Good or bad timing? The effect of productivity shocks on education investment and on schooling performance.

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Motivations and research Question I

Objective:

- What are the effects of productivity shocks on education decisions and schooling performance?

Motivations:

- Agriculture is by far the dominant activity in developping countries. In 2015:
  - 60 % of the population was rural and 62 % of the labor force worked in agriculture in Sub-Saharan Africa.
- This sector is exposed to substantial shocks:
  - The frequency of price volatilities has risen over the last decade (FAO).
  - Over the last 25 years, the number of climatic shocks has been multiplied by two in African countries (UNEP).
- Very few protection systems:
  - imperfect credit and saving markets : Jacoby & Skoufias (1997), Deaton (1992), Dumas (2016).
- Alternatively, households:
  - Use informal insurance systems
  - Call on marginal workers such as children

Literature

What do we know about the relationship between productivity shocks and education?

- In theory: no clear answer. It depends on the relative size of the substitution effect and the income effect.
- Ferreira and Schady (2009) do a literature review and suggest that the relationship is pro-cyclical in low-income countries.
- Cogneau and Jedwab (2012), Gubert and Robillard (2007) find evidence of a negative relationship between negative agricultural shocks and education.
- Shah and Steinberg (2017), and Krueger (2007) show that positive shocks are detrimental to education.

  $\rightarrow$ Is the relationship non-linear ?
- Does the relationship vary with children's age ?

  Almond and Currie (2011), Currie and Vogl (2013) study the effect of shocks occurring in utero and at birth.

In this paper:

- I construct exogenous price and climate shocks in Tanzania.
- I consider two kinds of outputs: education decisions and schooling performance.
- I test whether the effect of productivity shocks on education outputs is non-linear.
- I study the effect of productivity shocks on education in respect of two criteria: **the age at which the shock occurs and the frequency of shocks**.

Outline

The model I

- Two periods:
  - $t_1 = [0, 6]$: children do not work and do not go to school
  - $t_2 = [7, 16]$: children can work and can go to school
- The parents' utility is a function of:

$$U = U(C_1, C_2, A; X) \tag{1}$$

C_1 and C_2, the households' consumption, A the cognitive skills, and X a set of households' characteristics.

- The cognitive skills are acquired according to the function:

$$A = \alpha A(C_1, C_2, E_2) \tag{2}$$

With α the learning efficiency, E_2 the time spent at school.

- Parents decide to allocate children's time between education E_2 and labor L_{2c}:

$$T_2 = E_2 + L_{2c} \tag{3}$$

- Under the budget constraints:

$$C_1 = w_1 L_1 (1 - \Delta) \tag{4}$$

$$C_2 = w_2 L_2 + \gamma w_2 L_{2c} + w_1 L_1 \Delta \tag{5}$$

L_1, L_2 are the adult labor times. w_1 and w_2 are the labor productivities, γ is the relative productivity and Δ is the informal saving rate $\in [0, 1]$.

The model I

- Impact of early productivity shocks
  - on education $\frac{\partial E_2}{\partial w_1}$: positive effect (through higher transfers).
  - on cognitive skills $\frac{\partial A}{\partial w_1}$: positive effect (through higher transfers and C_1).
- Impact of current productivity shocks
  - on education $\frac{\partial E_2}{\partial w_2}$: indeterminate effect (positive substitution effect and negative income effect)
  - on cognitive skills $\frac{\partial A}{\partial w_2}$: indeterminate effect (positive effect through C_2 and indeterminate effect through E_2).

The Data

- **The Education data.**
  - The panel LSMS-ISA data (2008, 2010, 2012).
    → information on education status and child labor ▸ Child labor
    → information on households production
  - The Uwezo cross-section data (from 2010 to 2014) : Data on math, Swahili and English scores for enrolled and unenrolled children.
    → Tests for the standard 2 level. ▸ Test scores

- **Climate data.**
  - Standardized Precipitation Evapotranspiration Index (SPEI) (Vicente-Serrano et al., 2010).
    - ★ Account for precipitation, and other climatic dimensions: $(P - PET)$, with PET the potential evapotranspiration for a well-watered reference surface. ▸ PET eq.
    - ★ Express in standard deviations from the historical mean of the locality.
    - ★ I compute the SPEI for the growing cycle in Tanzania: March to May.

The Data I

Figure: SPEI by district capturing the water balance.

