GOBESHONA5

8 - 11 January 2019

International Conference on Climate Knowledge

The effects of social networks on environmentally induced migration in Bangladesh

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Gobeshana5
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Study Area

- 9 Mouzas SW region

  Jessore *Satkhira*

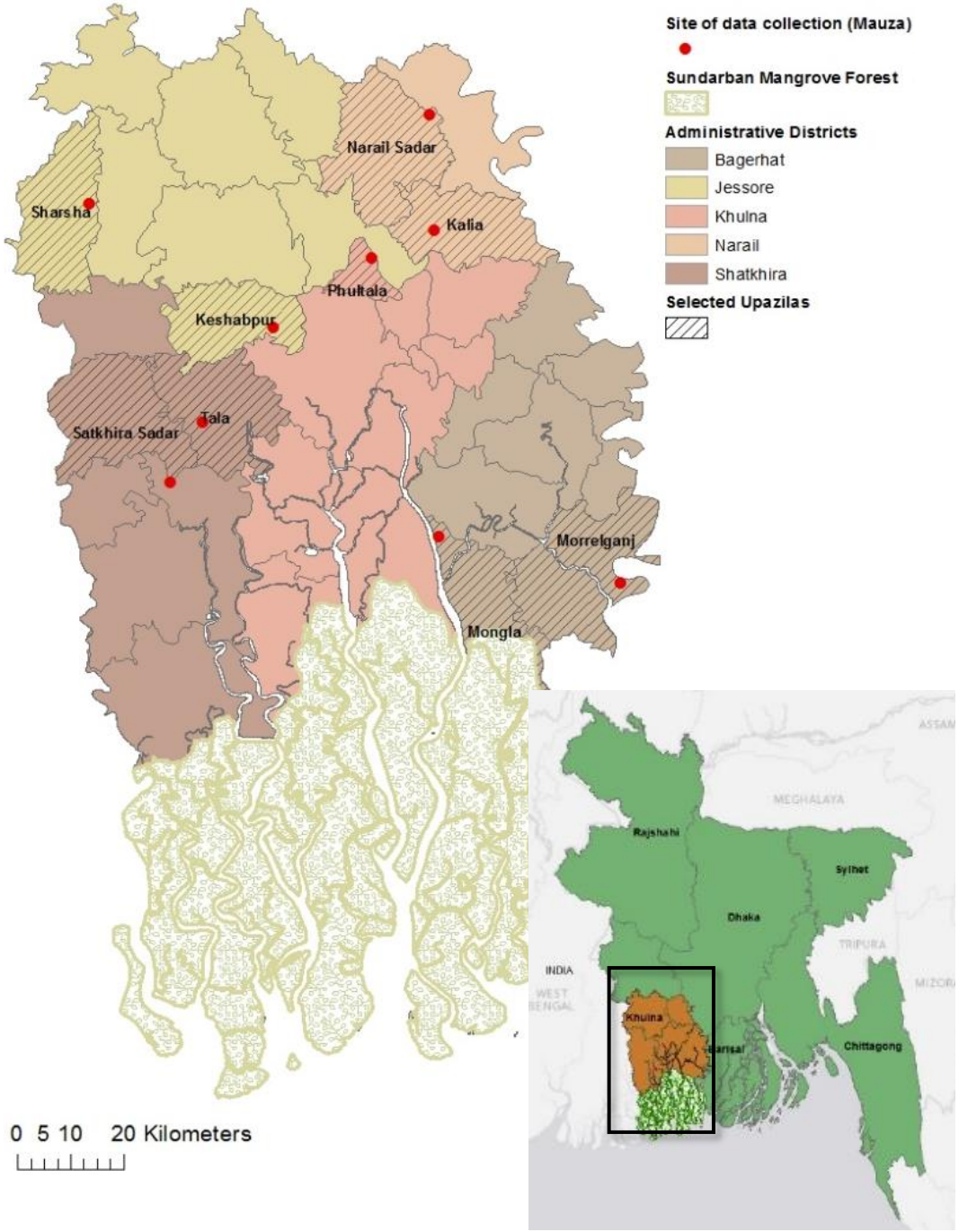
  Khulna *Bagerhat*

  Narail

- Region is highly vulnerable to salinity, water logging, and cyclones.

