

# Is Africa's Youth Leaving Agriculture en mass?

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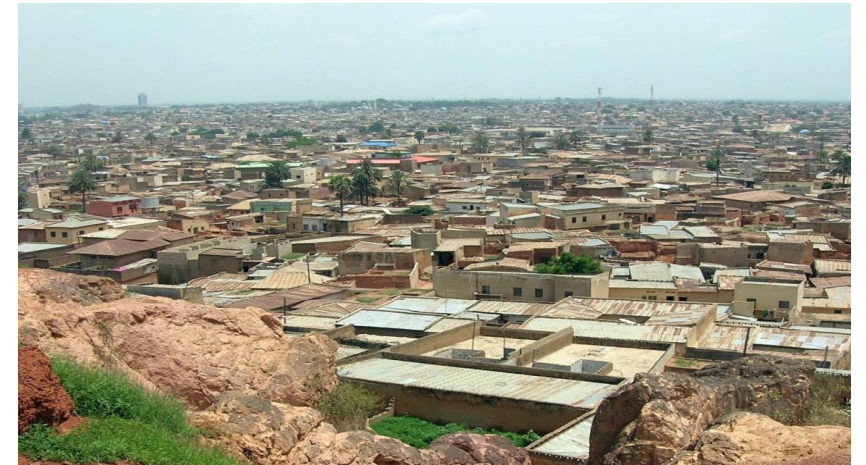
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# Youth in agriculture – clarifying the issue.

- Two perspectives
    - Food perspective:
      - We have a growing world population. Not only how to produce the food, but also WHO will produce the food, both in production and along the VC
    - Youth unemployment
      - Given Africa's youth bulge, many jobs needed for youth who are still mainly rural
      - What if they abandon agriculture, because AG is (perceived) not (to be) lucrative?
  - But,
    - Exit out of agriculture is normal as countries develop (structural transformation)
    - ST happens mainly through youth (more agile, in transition, access too land)
    - There is a problem if ST w/o agricultural productivity growth
- ➔ What is the level of youth exit out of agriculture ?
- ➔ Does it justify a youth specific approach or is it @ modernizing agriculture in general?