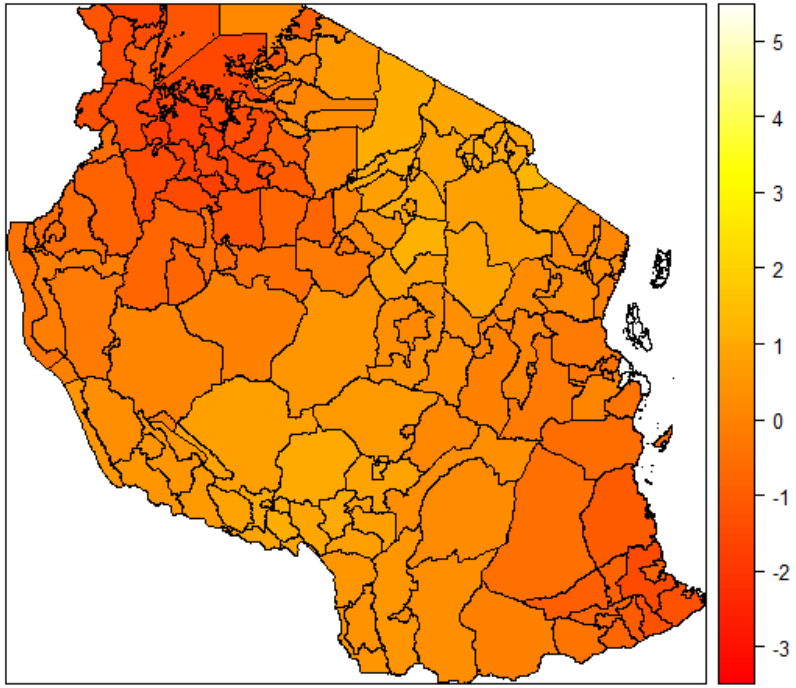


Figure: In 2008.

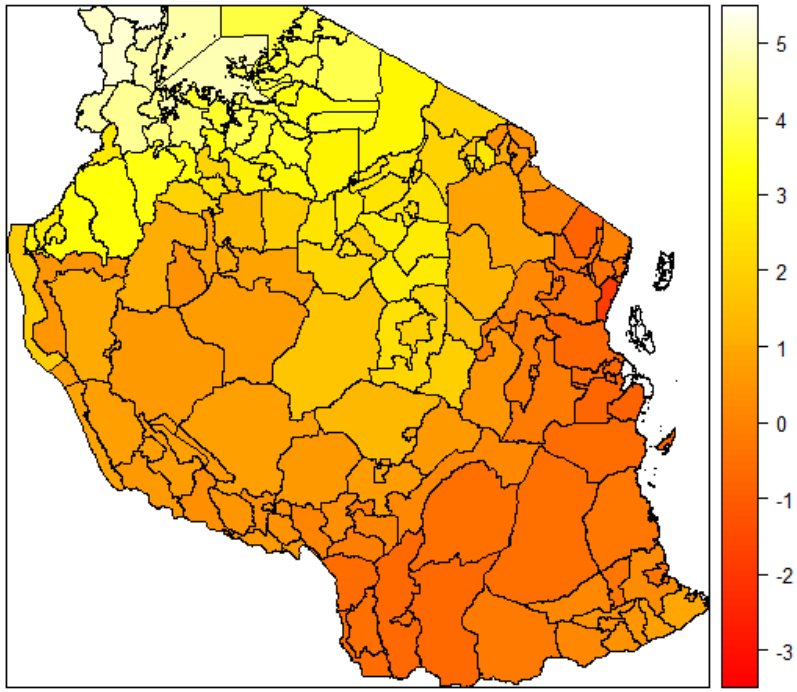


Figure: In 2010.

The Data II

- **Price data**:

  World Bank Commodities Price Data.

  - Focus on cash-crop commodities only: coffee, cotton, coconut, tobacco, tea, sugar and palm-trees.
  - Use the Hodrick-Prescott (HP) filter to detrend prices: $p_{c,y} - T_{c,y}$.

- **Agricultural data**:

  Geo-coded EarthStat data inform on the crops' intensity in hectares $\frac{S_{cj,2000}}{S_{j,2000}}$.

  $\rightarrow$ I construct the price index:

$$P_{jy} = \sum_{c=1}^{n} \frac{(p_{c,y} - T_{c,y})}{T_{c,y}} * \frac{S_{c,j,2000}}{S_{j,2000}}$$

The Data III

Figure: Percentage of the coffee plantation in Tanzania in 2000.