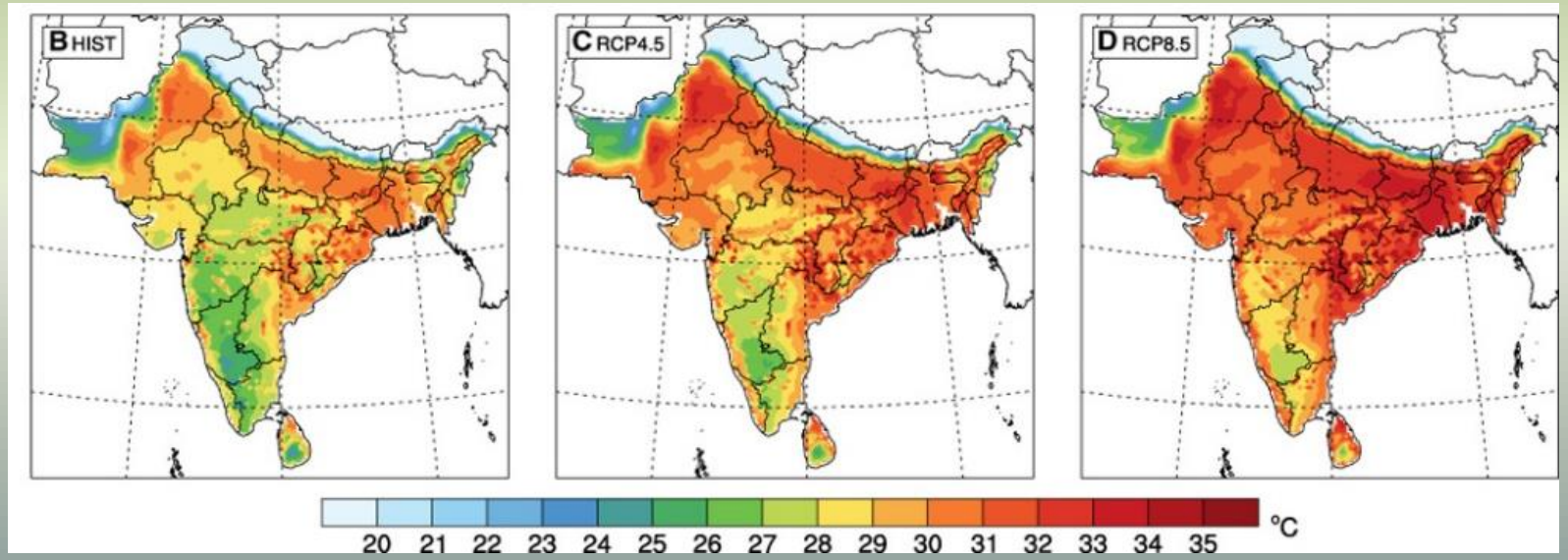
- High rates of poverty

- Adaptation



Research Questions

1. **Does extreme temperature and precipitation drive migration in Bangladesh?**



Im, Pal, & Eltahir, (2017)

Research Questions

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1. **Does extreme temperature and precipitation drive migration in Bangladesh?**

