Externalities of Colonial Schools

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African School of Economics

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- Three master's and four bachelor's programs.
- Campuses in Benin, Côte d'Ivoire, and soon Nigeria.
- Joint degrees in South Africa and Hunter College targeting URMs.
- Placements in top PhD programs.

This project

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- On the basis of the historical context of the creation of the schools, we assume location and cohort selection were exogenous.
- Exploit the timing and location of colonial institutions, using a two-step hierarchical design.

Research questions

1. *What externalities did colonial schools have on the first three generations?*
2. *What were the mechanisms?*
   → Labor market, income, aspirations, redistributive social norms, locus of control?

Preview of results

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- The treated have better living standards, less likely to be farmers, have wider social ties.
- Significant family and village externalities: second generation descendants of the “village-treated individuals” have better outcomes than those in control villages. They close the income gap with descendants of the “individually treated.”
- Family-level externalities run partly through a “family tax” and village-level externalities run partly through grandparents’ aspirations.

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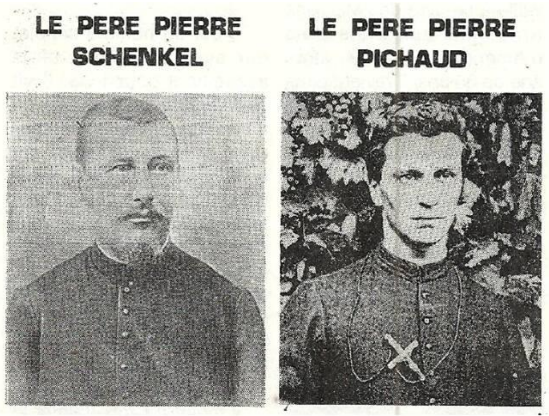
- Significant income and education mobility of the third generation. More so for descendants of village treated grandparents, particularly in low and middle income categories.
- Mobility of the third generation is sustained by positive attitudes (self-reliance, work ethics, positive life outlook).

Context: Benin



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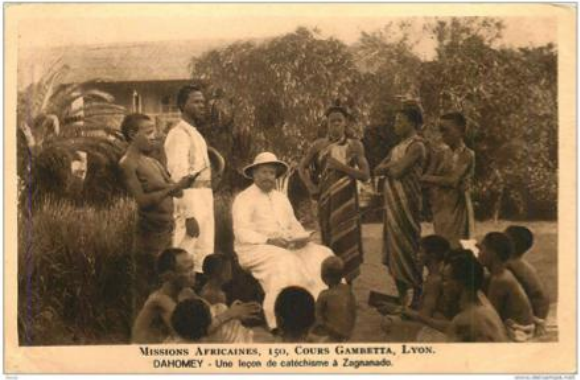
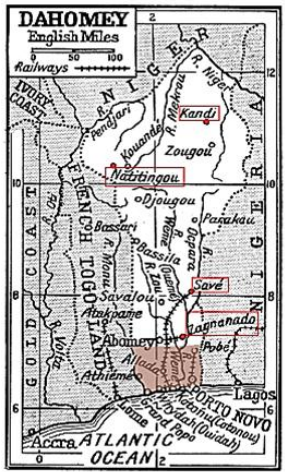


- In November 1894, two missionaries decided to explore the source of the Ouémé River.
- They almost died in the Zagnanado region but were saved by local villagers.
- In October 1895, a school was created, following a near-random draft of 33 local children.

Site selection

Figure A.1: Historical Map of Benin, Four School Sites Selection



Note: Each of the four school sites are indicated in red. Shaded area from Abomey to the coast signifies areas that are excluded from control sampling because they already possess various colonial infrastructures.

- Criteria for selection of treatment sites:
  1. 100 km from the Atlantic Coast, north of the Dahomey Kingdom that was impenetrable to Europeans settlers prior to Colonial conquest (D'Almeida Topor, 1995); no prior European settlements or institutions.

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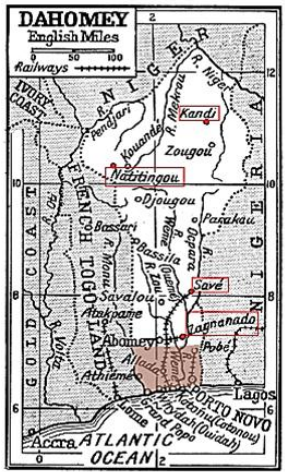

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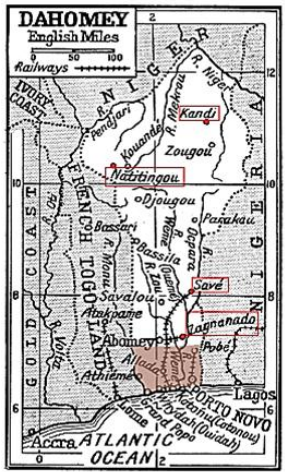

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  2. No formal educational institution exists in these regions, prior to the creation of the school; limited self-selection in education.
- Sites selected: Zagnanado (1895), Kandi (1913), Save (1911), Natitingou (1922).

Sampling procedure: first generation

- Treatment 1 (T1): Students who attended the first schools within the first three years of their establishment. Identified using archives, admin records, documents from local colonial office, church records, and interviews with informants.

