Migration and Consumption Insurance in Bangladesh

Costas Meghir (Yale)
Mushfiq Mobarak (Yale)
Corina Mommaerts (Wisconsin)
Melanie Morten (Stanford)

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Seasonal migration and consumption insurance

- Income very volatile in developing country agricultural households
  - Often seasonal component
- Seasonal and temporary migration is common
- Informal risk sharing common and important
- How do these insurance mechanisms interact?

This paper

- Experimental intervention to increase migration
- Treatment effect of migration on risk sharing
  - Risk sharing improves
- Is this consistent with limited commitment risk sharing?
  - Estimate model using *control* data
  - Estimate out-of-sample predictions of the experiment
  - Model matches treatment effects
- In progress: further counterfactuals

Contributions

- Bryan, Chowdhury and Mobarak (2014)
  - Study effects of migration on migrants
  - We study spillover efffects on risk sharing network
- Morten (2017)
  - Focus on seasonal migration
  - Exploit experimental variation

Key related literature

- Rural-urban migration

  Bryan, Chowdhury and Mobarak (2014); Sjaastad (1962); Harris and Todaro (1970)

- Limited commitment risk sharing

  Krueger and Perri (2010); Ligon, Thomas, Worrall (2002); Kocherlakota (1996)

- Interaction between substitute risk management strategies

  Mobarak and Rosenzweig (2014), Morten (2017)

- Risk sharing and permanent migration

  Banerjee and Newman (1998); Munshi and Rosenzweig (2009)

- Combining structural models and experimental data

  Kaboski and Townsend (2011), Todd and Wolphin (2006)

Outline

1. Data and experiment
2. Reduced form test
3. Model of endogenous risk-sharing and migration

Experimental setup

Bryan, Chowdhury and Mobarak (2014)

- North-West Bangladesh (Rangpur division):
  - Population Rangpur: 9.6m; 5.3 m below poverty line
  - Lean season (*Monga*) prior to Aman rice harvest (Sep-Nov)
  - But, low levels of seasonal out-migration ▸ Seasonality of consumption
- Experiment: August 2008
  - Small (approx bus ticket) cash or credit incentive
  - Baseline: July 2008 *pre-Monga*
  - Follow up surveys: Nov '08; Nov '09; July '11; Dec '13
- 100 villages over two districts
  - Cash: 37; Credit: 31; Information: 16; Control: 16

Summary of main experimental results

1. Seasonal/circular migration
   - Increase of 22 p.p. in migration
   - Control: 36%, Treatment: 58%

2. Own household consumption at origin
   - LATE estimate: increase 30% ▸ Table

3. Re-migration
   - One year later (no incentives): Mig + 9%; Cons + 28%
   - 2.5 years later: Mig +7%; Cons + 30%
   - 4.5 years later: Mig + 7%; Cons + 35%;

▸ Summary stats

Why would experiment affect risk sharing?

- Experiment made migration easier
  - Reduced travel cost
- Interaction with risk sharing
  - Increases value of outside option (-)
    $\rightarrow$ Household uses migration as self-insurance, risk-sharing less valuable
  - If migration itself risky, risk-sharing may facilitate (+)
    $\rightarrow$ Network can help insure risky decision
  - May help insure aggregate shocks (+)
- Net effect on insurance ambiguous

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Testing for risk sharing: Townsend test

Standard Townsend test:

$$\log c_{ivt} = \beta \log y_{ivt} + \gamma_i + \gamma_{vt} + \epsilon_{ivt}$$

- Full risk sharing: $\beta = 0$
- No risk sharing: $\beta = 1$

Table: Consumption smoothing among control villages

	(1) Log total consumption	(2) Log food consumption
Log income	0.197***	0.174***
	(0.015)	(0.014)
Observations	2169	2169
R-squared	0.229	0.232

Does migration cause risk sharing to get better?

- Interact treatment with income
- Intepreting sign of interaction
  - Negative: cons, income less correlated: r/s $\uparrow$
  - Positive: cons, income more correlated: r/s $\downarrow$

$$\log c_{ivt} = \beta_1 \log y_{ivt} + \beta_2 \log y_{ivt} * T_v + \gamma_i + \gamma_{vt} + \epsilon_{ivt}$$

Table: Effect of migration incentives on consumption smoothing

	Log total consumption			Log food consumption		
	(1)	(2)	(3)	(4)	(5)	(6)
Overall treatment effect	-0.042**			-0.038**		
	(0.020)			(0.019)		
Group restrictions						
Unassigned group		-0.053**			-0.047**	
		(0.024)			(0.023)	
Self-formed group		-0.021			-0.014	
		(0.028)			(0.029)	
Assigned group		-0.050*			-0.047*	
		(0.030)			(0.027)	
Destination restrictions						
Unassigned destination			-0.054**			-0.050**
			(0.022)			(0.023)
Assigned destination			-0.030			-0.025
			(0.025)			(0.023)
Observations	4419	4419	4419	4421	4421	4421
R-squared	0.205	0.205	0.206	0.206	0.206	0.206

▸ Savings

Table: Effect of migration incentives on consumption smoothing, non-migrant sample

	Log total consumption			Log food consumption		
	(1)	(2)	(3)	(4)	(5)	(6)
Overall treatment effect	-0.048*			-0.046**		
	(0.026)			(0.023)		
Group restrictions						
Unassigned group		-0.073**			-0.070**	
		(0.030)			(0.029)	
Self-formed group		-0.002			0.006	
		(0.038)			(0.037)	
Assigned group		-0.061*			-0.065**	
		(0.037)			(0.032)	
Destination restrictions						
Unassigned destination			-0.060**			-0.049*
			(0.030)			(0.029)
Assigned destination			-0.036			-0.043
			(0.032)			(0.029)
Observations	2615	2615	2615	2626	2626	2626
R-squared	0.234	0.236	0.235	0.232	0.234	0.233