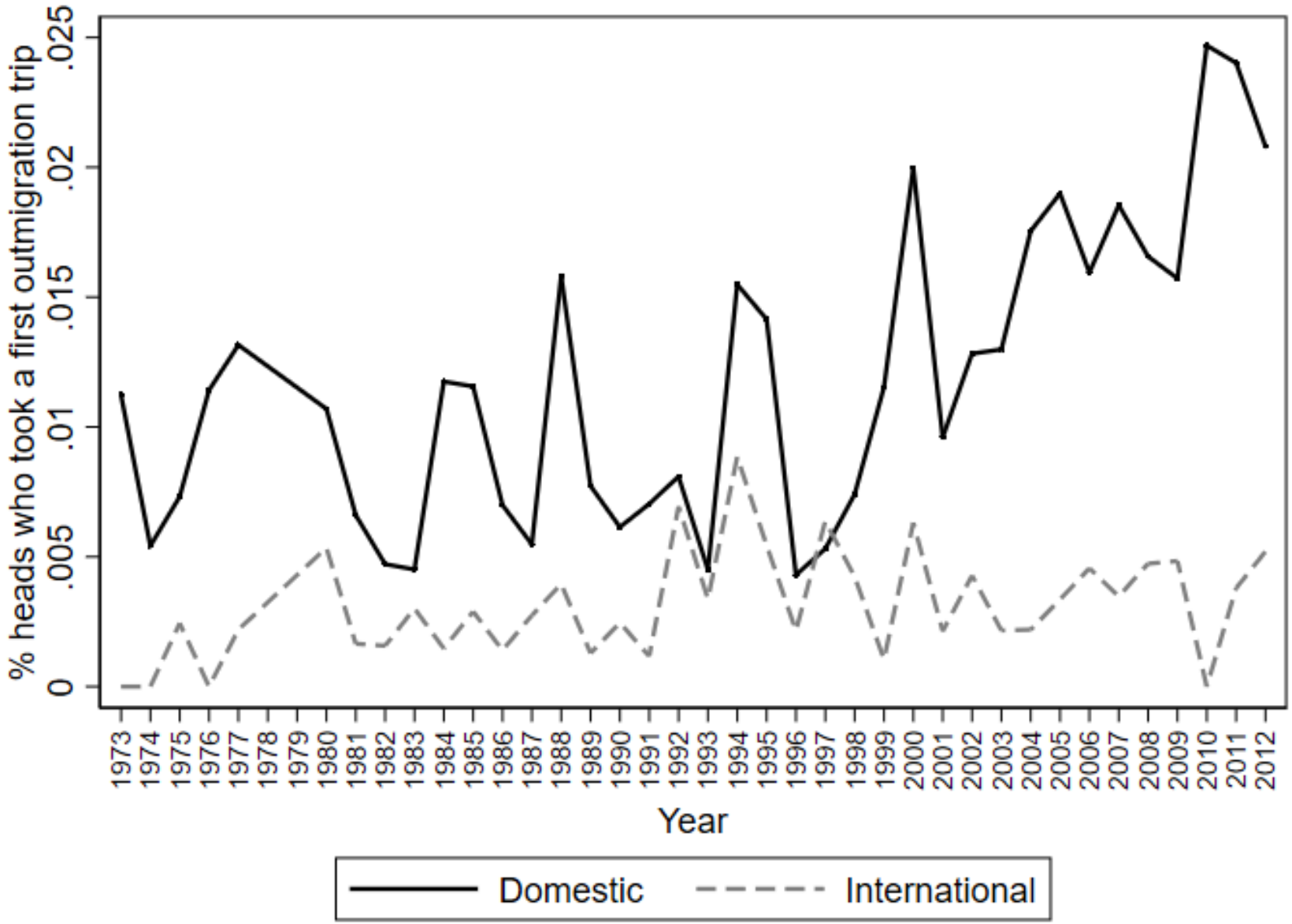
2. **To what extent do social ties to other migrants facilitate environmentally-induced migration?**

- **Qualitative work - social ties facilitate migration as coping** *(Kartiki 2011; Mallick & Vogt 2012)*
- **Some evidence that environmentally induced migration is *less* dependent on social networks** *(Nawrotzki, Riosmena, and Hunter, 2013)*

Bangladesh Environment & Migration Survey (BEMS)

- *Ethnosurvey* – elicits quantitative data through qualitative interviews
- Adapted from study of Mexican-American migration
- Collects retrospective data about migrant trips, livelihoods, and other sociodemographic information
- Migrant trip defined as a move outside of the upazila for more than 3 months

