Household Responses to COVID-19 in India

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Our Research Uses Comprehensive Data to Study Impact of COVID-19 in India

- **Research Question:** What tools did Indians use to protect against income drops and consumption declines when facing large shock of COVID-19?
- **Context:** Lockdowns imposed at beginning of pandemic in India were harsh, imposing large supply-side constraints in the economy.
 - Unlike in developed countries, government did relatively little direct stimulus.
- Data: Largest longitudinal survey in India, rarely used in prior research.
- Understanding private responses to this large shock aids our understanding of Indian institutions and the insurance they provide.

We Document Large Shock, and Highlight Adaptation Mechanisms

- All Indians were affected, but some were hit more than others:
 - Small Traders/Daily Wage Earners, and Business Persons were badly hit.
 - Among Salaried workers: blue/pink collar workers worst off.
 - Among farmers: daily laborers badly hit.
- Adaptation mechanisms that did not work:
 - 1. Reduce less productive hours first.
 - 2. Switch to home production.
- Adaptation mechanisms that did:
 - 1. Reduce hours rather than jobs.
 - 2. Make occupations transitions to offset loss in employment.
 - 3. Switching durable/non-durable consumption.
- Adaptation mechanisms requiring more evaluation: household size, caste, migration.

Timeline of COVID-19 in India

- First case Jan 30, but contained and travel restrictions limited initial spread.
- Community spread grew through March.
- March 22: "Janata Curfew" limited out-of-home behavior 7am-9pm
- March 24 (500 cases): PM Modi announces nationwide 21 day lockdown.
 - Ban on leaving home.
 - Closure of all non-essential services.
 - Ban on most private meetings.
 - Triggered large-scale rural migration.
- April 15 May 3: Conditional lockdowns based on color-coded district classification (green/orange/red).
- Subsequent lockdowns after this period based on local conditions.

Regulatory Supply-Side Shock took Place Before COVID Spike



Which Resulted in a Large Supply-Side Effects

India: Mobility Changes

In % Compared to Baseline during 3 Jan - 6 Feb 2020

March 15- April 6 📕 April 4- May 16 📕 May 16- June 27



Source: Google COVID-19 Community Mobility Reports

We Use Comprehensive Longitudinal Survey Data Through Pandemic

- We use CMIE Consumer Pyramids Data.
- Panel survey of \sim 174,000 Indian households (1.19m people total) Jan 2014 present.
- Sampling: Based on 2011 Census.
 - 99 geographic district clusters selected throughout the country (urban and rural).
 - Randomize villages within rural areas, select urban areas based on size.
 - 16 households per village/Census Block in towns.
- Each household visited $3 \times$ yearly.
- Switched from in-person to phone interviews during lockdown.
 - Usual response rate is 80%.
 - Late-March and April wave had 64.4% response rate.

We Document Substantial Drop in Income and Consumption



Baseline Income Shock Exposure for Key Occupational Categories Mean



Among Salaried Workers: Blue/Pink Collar Worst Affected



Among Farmers: Laborers Worst Affected



Spatial Variation



Baseline Consumption Shock Exposure for Key Occupational Categories



- We document substantial income losses across occupational groups and regions.
- Income losses are relatively less severe among salaried workers and farmers.
 - However these categories contain substantial heterogeneity, with blue/pink collar workers and agricultural laborers badly off
- But every occupational groups sees consumption declines.
- Next, we investigate insurance and personal protective mechanisms that buffer this decline:
 - 1. What measures did and did not protect against income declines?
 - 2. Which insurance mechanisms protect against consumption declines, for given drop in income?