Direct evidence

Table: Treatment effect on financial assistance from and to others

	Would help you	Would help you and you'd ask	Would ask you for help	Would ask you for help and you'd help
Family	0.047*	0.043*	0.111***	0.106***
	(0.026)	(0.026)	(0.033)	(0.031)
Control mean	[0.730]	[0.707]	[0.516]	[0.475]
Friends	0.081***	0.073**	0.096***	0.090***
	(0.031)	(0.030)	(0.029)	(0.027)
Control mean	[0.258]	[0.239]	[0.207]	[0.182]
Other villagers	0.069**	0.070**	0.106***	0.105***
	(0.028)	(0.027)	(0.031)	(0.026)
Control mean	[0.628]	[0.588]	[0.365]	[0.306]
NGOs	0.067**	0.071**		
	(0.030)	(0.029)		
Control mean	[0.540]	[0.494]		
Moneylenders	0.031	0.029		
	(0.021)	(0.020)		
Control mean	[0.208]	[0.180]		

▸ Migrant subsample ▸ Non-migrant subsample

Risk sharing improved in treatment villages

- Correlation between income and consumption decreased
  - $\downarrow$ 4%
  - Food consumption: $\downarrow$ 4%
- Effect consistent when look only at non-migrants
  - $\downarrow$ 5%
  - Food consumption: $\downarrow$ 5%
- Suggests risk sharing *improved* in treatment villages

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Move to structural estimation

- Experiment changes the income process of the village
  - Variance of income
  - Persistence of income
  - Measurement error in income
- We calibrate LC model using control villages
  - Income process generates consumption stream
  - Estimate model to match risk sharing
- Validate model out-of-sample with the experiment

Limited commitment model

- Households can walk away from risk sharing model
  - Value of risk sharing needs to be as high as autarky
  - Endogenously incomplete risk sharing
- Changes in income process affect value of autarky
- Estimation approach
  - Estimate mig, village income off control villages
  - Then, change migration cost

Kocherlakota (1996), Ligon, Thomas and Worrall (2002)

AR (1) income process

- Income process characterized by
  - Variance of measurement error: $var(\epsilon^y)$
  - Variance of persistent shock $var(\nu)$
  - Income persistence ρ

$$\log y_{it} = u_{it} + \epsilon^y_{it}$$
$$u_{it} = a + \rho u_{it-1} + \nu_{it}$$

- Estimate separately for treatment and control
- Identify from cross-person moments

▸ Details of moment conditions

▸ Naive estimation of model

Full model

- Social planner decides utility now vs promise for future
- Timing:
  1. Village income revealed
  2. Migration and contingent utilities chosen
  3. Migration income revealed, ex-post utilities assigned
- Ingredients
  - Village income risk, migration income risk
  - State variables: village income (y_j) and promised utility (w_{jk})
  - Choose: migration ($\mathbb{I}$), ex-post utility (h_{jk}), continuation utility ($w'_{j'k'}$)

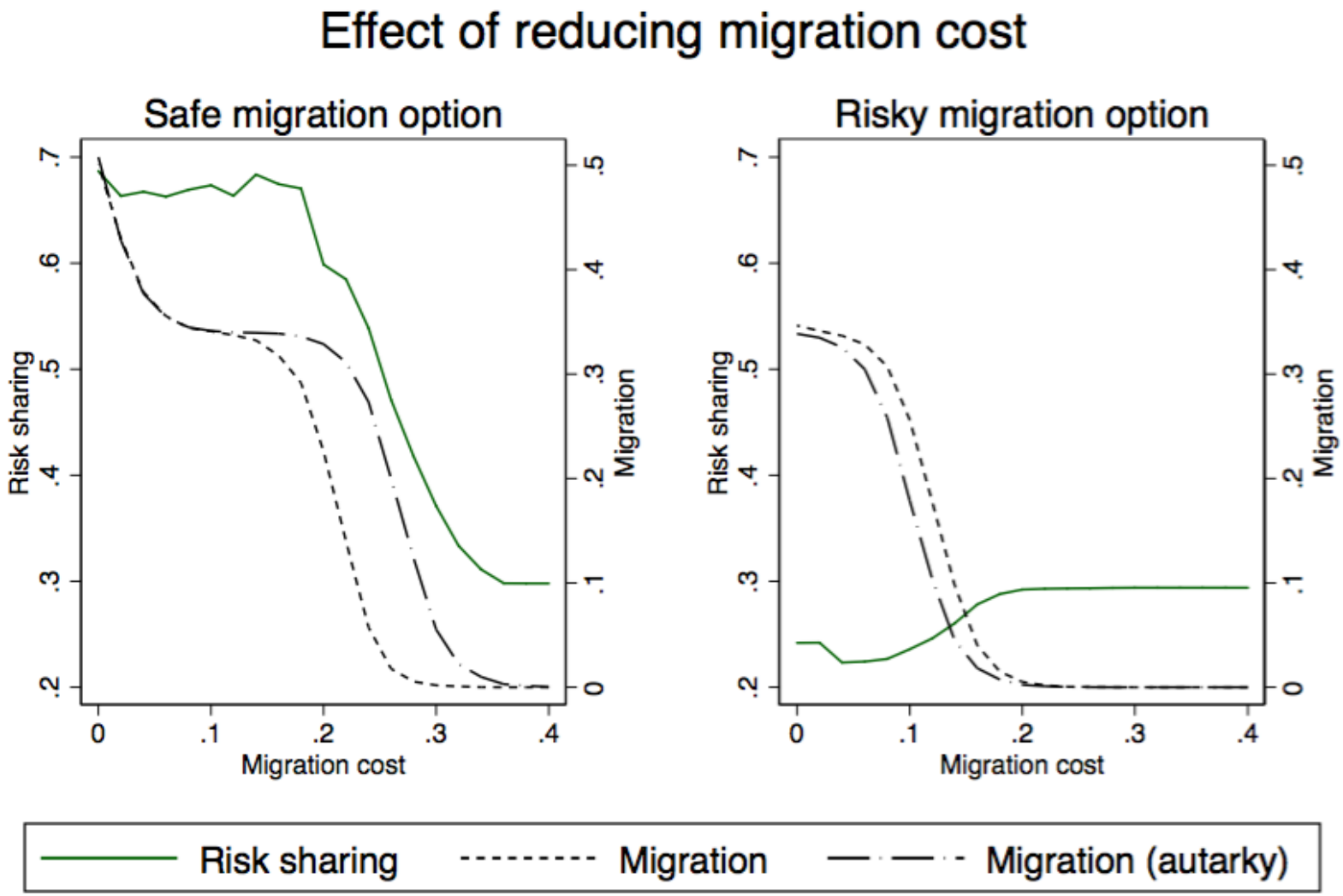
Limited commitment constraints

- Limited commitment constraints: need to receive at least autarky
  - Before migrate: ex-ante
  - After migrate: ex-post
- Promise keeping constraints

▸ Autarky

▸ Details of model

Intuition



Village income takes 3 states, with equal probability: [1.1, 1.5, 1.9].
Safe migration option is guaranteed migration income of 1.5.
Risky migration option is a process with 2 states with equal probability, [0.8, 2.2].

