

# Why Do People Stay Poor?

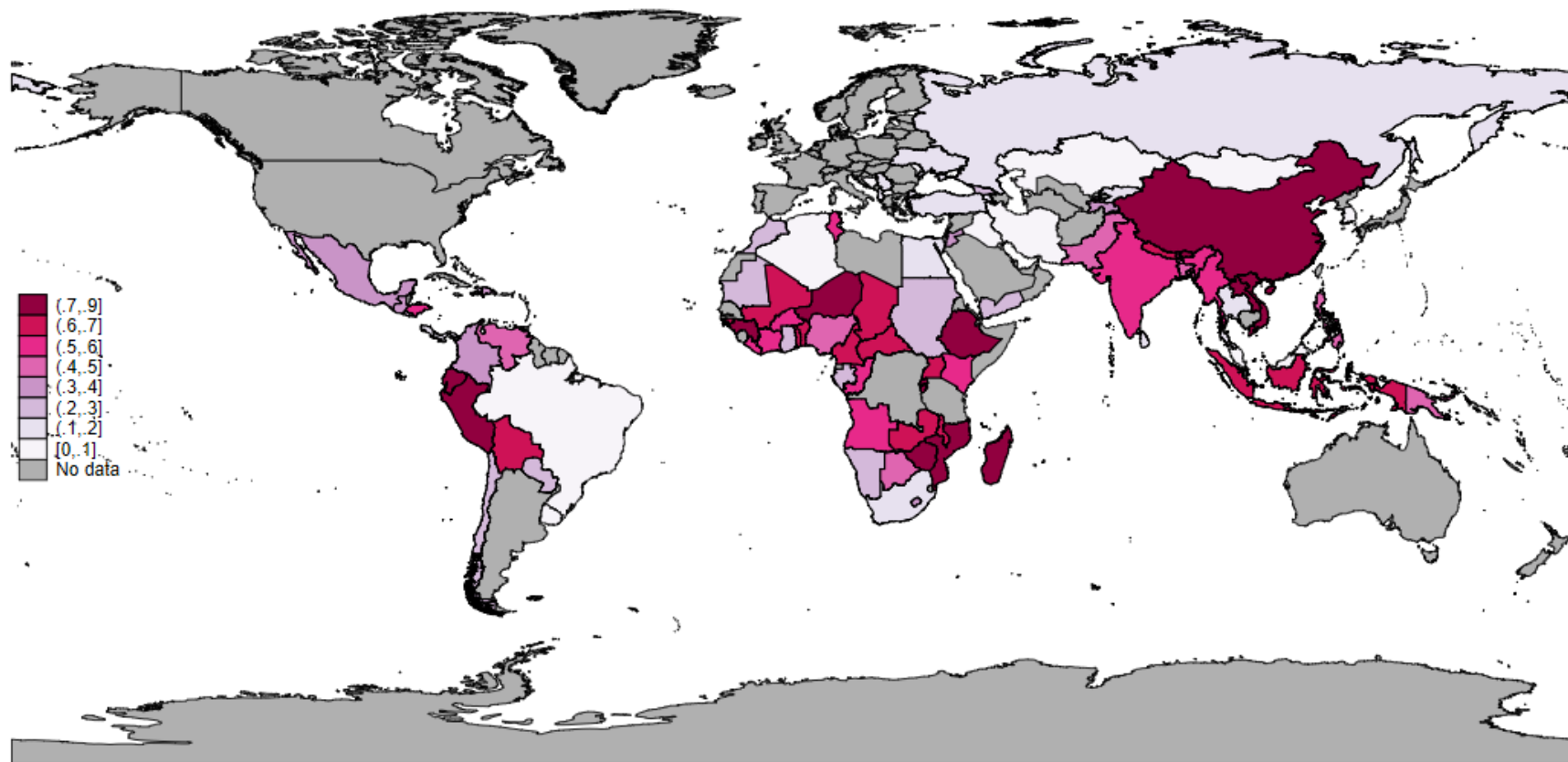
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with

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Anton Heil (Berkeley)

# Most of the global poor work

Fraction of Poor in Employment



Source: ILO, World Bank Povcal. Poverty is defined as those living on <\$1.90 PPP per day

# Why do people stay poor?

- Labor is the sole endowment of the poor → the link between jobs and poverty is key
  - Over 65% of workers (2bn people) are in low-productivity, informal jobs with low earnings (WB 2013)
  - 98% of agricultural wage employment in India is through casual jobs in spot markets (Kaur 2017)

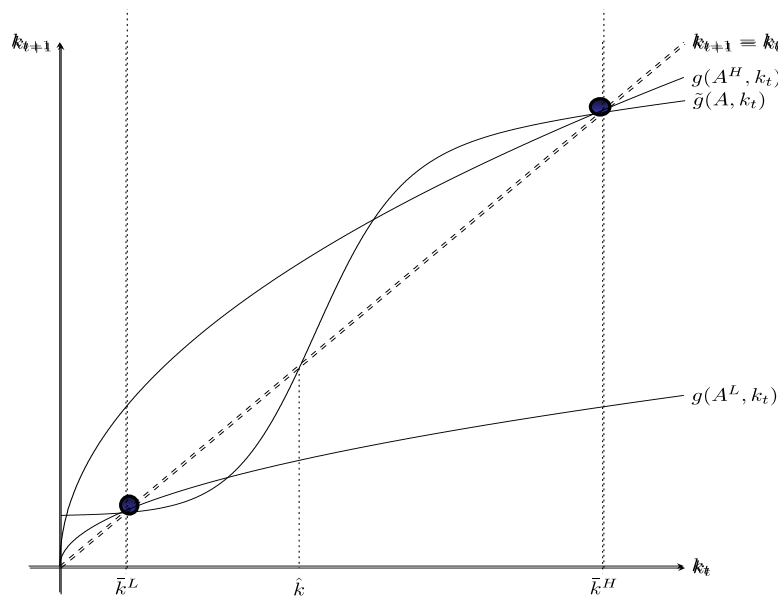
# We ask

**Do people stay poor because they are only able to do bad jobs or do they do bad jobs because they are poor?**

# Poverty traps

- The idea of poverty traps (multiple steady states/ equilibria) has a long history in macro and micro development theory (Rosenstein-Rodan 43, Nelson 56, Dasgupta & Ray 86, Banerjee & Newman 93, Galor & Zeira 93, Azariadis 96, Azariadis & Stachurski 06, Ghatak 16)
- Empirical investigations include calibrations with cross-country data (Graham & Temple 06), structural approaches with household data (Kabowski & Townsend 11), micro studies with observational data (Kraay & McKenzie 14, Lybbert et al 04, Barrett et al 06, Santos & Barrett 11)
- Recent field experiments relating to big push approaches (Banerjee et al 19, Blattman et al 13, 19, Haushofer & Shapiro 16, 18 – see Banerjee 20 for an overview)

# People (countries) are observed at two equilibria, H and L



- Is it because of productivity differences?
- Or poverty traps?

# Finding the answer is key for policy

- In the first world people with the same productivity will reach the same steady state → climb out of poverty no matter how low they start
- In this world, anti-poverty policies support *consumption*
  - drip feeding transfers will help people climb the hill
- In the second world, wealth at birth determines the steady state → in this world there is no way out without a big push
- In this world, anti-poverty policies support *production*
  - a large increase in productive assets is needed to get out of the poverty trap

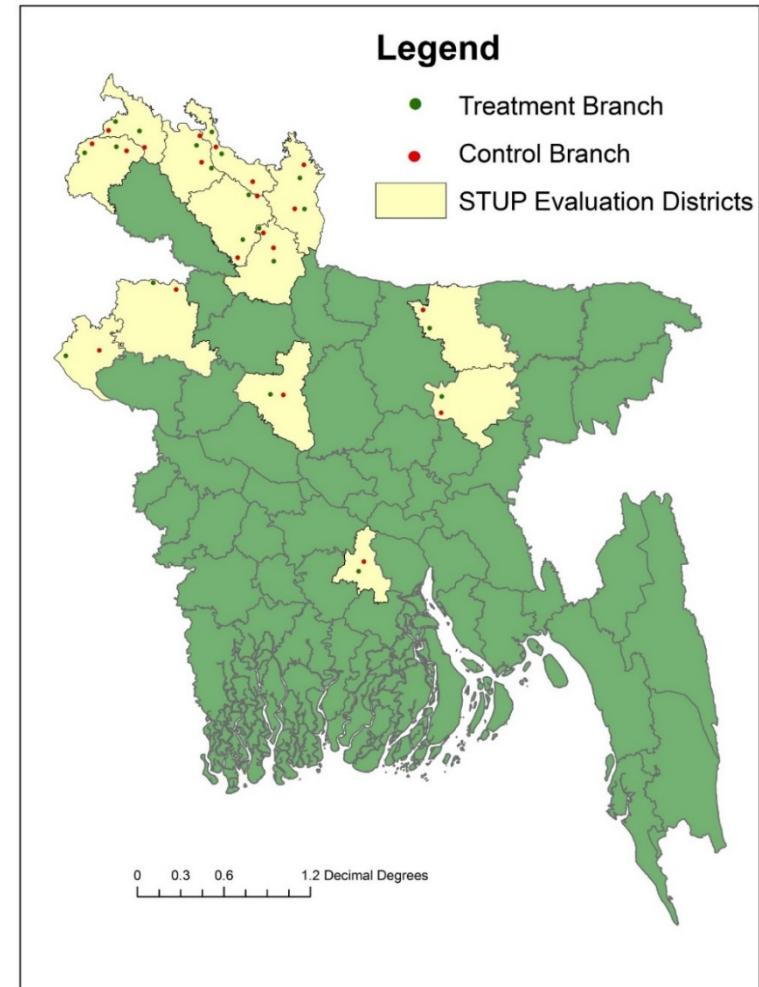
# This paper

- We use the RCT of a large asset transfer program in Bangladesh and trace effects over 11 years to test directly for a poverty trap
- We estimate a structural model of occupational choice to back out the implied misallocation

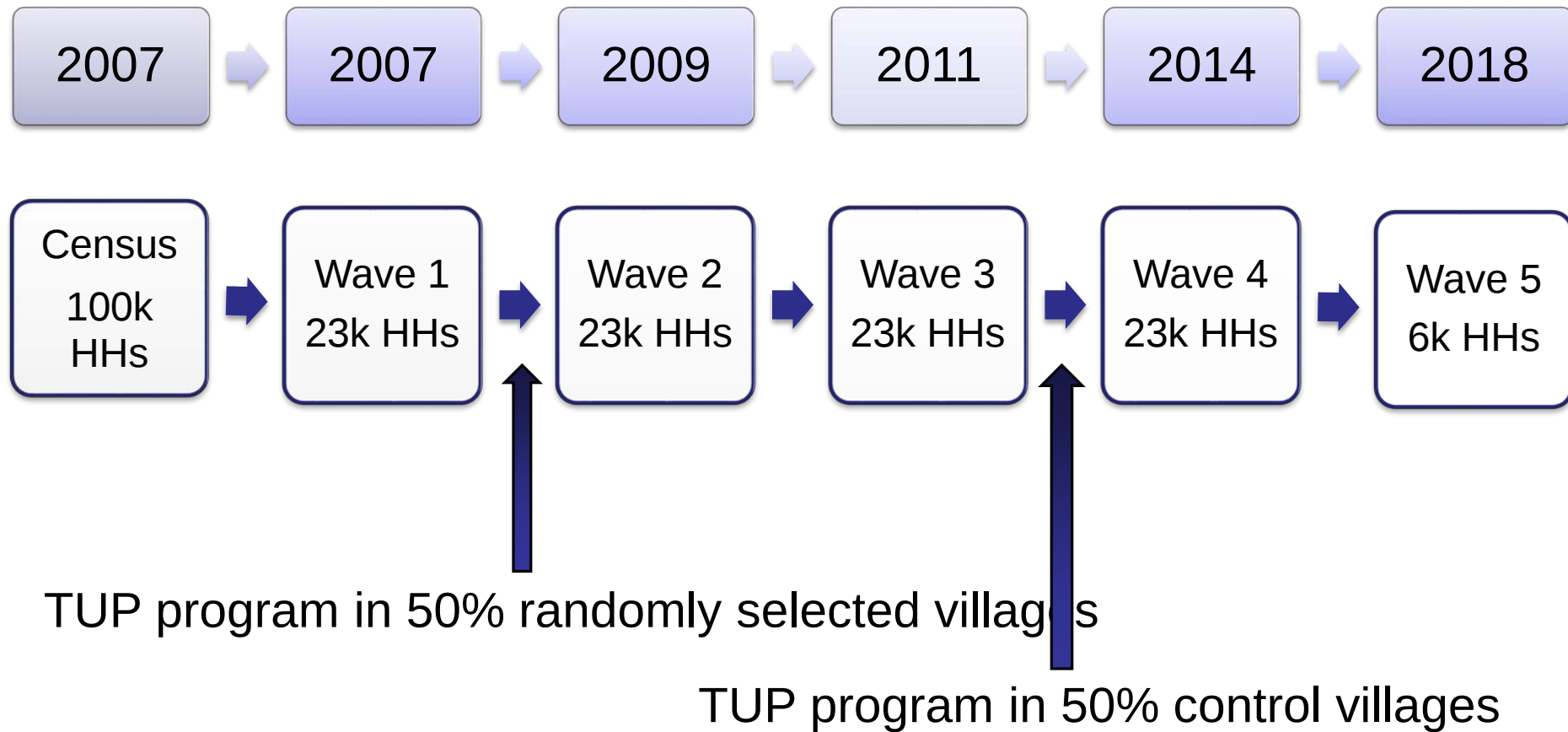
Setting

# Study site: 23,000 HHs in 1,309 villages in Northern Bangladesh

Monga (famine) region:  
irregular demand for  
casual wage labor, higher  
grain prices, extreme  
poverty and food  
insecurity



