


Switching to English in Rwanda's Educational Curriculum: Estimating the Return on Investment

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Language policy in sub-Saharan Africa

- Sub-Saharan African countries characterized by the use of former colonial languages to act as official:
 - The principal language of administration, education, government, and law.
 - With the exception of Eritrea, Ethiopia and Tanzania no country even provides the entire span of primary schooling in an indigenous language.
- The stated objectives for such a choice have been:
 - Use of “world” language that allows access and integration with the world. 
 - Need for a neutral language to address competing group claims and nation building.
- The inability of African educational systems to meet objectives suggest an incoherent policy environment.

Institutionalized incoherence?

- Our fundamental message on African language policies:
 - They have relied on colonial languages for education that retard human capital development.
 - They have ignored speech forms (lingua francas) that would enhance national unity and support human development.
 - Whether due to mistaken beliefs about the return on colonial education, or fears of ethnic mobilization, or inertia, or maximizing elite interests, the policies undermine the goals of human development and national unity.
 - These self-undermining policies are examples of “institutionalized incoherence.”

- We study the effect of Rwanda's language policy change in 2008 on human capital outcomes:
 - Introduced English as the primary medium of instruction.
 - Look at the effect on i) completed years of schooling; ii) literacy; and iii) transition to secondary schooling.
- We employ nationally representative data from the Demographic and Health Surveys (DHS).
- Compare Rwanda and Burundi using a difference-in-differences (DID) estimator.

- Our analysis reveals several key findings:
 - Led to a significant decline in completed years of schooling of about ≈ 1 year for the cohort affected by the introduction of English in primary schooling.
 - Decline of around 10% points in the probability to read an entire sentence.
 - Reduced probability of transitioning to secondary schooling by around 6.5% points.

Media of Instruction in Rwanda

Year	Primary 1-3	Primary 4ff	Note
1917	French	French	Belgium gets trusteeship
1967	Kinyarwanda	French	
2003	Kinyarwanda	French or English	English added by new Tutsi leadership as an official language
2008	English	French or English	Teachers given crash course in English with implementation in 2009
2011	Kinyarwanda	English	Failure to get teachers at a proper level of English and only 2-5% of the population fluent in English
2019	English	English	Apparent input from private schools

- An estimated 99% of the population can speak Kinyarwanda:
 - One of the few settings where linguistic diversity is not a constraint to indigenous language promotion.
- Approximately 5% to 15% of the population speaks French (Samuelson, 2012):
 - The spread of French, however, even prior to the switch was extremely limited with only around 12% estimated to speak French (Albaugh, 2014).
 - Most domains (novels, news, theatre, and poetry) rendered in Kinyarwanda.
- Estimates of the total number of English speakers range from 1.9% - 5%.

Why did Rwanda switch?

- The official explanation:
 - “Adopting English as the official language can promote better communication for business, foreign investment, deveopment, and technology transfer” (Samuelson).
 - English was portrayed as key to Rwanda's regional and global integration, including its joining of the East African Community (July 2007) and the Commonwealth (November 2009).

Why did Rwanda switch?

- The political story:
 - French has suffered from negative attitudes due to the alleged involvement of the French army in lending support to the Hutu genocidaires in the mass killing of Tutsis and those alleged to support them (Prunier, 1997).
 - After the victory of the Tutsi-led exiled forces:
 - Many of these English-speaking returnees, including President Paul Kagame, have shown little interest in learning French.
 - The Hutu population, only recently facing exile, has had minimal exposure to English.

The data

- We employ data from the Demographic and Health Surveys (DHS).
 - The DHS are nationally representative datasets providing information on education, health and population.
- We draw on data from the men and women's round of the DHS for:
 - Rwanda - 2014-15 (19714 respondents aged 15-49) and 2019-20 (21147 respondents aged 15-49).
 - Burundi - 2014-15 (24821 respondents aged 15-49).
- Consider three dependent variables: i) completed years of schooling; ii) literacy; and iii) transition to secondary schooling.

The identification strategy

- The children attend primary school from the ages of 6-12 in Rwanda and Burundi.
- The MOI was Kinyarwanda in Rwanda and Burundi for the first 3-5 grades of primary schooling (Albaugh, 2014).
- Language policy in Burundi remain unchanged during the period under study and is the control group.
- However, Rwanda in 2008 changes the language of instruction in schooling:
 - Kinyarwanda to English in primary schooling: initially right from Grade 1, and then from 2011 from Grade 3 onwards.
 - From French to English in secondary and above.
- The cohorts aged less than 12 years old in 2008 in Rwanda are the treated cohort.
- The individuals who were aged older than 19 were unaffected by the language policy change in both countries.