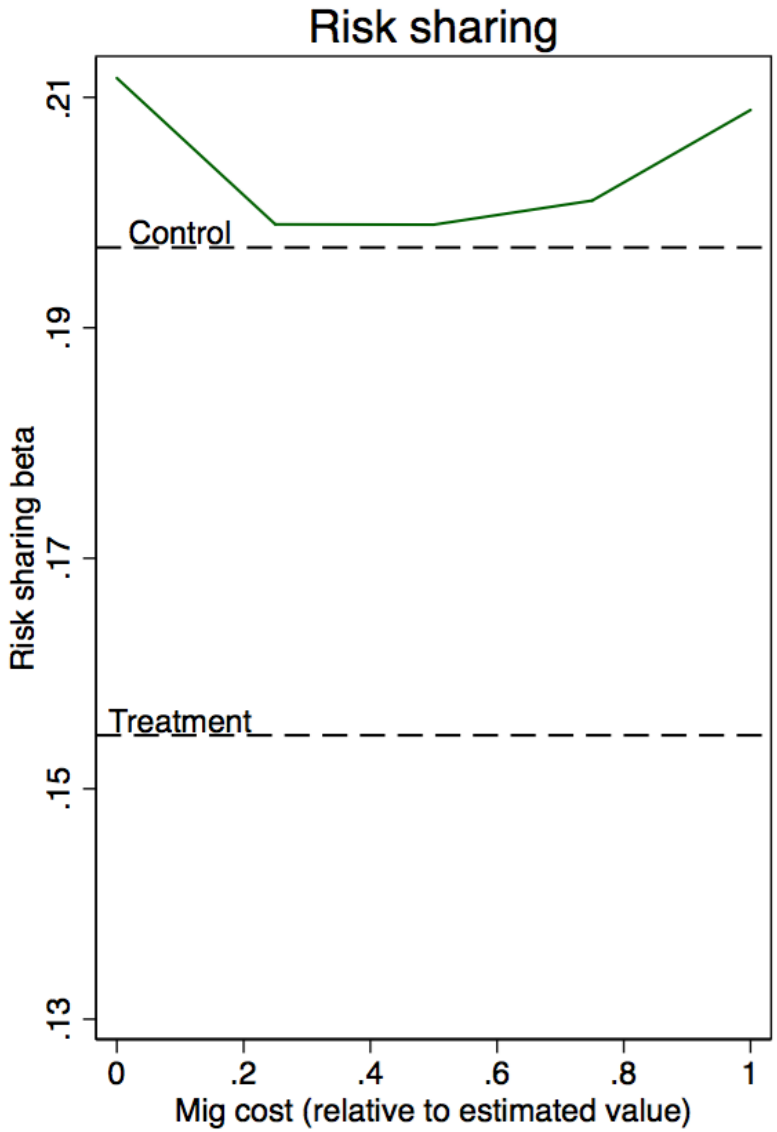
Estimation results: with migration

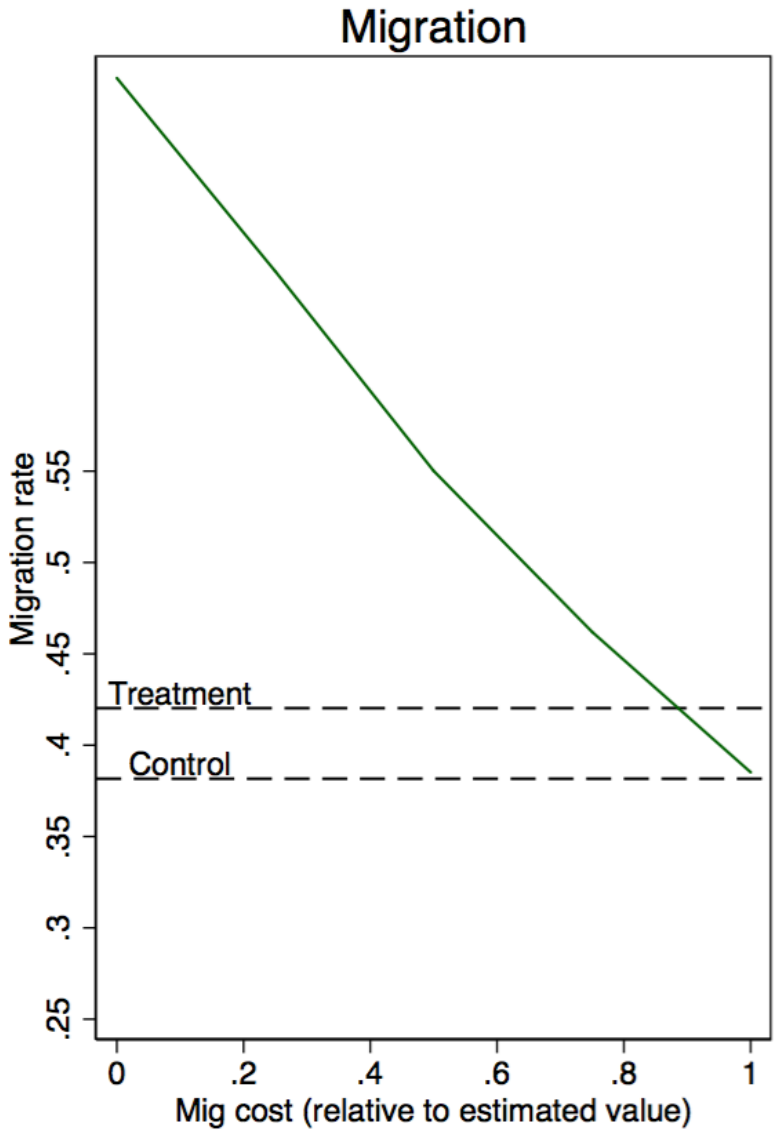
Table: Fit of model to data: control

	Data	Model
Targeted moments		
Risk-sharing beta	0.20	0.21
Variance of consumption	0.12	0.13
Mean migration rate	0.38	0.38
Estimated parameters		
Coeff. relative risk aversion		1.57
Measurement error variance (cons)		0.11
Migration cost		0.06
Set exogenously		
Discount factor		0.90

Notes: Estimated on data from control villages only.

