

Economics School of Louvain - ESL

Importance of remittances in reducing poverty and inequality: the case of Kyrgyzstan

Author : Zhamilia Kartaeva

Thesis Director : Vincent Vandenberghe

Thesis Reader : Andre Gröger

Academic Year: 2022-2023

Master in Economics – 120 credits – Econometrics Focus

Erasmus Mundus Joint Master Degree in Models and Methods of Quantitative Economics

Acknowledgments

First, I would love to thank my thesis director, professor Vincent Vandenberghe, for his excellent supervision. Throughout the year, he has never refused a meeting, always ready to spend extra time to explain things that seemed unclear to me, genially guiding me with his expertise, and teaching without being judgmental.

Second, I appreciate my reader, Andre Groger, for his time and involvement that made my graduation possible.

I dedicate this thesis to my professor Irina Lukashova, who always supported me, encouraged to pursue a graduate degree and was not just a university professor but my university mother. Just in general, I am grateful to all the professors and staff members of the EMM department of Kyrgyz-Russian Slavic University for all the valuable life lessons and skills that I learned while doing my bachelors.

Last, but not least, I want to thank my parents, who have been working hard to make everything I have now possible.

Table of contents

1. Introduction.....	3
2. Migration overview	4
3. Literature review	5
4. Methodology.....	7
5. Data description	9
6. Results.....	12
7. Discussion and conclusion.....	16
Bibliography	17

1. Introduction

Migration is a topical question in Kyrgyzstan. Because of inability to earn enough money to sustain better quality life and afford higher consumption, many Kyrgyz people seek labor opportunities abroad, especially in Russia. Money sent to family stayed in home country relieves their budget constraints, increases local demand on durable goods and nonfood expenditure in general.

Monetary aspect of remittances that migrants transfer to Kyrgyzstan is important both on macro and household levels. Today, remittances account for 30% of Kyrgyzstan's GDP and help many people exit poverty. After multiple economic shocks i.e., Covid19 and Russian-Ukrainian war, poverty rates displayed a structural break and switched from a declining to growing trend. Because remittances' value dropped in the following months, the increase in poverty is regularly associated with the deterioration of labor migrants' remittances. But is that so?

This work performs a Heckman two-stage counterfactual analysis to estimate remittances' influence on poverty and inequality in the Kyrgyz Republic to critically assess the actual role of remittances in lowering poverty as much as claimed by the National Statistical Committee.

The key findings of this work are the following. Remittances help households stay below poverty lines shorter than in the situation where there are no remittances. But overall, our analysis shows twice less differences in poverty rates than the ones estimated by the government. And, despite extensive labor force migration, remittances do not reduce inequality in Kyrgyzstan. In summary, labor migration in the country still is not at a stage where it benefits the poor households.

The work is divided into 7 sections. In section 2 a short overview is done regarding migration and its pattern in Kyrgyzstan. Section 3 sums up the literature addressing similar topics and remittances in Kyrgyzstan in general, as well as papers written about different regional settings. In Section 4, endogenous treatment selection problem followed by Heckman two-stage counterfactual methodology. Section 5 determines the main aspects of the dataset used in the analysis. Results of Heckman two-stage, poverty and inequality measurements are in Section 6. Section 7 concludes this paper.

2. Migration overview

The specific historical context of the Kyrgyz Republic, its level of economical development and poor governmental performance in state management defined its nowadays migration tendencies and made it one of the largest remittance recipients representing almost 30 percent of its GDP (Brownbridge et al., 2020). According to different sources such as World Bank, UN, National Statistical Committee net labor force migration in Kyrgyzstan is estimated somewhere between 17 and 20 percent, around 80% of which reside in the Russian Federation.

As an addition to disposable income remittances allow families to improve their financial situation and increase consumption expenditure, thus stimulate local demand in general and partly local economical expansion. Brownbridge et al. (2020) concluded that because of the large remittance inflow Kyrgyzstan suffered from the so-called “Dutch-disease”. The country has experienced a significant shift from the production of traded goods towards the production of services which reached 50% of its GDP within last two decades.

Remittances are sent mostly from Russia. Official sources have estimated the value of remittances from Russia-bound migrants exceed 2 billion US dollars. The sum rises significantly if unofficial transfers are accounted for. A shared history within the USSR, knowledge of Russian language, relatively low cost of relocation for subjects of the Russian Federation and presence of high demand for blue-collar workers made Kyrgyzstan one of the Russia’s biggest labor suppliers. People in Kyrgyzstan have high incentives to migrate to Russia – a Kyrgyz worker has 4 times more annual output in Russia than in his home country (Brownbridge et al., 2020).