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- Treatment 2 (T2): Subjects who lived within 7 km of the first schools but did not attend. “Backward” sampling of those from same generation as T1.
  - → Type 1: those who lived in a village that had at least one T1 subject.
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- Control: Subjects who lived within 7-to-20 km of the first schools. “Backward” sampling of subjects from three randomly selected villages from this area.
- Socio-demographic surveys of T1, T2, and Control (age, profession, education, income, siblings [maximum 10], etc.).

Sampling procedure: subsequent generations

- Identify the descendants of the first-generation subjects.
  - → Select up to three wives of the first-generation subject.
  - → List the children of each wife.

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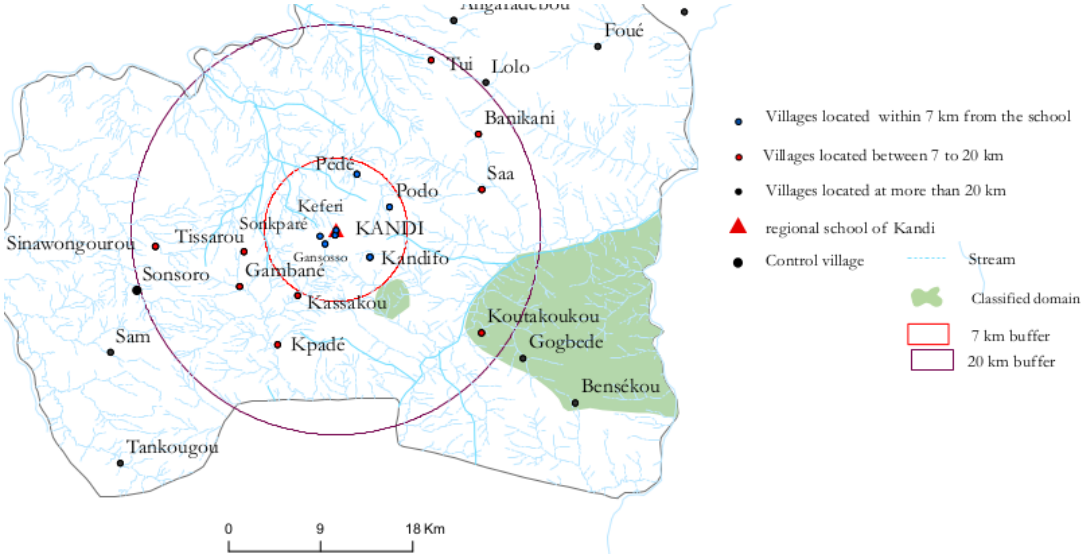
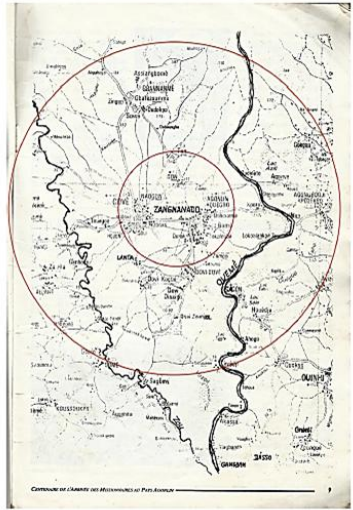
  - → Select up to seven siblings of the first-generation subject.
  - → List all the nephews and nieces.
  - → Sample up to seven nephews and nieces. Ensure gender proportionality.
- Identify the descendants of the second-generation subjects.
  - → Follow the same procedure as for the descendants of first-generation subjects.

Empirical design: treatment and counterfactual villages



Empirical design: Zagnanado

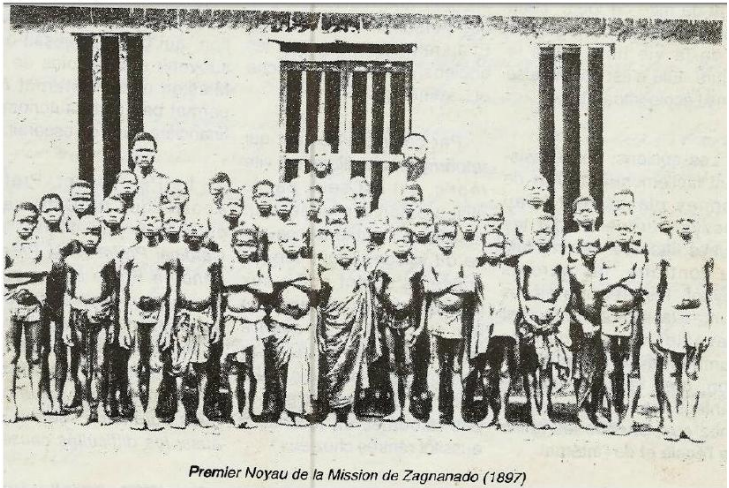
Figure A.8: Historical Map of Zagnanado



Empirical design: balance on village characteristics

District	Save		Natitinguou		Kandi		Zagnanado	
Village	Boni (T)	Okpara	Winke (T)	Koudengou	Keferi (T)	Sonsoro	Assiadji (T)	Kpedekpo
Elevation (m)	211	163	462	444	294	289	100	37
Soil Quality	0.49	0.49	0.51	0.51	0.51	0.51	1.77	3.22
Average Rainfall (mm)	150	150	108	108	92	92	83	83
Distance to Port (km)	188	186	451	462	530	525	95	98
Navigable Rivers	1	1	0	0	1	1	1	1
Kingdom	0	0	0	0	0	0	1	1
Trading Post	0	0	0	0	0	0	0	0
Years of Resistance	4	4	23	23	22	22	31	31