# We collect a five wave panel over 11 years



# Poverty, occupational choice and assets

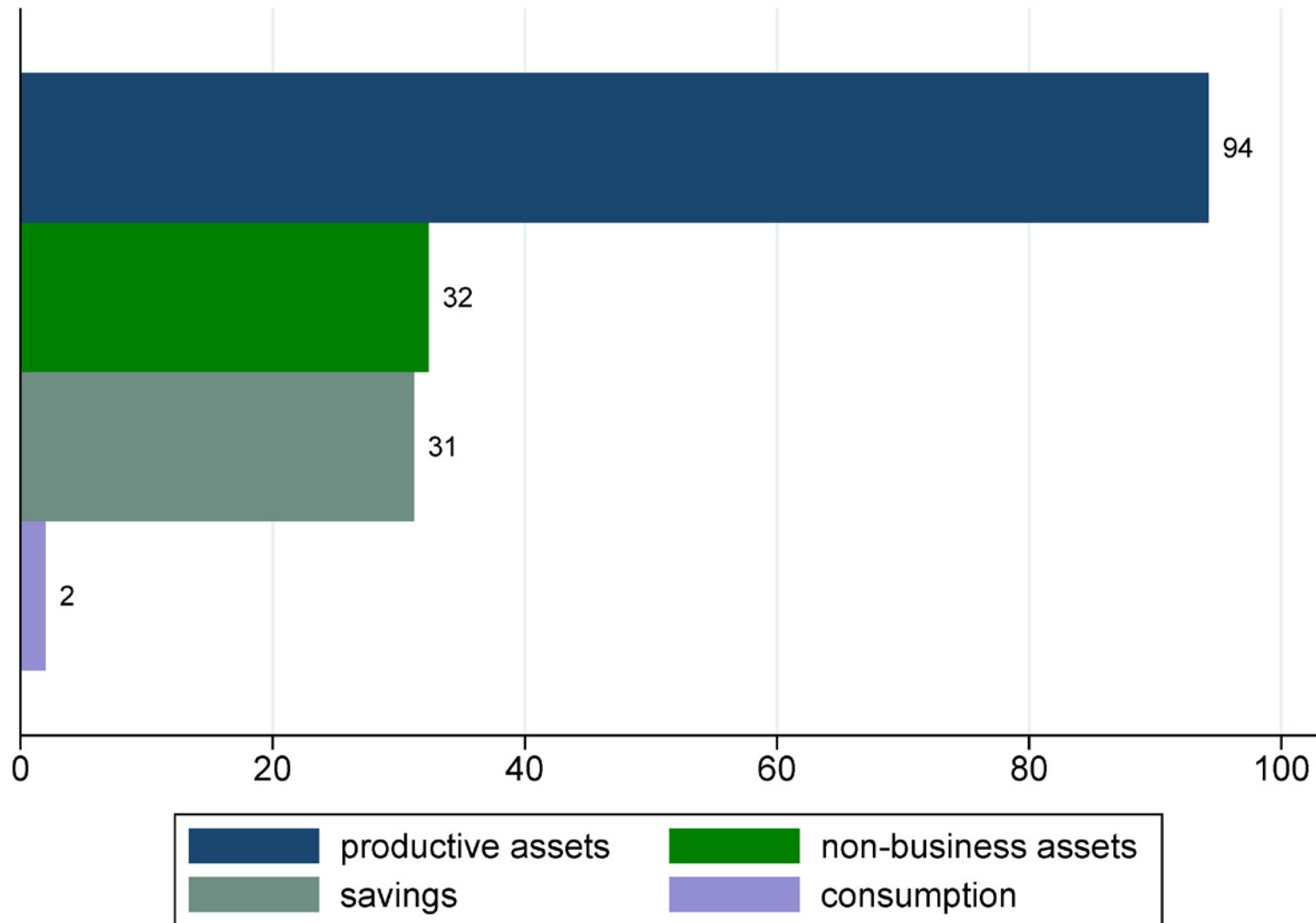
1. The poor stay poor
  - 3% poor control households reach median middle class assets
2. Hierarchy of jobs correlated with community-defined poverty
  - Poor casually employed in agriculture and domestic service
  - Richer self-employed in livestock rearing and land cultivation
3. Better jobs require productive assets
  - Productive assets set apart rich and poor: 94 times higher
  - Richer households own more expensive, indivisible assets

# Jobs and assets at baseline

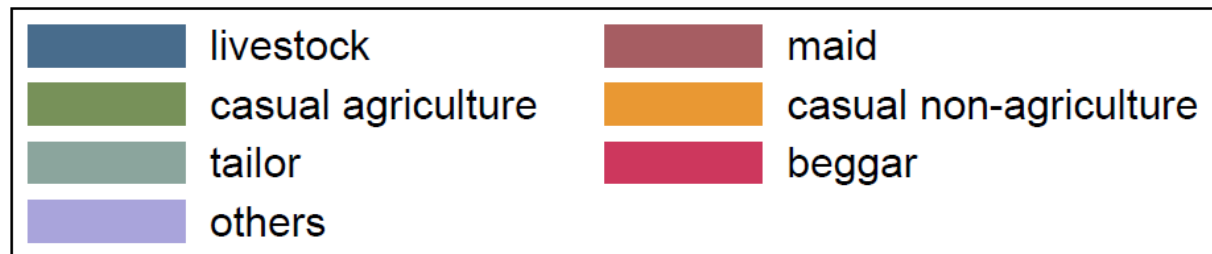
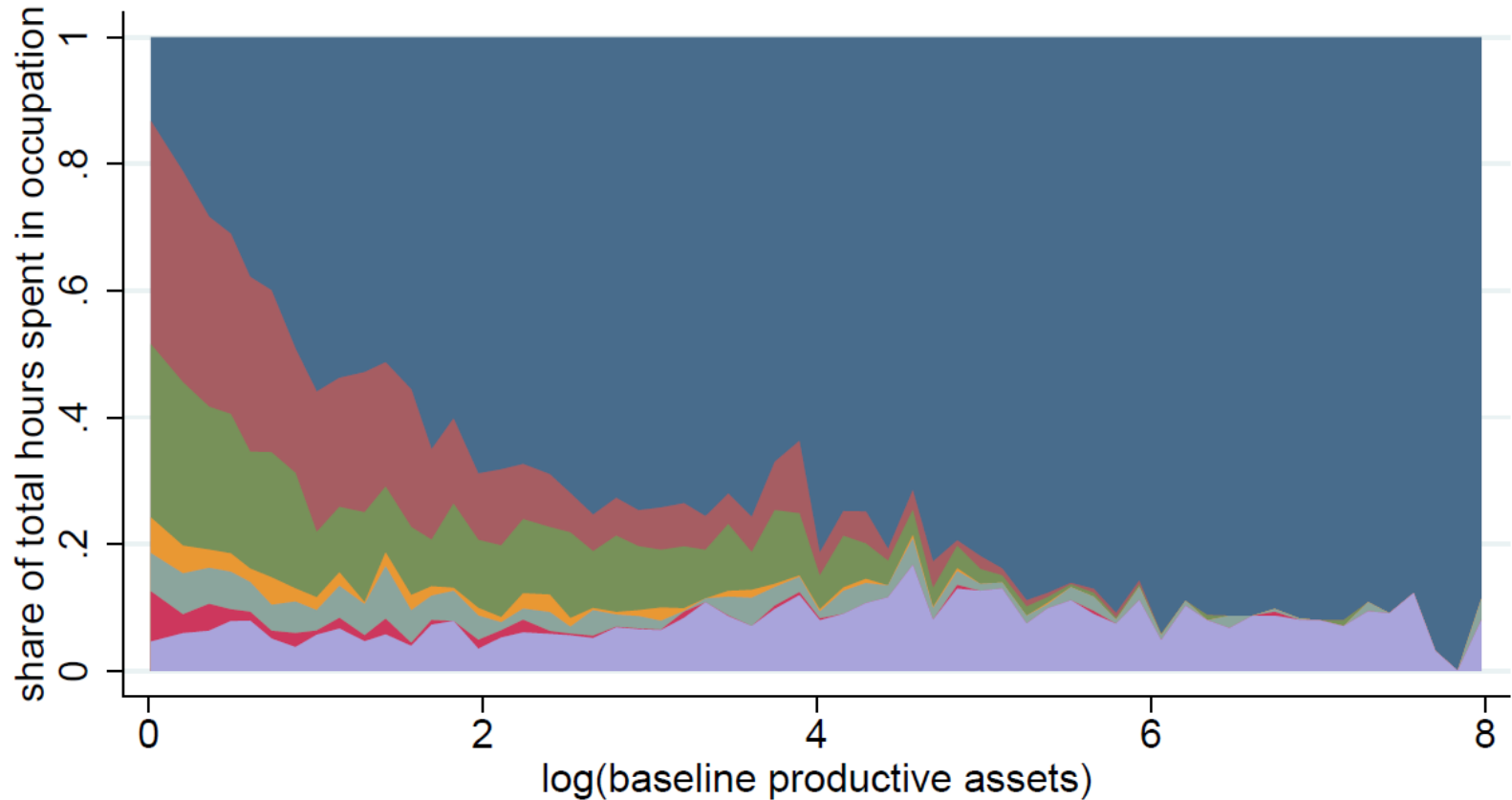
Table 1: JOBS AND ASSETS AT BASELINE

|                                      | (1)<br>ultra-poor   | (2)<br>near poor   | (3)<br>middle class | (4)<br>upper-class |
|--------------------------------------|---------------------|--------------------|---------------------|--------------------|
| <b>A) Labour Outcomes</b>            |                     |                    |                     |                    |
| In labour force                      | 0.84<br>(0.36)      | 0.81<br>(0.39)     | 0.87<br>(0.34)      | 0.91<br>(0.29)     |
| Total hours worked per year          | 1134.31<br>(888.38) | 938.53<br>(821.22) | 819.82<br>(639.08)  | 820.79<br>(549.77) |
| Total days worked per year           | 252.06<br>(136.74)  | 265.07<br>(141.27) | 303.55<br>(122.21)  | 325.62<br>(102.25) |
| Hourly income (BDT)                  | 4.65<br>(19.35)     | 4.27<br>(7.37)     | 5.98<br>(17.69)     | 12.55<br>(40.61)   |
| <b>B) Human and Physical Capital</b> |                     |                    |                     |                    |
| Years of formal education            | 0.56<br>(1.63)      | 1.26<br>(2.43)     | 1.99<br>(2.99)      | 3.72<br>(3.74)     |
| Literate                             | 0.07<br>(0.26)      | 0.17<br>(0.37)     | 0.27<br>(0.44)      | 0.51<br>(0.50)     |
| Body mass index (BMI)                | 18.25<br>(2.27)     | 18.58<br>(2.25)    | 19.17<br>(2.28)     | 20.53<br>(3.02)    |
| Household Savings (1000 BDT)         | 0.15<br>(0.83)      | 0.40<br>(1.24)     | 1.62<br>(10.62)     | 8.61<br>(29.29)    |
| Productive assets (1000 BDT)         | 9.92<br>(30.63)     | 12.94<br>(71.59)   | 145.38<br>(310.49)  | 801.77<br>(945.29) |
| Productive assets + Loans (1000 BDT) | 10.53<br>(31.10)    | 14.83<br>(72.47)   | 150.23<br>(312.50)  | 812.83<br>(947.65) |
| Observations                         | 6732                | 7340               | 6742                | 2215               |

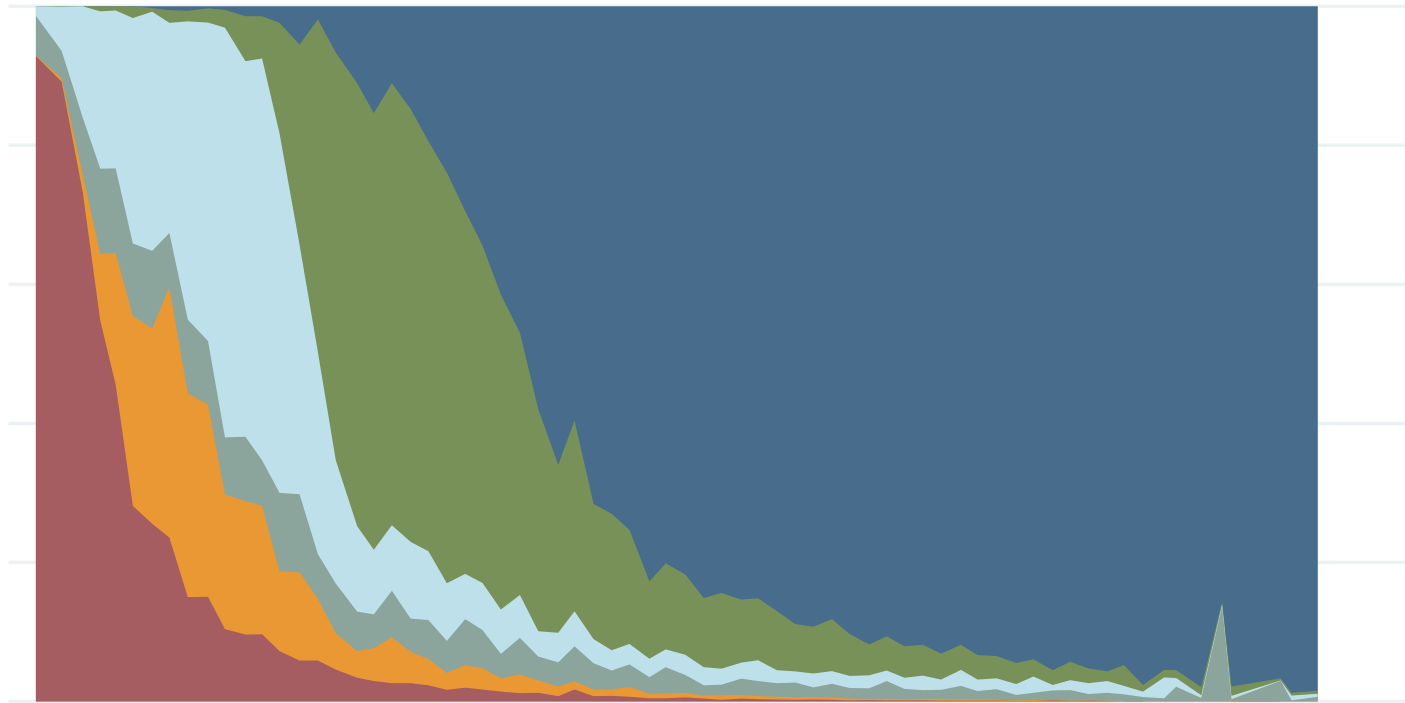
# Fact 1: Key difference between classes is productive asset holdings



