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Remittances and subjective well-being of the left behinds in Tajikistan

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Abstract

The current study investigates the impact of private transfers from international migrants on subjective well-being patterns of the household members left behind using longitudinal data from nationally-representative surveys conducted in Tajikistan in 2007 and 2011. After controlling for the potential endogeneity of remittance flows through combination of propensity score matching with difference-in-differences estimation, the findings countenance the notion that remittances can have a positive impact on household well-being when measured by satisfaction with life as-a-whole. The results are less robust with respect to improvements in satisfaction with current financial situation among remittance-receiving households. The study also finds the heterogeneity in the impact of remittances across different socio-economic contexts.

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1. Introduction

Migrant transfers, commonly referred as remittances, have become one of the main sources of household income in increasing number of developing countries. Therefore, there is a non-trivial question about how remittances are utilized. From the perspective of theoretical literature, an intention to migrate is viewed as a joint decision between a potential migrant and household members left behind undertaken to overcome market failures and diversify potential risks in domestic habitation (Stark and Bloom, 1985). Thus, remittances should serve as the main instrument through which migrant-sending households could achieve their utility maximization point by easing budget restraints and refining living conditions. However, the migration literature is also characterized by a pessimistic view on the role of migration (De Haas, 2010). According to Bohra-Mishra (2013), one of the main implications of the pessimistic approach is that "migration leads to economic dependency and stunted development in migrant-sending societies" (p.173), which can be attributed to the fact that in certain cases exploitation of proceeds coming from migrants may be biased negatively towards inefficient purposes. Indeed, the review of literature by Chami et al. (2005) indicates noteworthy tendency among migrant-sending households to increase consumption of status-oriented, redundant goods and services.

Along with theoretical studies, there is a vast empirical literature on development effects of migration on the well-being of those left behind, but it consists mostly of case studies that tend to focus on monetary measures of well-being such as household consumption or income (Adams and Cuecuecha, 2013; Adams and Cuecuecha, 2010; Bertoli and Marchetta, 2014; Castaldo and Reilly, 2007; Démurger and Wang, 2016; Esquivel and Huerta-Pineda, 2007). In this study, we concentrate on the effects of international remittances on subjective well-being of households left behind in Tajikistan. The choice of the country is not arbitrary, and Tajikistan is an interesting case for the analysis of remittances at the national level. Tajikistan is one of the world leaders in terms of dependency on remittances measured by a considerable margin of migrant transfers in the national income. At the same time, the country is characterized by significant number of households living below the national poverty lines (Clément, 2011). Taking into consideration economic situation in Tajikistan, remittances can be considered as one of the coping strategies available for households. Therefore, we aim to explore additional channels through which remittances could possibly affect households in Tajikistan, so that to contribute to the understanding of the role of remittances in regions with high migrant outflows.

One of the major challenges of remittance-effect studies comes from several methodological problems which may distort the causal inference (Adams and Cuecuecha, 2010). In the absence of a randomized experiment, there are several ex-post methodological tools to account for the endogeneity of a remittance status. This study combines propensity score matching (PSM) with difference-in-differences (DiD) estimation applied to the data from the 2007 Tajikistan Living Standards Measurement Survey (TLSS) and the 2011 Tajikistan Household Panel Survey (THPS). Specifically, we create hypothetical scenarios for two subjective well-being measures in the form of overall satisfaction with life and satisfaction with current financial situation of remittance-receiving households as if they did not have additional source of income. Then, we take advantage of the longitudinal data and compare the evolution of well-being patterns of remittance-receiving households with respect to their counterfactual exposure. The statistically significant difference at a reasonable level in the well-being patterns between two households is finally attributed to the impact of remittances.

