

Stratification and intergenerational Mobility in Africa - Examining Linkages with Pre-colonial African Society

Patricia Funjika

Department of Economics - University of Pretoria

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Outline

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- 2 Objectives
- 3 Methodology
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Motivation

- Historical events and development: Acemoglu et al. (2001); Gennaioli and Rainer (2007); Nunn (2009); Nunn and Wantchekon (2011); Michalopoulos and Papaioannou (2013, 2016).
- Strong link between status of parents and children → child from a poor family unlikely to escape his start in life, poverty perpetuated.
- Evidence of long term persistence of status: Piketty (2000); Clark (2012); Lindahl et al. (2015); Adermon et al. (2016).

Motivation

- Intra group mobility - 'ethclass' (Gordon, 1961): applied by Nimubona and Vencatachellum (2007); Valdivieso et al. (2017); Chetty et al. (2018)
- Salience of ethnicity in Africa - instrumentalists approach (Bates, 1970; Easterly and Levine, 1997; Esteban and Ray, 2008).
- Evidence of stratification in pre-colonial and colonial Africa (Kitching, 1980; Iliffe and John, 1987; Nafziger, 1988)
- Linkage between pre-colonial African society groups and post colonial Africa (Nafziger, 1988; Thomson, 2010).

Research Objectives

- Overall: Examine relationship between stratification in pre-colonial society and mobility in contemporary Africa
- Assess whether there is observable trends between intergenerational persistence levels and pre-colonial society
- Examine differences in intergenerational mobility between ethnic groups with different pre-colonial societies

Econometric Framework

- Adapted from Becker and Tomes (1986):

$$y_{ij(t)} = \beta_0 + \beta_1 y_{ij(t-1)} + \beta_2 E_j + \beta_3 E_j * y_{ij(t-1)} + \beta_4 \sum x_{ij} + \epsilon_{ij(t)} \quad (1)$$

- Mobility matrices: Equilibrium and convergence indices
- Transition Matrices

Main Data Sources and Variables

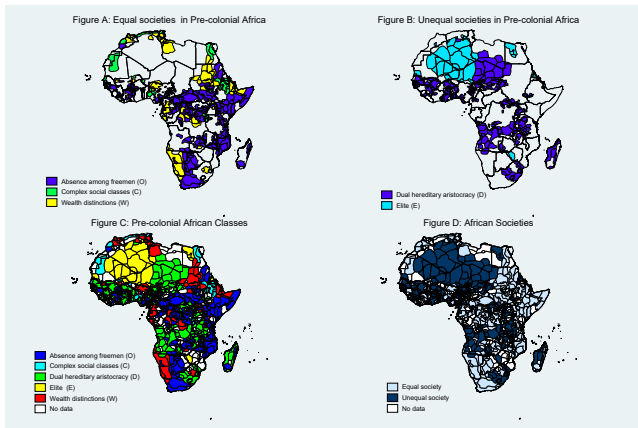
- Household surveys - World Bank. Collects data on parental education, ethnicity of respondents.
- Countries: Niger, Madagascar, Guinea, Nigeria, Ghana and Malawi.
- Main variables: Parental education, ethnic classification.
- Control Variables: Age, household size, gender, ethnic group, region, religion.

Ethnographic data

- Murdock (1959) provides classification of African societies before colonial period.
- Used in previous research: Gennaioli and Rainer (2007); Nunn and Wantchekon (2011); Michalopoulos and Papaioannou (2013)
- Five classifications: Fluid societies (Absence among freemen, wealth distinction, complex), rigid societies (dual and elite).
- Cross-validation of classification with Human Relations Area Files.
- Use Michalopoulos and Papaioannou (2013) dataset to link ethnic groups to countries.