Students in the first generation



Premier Noyau de la Mission de Zagnanado (1897)

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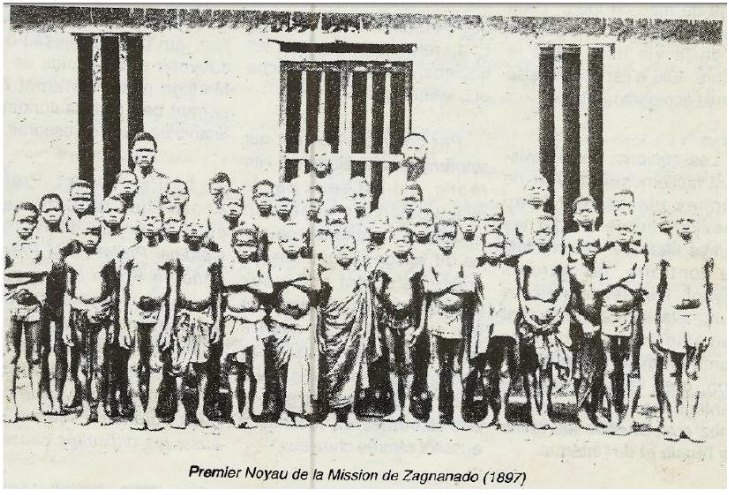

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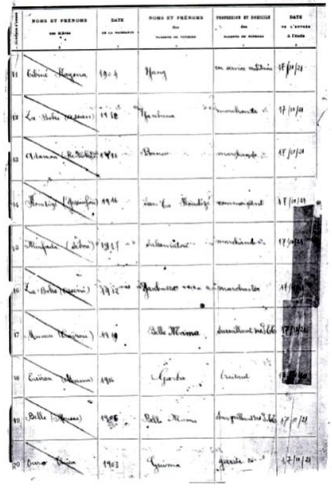

The first two generations

First generation: summary statistics

	Treated parents	Untreated parents in village w/ school	Untreated parents in village w/o school
Living Standards			
Farmer			
Water			
Electricity			
Means of transportation			
Living standards scale			
Politics			
Member of party			
Networks			
French language			
White friends			
Social networks scale			
Observations	89	164	152

- Balance checks
- Recall bias
- Informants
- Informant characteristics
- First-generation: education

First generation: summary statistics

	Treated parents	Untreated parents in village w/ school	Untreated parents in village w/o school
Living Standards			
Farmer	0.143 (0.352)		
Water			
Electricity			
Means of transportation			
Living standards scale			
Politics			
Member of party			
Networks			
French language			
White friends			
Social networks scale			
Observations	89	164	152

- Balance checks
- Recall bias
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- Informant characteristics
- First-generation: education

First generation: summary statistics

	Treated parents	Untreated parents in village w/ school	Untreated parents in village w/o school
Living Standards			
Farmer	0.143	0.784	
	(0.352)	(0.414)	
Water			
Electricity			
Means of transportation			
Living standards scale			
Politics			
Member of party			
Networks			
French language			
White friends			
Social networks scale			
Observations	89	164	152

- Balance checks
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- First-generation: education

First generation: summary statistics

	Treated parents	Untreated parents in village w/ school	Untreated parents in village w/o school
Living Standards			
Farmer	0.143	0.784	0.842
	(0.352)	(0.414)	(0.367)
Water			
Electricity			
Means of transportation			
Living standards scale			
Politics			
Member of party			
Networks			
French language			
White friends			
Social networks scale			
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First generation: summary statistics

	Treated parents	Untreated parents in village w/ school	Untreated parents in village w/o school
Living Standards			
Farmer	0.143	0.784	0.842
	(0.352)	(0.414)	(0.367)
Water			
Electricity			
Means of transportation			
Living standards scale			
Politics			
Member of party			
Networks			
French language			
White friends			
Social networks scale	1.661	-0.350	-0.451
	(0.864)	(0.539)	(0.425)
Observations	89	164	152

- Balance checks
- Recall bias
- Informants
- Informant characteristics
- First-generation: education

First generation: summary statistics

	Treated parents	Untreated parents in village w/ school	Untreated parents in village w/o school
Living Standards			
Farmer	0.143	0.784	0.842
	(0.352)	(0.414)	(0.367)
Water	0.258	0.146	0.092
	(0.440)	(0.355)	(0.290)
Electricity	0.101	0.024	0.007
	(0.303)	(0.155)	(0.081)
Means of transportation	0.476	0.182	0.195
	(0.502)	(0.387)	(0.397)
Living standards scale	0.677	-0.195	-0.188
	(1.159)	(0.887)	(0.835)
Politics			
Member of party	0.425	0.107	0.050
	(0.498)	(0.311)	(0.219)
Networks			
French language	0.955	0.085	0.013
	(0.208)	(0.280)	(0.114)
White friends	0.457	0.084	0.035
	(0.502)	(0.278)	(0.186)
Social networks scale	1.661	-0.350	-0.451
	(0.864)	(0.539)	(0.425)
Observations	89	164	152

