THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

Why do people stay poor?

Testing for Poverty Traps using Evidence from a Randomized Capital Transfer Programme in Bangladesh

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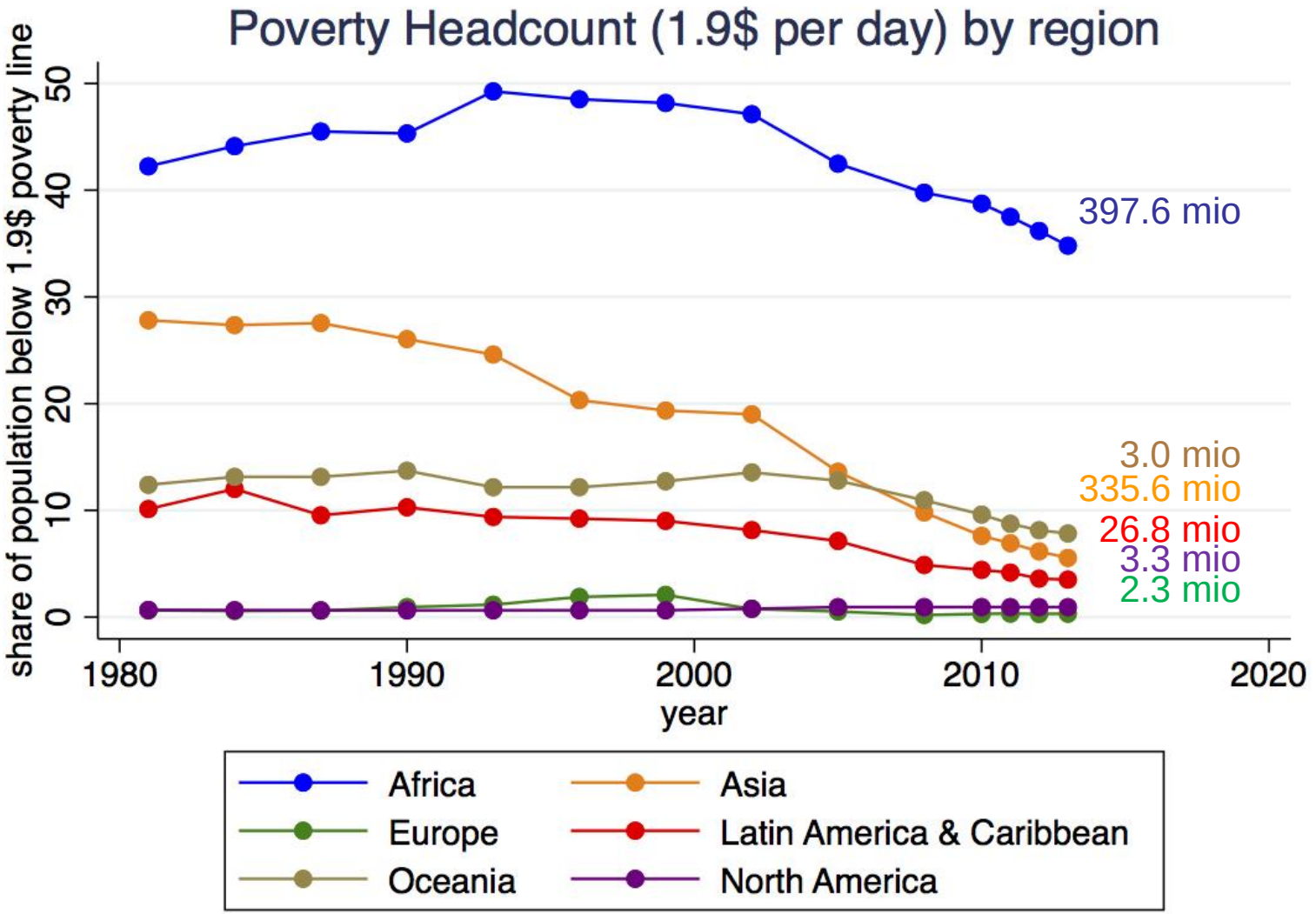
Research Questions

- Is poverty persistent? In particular:
  - Are the poor "stuck" in a trap and need a push to move out of it?

    or
  - Is it a combination of economic fundamentals (productivity, preferences) & slow convergence?
- If there is persistence, what is the mechanism behind it?
  - E.g., technological non-convexities, capital market frictions, nutrition-productivity link, saving rates increasing with income

Poverty has been decreasing but many are left behind



Persistence is Reflected in Limited Mobility

- Moreover, evidence suggests limited mobility, evening though with growth the situation improves
- Both intra-generational and inter-generational
- A newly created database—the Global Database of Intergenerational Mobility (GDIM) provides some summary statistics for a number of developing and developed countries, including India (https://www.worldbank.org/en/topic/poverty/publication/fair-progress-economic-mobility-across-generations-around-the-world)

How to think about persistence – Two Views

- Conditional (plus slow) Convergence or equal opportunity view - differences in individual traits like talent or motivation that make the poor choose low productivity jobs.

- Poverty traps view - access to opportunities depends on initial wealth and hence people stay have no choice but to do low productivity jobs because they are born poor.

Two Views on Persistence of Poverty

Equal access to opportunity, different fundamentals

- People have different fundamentals which determine their occupational choices and earnings
- Convergence to unique steady state occurs if either
  - DRS to factors that can be accumulated

  Or

  - Perfect credit markets

Unequal access to opportunity, similar fundamentals

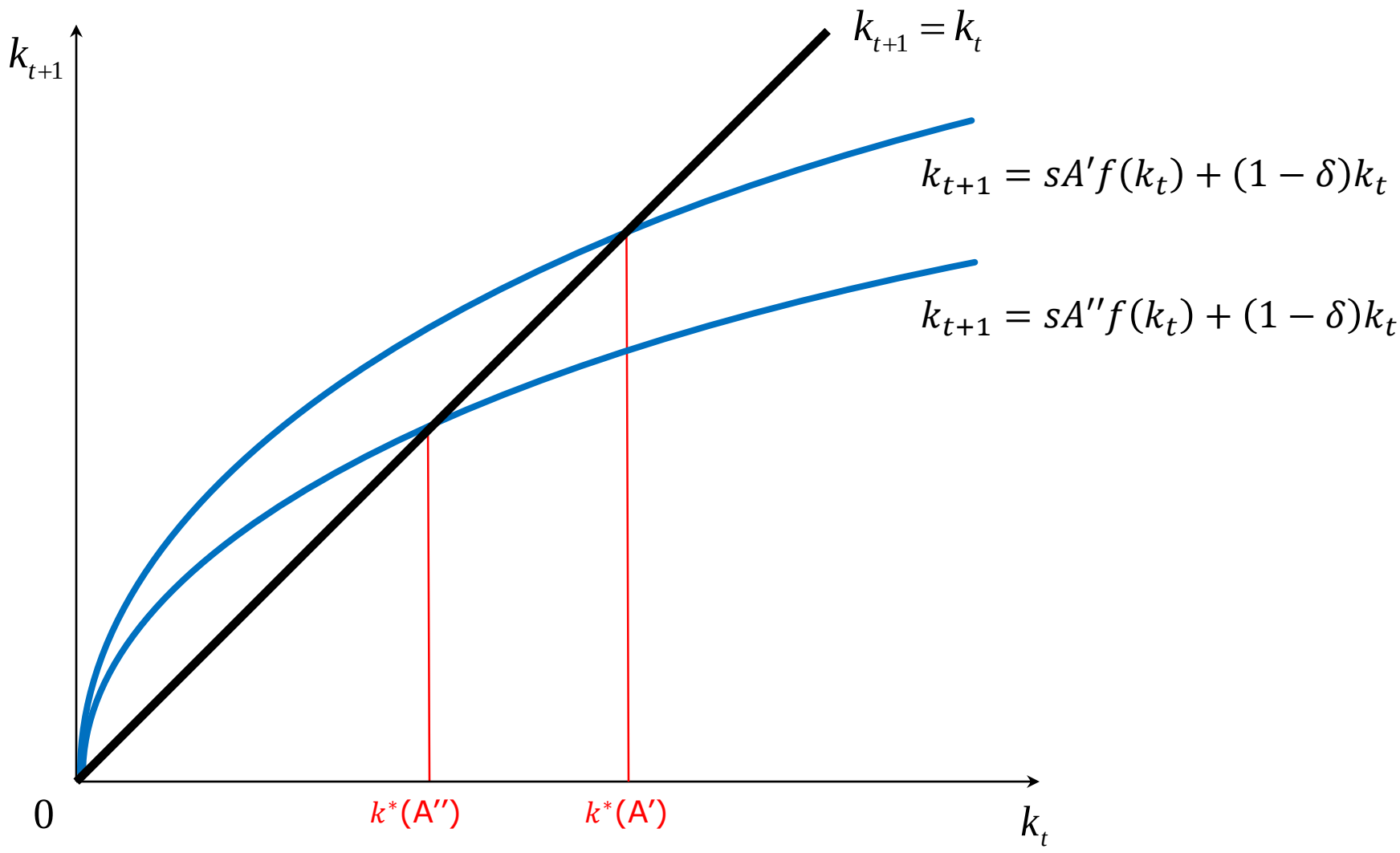
- People have different access to opportunity which determine their occupational choices and earnings
- Multiple steady states may exist if
  - IRS to factors that can be accumulated

  And

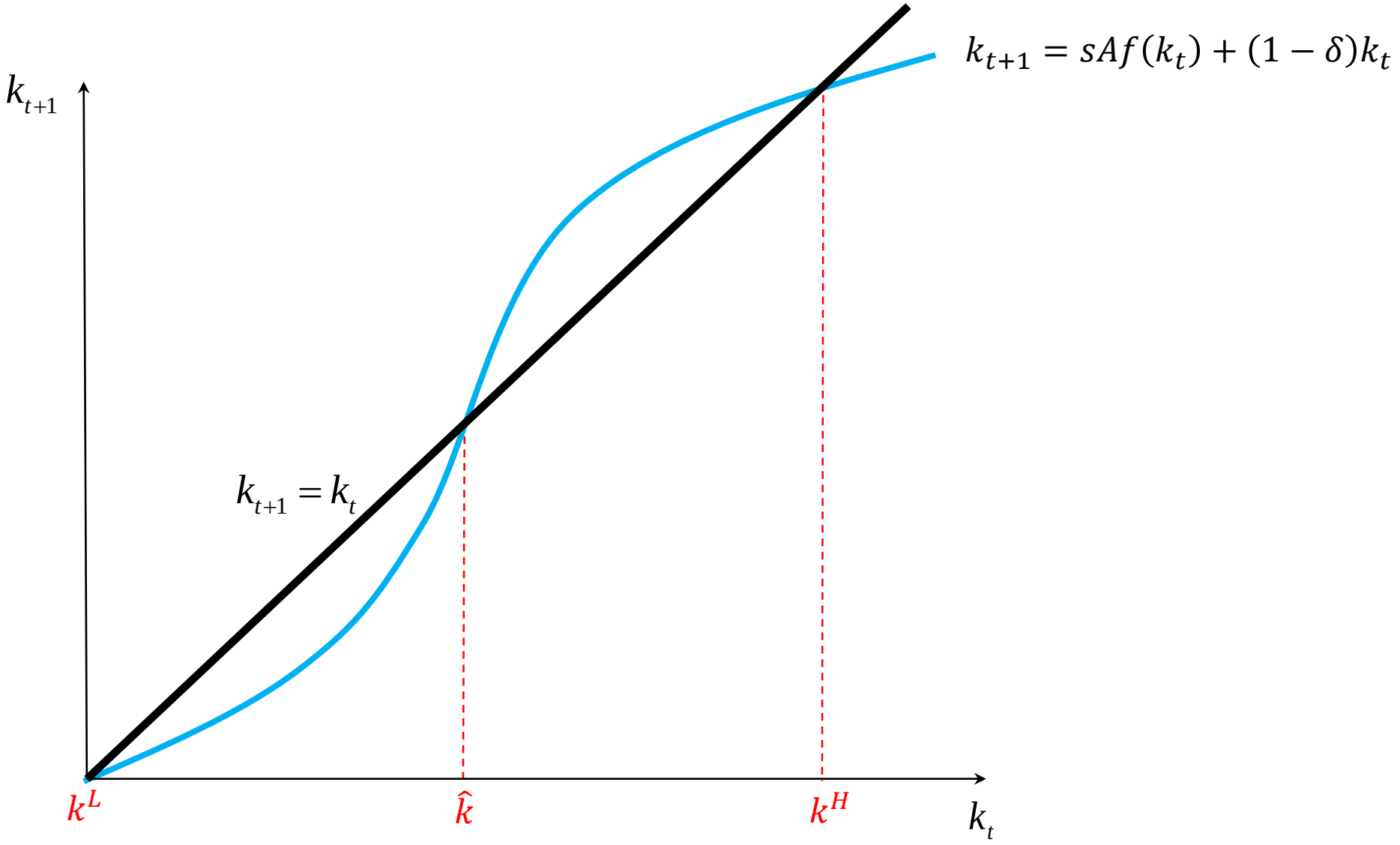
  - Imperfect credit markets

See Ghatak (WBER 2015)

If opportunities do not depend on initial wealth, you need differences in innate traits (A, s) to explain poverty



If opportunities depend on initial wealth, individuals with identical innate traits (A, s) can end up poor or non-poor

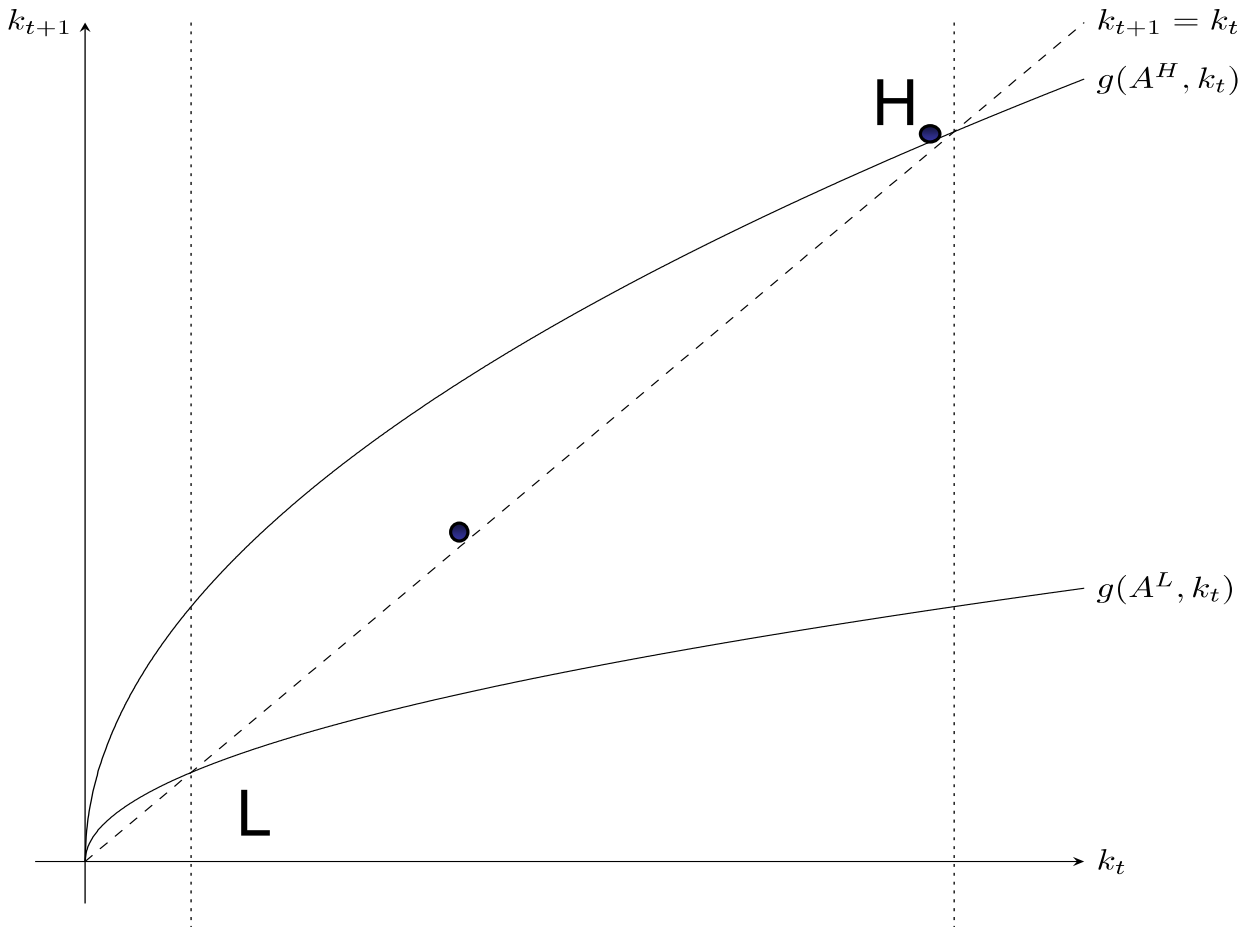


Poverty traps

- The idea of poverty traps (multiple equilibria) has a long history in macro and micro development theory (Rosenstein-Rodan 43, Nelson 56, Dasgupta Ray 86, Banerjee & Newman 93, Azariadis 96, Azariadis & Stachurski 06, Ghatak 15)

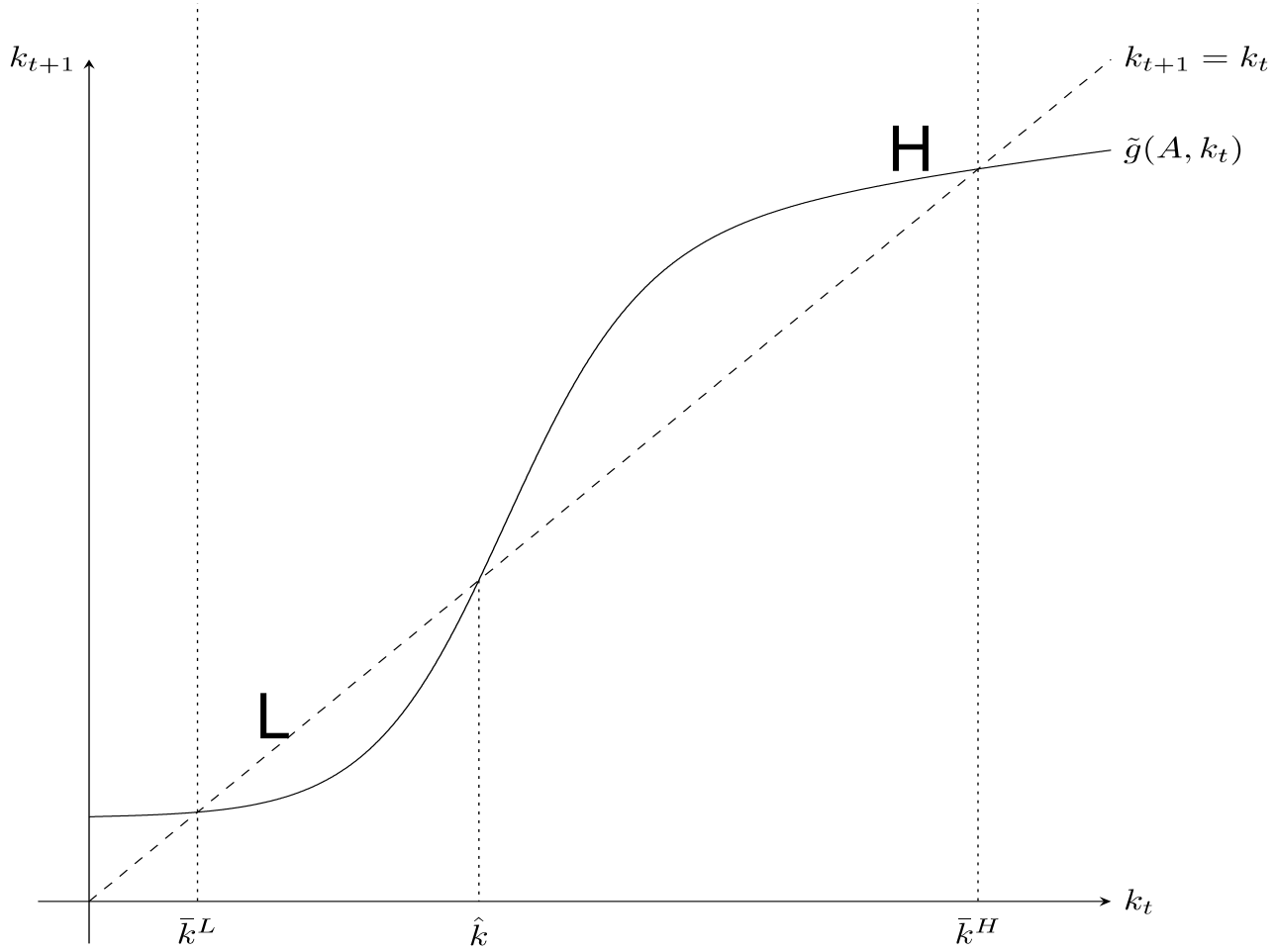
- Empirical investigations include calibrations (Graham & Temple 06) and tests of the underlying assumptions (Kraay & McKenzie 14)

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



Different productivity?

