14.771: Labor Markets

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Updated empirics

LeFave and Thomas (2016): Farms, Families and Markets

- Idea: use panel data. Why does this help?
- Consider:

$$LaborDemand_{it} = \alpha + \beta NumHHPpl_{it} + \epsilon_{it}$$

- What would happen if there was unobserved land quality for household i?
- Now with fixed effects

$$LaborDemand_{it} = \alpha_i + \beta NumHHPpl_{it} + \epsilon_{it}$$

- This is equivalent to de-meaning both sides by i, i.e.

$$(LaborDemand_{it} - \overline{LaborDemand_{it}}) = \beta(NumHHPpl_{it} - \overline{NumHHPpl_i}) + \epsilon_{it}$$

- Does this help?

Updated empirics

- Note: this requires a long enough panel to have plausibly exogenous changes in household composition
  - What's an endogenous change? E.g., having a relative move back home
  - What's an exogenous change? E.g., aging: kids become workers, adults become elderly
- Turns out LeFave and Thomas also just have much better data

Estimation

- Key estimating equation is

$$\ln L_h jt = \alpha + \beta N_{hjt} + \delta X_{hjt} + \eta_h + \eta_{jt} + \epsilon_{jht}$$

  where η_h is a household/farm fixed effect and η_{jt} is a time/community fixed effect
- Parameterize N into different age bins
- To isolate exogenous changes in N_{hjt}, restrict to households with no change in membership because of migration, births, or deaths. What's left? Households aging into different age bins

Results

TABLE II

LABOR DEMAND (LOG OF PERSON DAYS PER SEASON) AND HOUSEHOLD COMPOSITION[a]

	A. Pooled Cross-Sections		B. Including Farm Household Fixed Effects					C. Labor Demand by Farm Task		
Household Demographic Composition	N. Household Members (1)	Household Size and Shares (2)	N. Household Members (3)	Variation From Aging Only (4)	Prior Composition (5)	Next Period Composition (6)	1, 2, and 3 Period Lagged Composition as IVs (7)	Land Prep Livestock Dry/Sell/Mill (8)	Weeding Planting Fertilizing (9)	Harvesting (10)
Number of males in farm HH										
0 to 14 years	0.02	–	−0.001	–	−0.03	0.03	0.01	−0.01	−0.01	−0.03
	(0.01)		(0.016)		(0.02)	(0.02)	(0.04)	(0.03)	(0.02)	(0.03)
15 to 19	0.11	0.40	0.09	0.09	0.05	0.07	0.09	0.16	0.07	0.06
	(0.02)	(0.08)	(0.02)	(0.05)	(0.02)	(0.02)	(0.04)	(0.03)	(0.02)	(0.03)
20 to 34	0.17	0.59	0.13	0.15	0.09	0.05	0.21	0.14	0.09	0.12
	(0.01)	(0.07)	(0.02)	(0.11)	(0.02)	(0.02)	(0.05)	(0.03)	(0.02)	(0.03)
35 to 49	0.23	0.65	0.16	0.15	0.09	0.01	0.20	0.17	0.12	0.19
	(0.02)	(0.09)	(0.03)	(0.12)	(0.03)	(0.03)	(0.08)	(0.05)	(0.03)	(0.04)
50 to 64	0.32	0.76	0.22	0.24	0.08	0.08	0.22	0.22	0.16	0.24
	(0.03)	(0.09)	(0.03)	(0.12)	(0.04)	(0.03)	(0.10)	(0.06)	(0.04)	(0.05)
65 and older	0.21	0.45	0.20	0.24	0.06	0.08	0.20	0.17	0.14	0.19
	(0.03)	(0.10)	(0.04)	(0.14)	(0.04)	(0.03)	(0.11)	(0.06)	(0.04)	(0.05)

(*Continues*)

