Misallocation, Growth and Financial Market Imperfections

Microeconomic Evidence

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Rustuccia and Rogerson (2008) provided a convenient, compelling framework for understanding how micro-level misallocation can translate to aggregate TFP losses.

Hsieh and Klenow (2009) use this to calibrate TFP losses from these sources of misallocation.

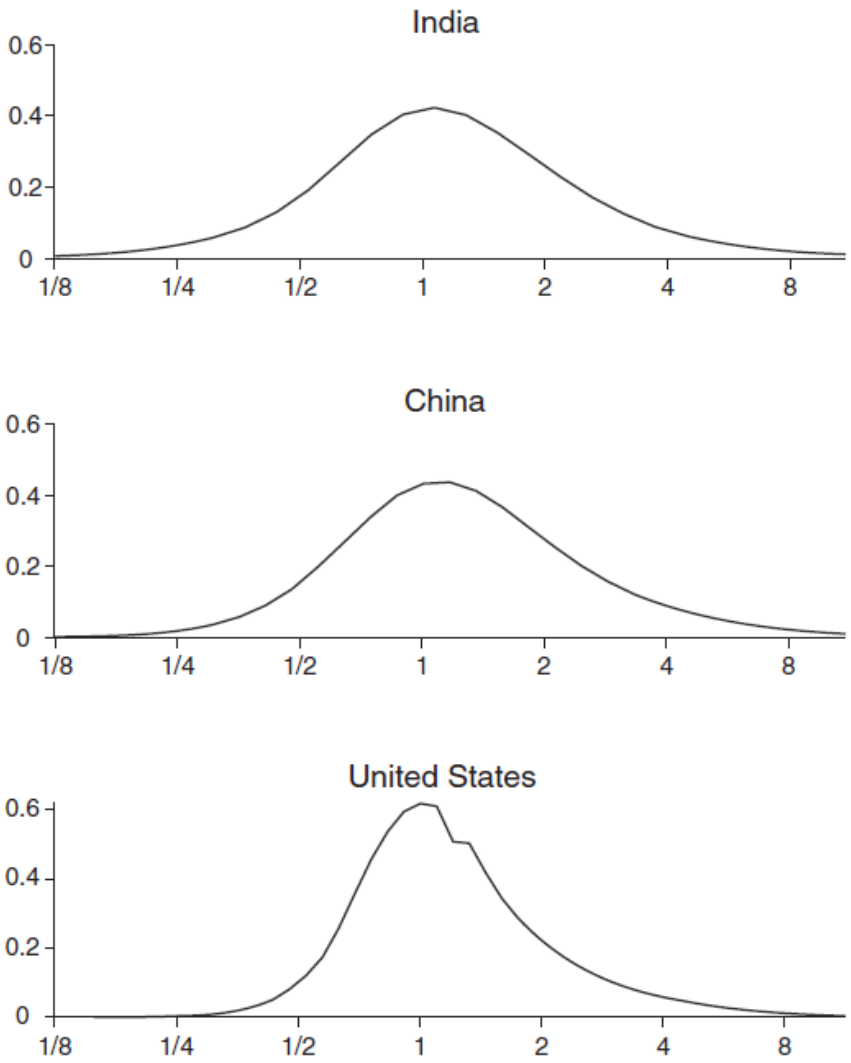


FIGURE II
Distribution of TFPR

Equalizing TFPR dispersion in India to US levels increases Indian TFP by 40-60%

'Possibility argument'

Huge challenges of measurement, and opportunities of rapidly-expanding data availability

- Syverson (2011 JEL) has a tremendous overview
- Trade literature leading the way (current state of the art: De Loecker, Goldberg, Khandelwal and Pavcnik 2012)

- Micro foundations are sometimes quite abstract:

$$\pi(s,\tau) = \max_{n,k\geq 0} \left\{ (1-\tau_Y) s k^{\alpha} n^{\gamma} - (1+\tau_N) w n - (1+\tau_K) r k - c_f \right\}$$

- Need to understand what drives dispersion in productivity
  - Growth and equilibrium implications depend on this

    (Midrigan and Xu 2010; Moll (2011); Collard-Wexler, Asker and De Loecker (2011); Buera, Kaboski and Shin (2011))
  - Micro policy depends on this
  - Credible measurement depends on this (Klenow 2012)

Agriculture is particularly easy...