2. Theoretical framework

From a theoretical perspective, the basis for this study is derived from the relatively new approach in migration studies in the form of mental accounting framework incorporated into behavioral life-cycle hypothesis. Following Shefrin and Thaler (1988), we assume that an economic agent has two identities: a "planner" who behaves according to neoclassical utility maximization function, and a "doer" who actually performs each decision and is short-sighted, which implies a preference for high current consumption. Therefore, the "planner" restricts the "doer" in order to achieve the optimum level of consumption:

$$U_t = Z_t + C_t \tag{1}$$

where Z is an unconstrained utility and C is a "willpower" cost of decreasing consumption to the optimum level of the "planner".

To decrease the willpower costs at any period, the agent as a "planner" divides wealth into mental accounts based on temptation levels. The mental accounts would decrease available opportunity set for the "doer" and prevent excessive current spending on certain undesired consumption baskets. The framework implicitly assumes the existence of self-discipline and mental restraining of the economic agents. Since the initial choice of mental accounts was rather limited, we actually apply framework of Davies et al. (2009), which can be viewed as an extension of Shefrin and Thaler's theory and assumes that the agents have different mental accounts for a current income from different sources (Y) and different categories of assets (A). Additional mental accounts transform current budget constraint, out of which the agent chooses the optimal level of consumption (C):

$$\sum_{m=1}^{M}\sum_{t=1}^{T} C_{m,t} \leq \sum_{k=1}^{K} A_k + E_t\left[\sum_{j=1}^{J}\sum_{t=1}^{T} Y_{jt}\right] \tag{2}$$

Given that, consumption of the item m becomes the function of various types of income and assets:

$$C_m = C_m\left(Y_1, Y_2, \dots, Y_j;\ A_1, A_2, \dots, A_K\right) \tag{3}$$

With respect to migrant transfers, the model predicts that a lump-sum increment will be treated differently from a permanent income even if the dividends are utterly expected (Davies et al. 2009). As a result, receipt of remittances causes a structural break in the consumption decision of the economic agents, which might subsequently affect their well-being patterns.

3. Estimation strategy

In practice it is difficult to identify how a mental account for remittance flows is created, but according to our hypothesis due to internal constraining typical well-being pattern of a remittance-receiving household should differ from a non-receiving household. However, we cannot directly compare well-being variables of households because the difference in characteristics of households with respect to their intention to migrate may itself be the reason for the divergence in well-being patterns. In other words, we should take the possibility of selection bias into account. McKenzie et al. (2010) tested the major methods to account for the endogeneity in the migration studies by conducting a natural experiment in New Zealand. They indicate that instrumental variable (IV) regressions with valid instruments provide the most accurate results, whereas estimations with poor instruments generate extensive bias, which may

be larger than bias from basic ordinary least squares (OLS) calculations. The authors rank PSM and DiD methods as the next best alternatives respectively.

Even though, the best way to abate bias caused by sample selection would be to apply IV estimation, in practice it is difficult to find reliable and valid instruments to uncover exogenous variation in well-being variables of remittance-receiving households. Therefore, we opt for another strategy and view the household remittance status as a treatment variable. Particularly, in this case we are interested in determining effects of the treatment on the treated in relation to the control group.

To analyze the impact of the treatment (δ) on the representative agent (i), we should measure the difference between outcome variable (Y) for the agent with ($i = 1$) and without ($i = 0$) the treatment:

$$\Delta Y = \delta = Y_{i1} - Y_{i0} \tag{4}$$

As far as we are interested in the impact evaluation, we can switch to the treatment effects. We would introduce a binary term to indicate a treatment status and define $D_t = 1$ as a treated unit in the period t. From the previous setting, we can derive average treatment effects on the treated (ATT) for the whole population for a hypothetical outcome (Y) conditional on covariates (X):

$$\overline{\Delta Y} = \bar{\delta} = E(Y_1|X, D_t = 1) - E(Y_0|X, D_t = 1) \tag{5}$$

The outcome is referred as hypothetical since in the absence of a randomized experiment, we can observe evolution of the variable only in one state. According to Rosenbaum and Rubin (1983), the solution is to create counterfactual outcome for the treated households in the absence of the treatment by matching treated and non-treated households on the basis of the observed characteristics. Specifically, the matching procedure is based on the probability of receiving remittances, which is referred as a propensity score.

