Variation in property rights and economic outcomes

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Introduction

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- If we think back to some of the early macro-level papers, one popular dimension of institutional quality was protection from expropriation.
- How do we interpret this concept?

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Unpacking property rights

- Individuals at various levels in the economy have varying levels of security for many different types of assets.
- What are the most important assets owned by the poor in developing economies?
- Variation in property rights in land has an enormous, direct impact on the economic lives of the poor.
- It's widely believed that more secure property rights in land can have substantial positive implications for their welfare.

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- What are potential channels through which stronger property rights in land can lead to increased welfare?
  - Households with stronger property rights may make investments that have long-run returns.
  - They may cease to make investments in mechanisms to increase security or enhance their claim to the land that have no real economic benefit.
  - They may be able to use land as collateral and obtain credit for some productive purpose.
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Overview

- This paper seeks to analyze a program in Peru implemented between 1996 and 2003 in which the government issued property titles to over 1.2 million urban households; this is the largest titling program targeted at urban squatters in the developing world.
- Field argues that this reform has efficiency gains from transferring the role of property protection from local households to the state, and thus leads to a substantial increase in labor supply.
- The empirical design is a dif-in-dif: comparing across households with and without pre-program ownership rights, before and after the program start date.

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Context

- Peru's informal settlements grew out of urban-rural migration, as in many developing countries, but prior to the reforms, obtaining a property title in these settlements was hampered by expensive procedures and fees.
- The new program was free and extremely rapid, entailing area-wide titling in which program teams moved from neighborhood to neighborhood.
- Titling eliminates tenure insecurity that that encompassed both fear of eviction (by the government) and fear of property theft (by other residents); a survey suggests that of residents without title, only 33% felt certain their land would not be invaded, and only 34% felt certain they would not be evicted.

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Empirical strategy

- The empirical strategy entails comparing early titling neighborhoods ("treated") to late titling neighborhoods ("untreated").
- Field provides evidence that early and late titling neighborhoods are not significantly different along many observable characteristics.
- However, given that the assumption of random assignment of program timing may be implausible, she further employs a dif-in-dif comparing households with and without baseline titling.
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Balance between early and late program neighborhoods

TABLE I
PRE-PROGRAM DISTRICT CHARACTERISTICS

	(1) No program	(2) Program	(3) t_Δ
FONCODES Poverty Indicators, 1993			
Proportion of population without access to water	33.87	31.71	0.56
Rate of inadequate roofing	38.61	37.73	0.21
Proportion of population without access to electricity	21.36	19.10	0.81
Proportion of population without access to sewerage	33.40	35.36	−0.58
Rate of school-aged children not in school	6.34	6.21	0.52
Rate of illiteracy	5.58	5.95	−0.75
Rate of residential crowding	17.47	16.94	0.45
Rate of chronic malnutrition	25.95	25.04	0.70
Composite poverty index	11.03	10.94	0.10
Municipal Election Votes, 1998			
Fraction votes for candidate from presidential party	0.272	0.278	−0.23
Observations (neighborhoods)	177	92	