- Balance checks
- Recall bias
- Informants
- Informant characteristics
- First-generation: education

Second generation: summary statistics

	Treated parents	Untreated parents in village w/ school	Untreated parents in village w/o school
Education			
Primary or more			
Secondary or more			
University			
Living Standards			
Farmer			
Water			
Electricity			
Telephone			
Means of transportation			
Networks			
Speaks French			
Speaks English			
Observations	772	1026	711

Second generation: summary statistics

	Treated parents	Untreated parents in village w/ school	Untreated parents in village w/o school
Education			
Primary or more	0.669 (0.471)		
Secondary or more			
University			
Living Standards			
Farmer			
Water			
Electricity			
Telephone			
Means of transportation			
Networks			
Speaks French			
Speaks English			
Observations	772	1026	711

Second generation: summary statistics

	Treated parents	Untreated parents in village w/ school	Untreated parents in village w/o school
Education			
Primary or more	0.669	0.520	
	(0.471)	(0.500)	
Secondary or more			
University			
Living Standards			
Farmer			
Water			
Electricity			
Telephone			
Means of transportation			
Networks			
Speaks French			
Speaks English			
Observations	772	1026	711

Second generation: summary statistics

	Treated parents	Untreated parents in village w/ school	Untreated parents in village w/o school
Education			
Primary or more	0.669	0.520	0.274
	(0.471)	(0.500)	(0.446)
Secondary or more			
University			
Living Standards			
Farmer			
Water			
Electricity			
Telephone			
Means of transportation			
Networks			
Speaks French			
Speaks English			
Observations	772	1026	711

Second generation: summary statistics

	Treated parents	Untreated parents in village w/ school	Untreated parents in village w/o school
Education			
Primary or more	0.669	0.520	0.274
	(0.471)	(0.500)	(0.446)
Secondary or more	0.375	0.222	0.115
	(0.484)	(0.416)	(0.320)
University	0.104	0.050	0.006
	(0.305)	(0.218)	(0.075)
Living Standards			
Farmer	0.079	0.166	0.386
	(0.270)	(0.372)	(0.487)
Water	0.536	0.452	0.385
	(0.499)	(0.498)	(0.487)
Electricity	0.636	0.504	0.089
	(0.482)	(0.500)	(0.284)
Telephone	0.480	0.281	0.079
	(0.500)	(0.450)	(0.270)
Means of transportation	0.369	0.275	0.263
	(0.483)	(0.447)	(0.441)
Networks			
Speaks French	0.655	0.494	0.248
	(0.476)	(0.500)	(0.432)
Speaks English	0.058	0.014	0.007
	(0.235)	(0.116)	(0.084)
Observations	772	1026	711

Third generation

Third generation: income mobility

Full Sample

Second Generation Income Category	Third Generation Income Category 1	2	3	N
	1			870
	2			417
	3			727

Control Villages

Second Generation Income Category	Third Generation Income Category 1	2	3	N
	1			276
	2			63
	3			34

▸ Matrix for education
▸ Marginal effects

Third generation: income mobility

Full Sample

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1	**30.63%**			870
2				417
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Second Generation Income Category	Third Generation Income Category 1	2	3	N
1	**30.63%**		**32.49%**	870
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Second Generation Income Category	Third Generation Income Category 1	2	3	N
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1	**30.63%**		**32.49%**	870
2				417
3			77.29%	727

Control Villages

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1			9.53%	276
2				63
3				34

▸ Matrix for education
▸ Marginal effects

Third generation: income mobility

Full Sample

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1	**30.63%**		**32.49%**	870
2				417
3			77.29%	727

Control Villages

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1			9.53%	276
2				63
3			35.33%	34

▸ Matrix for education
▸ Marginal effects

Third generation: income mobility

Full Sample

Second Generation Income Category	Third Generation Income Category: 1	2	3	N
1	**30.63%**	36.88%	**32.49%**	870
2	14.24%	29.63%	56.13%	417
3	5.88%	16.83%	77.29%	727

Control Villages

Second Generation Income Category	Third Generation Income Category: 1	2	3	N
1	57.93%	32.55%	9.53%	276
2	37.67%	42.98%	19.34%	63
3	20.97%	43.70%	35.33%	34

▸ Matrix for education
▸ Marginal effects

Third generation: income mobility by treatment status

Treatment Village : Treated Individuals

Second Generation Income Category	Third Generation Income Category 1	2	3	N
	1			246
	2			108
	3			727

Treatment Village : Untreated Individuals

Second Generation Income Category	Third Generation Income Category 1	2	3	N
	1			348
	2			246
	3			331

Control Villages

Second Generation Income Category	Third Generation Income Category 1	2	3	N
	1			276
	2			63
	3			34

Third generation: income mobility by treatment status

Treatment Village : Treated Individuals

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1	28.81%			246
2	11.72%			108
3				727

Treatment Village : Untreated Individuals

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1	11.90%			348
2	7.68%			246
3				331

Control Villages

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1				276
2				63
3				34

Very large indirect effect for lower income categories.