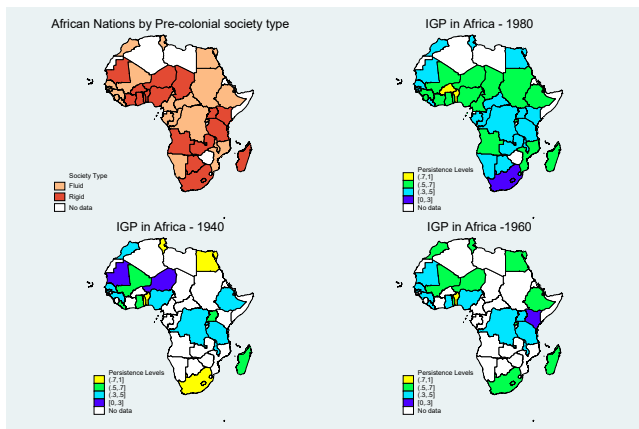
Ethnographic data

Figure 1: Pre-colonial African Class Stratification



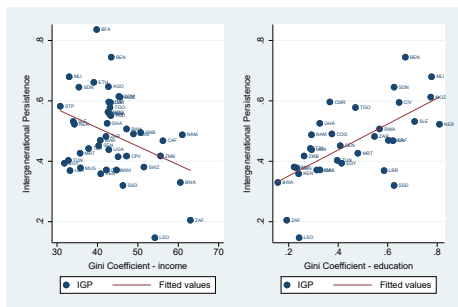
Source: Authors computation from Murdock et al. (2010)

IGP and Pre-colonial African societies



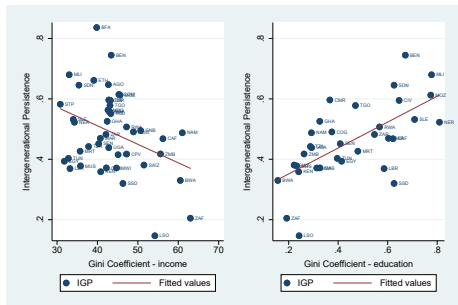
Source: Authors computation from GDIM (2018)

Great Gatsby Curve

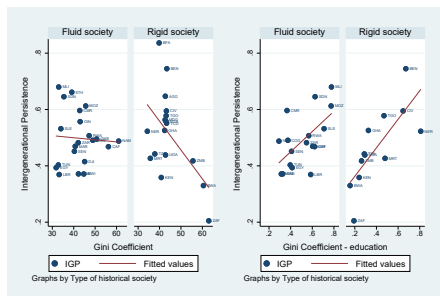


Source: Authors computation from GDIM (2018)

Great Gatsby Curve



Source: Authors computation from GDIM (2018)



Source: Authors computation from GDIM (2018)

Descriptive Statistics

Table 1: Sampled Countries

Country	Sample Description		Mean Years of Schooling			EF
	Year	Sample Size	Children	Mother	Father	
Ghana (R)	2017	25,723	7.40	2.62	4.49	0.673
Guinea (F)	2002/03	10,840	2.34	0.61	0.99	0.739
Madagascar(R)	2005	20,385	2.18	1.67	2.31	0.879
Malawi (F)	2017	20,034	5.94	0.78	1.40	0.674
Niger (R)	2014	8,839	2.90	0.30	0.57	0.651
Nigeria (R)	2010	11,811	6.81	2.78	3.91	0.850

R-rigid, F-fluid, EF-Ethnic fractionalization index (Alesina et al., 2003)

Regression Analysis - Interaction effects

Table 2: Regression results

Country	Freemen	Wealth D.	Complex	Dual	Other	Foreign	F-statistic
Ghana (R)	0.308***(b)			-0.056	-0.001		454.96***
Madagascar (R)	0.345***(b)			0.166***	0.100*		40.79***
Niger (R)		0.368***(b)	0.067	0.074	-0.533*	-0.171	119.71***
Nigeria (R)	0.375***(b)	-0.056	-0.059	-0.172***	-0.050		213.46***
Guinea (F)	-0.135	0.250*** (b)		0.029	-0.017	-0.067	603.05***
Malawi (F)	0.363***(b)			-0.138***	-0.036	-0.317***	410.69***