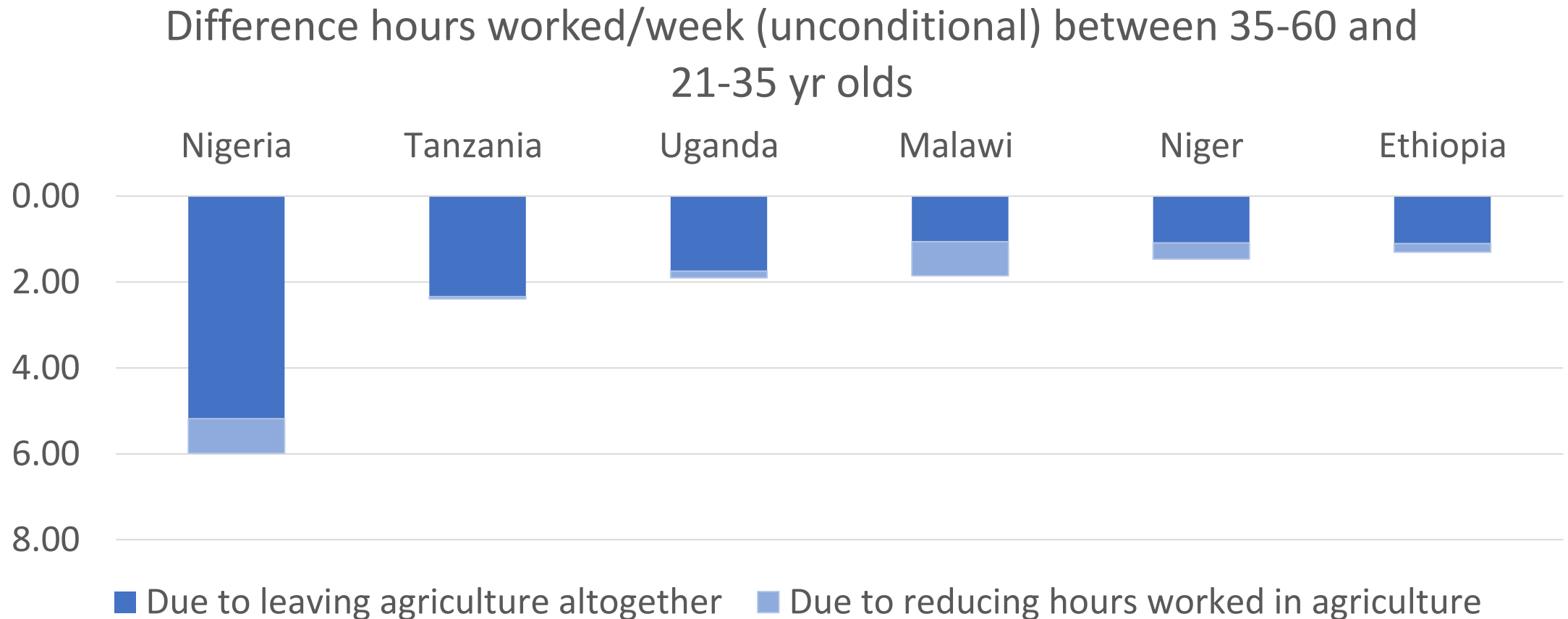
# This paper

- Is youth leaving agriculture?
  - X-sectional, Longitudinal
- Is youth leaving disproportionately ?
  - Difference in difference
- Correlates of age difference in agricultural engagement?
  - Regression and Oaxaca-Blinder decomposition
- Where in agriculture will the jobs be?
  - Staples and smallholder farming
- Empirical base - 6 African countries
  - National (vs case studies), actual (vs aspirations), hours (vs participation)



# Youth less involved in agriculture than older age groups.

## But excessive?



# Methodology – need to control for lifecycle effects (and common time effects)

## DID framework

- Let the ag labor input of person  $i$ , from country  $j$ , from age group  $a$ , in year  $t$  be:

$$Y_{ijat} = \lambda_a + \rho_j + \gamma_t + \delta_{aj}D_t + v_{ijta}$$

- Where:
  - $\lambda_a$  = age/lifecycle effect that is common across time
  - $\rho_j$  = country fixed effect (comparative advantage of ag (trade openness, land/labor ratios), institutions (nonag), cost of mobility)
  - $\gamma_t$  = year specific effect (survey design, shocks such as rainfall, price shock)
  - $D_t$  = dummy which is 1 for year 1, to capture the net age differentiated effect  $\delta$  of time related factors affecting ag labor demand and supply, i.e. structural transformation (education, terms of trade, institutional change, relative productivity growth, income). We assume that this effect is higher on youth than on adults.
  - $v$  = random error term

