

# Temporary International Migration and Shocks: Analysis using panel data

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# Temporary Migration & Shocks

- Effect of shocks on migration decision is widely studied - [agricultural shocks](#) (Kubik and Maurel, 2016); [direct income shocks](#) (Angelucci, 2015); [weather shocks](#) (Groger and Zylberberg, 2016)
  - No study distinguishes between different types of shocks that may affect migration differently [except, Halliday, 2006](#)
  - This distinction is important as a natural shock might reduce or increase migration depending on local labor markets and the liquidity constraints faced by and employment activities available to a household
- **What we do:**
  - How different natural [shocks](#) affect migration decision

# We Ask

- We estimate the effect of a natural shock on a household's decision to have a migrant
  - We restrict to natural shocks as they are most likely to be exogenous to a household's migration decision.
  - Since weather shocks are more likely to affect the livelihoods of rural households, we restrict our analysis to rural households
- Dynamics of temporary migration
  - Distinguish between return and onward migration within a household
  - For return migration decision, we compare two households who both have a migrant in the current period and study the change in their migrant status in the next period
  - Examine whether shocks act as a pull or push factor for migration
- Mechanisms:
  - How does migration response depend on the access to informal borrowing options?
  - How does local labor market affect the migration response to shocks?

# Contribution

- **Temporary international migration** response of households to different types of natural shocks
- Panel data from the Life in Kyrgyzstan (LiK) surveys (2010-2013) allows us
  - To address unobserved heterogeneity
  - Observe the dynamics of temporary migration, distinguish between **return and ongoing migration**
- Establish that it is important to distinguish between types of shocks:
  - Depending on local labor markets, a household's employment and liquidity constraints, a shock might reduce or increase migration
  - Drought shocks: income reducing effects which increases migration in agricultural areas (Morten, 2016) in the absence of other mechanisms to insure shocks
  - Winter Shocks: creates adverse labor situation which reduces migration

# Data for Kyrgyzstan

- Four waves of the Life in Kyrgyzstan (LIK) survey: 2010-2013
  - Representative sample of 3000 households
  - Covers all provinces (oblasts) of Kyrgyzstan
  - 120 communities (clusters) across the country
- Panel data constructed by linking surveys
  - Provides information for a household on demographics, migration, assets, education, shocks received, informal borrowing opportunity
- Natural Shocks:
  - drought, rain & landslide, winter & frost, earthquake and pest

# Incidence of Migration

Year	Non-migrant	Migrant	Fraction Migrant
2010	2596	383	0.129
2011	2502	446	0.151
2012	2515	464	0.156
2013	2368	464	0.164

## Summary: Typical Migrant Household

Variable	Non-migrant	Migrant
Household size	5.07	6.45
Male fraction	0.50	0.53
Adult fraction	0.65	0.72
Elderly fraction	0.07	0.03
Education years	13.35	14.50
Wealth 1	0.29	0.26
Wealth 2	0.24	0.31
Wealth 3	0.20	0.25
Wealth 4	0.16	0.12
Wealth 5	0.11	0.06

# Patterns of Migration

Year	0 to 0	0 to 1	1 to 0	1 to 1
2011	0.761	0.088	0.058	0.093
2012	0.736	0.083	0.071	0.110
2013	0.699	0.107	0.090	0.105

- Considerable changes in migration status of households over the period of our analysis
- Example (0 to 1): Migrant in current year but were non-migrants in the previous year [[Onward Migration](#)]
- Example (1 to 0): Migrant in the previous year and non-migrant in the current year [[Return Migration](#)]



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# Summary of Shocks (2010-2013)

Variable	Mean	SD	Min	Max
drought	0.232	0.422	0	1
rain&landslide	0.211	0.408	0	1
winter&frost	0.379	0.485	0	1
earthquake	0.162	0.368	0	1
pest	0.193	0.394	0	1

## Regression Specification

Determinants of migration:

$$hhmig_{i,t} = \beta_0 + \sum_{j=1}^5 \gamma_j shock_{i,j,t-1} + X_{i,t}\beta + \phi_t + \phi_t * region + \eta_i + \varepsilon_{i,t},$$