Remittances also reduces poverty in Kyrgyzstan. The National Statistical Committee releases annual reports in which they show how much poverty rates would increase in the absence of remittances. In 2021 they reported that on average remittances reduce poverty by 10% and extreme poverty by 12%. The topic of poverty in Kyrgyzstan itself is under constant monitoring by different institutions. Poverty rate estimates vary. But all the institutions agree as to the overall trend the country has experienced recently: before 2020 poverty rates were decreasing but the situation started to deteriorate after Covid19.

During the pandemic, families with migrants were the most vulnerable part of the population and the sudden fall of financial transfers pushed thousands below the poverty line. More recently, with the outbreak of the war between Russia and Ukraine, the value of total remittances sent dropped by 30% (National Bank of the Kyrgyz Republic) affecting recipient families, especially for those with stronger reliance.

Everything described above briefly sums up Kyrgyzstan's migration situation and concludes migration overview. The Covid19 and Russian-Ukrainian conflict suggest how easily families are left struggling financially and are not insured against volatilities in the Russian economy. Even though most of them probably manage to recuperate financially after short period of time, one cannot exclude that a significant number experience a long-term and irreversible loss of income and welfare. Still, it is not clear whether sensibility of poverty rates to decline in remittances is solely due to remittances per se or due to combination of multiple negative income shocks.

3. Literature review

A lot of macroeconomic publications and overviews assess the question of poverty measurement in Kyrgyzstan but barely mention the role and contribution of international remittances as a part of their structural review of household's income determinants. The authors of these publications are National Statistical Committee, National Bank of the Kyrgyz Republic, international ones like the UNICEF, World Bank, International Monetary Fund, United Nations, etc.

Another group of literature studies migration in isolation from poverty and inequality. The methods used are essentially descriptive (Brownbridge et al., 2020). Muktarbek kyzy et al. (2015) showed that remittances change expenditure patterns of recipient households and are mostly used to sponsor construction, large-scale celebrations, and purchase of durable goods; similar patterns were found by Thieme (2014) describing return migration. Higher level of remittances increases alcohol consumption among ethnic Kyrgyz households through relaxation of budget constraints and to cope with the separation of close relative (Paulone et al., 2019), but do not necessarily improve investments in children's human capital (Kroeger et al. 2014). This can be explained by the fact that spending on durable goods (and their maintenance) crowds out expenses on food, health, and education (Gao et al., 2021).

A handful of studies addressed remittances and poverty in Kyrgyzstan. Karymshakov et al. (2014) using cross-sectional data of representative households found that recipient households with international remittances are more influenced in terms of poverty than internal remittances recipient families. In a recent study done by Abidi et al. (2023) during Covid19 lockdown, poor remittance-recipient households were more adversely affected than those households occupying the same position in the income distribution who do not have remittances because of the inadequate social safety net policy that fails to cover fully this part of the population.

Because the decision to migrate is not made randomly, many international papers exploring remittances and poverty estimate this relationship trying to account for self-selection bias (Adams et al., 2010; Margolis et al., 2013; Karymshakov et al., 2014; Loxha A., 2019) by adopting Heckman two-stage technique. Margolis et al. (2013) go further by neglecting naïve counterfactual estimation and consider virtual scenarios, where migrants upon returning home still do generate some revenue but with a correction to account for local (un)employment rate and salaries.

The National Stata Committee estimate the contribution of remittances to poverty reduction in a quite straightforward way. It simply deducts remittances from the per capital household expenditure. But this technique leads to an overestimation because:

- 1) once household does not have remittances and a migrant member, this stayed-at-home migrant still would be generating some revenue;
- 2) remittance recipient status of the household is not assigned randomly, and any estimations must be corrected for self-selection bias.

In Karymshakov et al. (2014) authors conducted Heckman two-stage analysis which was corrected for self-selection of migrants but did not account for a local revenue generation scenario. On top of that, their counterfactual analysis stops after getting potential output measurements and nothing is done to show how results obtained would impact poverty rates.

There is an inverse U-shaped relation between migration and wealth levels. McKenzie (2017) reviews several reasons for this shape: costs of migration and potential gains of relocation, level of development of the country and size of the diaspora in the host country, returns to skill on local labor market and macro-level income shocks. Thus, in general, the impact of remittances on inequality is different for different economies.

Ebeke et al. (2011) investigated the unambiguous effect of labor migration on inequality in 80 developing countries. Remittances' effect on inequality varies depending on the state of economic development of the country. The first waves of remittances will increase inequality as only families with higher incomes are able to send migrants. It is only once the migrant network is well established that people from low-income households are able to migrate too and that inequality is likely to decrease. Based on obtained results, remittances cause a reduction of inequality in a country if: "(i) it is relatively more developed, (ii) where passport costs and the remoteness are relatively low and (iii), where international migrants are on average relatively less skilled."