28. 9. 2001

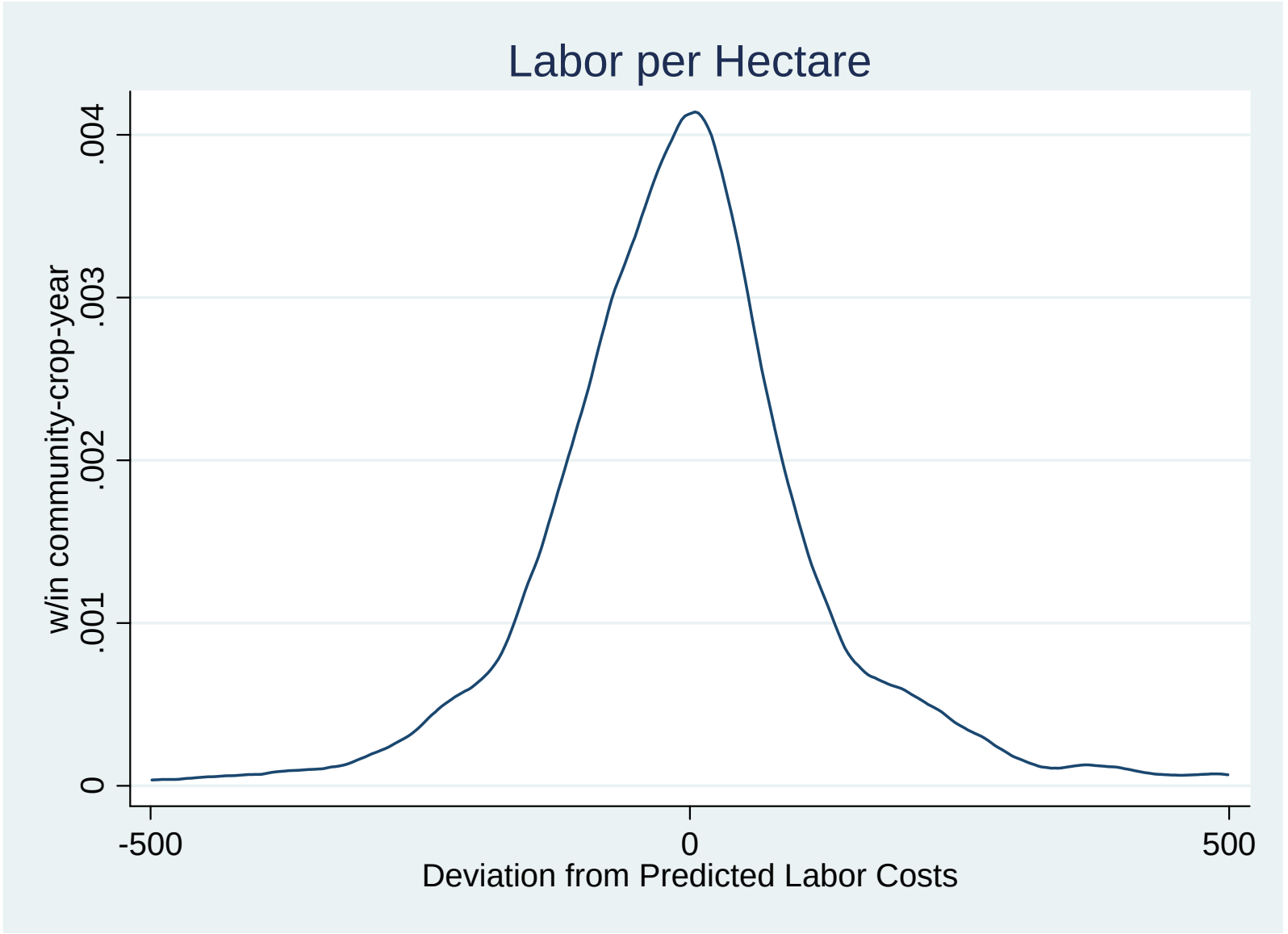
Productivity differences are real, measurable.