Model with mig: predicts improvement in risk sharing





Matching additional experiments

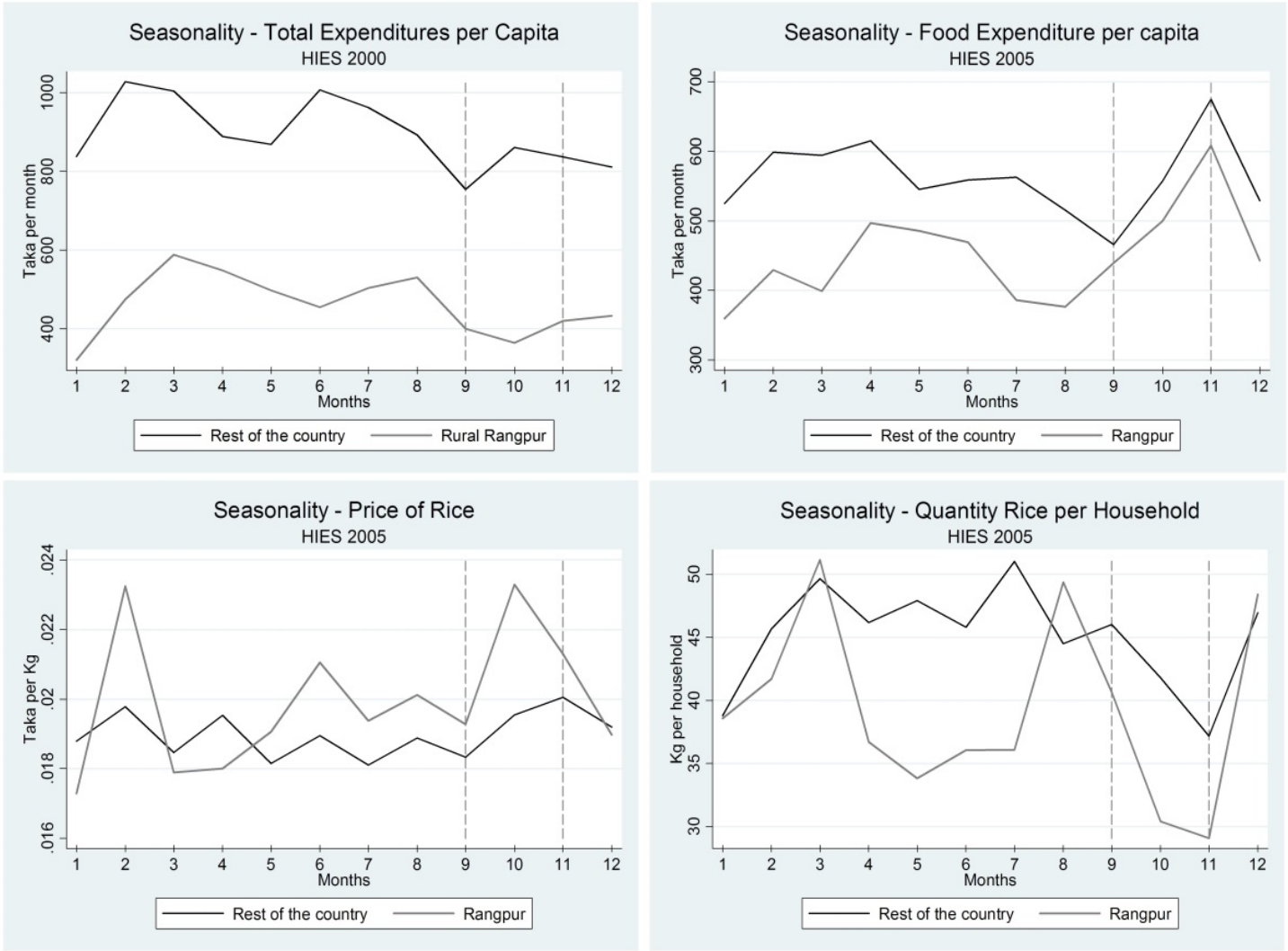
- Akram et al. (2016)
  - Subsidized different shares of the village
  - Take-up higher when higher share subsidized
- Risk-sharing: improves; more so in high-share-subsidy
- Can our model match this
  - Intuition: last figure

Conclusion

- Risk is important in developing countries
- Context: annual lean season
  - Simple experiment: large increase in migration
  - Large consumption effects
- But, what spillovers did this have?
- Examine interaction between risk sharing and migration
  - Townsend: improved risk sharing
  - Structural model: will examine mechanisms further

Seasonality and Monga

Figure 1. Seasonality in Consumption and Price in Rangpur and in Other Regions of Bangladesh



Source: Bangladesh Bureau of Statistics 2005 Household Income and Expenditure Survey

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Summary stats

	Round 1			Round 4			Roun	
mean/sd	Total	Control	Treatment	Total	Control	Treatment	Total	Contr
Total income	24.22	24.21	24.22	43.13	43.11	44.91	62.85	61.1
	(15.95)	(16.42)	(15.73)	(25.32)	(25.44)	(26.66)	(41.47)	(41.1
Wage income	11.65	12.29	11.34	22.77	22.23	23.53	35.80	35.7
	(12.06)	(13.21)	(11.48)	(20.62)	(20.66)	(22.06)	(39.25)	(50.3
Total consumption	46.67	46.58	46.72	77.95	79.91	80.87	79.48	76.7
	(17.12)	(17.39)	(17.00)	(33.80)	(33.68)	(34.84)	(36.91)	(34.3
Food consumption	35.44	35.42	35.44	52.09	53.83	53.68	49.96	48.9
	(13.37)	(13.50)	(13.32)	(21.74)	(21.62)	(22.13)	(19.34)	(19.6
Non-food consumption	11.01	10.83	11.10	25.09	25.29	26.23	28.85	27.5
	(5.83)	(5.89)	(5.81)	(16.39)	(15.62)	(16.99)	(23.52)	(21.5
Daily per capita calories	2.07	2.06	2.07	2.32	2.32	2.37	2.25	2.22
	(0.51)	(0.50)	(0.51)	(0.64)	(0.62)	(0.65)	(0.66)	(0.65
Household size	3.78	3.80	3.77	4.05	4.06	4.06	4.04	3.98
	(1.30)	(1.35)	(1.27)	(1.43)	(1.47)	(1.48)	(1.46)	(1.45
Migrant household				0.41	0.36	0.44	0.39	0.30
				(0.49)	(0.48)	(0.50)	(0.49)	(0.46
Number of households	1784	574	1210	1666	533	1133	1614	503

