Remittance, perception of security, and incidence of violence in Kyrgyzstan

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Introduction

- The current global estimate is that there were around 281 million international migrants in the world in 2020, which equates to 3.6 % of the global population, with overall $702 billion remittance.
- In 2021, remittance's share of GDP was 31.9% in Kyrgyzstan, 32.7% in Tajikistan, and 13.3% in Uzbekistan.
- According to the World Bank, the population totaled 6.975 million in 2022, of which 34% resided in urban areas of the country and 66% in rural regions. Approximately 700,000 Kyrgyz citizens work abroad.
- Following the 1990 Osh Conflict, 1999 Batken Conflict, and 2010 Kyrgyzstan revolutions, the Kyrgyzstan-Tajikistan border burst out of violent conflict on Jan 27, 2022. It is called status quo ante bellum after Sept. 2022.

Literature Summary

- Remittance affects socio-economic status on various aspects, including poverty [Masron and Subramaniam, 2018], food and nutrition security [Mabrouk and Mekni, 2018], child education [Bucheli et al., 2018], agricultural production [Maharjan et al., 2013], and entrepreneurship [Kakhkharov, 2019].
- The perception of security (or insecurity) constitutes a crucial aspect of subjective well-being, often showing a limited correlation with objective violent incidents [Wills-Herrera et al., 2012]. Existing literature suggests that perception of insecurity negatively influences cooperation [Velez et al., 2016], diminishes satisfaction with democracy and trust in public institutions, potentially impeding economic development [Blanco and Ruiz, 2013].

Hypothesis

- We hypothesize that receiving cash transfers from migrant members improves the perception of security and reduces the incidence of violence.
- We also hypothesize the remittance-induced improvements in security perceptions will only be limited to ethnic majorities and high-income households in the context of high ethnic and economic inequality and tension.

Data

- Data come from the ‘Life in Kyrgyzstan (LiK)’ Study survey, established by Professor Tilman Bruck and published by Institute of Labor Economics (IZA).
- The survey has recorded data on socio-economics, demographics, education, income, assets, consumption expenditure, migration, employment, agricultural markets, landholding size, economic and non-economic shocks, social networks, subjective well-being, perception of security, and experience of violence.
- Longitudinal data are available for six different periods between 2010 and 2019 that are all used for analysis: 2010, 2011, 2012, 2013, 2016, and 2019.

Wave	2010	2011	2012	2013	2016	2019
Observations	7945	7951	8072	9016	10005	11831

Key Variable Measurement

- Perception of security is measured as Likert scale from 1 to 5. We adjust the express and Likert scale as: 1 – feeling strongly insecure to 5 – feeling strongly secure.
- Remittance has two major measurements:1) the binary indicator of receiving remittance and 2) the change of remittance amount receiving in the last 12 months preceding the survey.
- We also create binary indicator for perception of security, trust in government, experienced in violence.

Method

We employ ordinal logistic fixed effects (OLFE) estimator as primary estimator to estimate the relationship between remittance and perceived security.

$$log\frac{P(Y_{it} \leq j)}{P(Y_{it} > j)} = \alpha_0 + \alpha_1 Remittance_{it} + \theta X_{it} + \mu_i + Time_t + \epsilon_{ijt} \quad (1)$$

where

- *i* denotes an individual.
- *j* denotes the category of the response.
- *t* denotes the survey year.
- *Y* is the level of perceived security in Likert Scale 1-5.
- *Remittance* contains two measurements: 1) the binary indicator of receiving remittance and 2) the change of remittance amount receiving in the last 12 months preceding the survey.
- *X* is a vector of covariates including individual demographic variables, household demographics variables, agricultural variables, and community variables.
- *μ* is the individual fixed effects
- Time is the survey year fixed effects.