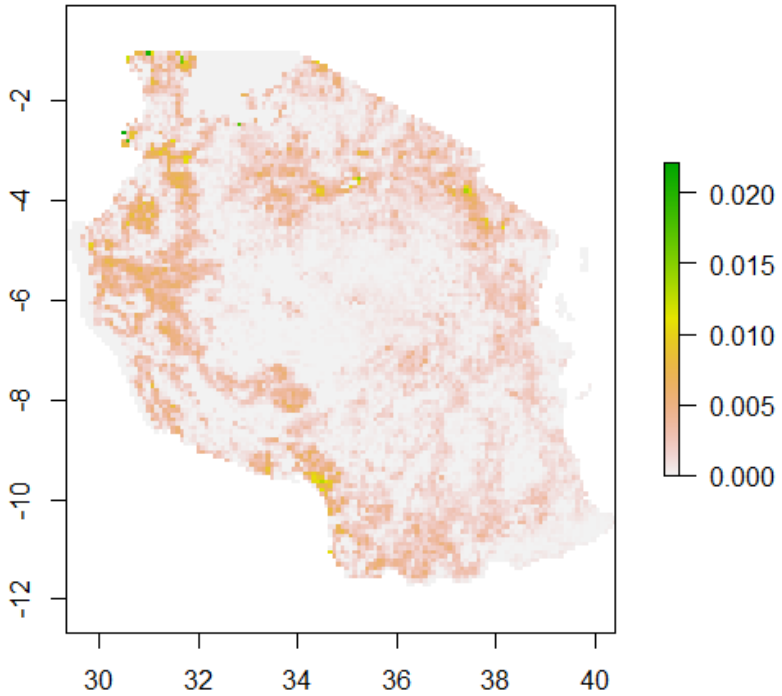


Figure: Cells of 10km*10km.

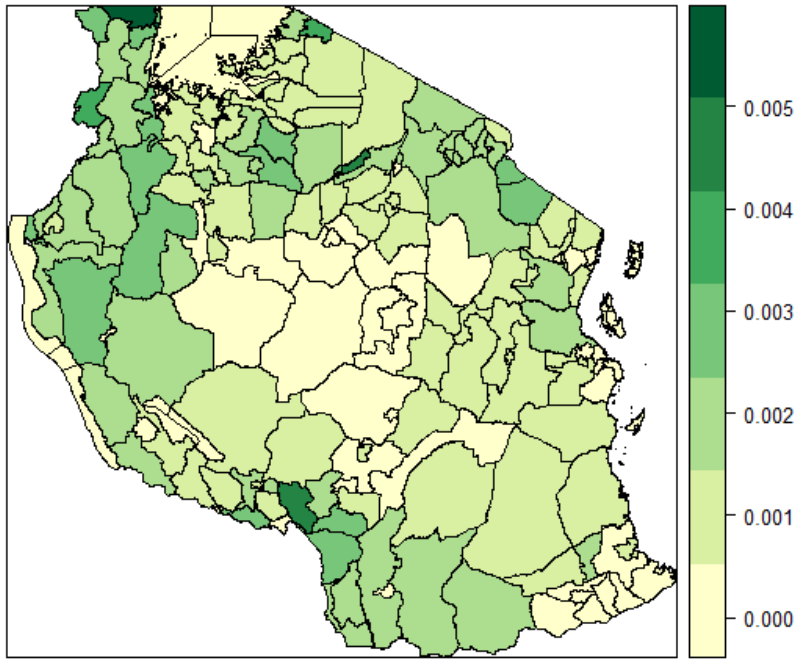


Figure: Average by district.

Identification Strategy and results

1. Current shocks

$$E_{ijty} = \beta_0 + \beta_1 P_{j,y-1} + \beta_2 SPEI_{j,y-1} + \gamma X_{ijy} + \delta_j + \mu_t + \nu_y + \epsilon_{ijty} \quad (6)$$

δ, μ, and ν denote the locality, age and survey year fixed effects, respectively. X_{ijt} is a set of household controls : number of adults, number of children, birth order, position among the siblings, education and age of the household head.

- Effect on education decisions

: Effect of Current Shocks on Education Decisions.

	Work	Enrolled	Dropout	Grade
Positive Price Shock$_{t-1}$	0.058*	-0.035**	0.004	-0.063
	(0.033)	(0.017)	(0.011)	(0.082)
Positive Rainfall Shock$_{t-1}$	0.084**	0.001	0.014*	-0.124***
	(0.033)	(0.014)	(0.008)	(0.045)
Negative Price Shock$_{t-1}$	-0.013	-0.004	-0.006	0.006
	(0.025)	(0.014)	(0.009)	(0.074)
Negative Rainfall Shock$_{t-1}$	0.006	0.009	-0.004	-0.034
	(0.028)	(0.017)	(0.008)	(0.045)
R-squared	0.167	0.154	0.084	0.297
Observations	12,677	11,625	11,230	10,588
Localities F.E	×	×	×	×
Year F.E	×	×	×	×

Sources: LSMS-ISA from 2008, 2010 and 2012 (Read and Write variable is only available for 2010 and 2012). Note: Standard errors, clustered by geographical units (0.5×0.5 of precision), are reported in parentheses. ***,**,* mean respectively that the coefficients are significantly different from 0 at the level of 1%, 5% and 10%.

$\rightarrow$ The relationship between current shocks and education decisions is counter-cyclical: $\frac{\delta E_2}{\delta w_2} < 0$.