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

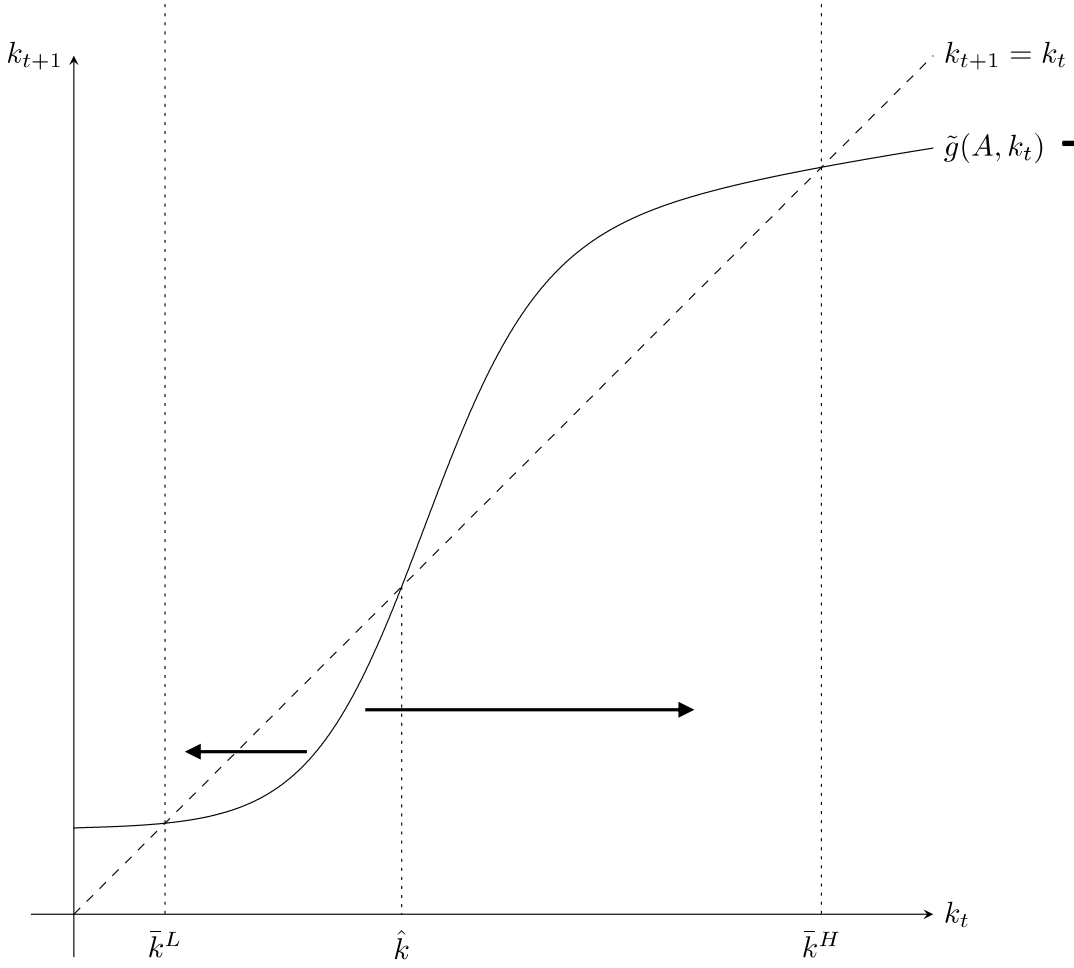


Or, poverty trap?

How to empirically identify poverty traps?

- Problem with observational data – accumulation of capital is endogenous to individual characteristics (e.g., productivity) – cannot compare those at L with those at H
- Even if we have a panel (individual or household), variations in capital accumulation (or income growth) will be driven by shocks that are correlated with individual characteristics, so movements around L & H cannot be used to identify

What would be an ideal test?



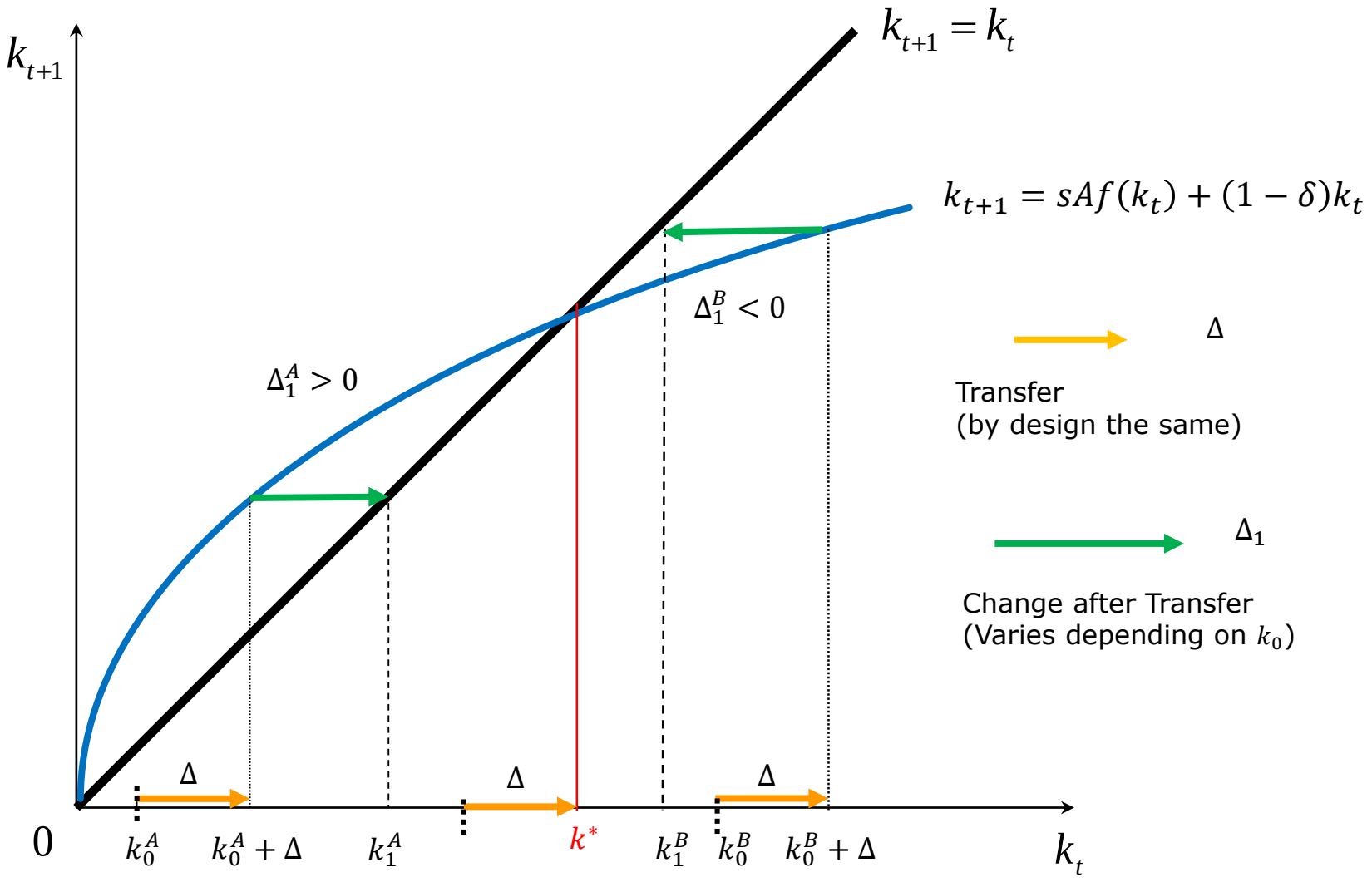
This is a poverty trap

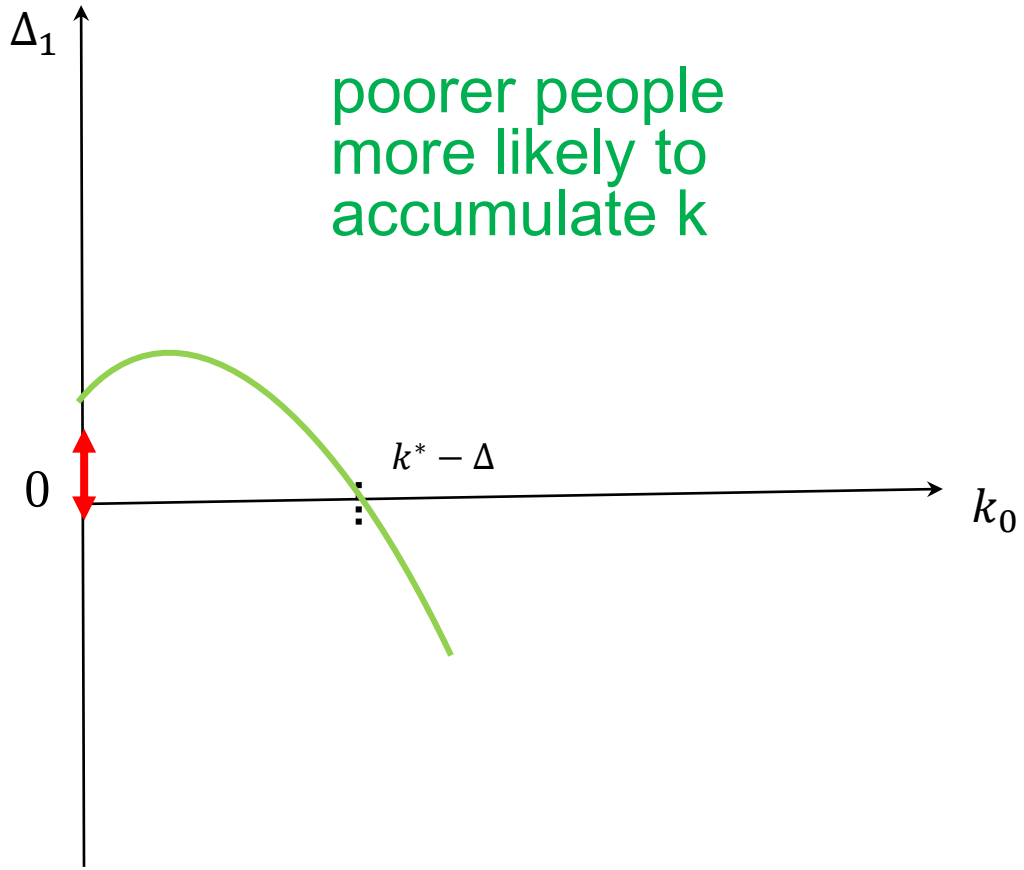
Take N people at k^L

Assign random capital transfers

Use the randomly generated k_t distribution to estimate the transition equation and response to transfers

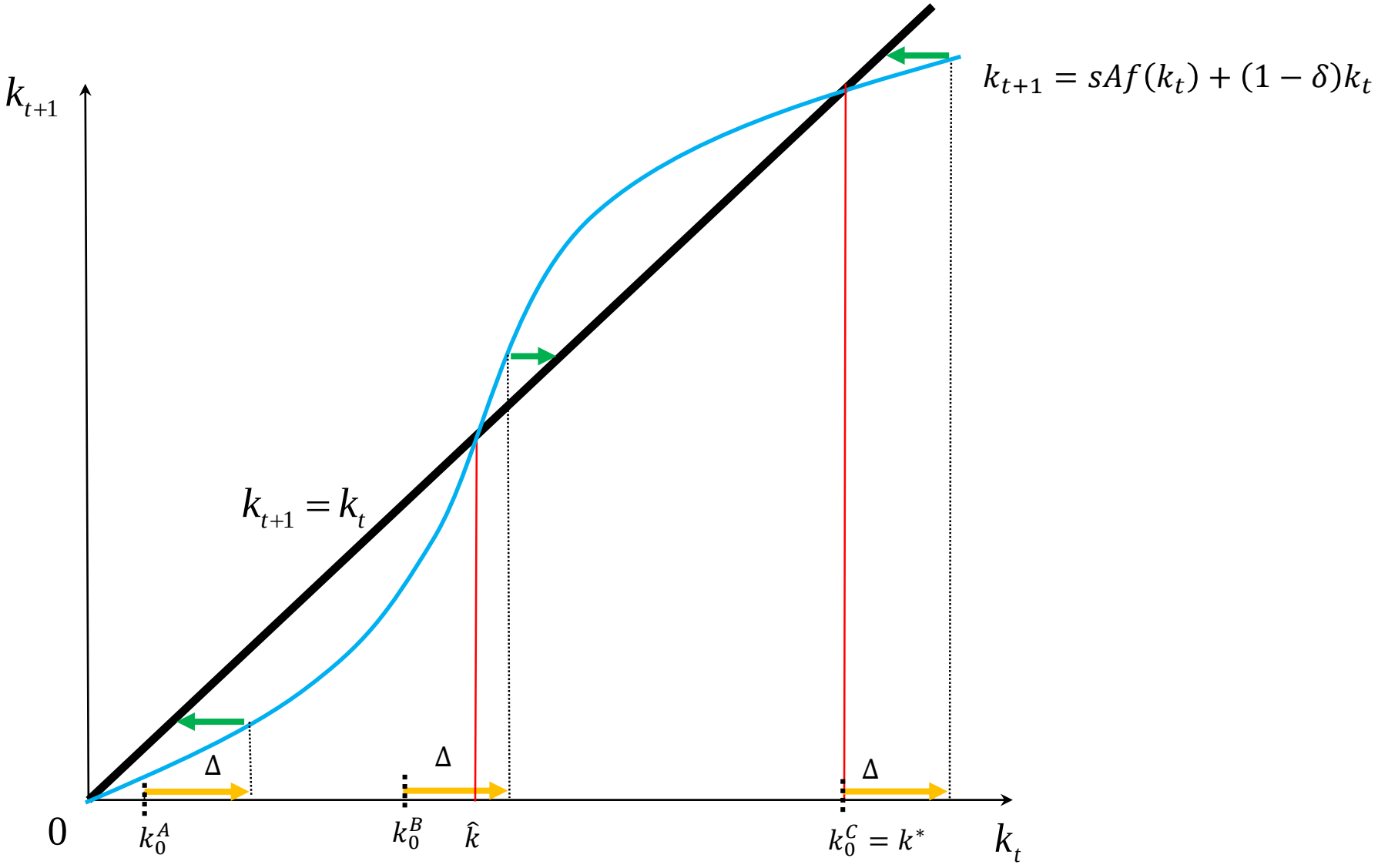
Response to asset transfer in equal opportunity view

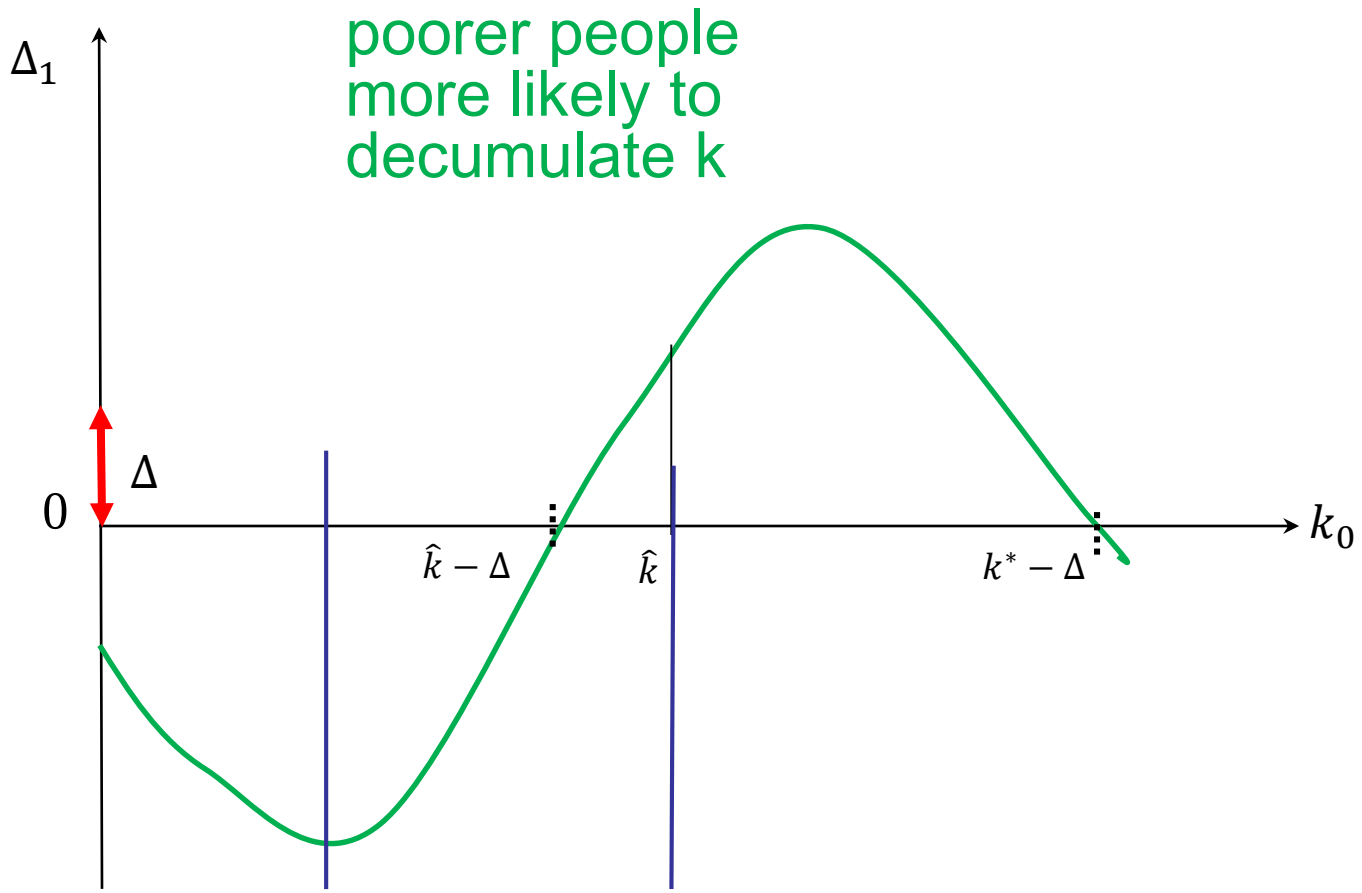




Changes in k plotted against k_0 in Solow world

Response to asset transfer in unequal opportunity view





Changes in k plotted against k_0 in Poverty Trap world

This paper

- We use the RCT of a large asset transfer program in Bangladesh to implement a direct test
- We estimate a structural model of occupational choice to back out the implied misallocation

Setting

The Study (I)

- BRAC's Targeting the Ultra-poor Programme in Northern Bangladesh studied in Bandiera et al. (QJE 2017)
- The data covers 21,000 households, of which over 6,000 extremely poor, living in 1,309 villages in the 13 poorest districts in the country.
- The poorest women in **randomly chosen villages** receive a large asset (a cow) with some training
- The program offers productive assets and training to create a source of regular earnings for poor women who are mostly engaged in irregular and insecure casual labour.