To one's knowledge, there is no literature about remittances and inequality in Kyrgyzstan.

4. Methodology

To establish a causal relationship between migration and poverty reduction it is important to correct selection bias. This is because remittance-recipient status of the household is affected by self-selection. The decision to migrate involves lots of unobserved considerations which result in final single observable – whether there is a migrant member in the household or not. This self-selection bias in the context labor migration is a problem of endogenous treatment assignment.

The relation of interest is the following household's income regression:

$$Y_i = \alpha + \beta X_i + \delta D_i + u_i \quad (1)$$

which depends on some household's characteristics X_i and treatment status D_i . Because of the endogeneity, differences in the outcome mostly depend on the latent variable (Clougherty et al., 2015) of the treatment status and can be modeled via the following selection regression:

$$D_i = \begin{cases} 1 & \text{if } D^* = \gamma Z_i + \varepsilon_i > 0 \\ 0 & \text{otherwise} \end{cases} \quad (2)$$

In remittances-poverty framework, those regressions can be estimated with two-stage Heckman counterfactual methodology.

1. Selection equation – probit estimation¹

$$D_i^* = \alpha_d + \beta_d F_i + \gamma_d H_i + \omega Z_i + u_i \quad (3)$$

with

$$D_i = \begin{cases} 1 & \text{if } D_i^* > 0 \\ 0 & \text{if } D_i^* \leq 0 \end{cases} \quad (4)$$

D_i equals 1 when household is not remittance recipient and equals 0 otherwise. The selection equation determines whether a household would self-select itself to get treatment or not given a set of variables and controls, such as family characteristics F_i , household head characteristics H_i and instrumental variables Z_i . The latter is linked to exclusion restriction and used to minimize the correlation of error terms in both stages (Bendig et al., 2022).

2. Outcome equation – linear regression estimation²

$$\ln Y_i = \alpha + \beta F_i + \gamma H_i + \lambda D_i + u_i \quad (5)$$

where $\ln Y_i$ is logarithm of the household income and RHS of the regression has the same specification as (3) except for instrumental variables. Estimated coefficient for treatment status connects this step to previous one.

The result of this procedure gives counterfactual outcome measurements: in migration-poverty context it can be understood as how much of a disposable income the household would have upon changing its treatment status to a non-recipient. Margolis et al. (2013) extended their counterfactual analysis by adding virtual local income to estimated outcomes because “...necessary to compare the level of funds sent with the income opportunities the immigrant would have had by remaining in the home country. Not taking these opportunities into account is a significant bias towards overestimating the impact of money sent.”

Accounting virtual local income for a migrant upon returning requires additional layer and level of explanatory variables for non-recipient households. However, this step

¹ Specification is taken from Margolis et al., 2013.

² Specification is taken from Margolis et al., 2013.

of analysis is unfeasible in the given setting, and therefore counterfactual scenario is an extreme case of the situation where remittances receiving households suddenly lose their additional income source due to unexpected shocks happened to all migrant members at once. But this claim cannot be totally true, as counterfactual analysis works in way that it estimates expected outcome conditional on being treated. Since the model is trying to capture unobserved factors in the error terms, it is likely that counterfactual income estimates do contain virtual local income to some extent.

5. Data description

The data is a six-wave household-level panel dataset which was taken from the Life in Kyrgyzstan Study database. “The LiK Study is research-based, open access, multi-topic longitudinal survey of households and individuals in Kyrgyzstan. The survey was first conducted in 2010 and was collected five more times (2011-2013, 2016, and 2019). The LiK Study tracks the same 3000 households and approximately 8000 individuals over time in all seven Kyrgyz regions (oblasts) and the two cities of Bishkek and Osh.”³ Dataset is said to be representative over the whole population of Kyrgyzstan. Because the latest wave of the panel is dated by 2019 there is a good opportunity to estimate remittances’ effect on households’ income in isolation from Covid19 shock and everything happened after.

There are not big differences in averages between both sub-samples besides demographical and financial characteristics of households (Table 1). Families who receive remittances are larger in size, have more males and females, and have at least one migrant member. These households have almost twice less wage income on average, spend more less the same amount of money on food but have more nonfood expenses. Because of remittances, their income in general is higher, but less when accounted for family size.