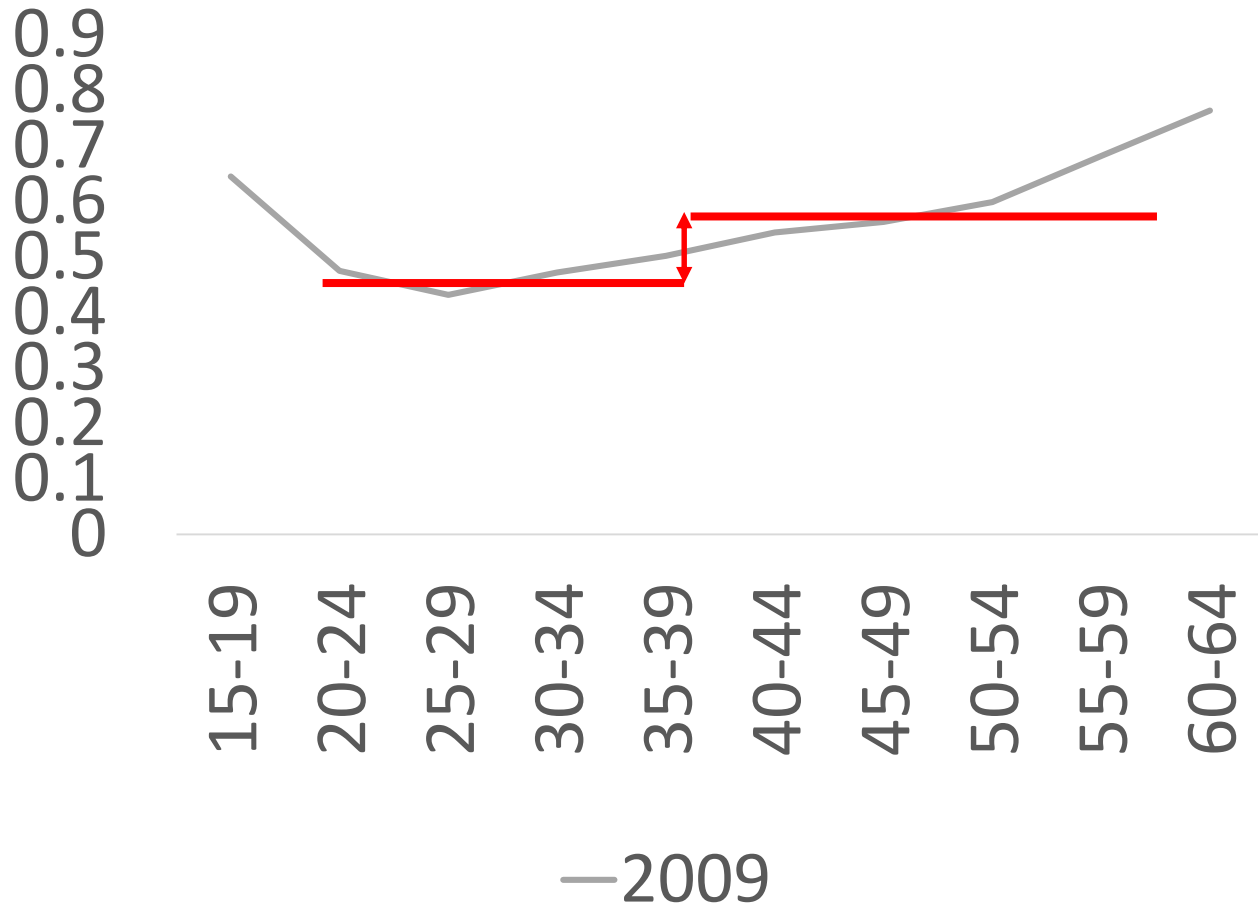
# Transition 1: Controlling for lifecycle effects and common time effects

$$E(Y_{ijat}) = \lambda_a + \rho_j + \gamma_t + \delta_{aj}D_t$$

Variable	Youth	Adults	Difference, Youth - Adults
Employment in t=0	$\lambda_y + \rho_j + \gamma_0$	$\rho_j + \gamma_0$	<i>Life cycle effect</i> $\lambda_y$
Employment in t=1	$\lambda_y + \rho_j + \gamma_1 + \delta_y$	$\rho_j + \gamma_1$	<i>Life cycle + age specific ST effect</i> $\lambda_y + \delta_y$
Change in mean employment t1-t0	<i>Common time + age specific ST</i> $(\gamma_1 - \gamma_0) + \delta_y$	<i>Common time</i> $(\gamma_1 - \gamma_0)$	Age specific ST effect $\delta_y$