## Fact 2: Occupational choice reflects differences in asset ownership



## Fact 3: More assets → more expensive assets

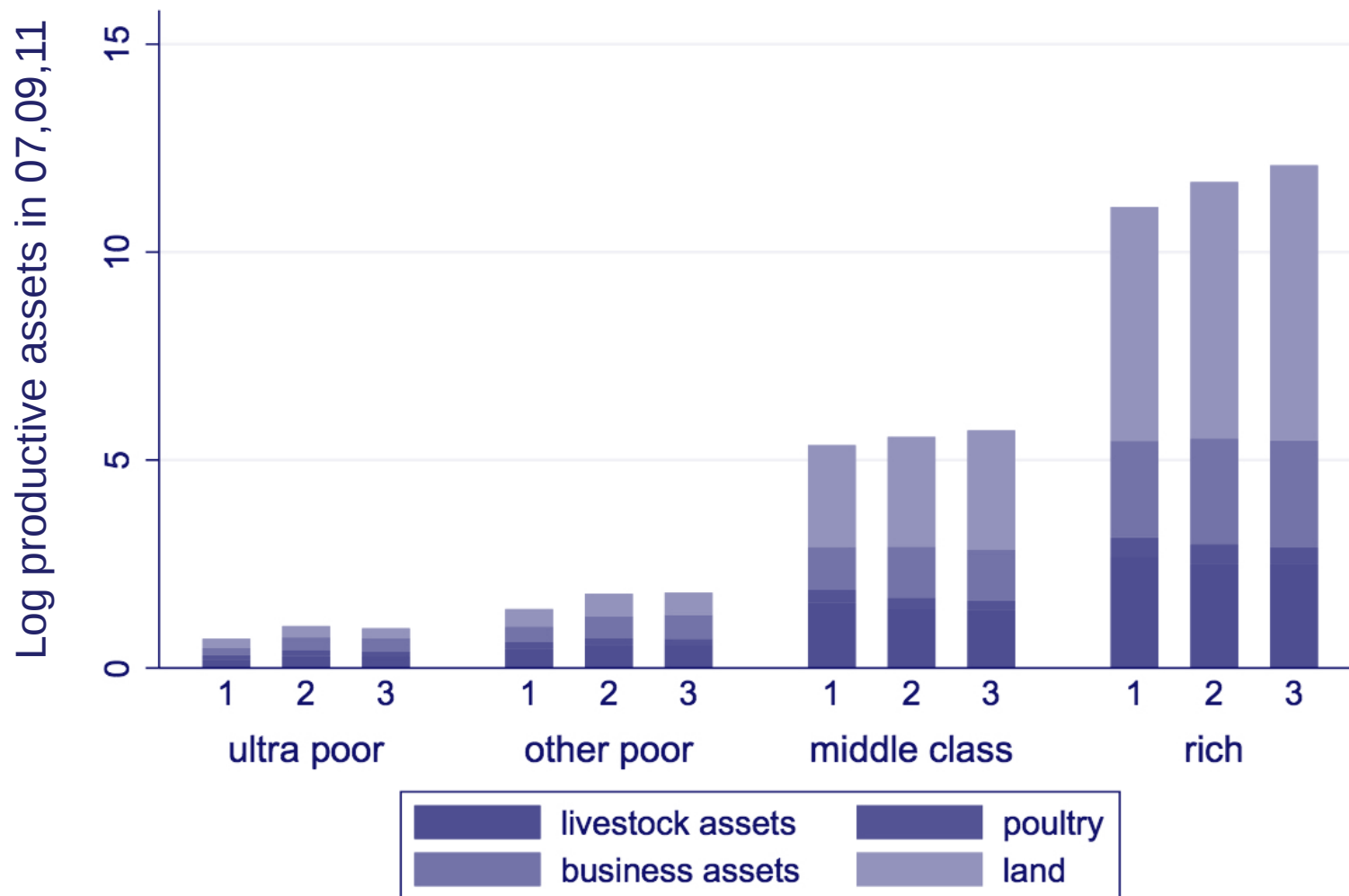


s  
Cows

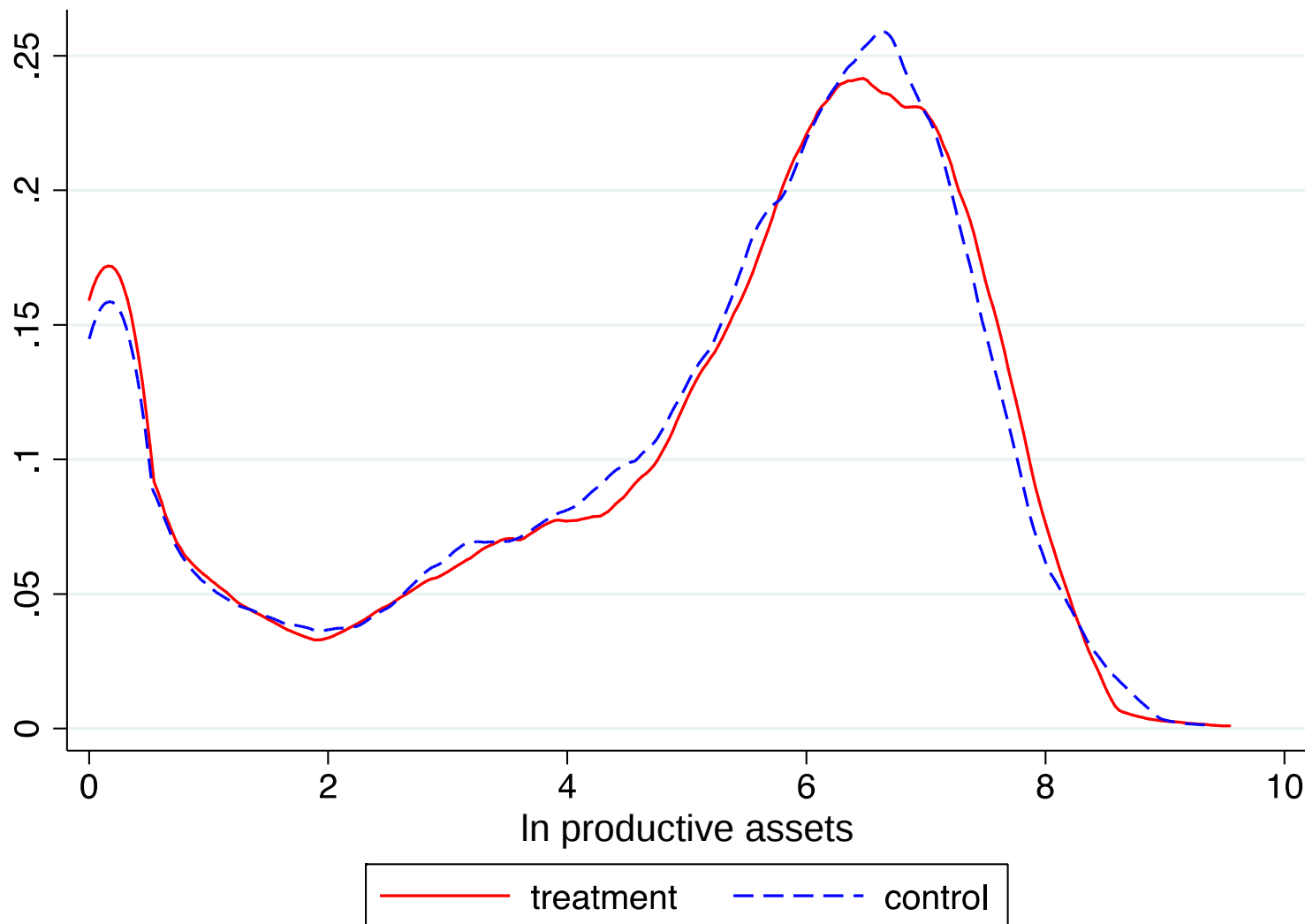
Vehicles  
Land

## Fact 4: Poor people stay poor

### Productive assets by class in control villages



## Fact 5: The distribution of productive assets is bimodal

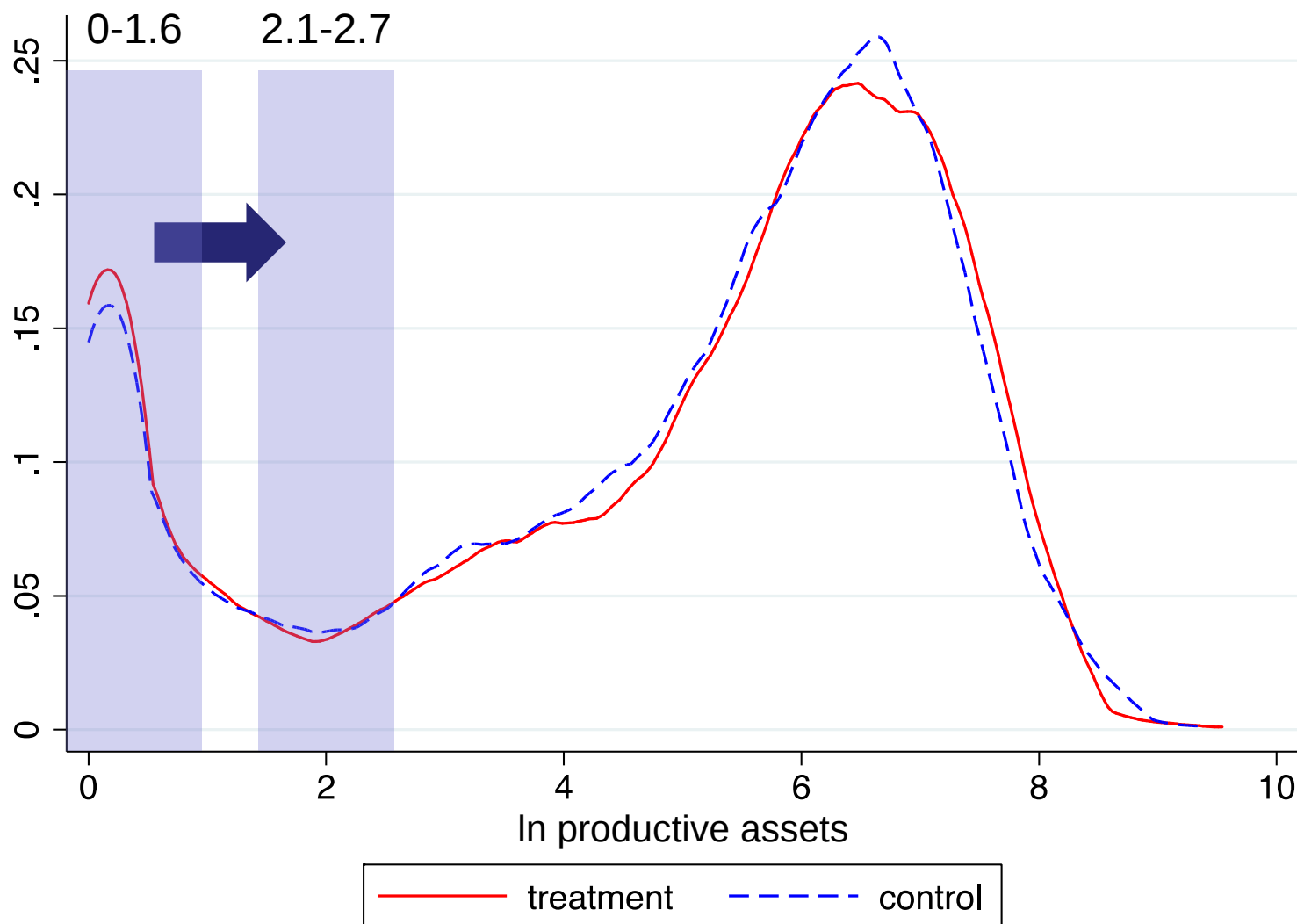


Test

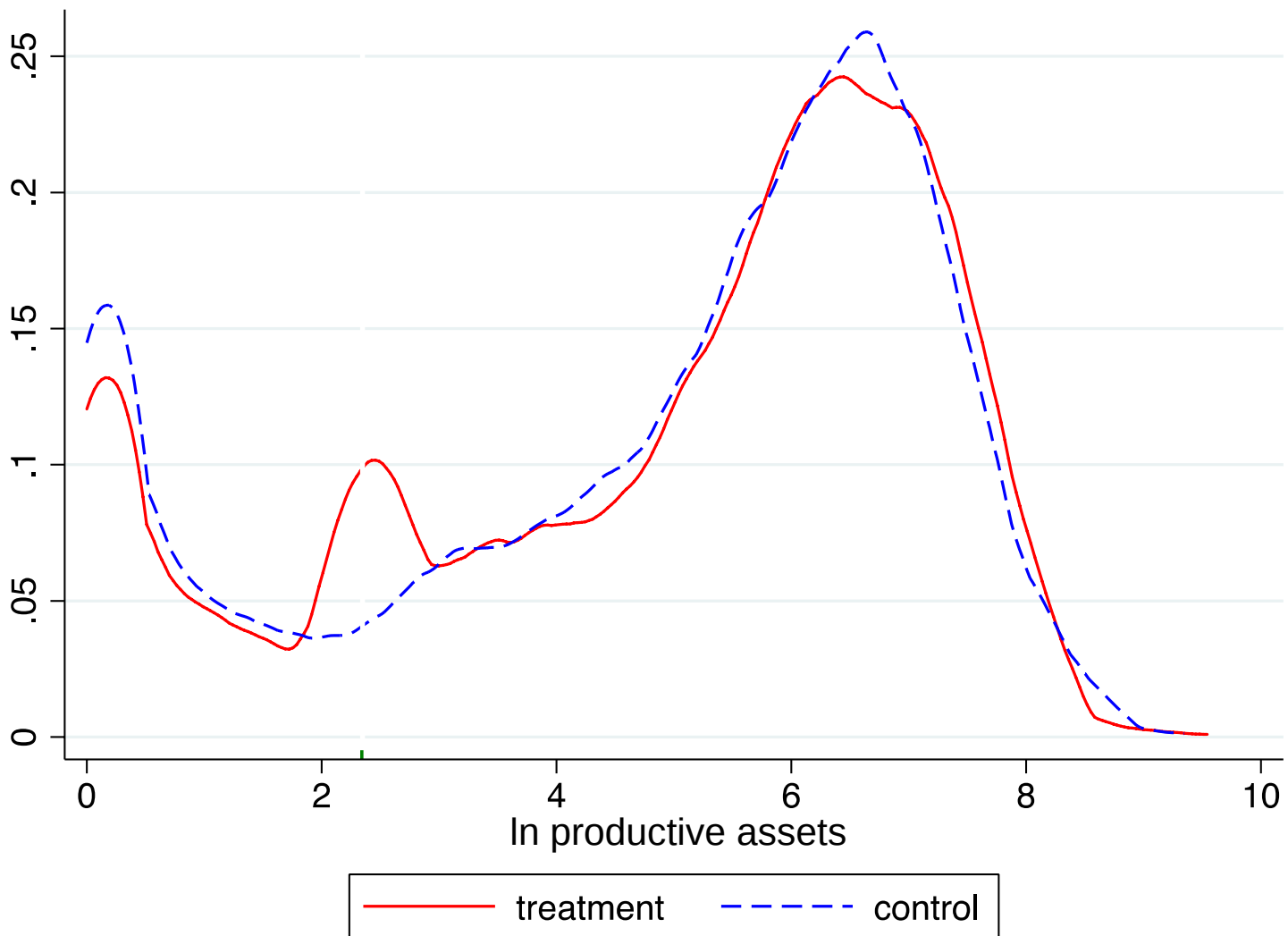
# BRAC's Targeting the Ultra-Poor program