Identification Strategy and results

- Heterogeneity
  - by gender ▸ Shock gender
  - by household's income ▸ Shock wealth
  - by age ▸ Shock age
- Effect on schooling performance

: Effect of Current Productivity Shocks on Test Scores

	Swahili	Maths	Swahili	Maths
Positive Price Shock$_{t-1}$	-0.007	-0.012	-0.015	-0.020
	(0.016)	(0.018)	(0.016)	(0.020)
Positive Rainfall Shock$_{t-1}$	-0.029*	-0.036*	-0.023	-0.032
	(0.017)	(0.020)	(0.018)	(0.022)
Negative Price Shock$_{t-1}$	-0.022	0.019	-0.020	0.010
	(0.028)	(0.026)	(0.024)	(0.021)
Drought$_{t-1}$	-0.001	0.003	0.006	0.010
	(0.013)	(0.016)	(0.013)	(0.015)
R-squared	0.321	0.293	0.321	0.287
Observations	328,948	328,948	286,250	286,250
District F.E	×	×	×	×
Year F.E	×	×	×	×
Attend school			×	×

Sources: Uwezo data from 2011 to 2014. Note: Standard errors are clustered at the district level and are reported in parentheses. ***,**,* mean respectively that the coefficients are significantly different from 0 at the level of 1%, 5% and 10%.

Identification Strategy and results

2. Repetitive shocks

$$E_{ijty} = \beta_0 + \beta_1 \sum_{i=7}^{t} R_{j,t} + \beta_2 \sum_{i=7}^{t} PP_{j,t} + \gamma X_{ijy} + \delta_j + \mu_t + \nu_y + \epsilon_{ijty} \quad (7)$$

R_{jy} a dummy for positive rainfall shock and PP_{jy} is a dummy for positive price shock.

- Effect on education decisions

: Effect of the repetition of shocks during school-age on education decisions.

	Work	Overage	Grade	Read and write
Number Positive Price Shocks	0.015	0.016*	-0.037	-0.025**
	(0.016)	(0.009)	(0.037)	(0.012)
Number Positive Rainfall Shocks	0.045***	0.019	-0.057	0.014
	(0.012)	(0.012)	(0.042)	(0.013)
R-squared	0.166	0.247	0.694	0.230
Length Positive Price Shocks	0.023	0.019*	-0.059	-0.019*
	(0.019)	(0.011)	(0.045)	(0.011)
Length Positive Rainfall Shocks	0.056***	0.000	-0.002	-0.020
	(0.015)	(0.015)	(0.049)	(0.017)
R-squared	0.166	0.247	0.694	0.230
Observations	10,322	8,717	8,717	6,748
Localities F.E	×	×	×	×
Year F.E	×	×	×	×

Sources: LSMS-ISA from 2008, 2010 and 2012. Note: Standard errors, clustered by geographical units (0.5*0.5 of precision), are reported in parentheses. ***,**,* mean respectively that the coefficients are significantly different from 0 at the level of 1%, 5% and 10%.

Identification Strategy and results

- Effect on schooling performance

: Effect of the repetition of shocks during school-age on test scores.

	Swahili	Maths	Swahili	Maths
Nb. Pos. Price Shocks	-0.026***	-0.032***	-0.027***	-0.030***
	(0.007)	(0.007)	(0.007)	(0.007)
Nb. Pos. Rainfall Shocks	-0.027***	-0.019	-0.031***	-0.019
	(0.010)	(0.012)	(0.011)	(0.012)
R-squared	0.323	0.295	0.322	0.289
Lenght Pos. Price Shocks	-0.024***	-0.028***	-0.024***	-0.025***
	(0.007)	(0.007)	(0.007)	(0.007)
Lenght Pos. Rainfall Shocks	-0.035***	-0.032***	-0.040***	-0.034***
	(0.007)	(0.009)	(0.007)	(0.009)
R-squared	0.323	0.295	0.322	0.289
Observations	328,948	328,948	294,521	294,521
District F.E	×	×	×	×
Year F.E	×	×	×	×
Attend School			×	×

Sources: Uwezo data from 2011 to 2014. Note: Standard errors are clustered at the district level and are reported in parentheses. ***,**,* mean respectively that the coefficients are significantly different from 0 at the level of 1%, 5% and 10%.

$\rightarrow$ The relationship between shocks and schooling performance is counter-cyclical: $\frac{\delta A^*}{\delta w_2} < 0$.

Identification Strategy and results

3. Early age shocks

▸ Effect on edu. decisions

$$E_{ijty} = \beta_0 + \beta_1 SPEI_{j,birth} + \ldots + \beta_7 SPEI_{j,age6} + \beta_8 P_{j,birth} + \ldots + \beta_{14} P_{j,age6} + \gamma X_{ijt} + \delta_j + \mu_t + \nu_y + \epsilon_{ijty} \quad (8)$$

: Effect of Early Life Shocks on Schooling Outcomes (beta coefficients)