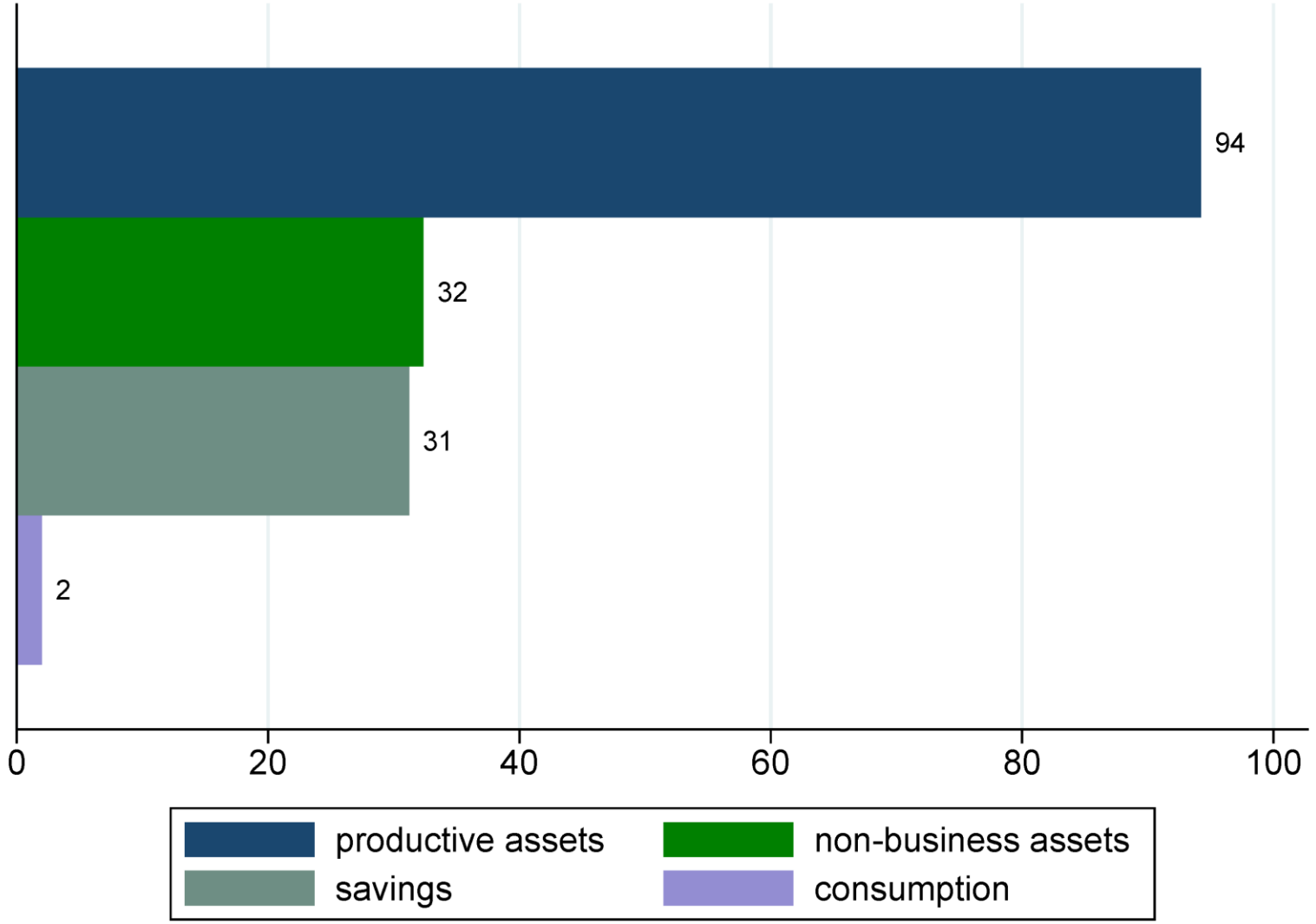
The Study (II)

- To identify beneficiaries, BRAC runs a participatory wealth assessment exercise in every village.
- This yields a classification of households in three wealth classes (ultra-poor, near-poor, middle and upper class) which forms our sampling frame.
- Ultra-poor households, who account for 6% of the population, are eligible to receive the program; other households are ineligible.
- Physical capital is measured as productive assets which includes poultry, livestock, tools, machines, vehicles, and land (money value)

The Study (III)

- All ultra-poor in these villages get assigned to treatment or control
- Survey all ultra-poor and near-poor, plus 10% sample of upper and middle class
- 4000 out of 6000 UP beneficiaries engaged solely in casual labor at baseline
- Asset transfer of approximately $560 in PPP in 2007
- Near doubling of baseline wealth for the ultra-poor
- Surveyed again in 2009, 2011, 2014, 2017

Fact 1: key difference between classes is ownership of productive assets (1)



Ratio between rich & ultra-poor

	(1) ultra-poor	(2) near poor	(3) middle class	(4) upper class
A) Labour Outcomes				
In labour force	0.84	0.81	0.87	0.91
	(0.36)	(0.39)	(0.34)	(0.29)
Total hours worked per year	1134.31	938.53	819.82	820.79
	(888.38)	(821.22)	(639.08)	(549.77)
Total days worked per year	252.06	265.07	303.55	325.62
	(136.74)	(141.27)	(122.21)	(102.25)
Average hours worked per day	4.48	3.26	1.99	1.63
	(2.65)	(2.38)	(1.50)	(0.93)
Total income	4969.93	4194.61	4855.15	9805.91
	(5429.53)	(6180.82)	(11679.78)	(24868.17)
Hourly income	4.65	4.27	5.98	12.55
	(19.35)	(7.37)	(17.69)	(40.61)
B) Human and Physical Capital				
Years of formal education	0.56	1.26	1.99	3.72
	(1.63)	(2.43)	(2.99)	(3.74)
Literate	0.07	0.17	0.27	0.51
	(0.26)	(0.37)	(0.44)	(0.50)
Productive assets (in 1000 BDT)	9.92	12.94	145.38	801.77
	(30.63)	(71.59)	(310.49)	(945.29)
Observations	6732	7340	6742	2215

Notes- Standard deviations in brackets

Fact 1: key difference between classes is ownership of productive assets (II)

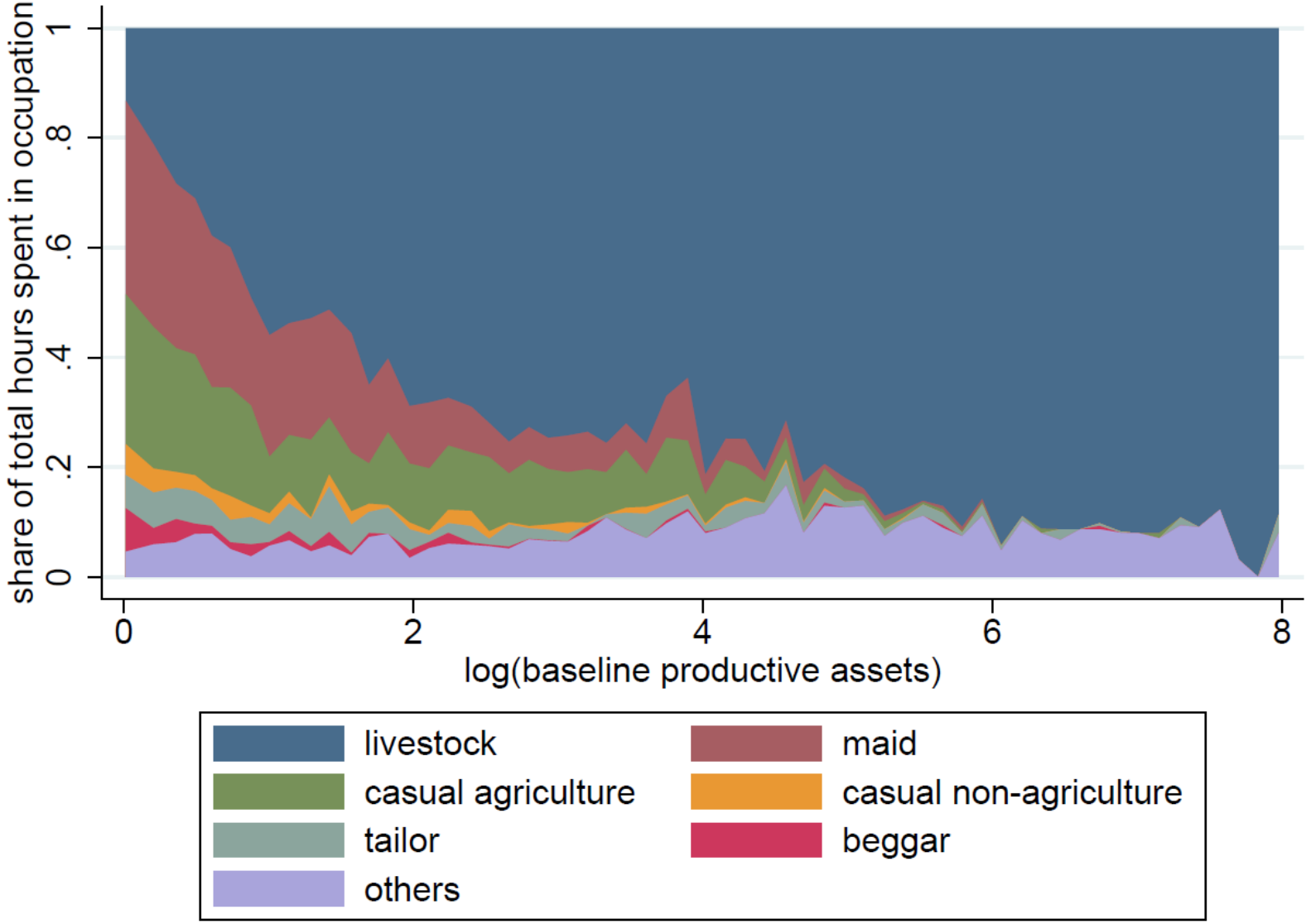
HOUSEHOLD CHARACTERISTICS AND ASSET HOLDINGS, BY WEALTH CLASS

	(1) Ultra-poor	(2) Near-poor	(3) Middle class	(4) Upper class
Household characteristics				
Share of population in this wealth class	0.061	0.219	0.585	0.135
Primary female is the sole earner	0.409	0.250	0.142	0.120
Primary female is illiterate	0.929	0.832	0.736	0.489
Consumption and assets				
Household is below the $1.25 a day poverty line	0.530	0.493	0.373	0.121
Consumption expenditure (per adult equivalent)	627.8	645.1	759.5	1,234.2
Household assets [$]	36.5	68.1	279.9	1,663.4
Household savings [$]	7.9	22.1	84.5	481.9
Household receives loans	0.191	0.393	0.498	0.433
Household gives loans	0.012	0.018	0.030	0.067
Business assets (excl. livestock and land) [$]	22.9	54.4	286.1	1,569.8

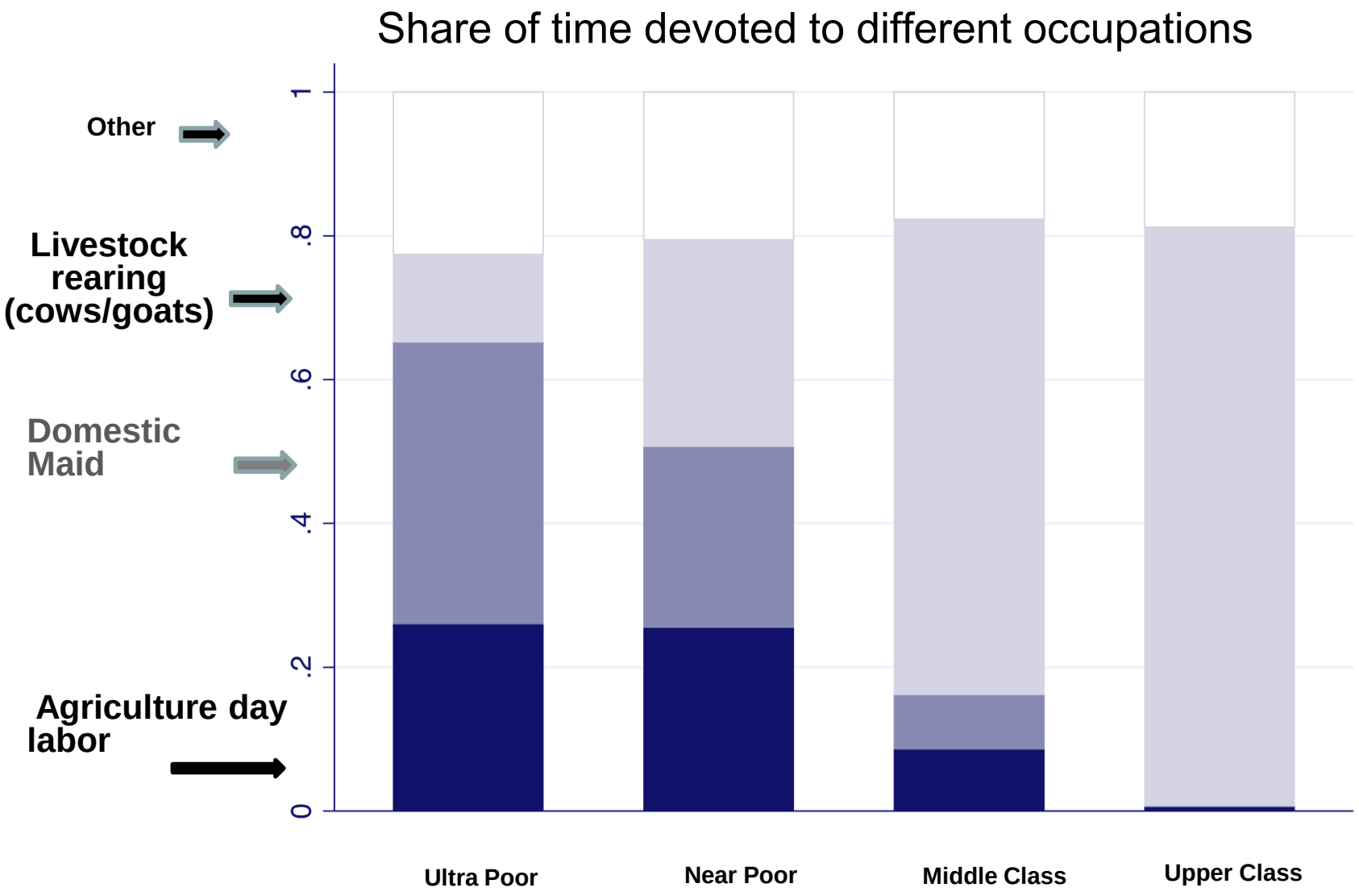
Fact 1: key difference between classes is ownership of productive assets (III)

Livestock				
Household owns cows	0.055	0.154	0.469	0.733
Household owns goats	0.092	0.142	0.300	0.425
Value of cows [$]	33.8	120.2	633.8	1,559.1
Value of goats [$]	7.97	12.8	39.8	71.3
Household rents cows for rearing	0.070	0.148	0.118	0.030
Household rents goats for rearing	0.111	0.157	0.102	0.021
Land				
Household owns land	0.066	0.107	0.487	0.911
Value of land owned [$]	200.0	491.2	6,789.6	40,125.1
Household rents land for cultivation	0.060	0.143	0.276	0.168
Number of sample households	6,732	6,743	6,328	2,036

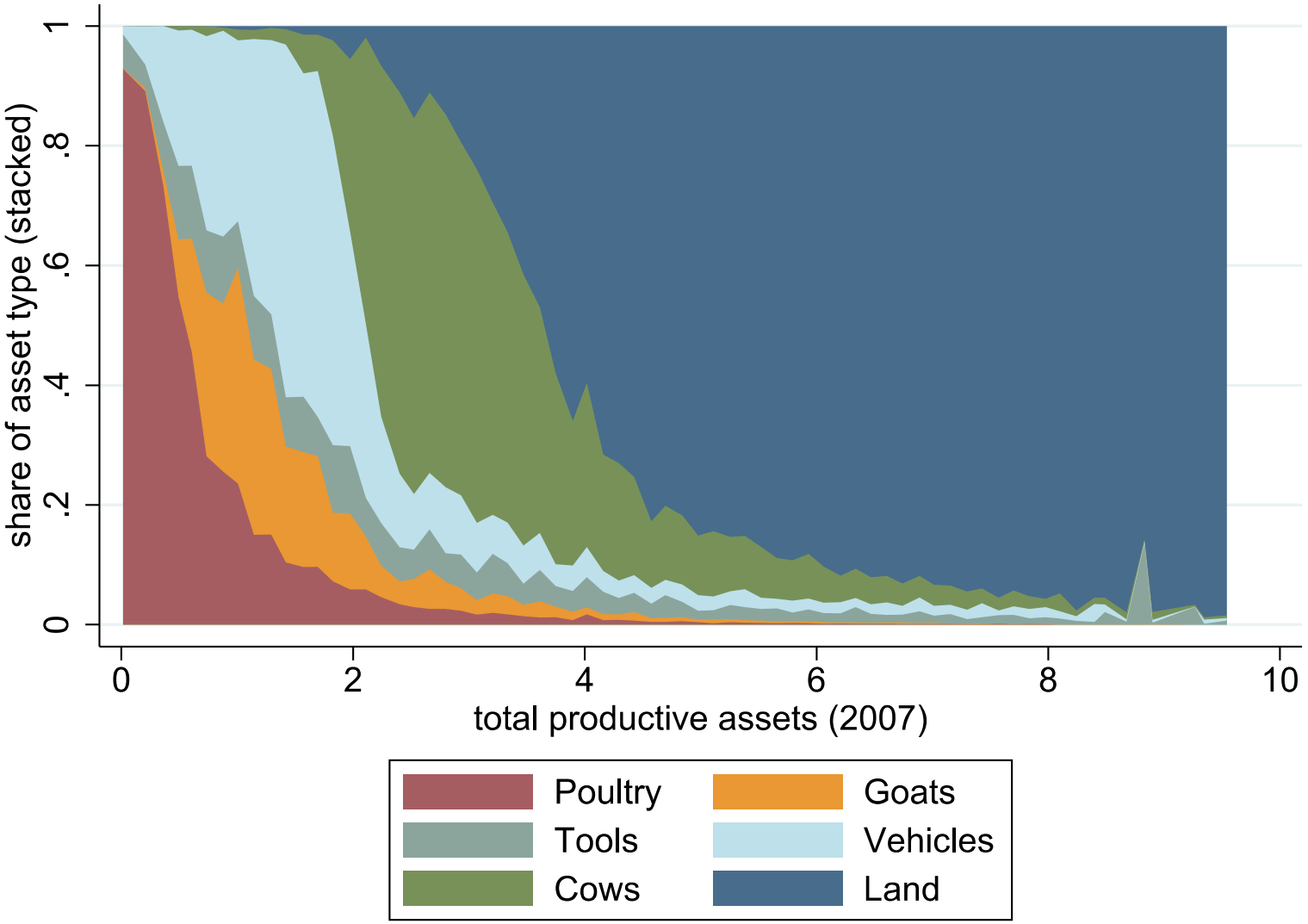
Fact 2: occupational choice reflects differences in asset ownership



Fact 2 (contd)


Share of time devoted to different occupations
Other
Livestock rearing (cows/goats)
Domestic Maid
Agriculture day labor
0
.2
.4
.6
.8
1
Ultra Poor
Near Poor
Middle Class
Upper Class

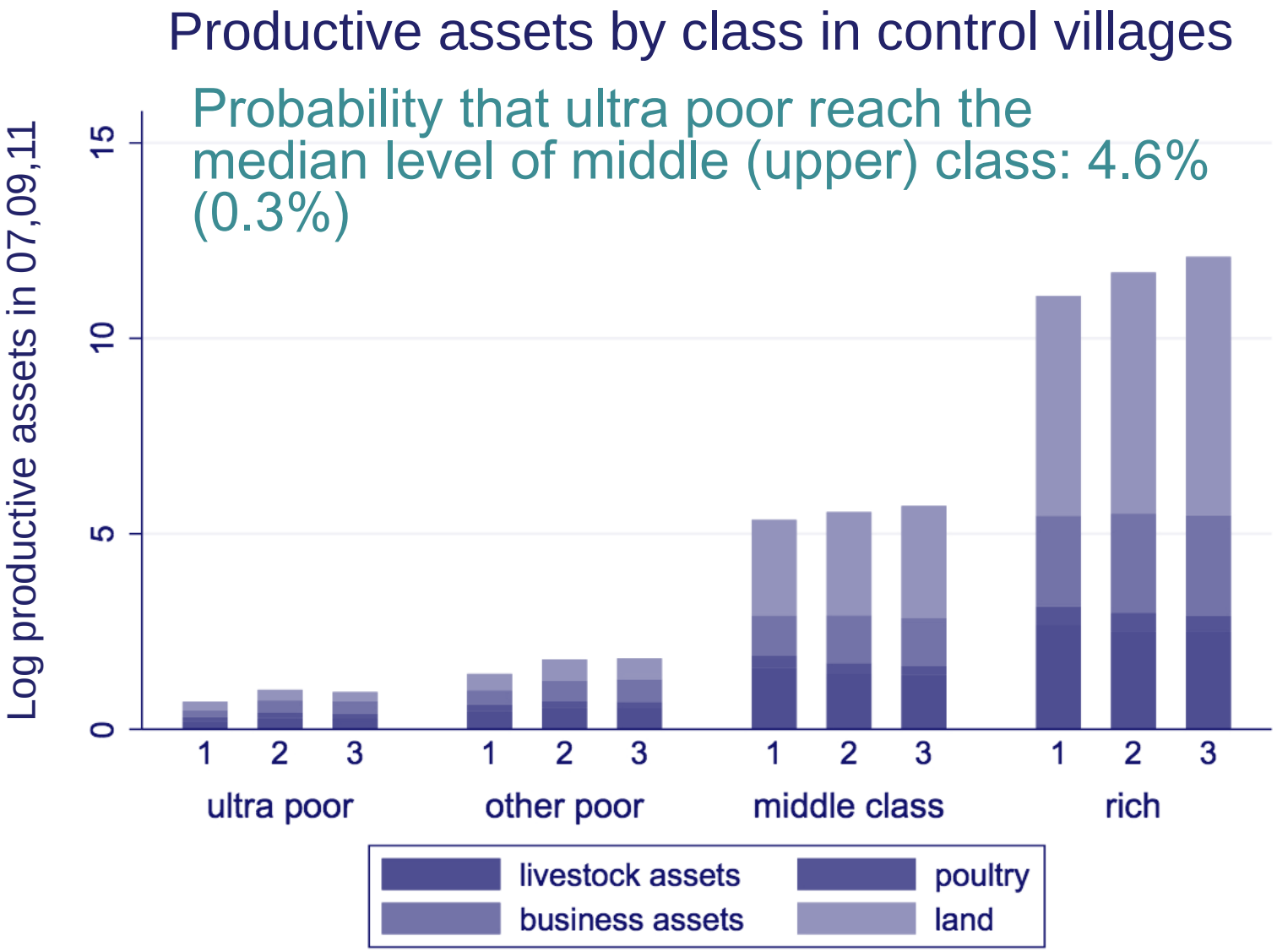
Fact 3: More assets → more expensive assets



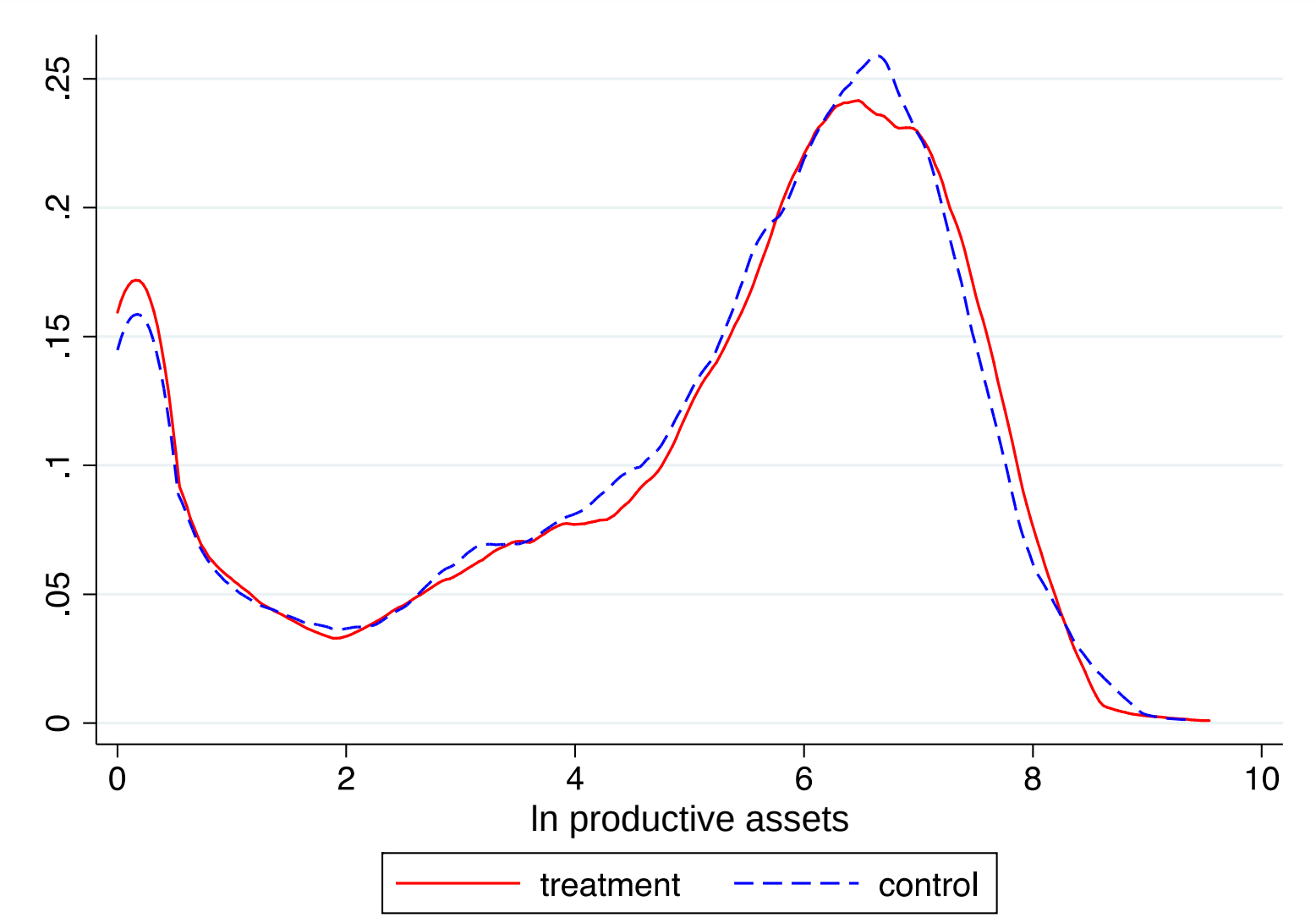
Fact 4: Casual labor is uncertain, seasonal and pays less

	(1) Agriculture	(2) Domestic Maid	(3) Livestock Rearing [Cows, Goats]
Days per year	127	167	334
	(65.9)	(89.5)	(41.2)
Hours per day	7.62	7.04	1.83
	(1.15)	(1.74)	(.771)
Hourly earnings [Tk]	.344	.268	.719
	(.102)	(.109)	(.779)

Fact 5: poor people stay poor



Fact 6: The distribution of productive assets at baseline is bimodal



Key Findings of the Banderia et al QJE (2017) paper

- The program transforms the labor activity choices of ultra-poor women – 4 years after the transfer, they devote 217% more hours to livestock rearing, 17% fewer hours to agricultural labour, and 26% fewer hours to maid services relative to their counterparts in control villages.