Method

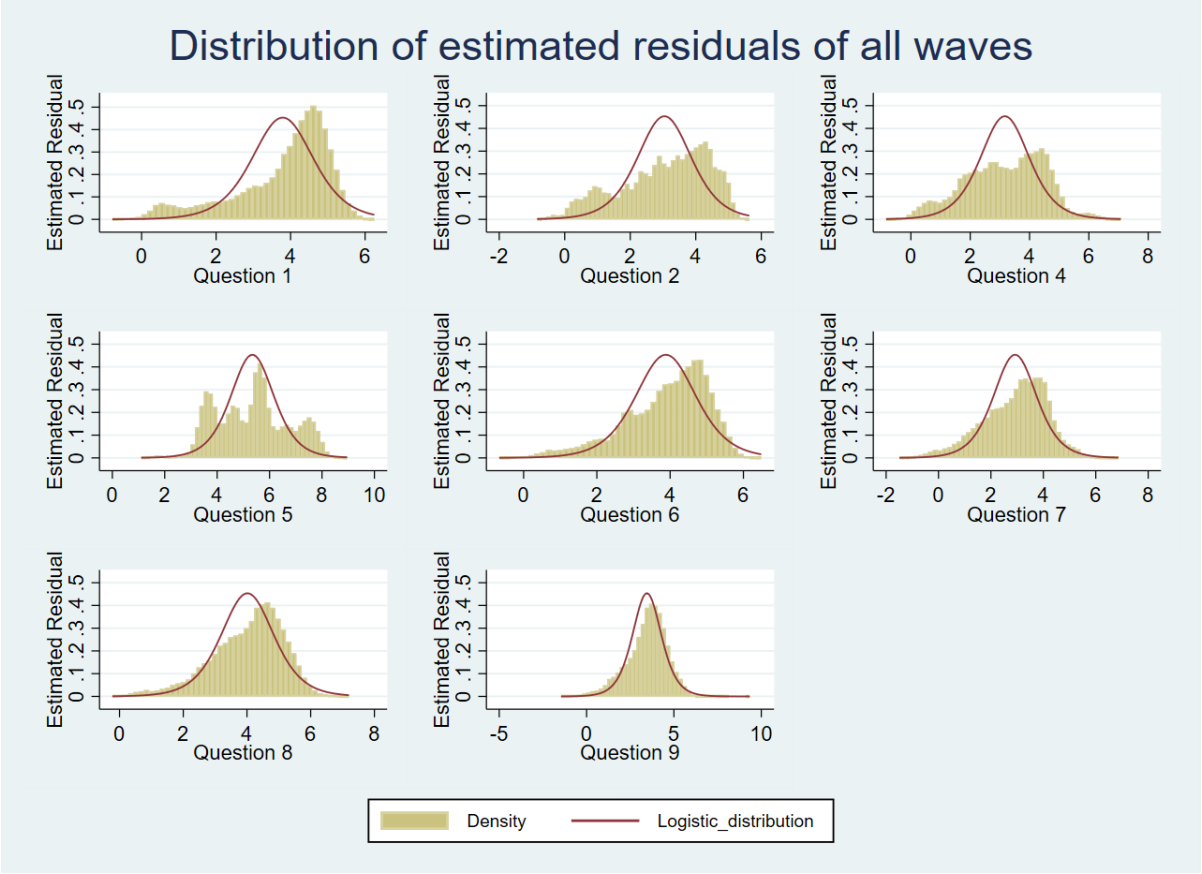
We estimate the relationship between the change in the amount of remittance (and the change of the remittance sending frequency) and perceived security (and experience of violence) using the ordinary least squares (OLS).

$$log\frac{P(Y_{it} \leq j)}{P(Y_{it} > j)} = \alpha_0 + \alpha_1 Remittance_{it} + \theta X_{it} + \mu_i + Time_t + \epsilon_{ijt} \quad (2)$$

where

- *i* denotes an individual.
- *j* denotes the category of the response.
- *t* denotes the survey year.
- *Y* is the level of perceived security in Likert Scale 1-5.
- *Remittance* contains two measurements: 1) the binary indicator of receiving remittance and 2) the change of remittance amount receiving in the last 12 months preceding the survey.
- *X* is a vector of covariates including individual demographic variables, household demographics variables, agricultural variables, and community variables.
- *μ* is the individual fixed effects
- Time is the survey year fixed effects.

Identification



Identification

- Selection bias

Selection bias may occur if migrant households differ systematically from non-migrant households. We use the propensity-score matching method to match migrant and non-migrant households on observables. However, the matched samples of migrant and non-migrant households show that some variables are still significantly different between the two groups.

- Reverse causality

The decision to send remittances could be influenced by the perceived level of security, creating a feedback loop. We use the Arrelano-Bond dynamic panel estimator to address reverse casualty. Results remains consistently positive.

- Omitted variable bias

The omitted variables, such as culture and personality, are assumed to affect migration and remittance non-randomly and are assumed to be time-invariant. To address this, we employ a fixed-effects model that controls for unobserved heterogeneity by differencing out time-invariant characteristics.

- Exchange rate shock

We control for the depreciation of the Russian Ruble to USD, dropping from 0.028 RUB/USD in to 0.015 RUB/USD in 2014 due to the financial crisis of the Rubble triggered by the 2014 Crimean Crisis.

Identification

We create an instrument variable to address the endogeneity.

$$Migration\ share_{ijt} = \frac{\sum_i \sum_j (\sum_{k \neq j} Migration\_household_{ikt})}{Total\ households\ in\ the\ cluster\ i\ at\ time\ t} \quad (3)$$

where

- *i* represents cluster.
- *j* represents household.
- *t* represents the survey year.
- *Migration share* is the share of the migration households in cluster *j* at time *t*.