Third generation: income mobility by treatment status

Treatment Village : Treated Individuals

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1	28.81%	32.12%	39.06%	246
2	11.72%	22.13%	66.15%	108
3				727

Treatment Village : Untreated Individuals

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1	11.90%	**39.63%**	**48.47%**	348
2	7.68%	31.87%	**60.45%**	246
3				331

Control Villages

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1				276
2				63
3				34

Very large indirect effect for lower income categories.

Third generation: income mobility by treatment status

Treatment Village : Treated Individuals

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1	28.81%	32.12%	39.06%	246
2	11.72%	22.13%	66.15%	108
3			85.62%	727

Treatment Village : Untreated Individuals

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1	11.90%	**39.63%**	**48.47%**	348
2	7.68%	31.87%	**60.45%**	246
3			71.29%	331

Control Villages

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1				276
2				63
3				34

Very large indirect effect for lower income categories.

Third generation: income mobility by treatment status

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Second Generation Income Category	Third Generation Income Category 1	2	3	N
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3			85.62%	727

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1	11.90%	**39.63%**	**48.47%**	348
2	7.68%	31.87%	**60.45%**	246
3			71.29%	331

Control Villages

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2	37.67%	42.98%	19.34%	63
3			35.33%	34

Very large indirect effect for lower income categories.

Third generation: income mobility by treatment status

Treatment Village : Treated Individuals

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1	28.81%	32.12%	39.06%	246
2	11.72%	22.13%	66.15%	108
3	4.18%	10.20%	85.62%	727

Treatment Village : Untreated Individuals

Second Generation Income Category	Third Generation Income Category 1	2	3	N
1	11.90%	**39.63%**	**48.47%**	348
2	7.68%	31.87%	**60.45%**	246
3	4.87%	23.84%	71.29%	331

Control Villages

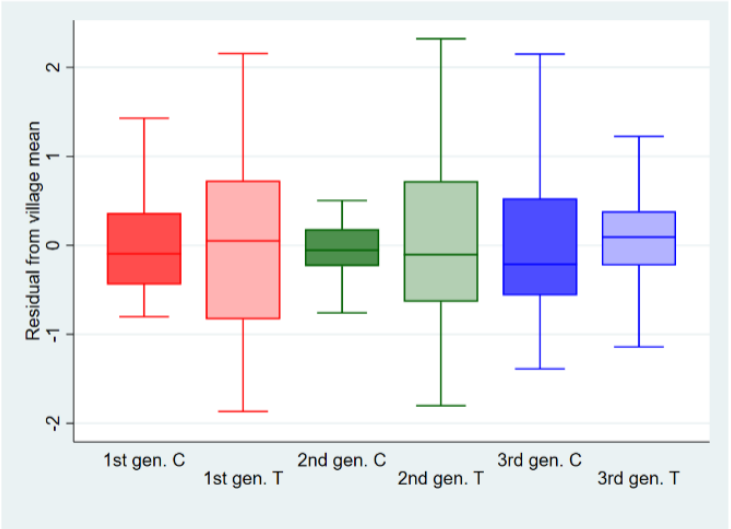
Second Generation Income Category	Third Generation Income Category 1	2	3	N
1	57.93%	32.55%	9.53%	276
2	37.67%	42.98%	19.34%	63
3	20.97%	43.70%	35.33%	34

Very large indirect effect for lower income categories.

Third generation: inequality and the Great Gatsby curve

- If schools induced such great income mobility what are the implications for inequality within villages and within families?
- Construct within-village deviations from average wealth and plot by treatment status and generation.

Third generation: inequality and the Great Gatsby curve



Third generation: attitudes

	(1) Time Preference	(2) Mental Health	(3) Work Ethic	(4) Self Reliance	(5) Life Outlook
Social Mobility					
Gender					
Entrepreneur					
Income					
Individual-level Treatment					
Village-level Treatment					
Constant					
Observations					

Note: The outcome variables are standardized factor analysis results using a number of questions pertaining to the respective outcomes. For all variables, a higher value means a better score for that outcome. Robust standard errors are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Third generation: attitudes

	(1) Time Preference	(2) Mental Health	(3) Work Ethic	(4) Self Reliance	(5) Life Outlook
Social Mobility		-0.124***			
		(0.0277)			
Gender					
Entrepreneur					
Income					
Individual-level Treatment					
Village-level Treatment					
Constant					
Observations		1155			

Note: The outcome variables are standardized factor analysis results using a number of questions pertaining to the respective outcomes. For all variables, a higher value means a better score for that outcome. Robust standard errors are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Third generation: attitudes

	(1) Time Preference	(2) Mental Health	(3) Work Ethic	(4) Self Reliance	(5) Life Outlook
Social Mobility		-0.124***	0.0712***	0.0549**	0.0549**
		(0.0277)	(0.0240)	(0.0235)	(0.0255)
Gender					
Entrepreneur					
Income					
Individual-level Treatment					
Village-level Treatment					
Constant					
Observations		1155	1945	1950	1958