- Aggregating across labour activities, there is a net positive effect on hours worked and days worked of 17% and 22%, respectively, suggesting that poor women had idle work capacity

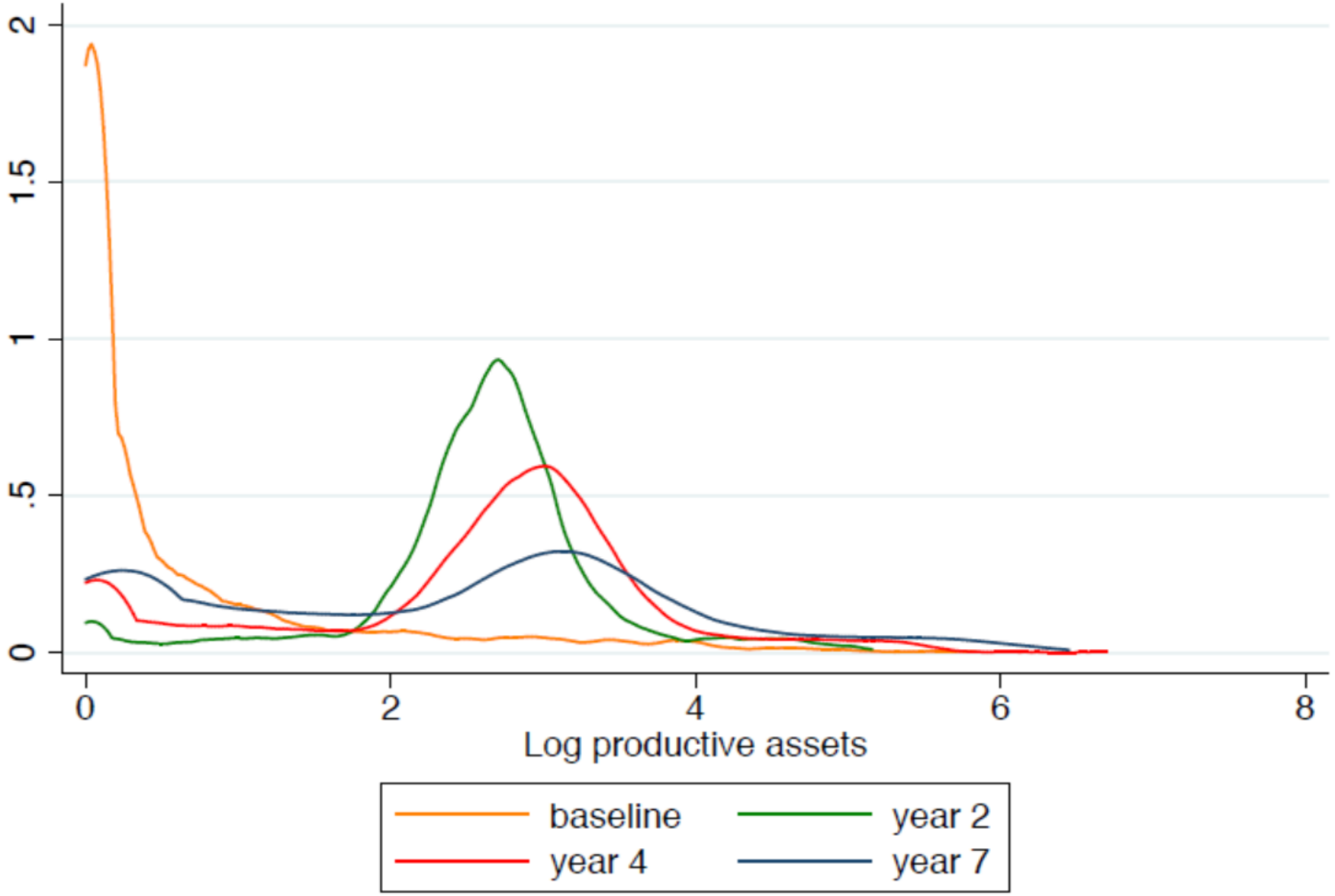
Key Findings of the Banderia et al QJE (2017) paper

- The reallocation of labour supply across work activities by the ultra-poor leads their earnings to be 21% higher than their counterparts in control villages, per capita consumption expenditure is 11% higher, and the value of household durables is 57% higher
- Four years after transfer, the ultra-poor in treatment villages have more than four times the amount of savings and they are more likely to receive and give loans to other households.
- Moreover, the value of cows they own is over twice as large (net of the value of the asset transfer itself) and they also accumulate business assets such as livestock sheds, rickshaws, vans, pumps, and trees whose value is over 159% larger than for the controls over the same period

A poverty trap?

- This is the average effect
- But for some it is not enough & they fall back
- What determines this - initial endowment level?
- Subject of current exercise

Preliminary evidence: some beneficiaries go back



Dynamics

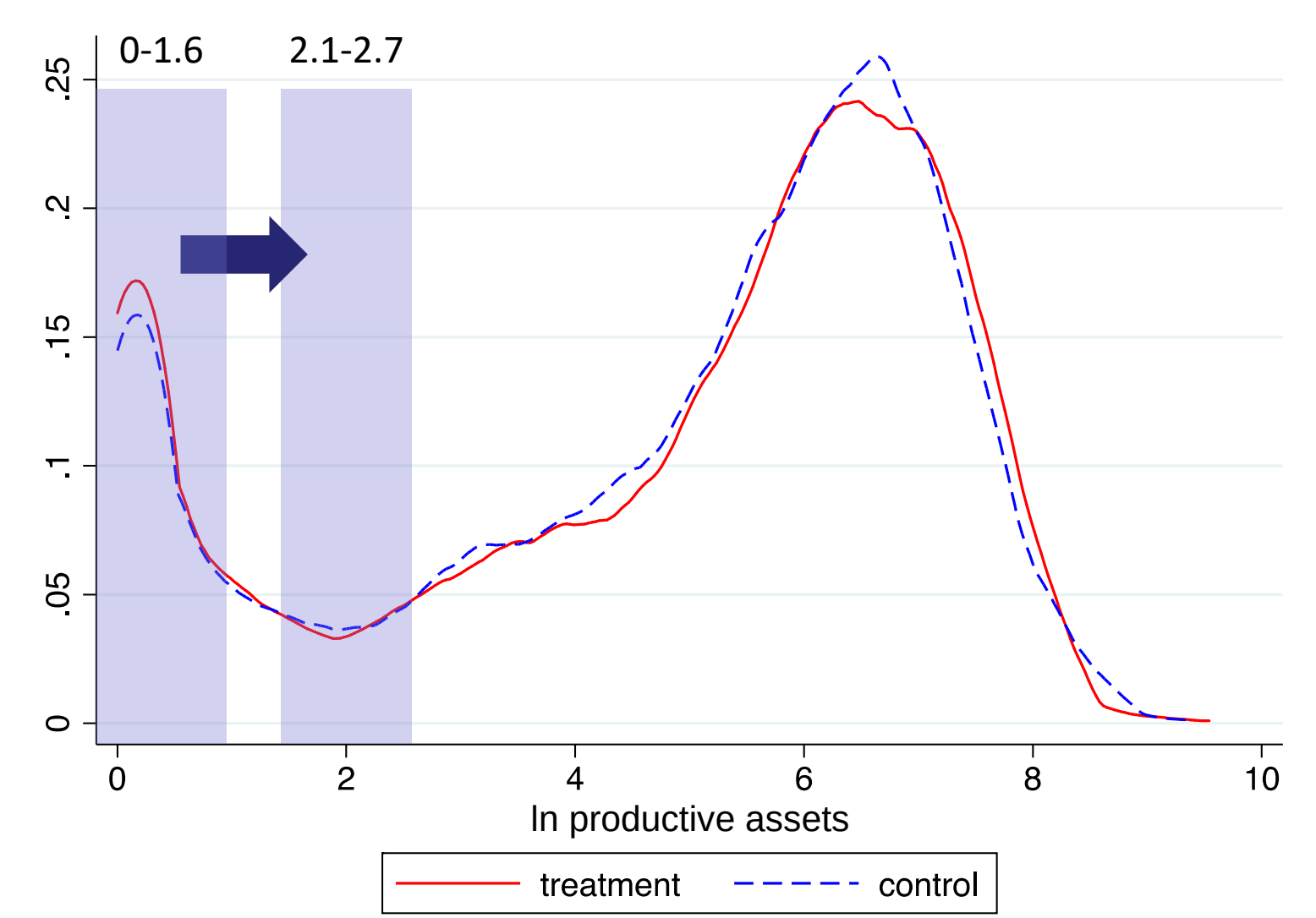
- Heterogeneity in asset accumulation behavior
- What explains that?
- In a poverty trap world, initial endowment should play a key role

Test

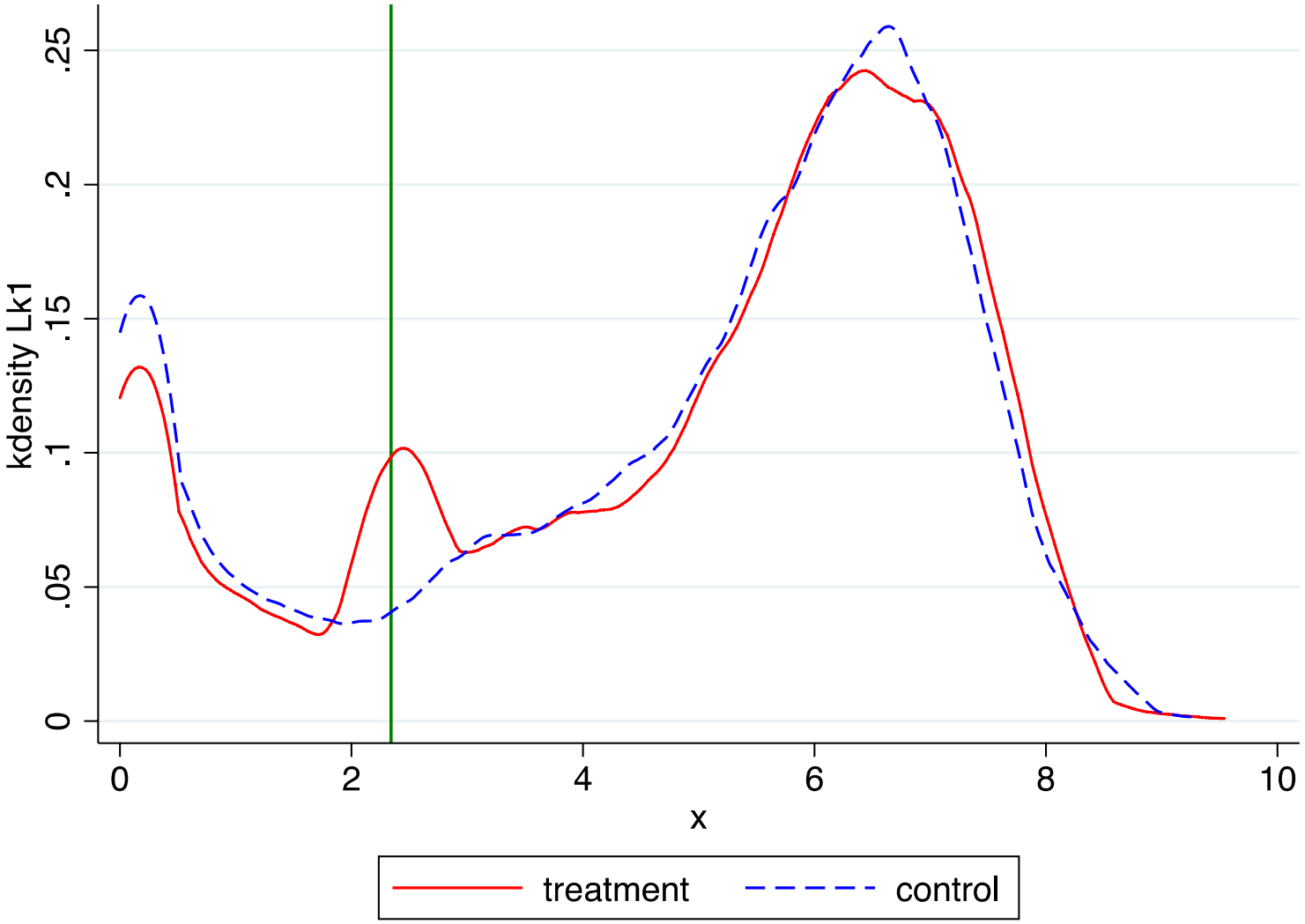
BRAC's Targeting the Ultra-Poor program

- 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



Before and after

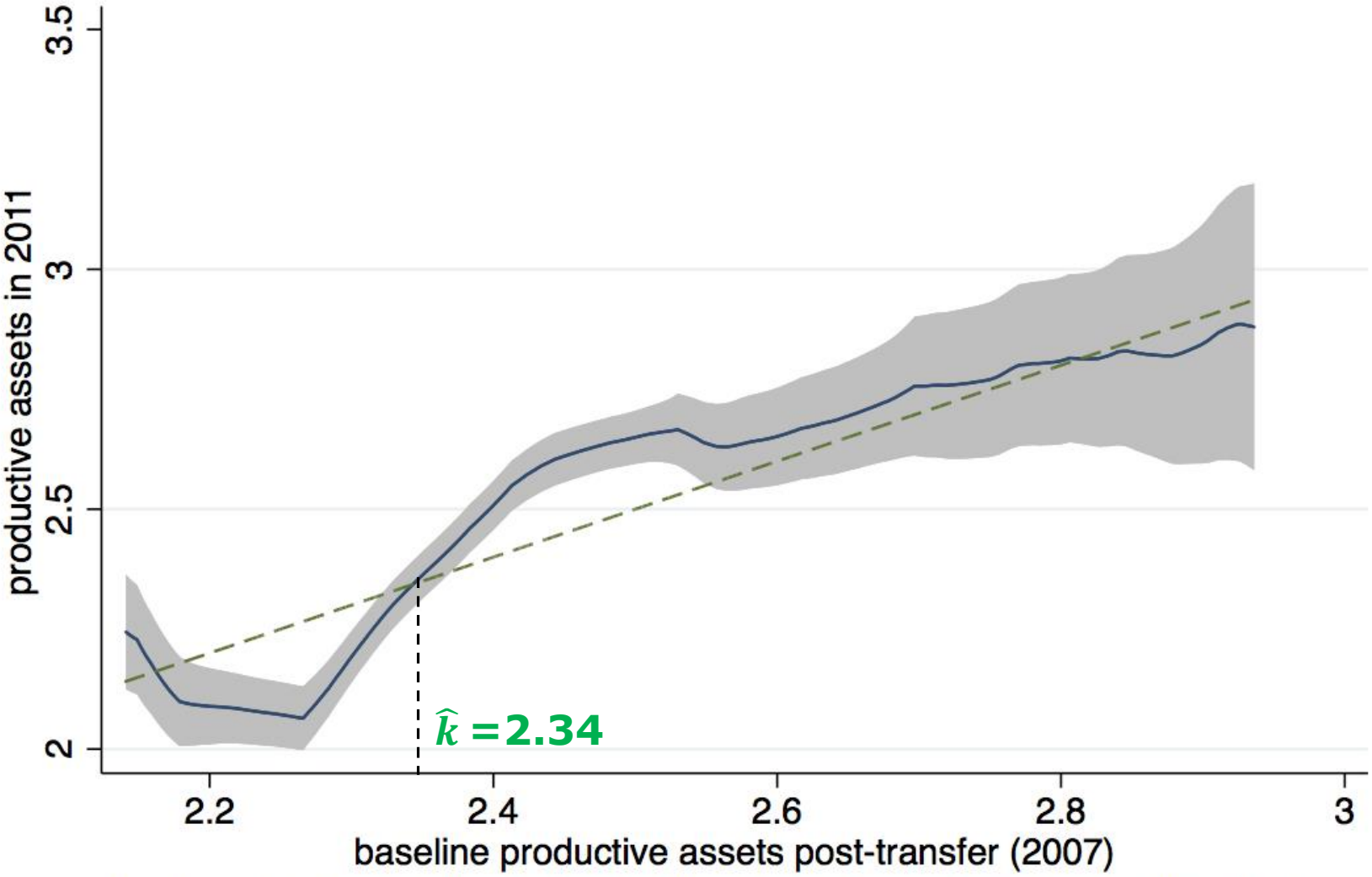


Our test

- While the asset is the same, beneficiaries differ slightly in their asset holdings at baseline
- We can use these differences to estimate the transition equation between k_1 in 2011 and k_0 in 2007
- Baseline test *under the assumption that variation in* k_0 *is not correlated with determinants of* k_1