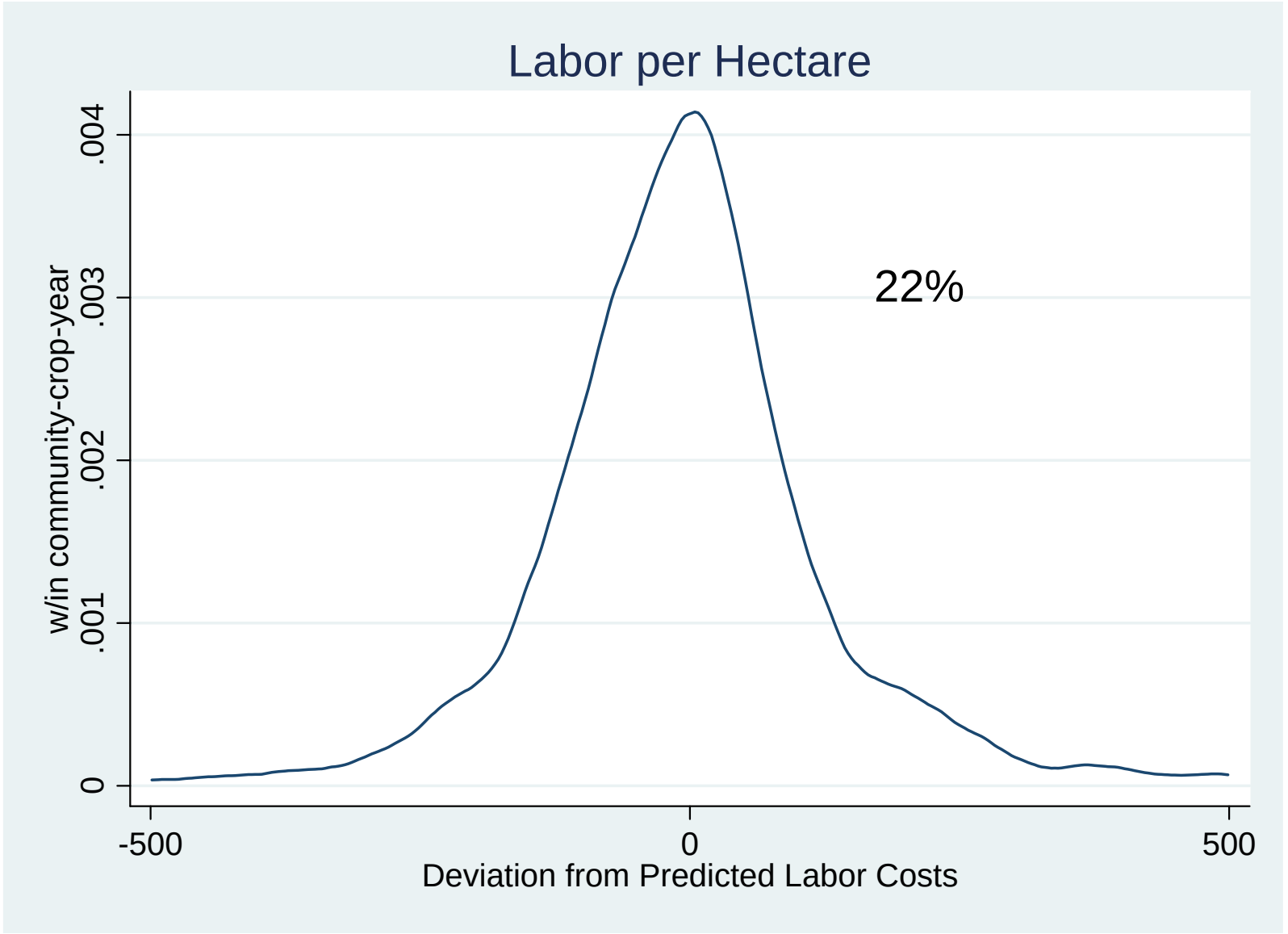
But the sources are varied and have dramatically different implications