# Illustration from Vietnam

## Share ag employment

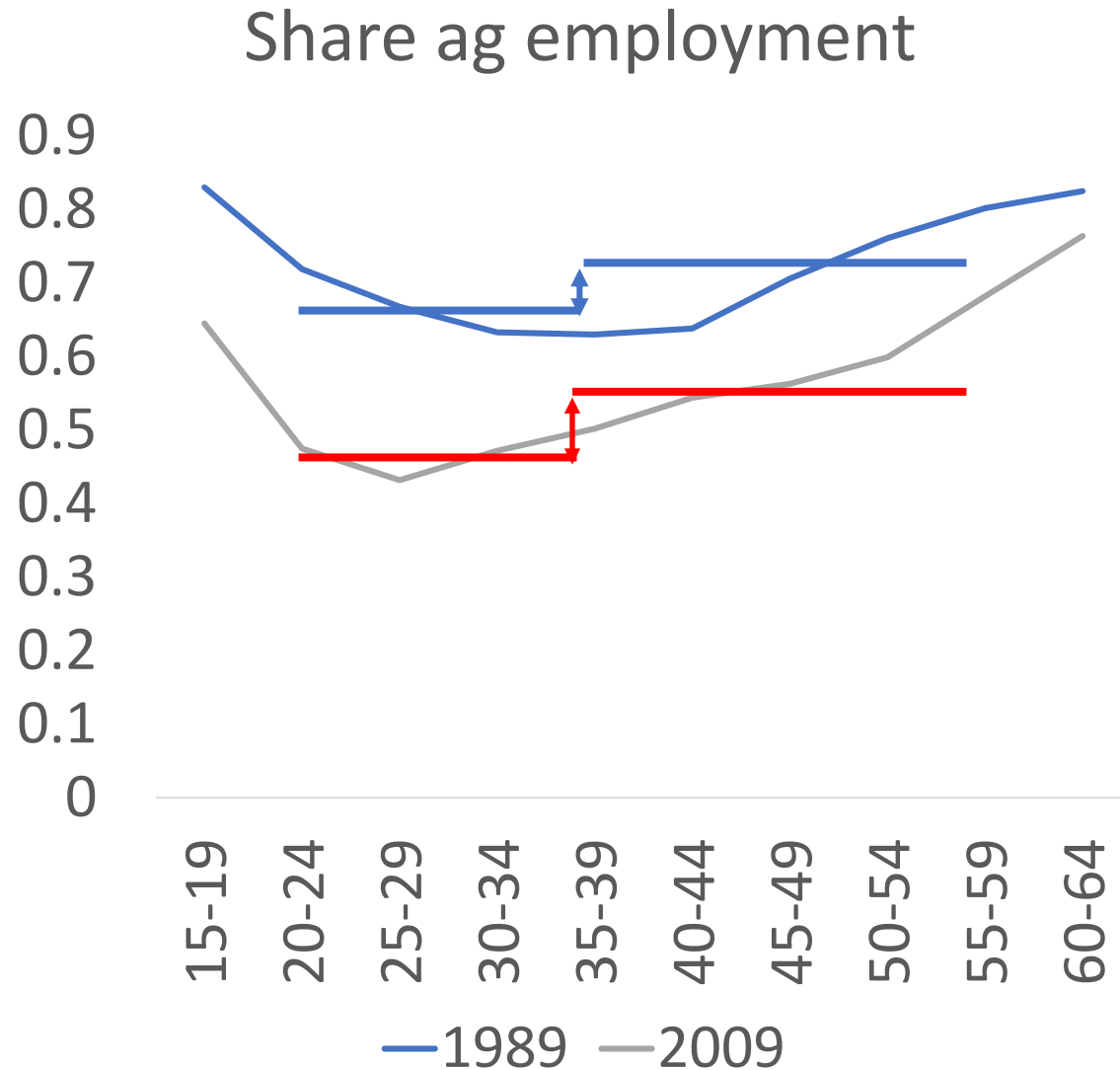


	20-35	36-60	
2009	0.46	0.58	-0.12

12 percent less engagement by youth in agriculture in 2009

But, life cycle effects ...