³ Access to the data was kindly provided by The Research Data Center of IZA (IDSC) for this master project. For further details one can read about the LiK Study on <https://lifeinkyrgyzstan.org>

Table 1 – Data averages

	With remittances R = 1	Without remittances R = 0
Household characteristics		
Human capital (sum of years spent on education)	27.5	26.7
Size of the household	6.3	4.8
Number of migrants in the household	1.2	0.0
Number of males in the household	3.2	2.3
Number of females in the household	3.1	2.4
Number of elderly in the household	0.4	0.4
Number of children(<15) in the household	1.6	1.4
Average annual pension in soms	27,617	25,189
Average annual wage income in soms	37,842	63,159
Average annual remittances in soms	135,147	-
Average annual income in soms	358,236	228,138
Average annual food expenditure in soms	102,199	94,422
Average annual nonfood expenditure in soms	960,682	781,130
High liquidity assets value (including livestock) in soms	195,865	171,253
Land ownership in sotka (1/100 hectar)	52.2	51.4
Household head characteristics		
Age	55.1	51.7
Gender (1 is male, 2 is female)	1.3	1.3
Years of schooling	11.8	12.2
Marital status	1.9	2.0
Sub-sample size	2794	13384

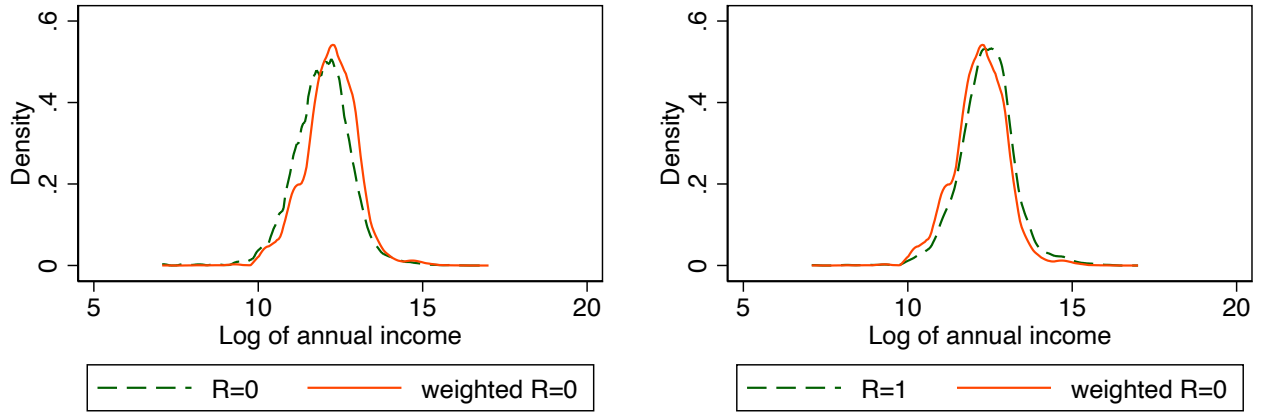


Figure 1 – DFL decomposition

Figure 1 shows DFL decomposition of income densities. Decomposition done by reweighting household characteristics in a way that if households without remittances resembles households with remittances their income distribution would change. This allows to look whether characteristics of a family are important in determining differences in income levels.

And indeed, households with remittances have higher income. Their income density is shifted slightly further than the weighted distribution for non-recipient households. Based on these results possible to assume that households with migrants and remittances have characteristics associated with higher income levels.

The model specification consists of two sets of characteristics: a household characteristic and household head characteristic. The first group includes indicators such as human capital measured by the total number of years spent on education, number of elderly and children, the share of total wages in the income structure, the share of all pensions in the income structure, the share of livestock in the structure of highly liquid assets and the total land owned in 1/100 hectares. The second group includes indicators for the head of household: gender, level of education and marital status.

Choice of instrumental variables should be done in a way that they affect decision to migrate and do not affect the outcome variable directly (Bendig et al., 2022). By looking at both summaries and density distributions of income, one can say that with approximately same level of descriptive characteristics family demographic composition is suitable to be used as instrumental variable. Particularly, number of males in the household.

The instrument is chosen because of the nature of labor migration and local perception on men being responsible for earning money whereas women are supposed to stay at home, manage housework and take care of other family members. If a household has a lot of men, it is probably that one of them will migrate (Sulaimanova et al., 2017). In Margolis et al. (2013) instrumental variable used to correct self-selection is number of boys in a family. It is stronger than number of males because does not directly impact income and is stronger in terms of exogeneity. But this may not work for different country setting presumable because of cultural and historical specifics and heterogeneity. Also, variable number of males in the data contains number of all males without age segregation. However, endogeneity correction with number of boys as an instrument is considered for the sake of comparison.

6. Results

Table 2 contains different specifications for Heckman two-stage counterfactual with number of males as an IV. Counterfactual income levels are obtained as expected logarithm of income conditional on a household not receiving remittances, consequently not having migrant members. Income regressions (1)-(3)-(5) are second stage of Heckman endogenous treatment estimation method corrected for self-selection bias with first stage probit regressions (2)-(4)-(6).

