

# Internal Migration in Developing Countries

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# Two facts about rural and urban areas

1. Cities offer higher wages *within* the same country.

	All Countries
10th Percentile	1.3
Median	2.6
Mean	3.5
90th Percentile	6.8
Number of Countries	151

- Wages 350% higher in cities (Gollin, Lagakos and Waugh, QJE 2014)
- Wages are 220% higher in cities even after adjusting for hours worked, human capital, etc.
- Gap is larger in poorer countries

# Puzzles and Policy Implications

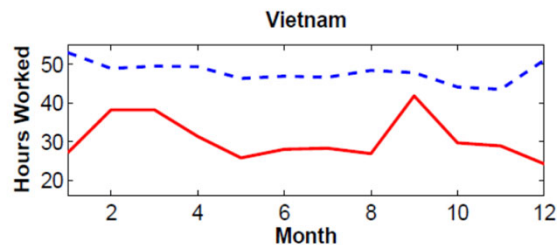
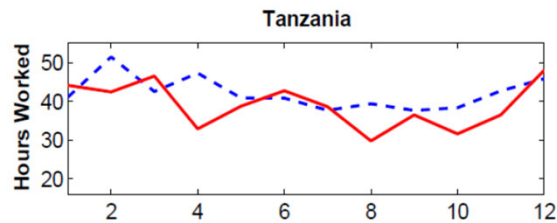
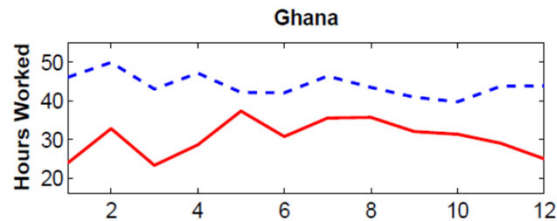
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  - Why does the gap exist if there are no mobility restrictions within countries?

# Puzzles and Policy Implications

- Is this an arbitrage opportunity?
  - Why does the gap exist if there are no mobility restrictions within countries?
- Are developing countries poor because citizens are inefficiently spatially allocated within those countries?
- Could you generate growth simply by relocating people from unproductive rural areas towards thriving urban areas?

## Fact #2:

There is *seasonal* unemployment and hunger in rural areas



- Work is seasonal in rural agrarian areas
- The rural-urban wage gap (and gap in hours) *increases* during certain months in the crop cycle.
- This can take an extreme form of seasonal hunger

# Puzzles and Policy Implications

1. Should we create job opportunities in rural areas during lean seasons?
  - Food for work programs?
  - Literature on NREGA in India – the world's largest public works program
  - This can distort labor markets (Imbert and Papp 2015)

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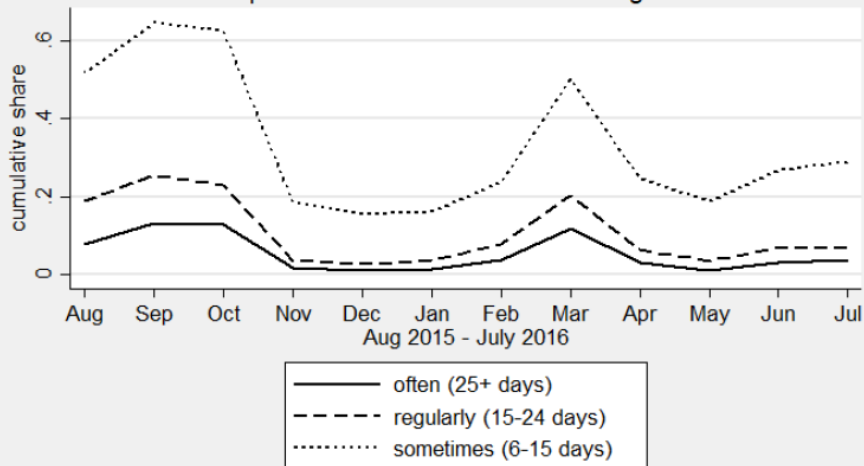
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2. Or should we invest in better transport connectivity between rural and urban areas?
  - The two strategies above are substitutes in individual choices (Imbert & Papp 2020)

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2. Or should we invest in better transport connectivity between rural and urban areas?
  - The two strategies above are substitutes in individual choices (Imbert & Papp 2020)
3. Should we facilitate migration?
  - Large literature on migration as risk mitigation and individual-level constraints

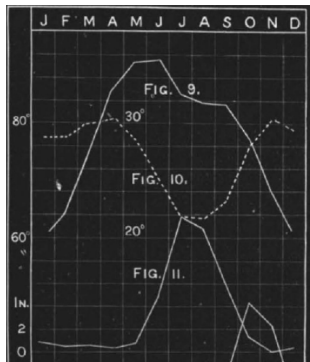
# Seasonal Hunger in Rangpur, Bangladesh, 2016

## Seasonal Hunger in Northern Bangladesh frequency in which households restrict portion size or number of meals in given month