# Illustration from Vietnam

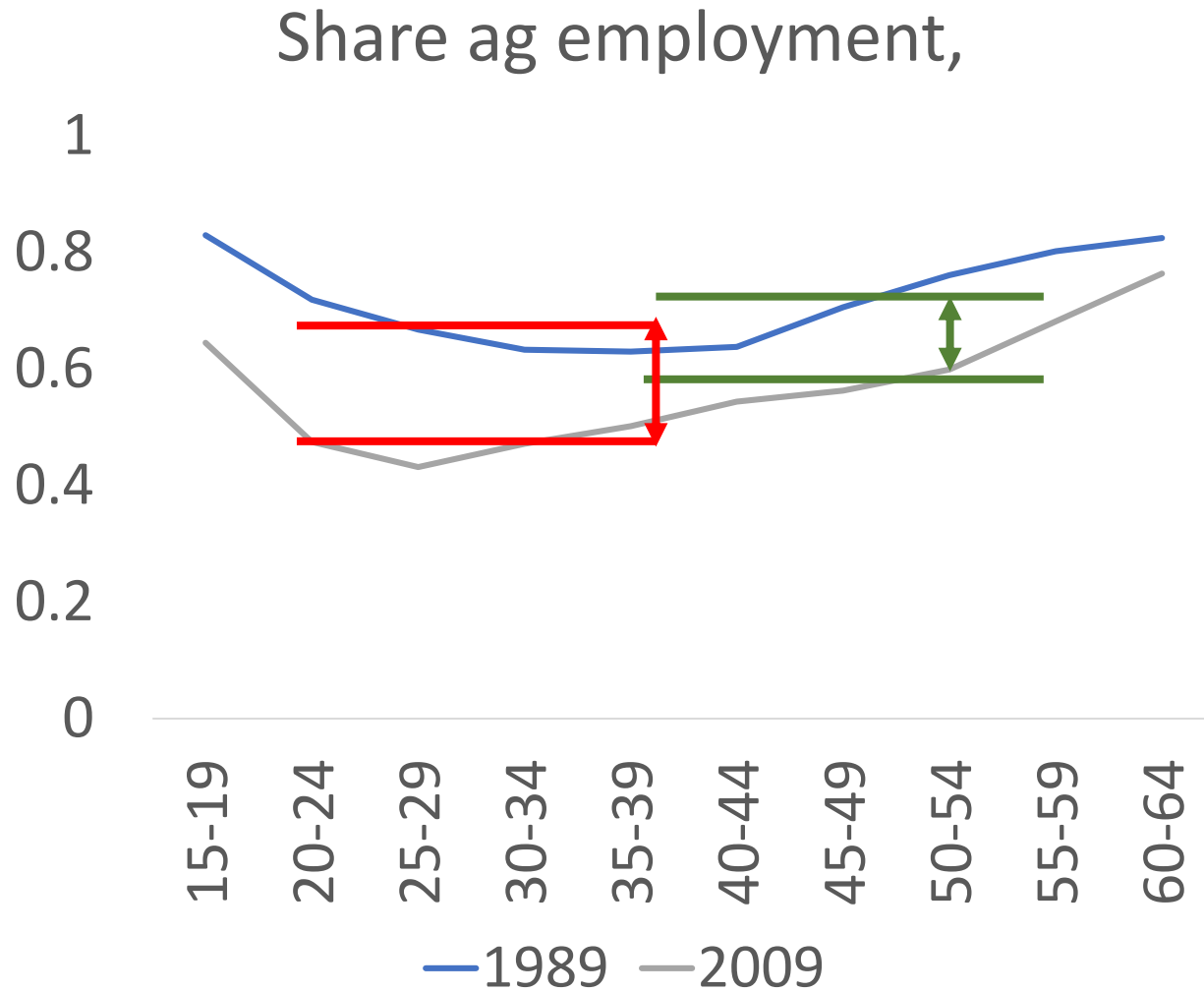


	20-35	36-60	
1989	0.67	0.71	-0.03
2009	0.46	0.58	-0.12
			<b>-0.08</b>

Accelerated exit of youth by 8 percentage points.