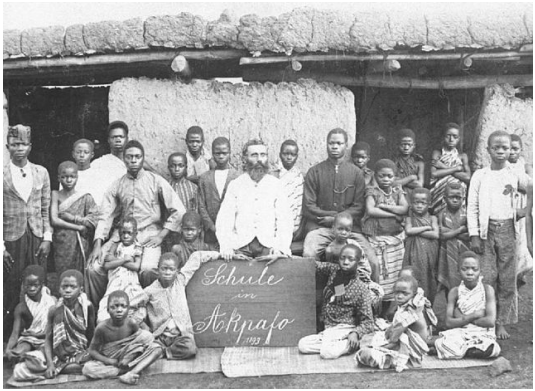
Note: The outcome variables are standardized factor analysis results using a number of questions pertaining to the respective outcomes. For all variables, a higher value means a better score for that outcome. Robust standard errors are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Third generation: attitudes

	(1) Time Preference	(2) Mental Health	(3) Work Ethic	(4) Self Reliance	(5) Life Outlook
Social Mobility	-0.0201	-0.124***	0.0712***	0.0549**	0.0549**
	(0.0222)	(0.0277)	(0.0240)	(0.0235)	(0.0255)
Gender	0.145***	0.0326	-0.132***	-0.121***	-0.0358
	(0.0450)	(0.0596)	(0.0487)	(0.0466)	(0.0485)
Entrepreneur	-0.122**	-0.0221	0.00852	0.00349	0.0719
	(0.0487)	(0.0779)	(0.0643)	(0.0675)	(0.0702)
Income	-0.0554	0.228***	-0.198***	-0.213***	-0.246***
	(0.0366)	(0.0415)	(0.0316)	(0.0325)	(0.0320)
Individual-level Treatment	0.0452	0.217***	0.0205	0.100**	0.119**
	(0.0489)	(0.0590)	(0.0486)	(0.0479)	(0.0488)
Village-level Treatment	-0.0818	0.337***	0.0407	0.0125	0.170**
	(0.0858)	(0.117)	(0.0764)	(0.0777)	(0.0732)
Constant	-0.0449	-0.458***	0.0666	0.0560	-0.137*
	(0.0804)	(0.115)	(0.0744)	(0.0735)	(0.0730)
Observations	1975	1155	1945	1950	1958

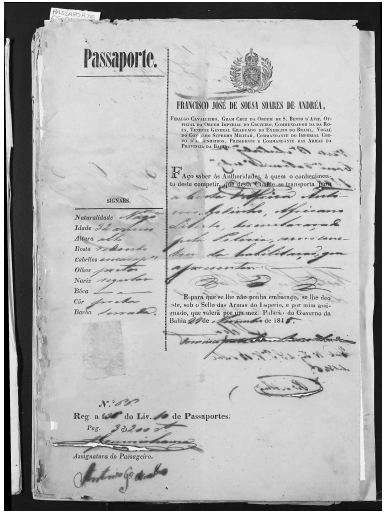
Note: The outcome variables are standardized factor analysis results using a number of questions pertaining to the respective outcomes. For all variables, a higher value means a better score for that outcome. Robust standard errors are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Ongoing projects



1. Colonial school externalities: Nigeria (the effects of gender, religion).

Ongoing projects



Passaporte.

FRANCISCO JOSÉ DE SOUSA SOARES DE ANDRÉA,

SIGNAES.

Naturalidade
Idade
Altura
Boca
Côr
Barba

Reg. a fol. do Liv. de Passaportes.

Assignatura do Passageiro.

1. Colonial school externalities: Nigeria (the effects of gender, religion).
2. Social mobility of descendants of former slaves from Brazil and the Caribbean.

Ongoing projects

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Ongoing projects

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Summary

- Unique quasi-experimental design: a selective blind two-step hierarchical randomized design with interference, with three generation data on income, education and mobility.
- There is
  1. increasing upward mobility in education and income across generations, and
  2. a persistent effect of grandparents' education on mobility.

Appendix

Selection on unobservables in the first generation: Rosenbaum bounds

- Selection of first-generation students may not have been near-random.
- Problem if unobservables positively correlated with education attainment and outcomes.
- How large the differences on unobservables would need to be between the treated and control individuals to eliminate the treatment effects we find?
- Use Rosenbaum (2002) sensitivity bounds.
- Selection on unobservables would have to be very high to eliminate the first-generation treatment effects we find.