	Swahili	Math	Swahili	Math
SPEI-6 March-May$_{age\ birth}$	0.006	0.014*	0.010	0.015**
	(0.007)	(0.007)	(0.006)	(0.007)
SPEI-6 March-May$_{age\ 1}$	0.008	0.022**	0.011	0.023***
	(0.009)	(0.009)	(0.008)	(0.008)
SPEI-6 March-May$_{age\ 2}$	0.014	0.024**	0.018*	0.026***
	(0.010)	(0.010)	(0.009)	(0.009)
SPEI-6 March-May$_{age\ 3}$	0.012	0.026***	0.013	0.026***
	(0.009)	(0.009)	(0.009)	(0.009)
SPEI-6 March-May$_{age\ 4}$	0.006	0.020*	0.005	0.018*
	(0.010)	(0.010)	(0.010)	(0.010)
SPEI-6 March-May$_{age\ 5}$	0.001	-0.000	0.002	0.003
	(0.009)	(0.009)	(0.010)	(0.008)
SPEI-6 March-May$_{age\ 6}$	0.005	-0.002	0.007	0.000
	(0.008)	(0.007)	(0.008)	(0.007)
$P_{j,birth}$	0.013	0.004	0.012	-0.001
	(0.011)	(0.008)	(0.011)	(0.008)
$P_{j,age\ 1}$	0.000	0.006	-0.001	0.011
	(0.010)	(0.008)	(0.010)	(0.008)
$P_{j,age\ 2}$	0.010	0.010	0.015	0.004
	(0.018)	(0.016)	(0.019)	(0.017)
$P_{j,age\ 3}$	-0.004	-0.014	-0.004	-0.004
	(0.017)	(0.016)	(0.015)	(0.016)
$P_{j,age\ 4}$	0.021	0.032*	0.022	0.025
	(0.015)	(0.017)	(0.016)	(0.021)
$P_{j,age\ 5}$	-0.013	-0.012	-0.011	-0.005
	(0.009)	(0.008)	(0.009)	(0.011)
$P_{j,age\ 6}$	0.013*	0.011	0.011	0.010
	(0.008)	(0.009)	(0.008)	(0.011)
R-squared	0.274	0.247	0.282	0.251
Observations	279,855	279,855	252,471	252,471
District F.E	×	×	×	×
Year F.E	×	×	×	×
Attend school			×	×

$\rightarrow$ The relationship between early shocks and schooling performance is pro-cyclical: $\frac{\delta A^*}{\delta w_1} > 0$.

Validity assumptions

1. Shocks affect the household production.

: Effects of productivity shocks on Household Production (beta coefficients).

	(1)	(2)	(3)	(4)	(5)
SPEI-6 months March-May			0.266**	0.315***	0.309***
			(0.109)	(0.112)	(0.112)
P_{jt}	0.121**			0.155***	
	(0.055)			(0.059)	
P_{jt} Short Run		0.110**			0.142**
		(0.052)			(0.055)
within R-squared	0.169	0.173	0.174	0.176	0.176
Observations	11,960	12,182	12,182	12,182	12,182
Localities and Times F.E	×	×	×	×	×
Households F.E	×	×	×	×	×

Sources: LSMS-ISA from 2008, 2010 and 2012. Note: Production and Consumption are computed in Tanzanian shillings (TZS). Standard errors, clustered by geographical units (0.5*0.5 of precision), are reported in parentheses. Controls are survey month dummies, cultivated lands, the number of days of labor in the field and the age of the household head. ***,**,* mean respectively that the coefficients are significantly different from 0 at the level of 1%, 5% and 10%.

2. Shocks are purely exogenous.

3. Shocks do not affect education through other unobserved variables.

Discussion I

: Effect of climate and prices on quality of education

	(1) Attend teachers	(2) Qualified teachers
Positive Rainfall Shock$_{jy}$	-0.000	0.014
	(0.010)	(0.036)
Positive Price Shock$_{jy}$	0.015	-0.009
	(0.012)	(0.017)
Negative Rainfall Shock$_{jy}$	0.007	0.017
	(0.009)	(0.021)
Negative Price Shock$_{jy}$	-0.009	0.096
	(0.013)	(0.069)
Within R-squared	0.03	0.016
Observations	9,356	9,356
Localities F.E	×	×
Month and Year F.E	×	×

Sources: Uwezo data from 2011 to 2014. Notes: Standard errors are clustered at the district level and are reported in parentheses. In columns (2) and (3), I control by the number of recorded actual teachers. ***,**,* mean respectively that the coefficients are significantly different from 0 at the level of 1%, 5% and 10%.

Conclusion

I find that:

- Productivity shocks are pro-cyclical in early-life: they improve future schooling performance.
- In contrast, productivity shocks become counter-cyclical in school-age.
  - The demand for child labor increases.
  - The enrollment decreases.
  - The schooling performance drops.

  $\rightarrow$ Lack of data on children's schedule.

Implication in terms of public policies:

- Useful when it comes to design public policies for protecting agricultural households.
- To promote education, it is necessary to suppress tuition fees but also to account for the opportunity costs of education.

Go back

Figure: Children activities by age in rural areas.