% of male household heads that took a migrant trip, 1973 – 2-12



Four measures of extreme temperature/precipitation

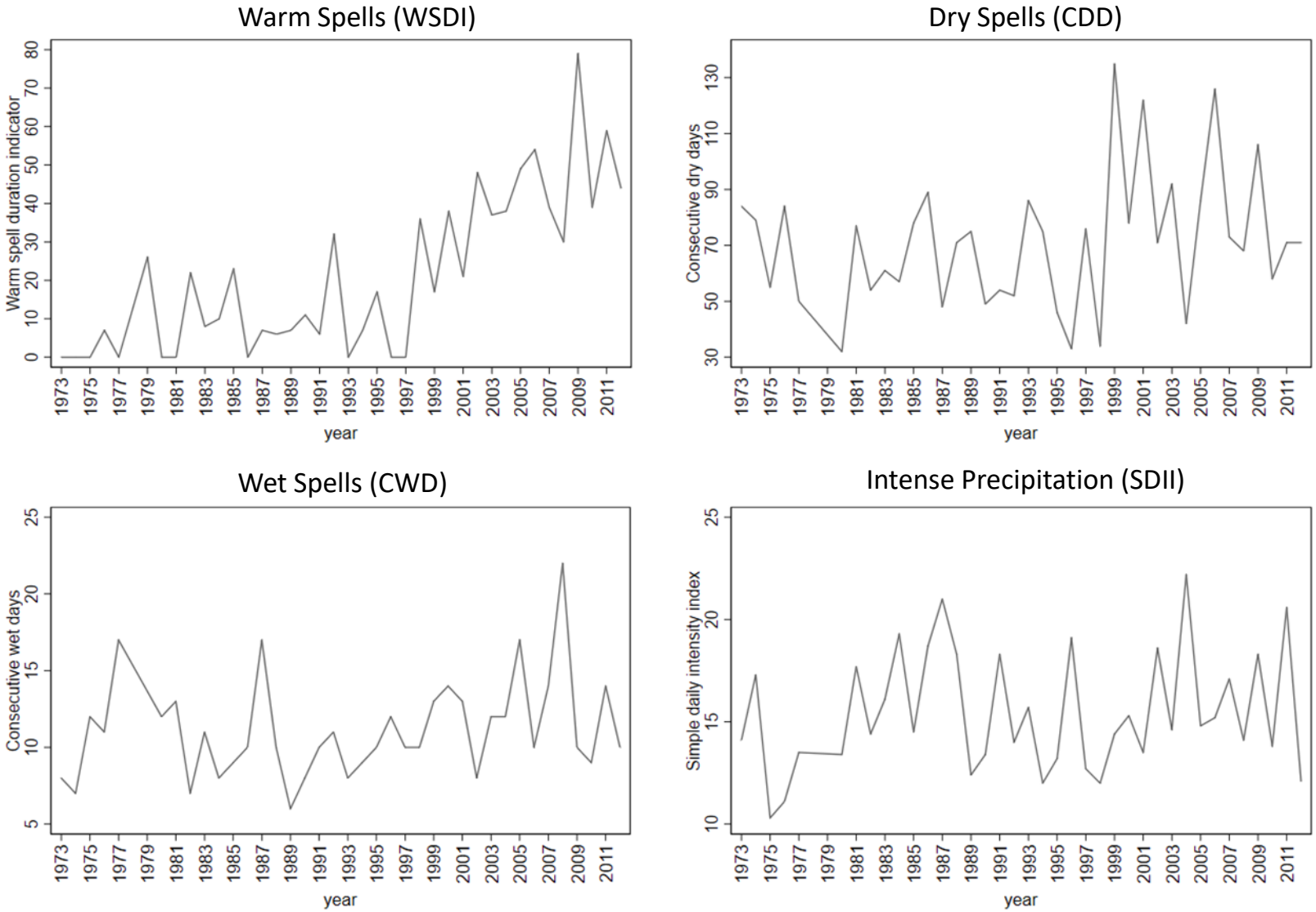


Figure 2. Observed values of four ETCCDI indicators, 1973 – 2012.

Analyses

- Event history analysis
- Predict the probability of making a migrant trip in any given year
- Controls for age, religion, livelihood sector, year, community
- This analysis is limited to male household heads