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Consumption effects

Panel A: 2008 Consumption

	ITT		
	Cash	Credit	Info
Consumption of Food	61.876**	50.044*	15.644
	(29.048)	(28.099)	(40.177)
Consumption of Non-Food	34.885***	27.817**	22.843
	(13.111)	(12.425)	(17.551)
Total Consumption	96.566***	76.743**	38.521
	(34.610)	(33.646)	(50.975)
Total Calories (per person per day)	106.819*	93.429	-85.977
	(62.974)	(59.597)	(76.337)

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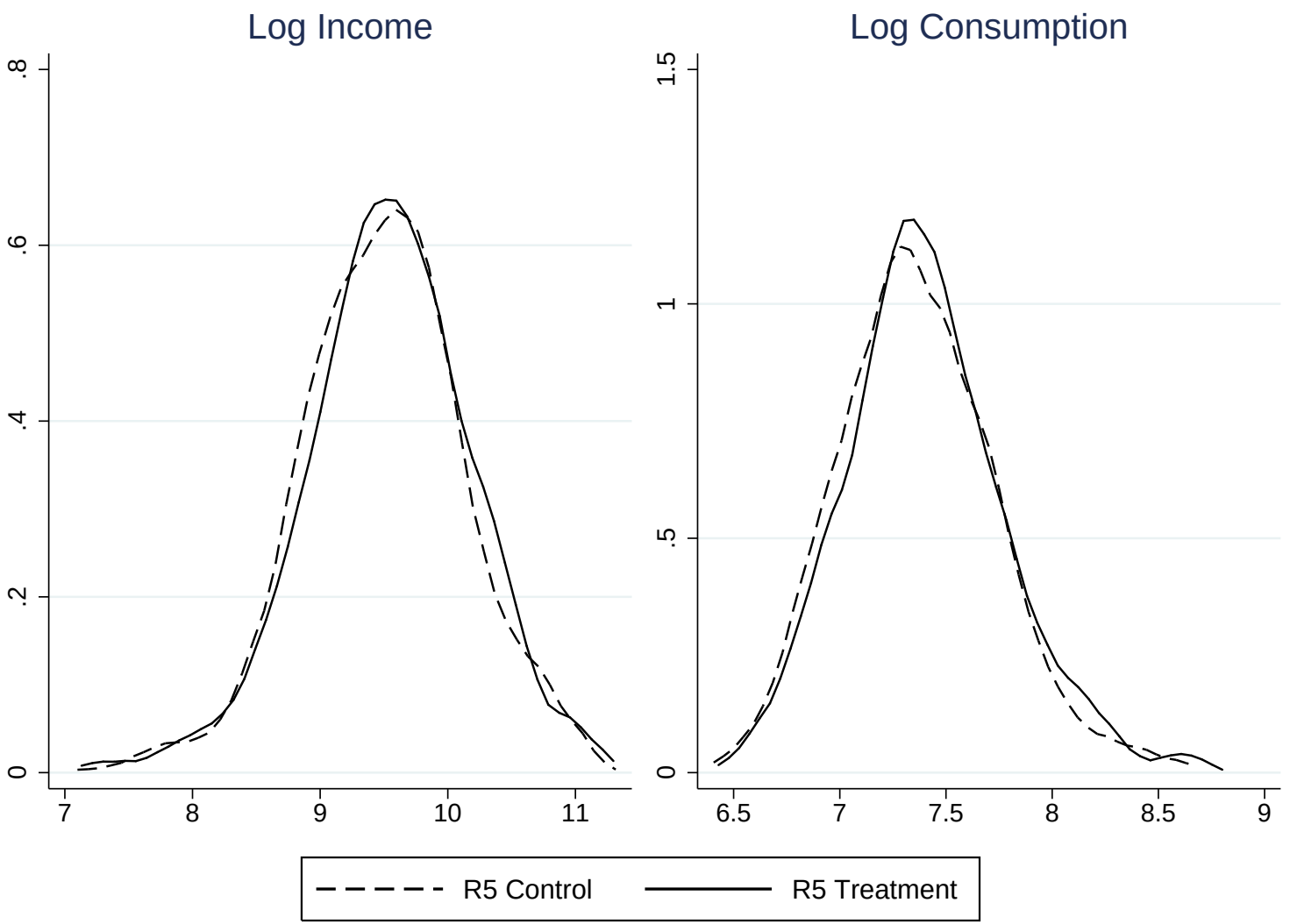
Effect of experiment on consumption and income



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Migrant sample

Table: Treatment effect on financial assistance from and to others, migrant sample

	Would help you	Would help you and you'd ask	Would ask you for help	Would ask you for help and you'd help
Family	0.061	0.056	0.150***	0.139***
	(0.037)	(0.038)	(0.044)	(0.042)
Control mean	[0.729]	[0.714]	[0.497]	[0.462]
Friends	0.124***	0.107**	0.127***	0.106**
	(0.046)	(0.047)	(0.041)	(0.041)
Control mean	[0.322]	[0.312]	[0.266]	[0.246]
Other villagers	0.096**	0.081**	0.138***	0.121***
	(0.039)	(0.041)	(0.042)	(0.039)
Control mean	[0.568]	[0.518]	[0.327]	[0.266]
NGOs	0.105**	0.112***		
	(0.041)	(0.040)		
Control mean	[0.538]	[0.497]		
Moneylenders	0.017	0.021		
	(0.030)	(0.029)		
Control mean	[0.191]	[0.171]		

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Non-migrant sample

Table: Treatment effect on financial assistance from and to others, non-migrant sample