Results *Continued*

TABLE II—*Continued*

Household Demographic Composition	A. Pooled Cross-Sections: N. Household Members (1)	A. Pooled Cross-Sections: Household Size and Shares (2)	B. Including Farm Household Fixed Effects: N. Household Members (3)	B. Including Farm Household Fixed Effects: Variation From Aging Only (4)	B. Including Farm Household Fixed Effects: Prior Composition (5)	B. Including Farm Household Fixed Effects: Next Period Composition (6)	B. Including Farm Household Fixed Effects: 1, 2, and 3 Period Lagged Composition as IVs (7)	C. Labor Demand by Farm Task: Land Prep Livestock Dry/Sell/Mill (8)	C. Labor Demand by Farm Task: Weeding Planting Fertilizing (9)	C. Labor Demand by Farm Task: Harvesting (10)
Number of females in farm HH										
0 to 14 years	−0.02	−0.15	−0.04	–	−0.02	0.003	−0.02	−0.03	−0.05	−0.03
	(0.01)	(0.07)	(0.02)		(0.02)	(0.017)	(0.05)	(0.03)	(0.02)	(0.03)
15 to 19	0.02	0.10	−0.01	0.02	−0.002	−0.001	−0.01	0.01	−0.02	−0.02
	(0.02)	(0.08)	(0.02)	(0.05)	(0.018)	(0.018)	(0.04)	(0.03)	(0.02)	(0.03)
20 to 34	0.04	0.12	0.06	0.23	0.05	0.01	0.04	0.05	0.06	0.07
	(0.02)	(0.09)	(0.02)	(0.10)	(0.02)	(0.02)	(0.05)	(0.03)	(0.02)	(0.03)
35 to 49	0.09	0.30	0.16	0.33	0.12	0.04	0.23	0.07	0.13	0.11
	(0.02)	(0.09)	(0.03)	(0.11)	(0.03)	(0.03)	(0.08)	(0.05)	(0.03)	(0.04)
50 to 64	0.10	0.27	0.13	0.35	0.08	0.06	0.18	0.04	0.13	0.11
	(0.02)	(0.09)	(0.03)	(0.12)	(0.03)	(0.03)	(0.09)	(0.05)	(0.04)	(0.05)
65 and older	−0.05	−0.10	0.05	0.26	0.03	−0.01	0.05	−0.05	0.06	0.07
	(0.02)	(0.09)	(0.03)	(0.13)	(0.03)	(0.03)	(0.09)	(0.05)	(0.03)	(0.05)
Log household size		0.34								
		(0.03)								

(*Continues*)

Results *Continued*

TABLE II—*Continued*

Household Demographic Composition	A. Pooled Cross-Sections: N. Household Members (1)	A. Pooled Cross-Sections: Household Size and Shares (2)	B. Including Farm Household Fixed Effects: N. Household Members (3)	B. Variation From Aging Only (4)	B. Prior Composition (5)	B. Next Period Composition (6)	B. 1, 2, and 3 Period Lagged Composition as IVs (7)	C. Labor Demand by Farm Task: Land Prep Livestock Dry/Sell/Mill (8)	C. Weeding Planting Fertilizing (9)	C. Harvesting (10)
Tests for joint significance of demographic composition										
All groups	37.27	33.65	13.13	2.53	5.01	4.21	2.99	6.19	5.40	4.89
p-value	0.00	0.00	0.00	0.005	0.00	0.00	0.00	0.00	0.00	0.00
Males	49.88	21.67	18.27	1.90	6.08	5.79	3.62	9.71	6.80	6.63
p-value	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Females	10.58	10.99	7.70	2.78	3.45	1.95	1.86	1.31	3.84	1.82
p-value	0.00	0.00	0.00	0.02	0.00	0.07	0.08	0.25	0.00	0.09
Prime age adults	45.13	14.55	22.52	2.18	8.88	4.86	5.51	10.02	9.71	7.85
p-value	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
C-test—1 and 2 period lags (χ^2)							15.19			
p-value							0.92			
Observations	38,189	38,189	38,189	11,594	33,737	33,737	25,739	27,387	33,166	24,353
N. Households	4,452	4,452	4,452	1,584	4,096	4,096	3,783	4,176	4,166	4,022

So what's going on?

- So what's going on? Why might we have failures of separation?
- Several papers look at nominal wage stickiness, i.e. the idea that nominal wages do not clear
- Why would this lead to separation failures?

Is there nominal stickiness?