The conventional matching strategies impose a strong assumption that all the factors correlated with both outcome and treatment can be observed (Blundell and Dias, 2009). However, if there are unobserved factors still affecting variables of interest, we should opt for 'selection on unobservables' methods. One of the appropriate solutions is to combine DiD method with PSM. In this case, the combined estimator would minimize selection bias by eliminating time-invariant unobserved determinants affecting the treatment status. In order to apply this estimator, a researcher needs a baseline data so that to observe evolution of both non-treated units with and without intervention. In the case of intervention in the form of receiving remittances, it is usually impossible to obtain such data since possibility of being treated is endogenously determined by treated units.

However, as shown in Nguyen (2012) even with two-period longitudinal data after intervention, it is still possible to apply the combined estimator by imposing two additional assumptions. The first one asserts constant difference of the conditional outcome in the no-intervention state between households who do not receive remittances and those who receive them only in the second period. The second one asserts constant difference of the conditional outcome in the no-intervention state in the second period and in the intervention state in the first period for households who receive remittances in both periods and for those who receive them only in the first period.

To obtain the combined estimator, initially, we express Equation (5) for the two-period model:

$$\bar{\delta} = Pr(D_1 = 1|X, D_2 = 1)[E(Y_{1t2}|X, D_1 = 1, D_2 = 1)] - E(Y_{0t2}|X, D_1 = 1, D_2 = 1)] \\ +Pr(D_1 = 0|X, D_2 = 1)[E(Y_{1t2}|X, D_1 = 0, D_2 = 1)] - E(Y_{0t2}|X, D_1 = 0, D_2 = 1)] \quad (6)$$

Then, we impose above-stated assumptions:

$$\bar{\delta} = Pr(D_1 = 1|X, D_2 = 1)\{[E(Y_{1t2}|X, D_1 = 1, D_2 = 1)] - E(Y_{0t2}|X, D_1 = 1, D_2 = 0)] \\ - [E(Y_{1t1}|X, D_1 = 1, D_2 = 1)] - E(Y_{1t1}|X, D_1 = 1, D_2 = 0)]\} + Pr(D_1 = 0|X, D_2 = 1) \\ \{[E(Y_{1t2}|X, D_1 = 0, D_2 = 1)] - E(Y_{0t2}|X, D_1 = 0, D_2 = 0)] - [E(Y_{0t1}|X, D_1 = 0, D_2 = 1)] \\ - E(Y_{0t1}|X, D_1 = 0, D_2 = 0)]\} \quad (7)$$

As we can see from Equation (7), in order to perform the comparison, we should match remittance-receiving households in both periods with households who receive them only in the first period [1]; and households receiving remittances in the second period with households who do not receive remittances in any period [2].

At the initial stage, we recapitulate observable, preferably pre-treatment, characteristics of households into the index function (propensity score), which can be interpreted as a probability of the economic agent to receive the treatment (remittances):

$$\Pr(\alpha) = F(H, C, R) \quad (8)$$

where $F(.)$ can take form of normal or logistic distributions, H, C and R represent set of covariates at household, community and regional levels.

Then, we should transform the outcome variable of the control group to counterfactual scenario. Caliendo and Kopeinig (2008) described several weighting algorithms available for matching based on propensity scores. Once the comparison units have been identified, we difference the weighted means of the outcome variables for treated and untreated groups using Gaussian Kernel matching because of lower variability, reproduction of more precise estimates and exploitation of information from all units in the control group. This type of matching requires fixed bandwidth parameter. However, the previous literature does not provide a formal procedure to determine a bandwidth value (Handa and Maluccio, 2016); and therefore, we assign weights ad hoc by applying several bandwidth values.