- The dependent variable  $hhmig = 1$  for a migrant household; and  $hhmig = 0$  for a non-migrant household.
- Household specific fixed effects model
- One period lagged values for shocks to address potential simultaneity in migration decisions

## Determinants of Migration: Shocks

	1	2	3	4	5	6
	b/se	b/se	b/se	b/se	b/se	b/se
drought <sub>t-1</sub>	0.038* (0.022)					0.040* (0.023)
rain&landslide <sub>t-1</sub>		-0.002 (0.021)				0.009 (0.022)
winter&frost <sub>t-1</sub>			-0.041** (0.020)			-0.045** (0.020)
earthquake <sub>t-1</sub>				-0.009 (0.028)		-0.012 (0.027)
pest <sub>t-1</sub>					0.015 (0.017)	0.012 (0.019)
constant	0.164*** (0.023)	0.164*** (0.026)	0.194*** (0.030)	0.136*** (0.024)	0.160*** (0.025)	0.168*** (0.027)
Observations	5209	5209	5209	5209	5209	5209
Households	1781	1781	1781	1781	1781	1781
HH FE	Yes	Yes	Yes	Yes	Yes	Yes
HH Control	Yes	Yes	Yes	Yes	Yes	Yes
Year*Oblast	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Yes	Yes	Yes	Yes	Yes	Yes

## Shocks and decision to recall and send migrants

	Recall	Send
	b/se	b/se
drought <sub>t-1</sub>	-0.066 (0.072)	0.053** (0.021)
rain&landslide <sub>t-1</sub>	-0.101 (0.064)	0.025 (0.019)
winter&frost <sub>t-1</sub>	0.146 (0.103)	-0.004 (0.017)
earthquake <sub>t-1</sub>	0.016 (0.087)	-0.008 (0.022)
pest <sub>t-1</sub>	-0.023 (0.083)	-0.006 (0.019)
constant	1.318*** (0.389)	-0.164* (0.085)
Observations	891	4160
Households	523	1668
HH FE	Yes	Yes
HH Control	Yes	Yes
Year*Oblast	Yes	Yes
Clustered SE	Yes	Yes

## Hours spent on activities per day in colder vis-a-vis other months

Activity		Mean	SD	P10	P90
Housing/Repair	Non-winter	1.9	1.1	1.0	3.5
	Winter	2.8	2.0	1.0	5.5
Eat/Sleep/Laundry	Non-winter	5.2	3.4	1.5	9.5
	Winter	5.2	3.4	1.5	9.5

- Labor intensive tasks much more in winter
- Absence of market for household labor

## Migration, Informal Finance and Shocks

	1	2	3	4	5
	b/se	b/se	b/se	b/se	b/se
easyfin	0.126 (0.121)	0.082 (0.126)	0.012 (0.144)	0.117 (0.116)	0.019 (0.134)
drought <sub>t-1</sub>	0.183** (0.077)				
easyfin*drought <sub>t-1</sub>	-0.346** (0.165)				
rain&landslide <sub>t-1</sub>		0.091 (0.093)			
easyfin*rain&landslide <sub>t-1</sub>		-0.215 (0.199)			
winter&frost <sub>t-1</sub>			-0.051 (0.067)		
easyfin*winter&frost <sub>t-1</sub>			0.028 (0.143)		
earthquake <sub>t-1</sub>				0.176** (0.087)	
easyfin*earthquake <sub>t-1</sub>				-0.431** (0.192)	
pest <sub>t-1</sub>					-0.009 (0.057)
easyfin*pest <sub>t-1</sub>					0.060 (0.143)
Observations	5051	5051	5051	5051	5051

## Conclusion

- Effect of a shock on migration depends on the shock's effect on household's income, prevailing labor market and liquidity constraints
  - A drought shock raises onward migration, perhaps by reducing agricultural production
  - More so when access to informal finance is limited
  - Winter shock is less likely to affect agricultural income since agriculture is primarily done in warmer months.
  - Instead, a winter shock increases labor requirement within the household, in the absence of a market for household labor
  - Hence, access to informal finance has no impact on the effect of winter shocks on migration decision
  - Effectively, a winter shock increases return migration