The difference-in-differences (DID) estimator

- We estimate the following estimating equation:

$$H_{ikrp} = \sum_{k=1}^{k=4} (Rwanda_i * C_k) \delta_k + \zeta_k Cohort_k + X_{ikrp} + X_{krp} + \Phi r + \epsilon_{ikrp},$$

where

- H_{ikrp} is the human capital outcome for individual i from cohort k , region r and cluster p .
- The coefficients ζ_k are the one associated with the cohort dummy and captures the time trend, and the omitted cohort is the one aged 19-25 in 2008.
- Φr is a set of administrative unit 1 fixed effects.
- The cluster level controls are denoted X_{rcep} and account for geographical features – growing season length, proximity to water, slope, proximity to national borders, latitude and longitude.
- X_{ircp} represents a set of individual-level controls for age, distance from the border and urban residence.
- The standard errors, ϵ_{ikrp} , are clustered at the level of the primary sampling unit.

The difference-in-differences (DID) estimator

- $H_{ikrp} = \sum_{k=1}^{k=4} (Rwanda_i * C_k) \delta_k + \zeta_k Cohort_k + X_{ikrp} + X_{krp} + \Phi r + \epsilon_{ikrp}$.
- δ_k 's - the principal coefficients of interest.
- D-I-D estimator assumes that the groups being compared have parallel trends in absence of the change in policy:
 - The omitted cohort is the individuals aged 19-25 in 2008 $\Rightarrow \delta_k = 0$ for $k = \{2, 3, 4\}$ for the identification assumption to be satisfied.
- We estimate the D-I-D equation for the entire country, as well as by restricting the comparison to individuals who are residents within 50kms from the border.

Cohorts and sample sizes: Burundi and Rwanda

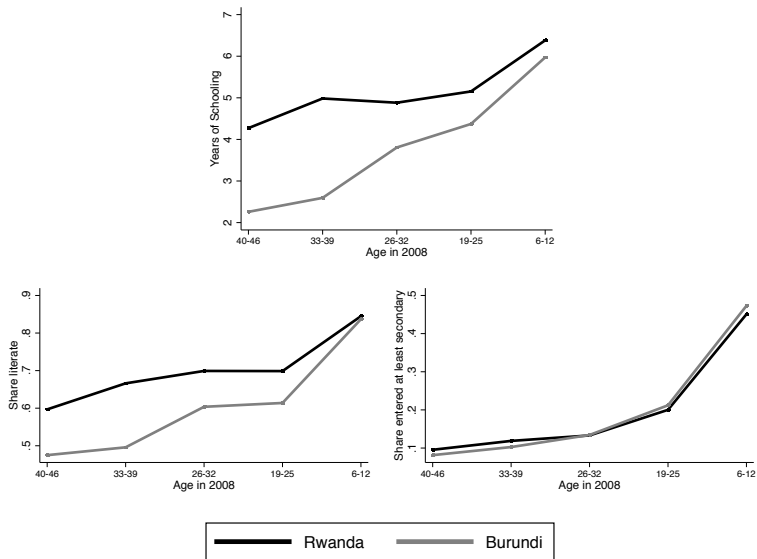
Table 1: Cohorts and sample sizes: Burundi and Rwanda

Age in 2008	Burundi (1)	Rwanda (2)
6-12	7074	11893
19-25	4903	8593
26-32	3784	6575
33-39	2621	4195
40-46	1007	1592
Total	19389	32848

Key characteristics: Comparing Burundi and Rwanda

	Burundi	Rwanda		
	Mean		Diff.	P-value
	(1)	(2)	(3)	(4)
Completed years of education	4.496	5.480	-0.984	0.000
Dummy can read an entire sentence	0.670	0.743	-0.072	0.000
Dummy entered secondary education	0.270	0.262	0.008	0.034
Rural residence	0.784	0.762	0.022	0.000
Distance to capital (Kms.)	80.003	57.100	22.902	0.000
Age at time of survey	29.904	30.366	-0.462	0.000
Age of household head	44.029	44.361	-0.333	0.014
Household has: television	0.142	0.275	-0.133	0.000
Household has: radio	0.471	0.606	-0.136	0.000
Household has: television	0.142	0.275	-0.133	0.000
Household has: refrigerator	0.071	0.144	-0.072	0.000
Household has: bicycle	0.268	0.262	0.006	0.535
Household has: motorcycle/scooter	0.078	0.138	-0.060	0.000
Household has: car/truck	0.068	0.137	-0.069	0.000
Number of household members	6.137	5.348	0.789	0.000
Number of children under-5 in Household	1.097	0.857	0.240	0.000