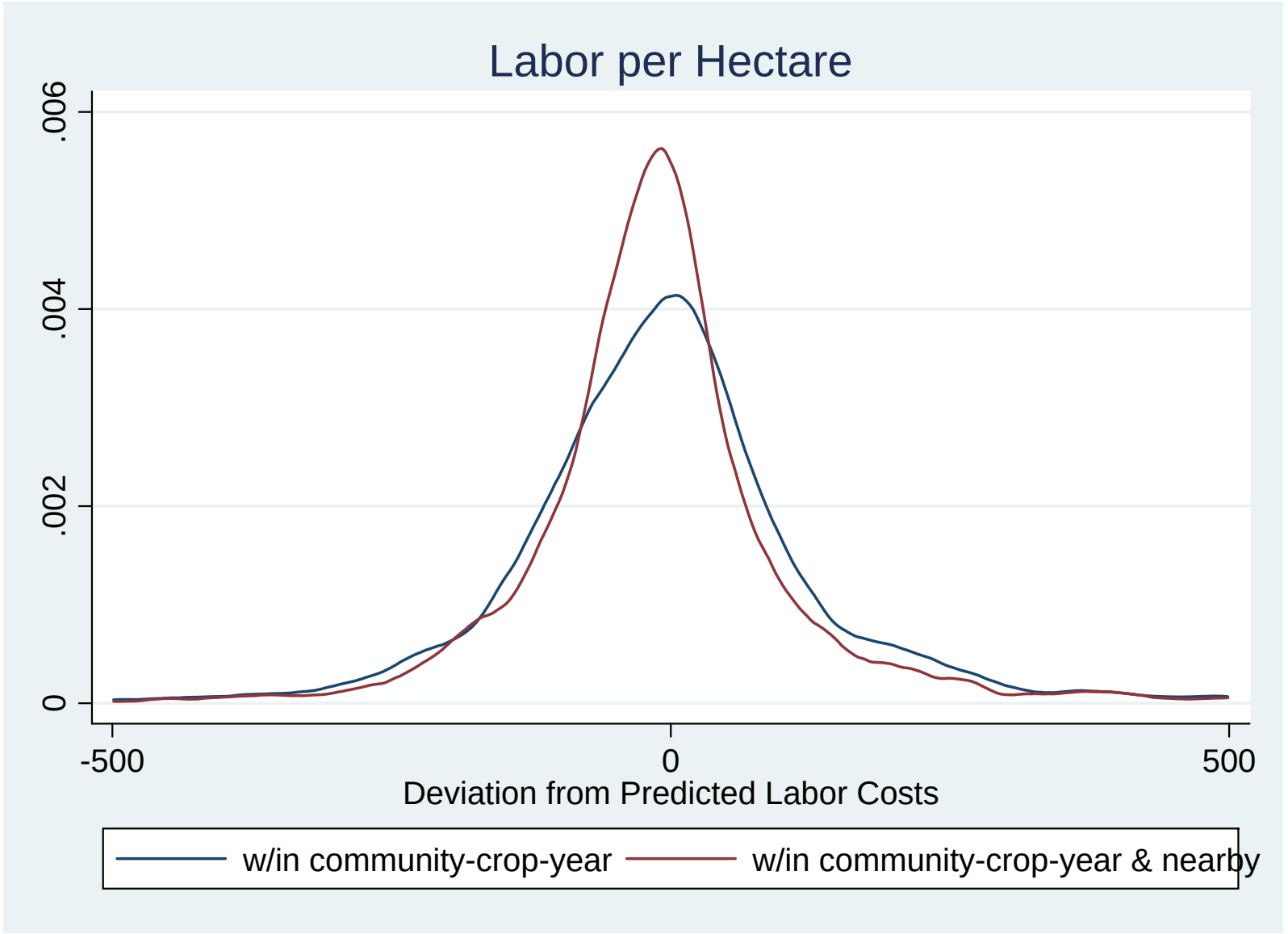
- Transitory, *ex-post* productivity shocks
  - e.g., unexpected, transitory infestation of *striga*
  - the classic: rainfall

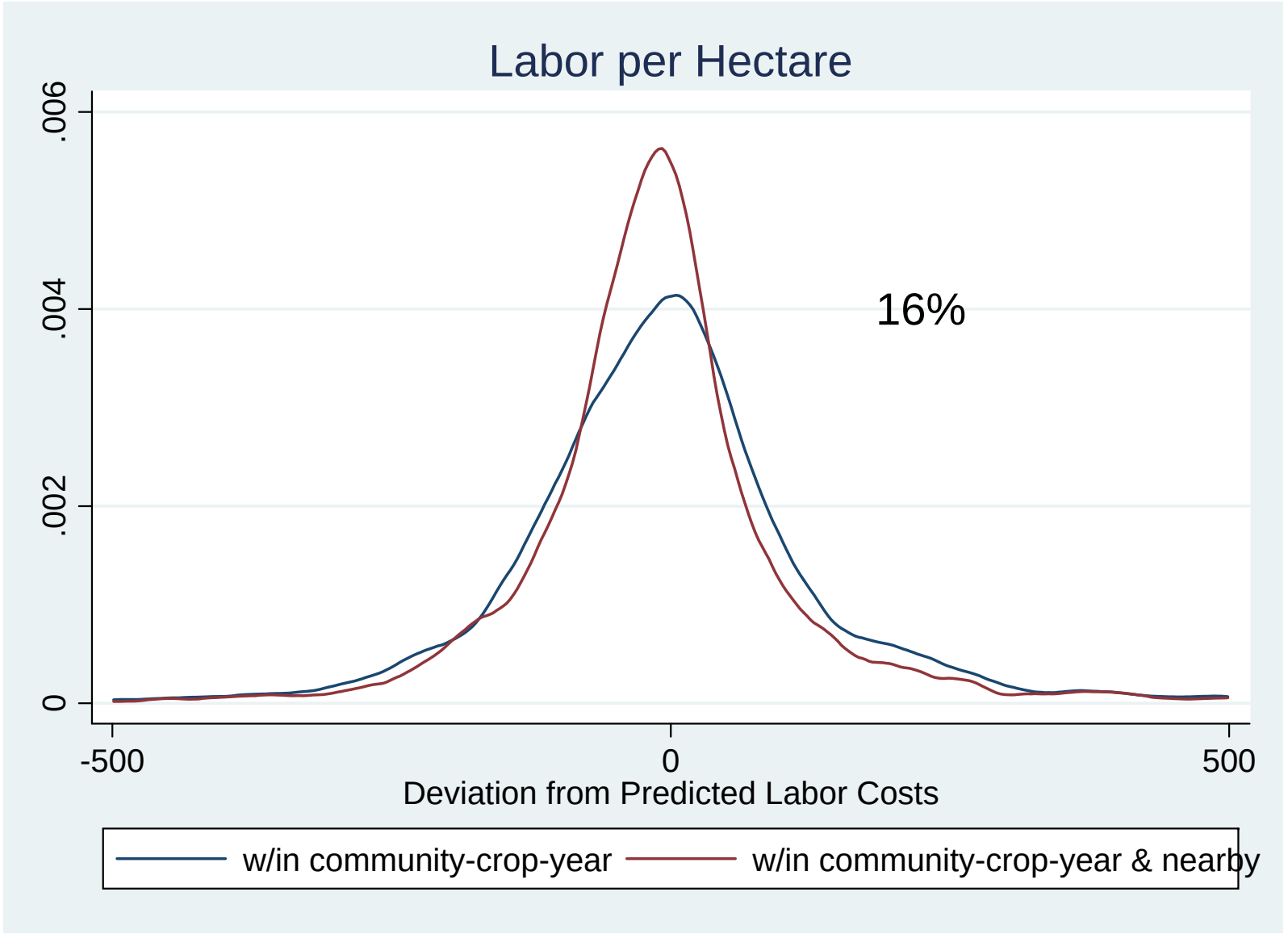
- Permanent plot-level fixed effects
  - the dirt
- Slow-moving, management
  - cultivation practices, technological innovation, knowledge of new *striga*-resistant seeds
- Land market imperfections
  - Why isn't the productive farmer renting or buying the other's land? (even in households!)

