall life satisfaction, economic opportunities available for households might not be the same in different parts of the country (Robinson and Guenther, 2007). Therefore, for the sake of investigating heterogeneity in the relationship between migration and subjective well-being, we should adjust the sample to different

contexts, specifically according to the regional location and income of a household unit. Precisely, the heterogeneity analysis draws on the 2011 THPS with the initial distribution of households from the 2007 TLSS. This choice stems from the considerations to minimize the possibility of correlation between changes in household characteristics and out-migration. To capture all aspects of migration experience, the study considers only "migration" variable for the heterogeneity analysis.

4.1 Regional decomposition

The effects of migration are positive in both urban and rural settings in the case of overall life satisfaction (Table 5); the statistical significance of the estimates are higher in comparison to the case when the whole sample is considered. The increase of statistical significance can be explained by the decrease in the exogenous variation between variables. Separate calculations also demonstrate that households with migrants in urban settings are likely to be more satisfied with life as-a-whole than rural households. Conversely, the impact of migration on satisfaction with current financial satisfaction is only statistically significant (and positive) for rural households. The estimations indicate indeterminacy in the way how migration affects urban households.

Table 5 Heterogeneous effects of migration: location

	Overall life satisfaction	Current financial satisfaction
Rural	0.862	0.902
	(3.33)***	(3.43)***
Urban	1.26	0.122
	(4.69)***	(0.17)

Note: Z-scores are based on clustered standard errors and their absolute values are displayed in parentheses. *** significance at 1% level. Individual controls are included in all regressions.
Source: Author's own calculations

4.2 Income-based disaggregation

Table 6 provides additional insights into the impact of migration on subjective well-being measures across "pre-migration" household income categories. The measure of monetary deprivation is represented by a poverty headcount index derived from the expenditures-based poverty line of buying 2 250 calories and affording a certain amount (36%) of non-food items (TLSS, 2007). The well-being changes (measured

Table 6 Heterogeneous effects of migration: income

	Overall life satisfaction	Current financial satisfaction
Poor	0.839	0.75
	(3.61)***	(2.62)***
Non-poor	1.1	0.939
	(5)***	(3.11)***

Note: Z-scores are based on clustered standard errors and their absolute values are displayed in parentheses. *** significance at 1% level. Individual controls are included in all regressions.
Source: Author's own calculations

by both indicators) caused by migration is positive and statistically significant for poor and non-poor households. Though, the magnitude of regression coefficients tends to increase with household income. When we compare the coefficients across regressions, the difference in the impact of migration between poor and non-poor households is more significant in the case of overall life satisfaction than current financial satisfaction.

DISCUSSION AND CONCLUSION

Since the early 1990s, labor migration has made notable contributions to addressing financial vulnerability of households in transition economies. The question posed by this study was whether the access to international migration can also promote other aspects of well-being of those who are left behind. The research to date on the topic has produced mixed and debatable results. On this occasion, in an attempt to link well-being and migration, the study starts with investigating prospective transmission mechanisms and develops an economic model of life evaluations based on linear and nonlinear estimations. After controlling for self-selection of households and endogeneity of migration decision, this research finds a particularly clear evidence of the positive effects of international migration on source countries.

The results suggest that there is a strong positive relationship between subjective well-being and international migration, with the main mechanism being financial remittances. More specifically, the findings demonstrate that having family members abroad and subsequent receipt of remittances, on average, is expected to increase the probability of being satisfied with life as-a-whole and with current financial situation at the household level. The migration-induced changes are more pronounced in the case of overall life satisfaction than current financial satisfaction which might imply that the impact of out-migration is structurally different with respect to financial and non-financial measures of subjective well-being.

The further analysis showed that specific characteristics of households may also be a source of heterogeneity in the well-being effects of migration. The impact is heterogeneous in terms of household location and income level. When we consider satisfaction with life as-a-whole, richer and urban households benefit more from migration in comparison to their respective counterparts. Conversely, rural migrant-sending households are expected to be more satisfied with their current financial situation, while the impact of migration is not observed for urban households; as for the divergence in financial well-being levels between households from different income groups, the change introduced by migration is positive and relatively homogeneous. Based on the split-sample analysis, we can firstly hypothesize that not only financial remittances affect households but also social remittances. This might contribute to resolving the economic quest of why economic agents might be emotionally indifferent to further economic improvements after reaching a certain income threshold (Stevenson and Wolfers, 2013). Secondly, it is documented that Tajik rural households encounter extra costs to receive international remittances due to limited access to transport infrastructures and financial intermediaries (Clément, 2011). At the same time, according to Robinson and Guenther (2007), rural areas of Tajikistan are more prone to natural hazards and households engage in migration to diversify income. Therefore, it is plausible that rural households with migrants act more economically responsibly and achieve greater financial security.

The derived results are highly relevant for the economic setting of Tajikistan. Extensive labor emigration as a response to poverty and lack of employment has become a routine occurrence for the people living in Tajikistan. The government's migration policy and the institutional agenda for applying migration policies have been a complicated matter. However, given the occurrence that the country experiences considerable outflows of people and unable to ensure sufficient funding for social provision, the contribution of migration to refining living conditions can be significant and should draw attention of policymakers. More particularly, when the migration situation of Tajikistan and the research findings are considered

together, there are several policy implications for the bodies operating in the field of or affected by migration and remittances.

Firstly, remittances improve the financial well-being of Tajik households and might provide them opportunity to exit a poverty trap. This is especially actual for rural households, given their limited access to labor opportunities. However, we cannot conclude that international migration from Tajikistan is purely "pro-poor" because richer households have higher returns to migration. When we also consider the positive effects of migration on overall subjective well-being, it can be hypothesized that migration might be construed not only in terms of wealth-expanding economic activity but also as an important factor contributing to life satisfaction. As far as we are concerned with development policies, the differences in the well-being patterns of households with and without migrants should be taken explicitly into account in the process of policy formulation. Since policymakers are concerned with a tradeoff between provision of social assistance to population and maintaining a balanced budget, this practice may facilitate better targeting of households in need. Consequently, monetary injections by municipal or non-governmental organizations can be used more efficiently. Finally, if migration and remittances are encouraged under a certain policy, it should be noted that their impact is relatively susceptible to observed and unobserved household characteristics. In this regard, the more effective approach might be to concentrate on small-scale policy reforms rather than introducing migration-related initiatives at the national level.

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