- Randomly allocated across areas
- Beneficiaries are the poorest women in these villages
- Program transfers a large asset (a cow) and training
- Value of the asset = 1 year of PCE (5x typical microloan)

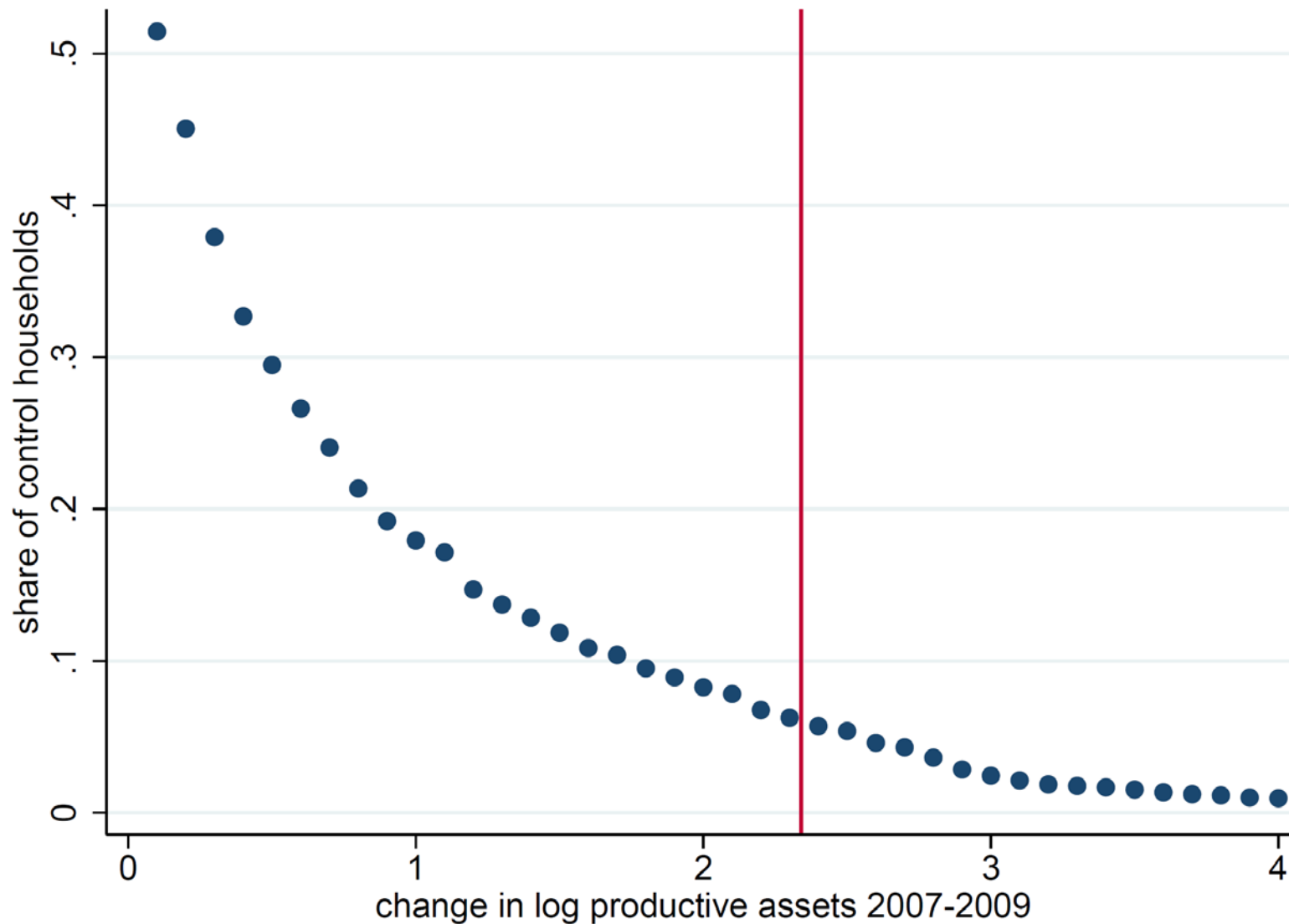
# Program moves the poorest into the lowest density area



# After transfer



# Shocks of this magnitude are very rare



# Our test

- Poverty traps and differential productivity are observationally equivalent in steady state
- But they produce different transition equations
- A necessary condition for poverty traps is that the transition equation is not concave
  - Test using fact beneficiaries differ slightly in baseline assets
  - Exploit to estimate transition equation from  $k_{2007}$  to  $k_{2011}$
  - Test predictions of poverty trap model up to 11 years post-transfer

# Identification

Identification is based on differences in initial assets that are extremely small relative to the transfer but not randomized  
→ consider evidence in support of identifying assumption

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## 2. Endogenous program responses

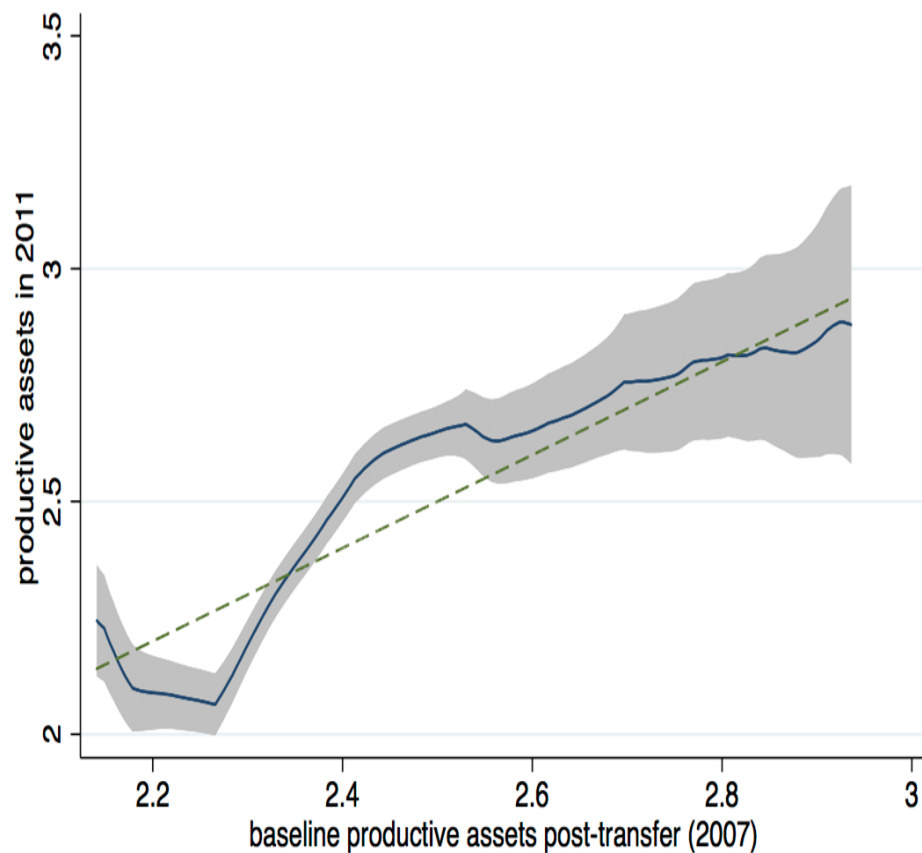
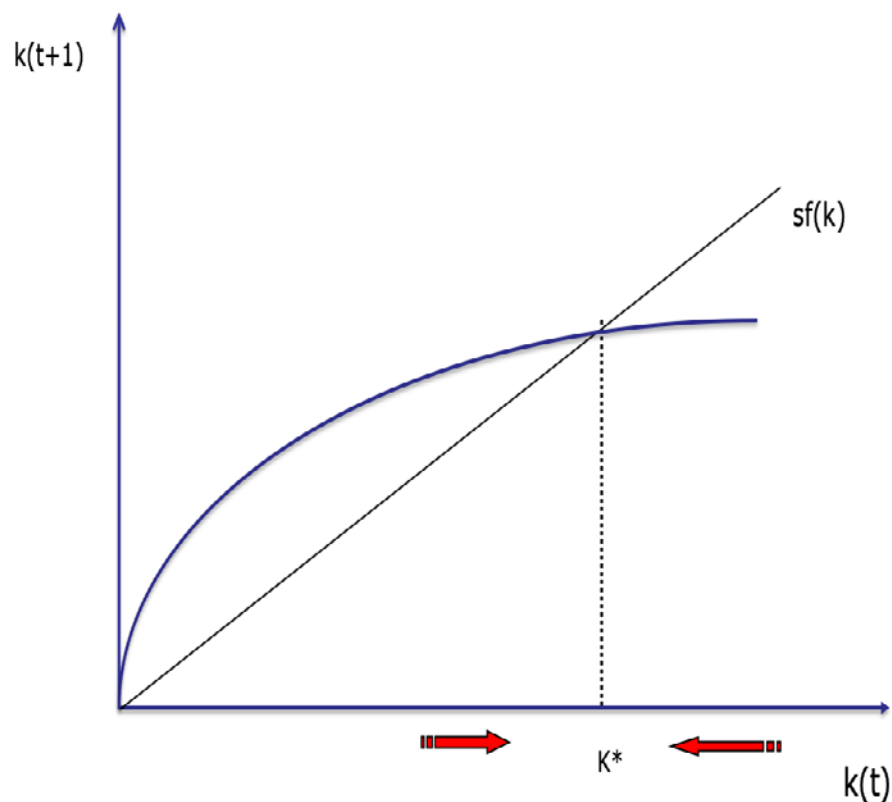
- $k_0$  correlated with response to the program
- Use different source of variation to compare those with same  $k_0$ :