The numerator is the number of total migrant households in cluster *j* at time *t*, excluding the *k*-th migrant household in cluster *i* at time *t*. The denominator is the total number of households at cluster *j* at time *t*.

We use the generalized structural equation model (GSEM) to include the instrument variable in the ordinal logistic model.

Results

Table I. Effect of remittance on perception of security

	Personal Security Perception				*Neighborhood Security Perception*			
	I feel safe walking alone during the day	I feel safe walking alone during the night	I no longer need to avoid dangerous areas	I won't become a victim of violence in next 12 months	Neighborhood is peaceful	Neighborhood is not dangerous	Less violence now than one years ago	No weapon fired in the neighborhood
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittance (1=yes, 0=no)	0.14*	0.072	0.057	0.072	0.034	0.12*	-0.022	-0.014
	(0.077)	(0.060)	(0.062)	(0.067)	(0.061)	(0.069)	(0.062)	(0.068)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	**33,832**	**41,190**	**41,792**	**39,225**	**41,977**	**38,784**	**40,891**	**35,712**
Log (remittance amount)	0.18***	0.067*	0.096**	0.033	0.037	0.18***	0.025	0.11**
	(0.05)	(0.04)	(0.04)	(0.05)	(0.04)	(0.05)	(0.05)	(0.05)
Log (remittance amount)2	-0.023***	-0.009	-0.013**	-0.004	-0.005	-0.024***	-0.005	-0.018**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	**33,830**	**41,189**	**41,790**	**39,221**	**41,975**	**38,782**	**40,889**	**35,710**

Notes: Each point estimate is a coefficient estimate from a separate regression. Clustered standard errors in parentheses. * p < .10, ** p < .05, *** p < .01. Control covariates include agricultural specification, land area in acres, asset index level, consumption expenditure, age, gender, marital status, education, ethnicity identification, household size, number of migrants, number of workers, number of elderly, and indicator of the community has financial institution that allow receiving remittance.

Results

Table II. Effect of remittance on perception of security using generalized structural equation model with instrument variable

	Personal Security Perception				*Neighborhood Security Perception*			
	I feel safe walking alone during the day	I feel safe walking alone during the night	I no longer need to avoid dangerous areas	I won't become a victim of violence in next 12 months	Neighborhood is peaceful	Neighborhood is not dangerous	Less violence now than one years ago	No weapon fired in the neighborhood
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log (remittance amount)	0.12***	0.058***	0.096***	0.066***	-0.007	0.16***	0.077***	0.092***
	(0.025)	(0.022)	(0.022)	(0.023)	(0.022)	(0.024)	(0.023)	(0.026)
Log (remittance amount)2	-0.021***	-0.0078**	-0.014***	-0.009***	-0.001	-0.023***	-0.011***	-0.015***
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	**33,830**	**41,189**	**41,790**	**39,221**	**41,975**	**38,782**	**40,889**	**35,710**

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Results

Table III. Effect of remittance on experienced violence (OLS)

	Experienced violence	
	Experienced violence (1=yes, 0=no)	Number of experienced violence
	(1)	(2)
Remittance (1=yes, 0=no)	-0.008*	-0.015**
	(0.005)	(0.008)
Control covariates	Yes	Yes
Observations	**46,434**	**46,434**
Log (remittance amount)	0.001	-0.001
	(0.003)	(0.005)
Log (remittance amount)2	0.000	0.000
	(0.000)	(0.001)
Control	Yes	Yes
Observations	**46,431**	**46,431**

Notes: Each point estimate is a coefficient estimate from a separate regression. Clustered standard errors in parentheses. * p < .10, ** p < .05, *** p < .01. Control covariates include agricultural specification, land area in acres, asset index level, consumption expenditure, age, gender, marital status, education, ethnicity identification, household size, number of migrants, number of workers, number of elderly, and indicator of the community has financial institution that allow receiving remittance.