4. Data description

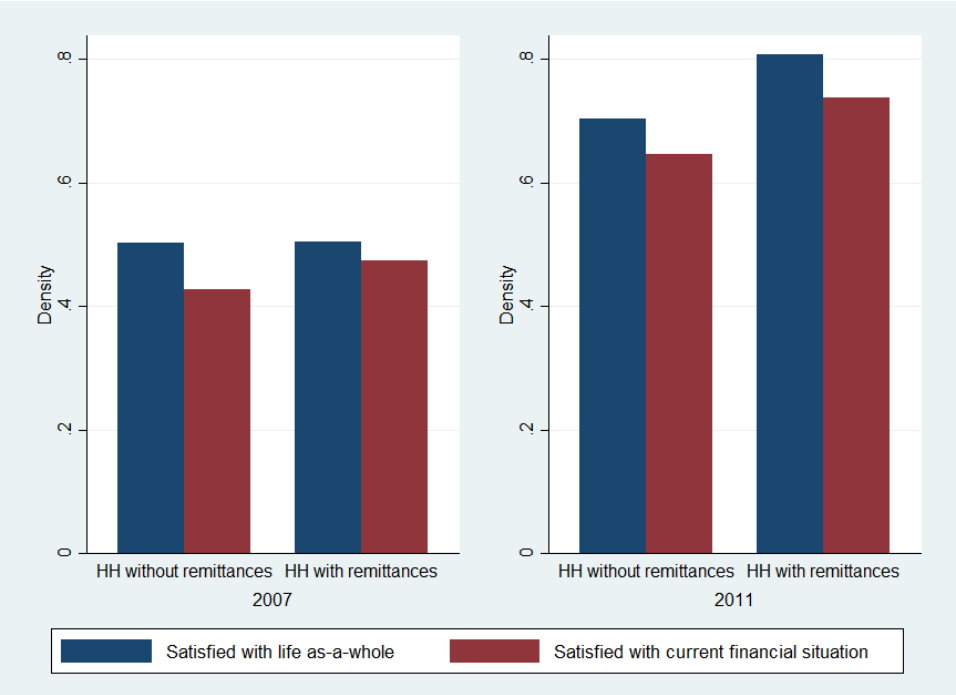
This study employs the data obtained from the TLSS conducted under auspices of the World Bank in 2007 and the THPS collected by the Institute for East- and Southeast European Studies in 2011. As for the coverage, the samples encompass each region of Tajikistan and are representative both at urban and rural areas. The TLSS covers 4860 households, whereas only 1503 families were re-interviewed in 2011. Even though the panel attrition can be considered as low (Danzer et al. 2013), it was not possible to consider all households, which were present in the two waves of the survey, due to unavailability of data on the variables crucial to the analysis; and the sample used in our investigation comprises 1347 households.

The key variables in the current research are receipt of remittances and subjective well-being measures. However, before proceeding to the main outcome variables, we initially test the existence of internal constraining, which is caused by receipt of remittances. Adams and

Cuecuecha (2010) note that this structural change can lead to the increase of productive or inefficient consumption behavior. The definition of the effective exploitation of resources is broad and allows to consider many goods and services (Démurger and Wang, 2016). However, there is a certain consensus on the role of education as an important factor in sustainable development since it improves performance capability of economic agents by making labor force more productive and skillful, and resulting in fresh knowledge and innovations (Odeleye, 2012). In this regard, we introduce household budget share for education to represent efficient consumption profile. The similar approach can be found in previous empirical studies (Adams and Cuecuecha, 2010; Clément, 2011; Démurger and Wang, 2016). The variable includes all education related expenses from pre-school to higher education, as well as all expenses related to non-academic educational activities (World Bank, 2017).