Kaur 2019: "Nominal Wage Rigidity in Village Labor Markets"

- Kaur's idea to test for nominal wage stickiness:
  - With nominal downward stickiness, the sequence of rainfall shocks matters
  - If you have positive shock, then negative shock, wages will be too high after positive shock and not fall enough when you have the negative shocks
  - But if you have negative shock, then positive shock, there will be no problem
- Tests this using data on Indian districts

Impact on wages

Dependent Variable: Log Nominal Daily Agricultural Wage

	$Shock_{t-1}$	$Shock_t$	Source: World Bank Data (1956-1987) (1)	(2)	(3)	Source: NSS Data (1982-2008) (4)	(5)	(6)
1	Zero	Zero	Omitted	Omitted	Omitted	Omitted	Omitted	Omitted
2	Drought	Zero	0.003 (0.011)	Omitted	Omitted	0.002 (0.015)	Omitted	Omitted
3	Zero	Positive	0.021 (0.010)**			0.045 (0.012)***		
4	Drought	Positive	0.064 (0.019)***	0.026 (0.009)***	0.026 (0.009)***	0.079 (0.028)***	0.052 (0.011)***	0.052 (0.011)***
5	Positive	Positive	0.014 (0.016)			0.066 (0.023)***		
6	Zero	Drought	-0.006 (0.013)			0.006 (0.016)		
				-0.010 (0.011)	-0.010 (0.011)		-0.003 (0.013)	-0.002 (0.013)
7	Drought	Drought	-0.015 (0.018)			-0.025 (0.028)		
8	Positive	Drought	0.038 (0.021)*	0.037 (0.020)*		0.115 (0.018)***	0.114 (0.019)***	
					0.024 (0.010)**			0.056 (0.013)***
9	Positive	Zero	0.021 (0.010)**	0.021 (0.010)**		0.026 (0.014)*	0.025 (0.015)*	
District and year FE?			Yes	Yes	Yes	Yes	Yes	Yes
Additional controls?			No	No	No	Yes	Yes	Yes
Obs: district-years			7,296	7,296	7,296	--	--	--
Obs: individual-years			--	--	--	154,476	154,476	154,476
Dependent var mean			1.197	1.197	1.197	3.261	3.261	3.261

Interaction with inflation

Dependent Variable: Log Nominal Daily Agricultural Wage

		Definition of Lag Positive Shocks: Positive shock in previous year			*Definition of Lag Positive Shocks:* At least one positive shock in last 3 years		
			Continuous measure: Inflation rate	*Binary measure:* Inflation > 6%		*Continuous measure:* Inflation rate	*Binary measure:* Inflation > 6%
		(1)	(2)	(3)	(4)	(5)	(6)
	{$Shock_{t-1}$=Drought or Zero}; {$Shock_t$=Zero}	Omitted	Omitted	Omitted	Omitted	Omitted	Omitted
1	{$Shock_{t-1}$=Drought, Zero, or Positive}; {$Shock_t$=Positive}	0.017	0.020	0.021	0.024	0.035	0.034
		(0.009)*	(0.011)*	(0.011)*	(0.010)**	(0.011)***	(0.012)***
2	{$Shock_{t-1}$=Drought, Zero, or Positive}; {$Shock_t$=Positive} x Inflation measure		-0.031	-0.006		-0.127	-0.017
			(0.101)	(0.017)		(0.109)	(0.018)
3	{$Shock_{t-1}$=Drought or Zero}; {$Shock_t$=Drought}	-0.020	0.000	0.001	-0.038	0.014	-0.004
		(0.011)*	(0.014)	(0.016)	(0.015)***	(0.018)	(0.020)
4	{$Shock_{t-1}$=Drought or Zero}; {$Shock_t$=Drought} x Inflation measure		-0.254	-0.036		-0.577	-0.056
			(0.156)	(0.023)		(0.188)***	(0.028)**
5	{$Shock_{t-1}$=Positive}; {$Shock_t$=Drought}	0.019	0.039	0.061	0.028	0.040	0.057
		(0.020)	(0.034)	(0.033)*	(0.016)*	(0.024)*	(0.027)**
6	{$Shock_{t-1}$=Positive}; {$Shock_t$=Drought} x Inflation measure		-0.218	-0.080		-0.154	-0.057
			(0.251)	(0.040)**		(0.198)	(0.034)*
7	{$Shock_{t-1}$=Positive}; {$Shock_t$=Zero}	0.015	0.044	0.042	0.029	0.049	0.052
		(0.011)	(0.016)***	(0.018)**	(0.008)***	(0.012)***	(0.014)***
8	{$Shock_{t-1}$=Positive}; {$Shock_t$=Zero} x Inflation measure		-0.336	-0.047		-0.248	-0.040
			(0.128)***	(0.021)**		(0.096)***	(0.017)**
	Year and district fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
	F-test p-value: Coefficient 3 + Coefficient 4 = 0	--	--	0.027**	--	--	0.002***
	F-test p-value: Coefficient 5 + Coefficient 6 = 0	--	--	0.400	--	--	0.990
	F-test p-value: Coefficient 7 + Coefficient 8 = 0	--	--	0.678	--	--	0.207

