

# Catch up growth: easing early chronic malnutrition through cash transfer programs

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# High levels of nutritional deficiencies in countries of Sub Saharan Africa

	Kenya				Malawi			
	Total	Rural	Urban	Bottom Quintile	Total	Rural	Urban	Bottom Quintile
2000					54.6	56.9	40.0	62.2
2003	35.3	37.0	29.3	44.1				
2004					52.5	53.9	42.3	58.0
2008	35.7	37.1	26.4	44.4				
2010					47.1	48.2	40.7	55.5

# Implications of nutritional deficiencies

- Linked to range of averse outcomes
  - Reduced cognitive capacity and earning potential as adolescents and adults
  - Increased risk of delivery complications for adult women
  - Adolescent obesity
  - Childhood mortality
- Policy focus on first two years of life—but can kids catch up?
  - Increasing evidence that they can
  - And catch up in terms of cognitive capacity
- And this ability to correct childhood malnutrition, ‘catch-up growth’, has policy implications

# What exactly is catch-up growth?

- Describes a phase of rapid linear growth which allows a child to move toward pre-illness growth curve
- Much variation in terms of definition, measurement and analytical approach regarding
  - if full catch-up growth is possible; and
  - what factors may enable or contribute to correcting malnutrition
- If child exhibits high or moderate forms of malnutrition, are they both 'locked into' lower growth trajectory with lower growth potential?

# Can cash transfer programs facilitate catch up growth?

- Cash transfer programs in Sub Saharan Africa focus on child wellbeing
  - Health, education and food security (quality and quantity)
- Large share of resources spent on children
- Can cash transfer programs help break state dependency?
- Use ongoing impact evaluations with anthropometric data to see role of cash transfer programs
  - Malawi (SCT pilot in Mchinji: 2007-8)
  - Kenya (CT-OVC: 2007-9)

# Analytical approach

- Focus on stunting (height for age) among children age 5 or below
  - HAZ score
  - Yes/no if child is stunted (HAZ score is below “-2”)
- First, use difference-in-difference with inverse probability weighting (IPW) to evaluate impact of each program on HAZ score and stunting
- Second, look at impact of cash transfer program on catch up growth

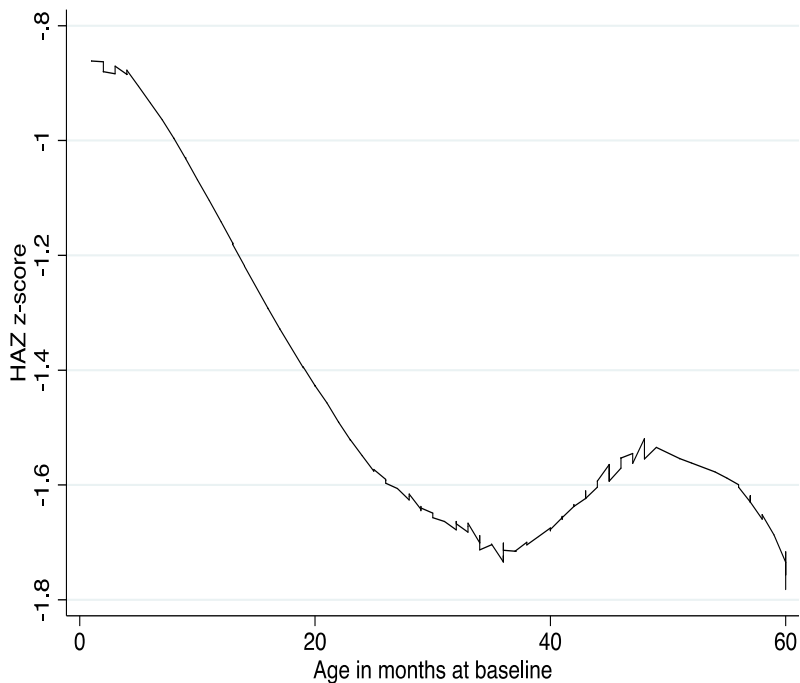
# Measuring catch up growth

- Value at baseline of HAZ affects current HAZ—reflects state dependency
  - A child stunted at baseline more likely to be stunted at follow-up
- Interaction between receipt of cash transfer and baseline value of HAZ reflects impact on catch up growth
- Control for child, household and community level characteristics