Key Findings

Key Findings

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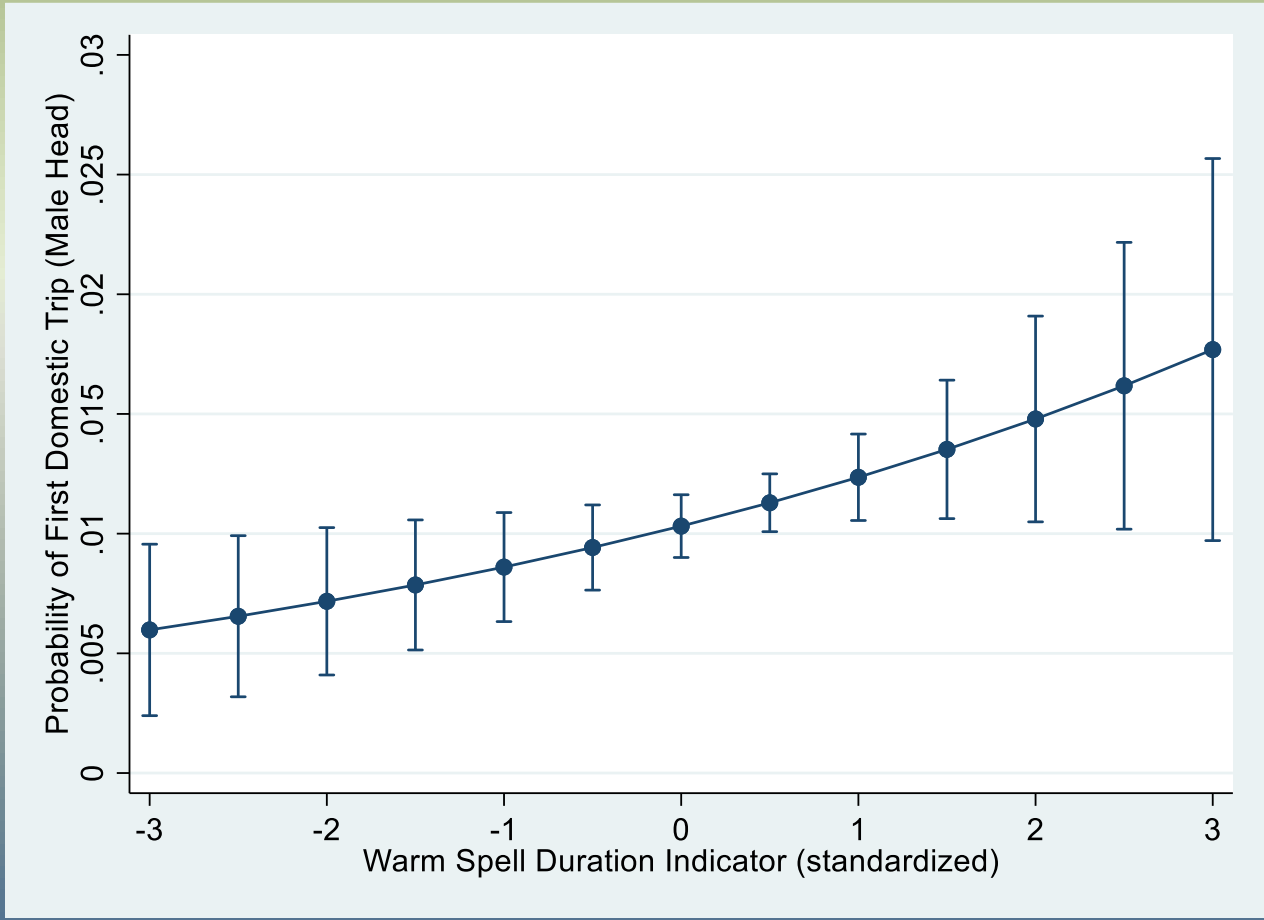
(1) Warm spells are associated with an increase in domestic migration
(2) The effect of temperature is stronger than rainfall