Results

Table IV. Effect of perception of security on trust in government (OLS)

	Change of Personal Security Perception				*Change of Neighborhood Security Perception*			
	I feel safe walking alone during the day	I feel safe walking alone during the night	I no longer need to avoid dangerous areas	I won't become a victim of violence in next 12 months	Neighborhood is peaceful	Neighborhood is not dangerous	Less violence now than one years ago	No weapon fired in the neighborhood
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Change of Trust in Local Government	-0.005	0.060***	0.062***	0.053***	0.11***	0.072***	0.065***	0.020**
	(0.012)	(0.013)	(0.013)	(0.010)	(0.014)	(0.010)	(0.011)	(0.010)
Change of Trust in Central Government	0.002	0.063***	0.055***	0.023**	0.035***	0.050***	0.038***	-0.008
	(0.011)	(0.012)	(0.012)	(0.010)	(0.013)	(0.010)	(0.011)	(0.009)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	**29,841**	**29,841**	**29,841**	**29,841**	**29,841**	**29,841**	**29,841**	**29,841**

Notes: Each point estimate is a coefficient estimate from a separate regression. Clustered standard errors in parentheses. * p < .10, ** p < .05, *** p < .01. Control covariates include agricultural specification, land area in acres, asset index level, consumption expenditure, age, gender, marital status, education, ethnicity identification, household size, number of migrants, number of workers, number of elderly, and indicator of the community has financial institution that allow receiving remittance.

Results-heterogeneity

Table V. Heterogeneity analysis on gender

	Personal Security Perception				*Neighborhood Security Perception*			
	I feel safe walking alone during the day	I feel safe walking alone during the night	I no longer need to avoid dangerous areas	I won't become a victim of violence in next 12 months	Neighborhood is peaceful	Neighborhood is not dangerous	Less violence now than one years ago	No weapon fired in the neighborhood
Remittance (1=yes, 0=no)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female Head	-0.041	0.009	-0.073	0.064	-0.092	0.042	-0.11*	0.012
	(0.068)	(0.062)	(0.062)	(0.064)	(0.061)	(0.068)	(0.060)	(0.070)
Male Head	0.041	-0.009	0.073	-0.064	0.092	-0.042	0.110	-0.012
	(0.088)	(0.074)	(0.075)	(0.080)	(0.074)	(0.085)	(0.076)	(0.084)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	**33,832**	**41,190**	**41,792**	**39,225**	**41,977**	**38,784**	**40,891**	**35,712**

Notes: Each point estimate is a coefficient estimate from a separate regression. Clustered standard errors in parentheses. * p < .10, ** p < .05, *** p < .01. Control covariates include agricultural specification, land area in acres, asset index level, consumption expenditure, age, marital status, education, ethnicity identification, household size, number of migrants, number of workers, number of elderly, and indicator of the community has financial institution that allow receiving remittance.

Results-heterogeneity

Table VI. Heterogeneity analysis on ethnicity

	Personal Security Perception				*Neighborhood Security Perception*			
	I feel safe walking alone during the day	I feel safe walking alone during the night	I no longer need to avoid dangerous areas	I won't become a victim of violence in next 12 months	Neighborhood is peaceful	Neighborhood is not dangerous	Less violence now than one years ago	No weapon fired in the neighborhood
Remittance (1=yes, 0=no)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Kyrgyz	0.190	0.150	-0.120	0.028	0.029	0.210	0.010	0.049
	(0.170)	(0.130)	(0.140)	(0.140)	(0.140)	(0.150)	(0.130)	(0.140)
Uzbeks	-0.033	-0.20**	0.094	-0.042	-0.056	-0.110	-0.026	-0.058
	(0.100)	(0.085)	(0.093)	(0.100)	(0.099)	(0.097)	(0.092)	(0.100)
Russian	-1.49***	-0.066	0.062	-0.400	0.220	-0.80**	-0.002	0.430
	(0.440)	(0.360)	(0.340)	(0.330)	(0.280)	(0.330)	(0.350)	(0.490)
Tajiks	-0.260	0.043	0.000	0.120	0.051	0.110	0.220	(0.036)
	(0.280)	(0.240)	(0.310)	(0.350)	(0.250)	(0.320)	(0.280)	(0.270)
Control covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	**33,832**	**41,190**	**41,792**	**39,225**	**41,977**	**38,784**	**40,891**	**35,712**

Notes: Each point estimate is a coefficient estimate from a separate regression. Clustered standard errors in parentheses. * p < .10, ** p < .05, *** p < .01. Control covariates include agricultural specification, land area in acres, asset index level, consumption expenditure, age, gender, marital status, education, ethnicity identification, household size, number of migrants, number of workers, number of elderly, and indicator of the community has financial institution that allow receiving remittance.

Conclusion

- The reception of remittances significantly enhances personal and neighborhood perceptions of security in recipient households, exerting a broad influence across diverse regions and ethnicities in Kyrgyzstan.
- This impact extends beyond perceptions, affecting trust in local and central governments driven by the reduction in experienced violence.
- It is noteworthy that adverse effects are observed among young, poor, and female individuals, conflicted regions, and Uzbeks or Russian communities as the minority ethnicities in Kyrgyzstan.

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