PRICE INFORMATION, INTER-VILLAGE NETWORKS, AND BARGAINING SPILLOVERS

EXPERIMENTAL EVIDENCE FROM GHANA

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MOTIVATION RESULTS MODEL CONCLUSION APPENDIX

THE MARKETS FOR YAM

Yams are mostly produced in the Volta region and sold in urban markets (Accra): wholesale traders act as middlemen

- High transport costs
- High volatility and low spacial integration (Cudjoe et al. 2008)
- Market access is restricted



Farmers have scarce information on final prices, feel cheated



MOTIVATION	Results	Model	CONCLUSION	Appendix

RCT study to assess the role of price information in farmers-middlemen interactions in the Volta region

- 1000 farmers, 100 communities
- Stratified design
- Treatment = weekly SMS
- 3 yearly and 23 monthly surveys



Community-clusters: PCA on market overlap, marketing communications and distance Randomization

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ATE C	ON PRICES (IGNORING	SPILLOV	ERS)			_
		Yam (1)	All others (2)	Maize (3)	Cassava (4)	
	Treatment, Pre-T	0.641 (6.942)	-2.069 (2.518)	-3.734 (5.249)	2.062 (2.253)	_
	Treatment, Year 1	8.732 ** (3.687)	0.209 (2.088)	-0.674 (1.731)	2.361 (2.313)	
	Treatment, Year 2	-0.014 (4.483)	-4.112 (2.775)	1.499 (1.773)	0.039 (3.559)	
	Other covariates	Ì √ Í	Ì √ Î	Ì√ Í	Ì√ Í	
	Strata FE	\checkmark	\checkmark	\checkmark	\checkmark	
	Month-year FE	\checkmark	\checkmark	\checkmark	\checkmark	
	No. Obs. R^2	5,032 0.315	7,762 0.836	1,568 0.434	1,177 0.610	_
	Pre-T mean in C group	117.99	70.85	82.04	37.98	

Notes: August 2011 GHS prices in log, per 100 tubers (yams), rope (raw cassava), mini bowl (dough) or bowl (others). Huber-White robust standard errors clustered by community cluster. *** Significant at 1% level. ** Significant at 5% level. * Significant at 10% level. *p_{iit}* represents the price obtained by farmer *i* in cluster *j* in month *t*.

MOTIVATION	RESULTS	Model	CONCLUSION	Appendix

1 Why an effect?

Bargaining for better prices

2 Why only for YAMS?

No bargaining, no effect

3 WHY ONLY IN YEAR 1? Spillovers

MOTIVATION	RESULTS	Model	CONCLUSION	Appendix
WHY AN EFF	FECT?			

- No change in place, volumes or timing of sales
- 68% farmers use the information to bargain with traders
- No price effect for other crops with low prevalence of bargaining (same farmers)
- Treated farmers' price requests react to Accra price shocks
 - Shocks: deviations from *predicted* prices
 - Predicted prices: monthly time trend with monthly F.E.

Regression Characteristics by crop

Motivation	RESULTS	Model	CONCLUSION	Appendix

WHY ONLY YAMS? PRICE DISPERSION AT BASELINE



Yearly average and within-district coefficient of variation at baseline. In red: share of farmers who report bargaining.

Motivation	RESULTS	Model	CONCLUSION	Appendix

WHY ONLY IN YEAR 1?



Monthly data. Non-parametrically smoothed prices in Aug. 2011 GHC and 95% cluster-bootstrapped CI of difference. Full controls: strata fixed effects, yam type, gender, asset index, and distance to the nearest local market.

Cassava m. Cassava Sethe University Frankfurt

WHY ONLY IN YEAR 1?

Over time, farmers in control group who have strong network-ties to the treated group start getting higher prices, too

- Only happens for Control group and only for yams
- Network-ties: PCA on market overlap, marketing communications and distance

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EFFECT OF NETWORK TIES ON PRICES



Crop-strata, crop-period and yam-variety f.e. included. Network ties to T group (pre-T) = PCA of market overlap, marketing communications and distance.

Information sharing may explain the observed spillovers, BUT

- After treatment, treated farmers are (and remain) significantly better informed than the control group
- Network-ties do not improve information for Control farmers
- Controlling for price information does not affect the estimated effect of network-ties for Control farmers
 Regressions

1 Even at end-line, T farmers are better informed

2 NETWORK-TIES DO NOT AFFECT PRICE INFORMATION

	Price Information In (absolute error)	
	(1)	(2)
Treatment	-0.244*	-0.580*
	(0.141)	(0.346)
(Ties to T) * Control		0.007
		(0.396)
(Ties to T) * Treatment		0.664
		(0.635)
Strata FE	\checkmark	\checkmark
Interview week FE	\checkmark	\checkmark
Yam type FE	\checkmark	\checkmark
Difference		-0.658
		(0.676)
N. Obs.	541	541
R^2	0.103	0.105

"Difference" shows the linear combination ((Ties to T) * Control – (Ties to T) * Treatment). Standard errors clustered at community cluster level. *** Significant at 1% level. ** Significant at 5% level. * Significant at 10% level. Similar

results when using self-reported measures of informed-ness

MOTIVATION RESULTS MODEL CONCLUSION APPENDIX FACT: Strong positive externalities to Control farmers with strong network ties to Treated group

PROPOSED EXPLANATION

- Formal model of bargaining with asymmetric information
- Traders do not observe which farmers are informed
- Over time, they form beliefs and offer high prices (*pooling*) in communities which they believe are likely to reject low offers, low prices (*separating*) to others
- Strong **network ties** to the treated improve the chances to receive a high offer (spillovers)

More Assumptions Additional Prediction

"DE-BIASING" THE ATE

- Assume we have no spillovers on Control farmers with (Ties to T)=0
- 2 Assume linear relationship b/n (Ties to T) and prices
- S Estimate average spillover and add it to the biased ATE

Result: correcting for spillovers, the intervention has long-lasting positive impact on prices for yams (8% in Year 1 and 9% in Year 2) Estimates

MOTIVATION	Results	Model	CONCLUSION	Appendix
Conclusi	ONS			

TREATMENT EFFECTS

- Intervention initially benefited the treatment farmers
- Overtime, substantial positive spillovers on control group

MECHANISMS

- Farmers use price information to extract higher prices
- Spillovers may be driven by traders' reactions

INDIRECT SPILLOVERS

- Can arise even in the absence of direct treatment contagion
- Can lead to substantial bias