RURAL-URBAN MIGRATION IN INDIA AS A RESPONSE TO ENVIRONMENTAL SHOCKS

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With around 60% of the population employed in the agricultural sector, the strong agricultural dependence in India is particularly evident in rural areas. Due to the climate change these areas are increasingly exposed to environmental shocks, which cause substantial income fluctuations. Under such shocks, however, the informal insurance mechanisms do not function.

Because of the poor access to formal insurance, migration often becomes the consumption smoothening strategy. In this study, we conduct a nationally representative household analysis of intra- and inter-state rural-urban migration decisions in response to an environmental shock - a drought that affected a significant fraction of the Indian population in 2009.

RESEARCH QUESTION

Do households adapt their migration strategy in response to environmental (co-variate) shocks?

DATA

Indian Human Development Survey (IHDS)

- Nationally representative household survey
- Longitudinal data observed in 2 rounds: IHDS-I (2004-2005) & IHDS-II (2011-12)

India Water Portal

- Monthly mean rainfall data at district level (1950-2010)

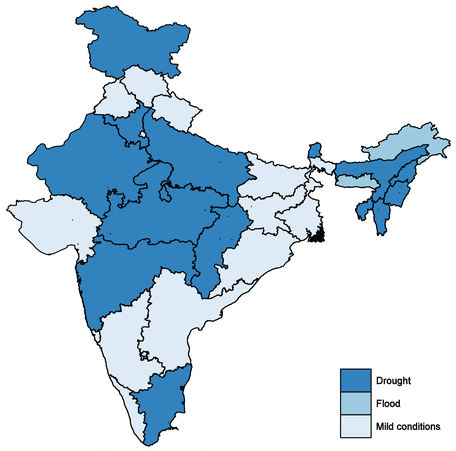
Sample of 23 865 rural households

- Binary dependent variable: household increased number of migrants (1), else (0)
- Explanatory variables: shock, household structure, socio-economic conditions at the household and village level, social networks at the destination, state-specific fixed effects.

DROUGHT MEASURES

The focus is on the kharif months (June - September) coinciding with the summer monsoon. The study utilizes the following drought measures:

- **Standardized Precipitation Index (SPI):** anomalies in rainfall compared to a long-run average applying the gamma distribution on rainfall data. SPI is translated to a categorical variable equal to (1) a flood, (2) a drought and (0) mild conditions.
- **Mean precipitations relative to the historical mean for 2009 and for 2006-2010.** The measure is translated to a categorical variable equal to (1) a flood, (2) a drought and (0) mild conditions.



Aggregated SPI 2009 kharif

Droughts and floods by state in 2009

METHOD

A cross-sectional analysis of households present in both IHDS rounds is conducted. The focus is on the change in migration in response to a co-variate shock. The main model is the logit model using a binary dependent variable. The sensitivity analysis applies a negative binomial model with a count dependent variable:

$$\Delta M_h = \beta_0 + \beta_1 SHOCK_d + \beta_2 X_h + \beta_3 X_v + \lambda_S + \epsilon_h$$

RESULTS

Migration	Overall	Same state	Different state
Flood (SPI 2009)	0.0267 (0.0191)	0.0148* (0.00775)	0.00944 (0.00976)
Drought (SPI 2009)	0.0109 (0.00837)	-0.00305 (0.00317)	**0.0112** (0.00527)**
Flood (Relative precip. 2009)	0.0239* (0.0125)	0.0128* (0.00686)	0.00840 (0.00663)
Drought (Relative precip. 2009)	0.00693 (0.00905)	-0.000565 (0.00354)	0.00548 (0.00552)
Flood (Relative precip. 2006-2010)	0.00228 (0.00965)	0.00223 (0.00546)	-0.000799 (0.00449)
Drought (Relative precip. 2006-2010)	0.00920 (0.00758)	-0.00570* (0.00308)	**0.0123** (0.00500)**

Results from the logit (main) model. Clustered standard errors (district level) in parentheses. Other covariates not reported. *p < 0.10, **p < 0.05, ***p < 0.01

CONCLUSION

Droughts drive rural-urban migration between states. Floods increase intra-state rural-urban migration. To understand the mechanisms of environmental migration, it is crucial to conduct a differentiated analysis by type of a shock and migration destination.

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