Predicted probability of a domestic trip as a function of warm spells

Key Findings

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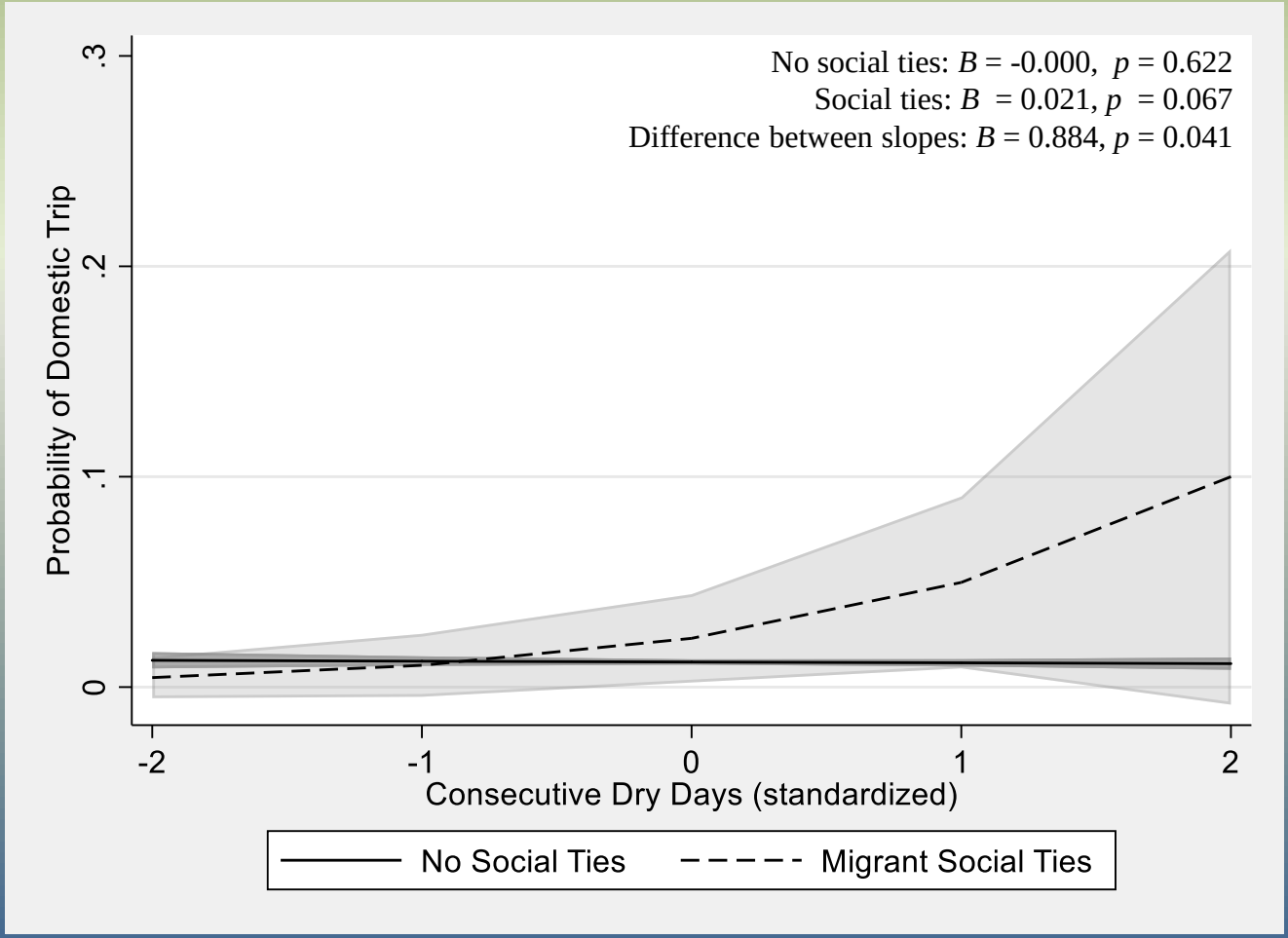
(3) Having migrant relatives increases the probability of domestic migration during drought years