Significance of estimators do not change drastically when new variables added, as well as standard errors. Instrument is significant in all cases: more males are in household – higher chances that this household will self-select remittance recipient status. Significance of IMR states the importance of unobserved factors on decision to migrate and thus affect household income level and diminishes selection bias from the other regression estimates.

There is also evidence in wage and pension income shares stating that having enough cash lowers likelihood of migration, hence household's decision to send one member for labor migration is based on need of sponsoring larger nonfood expenses. Probability of migration and receiving remittance increases also if a household is headed by woman.

Similarly, counterfactual regressions were estimated with boys being instrumental variable and results are in Table 5 in Appendix. For this case, even though instrument

is significant it explains less in selection process leaving more to unobserved factors in error term. Additionally, correlation of error terms of both stages (athrho) is less in value. One may conclude overall boys as instrument is less credible than number of males for given context.

Table 2 – Regression estimation

VARIABLES	(1) Log of income	(2) Treatment	(3) Log of income	(4) Treatment	(5) Log of income	(6) Treatment
Human capital	0.005*** (0.0004)	0.007*** (0.0009)	0.006*** (0.0004)	0.008*** (0.0009)	0.006*** (0.0004)	0.008*** (0.0009)
Share of employment wages in total income	0.262*** (0.0183)	0.859*** (0.0376)	0.251*** (0.0180)	0.896*** (0.0382)	0.199*** (0.0183)	0.899*** (0.0390)
Share of elderly pensions in total income	-0.875*** (0.0322)	1.252*** (0.0669)	-1.206*** (0.0344)	1.199*** (0.0716)	-1.228*** (0.0343)	1.195*** (0.0713)
Household head gender	-0.029 (0.0193)	-0.278*** (0.0398)	-0.033* (0.0185)	-0.299*** (0.0390)	-0.053*** (0.0186)	-0.298*** (0.0390)
Household head age	0.018*** (0.0006)	-0.021*** (0.0012)	0.010*** (0.0007)	-0.019*** (0.0015)	0.011*** (0.0007)	-0.019*** (0.0015)
Household head marital status	-0.057*** (0.0052)	0.058*** (0.0115)	-0.039*** (0.0051)	0.051*** (0.0112)	-0.039*** (0.0051)	0.051*** (0.0112)
D = 1 if no remittances	-0.795*** (0.0326)		-0.711*** (0.0315)		-0.705*** (0.0312)	
Number of males		-0.215*** (0.0089)		-0.300*** (0.0118)		-0.301*** (0.0119)
athrho		0.329*** (0.0229)		0.275*** (0.0219)		0.272*** (0.0219)
Insigma		-0.204*** (0.0089)		-0.232*** (0.0089)		-0.239*** (0.0091)
Number elderly			0.351*** (0.0139)	0.0404 (0.0296)	0.348*** (0.0139)	0.042 (0.0296)
Number of children			0.028*** (0.0045)	0.149*** (0.0118)	0.035*** (0.0046)	0.150*** (0.0119)
Share of livestock value in high-liquid asstes					-0.210*** (0.0155)	0.015 (0.0299)
Land size in 1/100 hectar					0.002** (0.0009)	0.001 (0.0032)
Constant	11.84*** (0.0486)	2.303*** (0.0776)	11.98*** (0.0489)	2.189*** (0.0843)	12.04*** (0.0490)	2.183*** (0.0846)
Observations	15,741	15,741	15,741	15,741	15,741	15,741

Note: athrho is Fisher transformation of correlation of error terms of both stages. Significance of this parameter allows to reject the null hypothesis of no self-selection, hence simple OLS estimations would lead to a bias. Inverse Mill's ratio is faciliated here by product of rho and sigma.

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Graphical comparison of counterfactual and initial income levels shows potential negative influence on how households are distributed according to their financial status. Conditional prediction was done with regression specification (5) and (6). There is an increase in number of households with lower income levels and a decrease in number of households with income higher median values (Figure 2). In the absence of macro level

shocks, remittances change income levels but do not shift the distribution to lower values. Thus, remittances themselves cannot imply structural changes in households' well-being.