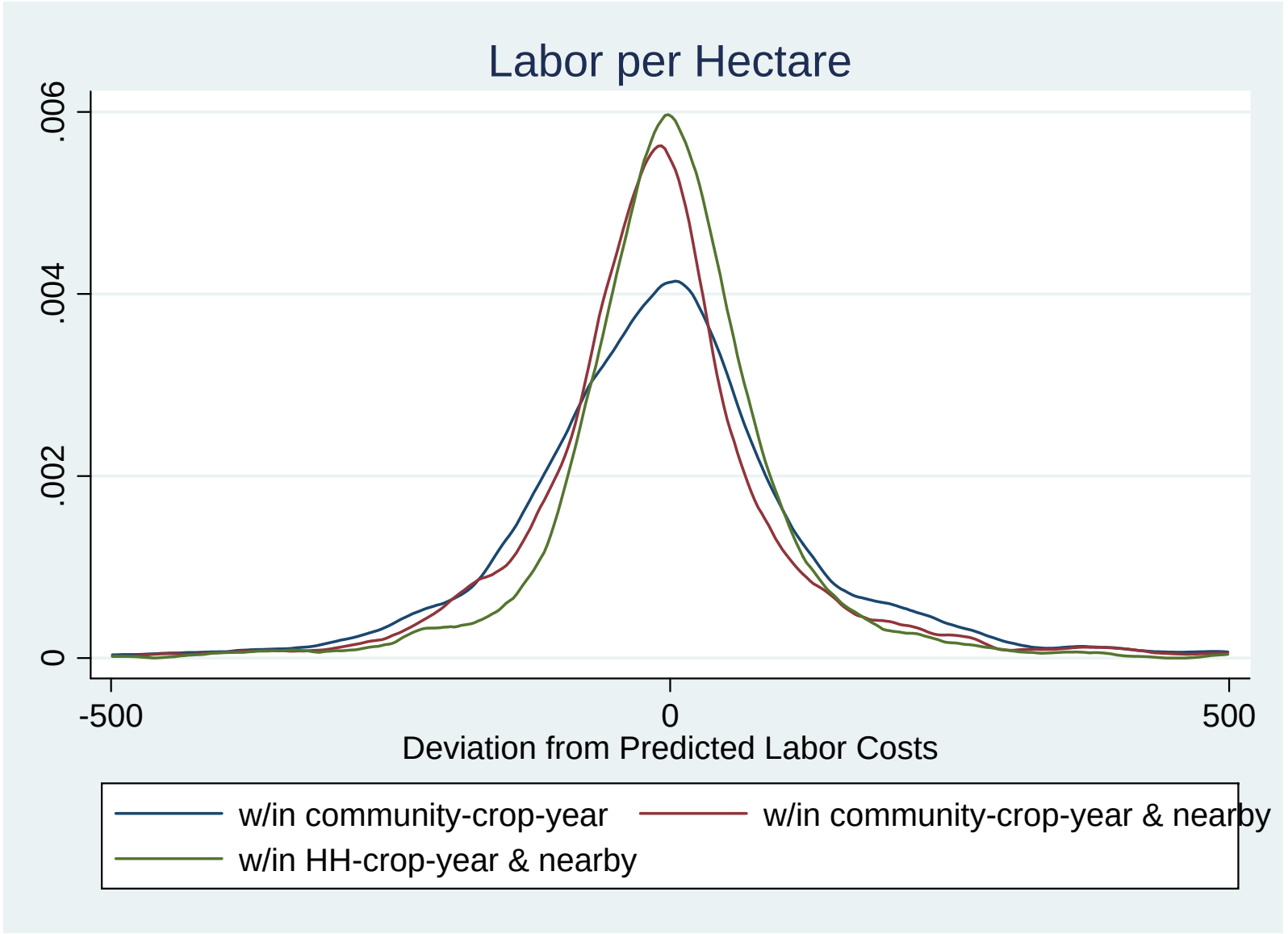
- Labor market imperfections
  - thin, high transaction cost labor markets
  - moral hazard, supervision costs
- Financial market imperfections
  - "I'd love to use fertilizer, but I don't have the money"
  - It's too risky...