Key Findings

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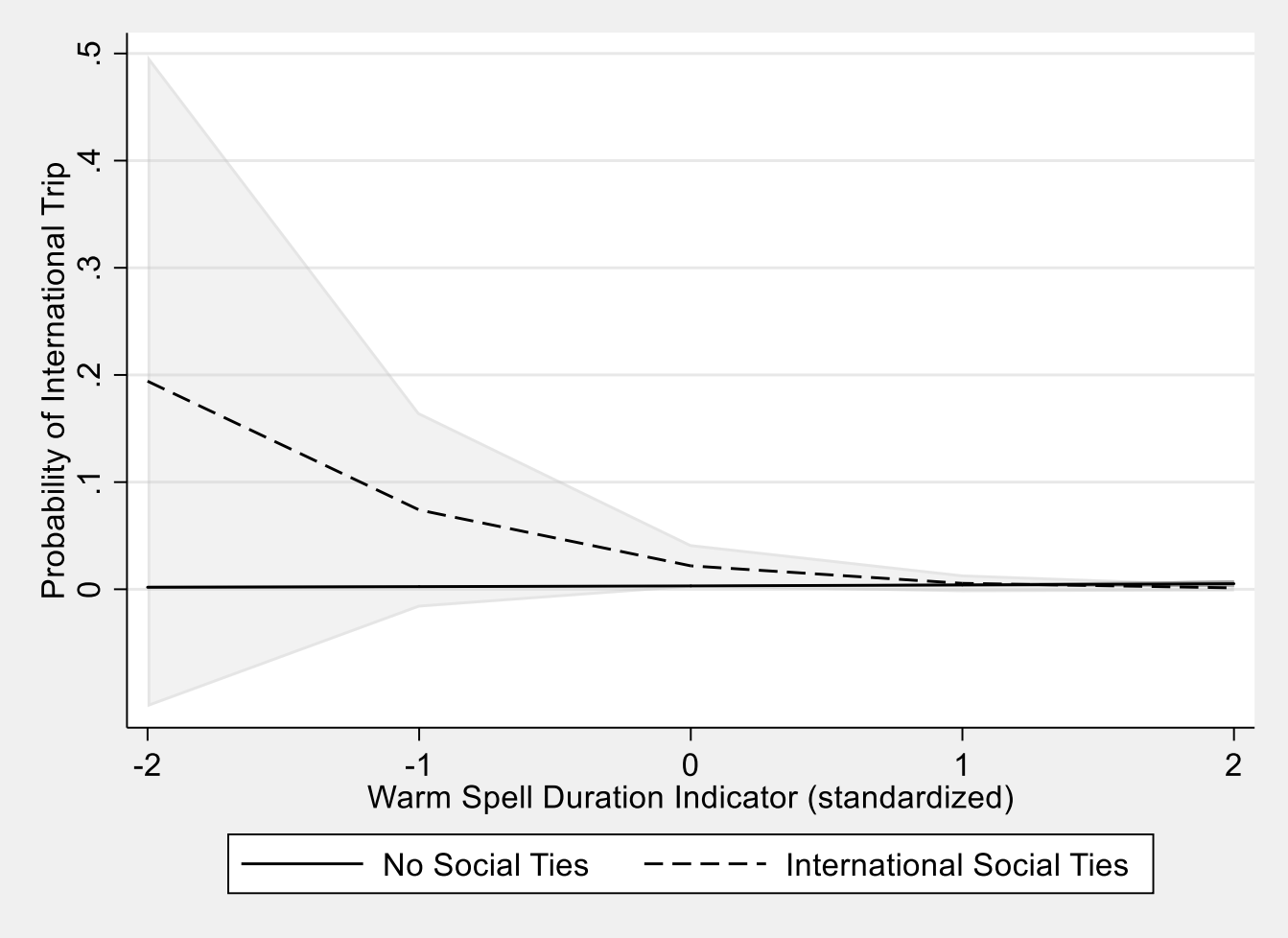
(4) Heat spells reduce international migration



1. **Temperature is a stronger driver of migration than rainfall**
2. **Environmental migration is predominantly domestic**
3. **Having access to migrant networks is an important source of resilience**

Thank you! ধন্যবাদ

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cupc
CU Population Center

Appendix

Key Variables

Indicator	Description	Mean (SD)	Observed Range
Warm Spell	(*Warm Spell Duration Indicator WSDI).* Annual count of days during which 6 consecutive days exceeded the 90th percentile of temperature.	8.74 (10.97)	0 – 54
Dry Spell	*Consecutive Dry Days (CDD).* Maximum number of consecutive days within a year with less than 1 millimeter (mm) of rainfall	65.55 (21.49)	32 – 135
Wet Spell	*Consecutive Wet Days (CWD).* Maximum number of consecutive days within a year with more than 1mm of rainfall.	10.39 (2.54)	6 – 22
Rainfall Intensity	*Simple Daily Intensity Indicator (SDII).* Total annual precipitation divided by the number of wet days in a year, describes the average annual intensity of rainfall.	15.11 (2.78)	10 – 22

Population & Sample Profile

	Bangladesh	BEMS Districts	BEMS Sample
Population	142.3 million	9.2 million	N = 918
Density (per km^2)	1015	674	
Household Size	4.4	5.0	5.4
Mean Age	24.3	27.9	43.6
Percent Muslim	86.6	78.5	77.9
Literacy Rate (7 & above)	51.8	50.3	58.9
Electricity	62.0	53.3	63.5
Engaged in Agriculture	30.1		41.9