Margin Plots - Malawi and Madagascar

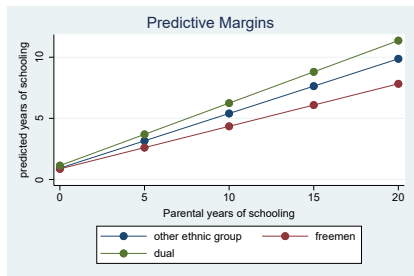


Figure 2: Madagascar

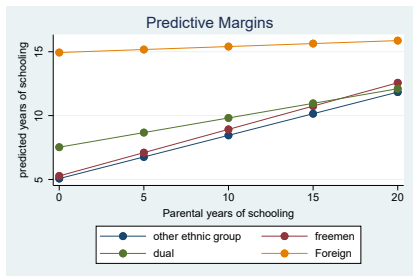


Figure 3: Malawi

Transition matrices-Malawi

Table 3: Transition Matrices - Malawi

	Education of offspring (Highest level of education)							
	None	Primary	Secondary	Tertiary	None	Primary	Secondary	Tertiary
Father education	Country estimates				Freemen			
None	0.2099	0.6248	0.1533	0.0120	0.2140	0.6244	0.1507	0.0109
Primary	0.0463	0.4519	0.4661	0.0357	0.0495	0.4579	0.4604	0.0322
Secondary	0.0092	0.2013	0.6461	0.1435	0.0097	0.1996	0.6534	0.1373
Tertiary	0.0040	0.0557	0.4549	0.4854	0.0031	0.0609	0.4717	0.4642
	Dual				Foreign			
None	0.0774	0.6391	0.2508	0.0327	-	0.0808	0.2200	0.6993
Primary	0.0023	0.4190	0.5206	0.0581	-	0.0348	0.0348	0.9304
Secondary	0.0033	0.1887	0.6251	0.1828	-	-	0.1271	0.8729
Tertiary	0.0204	0.0495	0.5442	0.3859	-	-	0.1456	0.8544
	Other							
None	0.2347	0.6233	0.1291	0.0129				
Primary	0.0624	0.4233	0.4763	0.0379				
Secondary	0.0134	0.3258	0.6200	0.0407				
Tertiary	-	0.0622	0.6293	0.3085				

Both male and female offspring included in analysis

Transition matrices-Madagascar

Table 4: Transition Matrices - Madagascar

	Education of offspring (Highest level of education)							
	None	Primary	Secondary	Post-secondary	None	Primary	Secondary	Post-secondary
Father education								
	Country estimates				Freemen			
None	0.8551	0.1114	0.0318	0.0018	0.8440	0.1210	0.0337	0.0013
Primary	0.6662	0.2166	0.1014	0.0158	0.7325	0.1966	0.0670	0.0039
Secondary	0.2228	0.3000	0.3933	0.0839	0.3419	0.3028	0.3016	0.0538
Tertiary	0.0768	0.1636	0.4126	0.3469	0.2389	0.1814	0.2957	0.2840
	Dual				Other ethnic groups			
None	0.8564	0.1112	0.0293	0.0031	0.8653	0.1011	0.0331	0.0005
Primary	0.6284	0.2289	0.1205	0.0222	0.6783	0.2113	0.0961	0.0142
Secondary	0.1683	0.2969	0.4283	0.1065	0.2457	0.3038	0.3871	0.0634
Tertiary	0.0606	0.1431	0.4541	0.3422	0.0569	0.2200	0.3341	0.3890

Both male and female offspring included in analysis

Conclusion

- Some linkages from pre-colonial society to contemporary Africa.
- Dual societies more mobile in former British colonies, pre-colonial rigidities still in existence in former French colonies - colonial period was key.
- From mobility and transition matrices - country level analysis masks differences in intra-group mobility.

The end

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Detailed descriptives

Table 5: Country Level Pre-colonial Classification Descriptive Statistics

Country	Pre-colonial Classification	Education (Years of schooling)				Age ^o
		Children	Mother	Father	n	
Ghana	Freemen	5.31	1.15	2.06	5,767	40.2
	Dual	8.22	3.14	5.37	12,205	40.63
	Other local groups [†]	7.45	2.61	4.38	8,797	40.7
Guinea	Freemen	1.59	0.32	0.45	313	43.4
	Wealth Distinct	1.47	0.27	0.59	3,541	45.6
	Dual	1.48	0.39	0.66	2,656	44.8
	Other local groups [†]	3.02	0.72	1.49	2,491	42.2
	Foreign ^ψ	6.24	1.85	2.96	1,839	40.6
Madagascar	Freemen	1.54	1.19	1.80	4,935	38.0
	Dual	2.59	1.99	2.57	8,931	38.6
	Other local groups [†]	2.05	1.63	2.34	6,313	37.9
Malawi	Freemen	5.83	0.74	1.34	17,753	39.2
	Dual	8.17	1.41	2.50	1,829	41.1
	Other local groups [†]	5.46	0.50	0.92	1,439	42.3
	Foreign ^ψ	15.51	9.97	12.19	41	41.8
Niger	Wealth Distinct	2.92	0.28	0.50	5,372	40.3
	Complex	2.84	0.37	0.71	2,391	41.1
	Dual	3.03	0.25	0.53	879	41.0
	Other local groups [†]	5.70	0.92	0.10	8	41.0
	Foreign ^ψ	7.32	1.51	2.80	189	42.1
Nigeria	Freemen	7.55	1.94	2.78	2,581	43
	Wealth Distinct	4.41	3.01	3.84	3,823	38.5
	Complex	8.58	2.80	4.43	2,401	41.4
	Dual	10.04	3.71	5.57	663	38.0
	Other local groups [†]	6.87	2.93	4.06	2,343	39.0