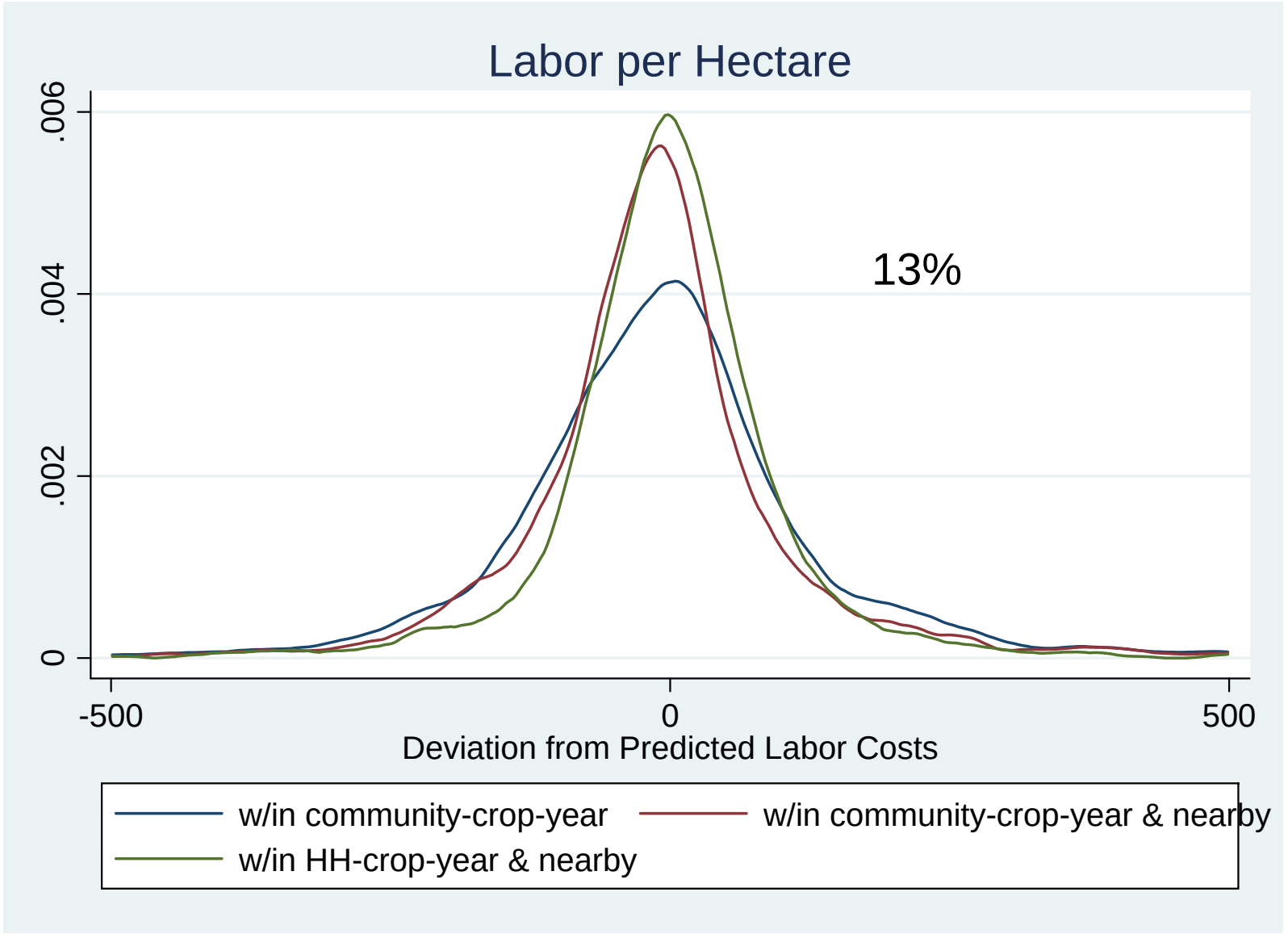

Labor per Hectare
w/in community-crop-year
0
.001
.002
.003
.004
-500
0
500
Deviation from Predicted Labor Costs