# Illustration from Vietnam



	20-35	36-60	
1989	<b>0.67</b>	<b>0.71</b>	
2009	<b>0.46</b>	<b>0.58</b>	
	<b>-0.21</b>	<b>-0.13</b>	<b>-0.08</b>

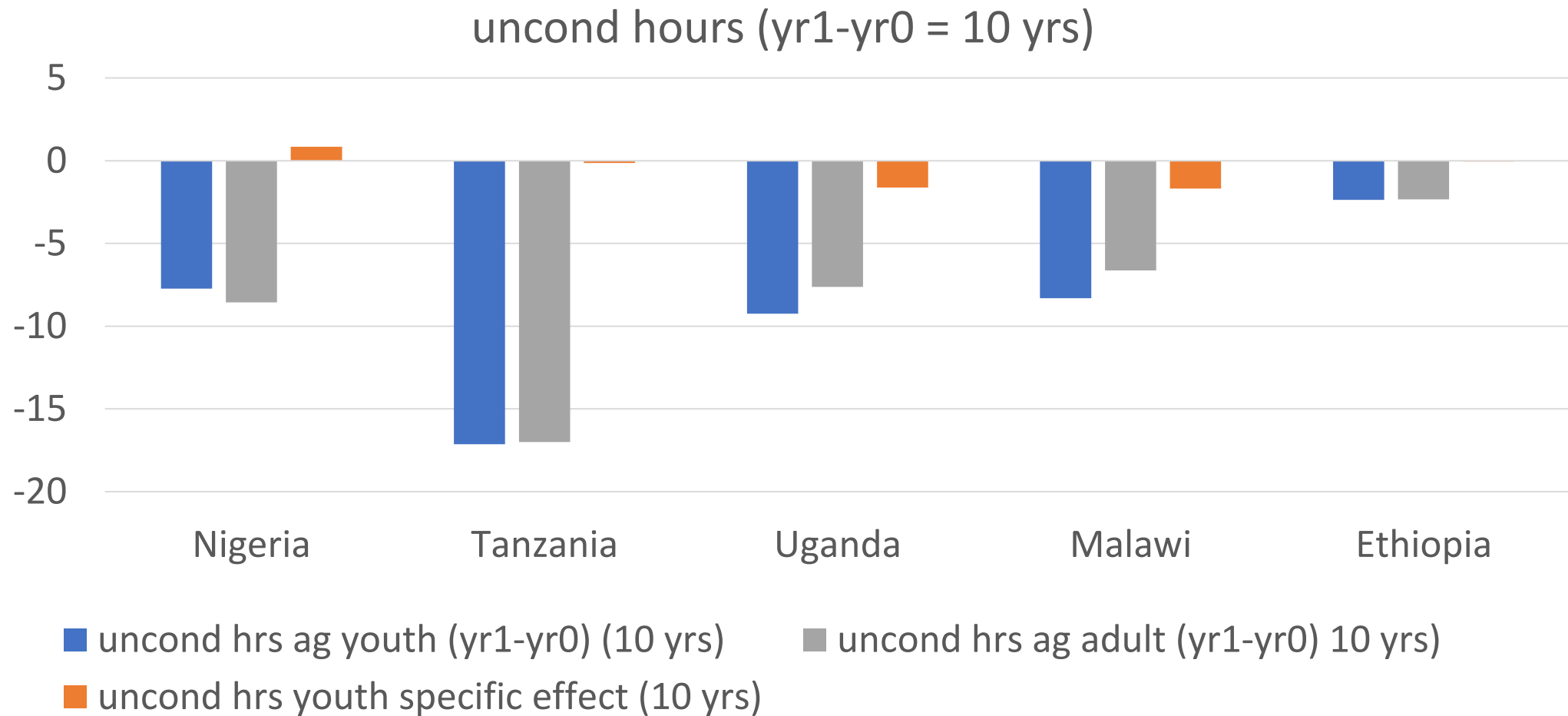
Look at decline among youth (21%).

But also, decline among adults (13%) (structural transformation).

Accelerated exit of youth by 8%points

Excessive?