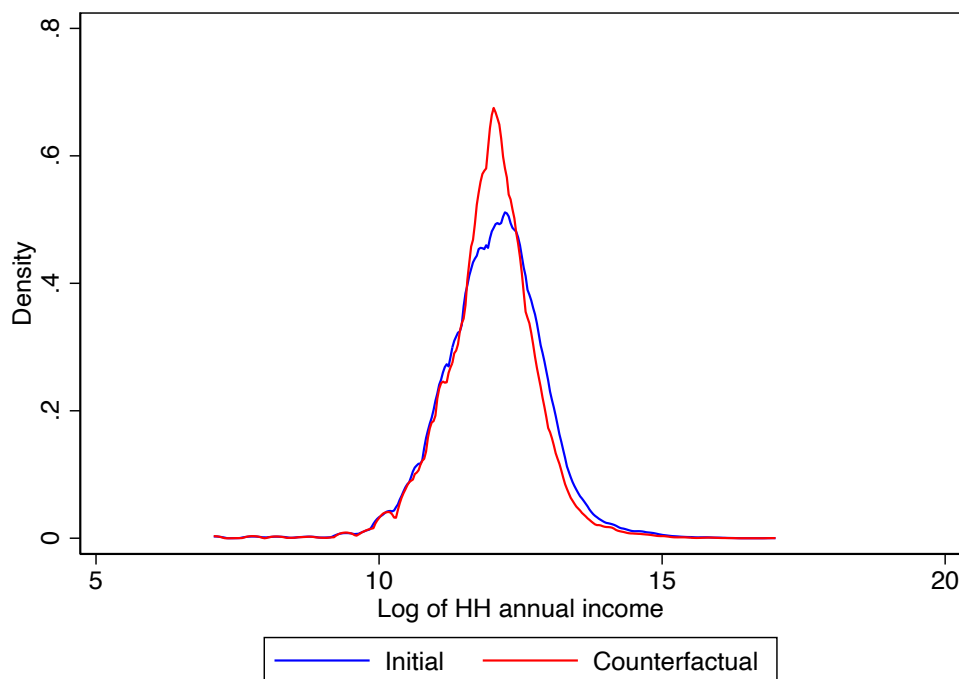


Figure 2 – Postestimation densities

Regarding poverty and inequality, there is not univocal influence of remittances on these measurements. Because of panel structure of the dataset, it was possible to conduct deeper analysis of poverty measurement and estimate such indicators as poverty duration, poverty spells, intertemporal poverty, etc.

Counterfactual scenario indeed negatively affects poverty. Number of poor households staying behind poverty thresholds during all six waves increased. Intertemporal poverty rate shows 1.28% percent rise. In counterfactual scenario number of poor households redistributed from shorter periods to longer periods beyond baseline poverty line. On average, households stay poor longer.

Need to mention what poverty threshold used in poverty analysis. Those thresholds were taken from National Statistical Committee. Their poverty line estimation methodology is based on governmentally approved algorithm and mostly determined by inflation rates and consumer price index. For each year of the panel poverty lines differ in values, are measured in local currency and for per capita.

Table 3 – Poverty measurements

Number of periods below the poverty line	Freq.		Percent		Cum.	
	Initial	Counter.	Initial	Counter.	Initial	Counter.
0	397	376	24.28	23.00	24.28	23.00
1	334	304	20.43	18.59	44.71	41.59
2	301	287	18.41	17.55	63.12	59.14
3	260	245	15.90	14.98	79.02	74.13
4	186	201	11.38	12.29	90.40	86.42
5	116	158	7.09	9.66	97.49	96.09
6	41	64	2.51	3.91	100.00	100.00
Total	1,635	1,635	100	100		

Number of poverty spells	Freq.		Percent		Cum.	
	Initial	Counter.	Initial	Counter.	Initial	Counter.
0	397	376	24.28	23.00	24.28	23.00
1	689	713	42.14	43.61	66.42	66.61
2	486	495	29.72	30.28	96.15	96.88
3	63	51	3.85	3.12	100.00	100.00
Total	1,635	1,635	100	100		

(spell = 1 or more consecutive periods below the poverty line)

For intertemporally poor population:	Initial	Counter.
Average number of periods below the poverty line	2.65	2.85
Average number of poverty spells	1.49	1.47
Average duration of poverty spells	1.92	2.12
% population ever poor (intertemporally poor)	75.72%	77.00%

There are two national poverty lines – baseline and extreme. Baseline poverty line indicates that a household can afford basic nonfood consumption minimum alongside with sufficient daily calorie intake. This threshold is somewhere around 400 US dollars. Extreme poverty line assumes households barely meet calorie daily intake minimum given that they spend all their disposable income on food consumption and is somewhat around 200 US dollars⁴.

As noted by Loxha (2019), in assessing households' poverty, economies of scale should be considered, for example like pooling household's income and expenditure levels. This would take into account that some members do not require the same number of expenditures due to their age or other characteristics. But national poverty thresholds used in the analysis are calculated in proportion to the number of household members, so for measuring poverty rates the value of annual household income is also taken in per capita terms.

⁴ Numbers are converted to US dollars to roughly picture the level of local welfare.