Source: No Lean Season research team's calculations; 2016 Household Follow-up Survey for the 2014 FGT (control group only)

# Seasonality in India, 1884



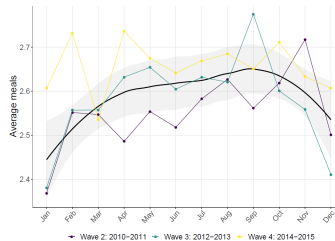
NATURE

[Feb. 7, 1884

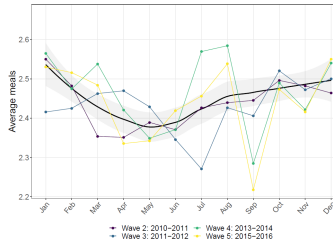
*Number of Deaths from all Causes Registered in the North-West Provinces and Oudh during the Five Years 1878-82*

Year	Jan.	Feb.	March	April	May	June	July
1878	137,161	140,173	143,760	157,326	136,867	120,767	91,677
1879	75,387	62,837	71,874	87,302	100,040	83,802	73,120
1880	116,366	72,030	69,250	72,534	76,622	78,200	56,502
1881	95,226	91,011	97,829	124,831	115,683	86,083	81,609
1882	114,220	92,472	96,596	107,628	119,714	114,382	122,110
Total	538,360	458,523	479,309	549,621	548,926	483,234	425,018

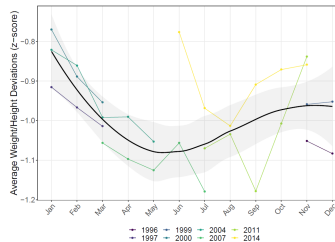
# Seasonality in Africa and Asia Today (LSMS and DHS)



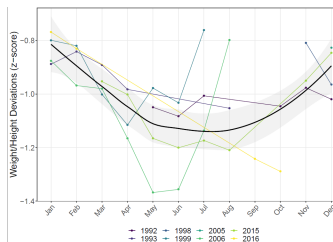
(a) Meals/Day in Rural Tanzania



(b) Meals/Day in Rural Uganda



(c) Child Wasting in Rural Bangladesh



(d) Child Wasting in Rural India

Changing climate is making seasonality more acute...



# The Costs of Seasonal Deprivation

- Hundreds of millions of people suffer from seasonal poverty: acute deprivation, often associated with a **pre-harvest** lean season
- Seasonal deprivation is harmful for two reasons
  1. Failure of consumption smoothing imposes welfare losses
    - Missed meals, reduced portions and diet diversity, no protein
    - Malnourished children undermines physical and cognitive development
  2. Desperate measures to address hunger has long-run adverse effects
    - Lower agricultural productivity (Fink et al., 2020)

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    - Lower agricultural productivity (Fink et al., 2020)
    - Poverty traps due to high-interest borrowing (Gulesci 2021)
    - Withhold investments that reduce future payoffs (fertilizer, education)

# Failure of Consumption Smoothing

- Two broad ways to smooth consumption:
  1. Inter-temporally (save from past or borrow from future)
  2. Spatially (migrate and send remittances)
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  - Credit constraints
  - Savings constraints. Failure of grain storage.