# Africa: Minor youth effect: large exit of youth out of agriculture (10 yr period), but similarly large exit among adults; resulting net age effect well below Vietnam



## Age related attributes explain a fair amount of the decline

hrs/week in ag	Youth 20-35	Youth 21-35 (+ attributes)
Ethiopia 2011-12	-1.447**	-0.463
Malawi 2010-11	-1.479***	-0.638
Niger 2011	-0.608	1.651**
Nigeria 2010-11	-4.955***	-5.123***
Tanzania 2010-11	-2.342***	-2.278***
Uganda 2009-2010	-1.606**	-0.802

Strongest age effects in Nigeria (exit) and Niger (entry)

# Gender, education and farm size systematically correlated

Hrs/week in ag	Ethiopia	Malawi	Niger	Nigeria	Tanzania	Uganda
Male	10.2***	1.46***	22.50***	10.40***	1.82***	0.09
Education	-0.4***	-0.23***	-2.5	-0.37***	0.91	-0.45***
Farm size p/c	5.4***	2.33**	1.05***	-0.285	1.93***	0.87
Wealth index	-0.04	-0.56***	-1.31**	-2.47***	-1.60***	-1.34***
Rural	9.0***	3.08***	9.13***	3.093*	4.89***	5.76**
Livestock owned	1.4	0.619	2.24*	1.67*	0.99	1.2
HH size	-0.08	0.11	0.21	-0.11	0.386***	0.29*
Dependency ratio	-1.3*	-0.17	-0.15	0.59	-0.11	-0.4

Results control for age groups (16-20 and 21-35)

## Less uniform patterns by aridity, distance to city & household head features

Hrs/week in ag	Ethiopia	Malawi	Niger	Nigeria	Tanzania	Uganda
Aridity index	9.11*	-1.07	-137.6***	-4.76	10.01**	-3.54
Distance city 20k+	0.04	-0.02	-0.22***	-0.19**	0.12***	0.06
Aridity*dist city	-0.04	0.04	1.28***	0.30**	-0.15**	-0.06
HH head age	-0.05	-0.01	0.01	-0.04	-0.07**	-0.06*
HH head male	-2.56*	0.17	-3	3.15	2.52**	0.81
HH head education	4.60**	-1.021*	-1.52	-1.46	-2.35**	-1.33

Results control for age groups (16-20 and 21-35)

# Significant differences in years of education; Differences in farm size/capita small

	Education (yrs)		Farm size/cap (ha)	
Age group	21-35	36-60	21-35	36-60
Ethiopia 2011-12	2.2	1.3	0.01	0.01
Malawi 2010-11	6.3	5.7	0.11	0.14
Niger 2011	6.2	6.9	0.43	0.41
Nigeria 2010-11	6.8	5.4	0.06	0.07
Tanzania 2010-11	1.3	0.1	0.37	0.36
Uganda 2009-10	6.6	5.2	0.14	0.15
<b>Average</b>	<b>4.9</b>	<b>4.1</b>	<b>0.19</b>	<b>0.19</b>

# Oaxaca-Blinder decomposition of diff bw young and old

predicted hrs/wk in ag	Ethiopia		Malawi		Niger		Nigeria		Tanzania	
	Expl	Unexpl.	Expl	Unexpl.	Expl	Unexpl.	Expl	Unexpl.	Expl	Unexpl.
36-60	15.0***		15.1***		23.1***		20.5***		20.51**	
16-35	13.7***		12.4***		28.9***		12.0***		19.3***	
Diff.	1.3*		2.7**		-5.8***		8.5***		1.3	
Educ	0.5**	-0.3	0.08***	-1	-0.1	4.7	0.5***	-2.6***	1.7***	-0.5*
Male	0.8***	0.9	0.2***	0.3	1.3	-7.7***	1.4***	1.1*	-0.4**	-0.1
Farm size p/c	0.06	-0.04	0.05**	-0.332	0.3	3.0	0.0	-0.4	-0.009	0.2
Wealth index	0	-0.02	-0.13***	-0.006	-0.6**	0.3	-0.1	0.4	0.2	-1.0