Balance between squatters and non-squatters

TABLE II
SUMMARY STATISTICS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	LSMS households, 1997 ($N = 354$)			Pre-program Squatter ($N = 635$)			Pre-program titled HHs ($N = 2043$)			
	Program 1997–2000	No Program 1997–2000	$\lvert t_\Delta \rvert$	Program	No Program	$\lvert t_\Delta \rvert$	Program	No Program	$\lvert t_\Delta \rvert$	$\lvert t_\Delta^2 \rvert$
Female head of HH	0.232	0.259	0.74	0.24	0.24	0.04	0.24	0.23	−0.33	−0.20
Age head	51.17	50.37	0.54	46.51	47.63	0.83	50.21	51.01	0.79	−0.21
Mean age of HH member	27.65	27.88	0.21	27.61	27.81	0.18	29.76	29.13	−0.83	−0.67
HH size (# members)	5.06	5.18	0.71	5.12	5.16	0.23	5.28	5.64	2.67	1.49
# members ages 5-69 ("working-age")	4.43	4.58	1.04	4.05	4.10	0.38	4.21	4.58	3.18	1.69
Lot size (m2)	170.62	209.98	1.49	185.47	202.58	0.61	195.65	210.42	0.80	−0.07
Education head > primary school	0.41	0.4	0.15	0.38	0.37	−0.38	0.40	0.41	0.17	0.44
HH adult literacy rate	0.854	0.861	0.53	0.86	0.86	0.30	0.88	0.86	−2.57	−1.60
Residence acquired by invasion	0.27	0.20	1.24	0.29	0.20	−1.50	0.24	0.21	−0.83	0.92
Residential tenure	17.5	17.71	0.16	16.65	16.65	0.00	19.67	18.38	−1.22	−0.89
Electricity in 1995 (*col. 1/2:1997*)	0.99	0.98	0.51	0.95	0.89	−2.20	0.97	0.95	−2.64	1.04
Indoor plumbing in 1995 (*col. 1/2:1997*)	0.72	0.76	0.46	0.72	0.67	−1.00	0.83	0.83	0.18	1.15
Current # rooms in house	N/A	N/A		3.18	3.53	2.61	3.72	4.00	2.71	−0.48
Fraction of HH members born in province	N/A	N/A		0.66	0.71	1.72	0.64	0.66	1.21	−0.88
# individuals that left HH last 3 years	N/A	N/A		0.31	0.33	0.28	0.36	0.35	−0.10	−0.29
# individuals that joined HH last 3 years	N/A	N/A		0.02	0.03	0.55	0.04	0.03	−0.10	−0.51
Participate in neighborhood group before titling	N/A	N/A		0.67	0.63	−0.73	0.58	0.58	0.03	0.68

Empirical specification

- The specification is complex on its face, but a simple structure.

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\begin{aligned}
L_{ijk} &= \beta_0 + \beta_1(N_{ijk}) + \beta_2(N_{ijk})^2 + \beta_3(squatter_{ijk}) + \beta_4(program_{jk}) \\
&+ \beta_5(program_{jk} * squatter_{ijk}) + \Pi' X_{ijk} + \Omega' Z_{jk} + \varphi(C_k) \\
&+ \gamma(C_k * squatter_{ijk}) + \phi(C_k * program_{jk}) + \epsilon_{ijk}
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- L_i is weekly labor hours of household i in neighborhood j and city k; N is number of household members; squatter is a dummy for no preprogram title and program is a dummy for whether program has reached the neighborhood; X and Z are household and neighborhood-level controls.
- φ is city fixed effects, and there are also interactions between cities and program entry and tenure status.
- Exclusion restriction requires that program entry has no differential impact on households with and without prior title, other than via the channel of greater tenure security. Important: no time fixed effects!

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Program effect on tenure security

TABLE III
PERCEIVED TENURE SECURITY, RAW MEAN DIFFERENCE IN DIFFERENCES

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Have property title		Improvement in tenure security with last title?		Do you consider dwelling currently at risk of eviction/invasion?		Do you consider dwelling currently very secure from eviction/invasion?	
	Pre-program squatter ($N = 593$)	Pre-program titled ($N = 1{,}959$)	Pre-program squatter ($N = 192$)	Pre-program titled ($N = 1{,}529$)	Pre-program squatter ($N = 593$)	Pre-program titled ($N = 1{,}959$)	Pre-program squatter ($N = 593$)	Pre-program titled ($N = 1{,}959$)
No titling program	0.003	1.000	N/A	0.967	0.437	0.199	0.131	0.320
	(0.017)	(0.000)		(0.006)	(0.034)	(0.016)	(0.022)	(0.018)
Titling program	0.718	1.000	0.979	0.970	0.162	0.091	0.372	0.383
	(0.019)	(0.000)	(0.010)	(0.008)	(0.029)	(0.014)	(0.048)	(0.029)
Difference	−0.715	0.000		−0.002	0.276	0.098	−0.241	−0.063
	(0.025)**	(0.000)		(0.009)	(0.045)**	(0.020)**	(0.052)**	(0.035)
Difference in difference		−0.715	—		—	−0.177	—	0.178
		(0.014)**	—		—	(0.047)**	—	(0.055)**

Discussion questions

- In addition to tenure security, the paper shows an impact on a number of other outcomes - what are they?
- What do we learn about the possibility of re-allocation of labor within the household?
- Field also implements a robustness check employing panel data - what is it?

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Discussion questions - more broadly

- Are these results interesting and policy-relevant?
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Goldstein and Udry, Profits of Power

- The next paper shifts the focus to tenure security in rural areas, where the institutional structure of property rights can have an enormous impact on farmers' willingness to make investments in their land, and thus on their ultimate productivity.
- Here, we're less interested in labor supply off the farm, and more interested in how the land itself is used.