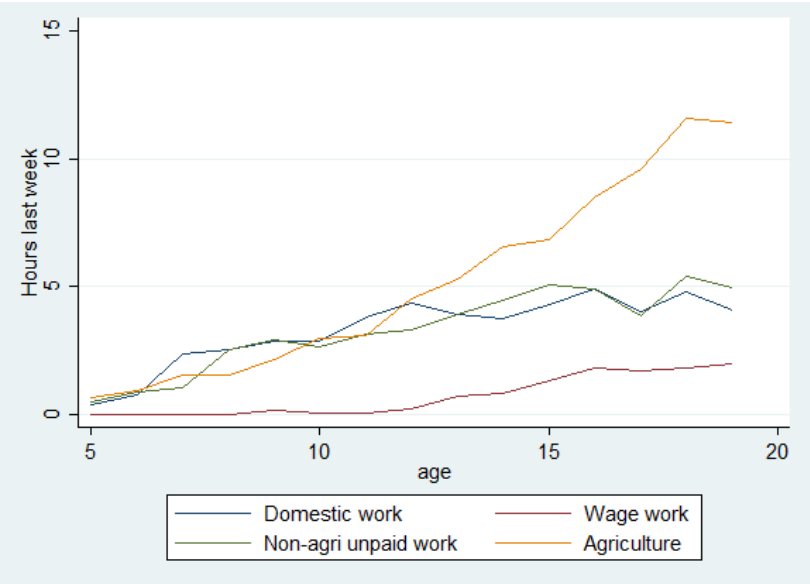


Figure: Girls

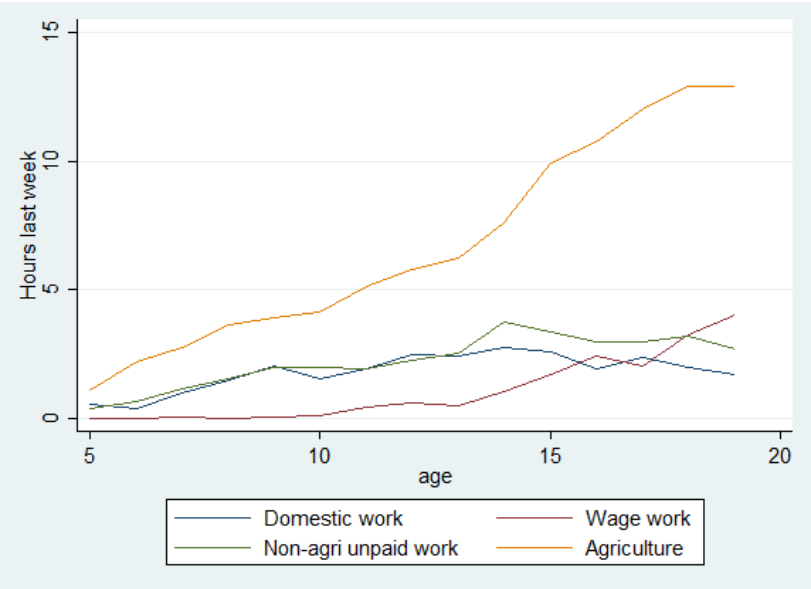
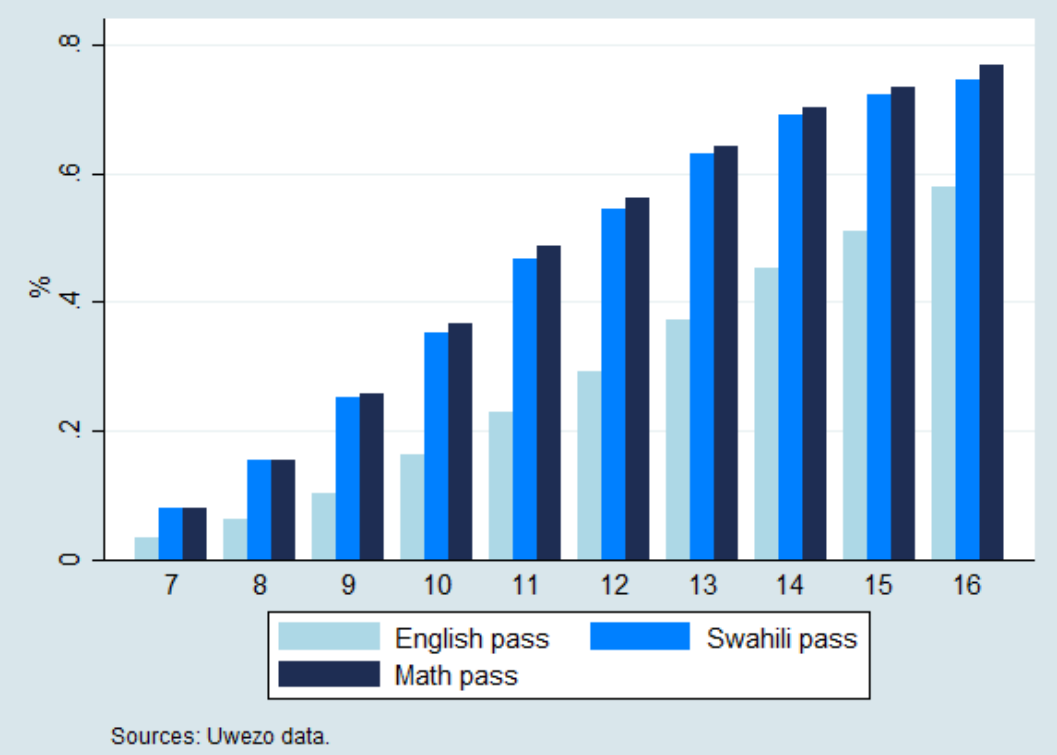