Evolution of human capital by cohorts



D-I-D estimator: Comparing Burundi and Rwanda

	Years of Education		Literacy Dummy		Entered Secondary Schooling Dummy	
	(1)	(2)	(3)	(4)	(5)	(6)
Rwanda*Age 6-12 in 2008	-0.54*** (0.15)	-0.54*** (0.15)	-0.072*** (0.014)	-0.072*** (0.014)	-0.047*** (0.016)	-0.047*** (0.016)
Rwanda*Age 26-32 in 2008	0.10 (0.12)	0.087 (0.12)	0.0075 (0.014)	0.0062 (0.014)	-0.0046 (0.0099)	-0.0051 (0.0099)
Rwanda*Age 33-39 in 2008	1.43*** (0.14)	1.42*** (0.14)	0.088*** (0.017)	0.087*** (0.017)	0.0065 (0.011)	0.0057 (0.011)
Rwanda*Age 40-46 in 2008	1.09*** (0.16)	1.10*** (0.16)	0.032 (0.024)	0.033 (0.024)	0.012 (0.012)	0.012 (0.012)
Cohort Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	No	Yes	No	Yes	No	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Rural Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	6.07*** (0.34)	5.79*** (0.39)	0.69*** (0.039)	0.72*** (0.043)	0.41*** (0.032)	0.36*** (0.037)
Observations	42,768	42,768	42,709	42,709	42,777	42,777
R-squared	0.216	0.219	0.086	0.087	0.223	0.224

SE clustered by PSU

*p<.05; **p<.01; ***p<.001

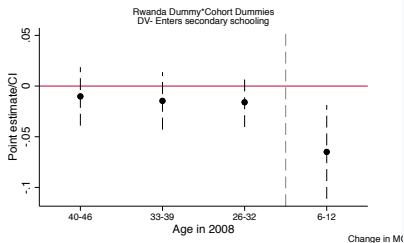
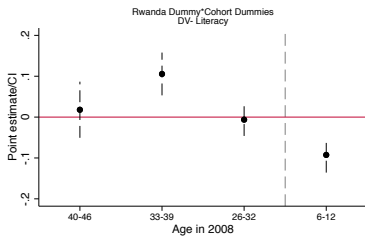
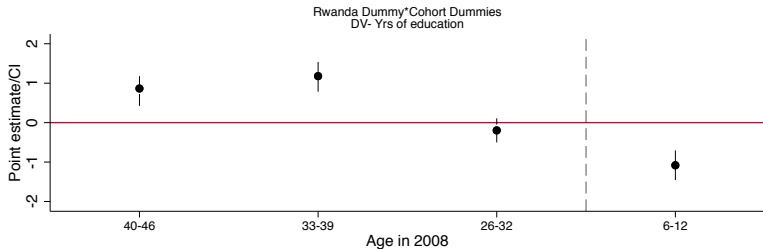
D-I-D estimator: 50kms from border

	Years of Education		Literacy Dummy		Entered Secondary Schooling Dummy	
	(1)	(2)	(3)	(4)	(5)	(6)
Rwanda*Age 6-12 in 2008	-1.09*** (0.19)	-1.08*** (0.19)	-0.093*** (0.022)	-0.091*** (0.022)	-0.066*** (0.024)	-0.065*** (0.024)
Rwanda*Age 26-32 in 2008	-0.18 (0.15)	-0.20 (0.16)	-0.0062 (0.020)	-0.0079 (0.020)	-0.015 (0.012)	-0.016 (0.012)
Rwanda*Age 33-39 in 2008	1.18*** (0.20)	1.18*** (0.20)	0.11*** (0.027)	0.11*** (0.027)	-0.014 (0.014)	-0.015 (0.014)
Rwanda*Age 40-46 in 2008	0.86*** (0.23)	0.86*** (0.22)	0.018 (0.035)	0.020 (0.035)	-0.0096 (0.015)	-0.010 (0.015)
Cohort Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	No	Yes	No	Yes	No	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Rural Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	6.19*** (0.43)	4.89*** (1.25)	0.67*** (0.051)	0.44*** (0.14)	0.44*** (0.043)	0.44*** (0.11)
Observations	21,245	21,245	21,214	21,214	21,249	21,249
R-squared	0.243	0.247	0.097	0.103	0.227	0.228

SE clustered by PSU

*p<.05; **p<.01; ***p<.001

Difference-in-Difference estimates



Discussion and conclusion

- Rwanda's change in language policy had negative effects on human capital formation:
 - Transition phase or long term descent into linguistic incoherence?
- Are there better ways to promote English acquisition?
 - Existing evidence from SSA suggests that local language instruction had higher returns both in promoting generalized human capital, as well as better English language skills (Eriksson, 2014; Taylor and Coetze, 2016; Laitin, Ramachandran and Walter, 2019).
 - Language equilibrium in the small states of northern Europe might be the best way forward.
- The linguistic homogeneity presents an unique opportunity to adopt the northern European model.

A snapshot of the nature of the official language problem

Country	Proportion speaking the official colonial language
Burundi	.05
Benin	.088
Burkina Faso	.05
Central African Republic	.08
Cameroon	.18
Ghana	.10
The Gambia	.03
Guinea-Bissau	.085
Mauritania	.054
Malawi	.05
Niger	.09
Swaziland	.04
United Republic of Tanzania	.07
Uganda	.075
South Africa	.185
Zambia	.205

Source: Albaugh, E. (2014), State-Building and Multilingual Education in Africa (CUP)

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