

The impact of Monsoon weather on food security in Pakistan



PRESENTER:
Risto Conte Keivabu

BACKGROUND:

1. Weather anomalies negatively affect agricultural yields and food security;
2. In particular, heat and droughts have shown to increase malnutrition and food insecurity;
3. In Pakistan, weather anomalies during the Monsoon season are particularly detrimental for the agricultural sector;
4. Climate change is expected to increase droughts during the Monsoon season;
5. Gap: no evidence on how droughts affect food security in Pakistan.

DATA & METHODS

Data

1. Information on 147,934 households, oct. 2019 & march. 2020 in 126 districts in Pakistan;

Variables

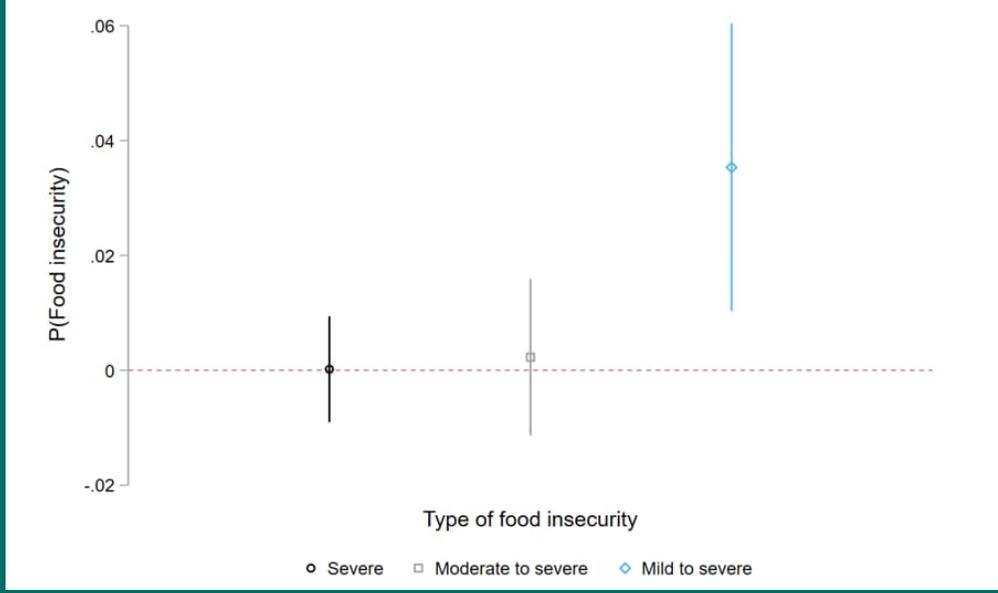
1. Experienced food insecurity (FIES): Severe, moderate to severe, mild to severe;
2. Exposure to SPEI (inverted) previous Monsoon season;
3. Controls: wealth index, age, education, employment in agriculture, number of hh members.

Methods

1. Relationship between SPEI during the Monsoon season and FIES controlling for month and province FE. Standard errors clustered at the district level:

$$Y_{ht} = DROUGHT_{dt} + X_{ht}\beta + \delta_m + \upsilon + \epsilon_{ht}$$

How do droughts during the Monsoon season affect food insecurity?



RE: Mild to moderate food insecurity increases

But, what specific features of food security?

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|--|--|--|----------------------------------|-------------------------|--|---------------------------------|---------------------------------|---|
| During the last 12 months was there a time when you were worried... because of a lack of money or other resources? | You or others in yours household worried about not having enough food to eat | You were unable to eat healthy and nutritious food | You ate only a few kinds of food | You had to skip a meal? | You ate less than you thought you should | Your household ran out of food? | You were hungry but did not eat | You went without eating for a whole day |
| Inverted SPEI monsoon season | 0.008 | 0.032* | 0.033* | 0.003 | 0.000 | -0.002 | -0.000 | 0.000 |

RE: food variety and quality

MAIN RESULTS

- Drought conditions during the Monsoon season increase mild to severe food insecurity;
- Dry conditions mostly decrease indicators of quality and variety of food security.

Supplementary analysis

- Alternative weather exposures:
 1. Temperature anomalies affect food insecurity, but not precipitation anomalies;
 2. Moderate Droughts (SPEI < -0.99; > -1.49,) do not, but Severe Droughts (SPEI < -1.49) do affect food security ;
 3. Heat the week or month prior increases food insecurity.
- Heterogeneity:
 1. No difference in the impact on food insecurity based on urbanity, education or employment in agriculture;
 2. Larger impact on food variety for low educated individuals.

Take-home

- Severe droughts during Monsoon season and heat (week prior) affect food security in Pakistan;
- Food variety and quality are the features affected by droughts;
- Households with lower educational attainment suffer largest drop in food variety;
- Climate change led increases in drought conditions during the Monsoon season could worsen food insecurity in Pakistan.

AUTHORS:

Conte Keivabu, Risto (MPIDR)
Chunara, Rumi (NYU)