$$k_{t+1} = sf(A, k_t) + (1 - \delta)k_t$$

Higher  $s$  → lower threshold, higher  $A$  → lower threshold

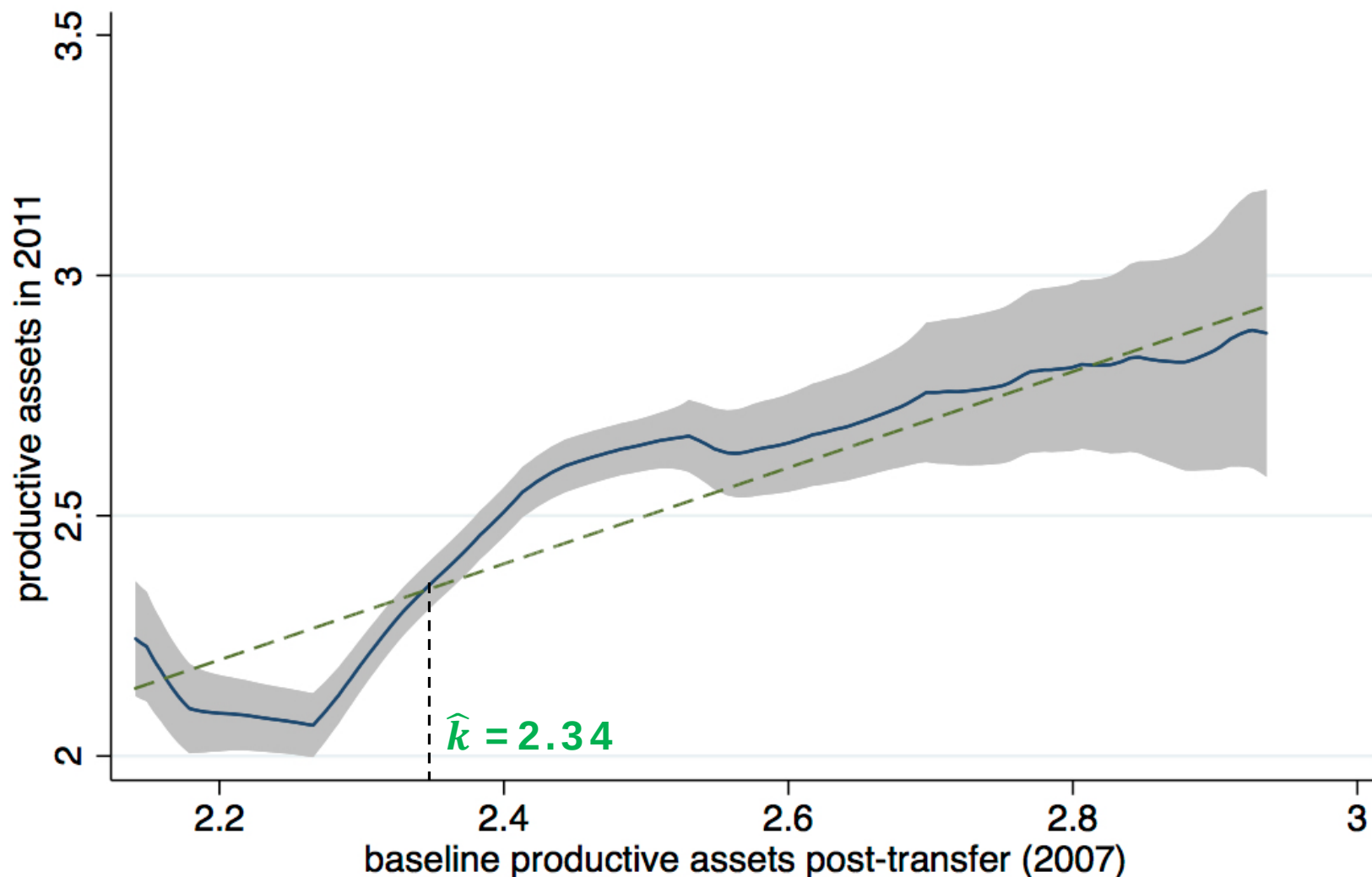
# Findings

# The transition equation without and with a poverty trap



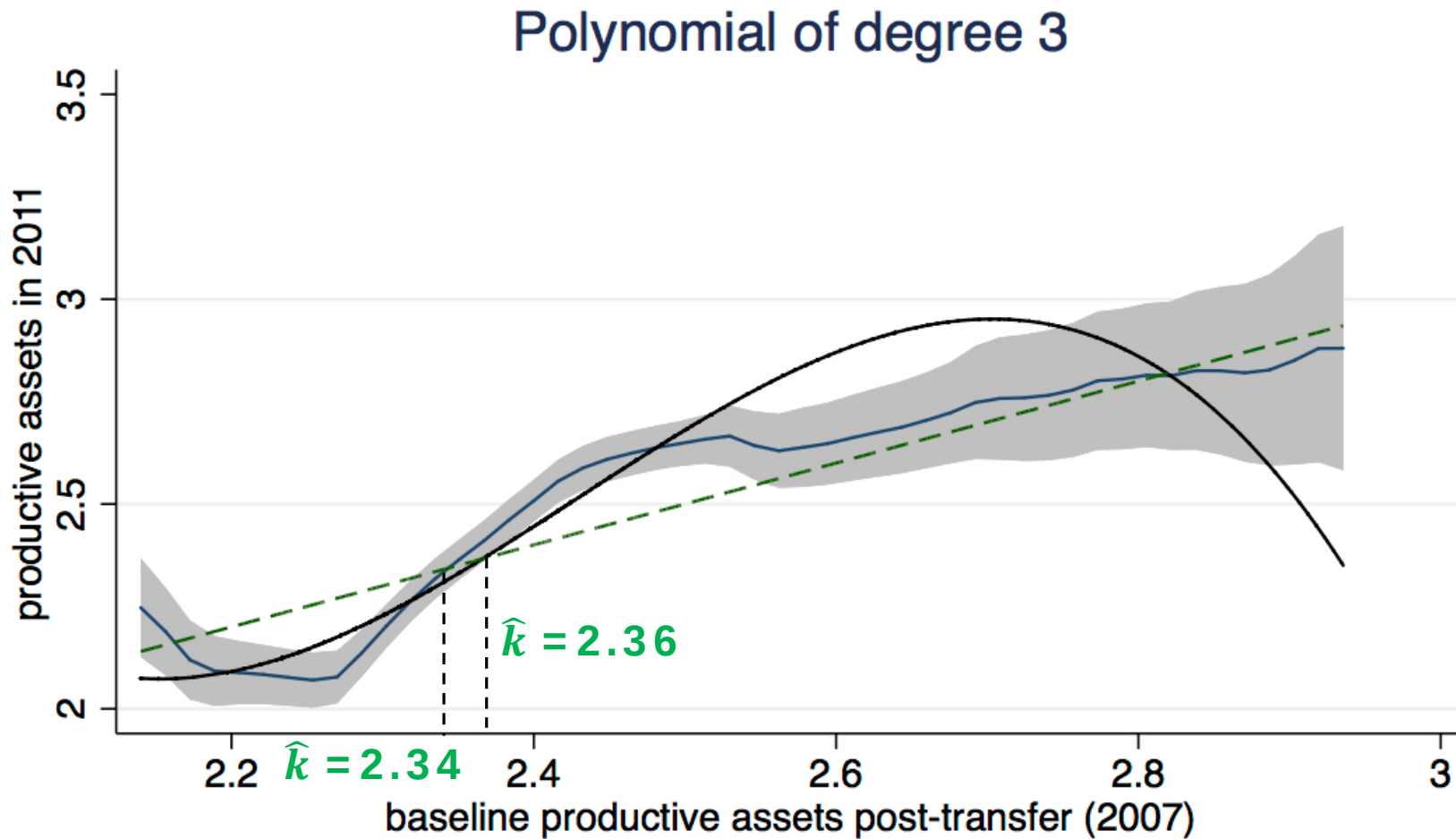
Sample includes treated ultra-poor households with baseline productive assets < 18,000 BDT.

# The transition equation is S-shaped

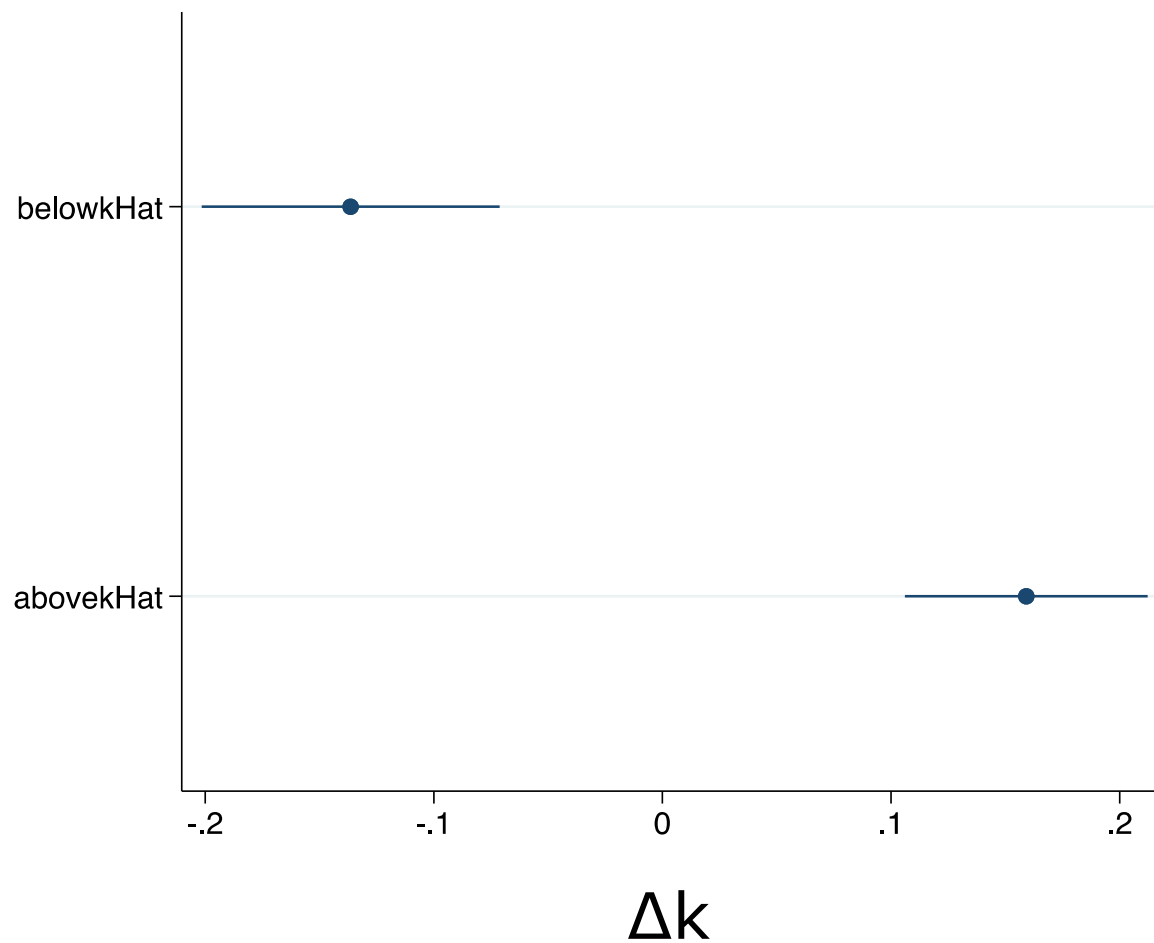


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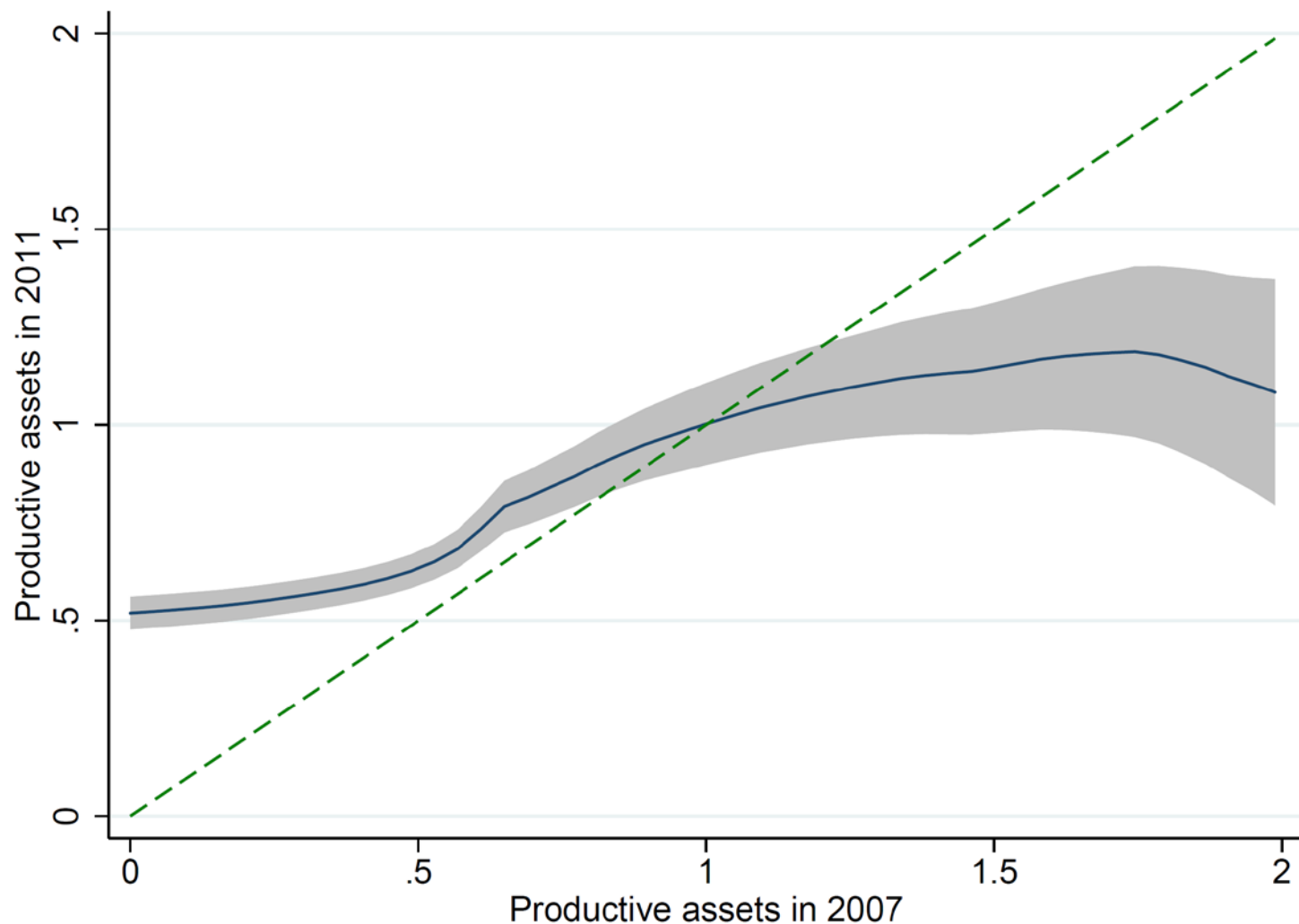
# Parametric identification gives similar answers



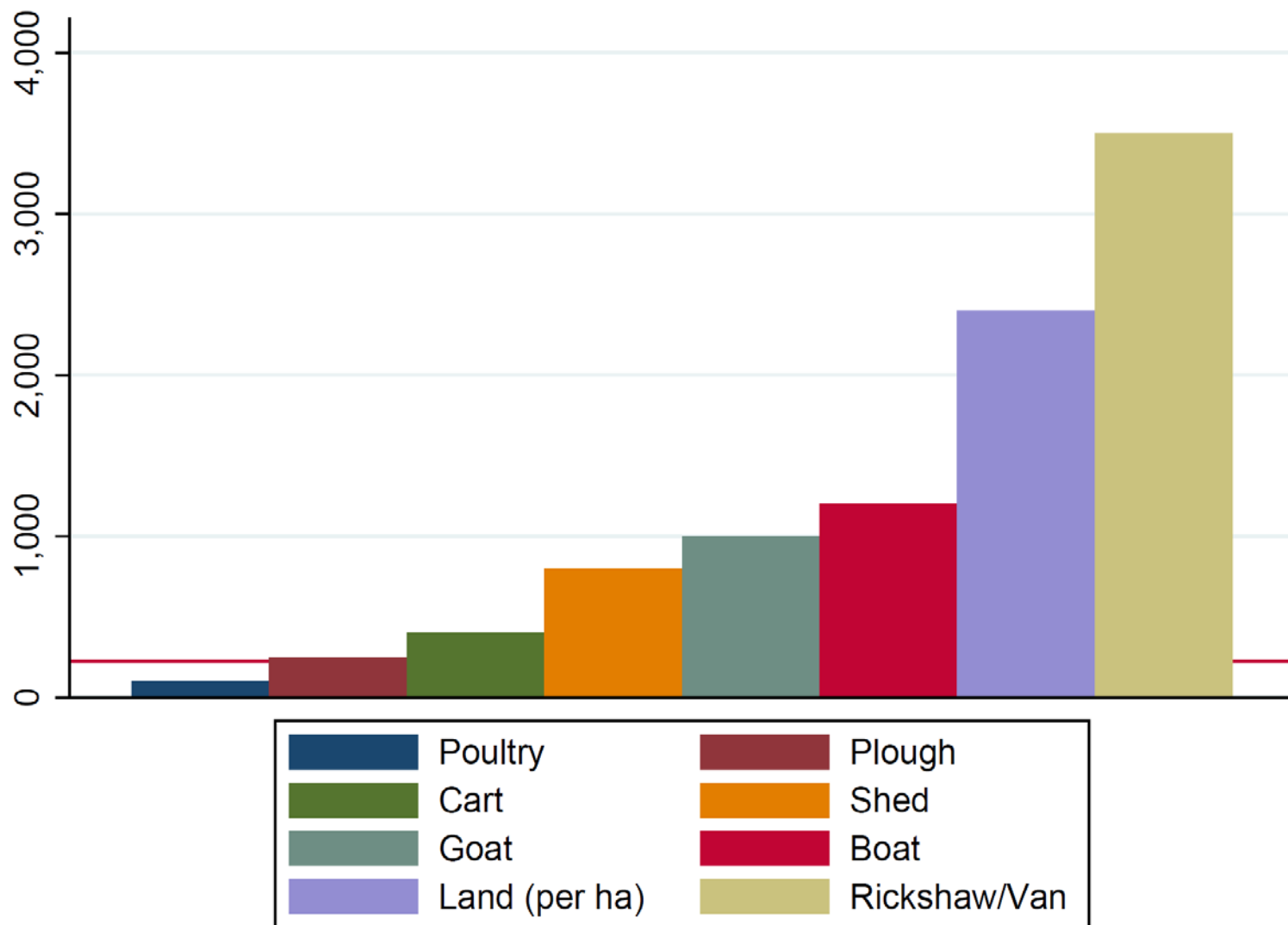
$K^*$  is unstable:  $\Delta k < 0$  to the left,  $\Delta k > 0$  to the right