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Context

- Goldstein and Udry examine rural property rights in west Africa, where those rights are largely not codified and subject to multiple and overlapping claims.
- In addition, given the agricultural environment (expensive fertilizer, relatively abundant land, and low crop returns), fallowing is the primary mechanism by which farmers increase their yields.
- The key insight of this paper is to show that farmers who lack political power are not confident of maintaining land rights over a fallow period; accordingly, they fallow for a shorter duration, and pay a substantial cost in potential output.

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Description of property rights

- The authors begin by describing the system of property rights: cultivator's rights over crops are secure, but not necessarily over land; land being fallowed, on the other hand, is subject to redistribution within the paramount chieftancy (known as the stool).
- About 18% of individuals hold some office within the village or matrilineage, and they express much stronger confidence in their property rights; they also appear to fallow more often.
- 89% of officeholders are men; thus there is a strong gender differential in property rights.
- Soil fertility in maize and cassava farming system managed primarily through fallowing; median duration of fallowing is around 4 years.

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Summary statistics

TABLE 1
PERCEPTIONS OF LAND RIGHTS

	Percent of Cultivated Plots on Which Respondent Claims Right to				Plots Fallowed More than 6 Years (%)
	Determine Inheritance (1)	Rent Out (2)	Lend Out (3)	Sell (4)	(5)
Nonofficeholders	4	15	21	10	18
Officeholders	18	37	42	22	26
t-test for equality	6.39	6.51	5.56	4.36	2.23
Observations	846	847	847	846	813

Conceptual framework

- The authors develop a simple conceptual framework.
- Assume households allocate resources efficiently; then, the marginal return of inputs in farm production should be equalized across households.
  - Why? If returns to fertilizer on one plot are higher than on the second plot, then the household should optimally shift fertilizer inputs until they're equal.
- Profits (π) on plot p cultivated by individual in household h and time t should be a function only of plot characteristics X_p.

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Initial specification

- Initially, the authors assume that there is complete tenure security ($\omega_p = 0$); in that case, within-household differences in plot profits depend only on plot characteristics.
- They estimate the following specification:

$$\pi_{pt} = X_p\bar{\beta} + \bar{\gamma}G_p + \bar{\lambda}_{hp,t} + \bar{\epsilon}_{pt}$$

- G_p is the gender of the plot cultivator, and $\bar{\lambda}$ is a household-by-year fixed effect.
- The question of interest: do profits differ by gender? If so, that is suggestive of some intrahousehold inefficiency in allocating agricultural inputs.

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Agricultural profits and gender

- The results show that women achieve much lower profits than their husbands (around 150% lower).
- This effect is robust to controls for fundamental plot characteristics, as well as spatial characteristics of the neighborhood.

Agricultural profits and gender

- The results show that women achieve much lower profits than their husbands (around 150% lower).
- This effect is robust to controls for fundamental plot characteristics, as well as spatial characteristics of the neighborhood.

Agricultural profits and gender: Regression results

TABLE 3
PROFITS AND GENDER
Dependent Variable: Profit × 1,000 Cedis/Hectare

	OLS (1)	OLS (2)	OLS (3)
Gender: 1 = woman	−913	−985	−1,683
	(365)	(468)	(380)
Plot size decile:			
2	198	1,049	1,646
	(486)	(571)	(265)
3	689	1,239	749
	(507)	(590)	(265)
4	655	1,806	1,557
	(508)	(591)	(364)
5	25	883	923
	(502)	(583)	(147)
6	377	1,447	819
	(489)	(581)	(222)
7	−79	1,206	628
	(494)	(548)	(252)
8	−389	593	−180
	(520)	(594)	(259)
9	46	705	420
	(513)	(633)	(261)
10	−383	−17	−693
	(597)	(693)	(338)
Soil type:			
Loam	629	35	−21
	(342)	(396)	(151)
Clay	226	−58	122
	(381)	(463)	(321)
Toposequence:			
Midslope	−364	339	−705
	(1,110)	(1,581)	(493)
Bottom	−45	661	−722
	(1,104)	(1,569)	(552)
Steep	−800	−83	476
	(1,153)	(1,610)	(695)

Fallowing as a predictor of farm profits

- The authors then alter the initial specification to include a measure of fallowing as an independent variable:

$$\pi_{pt} = \alpha\tau_p^* + X_p\beta + \gamma G_p + \lambda_{hp,t} + \epsilon_{pt}$$

- This equation is estimated both using OLS and using a set of instruments for family background as an instrument for fallowing.
- The authors find that conditional on fallowing, there is no difference in profits across plots according to gender.
- Fallow duration, however, is strongly positively correlated with profits.