Following Clément (2011), the paper adopts broad definition of a remittance-receiving household, which is whether a household received cash or in-kind transfers from an international migrant during the last 12 months prior to the survey. The main outcome variables are based on answers of the most informed household member on behalf of the whole household to the two following questions: (1) Overall how satisfied are you with your life? and (2) How satisfied are you with your current financial situation? However, the division of answers into categories was changed between the first and second waves of the survey: the number and composition of categories was modified in the 2011 THPS. In order to enable the comparison, we therefore, constructed two binary variables. Particularly, we assign the value of 1 to a household which can be considered as satisfied, and the value of 0 otherwise. In Figure 1, we represent the evolution of household overall satisfaction with life and satisfaction current financial situation. As it can be seen, subjective well-being measures have experienced a notable growth during the period under observation.

Figure 1. Subjective well-being measures



Source: TLSS (2007) and THPS (2011)

Another aspect of matching is a choice of covariates for the treatment analysis. To avoid endogeneity, these variables should simultaneously affect the treatment status and the outcome

variable; and should not be systematically influenced by the treatment (Démurger and Wang, 2016). Mostly, individual and regional household characteristics satisfy the requirements and are proposed by the literature on the altruistic behavior of migrants (Massey et al., 1993). Following Démurger and Wang (2016), we omitted information about the household head (due to possibility of endogeneity) and included the effect of migration network (social ties tend to direct potential migrants providing them instructions on the ways of possible migration destinations). Specific measure of the migration network was suggested by Justino and Shemyakina (2012). Particularly, we use community level migration network, i.e. a proportion of households with migrants within primary sampling units.

Table I presents summary data from the 2007 TLSS and the 2011 THPS. General macroeconomic trends are supported by the results of two surveys (World Bank, 2016); 13% of the sample was considered as remittance-receiving in 2007, while the percentage had increased to 23% by 2011. As for characteristics of households, they are comparable across the surveys. Finally, we can also observe that average budget share for education did not experience a noticeable growth during the period under observation.

Table I. Descriptive statistics

	Obs.	***Mean***	***St. Dev.***	***Obs.***	***Mean***	***St. Dev.***
		2007			*2011*	
Remittance status (1=Receiving)	4860	0.133	0.34	1503	0.236	0.425
Budget share for education	4860	0.041	0.076	1503	0.039	0.65
Overall life satisfaction (1=Satisfied)	4860	0.503	0.5	1503	0.728	0.445
Current financial satisfaction (1=Satisfied)	4860	0.434	0.5	1503	0.667	0.471
Share of young children (<6)	4860	0.114	0.14	1503	0.111	0.136
Share of children (6-15)	4860	0.229	0.193	1503	0.194	0.189
Share of adults (16-65)	4860	0.599	0.231	1503	0.638	0.232
Share of elderly (>65)	4860	0.058	0.151	1503	0.057	0.153
Share of female adults (16-65)	4860	0.321	0.167	1503	0.348	0.176
HH size	4860	6.33	2.829	1503	6.392	3.104
Average education of HH members	4860	2.618	0.961	1503	2.684	0.962
# of HH members with tertiary education	4860	0.396	0.743	1503	0.463	0.851
Migration network	4860	0.241	0.163	1503	0.271	0.238
HH location (1=Urban)	4860	0.352	0.478	1503	0.347	0.476
Administrative regions:						
DRS (Districts of Republican Subordination)	4860	0.2	0.4	1503	0.21	0.407
Dushanbe	4860	0.185	0.389	1503	0.18	0.384
GBAR (Gorno-Badakhshan Autonomous Region)	4860	0.145	0.352	1503	0.096	0.294
Khatlon (Region)	4860	0.263	0.44	1503	0.251	0.434
Sughd (Region)	4860	0.207	0.406	1503	0.263	0.441

Source: TLSS (2007) and THPS (2011)

5. Estimation of propensity scores

We estimated individual propensity scores using outcomes of two logit regressions. The values of determination and variation are comparable with previous literature (Clément, 2011; Démurger and Wang, 2016) and can signalize about proper explanatory power of the model. Significant reduction of the standardized bias at mean and median along with overall decline in the explanatory power of the logit estimation (Table VIII) also authenticate that derived propensity scores are robust and meaningful. As for the graphical representation (Figure 2), the distribution of covariates before matching is highly dispersed; but after assignment of the

weights, covariates are rather homogeneous. To sum up, we can assume that consistent weights can be derived from the implemented matching procedure.