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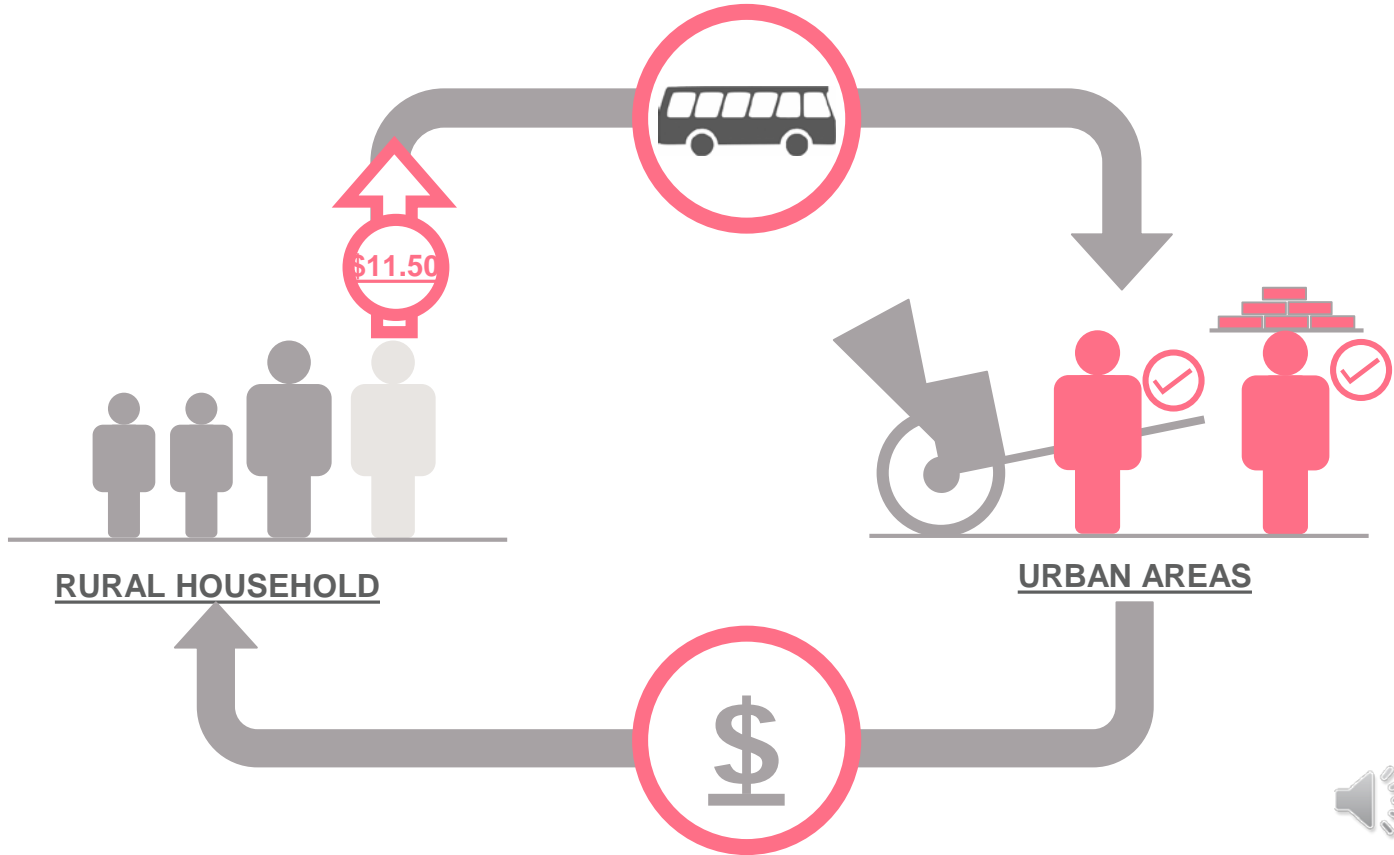
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  - Migration frictions prevent access to higher wages.



# The Research: Seasonal Migration



# Background: Transport Subsidies in Bangladesh

- Bryan et al (2014) offered transport subsidies in Bangladesh.
- To poor households food deprived during 3-month lean season
- To support internal, seasonal, circular migration

# Results: Temporary Migration Loans in Bangladesh

- Transport subsidies increased migration by 22 percentage points

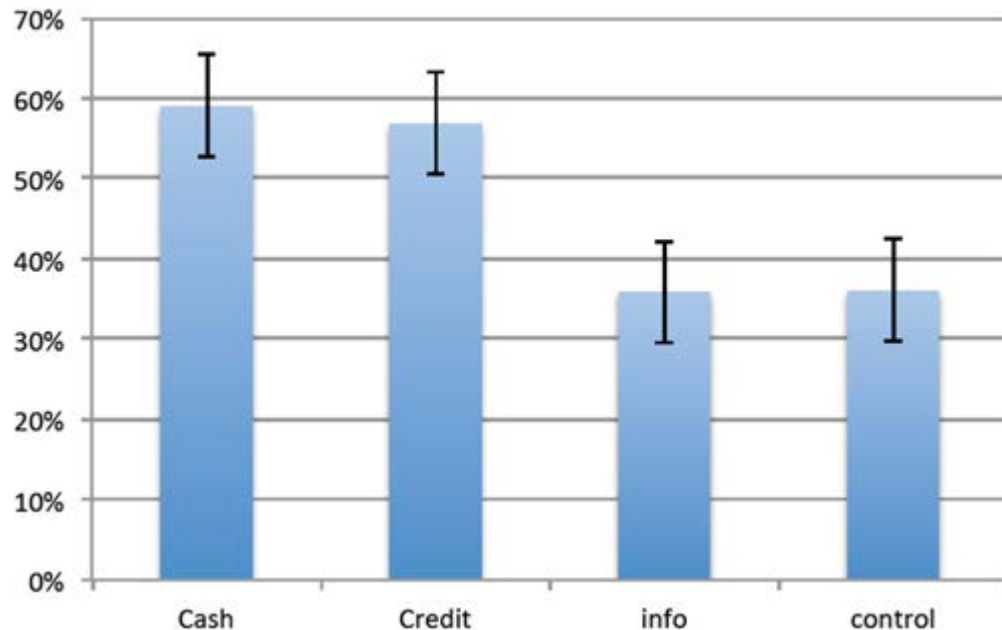


# Origins: 2008-2011 Study in Bangladesh

## Program Design:

- 100 villages in 2 districts in Rangpur (Kurigram and Lalmonirhat)
- Randomly assigned villages into one of four arms
- **19 poor households** in each village randomly selected