- Education and Gender matter most (especially as attributes, though also due to age differentiated effects);
- Differences in farm size/capita or wealth across age groups (or age differences in their effect) less important in understanding the decline/increase in youth engagement in ag

Where in agriculture might youth find employment?  
The role of staples, small holder farming



TZ: staples & vegetables by smaller farms, oil seeds & cash crops by larger SH; labor productivity higher on large farms; higher for rice and highest for vegetables

Table 5. Patterns of production and labor productivity across crops and land holding classes, Tanzania

	Total land holding size class					Overall
	< 1 ha	1-2 ha	2-5 ha	5-10 ha	> 10 ha	
<b>Current shares of production</b>						
Wheat & Rice	0.26	0.25	0.29	0.11	0.09	1.00
Other Grains	0.21	0.27	0.30	0.18	0.04	1.00
Pulses	0.21	0.28	0.31	0.11	0.09	1.00
Oilseeds	0.08	0.24	0.29	0.38		1.00
Roots & Tubers	0.34	0.34	0.25	0.05	0.03	1.00
Vegetables	0.28	0.33	0.34	0.04		1.00
Other cash crops (mostly cotton & tobacco)	0.10	0.20	0.13	0.18	0.09	1.00
<b>Current LQ (days labor per USD output)</b>						
Wheat & Rice	0.18	0.15	0.14	0.06	0.08	0.14
Other Grains	0.35	0.31	0.28	0.12	0.31	0.28
Pulses	0.44	0.35	0.28	0.17	0.21	0.32
Oilseeds	0.29	0.22	0.16	0.07		0.15
Roots & Tubers	0.39	0.20	0.29	0.25	0.40	0.30
Vegetables	0.11	0.08	0.08	0.13		0.09

# TZ: Simulated impact of inc growth with diet change: distribution of change in demand & associated change in demand for labor and gross returns/grower

	Total	Total land holding size class				
		< 1 ha	1-2 ha	2-5 ha	5-10 ha	> 10 ha
<b>Associated change in ...</b>						
<b>... labor ('000 days)</b>						
Wheat & Rice	5,471	1,904	1,456	1,573	240	299
Other Grains	3,413	920	1,049	1,031	259	155
Pulses	4,246	1,266	1,323	1,169	240	248
Oilseeds	708	109	247	231	122	-
Roots & Tubers	3,547	1,606	808	871	137	125
Vegetables	1,654	564	484	497	109	-
Total	19,040	6,368	5,367	5,371	1,106	828
<b>... gross income per grower (USD/year)</b>						
Wheat & Rice	31	18	31	39	80	98
Other Grains	2	1	2	3	7	4
Pulses	3	2	3	5	7	11
Oilseeds	10	4	6	10	48	-
Roots & Tubers	11	7	15	13	11	10
Vegetables	50	32	48	93	83	-

Source: Authors' calculations from Tanzania 2010/11 NPS data

Source: Tschirley et al. 2018

# Where in agriculture might youth find employment?

## The importance of staples and small holder farming

- Staples offer most employment growth opportunities for smallholders (absorb slack labor)
- Rice offers in addition also income growth opportunities
- Vegetables offer great income growth opportunities, but only for a small slice of farmers
- Larger farms have greater labor productivity, but shifting production to larger farms would eliminate most of the additional labor demand
- Value chain development can help raise labor absorption benefits of certain crop, such as oils seeds, if better local processing capacity (would facilitate vegetable oil import substitution).

# Take-Aways

## Is African youth leaving agriculture?

- Youth engagement in agriculture has dramatically declined
- But so has engagement of adults
- No clear signs of an accelerated/excessive decline in youth engagement in agriculture.

## Age correlated attributes more important than age itself

- No sign of feminization of agriculture
- Education (- effect on ag hrs) an important reason for exit
- Farm size (+) & wealth (-) important for young and old alike

## Staple crops and smallholders remain important loci for future employment in ag