Table II summarizes the results of the propensity score estimation. As it was expected, the larger migration network significantly increases the probability of receiving remittances. The percentage of female adult household members can be referred as another substantial determinant for remittance flows. A reference group for the impact of household composition is the share of children below the age of 6. The choice of the reference cluster is purely arbitrary. By the same token, the prefecture of GBAR was omitted from the analysis of regional differences. Household composition and regional dummies decrease the probability of receiving remittances with respect to the reference category. The same is true for households living in urban areas in comparison to households living in rural areas. Finally, several variables turned out to be insignificant or significant only in one of the regressions, which we refer to the sampling variation.

Table II. Regression estimation for receipt of remittances

	[1]	*[2]*
Share of children	-2.021 (2.59)***	-0.145 (0.22)
Share of adults	-3.115 (3.93)***	-3.108 (5.04)***
Share of elderly	-2.455 (2.4)**	-2.967 (3.71)***
Share of female adults	3.841 (5.43)***	3.329 (6.15)***
HH size	-0.023 (0.64)	-0.095 (3.21)***
Average education of HH members	-0.118 (0.76)	0.161 (1.16)
# of HH members with tertiary education	-0.094 (0.53)	-0.433 (3)***
Migration network	4.919 (8.69)***	0.797 (2.72)***
HH location	-0.566 (1.94)*	-0.524 (2.51)**
DRS	-0.72 (2.38)**	-0.58 (2.38)**
Dushanbe	-0.105 (0.23)	-1.135 (3.28)***
Khatlon	-0.739 (2.51)**	-1.011 (4.1)***
Sughd	-0.475 (1.67)*	-0.981 (3.98)***
Constant	-0.971 (1.09)	0.828 (1.06)
Pseudo R^2	0.161	0.103

Note: z-statistics in parentheses; * p<0.1, ** p<0.05, *** p<0.01

Source: Author's own calculations based on TLSS (2007) and THPS (2011)

6. Average treatment effects on the treated

6.1 The overall effect of remittances

The baseline estimations testing the mental accounting framework are reported in Table III, while summaries of the estimations for the impact of remittances on subjective well-being indicators are presented in Table IV and Table V. The results are derived at the bandwidth parameter of 0.06, which can be considered as the default value (Handa and Maluccio, 2016). The similar weights were obtained from both smaller and larger bandwidth values.

As it can be seen from Table III, the difference between conditional average consumption choices of remittance-receiving households and non remittance-receiving households is highly statistically significant, which indicates the existence of a positive structural change produced by the receipt of remittances. As for direction of the relationship, the overall change in the budget share for education, expressed by the DiD matching estimator, constitutes roughly to 1.4% increase at the mean.

Table III. Effect of remittances on education expenditures

	Control	***Treated***	
ATT_0	0.035	0.031	-0.004 (0.98)
ATT_1	0.034	0.044	0.01 (3.14)***
$\bar{\delta}$			0.014 (2.7)***

Note: t-statistics in parentheses; * p<0.1, ** p<0.05, *** p<0.01

Source: Author's own calculations based on TLSS (2007) and THPS (2011)

More importantly, we focused on subjective well-being measures to analyze whether remittance-receiving households are able to experience the benefits of remittance flows. The result for overall household life satisfaction is statistically significant at 95% of confidence level, indicating positive change in the average well-being of remittance-receiving households. Particularly, the effect of remittances is persistent and can be expressed by 7.7% difference between a representative remittance-receiving household over a non-receiving case.