# Transition equation in control villages



# What does the difference in assets correspond to?

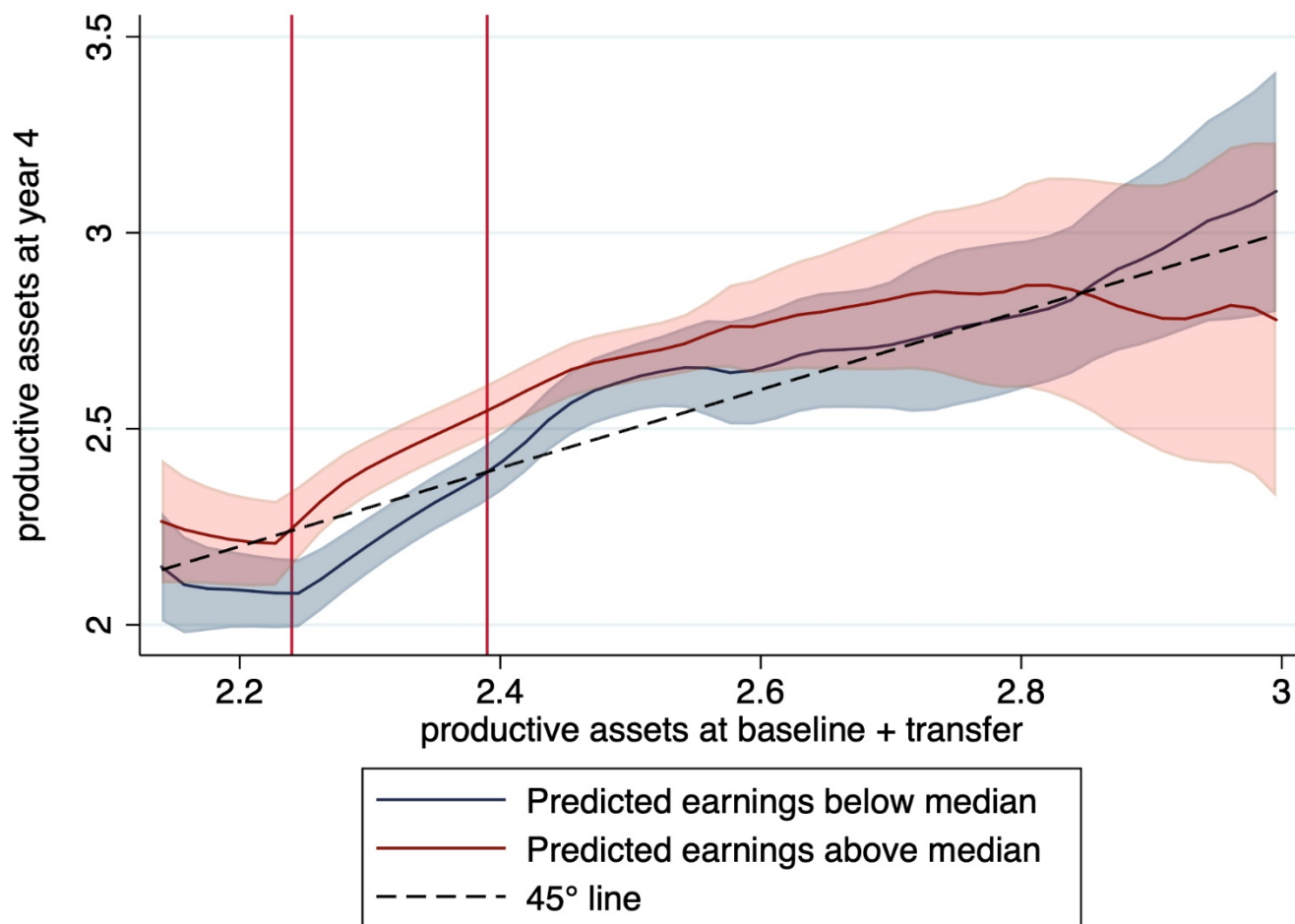


# Cannot be explained by common shocks correlated with $k_0$

|                                  | Treatment<br>(1)     | Control<br>(2)      | Both<br>(3)          |
|----------------------------------|----------------------|---------------------|----------------------|
| Above $\hat{k}$                  | 0.296***<br>(0.043)  | -0.010<br>(0.051)   | -0.010<br>(0.057)    |
| Treatment                        |                      |                     | -0.473***<br>(0.059) |
| Above $\hat{k} \times$ Treatment |                      |                     | 0.305***<br>(0.069)  |
| Constant                         | -0.136***<br>(0.033) | 0.336***<br>(0.045) | 0.336***<br>(0.050)  |
| $N$                              | 3,292                | 2,450               | 5,742                |

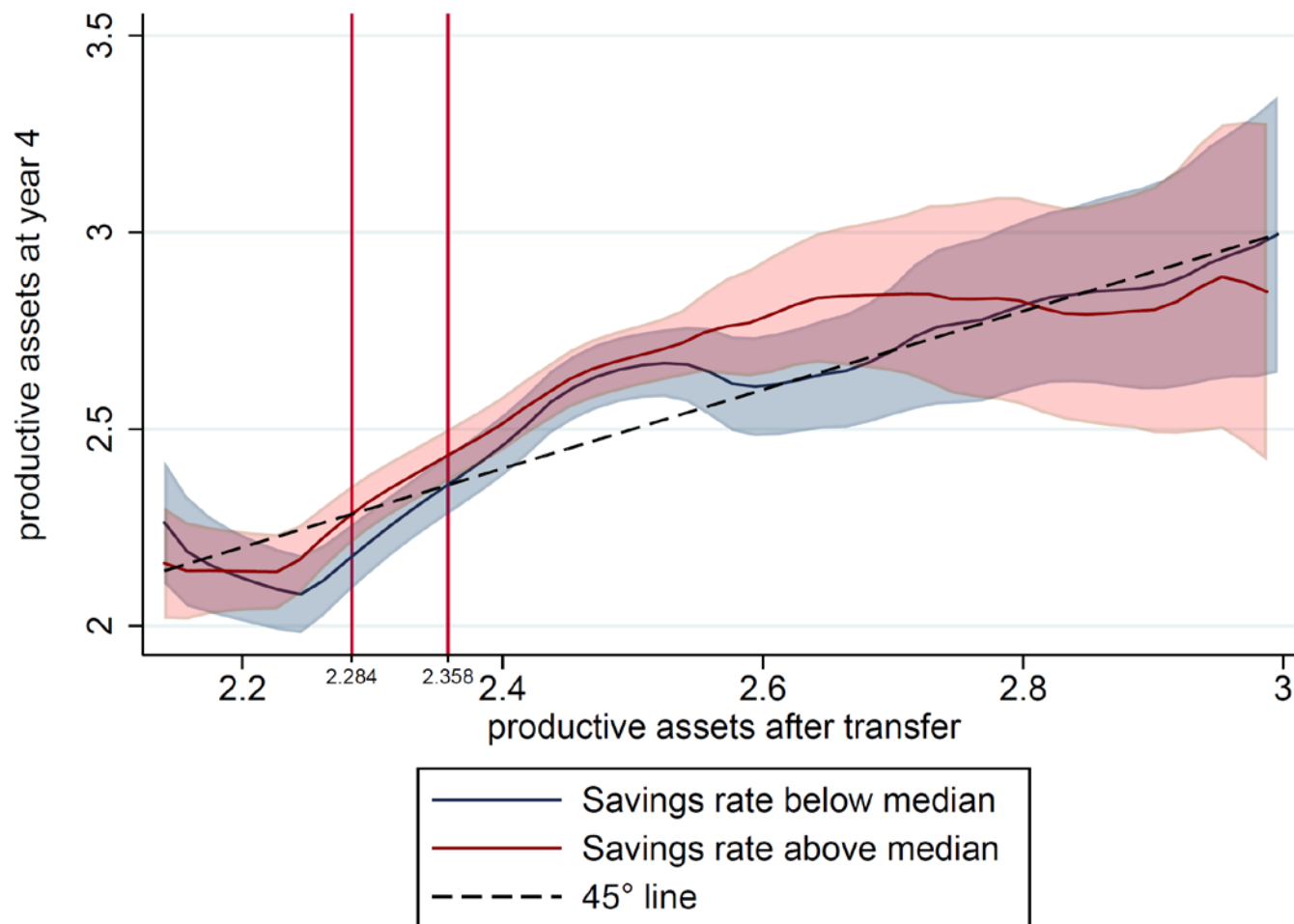
\*:  $p < 0.1$ , \*\*:  $p < 0.05$ , \*\*\*:  $p < 0.01$ . Standard errors in brackets. The dependent variable is the difference between log productive assets in 2011 and log of productive assets in 2007. Above  $\hat{k}$  equals 1 if the capital stock plus the transfer is larger than 2.34, 0 otherwise. Treatment = 1 if village is treated.

# Individual thresholds I: earnings potential



Measure earnings potential using returns to cows in different villages

# Individual thresholds II: savings potential



Instrument for savings rate using dependency ratio

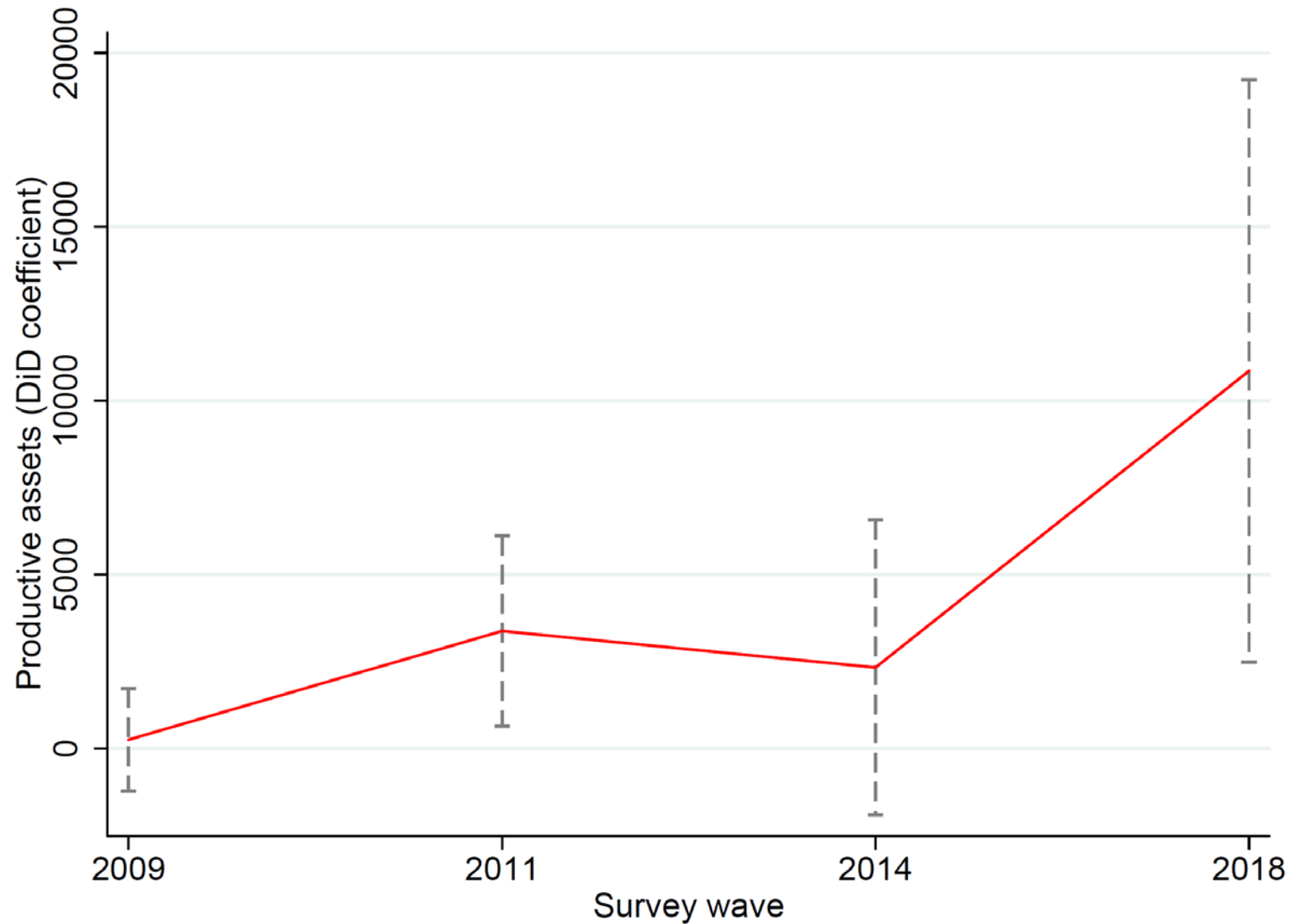
# Poverty traps using variation in thresholds

|                      | <i>Earnings Potential</i> |                      |                     | <i>Savings Potential</i> |                      |                     |
|----------------------|---------------------------|----------------------|---------------------|--------------------------|----------------------|---------------------|
|                      | Baseline<br>(1)           | FE<br>(2)            | Placebo<br>(3)      | Baseline<br>(4)          | FE<br>(5)            | Placebo<br>(6)      |
| Above $\hat{k}_i$    | 0.301***<br>(0.044)       | 0.307***<br>(0.047)  |                     | 0.319***<br>(0.045)      | 0.357***<br>(0.048)  |                     |
| Above $\hat{k}_L$    |                           |                      | -0.268<br>(0.047)   |                          |                      | 0.172<br>(0.878)    |
| Above $\hat{k}_H$    |                           |                      | 0.474***<br>(0.072) |                          |                      | 0.484***<br>(0.102) |
| Constant             | -0.157***<br>(0.038)      | -0.161***<br>(0.038) | -0.012***<br>(0.09) | -0.154***<br>(0.035)     | -0.177***<br>(0.037) | -0.262***<br>(0.07) |
| Baseline ln $K_0$ FE | N                         | Y                    | Y                   | N                        | Y                    | Y                   |
| N                    | 3,292                     | 3,292                | 1,656               | 3,135                    | 3,135                | 1,352               |