	Farmer	Living standards	Network scale
$\Gamma_{p<0.01}$	7.1	2.2	8.3
$\Gamma_{p<0.05}$	10.4	3	14.3
$\Gamma_{p<0.10}$	12.9	3.5	19.2

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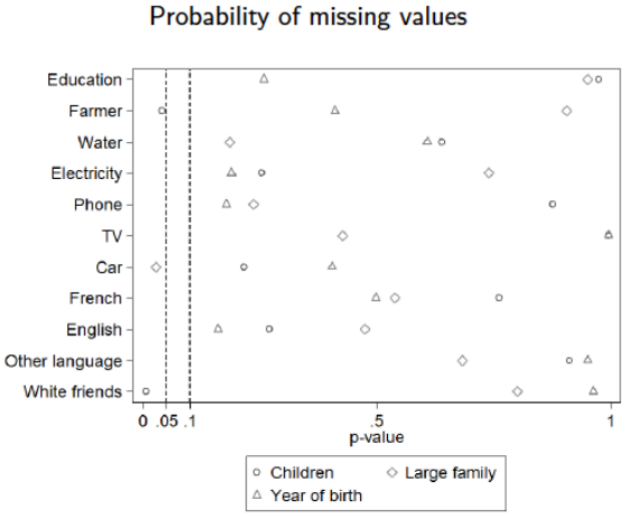
Balance checks

District	Save		Natitinguou		Kandi		Zagnanado	
Village	Boni (T)	Okpara	Winke (T)	Koudengou	Keferi (T)	Sonsoro	Assiadji (T)	Kpedekpo
Elevation (m)	211	163	462	444	294	289	100	37
Soil Quality	0.49	0.49	0.51	0.51	0.51	0.51	1.77	3.22
Average Rainfall (mm)	150	150	108	108	92	92	83	83
Distance to Port (km)	188	186	451	462	530	525	95	98
Navigable Rivers	1	1	0	0	1	1	1	1
Kingdom	0	0	0	0	0	0	1	1
Trading Post	0	0	0	0	0	0	0	0
Years of Resistance	4	4	23	23	22	22	31	31

	Treated parents	Untreated parents in village w/ school	Untreated parents in village w/o school
Pre-treatment			
Number of siblings	3.370	3.059	2.964
	(2.366)	(2.326)	(2.114)

Back

Recall bias



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Informants and counter-informants

region	number of informants	number of counter-informants
Kandi	51	52
Natitingou	56	58
Save	97	116
Zagnanado	85	99
Total	289	325

Back to Data
Informant characteristics

Informant characteristics

	treated parents	untreated parents in village w/ school	untreated parents in village w/o school	total
Number of informants	63	121	105	289
Age				
mean	67.43	68.95	61.85	66.04
min.	39	28	32	28
max.	100	98	96	100
Relationship to the subject (percent of all respondents)				
child/partner	45.16	43.80	38.24	42.11
nephew/niece	17.74	20.66	6.86	15.09
brother/sister/cousin	9.68	14.88	25.49	17.54
grandson/daughter	9.68	16.53	14.71	14.39
neighbor	9.68	3.31	9.80	7.02
other relative	8.06	0.83	4.90	3.86
total	100.00	100.00	100.00	100.00

Back to Data | Counter-informant chars.

Counter-informant characteristics

	treated parents	untreated parents in village w/ school	untreated parents in village w/o school	total
Number of informants	74	130	121	325
Age				
mean	64.50	65.52	57.30	62.22
min.	22	22	19	19
max.	90	97	100	100
Relationship to the subject (percent of all respondents)				
child/partner	25.68	33.85	20.00	26.85
nephew/niece	21.62	23.08	25.00	23.46
brother/sister/cousin	18.92	13.08	7.50	12.35
grandson/daughter	29.73	22.31	23.33	24.38
neighbor	4.05	6.15	24.17	12.35
other relative	0.00	1.54	0.00	0.62
total	100.00	100.00	100.00	100.00

Back to Data | Back to Informant chars.

First generation: education

	Treatment 1	Treatment 2	Control
Primary or more	0.963	0.008	0.008
	(0.189)	(0.092)	(0.091)
Secondary or more	0.098	0.000	0.000
	(0.299)	(0.000)	(0.000)

Back

First generation: political participation

	Campaign for party	Member of Party	Candidate in Election
Individual treatment	0.339***	0.317***	0.117***
	(0.053)	(0.047)	(0.036)
Village treatment	0.045	0.057	-0.021***
	(0.046)	(0.061)	(0.007)
Observations	365	362	373

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Blocked bootstrapped standard errors clustered by commune.