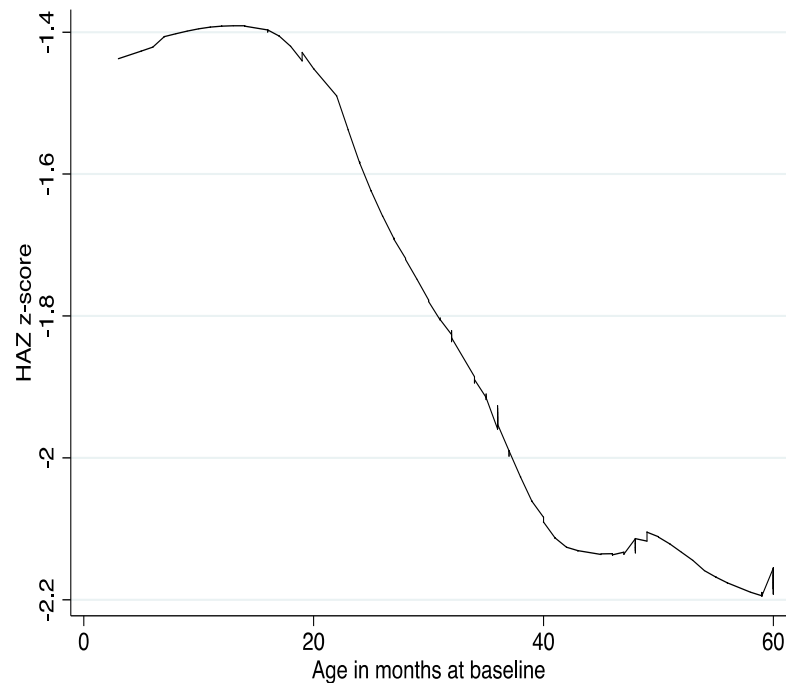
# Trends in HAZ score by age in months, baseline data

**Figure 3:** Trends in HAZ z-score by age in months, baseline data

**Panel A:** Kenya



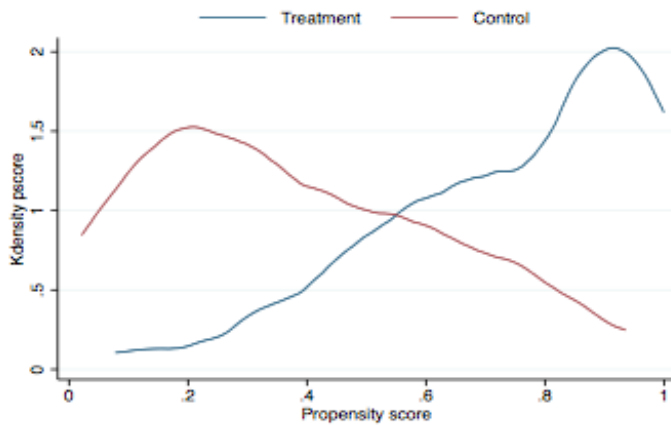
**Panel B:** Malawi



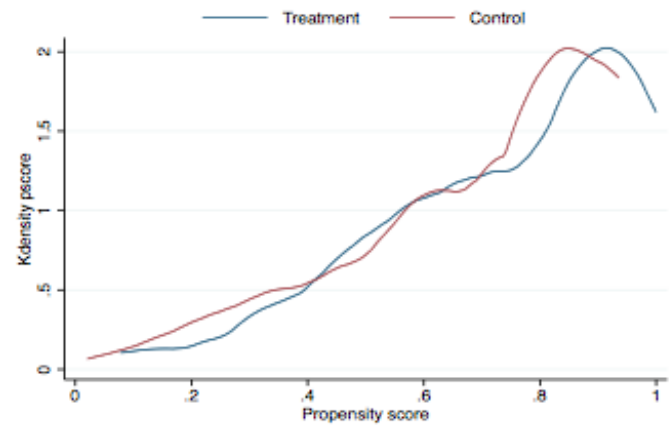


# Propensity score before and after using IPW

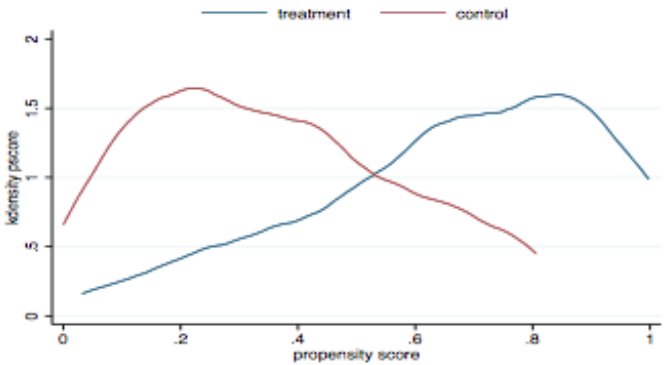
**Panel A:** Propensity score BEFORE using IPW, Kenya



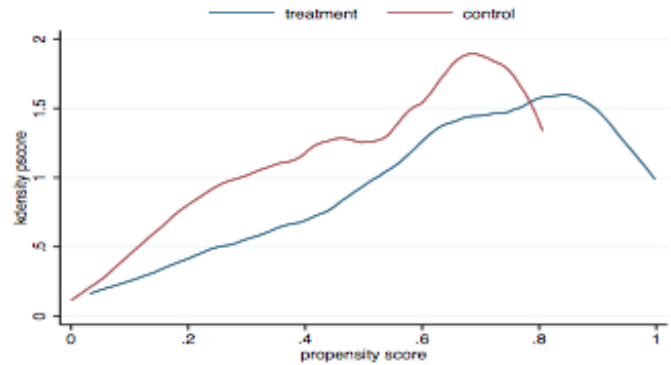
**Panel B:** Propensity score AFTER using IPW, Kenya