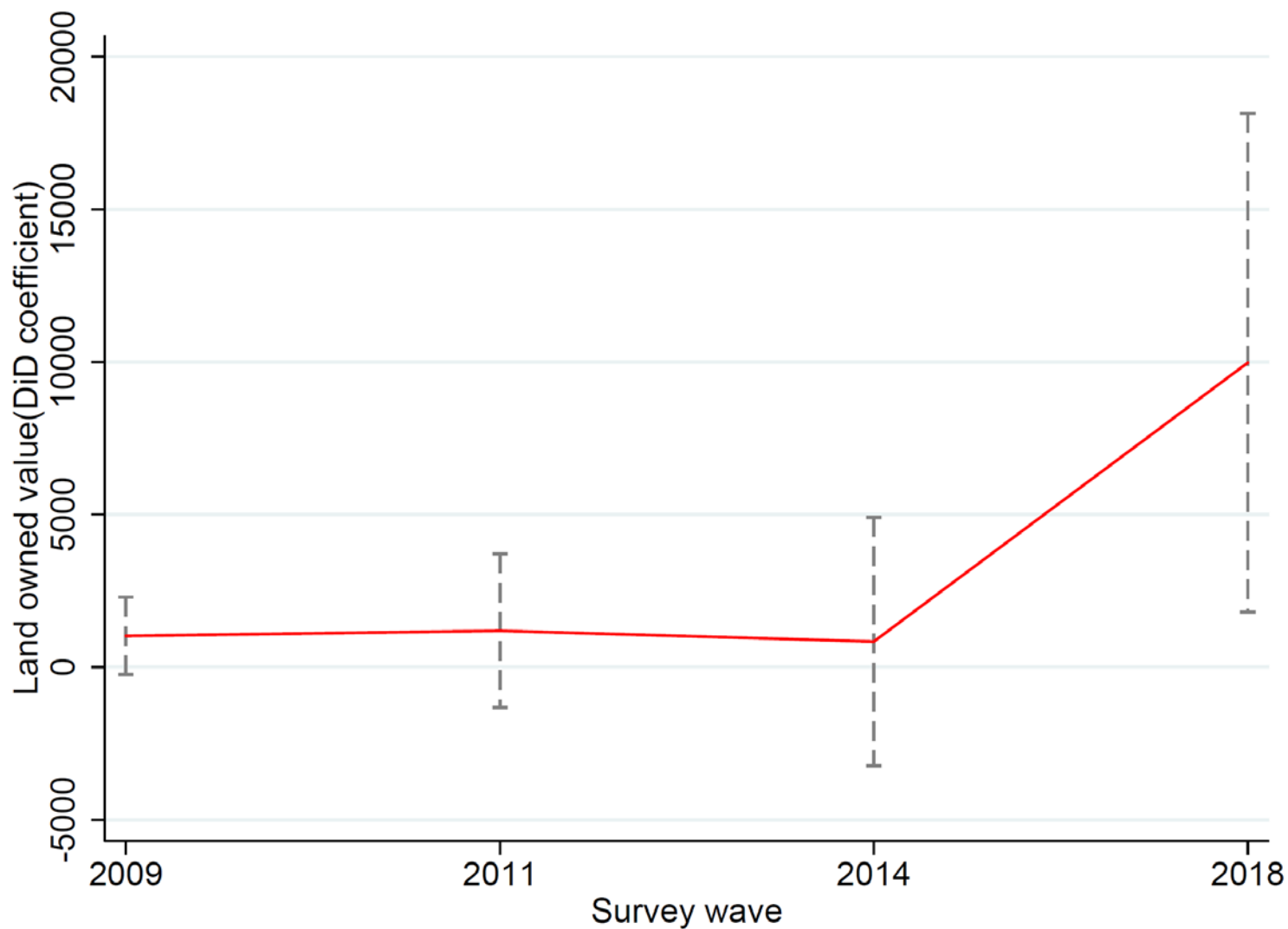
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Long run

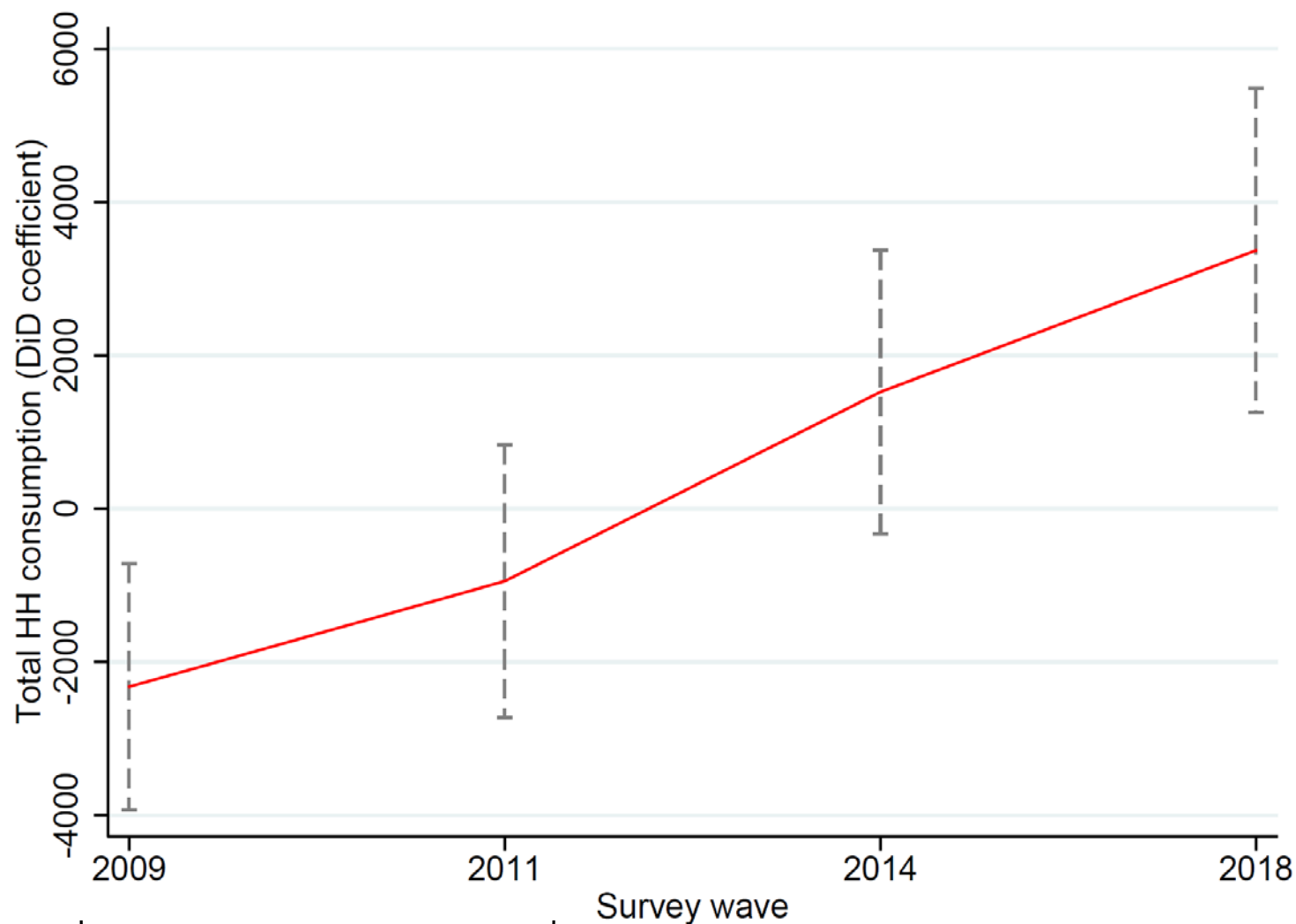
# Differences in productive assets grow over time