Labor per Hectare
w/in community-crop-year
0
.001
.002
.003
.004
22%
-500
0
500
Deviation from Predicted Labor Costs


Labor per Hectare
.006
.004
.002
0
-500
0
500
Deviation from Predicted Labor Costs
w/in community-crop-year
w/in community-crop-year & nearby


Labor per Hectare
.006
.004
.002
0
16%
-500
0
500
Deviation from Predicted Labor Costs
w/in community-crop-year
w/in community-crop-year & nearby


Labor per Hectare
.006
.004
.002
0
-500
0
500
Deviation from Predicted Labor Costs
w/in community-crop-year
w/in community-crop-year & nearby
w/in HH-crop-year & nearby


Labor per Hectare
.006
.004
.002
0
13%
-500
0
500
Deviation from Predicted Labor Costs
w/in community-crop-year
w/in community-crop-year & nearby
w/in HH-crop-year & nearby

- Uncovering the reasons for this variation is at the heart of empirical microeconomics of development

- All of this is w/in a very small sector; the goal is not to provide an accounting of misallocation overall

- But the underlying mechanisms guiding allocations should be vividly apparent in these settings

- Two simple market failures are at the heart of many of the most well-developed models that connect misallocation with growth
  - Credit
  - Insurance
- These also are what farmers and small-scale entrepreneurs report...

Credit Constraints and Misallocation

... something like

$$\begin{aligned} y^{ei}(a,t) &= \max_{k} \pi(k,t) + r(a-k) \\ \text{subject to } k &\leq \Omega(a,t) \end{aligned}$$

where $\pi(k,t) = f^i(k,t) - h^i(t)$ and Ω describes the financial frictions. Ω typically founded on imperfect enforcement. [(Banerjee/Newman (1993); Galor and Zeira (1993); Lloyd-Ellis and Bernhardt (2000); Jeong and Townsend (2008); Buera (2008); Buera, Kaboski and Shin (2011); Midrigan and Xu (2010), Moll (2012).]

Financial frictions, risk and investment

Incomplete insurance and risk aversion lead to inability to capture gain of high risk/high return investments.

- Idiosyncratic shocks ε when investing in risky, high return activity. Entry into insurance has a fixed cost, say

- Hence investments lean toward low risk, low return activities

[Greenwood-Jovanovic (1990); Angeletos (2007) see Townsend-Ueda (2006).]

Current evidence on financial frictions

Features:

- Manipulate the financial environment faced by enterprises, examine responses, this yields information on the financial constraints that are binding

- Quasi- or actual randomized experiments

Setting	**Focus**	**Paper(s)**
Medium-size formal firms in India	Borrowing	Banerjee, Duflo (2008)
Micro- and small firms in Sri Lanka	Borrowing	De Mel et al. (2008-12)
Farmers in rural Morocco	Borrowing	Crépon et al (2011)
Micro- and small firms in Ghana	Borrowing	Fafchamps et al (2011)
Rural Thailand	Borrowing	Kaboski, Townsend
Urban microenterprise in India	Borrowing	Banerjee et al (2010)
Urban microenterprise in Philippines	Borrowing	Karlan, Zinman (2011)
Urban microenterprise in Tanzania	Borrowing	Berge et al (2011)
Rural microenterprise in Pakistan	Borrowing	Giné, Mansuri (2011)
Rural microenterprise in Mongolia	Borrowing	Attanasio et al (2011)
Urban microenterprise in Ghana	Borrowing	Karlan, Knight, Udry (2012)
Small-scale farmers in China	Insurance	Cai et al (2010)
Small-scale farmers in India	Insurance	Cole et al. (2011)
Small-scale farmers in India	Insurance	Mobarak, Rosenzweig (2012)
Small-scale farmers in Ghana	Borrow/Ins	Karlan, Udry, Osei, Osei-Akoto

Setting	**Outcomes**
Medium-size formal firms in India	$\uparrow I$, $\uparrow \pi$
Micro- and small firms in Sri Lanka	$\uparrow I$, $\uparrow \pi$
Farmers in rural Morocco	$\uparrow I$, $\uparrow \pi$
Micro- and small firms in Ghana	
Rural Thailand	
Urban microenterprise in India	
Urban microenterprise in Philippines	
Urban microenterprise in Tanzania	
Rural microenterprise in Pakistan	
Rural microenterprise in Mongolia	
Urban microenterprise in Ghana	