## 2008 Migration Rate



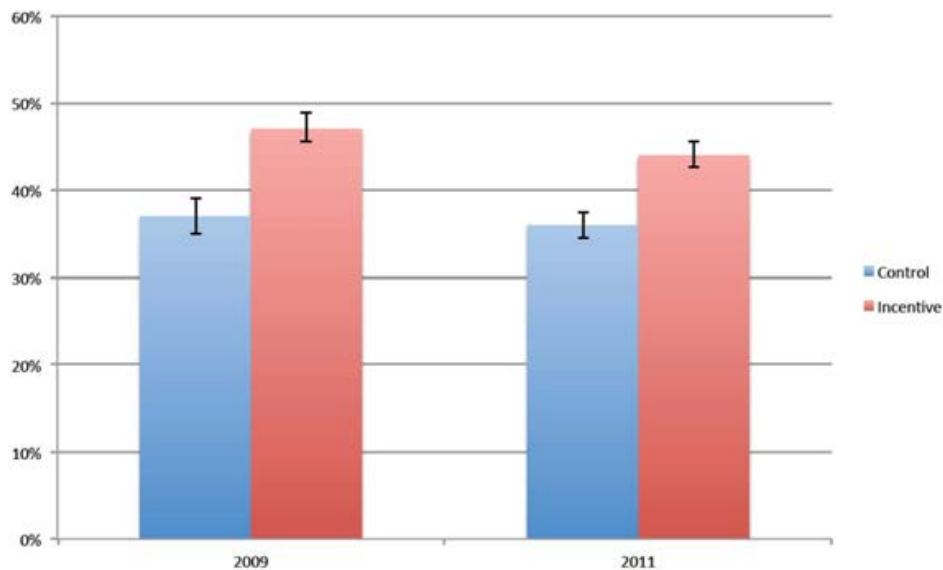
# Results: Temporary Migration Loans in Bangladesh

- Transport subsidies increased migration by 22 percentage points
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# Re-migration in follow-up rounds

Higher migration among incentivized households, 1 and 3 years later



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## Why?

- Model with risk aversion and individual-specific uncertainty
- Poor households close to subsistence find it too risky to migrate



# The Problem: Seasonal Poverty

**0.5 - 1 billion**  
people in the world  
experience seasonal  
hunger

A photograph of a crowded bus with passengers hanging out of the windows and boarding. The bus is yellow and white with some graffiti. The scene is outdoors, likely in an urban or semi-urban area.

## A Possible Solution: Migration to Urban Labor Markets

100 million  
live near thriving  
cities with jobs





# Overview of Research

## Beneficiaries

## Rural Spillovers

## Urban Spillovers

### Economic Effects

Migration  
Consumption

BCM 2014

Income  
Labor Supplied

ACM 2018

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### Non-Economic Effects



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### Non-Economic Effects

Migration Disutility	LMW 2018
Female Empowerment Divorce Intra-household Decision Making	MRe 2018
Domestic Violence	MRa 2018
Health (MUAC, Nutrition) Education (Exp.)	BCM 2014