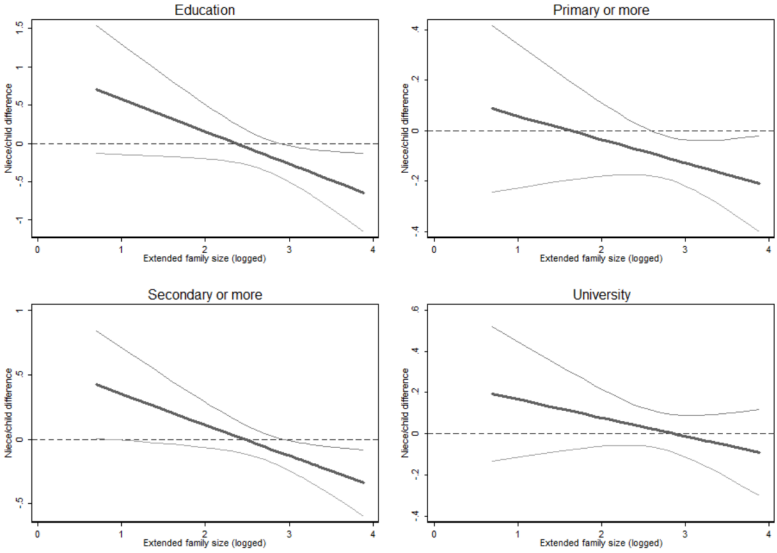
Back to Social ties

Second generation: qualitative evidence on aspirations

- Four matched pairs of very villages.
- Equidistant from local school and government, 2 miles apart.
- One village with at least one first-generation student, the other with none.
  - → Treated villages exhibit notably higher second-generation primary school enrollment.
  - → E.g., 33 second-generation students in Vedji, 0 in Veme (both in Zagnanado).
- Additional stories of parental aspirations from detailed interviews of 43 descendants.

Back to family externalities

Second generation: family tax



▸ Back to family externalities

Second generation: specification for transition matrices

- Predicted probabilities are estimated with an ordered logistic model:

$$Y_{i,k} = \beta Y_{i,k-1} + \varepsilon_i$$

where $Y_{i,k}$ is either education or income scale of individual i from the k-th generation and is a function of the outcome of the previous generation, $Y_{i,k-1}$.

Second generation: specification for transition matrices

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  where $Y_{i,k}$ is either education or income scale of individual i from the k-th generation and is a function of the outcome of the previous generation, $Y_{i,k-1}$.
- From this model, we compute the predicted probability of the latter generation being in a given stratum.

Back to matrix

Second generation: specification for ordered logistic model

- The basic specification for social mobility in the ordered logistic model is as follows:

$$Y_{i,k} = \beta X_{i,k} + \gamma Y_{i,k-1} + \varepsilon_i$$

where $Y_{i,k}$ is the scale variable of the k-th generation, and $X_{i,k}$ is a set of control variables specific to individual i from the k-th generation.

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$$Y_{i,k} = \beta X_{i,k} + \gamma Y_{i,k-1} + \varepsilon_i$$

  where $Y_{i,k}$ is the scale variable of the k-th generation, and $X_{i,k}$ is a set of control variables specific to individual i from the k-th generation.
- The independent variables are composites of parents' and/or grandparents' income, gender, profession, and treatment status.
- This model is implemented for both education and income scales.

Second generation: ordered logistic estimates of education mobility

	Category			
VARIABLES	0	1	2	3
First Generation Education	-0.244***	0.0799**	0.119***	0.0455**
	(0.0926)	(0.0312)	(0.0445)	(0.0187)
Individual-level treatment	0.202**	-0.0662**	-0.0983**	-0.0377*
	(0.0995)	(0.0334)	(0.0479)	(0.0195)
Village-level treatment	-0.256***	0.0837***	0.124***	0.0477***
	(0.0360)	(0.0129)	(0.0189)	(0.00893)
Observations				1504

Standard errors in parentheses
* p< 0.10 ** p< 0.05 *** p< 0.01

▸ Back to matrix

Second generation: ordered logistic estimates of income mobility

	Category		
VARIABLES	1	2	3
Individual-level treatment	-0.167***	0.00580**	0.161***
	(0.0251)	(0.00263)	(0.0244)
Village-level treatment	-0.269***	0.00936**	0.260***
	(0.0433)	(0.00385)	(0.0432)
Observations			1978

Standard errors in parentheses
* p< 0.10 ** p< 0.05 *** p< 0.01

Back to matrix

Third generation: education mobility

Full Sample

Second Generation Education Category	Third Generation Education Category: 0	1	2	3	4	N
0	49.47%	31.19%	10.86%	7.25%	1.23%	1048
1	30.16%	34.62%	17.86%	14.62%	2.74%	628
2	16.00%	28.79%	22.95%	26.27%	6.00%	290
3	7.75%	18.60%	21.73%	39.28%	12.64%	76

Control Villages

Second Generation Education Category	Third Generation Education Category: 0	1	2	3	4	N
0	71.20%	21.69%	4.80%	2.22%	0.09%	294
1	31.34%	39.37%	17.96%	10.86%	0.46%	57
2	7.78%	23.06%	28.28%	38.44%	2.45%	25
3	1.53%	6.07%	13.47%	66.94%	11.98%	2

Back to income

Third generation: ordered logistic estimates of income mobility

	Category		
VARIABLES	1	2	3
Individual-level treatment	-0.0230	-0.0181	0.0411
	(0.0125)	(0.0100)	(0.0225)
Village-level treatment	-0.263***	-0.207***	0.407***
	(0.0128)	(0.0135)	(0.0212)
Observations			1978

Standard errors in parentheses
* p< 0.10 ** p< 0.05 *** p< 0.01

Back to matrix

Third generation: risk aversion

	(1) Social Risk Aversion	(2) Financial Risk Aversion
Individual-level Treatment	-0.132***	-0.142***
	(0.0484)	(0.0485)
Village-level Treatment	0.386***	0.265***
	(0.0648)	(0.0641)
Gender	0.0262	0.0184
	(0.0477)	(0.0476)
Constant	-0.287***	-0.180***
	(0.0668)	(0.0674)
Observations	1985	2041

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$