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Agricultural profits and fallowing: Regression results

TABLE 4
PROFITS AND FALLOW DURATION

	OLS DV: Profit × 1,000 Cedis/Hectare (1)	OLS DV: Fallow Duration (2)	IV DV: Profit × 1,000 Cedis/Hectare (3)	IV DV: Profit × 1,000 Cedis/Hectare (4)	OLS DV: Fallow Duration (5)	IV DV: Profit × 1,000 Cedis/Hectare (6)
Fallow duration (years)*	145		541	662		326
	(48)		(233)	(261)		(58)
Gender: 1 = woman	−473	−.58	130	−688	−.34	328
	(393)	(.67)	(555)	(732)	(.24)	(148)
Age				−118		
				(62)		
> 6 years of school				−286		
				(720)		
1 if first of family in town		−.44			.30	
		(.66)			(.19)	
Years family/respondent lived in village		−.01			.01	
		(.01)			(.00)	

Discussion questions

- This paper suggests a different channel through which property rights may be relevant - households don't use an asset such as land in the most efficient way. Do you agree that this channel may be significant?
- What about the empirical results? Are there any sources of bias that were not addressed?
- Do you believe plot characteristics are measured accurately?

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Changing land rights in China

- Land was collectivized in China between 1958 and 1979.
- From 1979 to 1983, the Household Responsibility System was implemented, returning (partial) use rights over land to individual households; title is retained by the village collective.
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- The stated purpose of reallocations is to promote equity and to accommodate demographic shifts in the absence of a land market.
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Optimizing the choice of reallocation

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- In addition, households impose cost C on officials who reallocate.
  - Tenure insecurity induced by a reallocation generates a decline in agricultural investments with medium-term returns, and thus a decline in output.
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- In addition, the official who chooses to conduct a reallocation then faces a second margin of optimization.
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Optimizing household-level land shifts

- Probability household i will have its land reallocated denoted D_{ivt}.
- D_{ivt} defined as function of covariates X_{ivt}, conditional on $R_{vt} = 1$.
- R_{vt} denotes reallocation at village-year level.

$$\begin{aligned} D_{ivt} &= f(X_{ivt}) \quad \text{if} \quad R_{vt} = 1 \\ D_{ivt} &= 0 \qquad\quad\;\; \text{if} \quad R_{vt} = 0 \end{aligned}$$