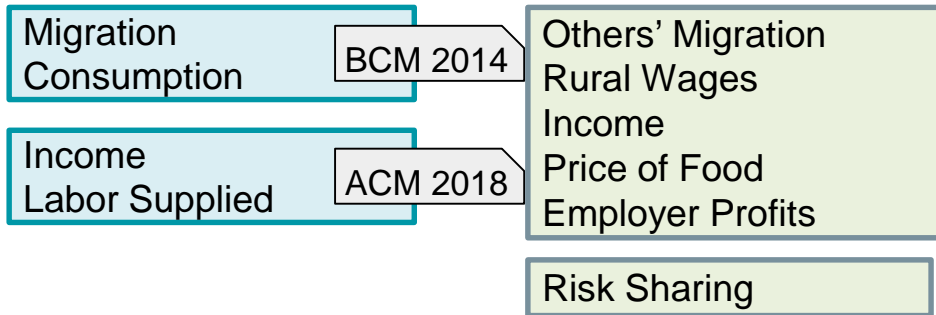
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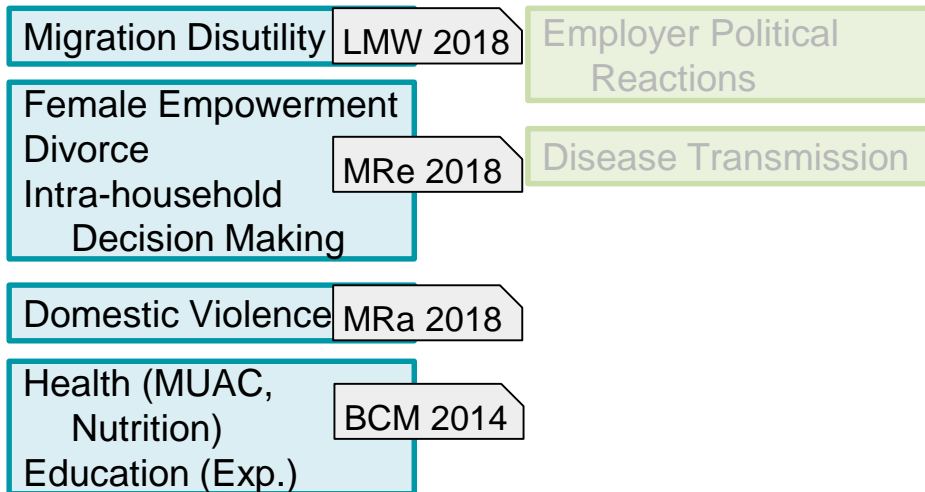
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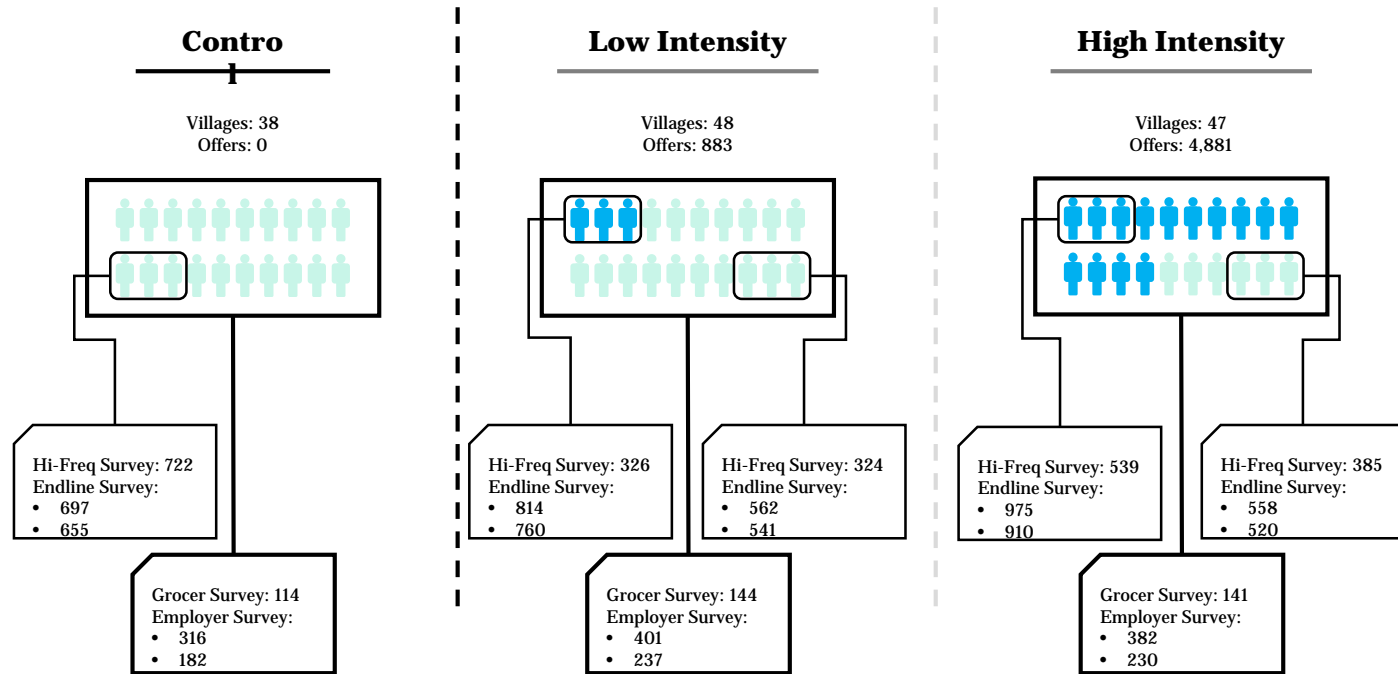
### Economic Effects



### Non-Economic Effects

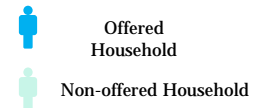


# Design of Experiment and Data Collection



Endline survey and the employer survey administered twice and enquired about:

- 2014 – 2015
- 2015 – 2016





# Overview of Research

## Beneficiaries

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## Urban Spillovers

### Economic Effects

Migration Consumption BCM 2014

Income Labor Supplied ACM 2018

Others' Migration Rural Wages Income Price of Food Employer Profits ACM 2018

Risk Sharing MMMM 2018

Natives' Wages Opportunities for Other Migrants Employer Profits Consumer Prices In Progress

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Employer Political Reactions Nepal, In Progress