# Change in composition of assets

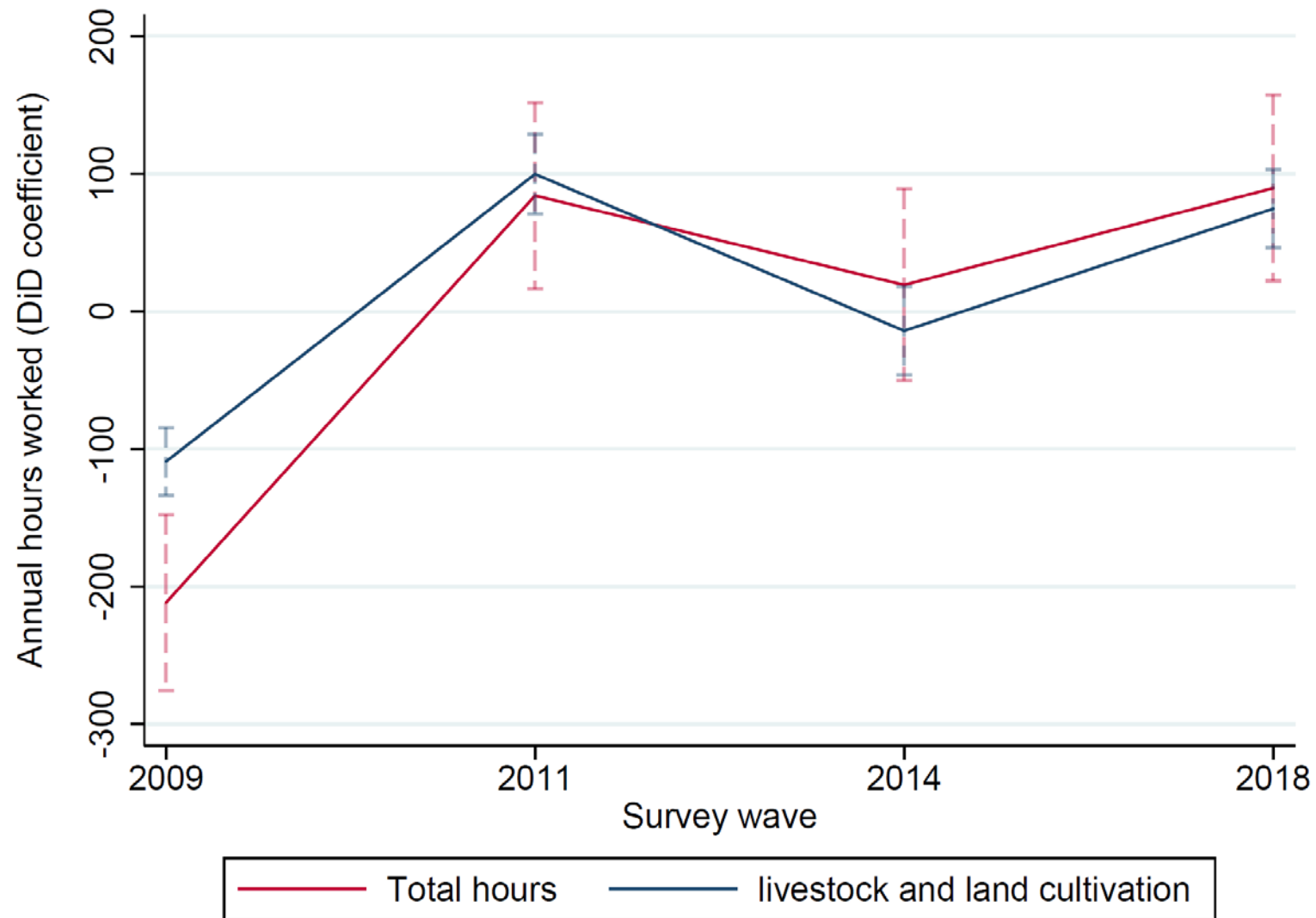


# Average gap in consumption increases



Initially negative as those  
above threshold save to buy  
assets

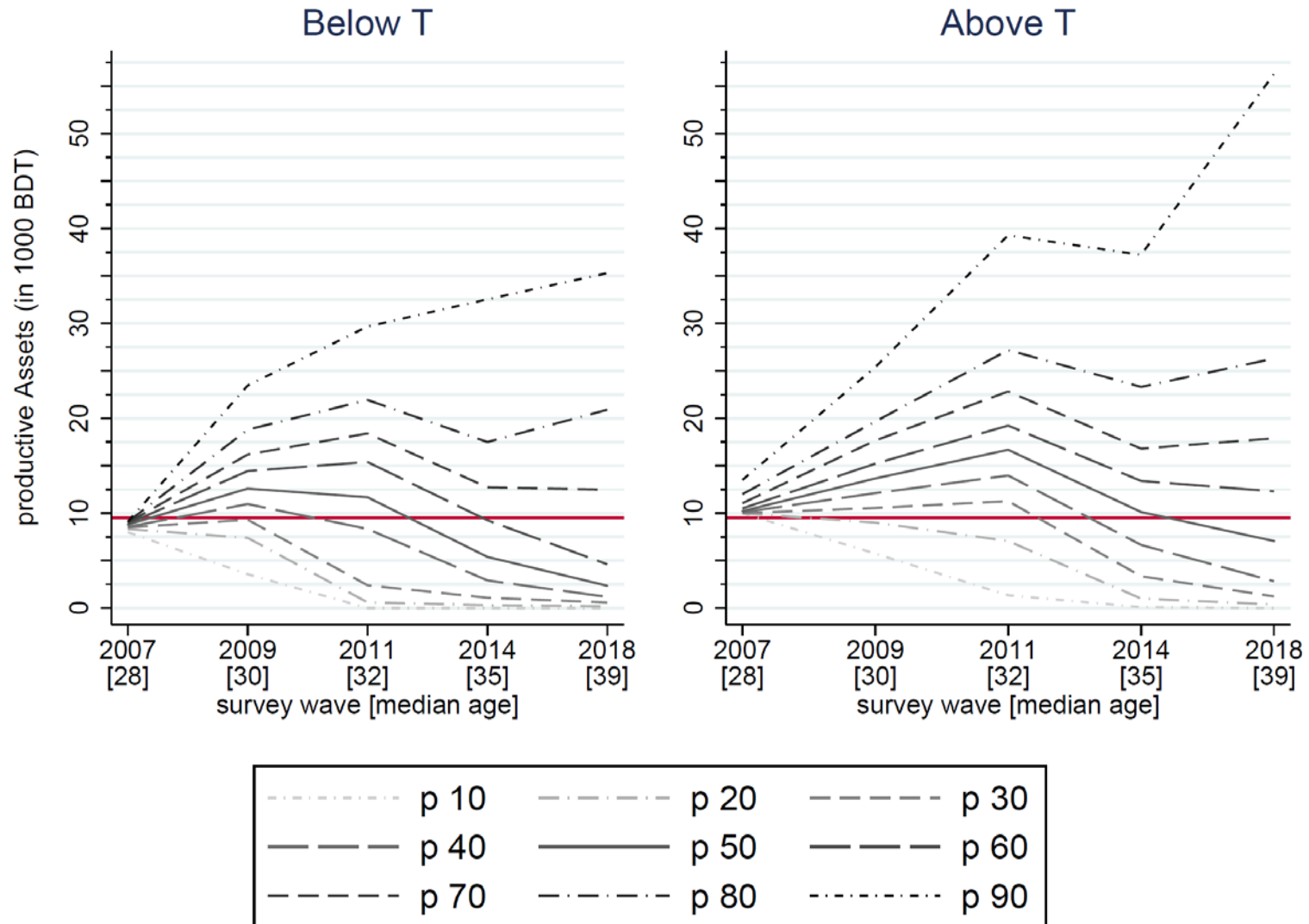
# Average gap in hours worked



# Life cycle effects

- Over 11 years, life cycle savings also affect asset stocks
- Asset dynamics reflect convergence to steady state and aging
  - Both lead to decreasing assets below threshold
  - Countervailing forces above threshold
- Evident above and below threshold but differences persist
- Stronger effects for younger beneficiaries: those above threshold 20pp more likely to grow assets by year 11

# Differences persist and inequality increases over time



# Structural Estimation

# Aims of structural analysis

- Reduced form findings suggest ultra-poor not in their first best occupation given their productivity and preference parameters
- Use structural estimation of model of occupational choice to:
  - Estimate individual-level productivity and cost of effort parameters
  - Determine optimal occupations in absence of capital constraints
  - Quantify extent of misallocation at baseline

# Steps of structural analysis

- Develop simple model of individual occupational choice
- Calibrate individuals' productivity and labor disutility parameters from baseline and year 2 data
  - unique feature: at  $t=0$  they can only do wage labor, at  $t=2$  they must try out livestock → no selection
- Evaluate model performance using year 4 data
- Simulate the model to estimate each individual's optimal steady-state occupational choice and quantify misallocation at baseline

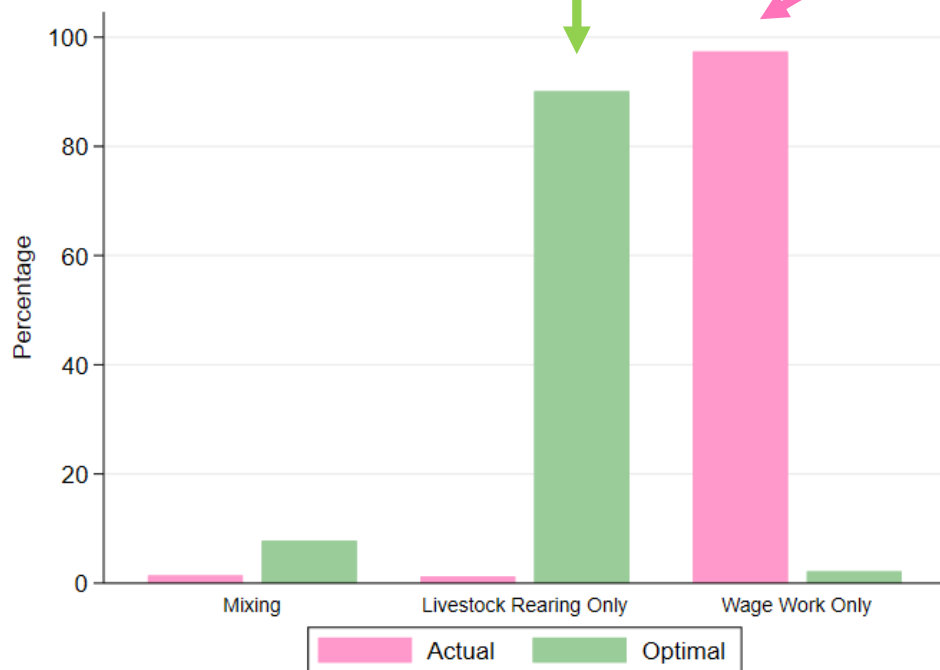
# Estimating misallocation

1

- Assume ultra-poor had assets = upper mode
- Use model to estimate optimal occupation
- Compute payoff at optimal occupation

2

Compute payoff at actual occupation



Total misallocation value:

**\$15 million pa**

Total cost of transfers needed to bring all above the threshold:

**\$1 million one-off**

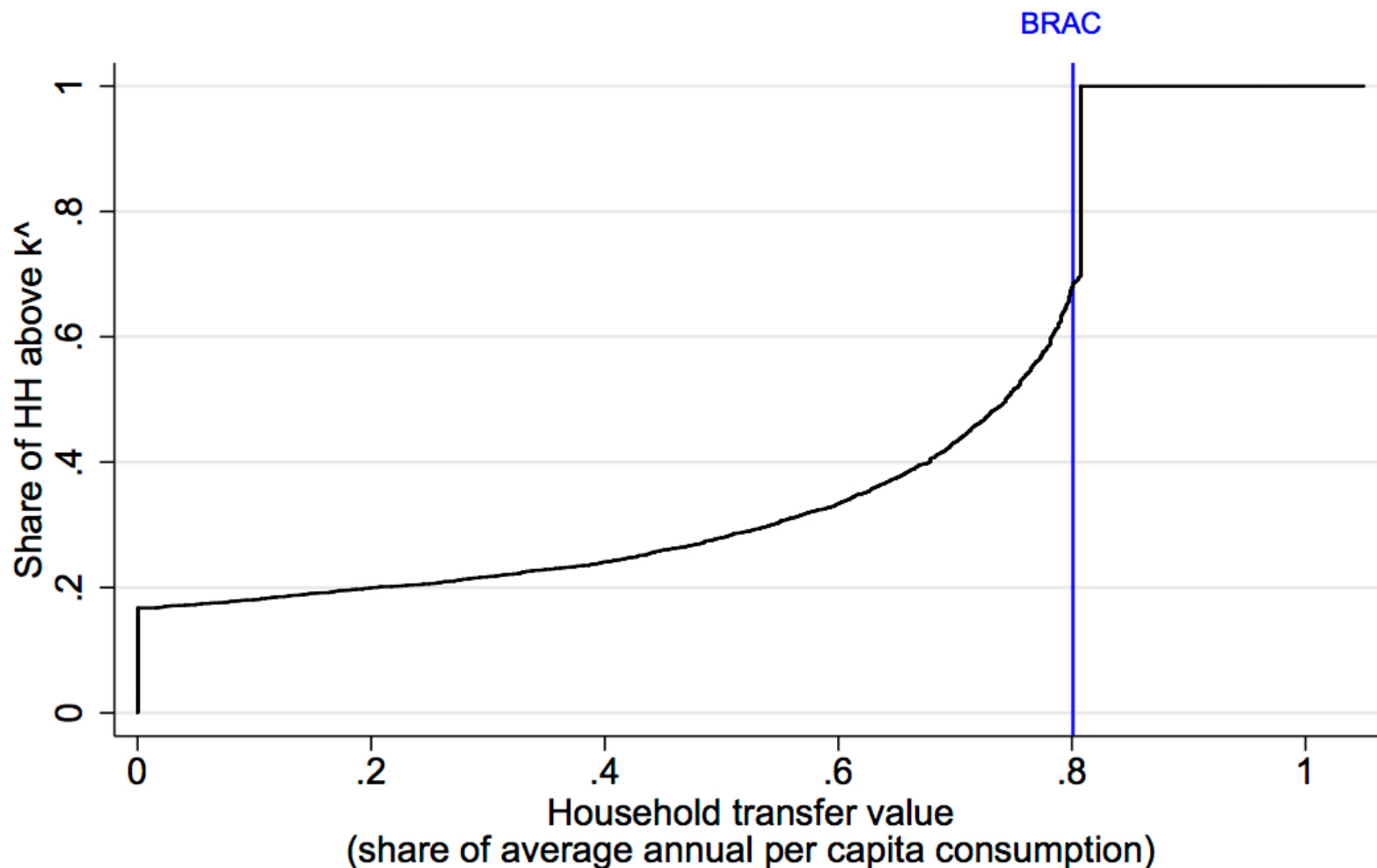
# Quantifying misallocation

- Model suggests 96% of individuals are misallocated at baseline
- Estimated total value of misallocation across all HHs 15 times larger than transfers needed for all HHs to escape the trap
- Value of misallocation  $\gg$  cost of eliminating trap robust with:
  - General equilibrium price effects
  - Doubling of wage rate
  - Halving disutility of wage labor

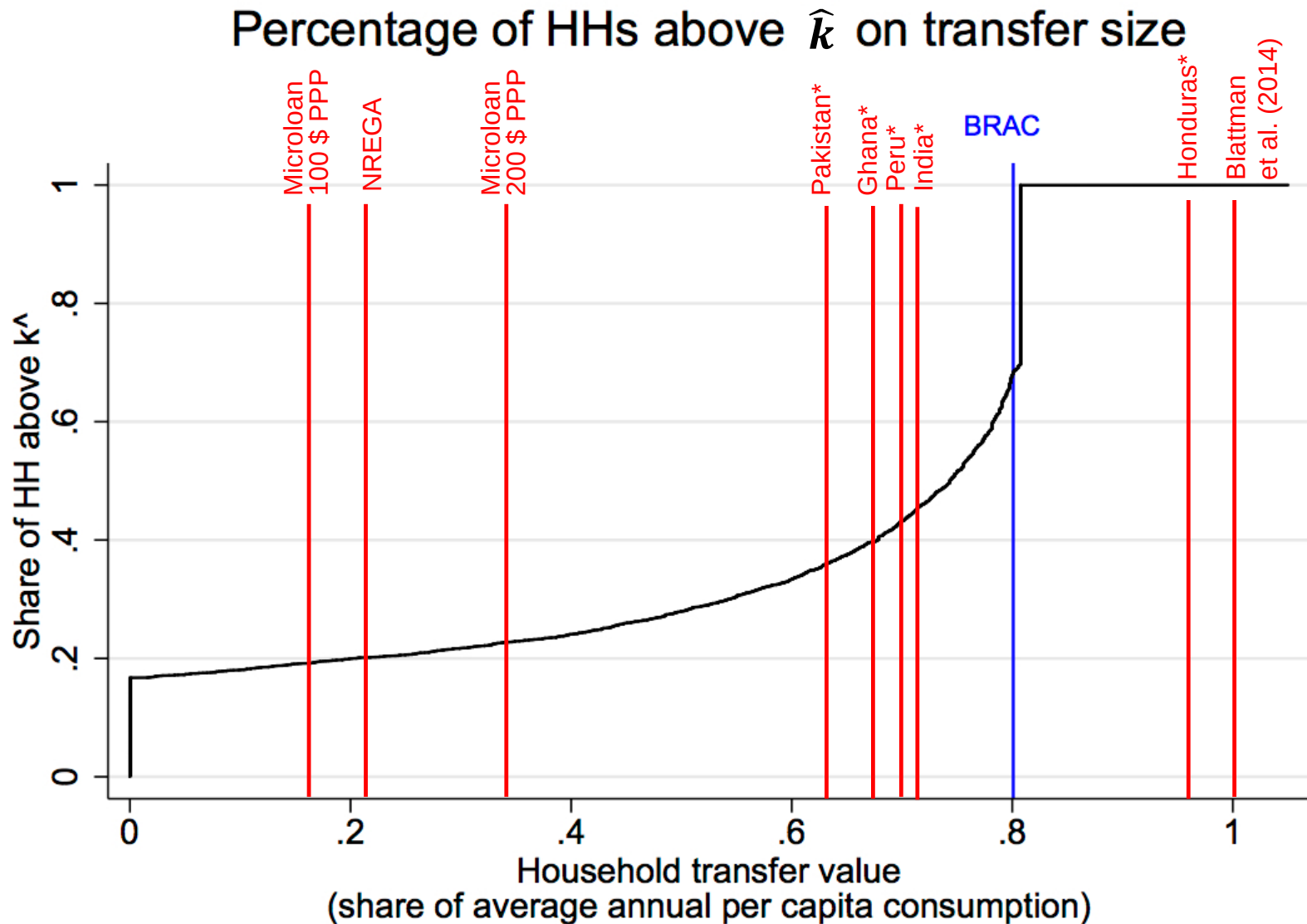
Policy

# A big problem requires a big solution

Percentage of HHs above  $\hat{k}$  on transfer size



# A big problem requires a big solution



\* Country names refer to study sites in Banerjee et al. (2015)

# Conclusions

- Poor people are not unable to take on more productive employment activities, they just lack the required capital
- Misallocation results suggest lack of opportunity prevents 96% from engaging in optimal occupation
- The existence of a poverty threshold implies that only transfers large enough to push beneficiaries past the threshold will reduce poverty in the long run
- Key policy conclusion – to tackle persistent poverty, need big push policies that tap into the talents of the poor rather than just propping up their consumption