	Would help you	Would help you and you'd ask	Would ask you for help	Would ask you for help and you'd help
Family	0.040	0.036	0.083**	0.080**
	(0.029)	(0.029)	(0.037)	(0.035)
Control mean	[0.715]	[0.689]	[0.511]	[0.466]
Friends	0.045	0.042	0.067**	0.072**
	(0.032)	(0.030)	(0.032)	(0.029)
Control mean	[0.260]	[0.234]	[0.223]	[0.195]
Other villagers	0.051	0.060*	0.082**	0.095***
	(0.034)	(0.034)	(0.036)	(0.028)
Control mean	[0.619]	[0.573]	[0.331]	[0.271]
NGOs	0.039	0.042		
	(0.035)	(0.033)		
Control mean	[0.582]	[0.531]		
Moneylenders	0.032	0.026		
	(0.023)	(0.022)		
Control mean	[0.181]	[0.158]		

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Savings

Table: Treatment effect on savings

	Everyone		Migrant sample		Non-migrant sample	
	Any	Amount	Any	Amount	Any	Amount
Treatment	0.0034	1.00	0.0082	-12.5	-0.0084	18.9
	(0.034)	(24.9)	(0.049)	(37.1)	(0.041)	(33.9)
Control mean	0.57	214.5	0.58	333.6	0.57	273.6
N	1865	1864	950	949	913	913

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Income moment conditions

$$\text{cov}(\Delta y_{i,t}, \Delta y_{i,t}) = \frac{2(1-\rho)}{1-\rho^2}\text{var}(\nu) + 2\text{var}(\epsilon^y)$$

$$\text{cov}(\Delta y_{i,t}, \Delta y_{i,t-1}) = -\frac{(1-\rho)^2}{1-\rho^2}\text{var}(\nu) - \text{var}(\epsilon^y)$$

$$\text{cov}(\Delta y_{i,t}, y_{i,t}) = \frac{(1-\rho)}{1-\rho^2}\text{var}(\nu) + \text{var}(\epsilon^y)$$

$$\text{cov}(\Delta y_{i,t}, y_{i,t-1}) = -\frac{(1-\rho)}{1-\rho^2}\text{var}(\nu) - \text{var}(\epsilon^y)$$

$$\text{cov}(\Delta y_{i,t}, y_{i,t-2}) = -\frac{\rho(1-\rho)}{1-\rho^2}\text{var}(\nu)$$

$$\text{cov}(\Delta y_{i,t}, y_{i,t+1}) = -\frac{\rho(1-\rho)}{1-\rho^2}\text{var}(\nu)$$

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Table: Village insurance estimates

	Control	Treatment	Difference
Income variances			
Persistent shocks			
Idiosyncratic	0.008	0.040	0.032
	(0.015)	(0.015)	(0.019)
Village-aggregate	0.001	0.016	0.015
	(0.002)	(0.004)	(0.005)
Persistence	0.988	0.884	-0.104
	(0.247)	(0.242)	(0.335)
Transitory shocks			
Idiosyncratic	0.283	0.253	-0.030
	(0.064)	(0.065)	(0.036)
Village-aggregate	0.020	0.003	-0.017
	(0.007)	(0.003)	(0.007)
Measurement error	— 0.000 —		
	(0.066)		
Consumption parameters			
Persistent shock transmissions			
Idiosyncratic	0.242	0.204	-0.037
	(0.509)	(0.128)	(0.511)
Village-aggregate	2.000	0.230	-1.770
	(0.694)	(0.168)	(0.716)
Transitory shocks transmissions			
Idiosyncratic	0.133	0.073	-0.060
	(0.076)	(0.044)	(0.066)
Village-aggregate	0.063	-1.000	-1.063
	(0.454)	(0.228)	(0.534)
Measurement error variance	0.080	0.083	0.003
	(0.008)	(0.008)	(0.013)

Details of autarky

- Before migration: choose best migration $\mathbb{I}^*$

$$\tilde{\Omega}(y) = \max_{\mathbb{I}} \{\mathrm{E}_{y_m} u((1-\mathbb{I})y + \mathbb{I}y_m) - d\mathbb{I}\} + \beta \mathrm{E}_{y'} \tilde{\Omega}(y')$$

- After migration and y_m realized:

$$\Omega(y, \mathbb{I}, y_m) = u((1-\mathbb{I})y + \mathbb{I}y_m) - d\mathbb{I} + \beta \mathrm{E}_{y'} \tilde{\Omega}(y')$$

- Note: $\tilde{\Omega}(y) = \mathrm{E}_{y_m} \Omega(y, \mathbb{I}^*, y_m)$

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No network effects in migration

Table 6. Learning from Own Experience and Others' Experiences in 2009 Re-migration Decision

Dep. Var.: Migration in 2009	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Did any member of the household migrate in 2008?	0.392***	0.410***	0.392***	0.464***	0.393***	0.436***	0.392***	0.476***
	(0.02)	(0.145)	(0.02)	(0.133)	(0.021)	(0.132)	(0.02)	(0.13)
Number of friends and relatives who migrated			0.007	-0.006				
			(0.01)	(0.022)				
Number of friends who migrated					-0.012	-0.048		
					(0.025)	(0.049)		
Number of relatives who migrated							0.01	0.007
							(0.011)	(0.027)
Constant	0.097***	0.088	0.095**	0.062	0.098***	0.078	0.095**	0.052
	(0.037)	(0.083)	(0.038)	(0.078)	(0.037)	(0.076)	(0.038)	(0.077)
Observations	1818	1818	1818	1818	1797	1797	1797	1797
R-squared	0.207	0.206	0.207	0.201	0.208	0.206	0.209	0.202

*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses.

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Model

$$V(s_j) = \min_q \left\{ V^{\text{mig}}(s), V^{\text{no mig}}(s) \right\}$$

where

$$V^{\text{mig}} = \min \sum_k \pi_k \left[\left(1 - \frac{1}{R}\right) C(h_{jk}) + \frac{1}{R} \sum_{j'} \tau_{j'} V(y_{j'}, w_{j'0'}^{'\text{mig}_k}, w_{j'1}^{'\text{mig}_k}, ..., w_{j'K'}^{'\text{mig}_k}) \right]$$

$$V^{\text{no mig}} = \min \left[\left(1 - \frac{1}{R}\right) C(h_{j0}) + \frac{1}{R} \sum_{j'} \tau_{j'} V(y_{j'}, w_{j'0'}^{'\text{no mig}}, w_{j'1}^{'\text{no mig}}, ..., w_{j'K'}^{'\text{no mig}}) \right]$$

$q = (\mathbb{I}, h_0, h_k, w_{j'0'}^{'\text{mig}_k}, w_{j'k'}^{'\text{mig}_k}, w_{j'0'}^{'\text{no mig}}, w_{j'k'}^{'\text{no mig}}) \quad \forall k \in 1, ...K, j' \in 1, ...J, k' \in 1, ..., K$
$s_j = (y_j, w_{j0}, w_{j1}, ..., w_{jK})$

Model, cont.