Impact on employment

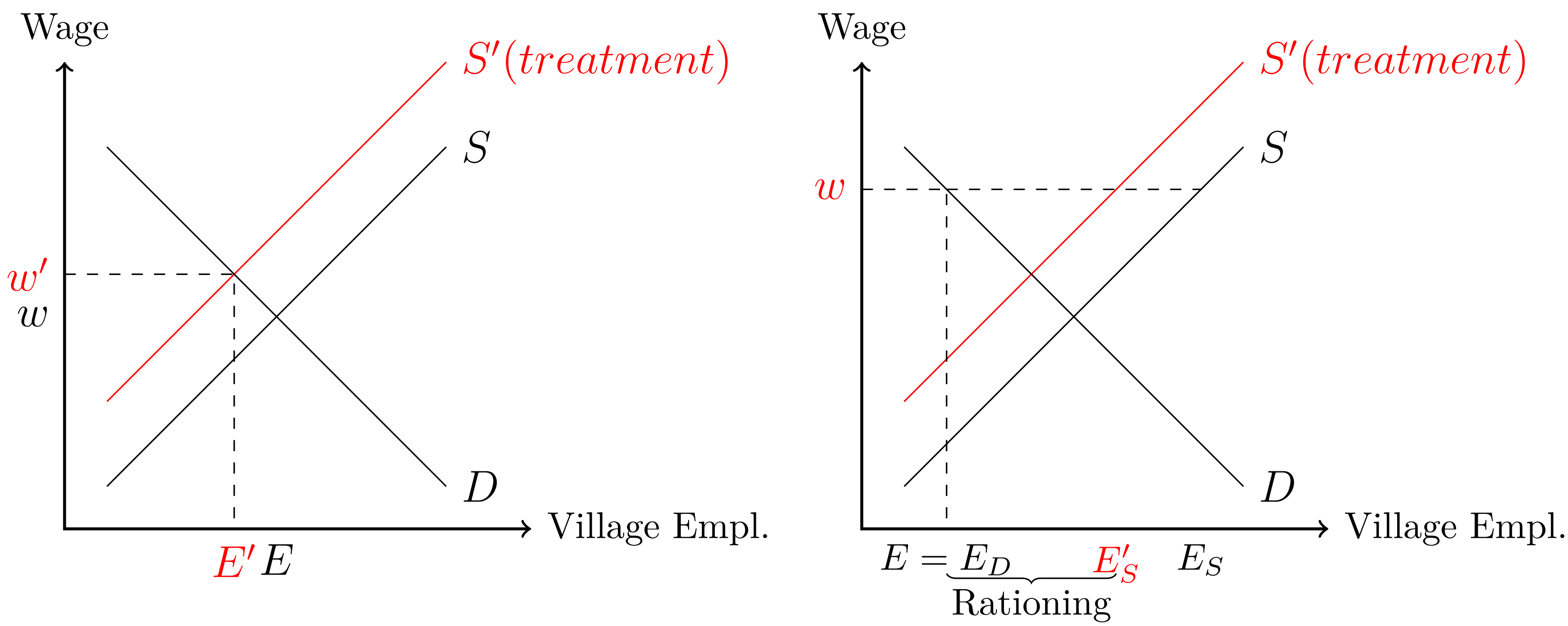
Dependent variable: Total worker-days in agriculture