**Panel C:** Propensity score BEFORE using IPW, Malawi



**Panel D:** Propensity score AFTER using IPW, Malawi



# Both programs have positive and significant impacts on reducing stunting

Kenya, CT-OVC		
	(1)	(2)
	HAZ-IPW	Stunting-IPW
Treatment	0.216 (1.177)	<b>-0.198</b> <b>(2.279)</b>
Observations	175	175
R-squared	0.137	0.321
Malawi, STC		
	(1)	(2)
	HAZ-IPW	Stunting
Treatment	<b>0.229</b> <b>(1.937)</b>	<b>-0.131</b> <b>(-1.928)</b>
Observations	208	208
R-squared	0.309	0.286

Note: T-tests in parentheses. Values in bold are significant at 10% level or more.

# Yet different impacts on catch up growth

Variables	Kenya, CT-OVC			Malawi, SCT		
	(1) HAZ-IPW, follow-up	(2) HAZ-IPW, follow-up	(3) HAZ-IPW, follow-up	(1) HAZ-IPW, follow-up	(2) HAZ-IPW, follow-up	(3) HAZ-IPW, follow-up
HAZ, baseline	<b>0.297</b> (4.277)	<b>0.290</b> (4.224)	<b>0.432</b> (5.273)	<b>0.784</b> (25.483)	<b>0.784</b> (25.526)	<b>0.792</b> (21.554)
Treatment		0.203 (1.922)	-0.157 (-0.724)		-0.072 (-0.541)	-0.100 (-0.544)
HAZ, baseline*Treatment			<b>-0.215</b> (-1.822)			<b>-0.016</b> (-0.254)
Observations	175	175	175	208	208	208
R-squared	0.576	0.581	0.593	0.816	0.816	0.816

Note: T-tests in parentheses. Values in bold are significant at 10% level or more.

Kenya: low state dependency, cash transfer facilitates catch up growth

Malawi: high state dependency, cash transfer does not facilitate catch up growth

# Zambia similar story to Kenya (preliminary results)

Zambia CGP		
	(1)	(2)
Variables	HAZ, follow-up	HAZ, follow-up
HAZ, baseline	<b>0.242</b>	<b>0.276</b>
	(13.490)	(11.080)
Treatment	0.26	-0.076
	(0.460)	(1.000)
HAZ, baseline*Treatment		<b>-0.07</b>
		(1.950)
Observations	2628	2628

Zambia: low state dependency, cash transfer facilitates catch up growth

# Results driven by severity of stunting at baseline?

Country		Total	Control	Treatment
<b>Malawi</b>				
HAZ, baseline		-1.825	-1.781	-1.864
HAZ, follow-up		-1.713	-1.763	-1.67
<b>Kenya</b>				
HAZ, baseline		-1.513	-1.577	-1.459
HAZ, follow-up		-1.28	-1.356	-1.216
<b>Zambia</b>				
HAZ, baseline		-1.416		
HAZ, follow-up			-1.491	-1.445

# Conclusion

- Link to initial status (state dependency) much stronger in Malawi than Kenya and Zambia
- Kenya CT-OVC and Zambia CGP appear to facilitate catch up growth
- When children have high initial levels of stunting, providing cash transfer did not suffice to recovery in terms of linear growth.

# Our websites

From Protection to Production Project

<http://www.fao.org/economic/PtoP/en>

The Transfer Project

<http://www.cpc.unc.edu/projects/transfer>

# Child characteristics

## KENYA, CT-OVC

<u>Child characteristics:</u>	Panel A: Unweighted means			Panel B: Weighted means		
	Total	Control	Treatment	Total	Control	Treatment
Girls	0.503	0.581	0.453	0.505	0.569	0.453
Age in months	35.411	34.565	35.962	36.804	37.818	35.962
Maternal orphan	0.126	<b>0.129**</b>	<b>0.189**</b>	0.182	0.164	0.189
Birth order	1.057	1.029	1.075	1.051	1.022	1.075
HAZ score	-1.526	-1.629	-1.459	-1.513	-1.577	-1.459
Stunting	0.411	0.42	0.406	0.406	0.405	0.406
Number of orphans by household	2.383	<b>2.072**</b>	<b>2.585**</b>	2.702	2.843	2.585
Observations	175	69	106	175	69	106

## MALAWI, STC

<u>Child characteristics:</u>	Panel C: Unweighted means			Panel D: Weighted means		
	Total	Control	Treatment	Total	Control	Treatment
Girls	0.514	0.549	0.481	0.488	0.495	0.481
Age in months	36.75	36.775	36.726	36.748	36.772	36.726
Maternal orphan	0.163	0.167	0.16	0.139	0.113	0.16
Birth order	1.486	1.441	1.528	1.504	1.475	1.528
HAZ score	-1.897	-1.931	-1.864	-1.825	-1.781	-1.864
Stunting	0.452	0.451	0.453	0.431	0.406	0.453
Number of orphans by household	0.608	<b>0.382***</b>	<b>0.831***</b>	0.672	0.503	0.831
Observations	208	102	106	208	102	106