Figure: Boys

Go back

Figure: Percentage of children that passes the exam by age cohort.



$$PET = \frac{0.408(R_n - G) + \gamma \frac{900}{T+273} u_2 (e_s - e_a)}{\Delta + \gamma(1 + 0.34 u_2)}$$

Where R_n is the net radiation of the crop surface, G, the soil heat flux density, T the mean daily air temperature at 2 m height, u_2 is the wind speed at 2 m height, e_s is the saturation vapour pressure, e_a is the actual vapour pressure , Δ is the slope vapour pressure curve and γ is the psychrometric constant (FAO, Allen et al., 1998).

◂ Go back

Heterogeneity by gender

: Effect of current shocks by gender.

	Work	Enrolled	Dropout	Grade
	Girls			
Positive Price Shock$_{y-1}$	0.058*	-0.044**	0.005	-0.061
	(0.035)	(0.019)	(0.012)	(0.084)
Positive Rainfall Shock$_{y-1}$	0.071**	-0.003	0.013	-0.113**
	(0.035)	(0.016)	(0.011)	(0.054)
Negative Price Shock$_{y-1}$	0.005	-0.022	0.001	-0.059
	(0.028)	(0.016)	(0.011)	(0.087)
Negative Rainfall Shock$_{y-1}$	0.004	0.010	-0.008	-0.032
	(0.032)	(0.017)	(0.009)	(0.047)
	Boys			
Positive Price Shock$_{y-1}$	0.059*	-0.025	0.004	-0.062
	(0.034)	(0.019)	(0.013)	(0.095)
Positive Rainfall Shock$_{y-1}$	0.097***	0.005	0.016	-0.131**
	(0.033)	(0.017)	(0.010)	(0.062)
Negative Price Shock$_{y-1}$	-0.033	0.015	-0.013	0.074
	(0.025)	(0.016)	(0.011)	(0.083))
Negative Rainfall Shock$_{y-1}$	0.009	0.009	-0.001	-0.028
	(0.027)	(0.020)	(0.009)	(0.059)
R-squared	0.17	0.09	0.315	0.67
Observations	12,677	11,625	11,230	10,588
Localities F.E	×	×	×	×
Year F.E	×	×	×	×

Note: Sources: LSMS-ISA from 2008, 2010 and 2012. Note: Standard errors, clustered by geographical units (0.50×0.5 of precision), are reported in parenthese. ***,**,* mean respectively that the coefficients are significantly different from 0 at the level of 1%, 5% and 10%.

◂ Go back

Heterogeneity by household income

: Effect of shocks during school age by households consumption.

	Work	Enrolled	Dropout	Grade
Below the median consumption				
Positive Price Shock$_{y-1}$	0.059*	-0.056***	0.017	-0.065
	(0.033)	(0.021)	(0.013)	(0.083)
Positive Rainfall Shock$_{y-1}$	0.088**	0.003	0.012	-0.107**
	(0.035)	(0.014)	(0.009)	(0.054)
Negative Price Shock$_{y-1}$	-0.008	-0.020	0.003	0.014
	(0.027)	(0.016)	(0.010)	(0.076)
Drought$_{y-1}$	-0.009	0.026	-0.014	0.015
	(0.027)	(0.018)	(0.008)	(0.058)
Above the median consumption				
Positive Price Shock$_{y-1}$	0.059	-0.022	-0.005	-0.085
	(0.039)	(0.017)	(0.014)	(0.085)
Positive Rainfall Shock$_{y-1}$	0.073*	-0.004	0.019*	-0.143*
	(0.041)	(0.018)	(0.011)	(0.073)
Negative Price Shock$_{y-1}$	-0.027	0.029*	-0.024*	-0.038
	(0.033)	(0.017)	(0.015))	(0.084)
Drought$_{y-1}$	0.030	-0.012	0.008	-0.073
	(0.037)	(0.017)	(0.011)	(0.066)
R-squared	0.17	0.16	0.0856	0.70
Observations	12,677	11,625	11,230	10,588
Localities F.E	×	×	×	×
Year F.E	×	×	×	×

Note: Sources: LSMS-ISA from 2008, 2010 and 2012. Note: Standard errors, clustered by geographical units (0.50×0.5 of precision), are reported in parentheses. ***,**,* mean respectively that the coefficients are significantly different from 0 at the level of 1%, 5% and 10%.

◂ Go back

Heterogeneity by age groups

: Effect of current shocks by age groups.