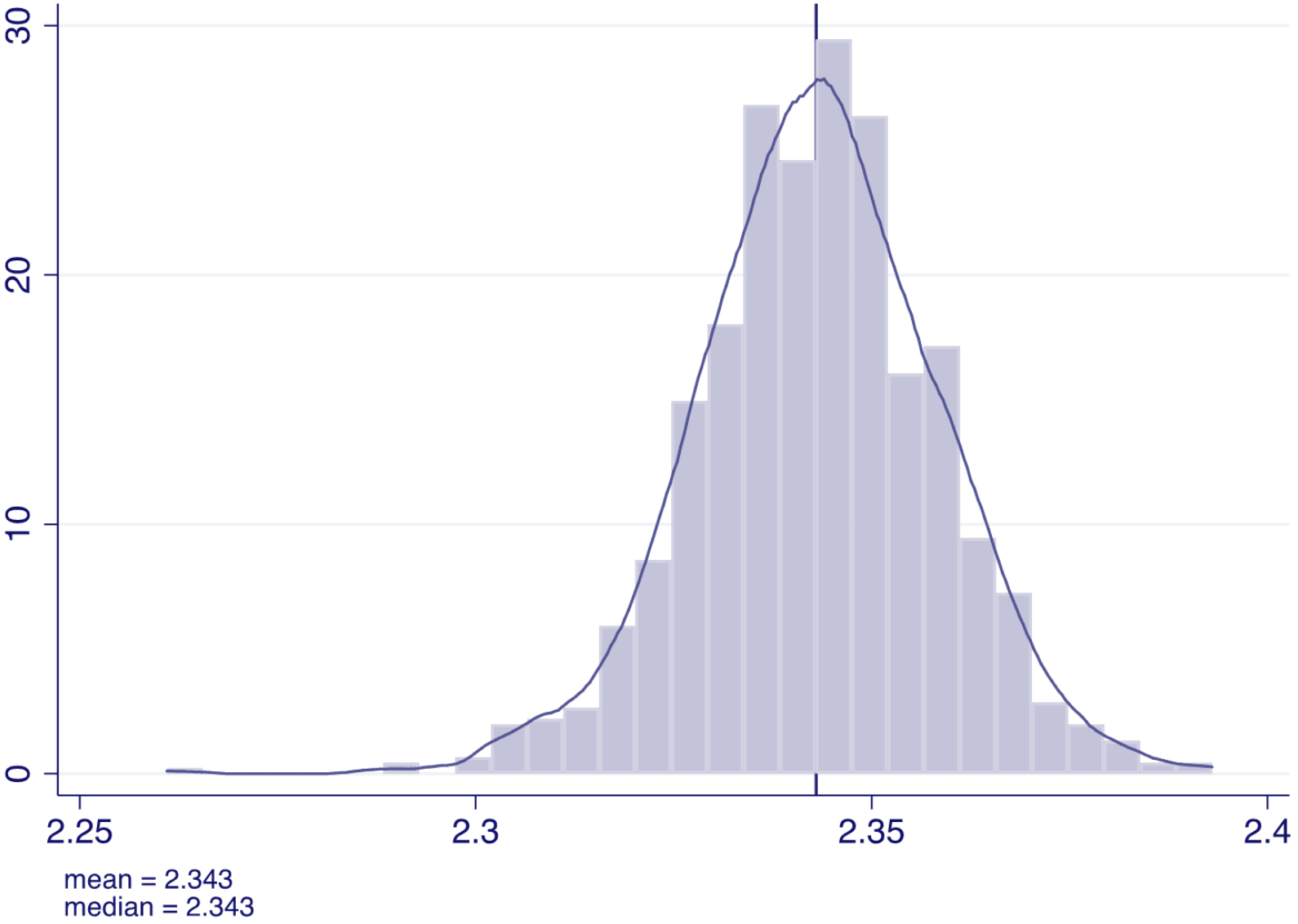
Findings

The transition equation is S-shaped

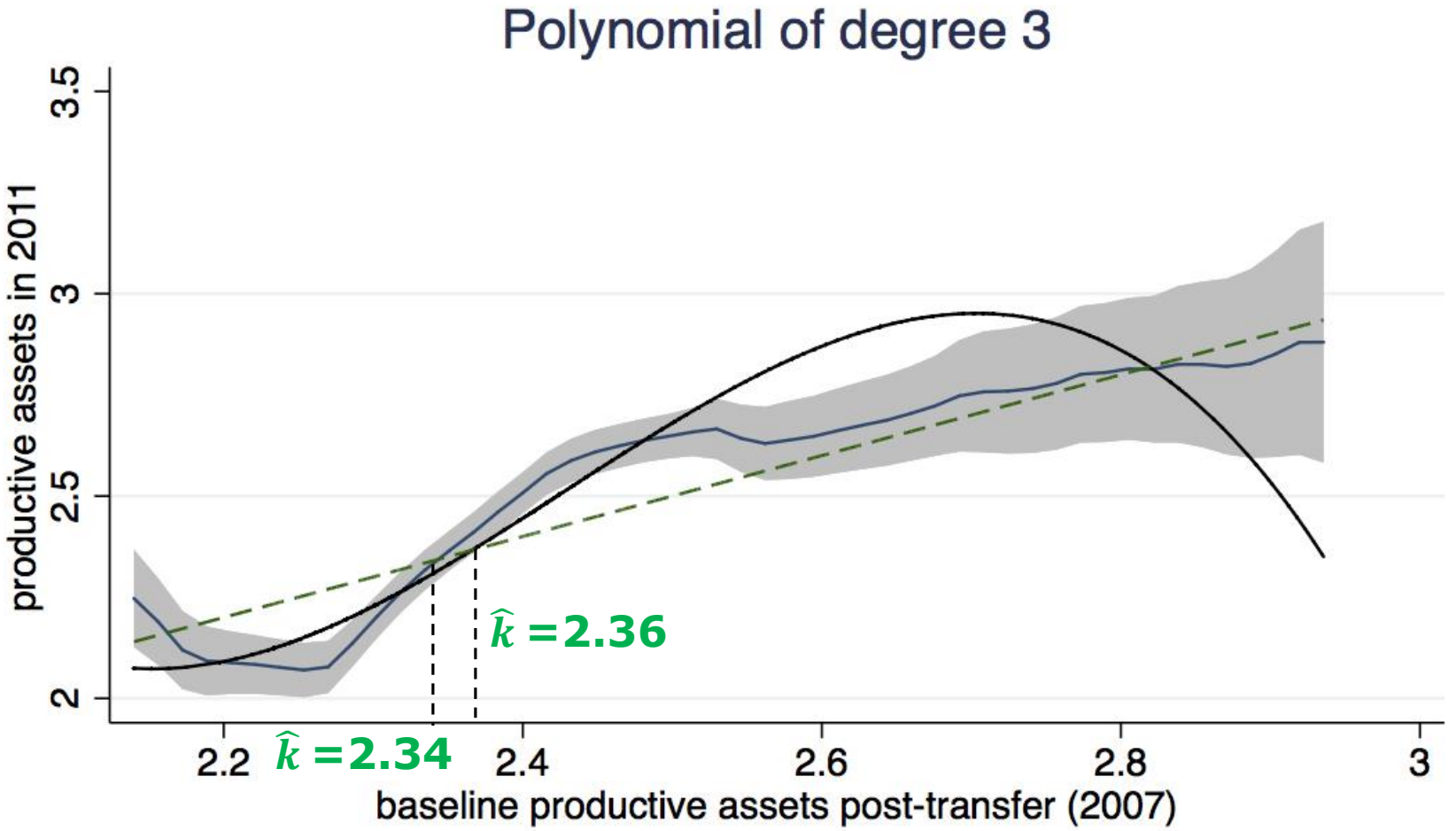


Sample includes treated ultra-poor households with baseline productive assets<18,000 BDT.

Bootstrapped threshold have a narrow support



Parametric identification gives similar answers



Identification

- Two assumptions

1. *No endogenous shocks*
   - k_0 uncorrelated with shocks to Δk
2. *No endogenous program responses*
   - k_0 uncorrelated with response to the program/new steady state

Identification

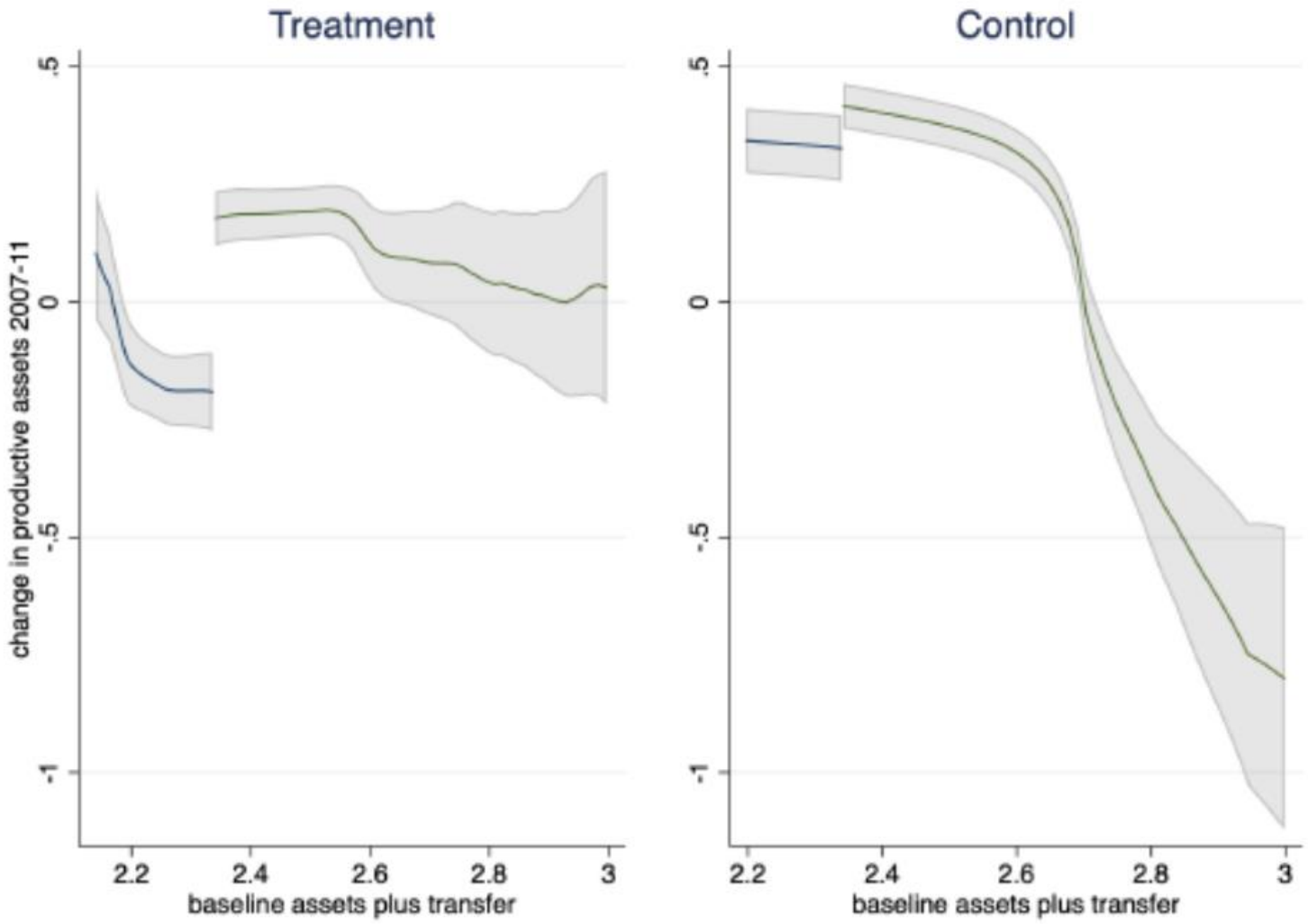
- Two assumptions

1. *No endogenous shocks*
   - k_0 uncorrelated with shocks to Δk
- Placement is randomized --> eligibles in control villages have the same shocks in expectation
- Use controls to account for shocks

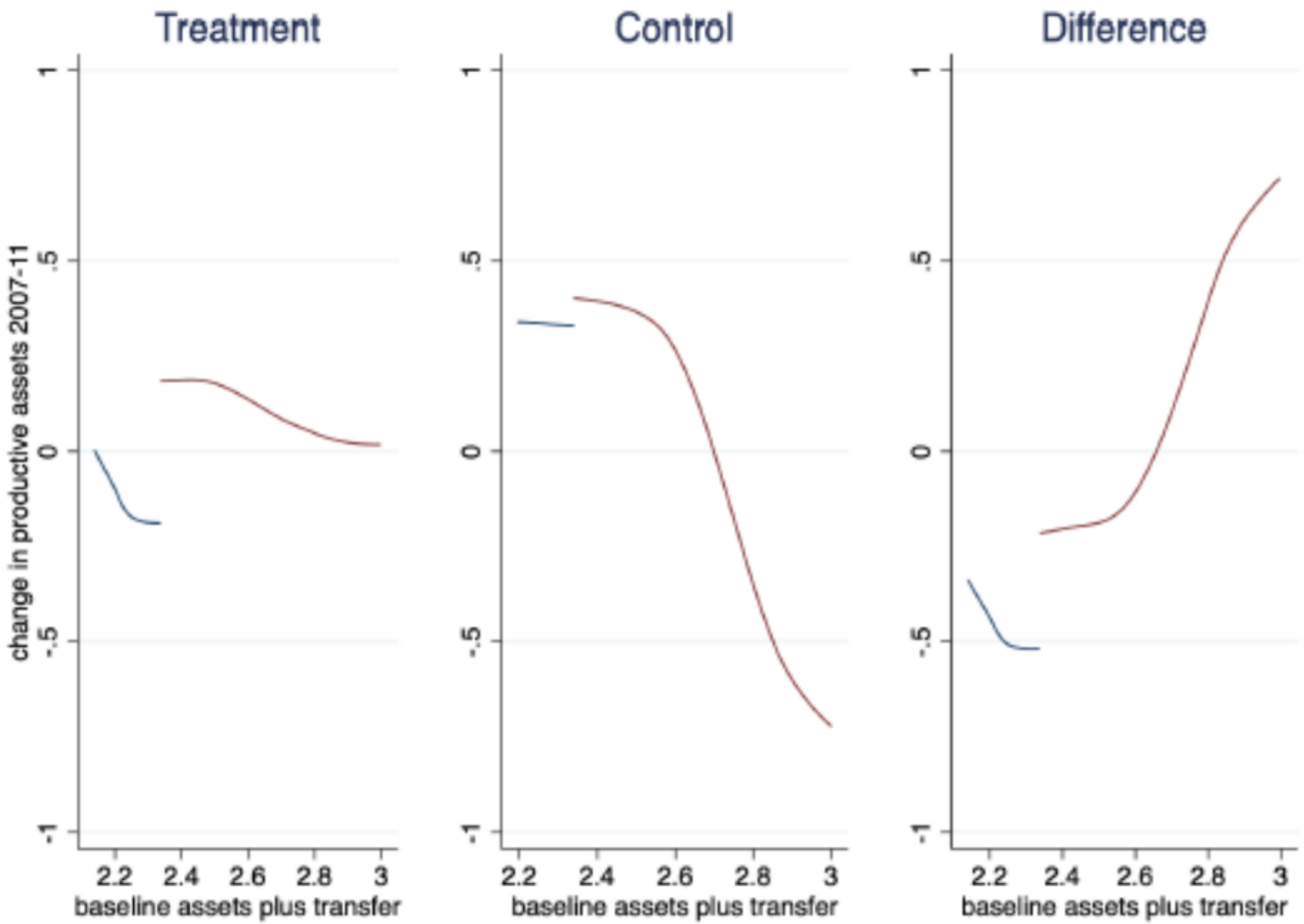
1. *No endogenous program responses*
   - k_0 uncorrelated with response to the program/new steady state

- Given that the allocation of the program is randomised, we can use potential beneficiaries in control villages, who have the same range of k0 but do not receive the transfer to control for unobservables correlated with baseline capital and its change over four years.
- To do so, we define a placebo threshold indicator which is equal to 1 if and only if the household would have been above the threshold had they received a transfer of the same value as the treatment households.

Change in Productive Assets



Change in Productive Assets, Difference



- If households whose baseline capital is such that the transfer would place them above the threshold systematically receive different shocks than those whose baseline capital is such that the transfer would place them below, this difference will be captured by the regression coefficient
- Column 2 of Table 1 shows that the estimated is close to zero, which suggests that households above and below the threshold are not systematically different in absence of the transfer
- Column 1 shows that beneficiaries who stay below the threshold despite the transfer lose 14% of the assets over four years whilst those who are pushed past the threshold grow their assets by 16%.

Pattern in treatment cannot be explained by common shocks correlated with k_0

Table 1: Capital accumulation

	Dependent variable: $\Delta \ln K_1$					
	Treatment (1)	Control (2)	Both (3)			
Above $\widehat{k}$	0.296***	−0.010	−0.010			
	(0.043)	(0.051)	(0.057)			
Treatment			−0.473***			
			(0.059)			
Above $\widehat{k}$ × Treatment			0.305***			
			(0.069)			
Baseline assets (demeaned)						
Above $\widehat{k}$ × $\ln K_1$						
Treatment × Baseline assets (demeaned)						
Above $\widehat{k}$ × Treatment × Baseline assets (demeaned)						
Constant	−0.136***	0.336***	0.336***			
	(0.033)	(0.045)	(0.050)			
N	3,292	2,450	5,742	3,292	2,450	5,742

No "jump" in control

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

Identification

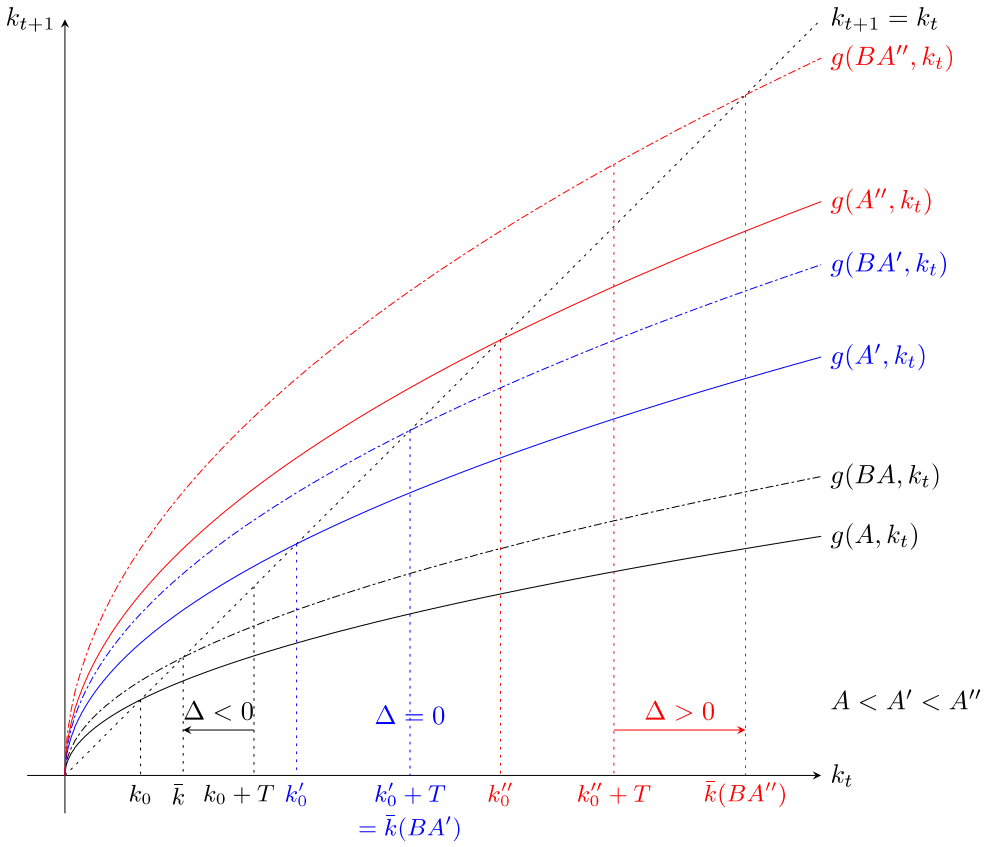
- Two assumptions

1. *No endogenous shocks*
   - k_0 uncorrelated with shocks to Δk
2. *No endogenous program responses*
   - k_0 uncorrelated with response to the program/new steady state

Use a different source of variation

- The difference-in-differences estimates relative to individuals in randomly allocated control villages control for common shocks endogenous to baseline capital but, by definition, cannot take care of endogenous responses to the program as this is not offered in control villages. For instance, the fact that the program offers training together with assets might increase A and shift the steady state.

Example: program shifts SS, more for higher A



Individual thresholds

- Denote the labor earnings of individual i by $E_i = A_i f(k_i)$
  - k is accumulable and observable physical capital
  - A i comprises all other factors that affect earnings and are complementary to k , including innate talent and accumulable human capital (health, skills, etc).

- Capital accumulation

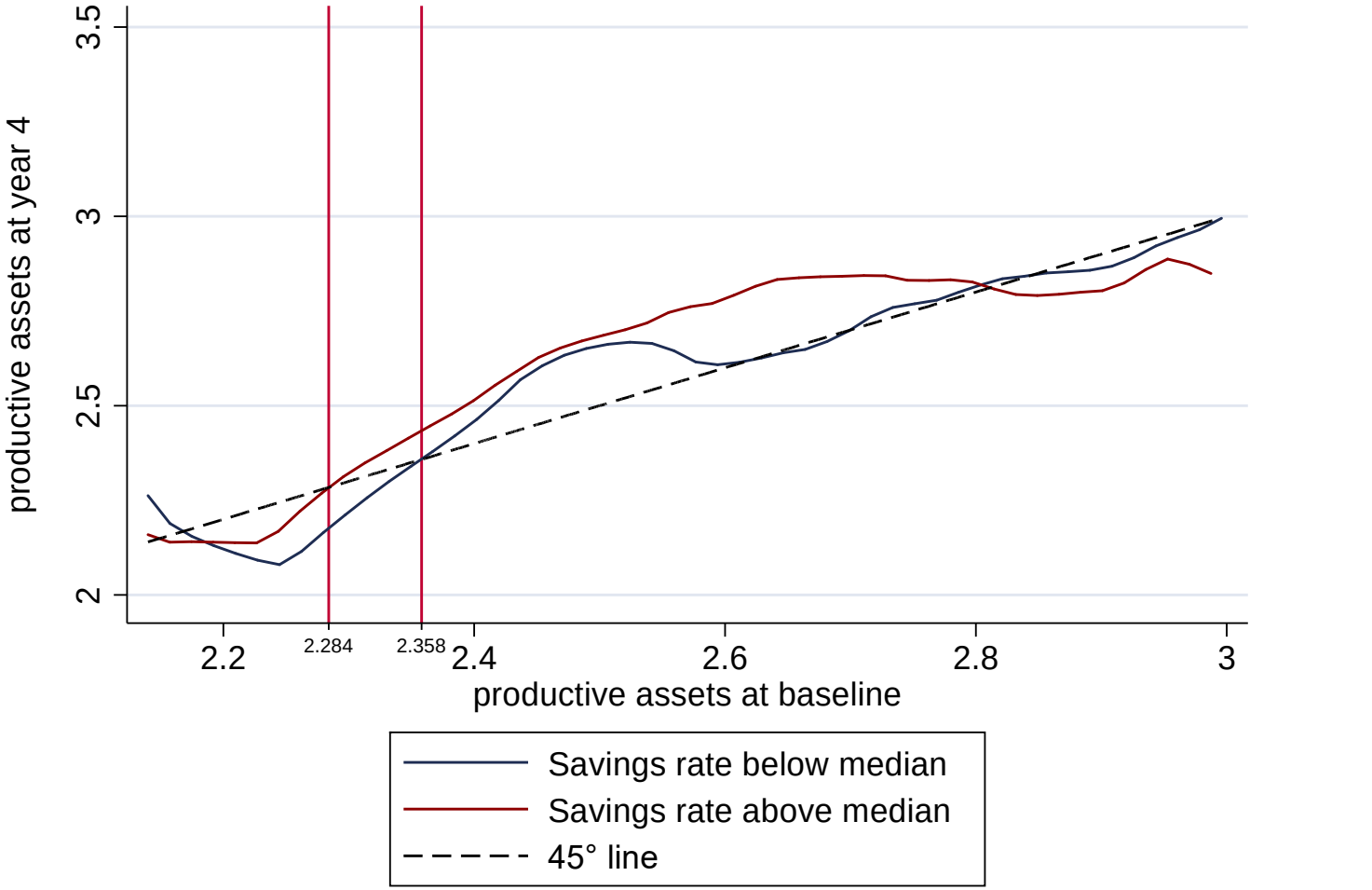
$$k_{t+1} = g(A, k_t) = sf(A, k_t) + (1- \delta) k_t$$

- where s =saving rate and δ =depreciation rate

- Higher s → lower threshold
- Higher A → lower threshold

- To test whether individuals with higher saving face a lower threshold we use the dependency ratio as an instrument for savings because a larger share of earnings can be saved when there are fewer household members who consume but do not earn.
- To test for differences due to earning potential we use a village measure of excess livestock earnings for non-beneficiaries at baseline.
- To do so, we regress livestock earnings on the number of cows, both linear and squared, and take the mean residuals at the village level.
- Intuitively, villages where individuals earn more than predicted by their livestock holdings must have the right infrastructure for livestock businesses.