Table IV. Effect of remittances on overall life satisfaction

	Control	***Treated***	
ATT_0	0.491	0.501	0.01 (0.36)
ATT_1	0.713	0.799	0.086 (3.88)***
$\bar{\delta}$			0.076 (2.08)**

Note: t-statistics in parentheses; * p<0.1, ** p<0.05, *** p<0.01

Source: Author's own calculations based on TLSS (2007) and THPS (2011)

The different scenario is observed for the second outcome variable (Table V). The difference between satisfaction with current financial situation of households receiving remittances when compared to the hypothetical state they would have without the receipt of remittances is less prominent; and therefore, the DiD matching estimator is no more statistically significant.

Table V. Effect of remittances on satisfaction with current financial situation

	Control	*Treated*	
ATT_0	0.409	0.444	0.035 (1.18)
ATT_1	0.639	0.726	0.087 (3.77)***
$\bar{\delta}$			0.052 (1.37)

Note: t-statistics in parentheses; * p<0.1, ** p<0.05, *** p<0.01

Source: Author's own calculations based on TLSS (2007) and THPS (2011)

6.2 The heterogeneous effects of remittances

Several exogenous factors might affect well-being patterns of households. Specifically, in the case of satisfaction with current financial situation, household wealth might be an important factor. Even though, for overall life satisfaction all external variables might be relevant, socio-economic opportunities available for household members might not be the same in different parts of the country. Therefore, for the sake of investigating the difference in the effect of remittances, we adjust our sample to different contexts: the position of a household in the first period household consumption distribution (before the receipt of transfers), and whether a family left behind lives in urban or rural settings. At the next step, we recapitulate propensity scores for each household from the baseline analysis and using Gaussian Kernel function derive adjusted weights for control households. After generating comparable matches, we calculate conditional mean values and difference the results to obtain periodic ATT. Finally, we eliminate time-invariant household unobservable factors to obtain sub-sample DiD matching estimators.

The effect of remittances is positive in both urban and rural settings in the case of overall household life satisfaction (table VI), but the statistical significance of the estimator is considerably lower in comparison to the case when the whole sample is considered. The low level of statistical significance can be explained by a decrease in the exogenous variation between variables caused by the sample splitting. Separate calculations also demonstrate that households receiving remittances in the urban settings are likely to be more satisfied with life as-a-whole rather than rural households.

Table VI. Heterogeneous effects of remittances in terms of area of residence

	Overall satisfaction with life
Urban ($\bar{\delta}$)	0.111 (1.65)*
Rural ($\bar{\delta}$)	0.073 (1.67)*

Note: t-statistics in parentheses; * p<0.1, ** p<0.05, *** p<0.01

Source: Author's own calculations based on TLSS (2007) and THPS (2011)

Table VII provides additional insights into the effect of remittances on current financial satisfaction across quintiles of initial household consumption. As it can be seen, the effect of remittances is not present at the 2nd and 5th quintiles. On the other hand, we can observe a statistically significant change caused by the receipt of remittances for the 1st, 3rd and 4th

quintiles. Remittance flows tend to improve current financial satisfaction of households in the 1st and 3rd quintiles, while the effect on the households from 4th quantile is negative.

Table VII. Heterogeneous effects of remittances by consumption quintiles

	Satisfaction with current financial situation
1st quintile ($\bar{\delta}$)	0.169
	(1.98)**
2nd quintile ($\bar{\delta}$)	0.06
	(0.63)
3rd quintile ($\bar{\delta}$)	0.2
	(2.28)**
4th quintile ($\bar{\delta}$)	-0.177
	(2.04)**
5th quintile ($\bar{\delta}$)	0.053
	(0.73)

Note: t-statistics in parentheses; * p<0.1, ** p<0.05, *** p<0.01

Source: Author's own calculations based on TLSS (2007) and THPS (2011)

7. Concluding remarks

After controlling for the potential endogeneity of migrant transfers, our empirical findings suggest that remittances cause a structural change in the behavior of households since consumption patterns of remittance-receiving households are significantly different compared to their hypothetical behavior without remittances. As far as we observe the differences in the average conditional outcome variables, we can conclude that households in Tajikistan treat remittances in the different way in comparison to other sources of income and implications of behavioral life-cycle hypothesis might be applicable to real-life case studies.