Sample	Full Sample (1)	Full Sample (2)	Lean Season Excluded (3)
Panel A: Average Impact of Lag Positive Shocks			
Lag positive shock	-0.111	-0.217	-0.220
	(0.046)**	(0.049)***	(0.052)***
Lag positive shock x Acres per adult in household		0.141	0.139
		(0.029)***	(0.028)***
Panel B: Full Specification			
{$Shock_{t-1}$=Drought or Zero; $Shock_t$=Zero}	Omitted	Omitted	Omitted
1 {$Shock_{t-1}$=Drought, Zero, or Positive}; {$Shock_t$=Positive}	0.078	0.078	0.104
	(0.047)*	(0.047)*	(0.051)**
2 {$Shock_{t-1}$=Drought, Zero, or Positive}; {$Shock_t$=Positive} x Acres per adult in household		-0.006	-0.005
		(0.005)	(0.004)
3 {$Shock_{t-1}$=Drought or Zero}; {$Shock_t$=Negative}	0.116	-0.112	-0.095
	(0.049**	(0.050)**	(0.051)*
4 {$Shock_{t-1}$=Drought or Zero}; {$Shock_t$=Drought} x Acres per adult in household		-0.001	-0.001
		(0.015)	(0.013)
5 {$Shock_{t-1}$=Positive}; {$Shock_t$=Drought}	-0.244	-0.352	-0.365
	(0.076)***	(0.073)***	(0.074)***
6 {$Shock_{t-1}$=Positive}; {$Shock_t$=Drought} x Acres per adult in household		0.123	0.135
		(0.037)***	(0.038)***
7 {$Shock_{t-1}$=Positive}; {$Shock_t$=Zero}	-0.107	-0.213	-0.205
	(0.058)*	(0.064)***	(0.072)***
8 {$Shock_{t-1}$=Positive}; {$Shock_t$=Zero} x Acres per adult in household		0.151	0.132
		(0.040)***	(0.038)***
9 Acres per adult in household	0.047	0.007	0.037
	(0.015)***	(0.002)***	(0.014)***
10 (Acres per adult in household)^2	-1.04×10^{-5}	-1.50×10^{-6}	-7.73×10^{-6}
	(3.37×10^{-6})***	(5.40x10-7)***	(3.02×10^{-6})**
F-test p-value: Coefficient 3 = Coefficient 5	0.117	0.002***	0.001***
Observations: individual-years	1,003,030	1,003,030	755,347
Dependent variable mean	3.48	3.48	3.62

Testing for labor rationing experimentally

- Supposed you wanted to text experimentally for failures of labor market clearing. How would you do so?
- Idea of Breza, Kaur, and Shamdasani (2019):
  - Randomly shock labor markets by hiring 24% of the labor market in some villages to work in an external factory. Specifically, recruit a list of workers interested in jobs. Randomly pick some villages from which to hire, and then within those, randomly pick which workers are hired.
  - See what happens to everyone else.
- How do you interpret this? What are the predictions if the labor market is competitive? If the market is rationed?
- Should the response be the same throughout the year?

Theory



(A) H_0 : No Rationing ($E_D \geq E_S$)   (B) H_1 : Rationing ($E_D < E_S$)

FIGURE 2. E ects of a Negative Labor Supply Shock

Results

Wages

Table 3. Wage E ects

	(1) Log cash wage	(2) Log total wage	(3) Log total wage	(4) Total wage	(5) Log total wage	(6) Total wage
Hiring shock	-0.0202	-0.0113	-0.0183	-5.632	-0.0620	-19.24*
	(0.021)	(0.022)	(0.019)	(3.925)	(0.050)	(11.425)
Hiring shock * Semi-peak	0.0733**	0.0676**	0.0684**	18.57**		
	(0.031)	(0.032)	(0.029)	(7.595)		
Hiring Shock * Empl. Level					0.457*	133.3**
					(0.240)	(57.182)
Sample	Spillover	Spillover	Spillover	Spillover	Spillover	Spillover
Baseline controls	No	No	Yes	Yes	Yes	Yes
Test: Shock + Shock*Semi-peak	0.0239	0.0227	0.0256	0.0472	.	.
Control mean: lean	5.458	5.500	5.500	253.8	5.500	253.8
Control mean: semi-peak	5.428	5.504	5.504	251.6	5.504	251.6
N (worker-days)	1543	1544	1544	1545	1544	1545

TABLE 4. Employment Spillovers

	(1) Hired wage empl.	(2) Hired wage empl.	(3) Hired wage empl.
Hiring shock	0.0684***	0.0544***	0.138***
	(0.021)	(0.019)	(0.045)
Hiring shock * Semi-peak	-0.0737**	-0.0735**	
	(0.034)	(0.030)	
Hiring Shock * Empl. Level			-0.706***
			(0.254)
Sample	Spillover	Spillover	Spillover
Baseline controls	No	Yes	Yes
Test: Shock + Shock*Semi-peak	0.840	0.427	.
Control mean: lean	0.145	0.145	0.145
Control mean: semi-peak	0.216	0.216	0.216
N (worker-days)	8906	8906	8906

- For slack season: why is it important to show column 1? Why is this less important for peak season?