To estimate income inequality across households in the panel, classical Gini index was used: index closer to 0 indicates lower inequality and vice versa otherwise. Counterfactual income levels showed reduction of inequality index from 0.457 to 0.438. This finding is novel and suggests that migration process in the country is still in transition phase. Poor in Kyrgyzstan are not the most benefitting from migration how it may be at first seen. Table 3 shows result only for baseline poverty lines. In extreme poverty case, no significant changes were spotted, what gives an additional support for inequality findings stating that extremely poor and majority below baseline poverty line households cannot afford migration or simply do not have remittances large enough.

Table 4 – Baseline poverty rates (Heckman vs National Stata Committee)

	2010	2011	2012	2013	2016	2019
initial	37.2%	35.6%	26.9%	27.1%	21.2%	33.9%
counterfactual	33.0%	36.2%	29.9%	31.0%	28.6%	40.9%
diff.	-4.2%	0.7%	3.0%	3.9%	7.4%	7.0%
NSC initial	33.7%	36.8%	38.0%	37.0%	24.5%	20.1%
NSC counterfactual	40.0%	43.4%	44.6%	43.5%	31.5%	31.2%
diff. NSC	6.3%	6.6%	6.6%	6.5%	7.0%	11.1%

The table above allows to compare differences in poverty rates for counterfactuals between Heckman used in this work and rates of National Statistical Committee⁵. These numbers suggest that there is a room for overestimation of remittances influence on poverty in what NSC does.

7. Discussion and conclusion

The significance of the impact of remittances on poverty in Kyrgyzstan is generally overestimated. Based on a counterfactual scenario, it can be argued that remittances alone, in isolation from macroeconomic shocks, probably do not raise poverty rates as much as reported by the National Statistical Committee.

Also, remittances contribute to increasing income inequality between households. One explanation could be that migration to the near abroad, in particular to Russia, has not reached a level where the poor can afford to go out to earn money. This seems to hold despite the presence of huge diaspora there and large gains after relocation.

⁵ National Statistical Committee open data.

Of course, the empirical analysis in this thesis has limitations. There are many flaws and inconsistencies in the data prior to processing into a final panel, which did not allow for the extraction of maximum possible information due to time and resource constraints.

However, this work is contributing the burgeoning literature on how migration and remittances impact the welfare of populations. The work done in this thesis can be seen as a methodological contribution to the identification of the determinants of poverty and inequality. It also delivers results that may usefully inform policymakers, in particular those in charge of designing welfare-enhancing policies.

Bibliography

Abidi N., Akhbari M., Hlayhel B., Sakha S., (2023), “Remittances and Social Safety Nets during COVID-19: Evidence from Georgia and the Kyrgyz Republic”, IMF Working Paper No. 23/94

Adams R., Cuecuecha A., (2010), “Remittances, Household Expenditure and Investment in Guatemala”, Elsevier, World Development Vol. 38, No. 11, pp. 1626–1641

Bang J., Mitra A., Wunnava P., (2018), “Hollowing Out the Middle? Remittances and Income Inequality in Nigeria”, IZA Discussion Papers 11438

Bendig D., Hoke J., (2022) “Correcting Selection Bias in Innovation and Entrepreneurship Research: A Practical Guide to Applying the Heckman Two-Stage Estimation”, SSRN

Brownbridge M., Canagarajah S., (2020), “Migration and Remittances in the Former Soviet Union Countries of Central Asia and the South Caucasus: What Are the Long-Term Macroeconomic Consequences?”, World Bank, Policy Research Working Paper No. 9111

Clougherty J., Tomaso D., (2015), “Correcting for self-selection based endogeneity in management research: A review and empirical demonstration”, DIW Discussion Papers, No. 1465

Clougherty J., Duso T., Muck J., (2016), “Correcting for Self-selection Based Endogeneity in Management Research: Review, Recommendations and Simulations”, Organizational Research Methods Vol. 19 2, pp. 286-347

Ebeke C., Le Goff M., (2011), "Why Migrants' Remittances Reduce Income Inequality in some Countries and not in Others?" HAL, Working Papers halshs-00554277

Gao X., Kikkawa A., Kang J., (2021), "Evaluating the Impact of Remittances on Human Capital Investment in the Kyrgyz Republic", ADB Economics Working Paper Series No. 637

Karymshakov K., Abdieva R., Sulaymanova B., (2014), "Worker's Remittances and Poverty in Kyrgyzstan", International Conference on Eurasian Economies

Kóczán Z., Loyola F., (2018) "How Do Migration and Remittances Affect Inequality? A Case Study of Mexico", IMF, Working Paper No. 2018/136