Table 3. Model Predicting First Domestic Trip by Male Head of Household

	Model C		Model D	
Variable	***B***	***SE***	***B***	***SE***
Heat Waves	0.186 *	0.089	0.193 *	0.090
Dry Spells	-0.010	0.069	-0.037	0.069
Wet Spells	0.099	0.066	0.090	0.066
Intense Precipitation	-0.039	0.060	-0.056	0.061
Domestic Migrant Social Ties	0.708	0.369	0.447	0.746
Covariates				
Age (ref = Under 15)				
15 - 29	1.436 ***	0.301	1.431 ***	0.301
30 - 44	0.570	0.323	0.569	0.323
Over 45	-0.438	0.393	-0.446	0.393
Muslim	0.739 ***	0.214	0.736 ***	0.214
Engaged in Agriculture	-0.096	0.118	-0.096	0.118
Year (ref = 1971 - 1979)				
1980 - 1989	-0.081	0.274	-0.080	0.275
1990 - 1999	-0.074	0.264	-0.087	0.265
2000 - 2009	0.475	0.321	0.502	0.322
2010 - 2012	1.232 ***	0.348	1.261 ***	0.348
Community (ref = Phultala)				
Mongla	-0.615	0.353	-0.614	0.354
Keshabpur	0.152	0.262	0.147	0.263
Sharsha	-0.292	0.297	-0.300	0.298
Morrelganj	1.129 ***	0.254	1.143 ***	0.253
Tala	-0.010	0.260	-0.012	0.260
Shatkhira Sadar	0.452	0.249	0.445	0.249
Narail Sadar	0.524 *	0.262	0.526 *	0.262
Kalia	-0.104	0.268	-0.103	0.269
Interaction Terms				
WSDI*Social Ties			-0.629	0.362
CDD*Social Ties			0.896 *	0.440
CWD*Social Ties			0.186	0.421
SDII*Social Ties			0.828	0.471
Constant	-6.541***		-6.542***	
Chi-square	251.17***		280.30***	
Pseudo R-squared	0.074		0.076	

Table 5. Model Predicting First International Trip by Male Head of Household

	Model C		Model D	
Variable	***B***	***SE***	***B***	***SE***
Heat Waves	0.201	0.159	0.256	0.160
Dry Spells	-0.008	0.099	-0.008	0.100
Wet spells	0.122	0.128	0.150	0.130
Intense Precipitation	-0.197	0.117	-0.211	0.120
Int'l Migrant Social Ties	1.787***	0.676	1.703**	0.623
Covariates				
Age (ref = Under 15)				
15 - 29	0.313	0.348	0.244	0.347
30 - 44	0.428	0.359	0.308	0.360
Over 45	-0.702	0.515	-0.779	0.511
Muslim	0.815	0.548	0.982	0.624
Engaged in agriculture	-0.515*	0.215	-0.503 *	0.216
Year (ref = 1971 - 1979)				
1980 - 1989	1.293	0.743	1.308	0.745
1990 - 1999	1.716*	0.722	1.688*	0.723
2000 - 2009	1.517	0.814	1.508	0.817
2010 - 2012	1.373	0.866	1.409	0.868
Community (ref = Phultala)				
Mongla	0.220	1.388	0.272	1.387
Keshabpur	0.388	1.238	0.389	1.238
Sharsha	1.749	1.084	1.736	1.084
Morrelganj	3.771***	1.028	3.804***	1.027
Tala	1.841	1.071	1.826	1.070
Shatkhira Sadar	2.419*	1.050	2.380*	1.053
Narail Sadar	1.059	1.157	1.064	1.157
Kalia	3.406***	1.018	3.400***	1.018
Interaction Terms				
WSDI*Social Ties			-1.702**	0.567
CDD*Social Ties			-0.390	0.893
CWD*Social Ties			-0.871*	0.398
SDII*Social Ties			0.314	0.591
Constant	-10.337***		-10.432***	
Chi-square	168.99***		243.65***	
Pseudo R-squared	0.128		0.134	
Person-years	30,949		30,949	