(1) ex-post participation constraints:

$$\Omega(y_{j'k'}, \mathbb{I}) \leq w'^{\text{mig}_k}_{j'k'} \qquad \forall k, j', k'$$

$$\Omega(y_{j'}, \mathbb{O}) \leq w'^{\text{mig}_k}_{j'0'} \qquad \forall k, j'$$

$$\Omega(y_{j'k'}, \mathbb{I}) \leq w'^{\text{no mig}}_{j'k'} \qquad \forall j', k'$$

$$\Omega(y_{j'}, \mathbb{O}) \leq w'^{\text{no mig}}_{j'0'} \qquad \forall j'$$

(2) ex-ante participation constraints:

$$\hat{\Omega}(y_{j'}) \leq \mathbb{I}' \sum_{k'} \pi_{k'} w'^{\text{no mig}}_{j'k'} + (1 - \mathbb{I}') w'^{\text{no mig}}_{j'0'} \qquad \forall j'$$

$$\hat{\Omega}(y_{j'}) \leq \mathbb{I}' \sum_{k'} \pi_{k'} w'^{\text{mig}_k}_{j'k'} + (1 - \mathbb{I}') w'^{\text{mig}_k}_{j'0'} \qquad \forall k, j'$$

(3) promise-keeping:

$$w_{j0} = (1 - \beta) h_{j0} - \beta \sum_{j'} \tau_{j'} (\mathbb{I}' \sum_{k'} \pi_{k'} w^{\text{no mig}}_{j'k'} + (1 - \mathbb{I}') w^{\text{no mig}}_{j'0'})$$

$$w_{jk} = (1 - \beta) h_{jk} - \beta \sum_{j'} \tau_{j'} (\mathbb{I}' \sum_{k'} \pi_{k'} w^{\text{mig}_k}_{j'k'} + (1 - \mathbb{I}') w^{\text{mig}_k}_{j'0'}) \qquad \forall k$$

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Did migrants have job lead?

Table 7. Differences in Characteristics Between Migrants in Treatment and in Control Group

Panel A: Percentage of Migrants that Know Someone at Destination

	Incentive	Non incentive	Diff
First Episode	47%	64%	17***
	(1.85)	(3.30)	(3.8)
Any Episode	55%	62%	6.3*
	(1.80)	(3.23)	(3.70)

Panel B: Percentage of Migrants that had a Job Lead at Destination

	Incentive	Non incentive	Diff
First Episode	27%	44%	17***
	(1.64)	(3.41)	(3.55)
Any Episode	31%	44%	12.8***
	(1.67)	(3.30)	(3.56)

Panel C: Percentage of Migrants Traveling Alone

	Incentive	Non incentive	Diff
First Episode	30%	32%	1.6
	(1.70)	(3.20)	(3.6)
Any Episode	37%	37%	0.44
	(1.75)	(3.20)	(3.65)

*** p<0.01, ** p<0.05, * p<0.1. Standard errors are in parentheses.

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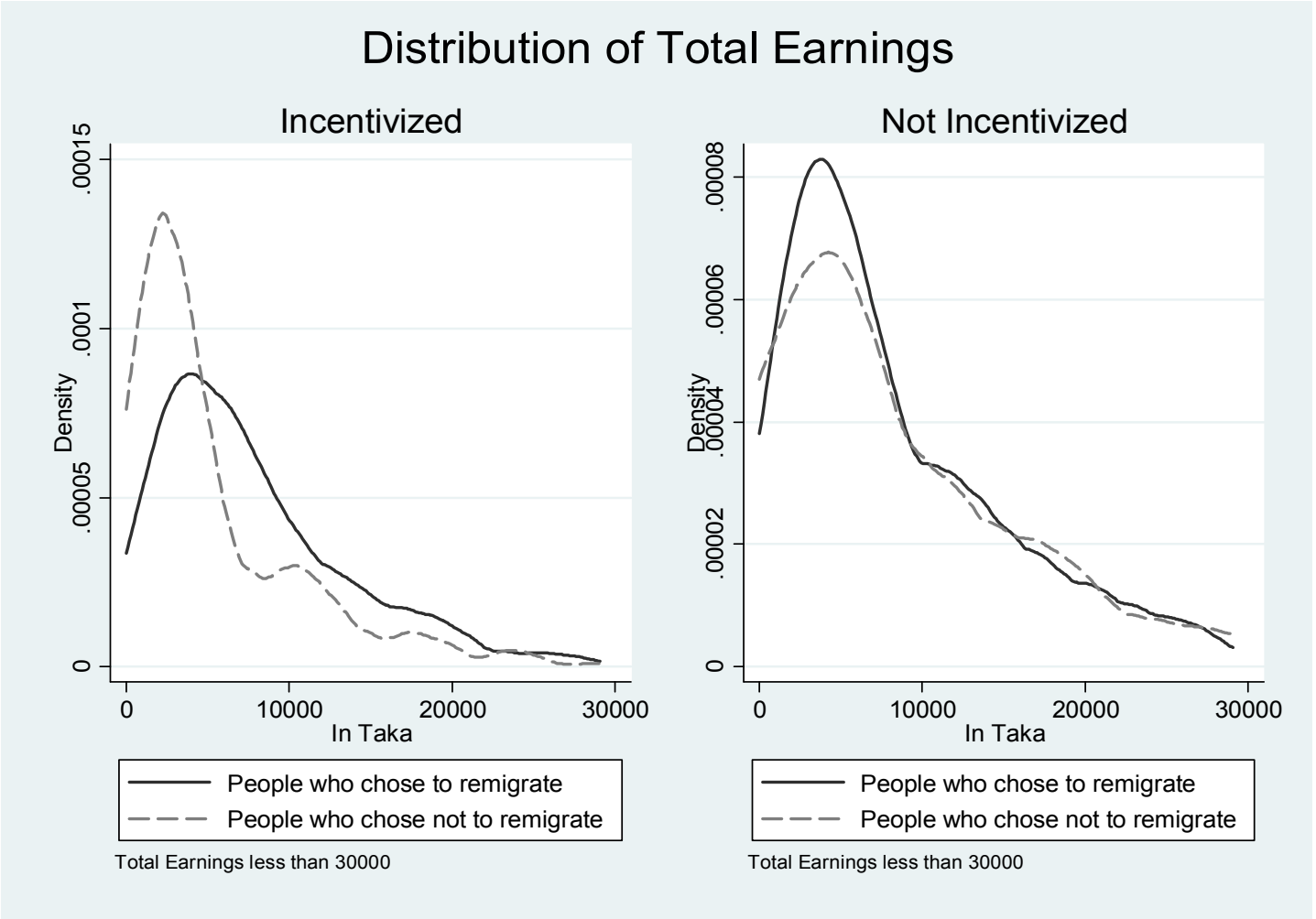
People who did well are those who remigrated