Kroeger A., Anderson K., (2014) "Remittances and the Human Capital of Children: New Evidence from Kyrgyzstan during Revolution and Financial Crisis, 2005–2009", *Journal of Comparative Economics* 42 (3): 770–85

Loxha A., (2019), "Do Remittances reduce poverty in Kosovo? - A counterfactual analysis", *South East European Journal of Economics and Business* 14(2):117-132

Margolis D., Miotti L., Mouhoud E., Oudinet J., (2013), "To Have and Have Not: Migration, Remittances, Poverty and Inequality in Algeria", IZA Discussion Papers 7747

Macro poverty outlook, (2022), World Bank

McKenzie D., (2017), "Poverty, Inequality, and International Migration: Insights from 10 Years of Migration and Development Conferences", *Revue d'économie du développement* (Vol. 25), p. 13-28

Muktarbek kyzy A., Seyitov T., Jenish N., (2015) "Remittances and Expenditure Patterns of Households in the Kyrgyz Republic", The National Bank of the Kyrgyz Republic, Working Paper No. 2

Paulone S., Ivlevs A., (2019), "Emigration and Alcohol Consumption among Migrant Household Members Staying Behind: Evidence from Kyrgyzstan", IZA IZA Discussion Papers 12075

Scott P., (2019), "Causal Inference Methods for selection on observed and unobserved factors: Propensity Score Matching, Heckit Models, and Instrumental Variable Estimation," *Practical Assessment, Research and Evaluation* Vol. 24 Article 3

Semyakina A., Woolridge J., (2017), "Binary response panel data models with sample selection and self-selection", *Journal of Applied Econometrics* 33(2)

Sulaimanova B., Jasoolov D., (2017), "International Migration in Kyrgyzstan: Dynamics and Determinants", International Conference on Eurasian Economies

Thieme S., (2014), “Coming home? Patterns and characteristics of return migration in Kyrgyzstan”, *International Migration*, 52(5):127-143

Appendix

Table 5 – Regression estimation (boys)

VARIABLES	(1) Log of income	(2) Treatment	(3) Log of income	(4) Treatment	(5) Log of income	(6) Treatment
Human capital	0.005*** (0.0004)	0.001* (0.0008)	0.006*** (0.0006)	0.001* (0.0008)	0.006*** (0.0004)	0.001* (0.0008)
Share of employment wages in total income	0.205*** (0.0183)	0.960*** (0.0368)	0.197*** (0.0178)	0.963*** (0.0368)	0.145*** (0.0182)	0.964*** (0.0376)
Share of elderly pensions in total income	-0.967*** (0.0314)	1.416*** (0.0653)	-1.291*** (0.0334)	1.383*** (0.0701)	-1.315*** (0.0333)	1.382*** (0.0700)
Household head gender	-0.023 (0.0190)	-0.110*** (0.0394)	-0.027 (0.0182)	-0.110*** (0.0396)	-0.047*** (0.0183)	-0.109*** (0.0397)
Household head age	0.019*** (0.0006)	-0.025*** (0.0012)	0.012*** (0.0007)	-0.025*** (0.0015)	0.012*** (0.0007)	-0.025*** (0.0015)
Household head marital status	-0.061*** (0.0051)	0.069*** (0.0115)	-0.043*** (0.0050)	0.071*** (0.0117)	-0.043*** (0.0050)	0.071*** (0.0117)
D = 1 if no remittances	-0.501*** (0.0335)		-0.435*** (0.0293)		-0.425*** (0.0290)	
Number of boys		-0.041*** (0.0132)		-0.036* (0.0184)		-0.036** (0.0184)
athrho		0.102*** (0.0190)		0.057*** (0.0153)		0.050*** (0.0150)
Insigma		-0.221*** (0.0089)		-0.245*** (0.0091)		-0.252*** (0.0093)
Number elderly			0.351*** (0.0136)	0.035 (0.0293)	0.347*** (0.0136)	0.036 (0.0292)
Number of children			0.029*** (0.0045)	0.000 (0.0127)	0.036*** (0.0045)	-0.001 (0.0127)
Share of livestock value in high-liquid asstes					-0.211*** (0.0154)	0.006 (0.0294)
Land size in 1/100 hecctar					0.003*** (0.0009)	0.000 (0.0023)
Constant	11.55*** (0.0477)	1.850*** (0.0758)	11.71*** (0.0461)	1.870*** (0.0834)	11.76*** (0.0460)	1.868*** (0.0838)
Observations	15,741	15,741	15,741	15,741	15,741	15,741

Note: athrho is Fisher transformation of correlation of error terms of both stages. Significance of this parameter allows to reject the null hypothesis of no self-selection, hence simple OLS estimations would lead to a bias. Inverse Mill's ratio is faciliated here by product of rho and sigma.

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1