Individual thresholds I: savings potential

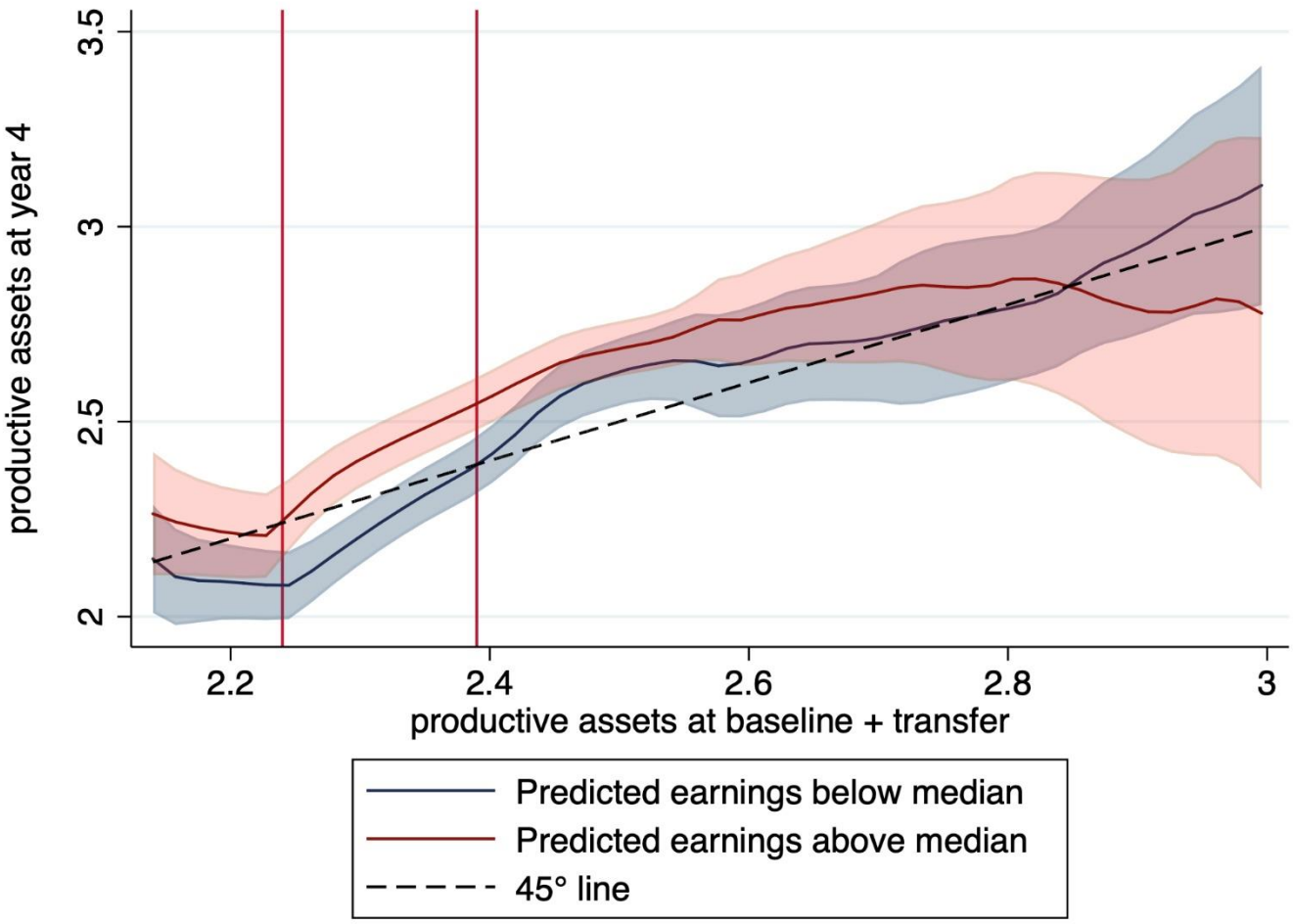


- (instrument using dependency ratio, only treatment group)

- Non-parametric estimates of the transition equation for households above and below the median saving rate, instrumented by the dependency ratio
- We see that the transition equation for households above the median is vertically above that for households below the median.
- Different thresholds provide an alternative identification strategy
- Roughly, we take the same k_0 and the variation in *s* we exploit is within the treatment group (and as s may be correlated with k_0 we use dependency ratio as an instrument for *s*).

- Do the same with earnings potential (next slide)
- The fact that differences in savings and earnings potential imply different thresholds provides an alternative identification strategy that uses the differences in thresholds for the same level of baseline capital

Individual thresholds II: earnings potential



- (instrument using returns to cows in different villages)

- We estimate three regressions for each of the two dimensions.
- Column 1 estimates if the transfer puts the capital stock above the individual-specific threshold based on savings potential
- In line with the earlier findings we see that individuals for whom the transfer is not large enough to bring them past the earnings-specific threshold lose 15% of asset value in four years, whilst those who pass the threshold accumulate 17%.

Savings Potential		
Baseline (4)	FE (5)	Placebo (6)
0.319*** (0.045)	0.357*** (0.048)	
		0.172 (0.878)
		0.484*** (0.102)
−0.154*** (0.035)	−0.177*** (0.037)	−0.262*** (0.07)
N	Y	N
3,135	3,135	1,352

- Column 5 (FE) control for the level of baseline capital.
- Now we put a fixed effect for those with the same level of initial capital and exploit their varying savings potential and differential threshold
- Strikingly the coefficients remain stable, which is consistent with the fact that savings potential is not correlated with baseline capital.
- Finally, in column 6 (Placebo) we restrict attention to those with the high threshold only and see that for them the effect kicks in only when total capital crosses the high threshold

- Do similar exercise for earnings potential

- Similar to savings potential results - individuals for whom the transfer is not large enough to bring them past the savings-specific threshold lose 16% of asset value in four years, whilst those who pass the threshold accumulate 14%.

- More importantly, and in line with the analysis in the previous section, these results reassure us that different patterns of accumulation above and below the threshold are not due to unobservables correlated with baseline capital.

	Earnings Potential		
	Baseline (1)	FE (2)	Placebo (3)
Above $\widehat{k}_i$	0.301*** (0.044)	0.307*** (0.047)	
Above $\widehat{k}_L$			−0.268 (0.047)
Above $\widehat{k}_H$			0.474*** (0.072)
Constant	−0.157*** (0.038)	−0.161*** (0.038)	−0012*** (0.09)
Baseline ln K_0 FE	N	Y	N
N	3,292	3,292	1,656

The Full Table - Poverty traps using variation in thresholds

Table 2: Heterogeneous thresholds

	Earnings Potential			*Savings Potential*		
	Baseline (1)	FE (2)	Placebo (3)	Baseline (4)	FE (5)	Placebo (6)
Above $\widehat{k}_i$	0.301^{***} (0.044)	0.307^{***} (0.047)		0.319^{***} (0.045)	0.357^{***} (0.048)	
Above $\widehat{k}_L$			-0.268 (0.047)			0.172 (0.878)
Above $\widehat{k}_H$			0.474^{***} (0.072)			0.484^{***} (0.102)
Constant	-0.157^{***} (0.038)	-0.161^{***} (0.038)	-0012^{***} (0.09)	-0.154^{***} (0.035)	-0.177^{***} (0.037)	-0.262^{***} (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

Mechanisms

- We have shown that a capital threshold exists that affects accumulation behaviour

- But, it could just be that those above $\hat{k}$ have $\Delta k > 0$ and those below have $\Delta k < 0$ which is a very different story from what we showed

- First we run a regression like the one we did at first, but now allow for an interaction term between a dummy that takes on value 1 if $k_0 + \Delta > \hat{k}$ and zero otherwise, and the baseline capital level as well as the effect of these two separately

- Gets the curvature

Dependent variable: ln ΔK1

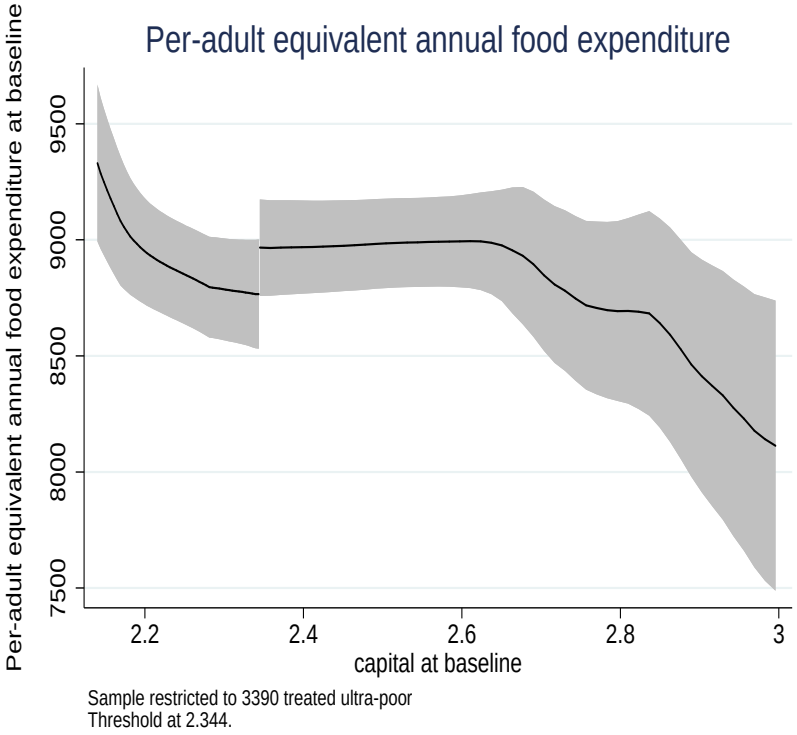
Treatment (4)	Control (5)	Both (6)
0.62***	0.35	0.353
(0.110)	(0.228)	(0.251)
		−0.519***
		(0.268)
		0.266***
		(0.271)
−2.155***	−1.586	−1.587
(0.697)	(1.346)	(1.474)
1.930***	−0.837	−0.837
(0.728)	(1.346)	(1.480)
		−0.568
		(1.613)
		2.767*
		(1.630)
−0.446***	0.073	0.073
(0.106)	(0.227)	(0.250)
3,292	2,450	5,742

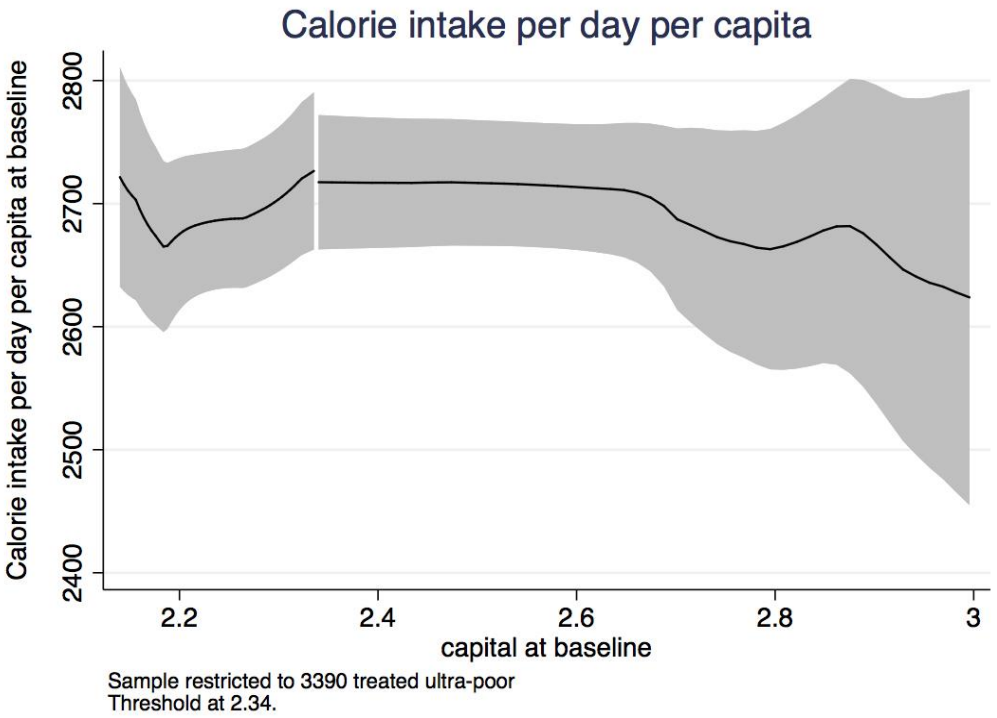
- This table shows that this is not consistent with a mean-reversion type of mechanism
- Here we run a regression on the threshold, the existing level of assets, and their interaction
- For the treatment, we get evidence that those with higher baseline who cross the threshold actually gain in terms of capital accumulation

- Next we check if there are other variables that display a jump around the $\hat{k}$ threshold

- If the source of the poverty trap is something else and not production non-convexity then this should be picked up

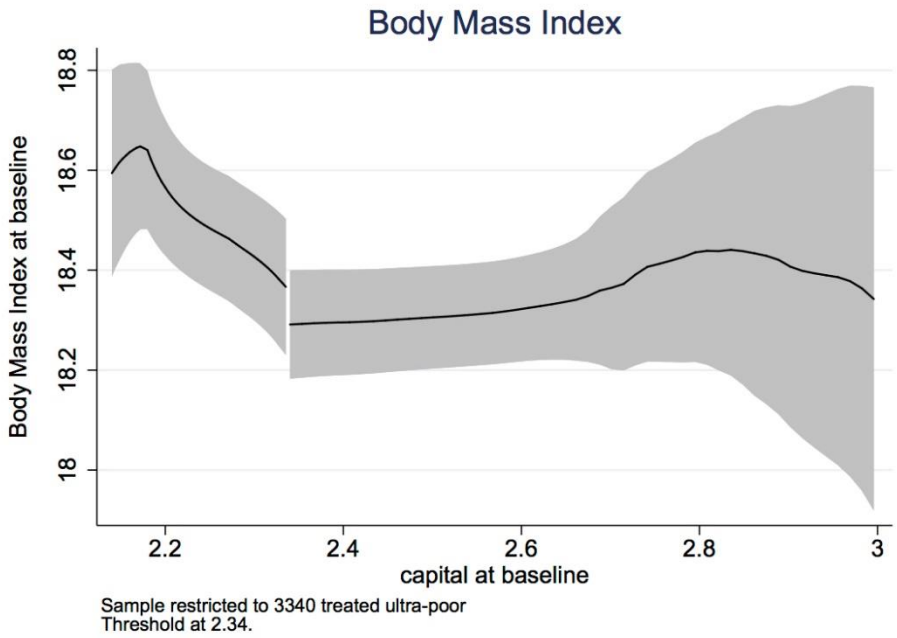
Nutrition

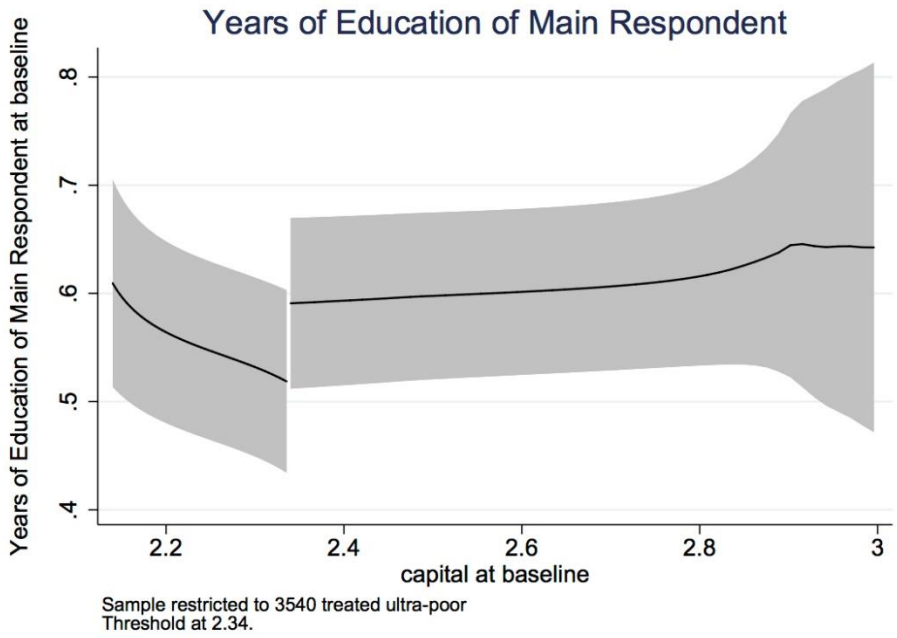




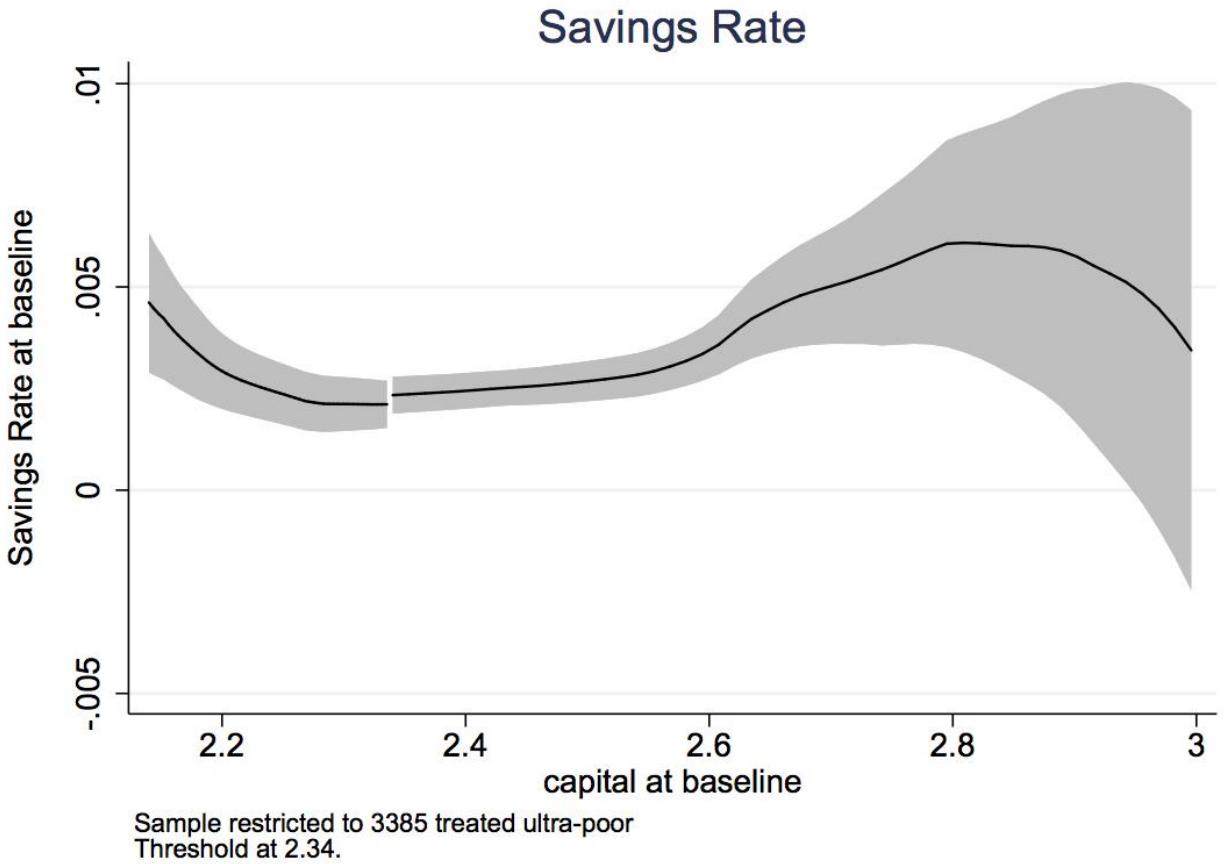
cost of calories low relative to income even of the poorest (Subramanian and Deaton 1997, Banerjee and Duflo 2011)

Human capital



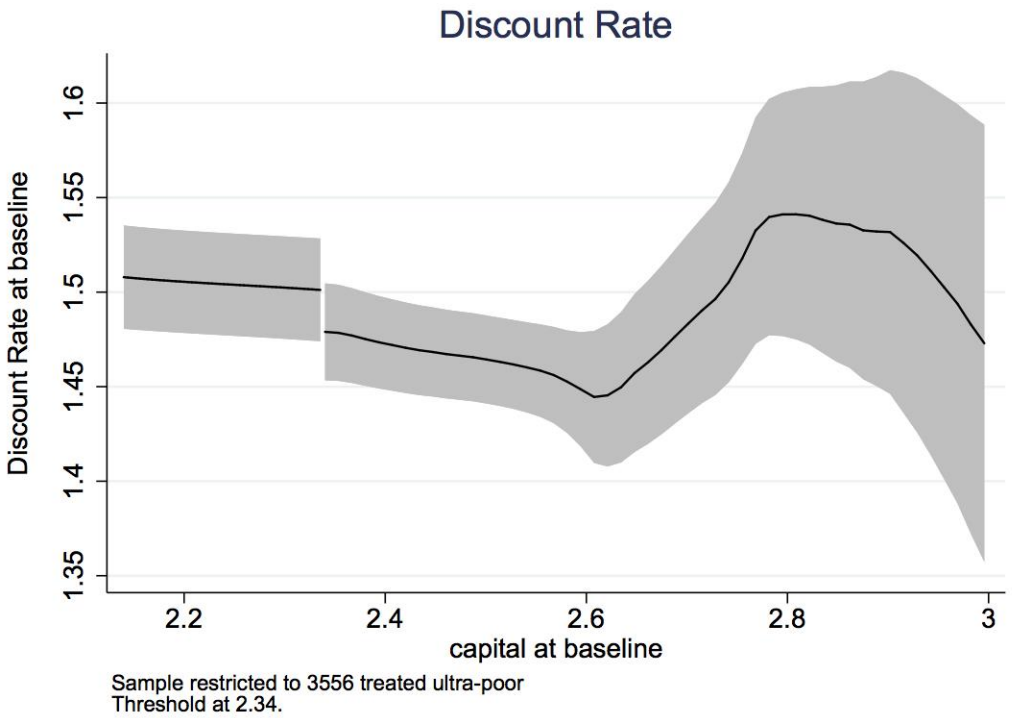


Behavioral 1: impatience



Temptation goods or limited attention lead the poor to make worse choices (Banerjee and Mullainathan, 2010; Shah et al., 2012).