Results

Aggregate Employment

Table 5. Aggregate Employment

	(1) Hired wage empl.	(2) Hired wage empl.
Hiring shock	0.0108	0.0693
	(0.022)	(0.048)
Hiring shock * Semi-peak	-0.0534**	
	(0.026)	
Hiring Shock * Empl. Level		-0.506**
		(0.234)
Sample	All Workers	All Workers
Baseline controls	Yes	Yes
Test: Shock + Shock*Semi-peak	0.00395	.
Control mean: lean	0.129	0.129
Control mean: semi-peak	0.199	0.199
R-squared	0.0946	0.0945
N (worker-days)	21085	21085

- For slack season: why is it important to show column 1? Why is this less important for peak season?

Results

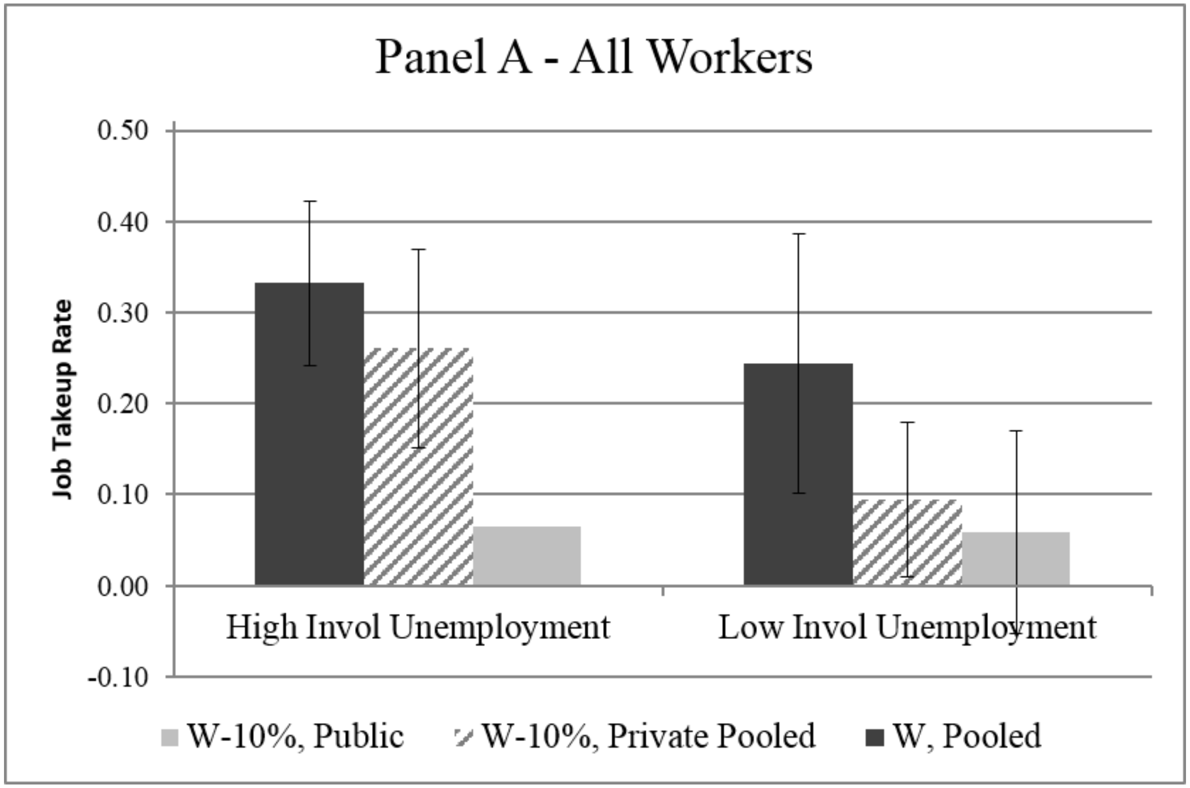
- Summary of results:
  - Peak season: wages increase 5 percent, employment declines 21 percent
  - Remove some workers $\rightarrow$ negative labor supply shock.
  - Slack season: wages unchanged, employment unchanged
- Interpretation:
  - Peak season: competitive labor market, with elasticity of labor demand around -4
  - Slack season: rationing (wage fixed)