Figure 4. Migration Experience in 2008 by re-Migration Status in 2009.



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Estimated income variances

Table: Income parameter estimates

	Control	Treatment	Difference
Persistent shock variance	0.087	0.148	0.061
	(0.041)	(0.072)	(0.072)
Persistence (ρ)	0.800	0.519	-0.281
	(0.089)	(0.125)	(0.142)
Measurement error variance	0.215	0.149	-0.066
	(0.051)	(0.075)	(0.080)

Estimation of LC model

- Set $\beta = 0.9$
- Use income process for control villages
- Estimate
  - Coefficient of relative risk aversion
  - Variance of measurement error in consumption
- Moments
  - Risk-sharing beta
  - Observed variance of consumption

Estimation results

Table: Fit of model to data: control

	Data	Model
Targeted moments		
Risk-sharing beta	0.19	0.19
Variance of consumption	0.13	0.13
Estimated parameters		
Estimated coeff. relative risk aversion		1.12
Estimated measurement error variance (cons)		0.07

Notes: Estimated on data from control villages only.

Model predicts improvement in risk sharing

Table: Out-of-sample predictions: treatment

	Data	Model
Risk-sharing beta	0.16	0.06
Variance of consumption	0.13	0.09
Estimated coeff. relative risk aversion		1.12
Estimated measurement error variance (cons)		0.07

Notes: Out-of-sample predictions on treatment villages, using parameters estimated on data from control villages only.

Mechanics of the model: comparative statics

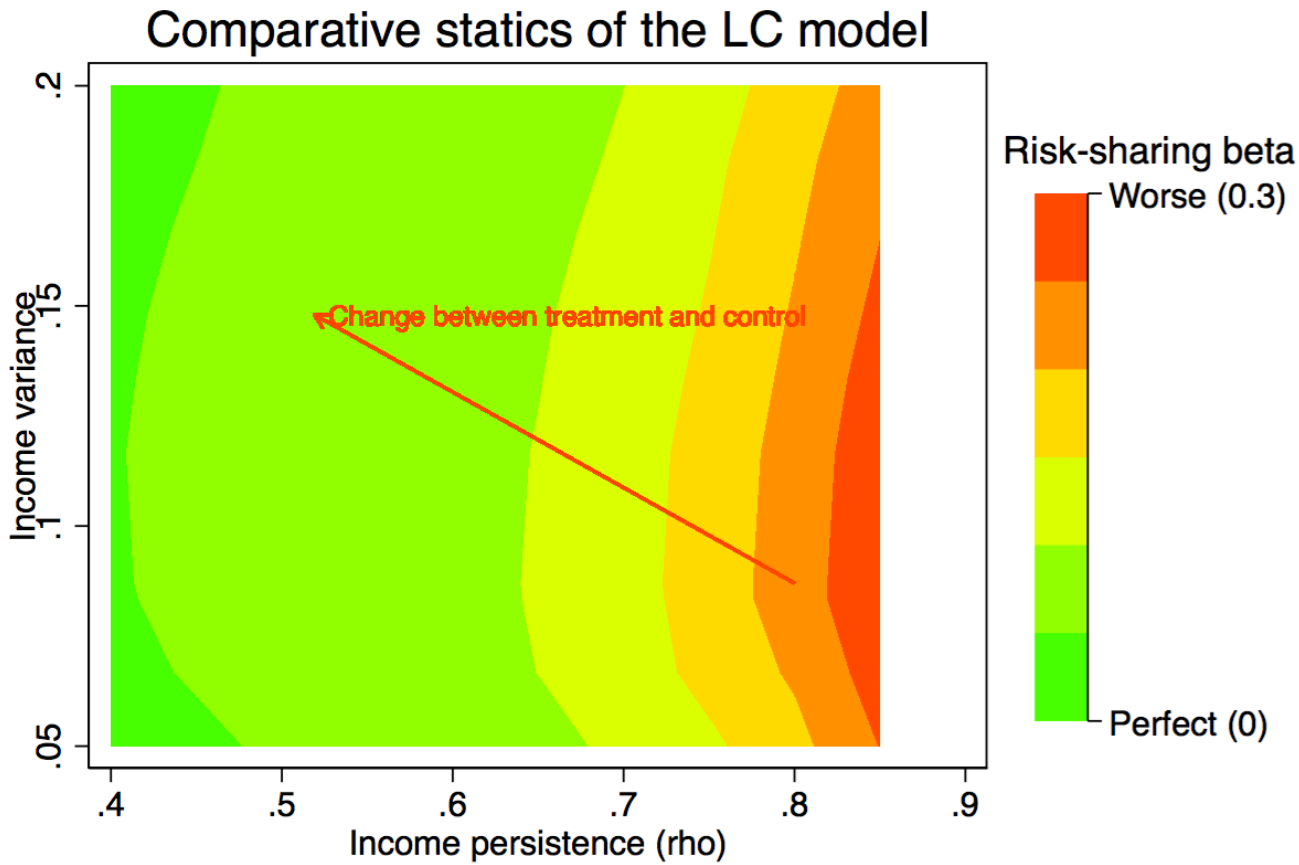

Figure shows the risk sharing beta, holding constant time discount factor at 0.9 and the coefficient of relative risk aversion at the estimated value.

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