Disease Transmission

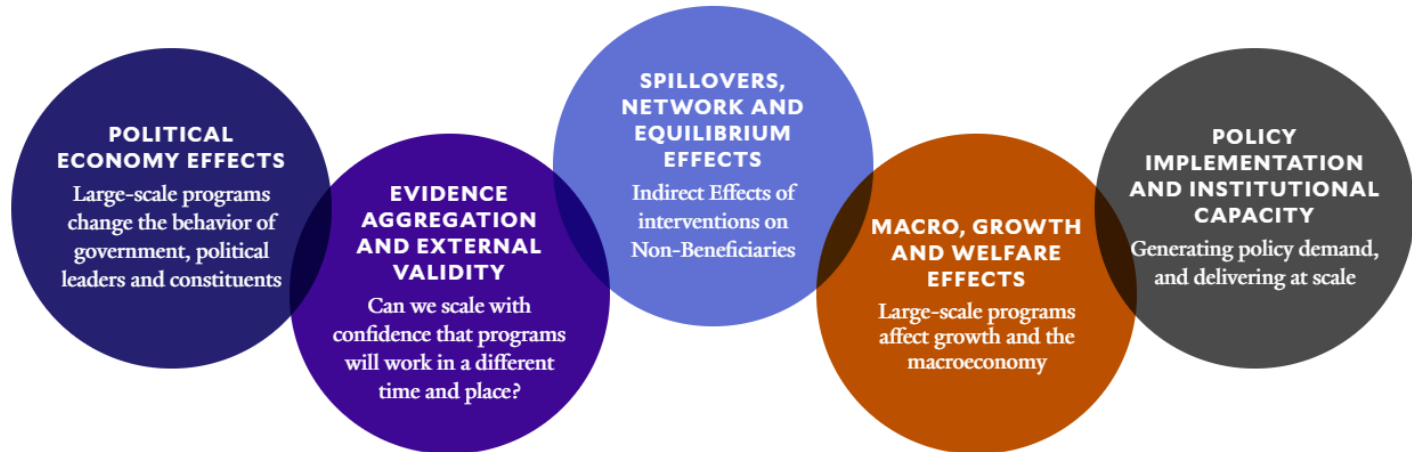
Permanent Migration to Cities CMR 2018

Perceptions of Crime and Congestion Urban Living Conditions Political Reactions In Progress

The *Yale Research Initiative on Innovation and Scale (Y-RISE)* advances research on the effects of policy interventions when delivered at scale. While evaluation techniques for pilot-scale programs are well developed, complexities arise when we contemplate scaling up interventions to create policy change.



## Challenges and Implications of Scale



# Seasonal Poverty, Credit, and Remittances

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March 30, 2022

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<sup>1</sup>Yale University

<sup>2</sup>Y-RISE

<sup>3</sup>CESLAM, Kathmandu, Nepal

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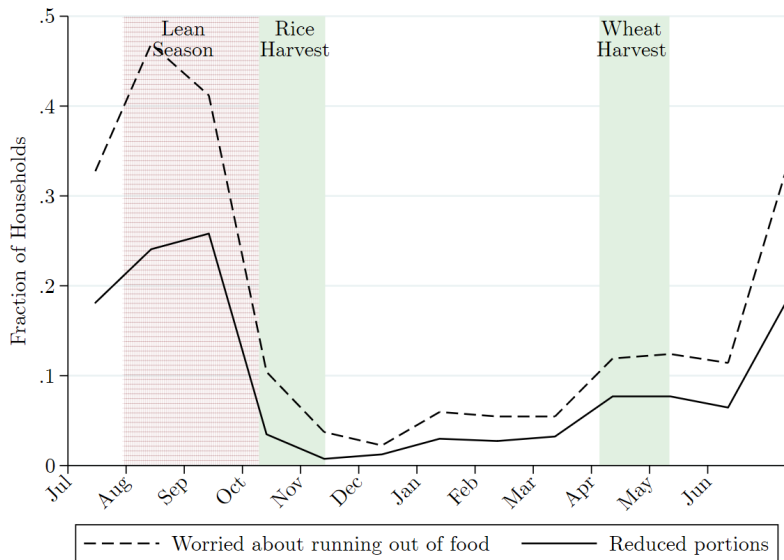
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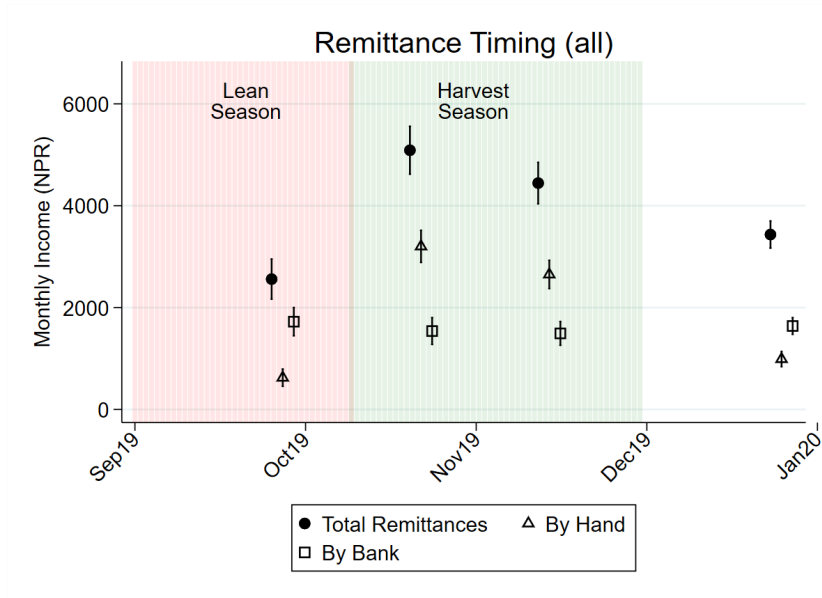
# Context: Seasonality in Food Security