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- In my paper, I use a quasi-IV strategy, exploiting the fact that households previously included in a reallocation (in the last round) are less likely to have their land reallocated in a subsequent round.
- Thus they have differentially greater security, compared to their neighbors in the same village and year.
- What I observe is that households previously included in a reallocation, in the year of the **next** reallocation, invest significantly more in agricultural inputs.
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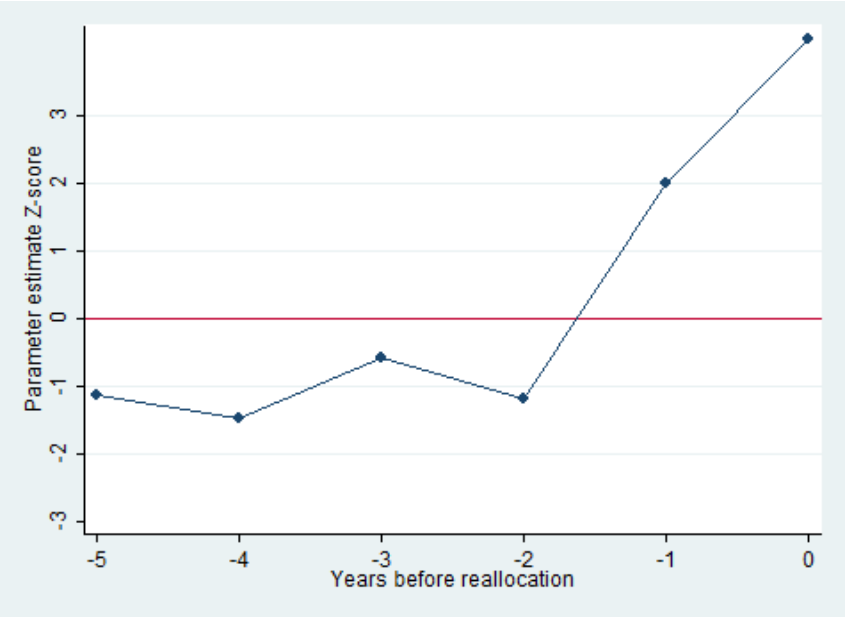
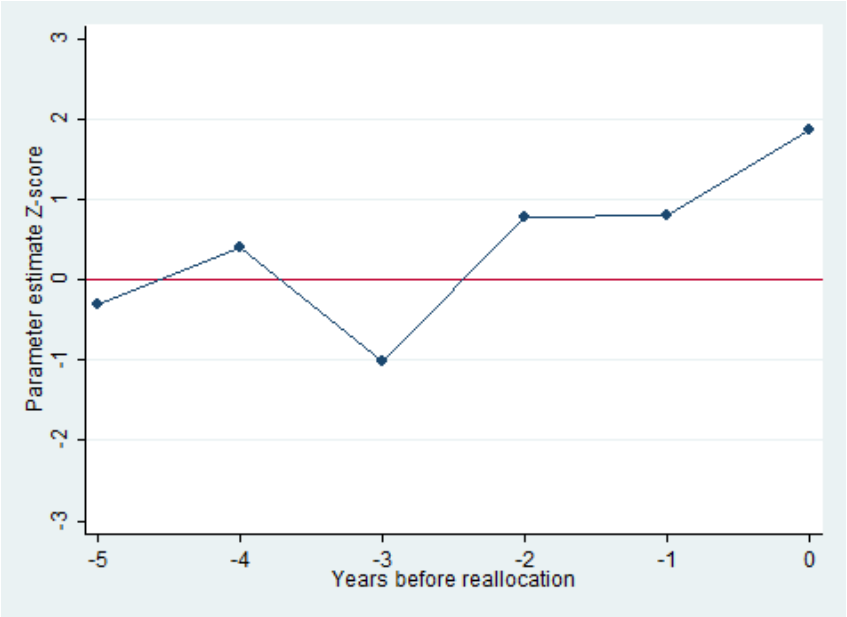
Trends in non-reallocation years



(a) Area sown



(b) Fertilizer

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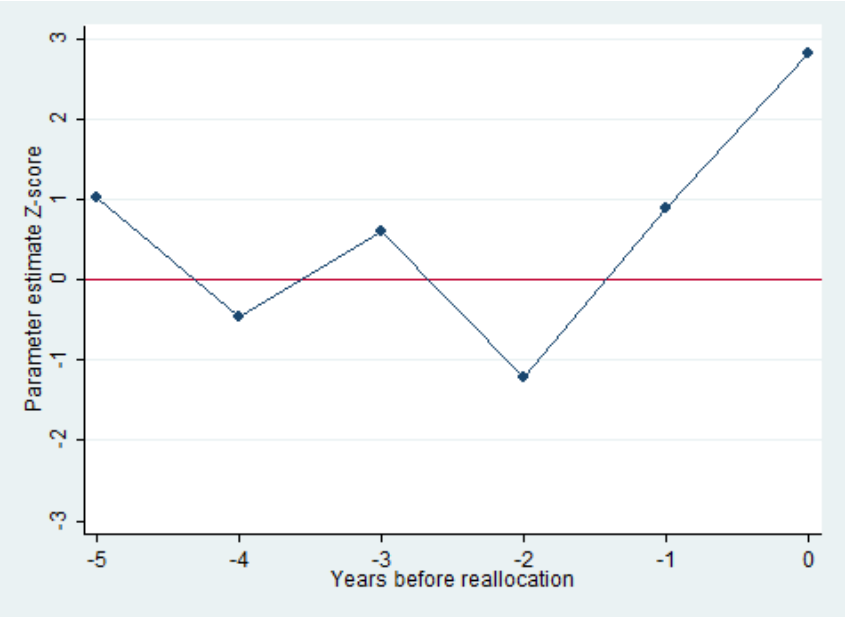
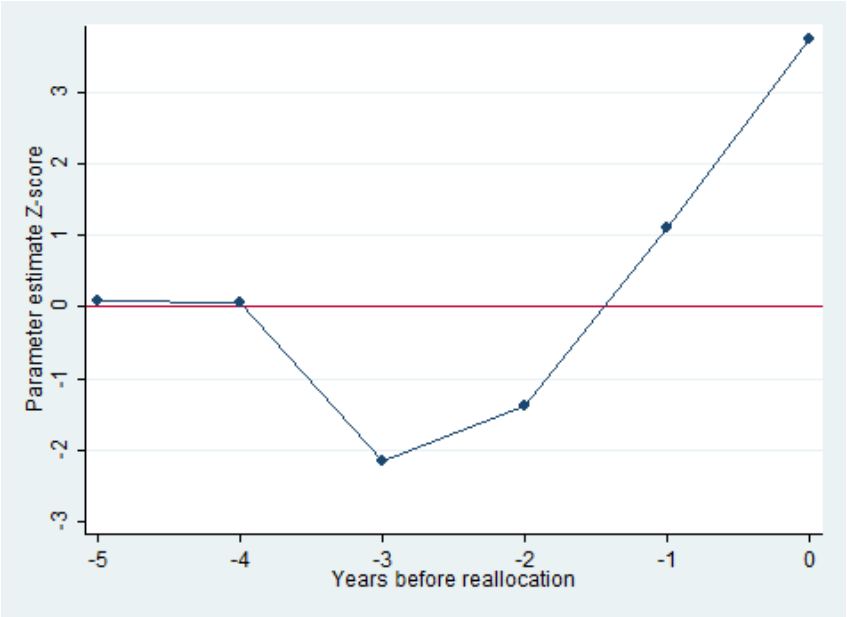