Mechanisms

- One puzzle about this finding is how this persists in a spot day labor market
  - Easy to imagine in a long term relationship not wanting to cut a workers' wage - they have specific human capital and quit
  - Harder to understand how this would persist in a spot market for day laborers

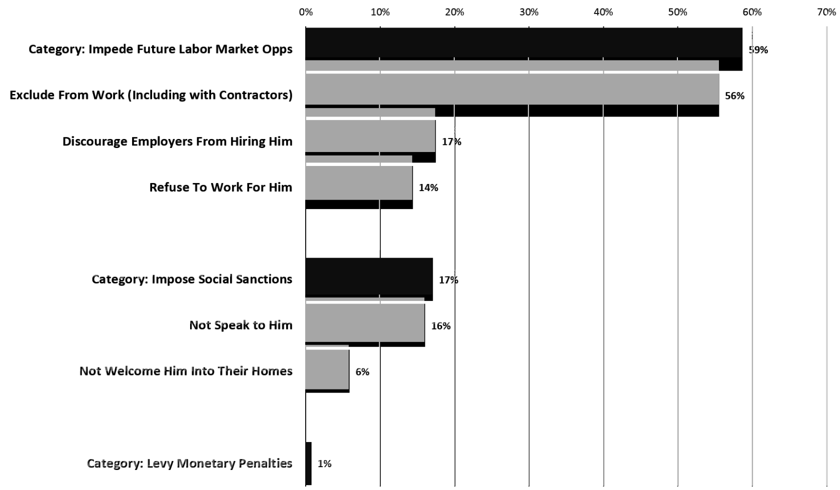
- Breza, Kaur, and Krishnasamy (2019) run an experiment to get at this:
  - Offer spot jobs in India
  - Vary the wage
  - Vary whether the wage offer is observable or not
    - *Public.* Wage offer made in the street in front of someone's house
    - *Employer.* Wage offer made inside house, so employer and worker can hear it
    - *Private.* Wage offer made inside house, after employer has left
  - What might you expect?
  - Key finding: workers are willing to accept wages below prevailing wage only if private

Results

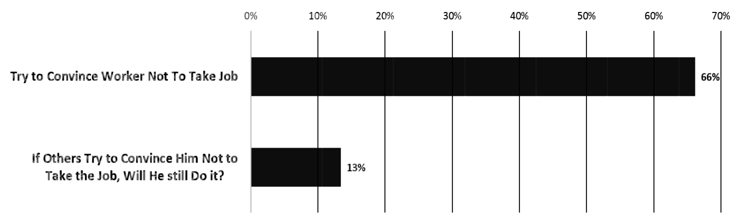


(a) All Workers

Why? Survey results



(a) Sanctions



(b) Social Pressure

FIGURE VII: Survey Evidence - Sanctions for Accepting Wage Cuts

Poverty and Behavioral Issues in Labor Supply

- This has thus far highlighted one particular labor market challenges – frictions due to nominal rigidities – that creates challenges for rural labor markets.
- But poverty may affect labor supply in other ways.
- We'll explore four:
  - Basic consumption needs and the elasticity of labor supply.
  - Poverty, mental challenges, and productivity.
  - Identity and labor supply
  - On the flip side, the cognitive *benefits* of work.
  - (plus, as discussed earlier, nutriton-based poverty traps)

Poverty and the elasticity of labor supply

Jayachandran (2006): "Selling Labor Low: Wage Responses to Productivity Shocks in Developing Countries"

- Jayachandran's idea:
  - The rural wage will be more inelastic if workers are unable to smooth shocks, because they really need the income to survive. In particular it will be more inelastic if there is:
    - Less access to credit
    - Lower ability to migrate
  - Inelastic wages imply larger impacts of productivity shocks on rural welfare.
  - They also imply a pecuniary externality – it is not just your own ability to smooth that affects your ability to cope with shocks, but the ability of everyone else around to smooth also affects your welfare.