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# Seasonality in Migration and Remittances



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- Puzzle: Why are remittances *pro-cyclical*?

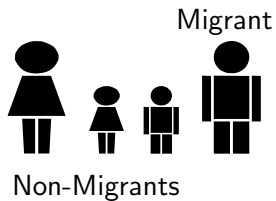
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  - **Remittance/transfer constraints**
- We propose an approach to address remittance constraints even when the remittance technology does not exist

# Model of this Economy

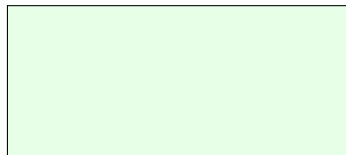


# Model of this Economy

Period 1 (Lean Season)

Period 2 (Harvest Season)

Home



Destination

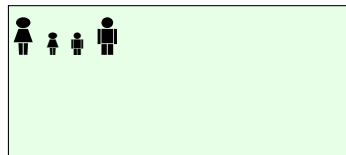


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# Remittance Flows

Period 1 (Lean Season)



Consume:  $Y_{h1} - I + R_1$

Home

Period 2 (Harvest Season)



Consume:  $f(I) + R_2$

Destination



Consume:  $Y_d - R_1 - R_2$

# Model with Remittance Constraints

Period 1 (Lean Season)



Consume:  $Y_{h1} - I + R_1$

Home

Period 2 (Harvest Season)



Consume:  $f(I) + R_2$

Destination



Consume:  $Y_d - R_2$

# Our Loan Experiment

## Intervention: seasonal loan:

Period 1 (Lean Season)



Consume:  $Y_{h1} - I + LR_1$

Home

Period 2 (Harvest Season)



Consume:  $f(I) + R_2 - L$

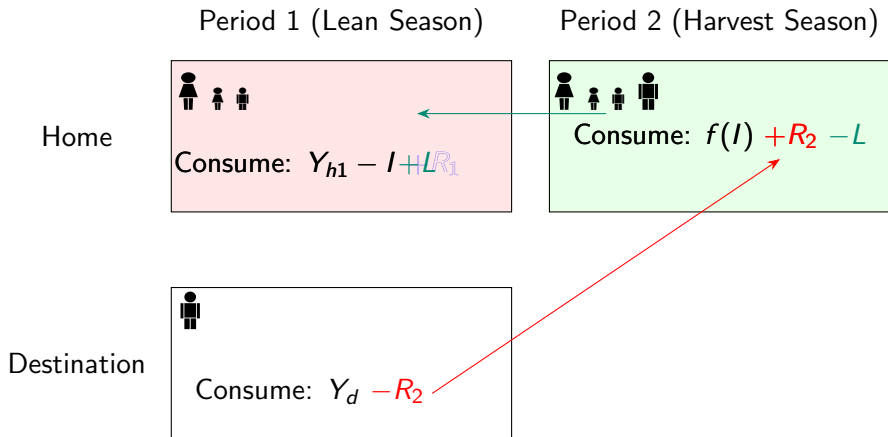
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Consume:  $Y_d - R_2$

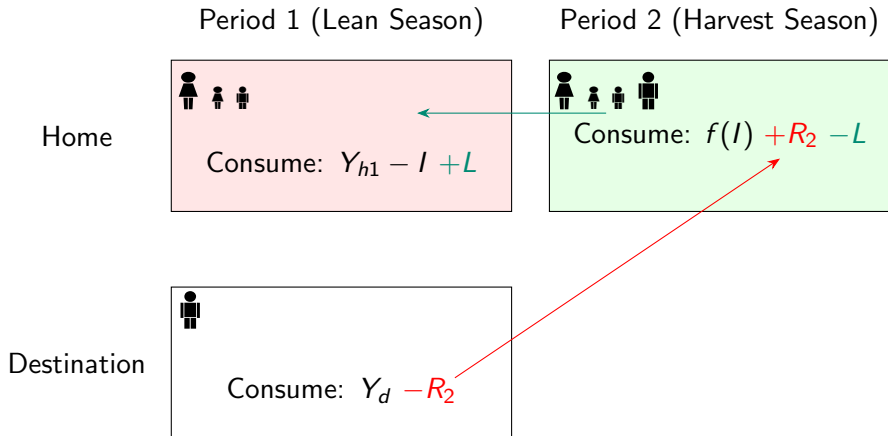
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## Intervention: seasonal loan:

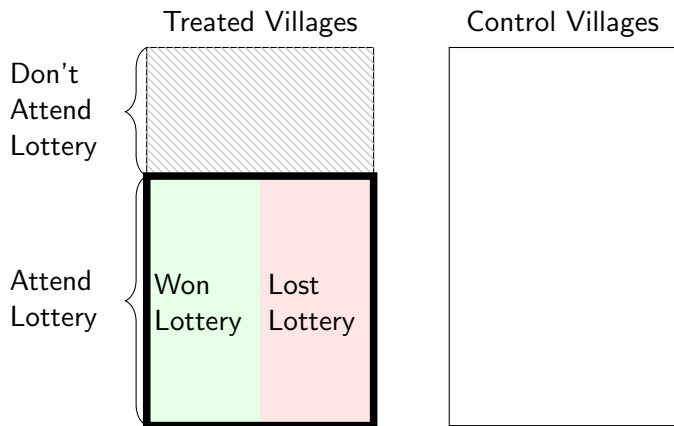


# Model

$L = 10,000 \text{ NPR} = \$90 \text{ USD} \approx R_2$   
Harvest value ( $f(I)$ )  $\approx 26,000 \text{ NPR}$   
Migrant Income ( $Y_d$ )  $\approx 38,000 \text{ NPR}$



# ATT: Lottery Winners vs. Losers



# Results Summary

Key: Statistical Significance		
Insignificant	10%	5% or lower

Outcome	Within-Vill. ATT		Between-Vill. ITT	
	(1) W 99	(2) W 95	(3) W 99	(4) W 95

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Farm Hours <small>(tbl)</small>	+	+		
Local Migration <small>(tbl)</small>	-	-		

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Rice Harvested <small>(tbl)</small>	+	+		

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Farm Hours <small>(tbl)</small>	+	+		
Local Migration <small>(tbl)</small>	-	-		
Rice Harvested <small>(tbl)</small>	+	+		
Rice Sold/Revenue <small>(tbl)</small>	+	+		

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Farm Hours <span>(tbl)</span>	+	+		
Local Migration <span>(tbl)</span>	-	-		
Rice Harvested <span>(tbl)</span>	+	+		
Rice Sold/Revenue <span>(tbl)</span>	+	+		
Food security (lean seas.)		+		

# Results Summary

Key: Statistical Significance		
Insignificant	10%	5% or lower

Outcome	Within-Vill. ATT		Between-Vill. ITT	
	(1)	(2)	(3)	(4)
	W 99	W 95	W 99	W 95
Total Remittances <span>(tbl)</span>	+	+		
Harvest Season Remittances <span>(tbl)</span>	+	+		
Nitrogen Fertilizer <span>(tbl)</span>	+	+		
Input Investments <span>(tbl)</span>	+	+		
Farm Hours <span>(tbl)</span>	+	+		
Local Migration <span>(tbl)</span>	-	-		
Rice Harvested <span>(tbl)</span>	+	+		
Rice Sold/Revenue <span>(tbl)</span>	+	+		
Food security (lean seas.)		+		
Subj. well-being (lean seas.) <span>(tbl)</span>		+		

# Future Directions - Summer 2022

- Lower-cost implementation with private-sector MFI
- Run intervention 2 months earlier, potentially changing:
  - Rice planting decisions
  - Timing and location of migration
- Cost-effective/scalable ways to reduce remittance frictions?
  - Reducing cost of entry for IME branches into village markets
  - Lowering administrative barriers to remittance transfers (Aadhaar cards)

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  - Reducing cost of entry for IME branches into village markets
  - Lowering administrative barriers to remittance transfers (Aadhaar cards)
- Improve migration destination choices
  - Migrants likely to travel where fellow village/caste members go
  - Some migrants stuck at comparatively lower-wage destinations due to network effects
  - Use database to encourage migration towards higher-wage destinations
  - Create migration “mentor” program.
  - Match and connect mentors/mentees.
  - Incentives for mentors and mentees to travel together.

# Internal Migration: Future Research Directions

- US was rural and agrarian. Growth and migration over 200 years
- Massive internal migration in China over the last 30 years.
- Who Produces the Food when migrants exit agriculture?
  - Mechanization in the U.S. (Hornbeck & Naidu 2014; Manuelli & Seshadri 2014)
  - In India, migrant families divest from agriculture, but land markets and crop markets responds (Madhok et al 2022)
- How costly are Restrictions on Internal Migration?
  - China's hukou policy
  - Daughters bear the cost of family separation (Gao et al 2022).

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Thank you,

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