Setting	**Outcomes**
Medium-size formal firms in India	$\uparrow$ I, $\uparrow$ π
Micro- and small firms in Sri Lanka	$\uparrow$ I, $\uparrow$ π
Farmers in rural Morocco	$\uparrow$ I, $\uparrow$ π
Micro- and small firms in Ghana	cash v. in-kind
Rural Thailand	$\uparrow$ cons
Urban microenterprise in India	$\uparrow$ businesses
Urban microenterprise in Philippines	
Urban microenterprise in Tanzania	
Rural microenterprise in Pakistan	
Rural microenterprise in Mongolia	
Urban microenterprise in Ghana	

Setting	**Outcomes**
Medium-size formal firms in India	$\uparrow$ I, $\uparrow$ π
Micro- and small firms in Sri Lanka	$\uparrow$ I, $\uparrow$ π
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Micro- and small firms in Ghana	cash v. in-kind
Rural Thailand	$\uparrow$ cons
Urban microenterprise in India	$\uparrow$ businesses
Urban microenterprise in Philippines	$\downarrow$ businesses
Urban microenterprise in Tanzania	nothing
Rural microenterprise in Pakistan	nothing
Rural microenterprise in Mongolia	nothing
Urban microenterprise in Ghana	

Setting	**Outcomes**
Medium-size formal firms in India	$\uparrow$ I, $\uparrow$ π
Micro- and small firms in Sri Lanka	$\uparrow$ I, $\uparrow$ π
Farmers in rural Morocco	$\uparrow$ I, $\uparrow$ π
Micro- and small firms in Ghana	cash v. in-kind
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Urban microenterprise in India	$\uparrow$ businesses
Urban microenterprise in Philippines	$\downarrow$ businesses
Urban microenterprise in Tanzania	nothing
Rural microenterprise in Pakistan	nothing
Rural microenterprise in Mongolia	nothing
Urban microenterprise in Ghana	$\uparrow$ I, $\downarrow$ π

- – As Kaboski/Townsend; Bannerjee *et al*. emphasize, heterogeneous responses to be expected depending on history of shocks, current wealth

  – Heterogeneity also driven by $\Omega(W;t)$;and by productivity shocks and/or fixed characteristics

  – Heterogeneity interacts with learning; option value of experimenting in Karlan, Knight, Udry.

  – This all speaks to the massively growing literature on business training (which has much *weaker* results)

  – We cannot conclude that there is strong evidence that binding, simple collateral constraints are ubiquitous

On to risk....

Setting	**Effect of Insurance/capital**
Small-scale farmers in China	
Small-scale farmers in India (gift)	
Small-scale farmers in India (sale)	
Small-scale farmers in Ghana	

Setting	**Effect of Insurance/capital**
Small-scale farmers in China	$\uparrow$ I in risky sows
Small-scale farmers in India (gift)	switch to cash crops
Small-scale farmers in India (sale)	switch to riskier, HYV
Small-scale farmers in Ghana	Ins $\longrightarrow \uparrow$ risk,$\uparrow$ I in ag;
	Capital $\longrightarrow$nothing

Observations

1. We see large variation across firms even in narrowly-defined sectors in productivities, input intensities

2. Source of this variation is of the essence. What is the evidence on misallocation?

   (a) Productivity dispersion, shocks, fixed effects

   (b) Inefficiency in the allocation of resources

3. Much of the interesting recent literature has concentrated on financial market imperfections, but at best mixed evidence that farmers, small and microenterprise are capital constrained in the classic sense that $k = \Omega(W)$

4. Much stronger evidence of general concerns about risk and inability to insure. Important response of investment to safety.

5. Heterogeneity:

   (a) Certain firms face binding capital constraints and others not; all endogenous

   (b) Multiple imperfections; relaxation of $k = \Omega(W)$ may be irrelevant, particularly with endogenous W.

   (c) Spatial heterogeneity in type of financial imperfection as in Karaivanov and Townsend (2012)

   (d) Idiosyncratic heterogeneity:

      i. Productivity shocks are not fully known, even to entrepreneur – room for learning about oneself

      ii. Management, technology, markets: robust evidence of learning from others

6. Little evidence that financial frictions are key

   (a) Strong evidence of land and labor market imperfections in rural Africa

   (b) Output markets and quality

   (c) Variation in technology use, much evidence of learning, but uneven

   (d) Management variation, but little support for effectiveness of training

   (e) Microenterprises as subsistence activities. Are we looking at the wrong businesses?

7. Models of misallocation and growth reliant on single financial frictions are not sufficient; heterogeneity is the rule. Sorry.