(c) Agricultural production



(d) Agricultural labor

Key results

- Households previously included in a reallocation, who have stronger property rights, show evidence of greater investment.
- They have higher sown area, higher use of fertilizer, higher use of agricultural labor, and higher agricultural output.
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An alternate lens

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- **But**, the category "previously included in a reallocation" is not fixed over time.
- If we observe multiple reallocation cycles, then in the first cycle, a household could be coded as "previously included"; in the second cycle, it might be coded as "not previously included."

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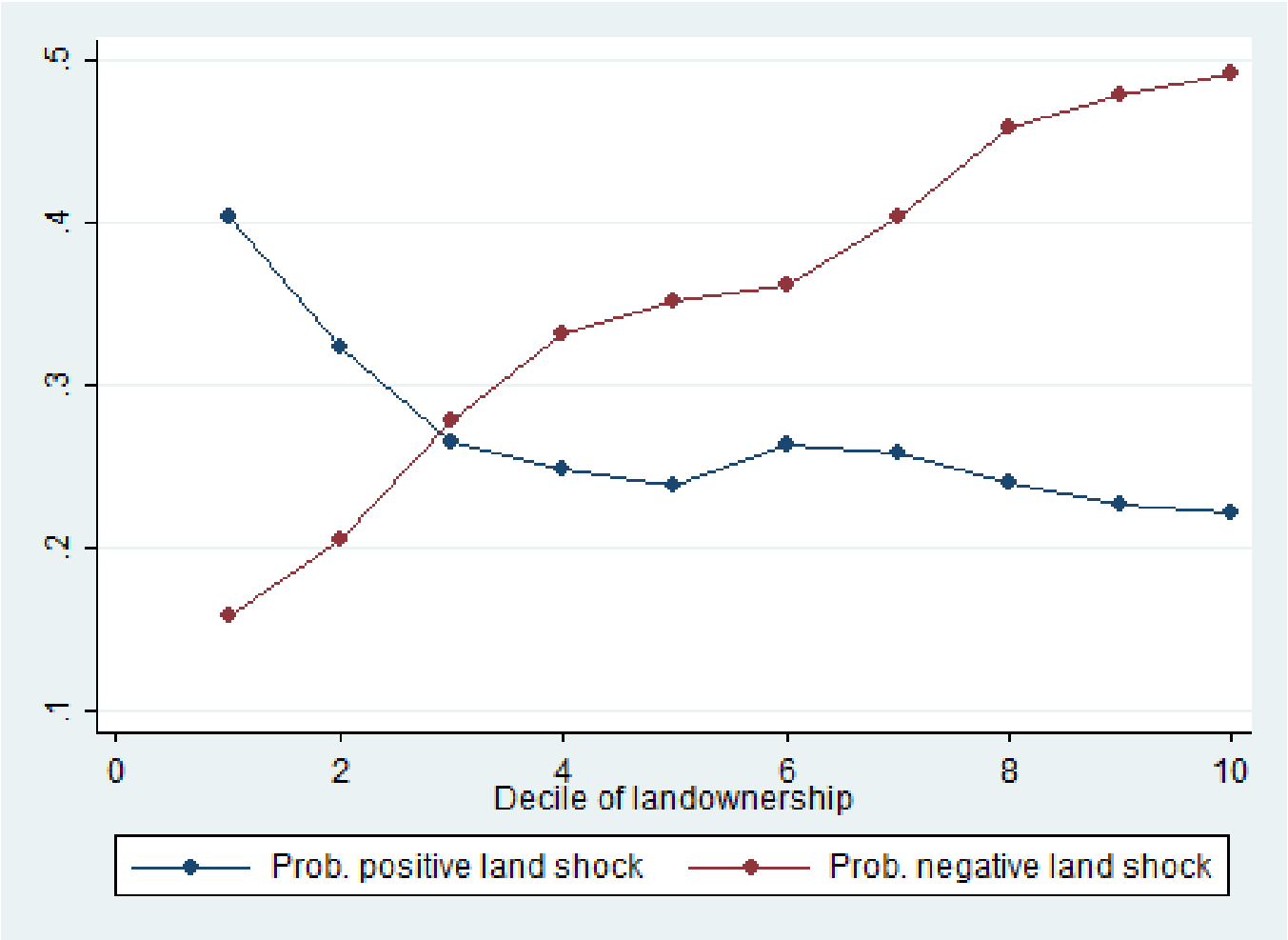
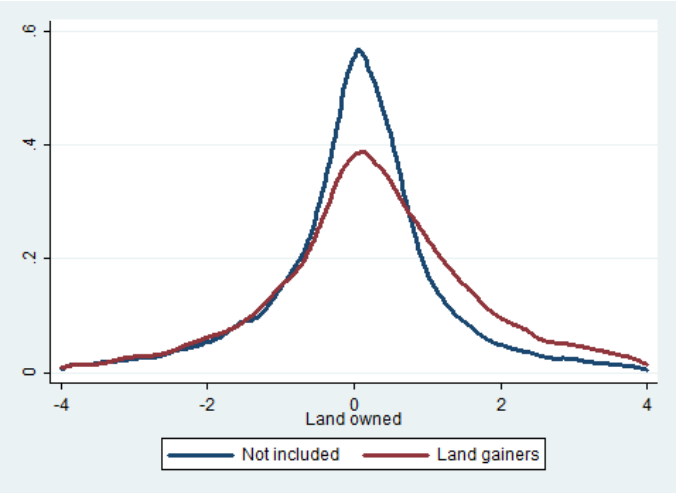
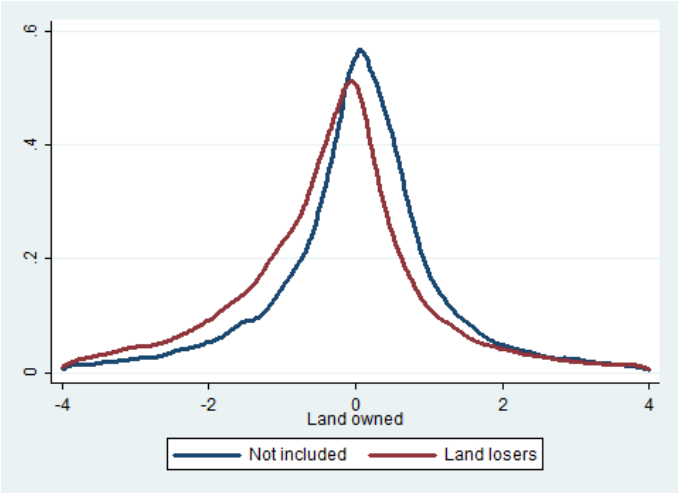
Probability of reallocation by decile of landownership



Kernel density estimates of landholding distributions



(e) Land gainers



(f) Land losers

Bias, cont.

- The hope is that even if land losers are different from households that are not included, and land gainers are also different, the only **shared** characteristic that gainers and losers have relative to households not previously included is differential property rights.
- To further assess the plausibility of this assumption, you'll have to read the paper!

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