Income: Some Occupations Lowered Risk by Reducing Hours Worked

	Not employed	[0-4] hours	(4-6] hours	(6-8] hours	>8 hours	Total
\downarrow Initial State	%	%	%	%	%	%
%	%					
Not employed	26.4	4.9	12.5	42.7	13.5	0.4
[0-4] hours	38.2	10.9	13.4	31.7	5.7	2.1
(4-6] hours	34.3	12.6	25.0	24.7	3.5	8.7
(6-8] hours	27.0	15.5	11.8	37.7	8.0	62.7
>8 hours	19.3	15.5	13.5	33.5	18.2	26.1
Total	25.9	15.1	13.4	35.4	10.2	100.0

Income: Occupational Shifting Also Protected Some Income

	Change Dec '19 – April '20						
	Business	Salaried	Farmers &	Small traders &	Students &	Home makers	Total
	Persons	Employees	farm laborers	daily wage earners	Retired		
	%	%	%	%	%	%	%
Business persons	46.0	14.3	13.2	16.5	7.5	2.5	21.3
Salaried Employees	13.5	47.5	11.7	12.7	8.4	6.3	21.7
Farmers and farm laborers	5.8	5.2	64.5	10.3	6.4	7.9	32.1
Small traders & daily wage earners	12.7	10.4	23.0	41.3	8.1	4.5	24.9
Total	17.8	17.6	31.8	19.8	7.5	5.6	100.0

	Change Dec '19 – April '20, relative to Dec '18 – April '19								
	Business	Business Salaried Farmers & Small traders & Students & Home makers Total							
	Persons	Employees	farm laborers	daily wage earners	Retired				
	%	%	%	%	%	%	%		
Business persons	-26.5	6.3	8.4	6.6	4.2	1.1	2.9		
Salaried employees	5.6	-31.4	8.4	8.5	5.5	3.4	-0.8		
Farmers and farm laborers	2.0	3.3	-17.6	3.1	4.3	4.9	-3.3		
Small traders & daily wage earners	3.2	5.7	13.5	-29.6	5.4	1.8	1.2		
Total	-1.0	-3.4	-1.1	-2.3	4.9	2.9			

Income: Minor Shift to Household Production



Test of Consumption Sheltering: Urban Areas



Better Consumption Sheltering in Rural Areas



Similar Patterns as in Pre-COVID Period



Rural Consumption Smoothing Not Driven by Large Households Change in Logs

Dep. Var:	HHLD Expenditure
HHLD income per member	0.18*** (0.02)
Rural HHLD	-112.71 (70.18)
Large HHLD	
HHLD income per member \times rural HHLD	-0.10*** (0.02)
HHLD income per member \times large HHLD	
Rural HHLD \times large HHLD	
HHLD income per member $ imes$ large HHLD $ imes$ rural HHLD	

Rural Consumption Smoothing Not Driven by Large Households Change in Logs

Dep. Var:	HHLD Expenditure		
HHLD income per member	0.18*** (0.02)	0.23*** (0.00)	
Rural HHLD	-112.71 (70.18)	211.08*** (11.02)	
Large HHLD		-252.84*** (66.23)	
HHLD income per member \times rural HHLD	-0.10*** (0.02)	-0.16*** (0.00)	
HHLD income per member \times large HHLD		-0.09*** (0.02)	
Rural HHLD \times large HHLD		-405.11*** (66.41)	
HHLD income per member \times large HHLD \times rural HHLD		0.10*** (0.02)	
Ν	7,893,173	7,893,173	
R-sg.	0.267	0.329	

Consumption: Sacrificed Durable Consumption Saving Non-Durable Consumption



- Cutting Unproductive Hours? Was Mostly Unsuccessful.
- Household Borrowing?
- Household Saving?
- Gold?
- Income/Consumption Ratio?

We Contribute to Literatures on Risk-Sharing and Impact of COVID-19

- Tests of consumption insurance (especially India): Chaudhuri Paxson (2001), Chetty Looney (2006), Deaton Paxon (1999), Dynarski Gruber (1997), Gertler Gruber (2002), Gine Townsend Vickrey (2007), Imbert Papp (2019), Kochar (1999), Morduch (1995), Morduch (1999), Munshi Rosenzweig (2015), Townsend (1994)
 - Relative to literature—we use COVID-19 as especially large (and macro) shock to households.
- Analysis of Covid shock (mostly developing countries): Chetty Friedman Hendren Stepner (2020), Goolsbee Syverson (2020), Ray Subramanian (2020)
 - Relative to literature—We contrast household responses in developing country with less state capacity and formal insurance.

- COVID-19 was a very severe shock for households, poorly insured by government, but partially insured privately.
- Better protection for individuals in rural areas may help explain urban-rural wage gaps and unwillingness to migrate.
- Future work will try to understand these protection mechanisms further.