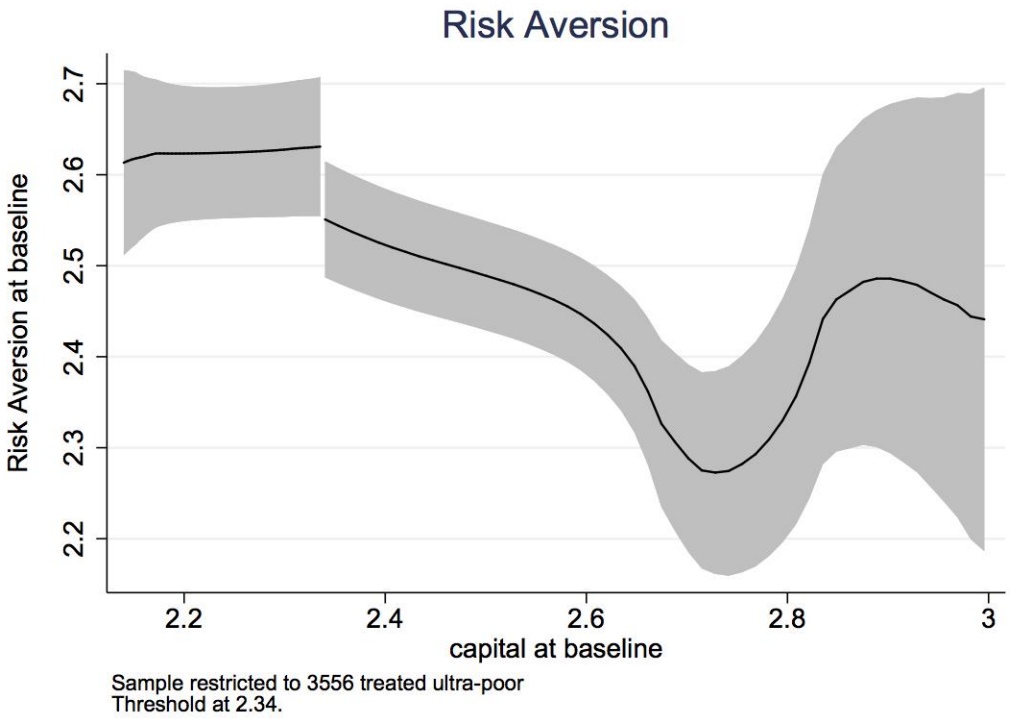
Behavioral 1: impatience



Suppose you have won 200 taka in a game. You can get this 200 taka today or get 250 taka instead in one month. Which one would you prefer?

1) 200 taka today
2) 250 taka in one month

Behavioral 2: risk aversion



Which payoff would you prefer?

1) 100 for winning, 100 for losing
2) 200 for winning, 60 for losing
3) 300 for winning, 20 for losing
4) 400 for winning, 0 for losing

Regressions: Mechanisms

Panel A

Dependent variable:	Food PCE (1)	Calories (2)	BMI (3)	Loans (4)	Savings (5)
Above $\widehat{k}$	0.005	−0.004	−0.01	0.041	−0.005
	(0.018)	(0.019)	(0.007)	(0.025)	(0.014)
Above $\widehat{k}$ × two years after transfer	−0.028	−0.033	−0.009	−0.028	−0.011
	(0.026)	(0.027)	(0.01)	(0.036)	(0.02)
Above $\widehat{k}$ × four years after transfer	−0.019	−0.005	−0.004	−0.023	0.038
	(0.026)	(0.027)	(0.01)	(0.036)	(0.02)
Constant	2.217***	7.85***	2.909***	0.127	−0.057***
	(0.014)	(0.024)	(0.005)	(0.019)	(0.01)
N	6,023	6,021	6,064	6,402	6,402

- Panel A test the nutrition hypothesis, using food expenditure, calories per capita and BMI.
- We find that individuals just to the left and those just to the right have similar nutrition at baseline —BMI is 1.7% lower in treatment, and this does not change over the years.
- The evidence thus indicates that nutrition is unlikely to drive the feedback mechanism that underpins poverty traps.
- Columns 4-5 analyse differences in financial flows, again individuals just to the left and those just to the right have similar levels of savings and loans at baseline, and while the difference in loans remains constant, savings among those to the right of the threshold increase significantly by year 4.

- Panel B decomposes the effect on different productive assets

- If we look at different types of productive assets, whose accumulation behaviour is consistent with the technological non-convexity story?

Mechanisms

Panel B

Dependent variable:	Poultry (1)	Goat (2)	Shed (3)	Vehicles (4)	Other Assets (5)	Cows (6)
Above $\widehat{k}$	−0.015	0.013	−0.003	0.037*	0.010	0.0003
	(0.010)	(0.019)	(0.012)	(0.019)	(0.013)	(0.038)
Above $\widehat{k}$ × two years after transfer	0.088***	0.1***	0.056***	−0.005	−0.01	0.171***
	(0.015)	(0.027)	(0.017)	(0.027)	(0.018)	(0.054)
Above $\widehat{k}$ × four years after transfer	0.054***	0.1***	0.071***	−0.022	−0.005	0.575***
	(0.015)	(0.027)	(0.017)	(0.027)	(0.018)	(0.054)
Constant	0.095***	0.013	0.008	0.018	0.004	0.000
	(0.008)	(0.014)	(0.009)	(0.014)	(0.01)	(0.028)
N	6,402	6,402	6,402	6,402	6,402	6,402

*: $p < 0.1$, **: $p < 0.05$, ***: $p < 0.01$. Standard errors in parenthesis. Sample is restricted to values of baseline capital plus transfer in [2.24;2.44]. All dependent variables are in logs.

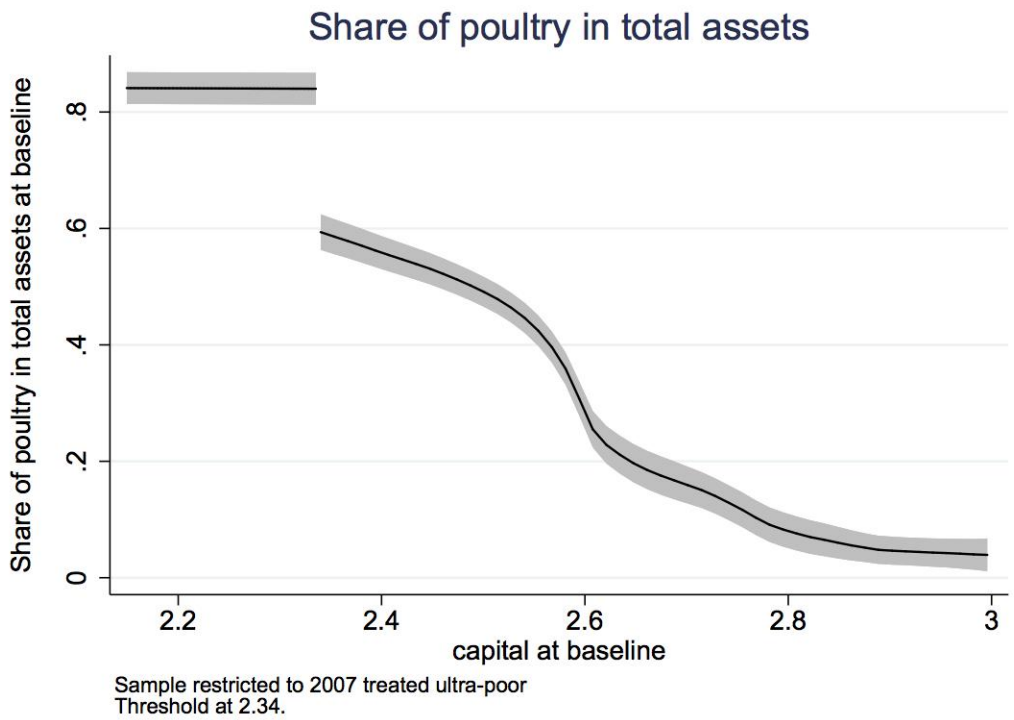
Two findings

- The first is that within this narrow window, there is a discontinuity in the ownership of vehicles.
- That is, among individuals with very similar levels of capital, those just to the right of the threshold own 8% more vehicles.
- Second, after the transfer the difference between individuals above and below the threshold grows rapidly overtime with the acquisition of increasingly more expensive assets: cow sheds and goats after two years and cows after four.
- The latter is particularly striking: by year four, individuals above the threshold have 64% more cows stocks than those below.

Summary

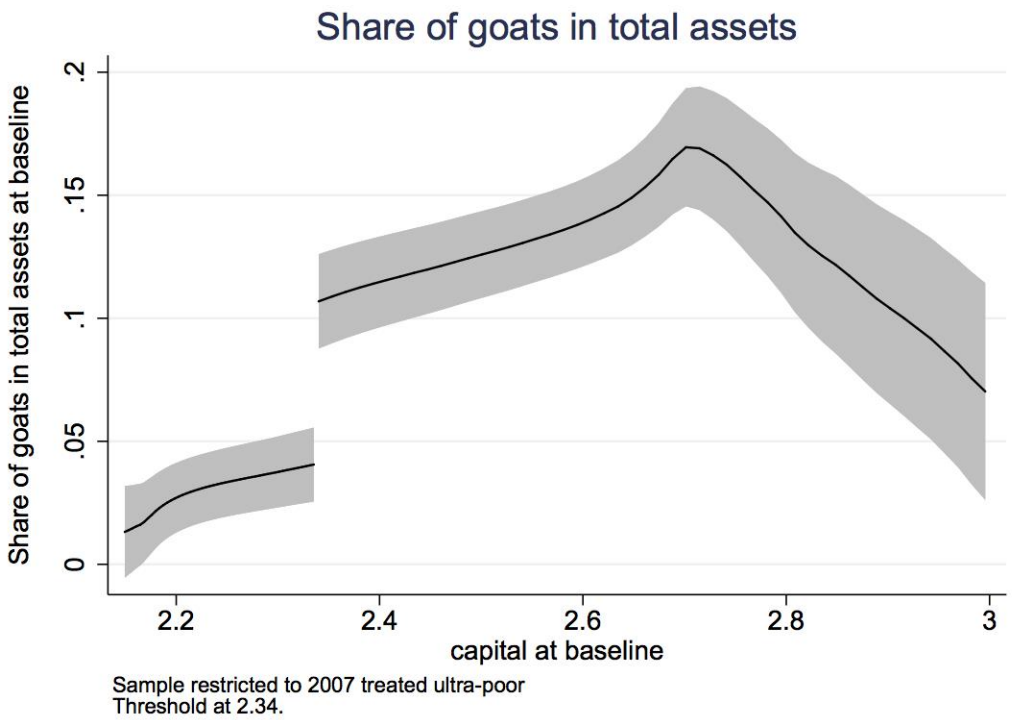
- In summary, the evidence in Table 3 indicates that the program does not relax a credit or food constraint.
- Rather we find that indivisibilities underpin the poverty trap: indeed individuals with baseline capital high enough that the transfer will place them past the threshold own more expensive assets (vehicles and goats) and accumulate even more expensive assets (cows) after being treated.
- As assets are combined with labour to generate income, the picture that emerges is one where poor people cannot afford to purchase indivisible productive assets and remain employed in low wage, insecure casual jobs that pay little relative to the price of the asset and keep them in a poverty trap.

Asset composition differs: fewer chickens

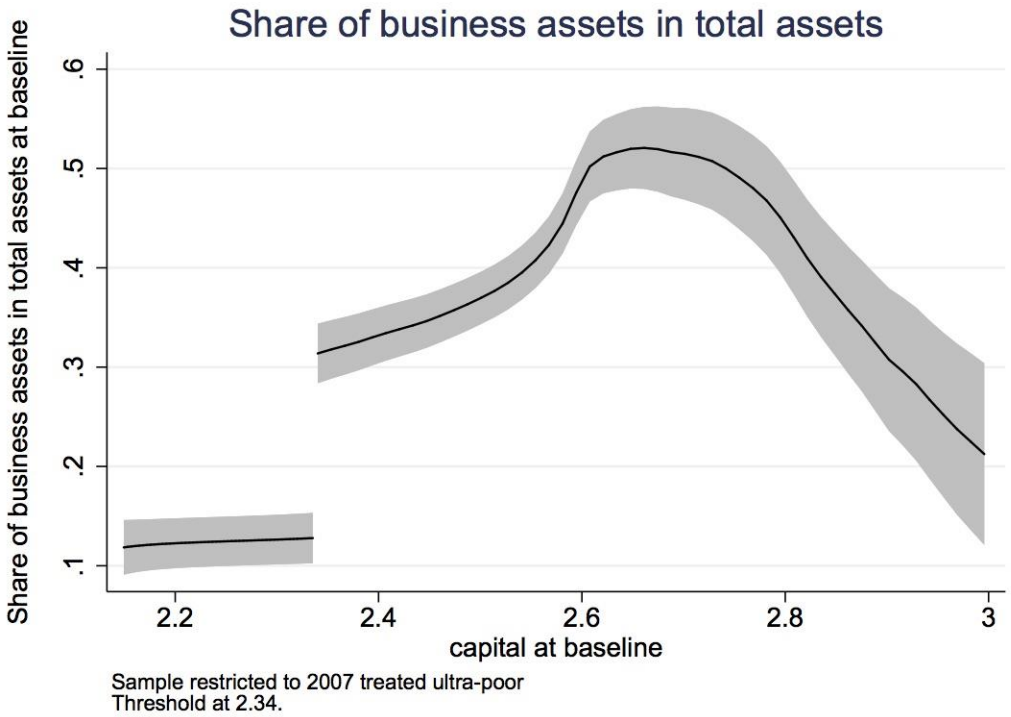


20%
DROP

More goats


Share of goats in total assets
Share of goats in total assets at baseline
0
.05
.1
.15
.2
2.2
2.4
2.6
2.8
3
capital at baseline
Sample restricted to 2007 treated ultra-poor
Threshold at 2.34.

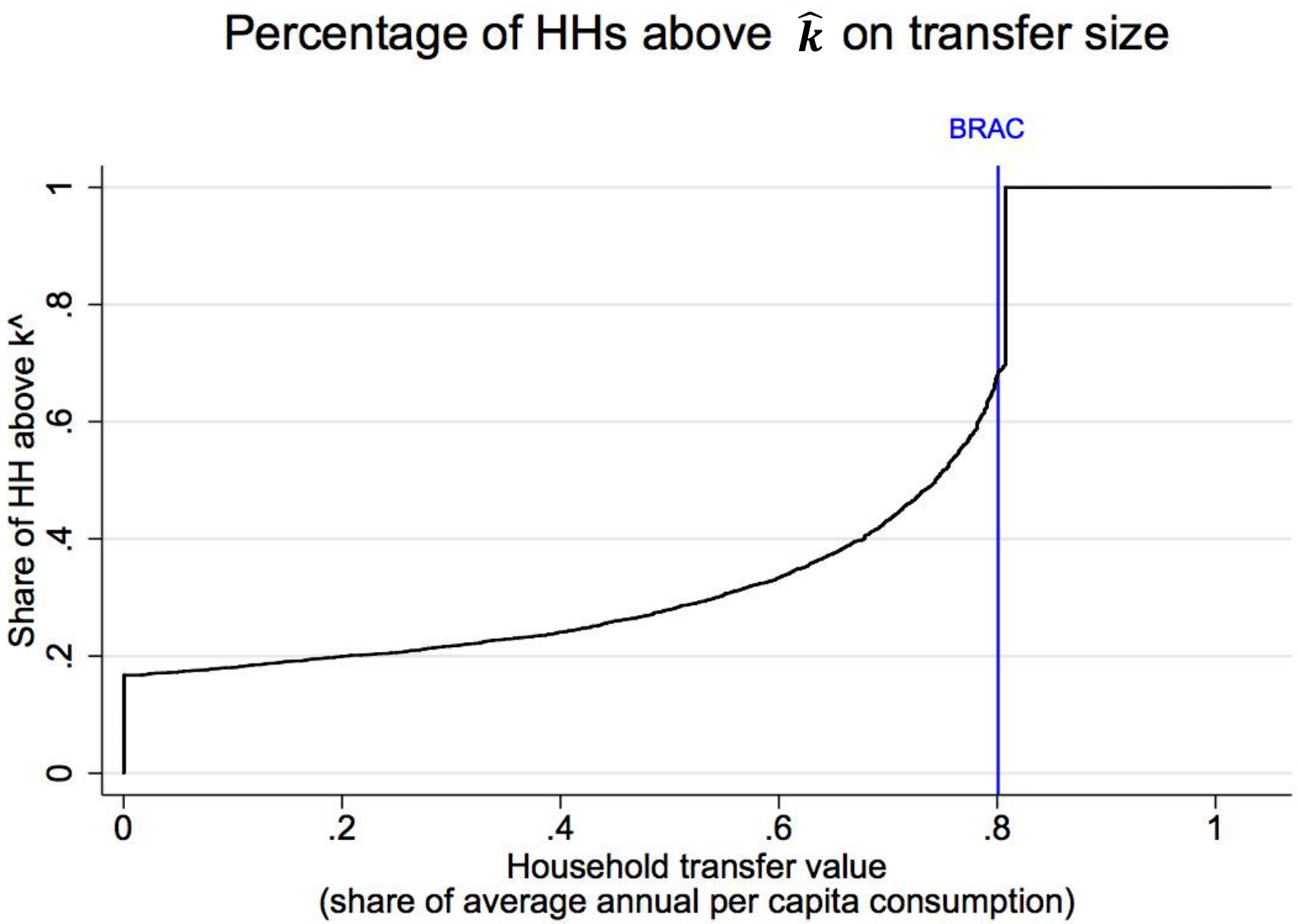
More business assets (esp rickshaw and boats)