As for the specific channels through which remittances affect households, we demonstrate that remittances, on average, directly improve subjective well-being of households by increasing the likelihood of being satisfied with life as-a-whole. Further analysis showed that specific characteristics of households may be a source of heterogeneity in the impact of remittances. Specifically, we argue that the effect is heterogeneous in terms of area of residence and households residing in an urban area benefit more from remittances in comparison to their counterparts in rural parts of the country. On the other hand, the ATT of remittances on satisfaction with current financial situation is not observed for the whole sample. The effect is only present when we decompose treatment effects in terms of pretransfer household wealth. This might be explained by the varying effects of remittances with respect to pretransfer household consumption quintiles.

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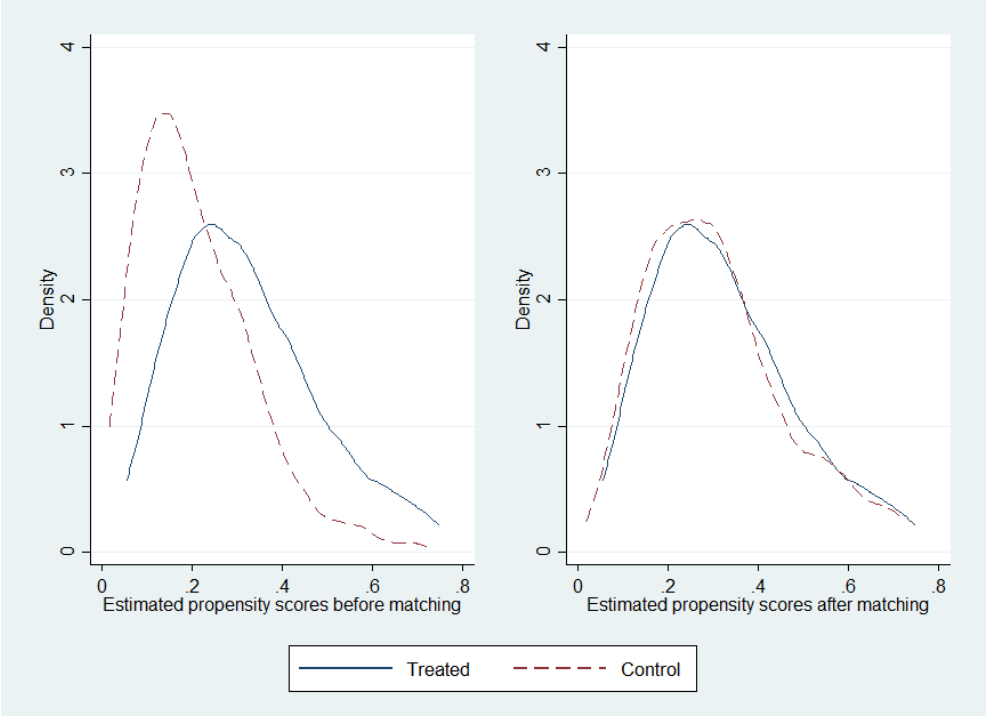
9. Appendix

Table VIII. Summary of balancing tests

	Sample	*Pseudo R^2*	*LR chi^2*	*p>chi^2*	*Mean bias*	*Median bias*
[1]	*Unmatched*	0.161	175.6	0	23.1	15.5
	Matched	0.008	4.22	0.989	3.9	2.6
[2]	*Unmatched*	0.103	151.8	0	19.2	18.1
	Matched	0.004	3.29	0.997	3	3.4

Source: Author's own calculations based on TLSS (2007) and THPS (2011)

Figure 2. Distribution of propensity scores of treatment and control groups, before and after matching



Source: Author's own calculations based on TLSS (2007) and THPS (2011)