India Imposed Strict Government Controls

COVID-19: Government Response Stringency Index



This is a composite measure based on nine response indicators including school closures, workplace closures, and travel bans, rescaled to a value from 0 to 100(100 = strictest). If policies vary at the subnational level, the index is shown as the response level of the strictest sub-region.

🕂 Add country



Source: Hale, Webster, Petherick, Phillips, and Kira (2020). Oxford COVID-19 Government Response Tracker - Last updated 5 October, 03:30 (London time)

Note: This index simply records the number and strictness of government policies, and should not be interpreted as 'scoring' the appropriateness or effectiveness of a country's response. CC BY

Þ	Jan 21, 2020	0			0	Oct 3, 2020

Baseline Shock Exposure for Key Occupational Categories Back



Income: Measures to Cut Unproductive Marginal Hours Were Unsuccessful Back



Estimate Household Borrowing Responses Back



Estimate Household Deposits/Savings Responses Back



Estimate Household Deposits/Savings Responses Back



Estimate Household Gold Responses Back



Estimate Household Gold Expectations Back



Household Income/Consumption Ratio Back



Rural Consumption Smoothing Not Driven by Large Households (Back)

rural_reg_log

$ \begin{split} \Delta \log \text{HHLD income per member} & 0.06^{***} & 0.09^{***} \\ (0.01) & (0.03) \\ \\ \text{Rural HHLD} & 0.00^{***} \\ (0.00) & (0.00) \\ \\ \text{Large HHLD} & -0.00^{***} \\ (0.00) \\ \\ \Delta \log \text{HHLD income per member \times rural HHLD} & -0.04^{***} \\ (0.01) & (0.03) \\ \\ \Delta \log \text{HHLD income per member \times large HHLD} & -0.04 \\ (0.03) \\ \\ \text{Rural HHLD \times large HHLD} & 0.00 \\ (0.00) \\ \\ \Delta \log \text{HHLD income per member \times large HHLD \times rural HHLD} & 0.05 \\ (0.03) \\ \\ \end{split} $	Dep. Var:	HHLD Expenditure		
Rural HHLD 0.00^{***} (0.00) 0.00^{***} (0.00)Large HHLD -0.00^{***} (0.00) $\Delta \log$ HHLD income per member \times rural HHLD -0.04^{***} (0.01) -0.07^{**} (0.03) $\Delta \log$ HHLD income per member \times large HHLD -0.04^{***} (0.03) -0.04 (0.03)Rural HHLD \times large HHLD 0.00 (0.00) $\Delta \log$ HHLD income per member \times large HHLD \times rural HHLD 0.05 (0.03)	Δ log HHLD income per member	0.06*** (0.01)	0.09*** (0.03)	
$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	Rural HHLD	0.00*** (0.00)	0.00*** (0.00)	
$ \Delta \log \text{HHLD income per member} \times \text{rural HHLD} (0.01) (0.03) (0.03) (0.03) (0.03) (0.03) (0.03) (0.03) (0.03) (0.00)$	Large HHLD		-0.00*** (0.00)	
$ \Delta \log \text{HHLD income per member} \times \text{ large HHLD} & -0.04 \\ (0.03) \\ \text{Rural HHLD} \times \text{ large HHLD} & 0.00 \\ (0.00) \\ \Delta \log \text{HHLD income per member} \times \text{ large HHLD} \times \text{ rural HHLD} & 0.05 \\ (0.03) \\ \end{array} $	Δ log HHLD income per member \times rural HHLD	-0.04*** (0.01)	-0.07** (0.03)	
Rural HHLD × large HHLD0.00 (0.00) $\Delta \log$ HHLD income per member × large HHLD × rural HHLD0.05 (0.03)	Δ log HHLD income per member $\!\times$ large HHLD		-0.04 (0.03)	
$\label{eq:log-hard} \Delta \mbox{ log HHLD income per member} \times \mbox{ large HHLD } \mbox{ rural HHLD } 0.05 \\ (0.03)$	Rural HHLD $ imes$ large HHLD		0.00 (0.00)	
	Δ log HHLD income per member \times large HHLD \times rural HHLD		0.05 (0.03)	