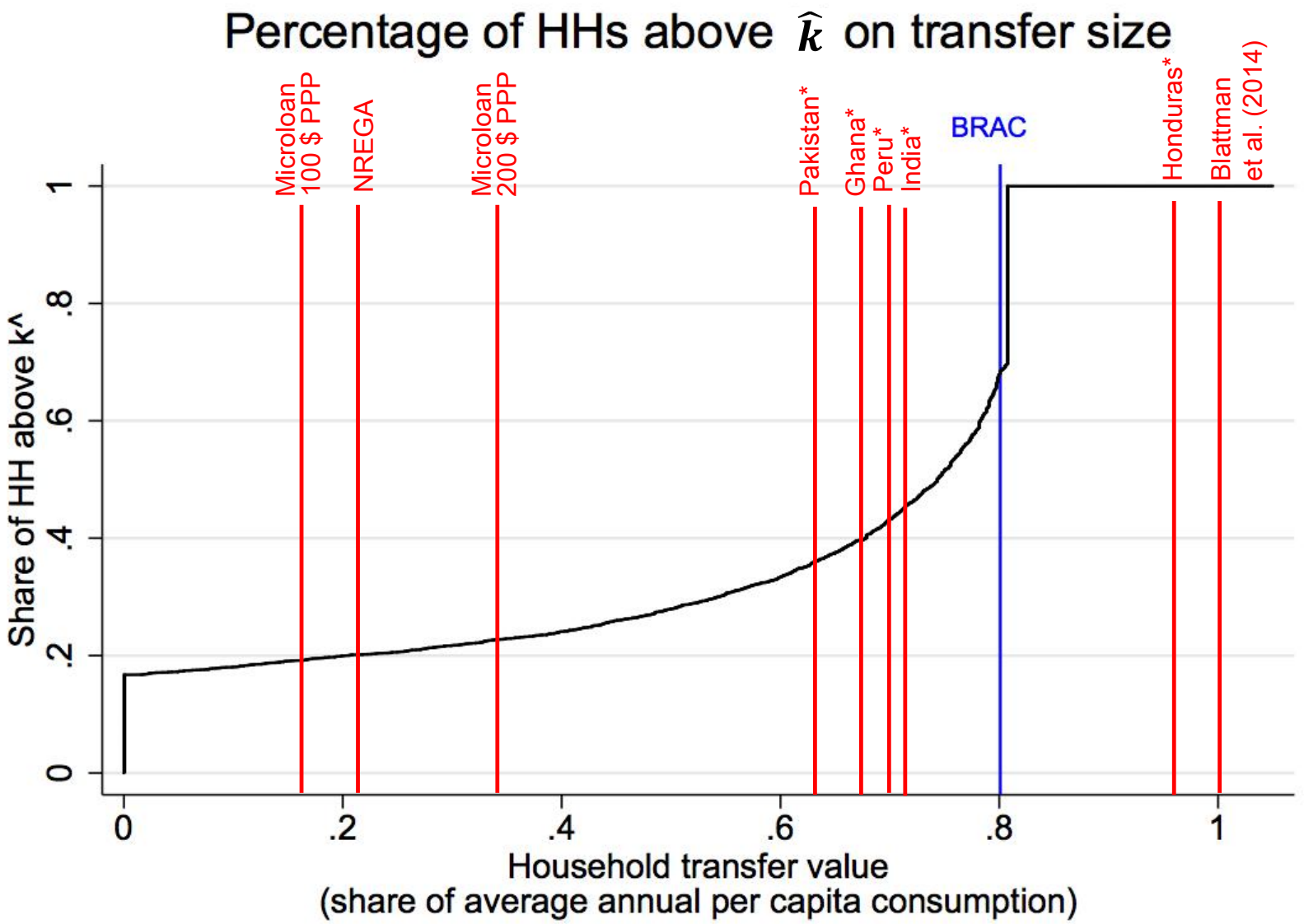
20%
HIKE

Policy

A big problem requires a big solution



A big problem requires a big solution



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

A large upfront investment can pay off in the long run

- People living below $1.90 per day: 735.9 million
- Net aid flows from member countries of the Development Assistance Committee per year: $131.6 bn
- Cost of the programme $1120 per household (1-3)
- Cost of treating all extreme poor: $274.6bn- $824.2bn
- 2 -6 years worth of aid at current levels

Conclusions

- Key conclusion – misallocation of talent
- Poor people are not unable to take on more productive employment activities, they just lack the needed capital
- 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

Thank you

Appendix - Role of A

- The alternative explanation is that we're in the convergence world and A is somehow related to baseline capital. Individuals with low baseline capital have low A, and hence a low steady state, with they revert back to after the transfer. Individuals with high baseline capital have high A, hence high steady state, which they hadn't fully converged to before the transfer, but the transfer accelerates their convergence and their experience further positive change in assets after the transfer.

- If this explanation was true, we would expect to see the change in assets to be increasing steadily in baseline assets, starting with negative change at low levels of baseline assets. Instead, we find the change to be decreasing in baseline assets below k^ and then the discontinuous jump. For this to happen in the alternative explanation above, the relationship between A and baseline capital would have to follow a similar pattern, which is unlikely.
- Could make a similar point re. relationship of baseline assets & the human capital transfer (training) if human capital & assets are compl

Estimating A

- Whilst ability or talent for livestock rearing cannot be measured directly, the fact that the program requires all beneficiaries to work with the asset for two years eliminates the usual selection bias and allows us to estimate it.
- We do so by computing the ratio of their realised livestock income to the value of livestock income predicted for the individual using a parameterised production function.

Innate traits (A)

- Assume a standard Cobb-Douglas production function:

$$y = AK^{\beta_1}L^{\beta_2}H^{\beta_3}$$

- We want to test whether under this assumption the distribution of A can explain the observed bimodal distribution of productive assets.

- A is unobserved → estimate from panel of control HHs

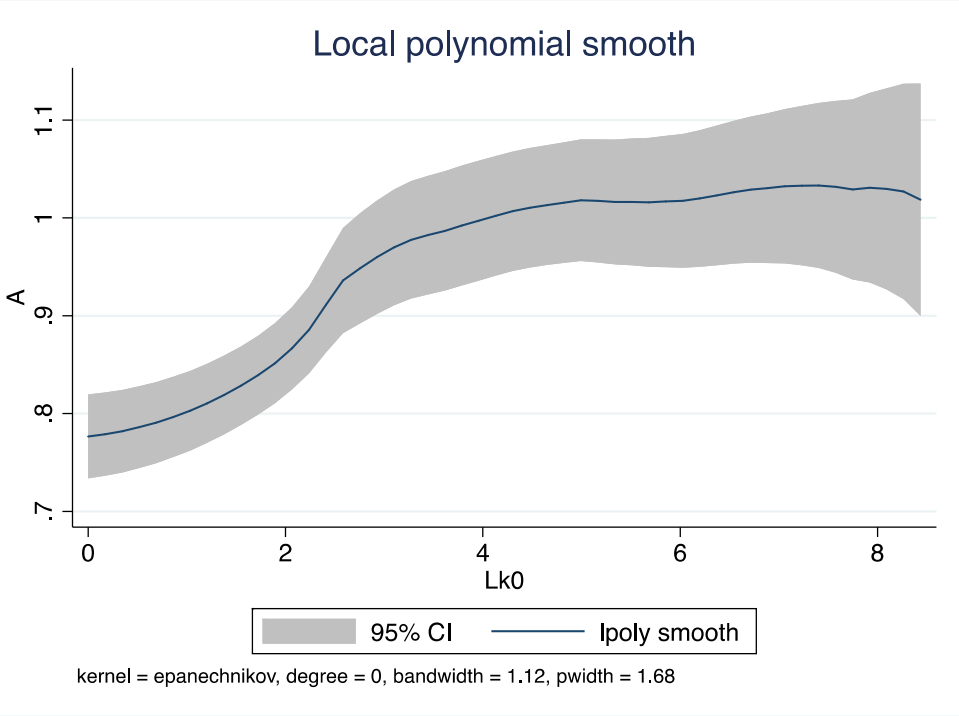
- $y_{i,t}$ is total income of the respondent, $K_{i,t}$ is productive assets, $L_{i,t}$ is total hours worked, $H_{i,t}$ is respondent's years of education, γ_i is an individual fixed effect, δ_t is a time fixed effect, $\varepsilon_{i,t}$ is an idiosyncratic error, and $t \in \{2007, 2009, 2011\}$.

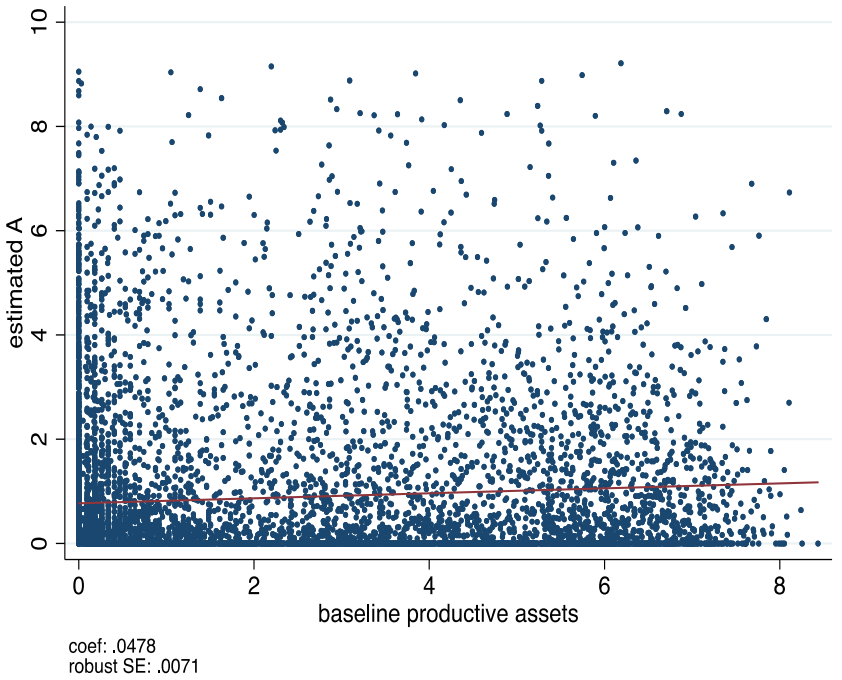
- Regression equation:

$$\ln(y_{i,t}) = \beta_1 \ln(K_{i,t}) + \beta_2 \ln(L_{i,t}) + \beta_3 \ln(H_{i,t}) + \gamma_i + \delta_t + \varepsilon_{i,t}$$

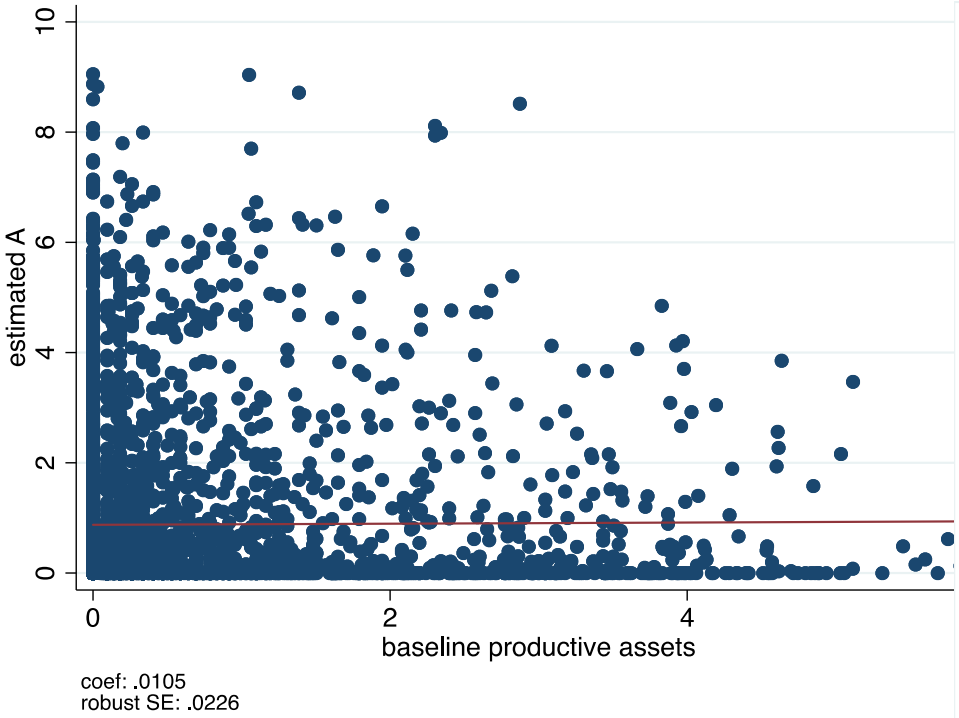
- We interpret $\exp(\hat{\gamma}_i)$, the individual fixed effect, as a measure of (unobserved) innate traits (A).

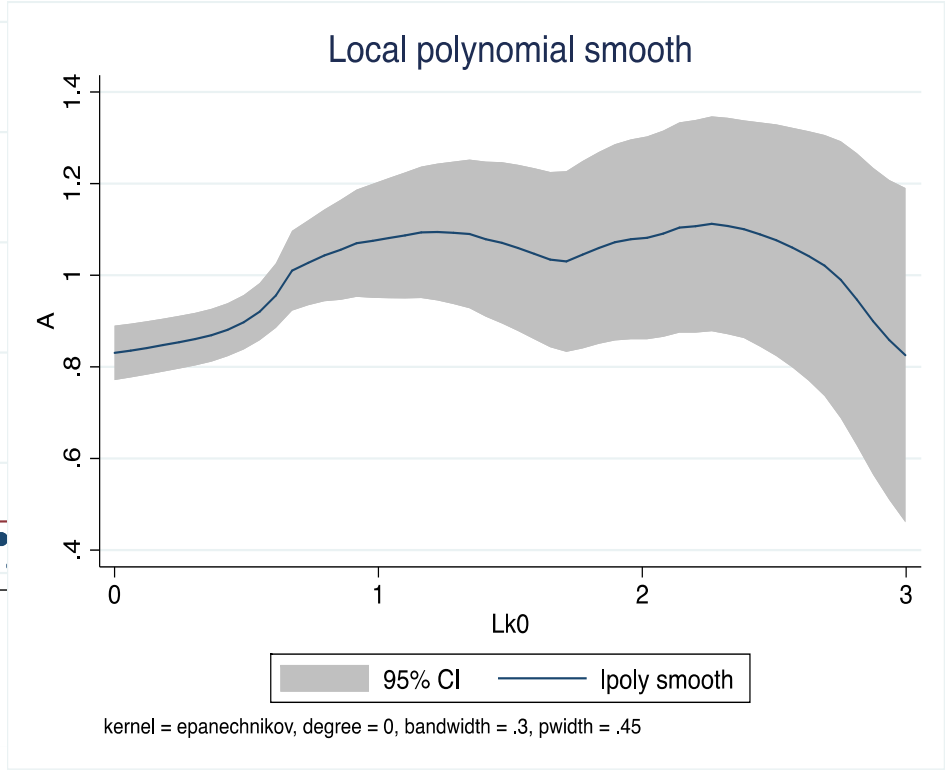
The correlation is positive over the full support of K0



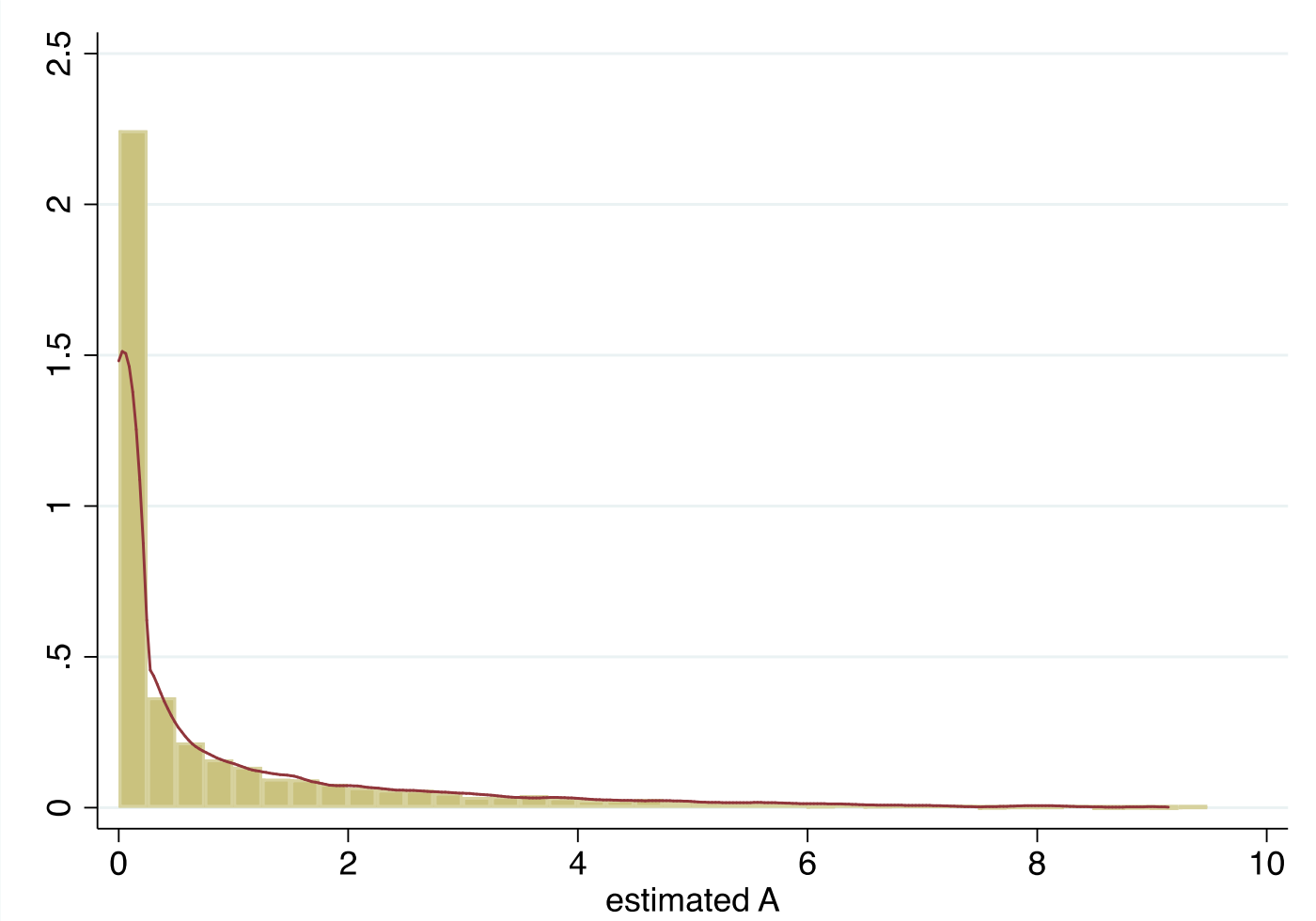


The correlation is zero over the relevant range

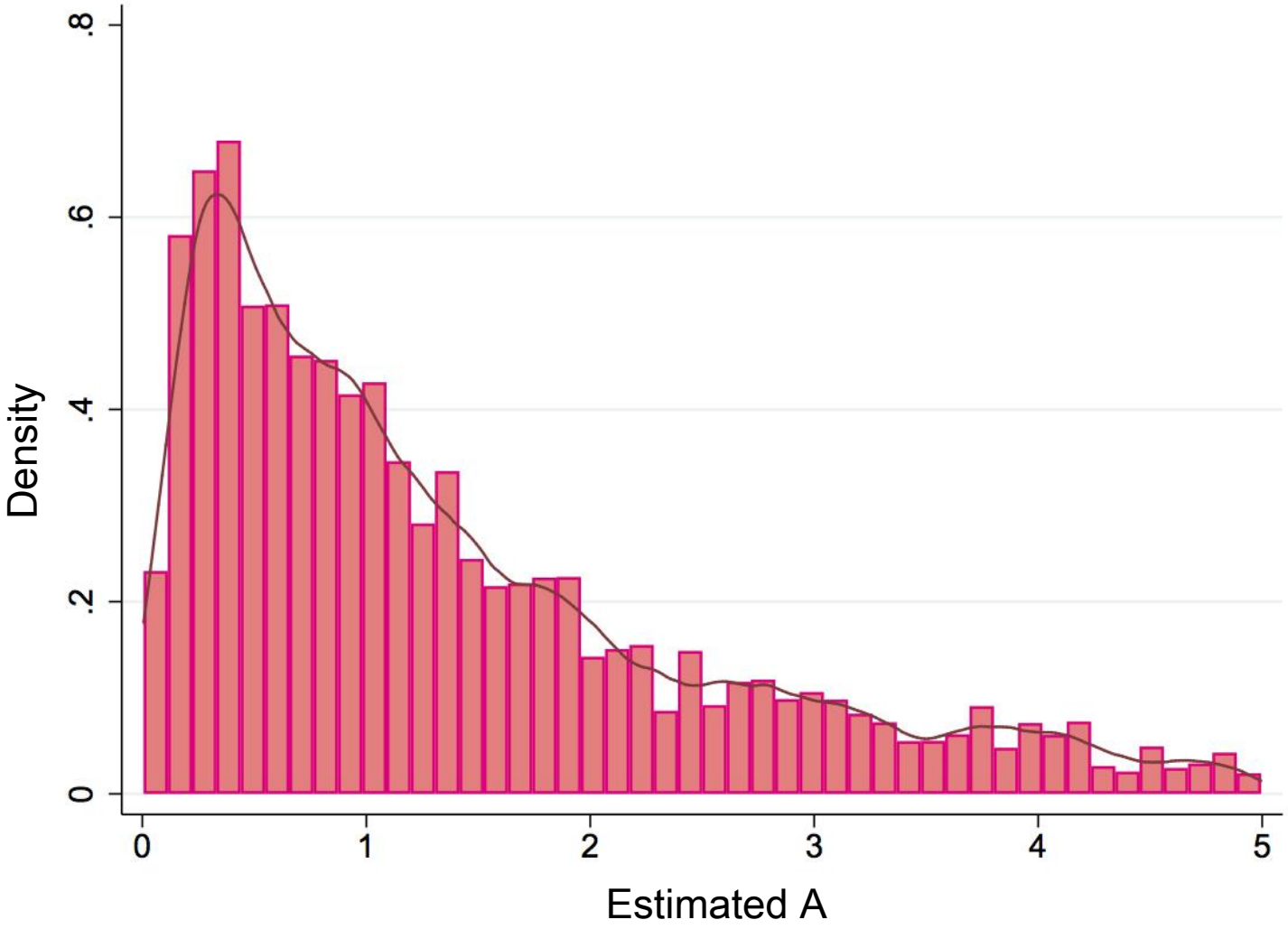




A is not bi-modal



Could Missing Mass be Driven by the A's?
But A is unimodal - cannot explain the bimodality in assets



A is not correlated with k_0