	Work	Enrolled	Dropout	Grade
7-13 age group				
Positive Price Shock$_{t-1}$	0.021	0.003	0.002	-0.089
	(0.031)	(0.017)	(0.012)	(0.086)
Positive Rainfall Shock$_{t-1}$	0.073**	0.042***	0.004	-0.086*
	(0.033)	(0.014)	(0.008)	(0.045)
Negative Price Shock$_{t-1}$	-0.011	-0.002	-0.008	0.055
	(0.027)	(0.016)	(0.011)	(0.075)
Drought$_{t-1}$	0.005	0.008	-0.003	-0.002
	(0.027)	(0.015)	(0.008)	(0.048)
14-16 age group				
Positive Price Shock$_{t-1}$	0.154***	-0.127***	0.011	0.017
	(0.043)	(0.034)	(0.024)	(0.119)
Positive Rainfall Shock$_{t-1}$	0.113***	-0.096***	0.039**	-0.214*
	(0.037)	(0.027)	(0.019)	(0.110)
Negative Price Shock$_{t-1}$	-0.020	-0.010	-0.001	-0.113
	(0.030)	(0.026)	(0.021)	(0.119)
Drought$_{t-1}$	0.007	0.010	-0.007	-0.111
	(0.035)	(0.030)	(0.021)	(0.091)
R-squared	0.171	0.162	0.0852	0.694
Observations	12,677	11,625	11,230	10,588
Localities F.E	×	×	×	×
Year F.E	×	×	×	×

Note: Sources: LSMS-ISA from 2008, 2010 and 2012. Note: Standard errors, clustered by geographical units (0.50×0.5 of precision), are reported in parentheses. Coefficients are computed with the Delta method. ***,**,* mean respectively that the coefficients are significantly different from 0 at the level of 1%, 5% and 10%.

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	Ever edu		Grade		Overage	
SPEI-6 March-May$_{age\ birth}$	0.009**	0.007	0.027	0.020	-0.007	-0.006
	(0.004)	(0.005)	(0.024)	(0.029)	(0.007)	(0.008)
SPEI-6 March-May$_{age\ 1}$	0.006	0.008	0.050*	0.062*	-0.008	-0.014
	(0.006)	(0.007)	(0.026)	(0.037)	(0.007)	(0.010)
SPEI-6 March-May$_{age\ 2}$	0.003	0.005	0.005	0.001	-0.002	0.000
	(0.006)	(0.008)	(0.033)	(0.042)	(0.008)	(0.010)
SPEI-6 March-May$_{age\ 3}$	-0.004	0.000	0.020	0.027	-0.012	-0.015
	(0.006)	(0.007)	(0.036)	(0.049)	(0.009)	(0.012)
SPEI-6 March-May$_{age\ 4}$	-0.005	-0.004	0.018	-0.003	0.012	0.017
	(0.006)	(0.007)	(0.040)	(0.040)	(0.010)	(0.011)
SPEI-6 March-May$_{age\ 5}$	0.001	0.003	-0.020	0.000	-0.010	-0.017
	(0.006)	(0.006)	(0.041)	(0.047)	(0.010)	(0.011)
SPEI-6 March-May$_{age\ 6}$	-0.002	-0.004	-0.032	-0.024	0.004	-0.002
	(0.005)	(0.005)	(0.029)	(0.034)	(0.010)	(0.011)
$P_{j,age\ birth}$	-0.016	-0.003	0.203	0.248	-0.057	-0.085
	(0.024)	(0.026)	(0.177)	(0.201)	(0.048)	(0.057)
$P_{j,age\ 1}$	0.027	0.006	-0.266	-0.319	0.072	0.104
	(0.030)	(0.032)	(0.208)	(0.237)	(0.060)	(0.072)
$P_{j,age\ 2}$	-0.036	-0.001	0.333	0.429	-0.091	-0.133
	(0.045)	(0.049)	(0.313)	(0.360)	(0.091)	(0.106)
$P_{j,age\ 3}$	0.062	0.007	-0.482	-0.642	0.121	0.207
	(0.082)	(0.087)	(0.566)	(0.641)	(0.159)	(0.184)
$P_{j,age\ 4}$	-0.084	-0.027	0.603	0.738	-0.095	-0.186
	(0.092)	(0.097)	(0.646)	(0.728)	(0.178)	(0.204)
$P_{j,age\ 5}$	0.072	0.029	-0.720	-0.824	0.125	0.210
	(0.082)	(0.083)	(0.580)	(0.649)	(0.156)	(0.178)
$P_{j,age\ 6}$	-0.026	-0.018	0.473*	0.485	-0.055	-0.089
	(0.037)	(0.037)	(0.272)	(0.297)	(0.070)	(0.077)
R-squared	0.063	0.074	0.610	0.604	0.198	0.206
Observations	9,697	7,756	8,267	6,612	8,267	6,612
District F.E	×	×	×	×	×	×
Year F.E	×	×	×	×	×	×
With migrant HH	×		×		×	