[†] refers to ethnic groups which could not be matched to a class code in the dataset

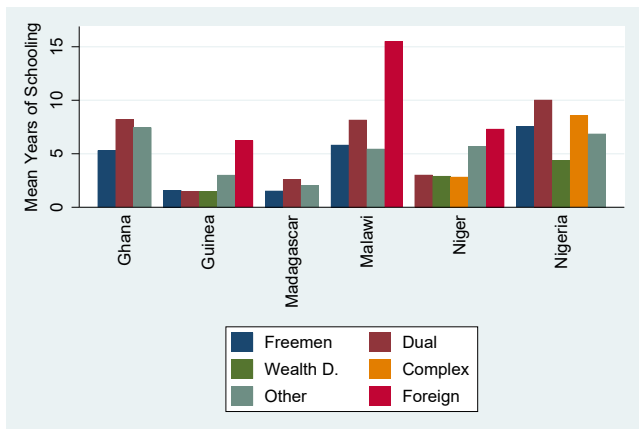
^ψ foreign in this case refers to those who identify with European descent or from outside the country

Age^o = average age in years

Ethnic class stratification

- 1 Elite: elite class was in existence and controlled scarce resources and land and were differentiated from property less lower class
- 2 Dual: stratified into a hereditary aristocracy and a lower class
- 3 Complex: stratification into social classes associated with significant differences in occupational status
- 4 Wealth distinctions: distinctions were made in terms of status based on property owned but this was not crystallized into distinct or hereditary social classes;
- 5 Absence among freemen: no significant class distinctions except for variations in individual repute based on skill or wisdom

Descriptives



Ghana Table

Table 6: Country regression results - Ghana

	Dependent Variable, respondent education level y_t							
	Model 1				Model 2 (Demeaned Values)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Parental capital	0.602*** (0.026)	0.330*** (0.031)	0.328*** (0.029)	0.308*** (0.026)	0.650*** (0.028)	0.355*** (0.033)	0.353*** (0.031)	0.332*** (0.028)
Class (Dual)	1.824*** (0.213)	-1.887* (0.878)	-1.415 (0.925)	-1.431 (0.920)	1.321*** (0.168)	-2.073* (0.880)	-1.634 (0.933)	-1.619 (0.926)
Class (Other)	1.144*** (0.230)	2.318** (0.776)	2.617** (0.829)	1.836* (0.867)	0.870*** (0.178)	2.283** (0.776)	2.539** (0.834)	1.798* (0.872)
PC*Class(Dual)	-0.154*** (0.029)	-0.059 (0.032)	-0.065* (0.031)	-0.056 (0.028)	-0.162*** (0.031)	-0.059 (0.034)	-0.065* (0.033)	-0.055 (0.030)
PC*Class (Other)	-0.084** (0.031)	-0.005 (0.033)	-0.012 (0.032)	-0.001 (0.030)	-0.089** (0.033)	-0.002 (0.035)	-0.010 (0.034)	0.002 (0.032)
Constant	3.873*** (0.176)	10.061*** (0.457)	9.866*** (0.533)	8.698*** (0.556)	5.883*** (0.143)	7.389*** (0.315)	7.133*** (0.440)	5.956*** (0.476)
Controls for x	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Ethnic FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes	No	No	Yes	Yes
Religion FE	No	No	No	Yes	No	No	No	Yes
R ²	0.274	0.416	0.421	0.433	0.277	0.417	0.422	0.434
F	517.74***	550.72***	538.07***	537.11***	520.74***	569.07***	555.61***	554.89***

*p<0.05, ** p<0.01, *** p<0.001; n=27,853

Base for interaction and categorical results- Absence among Freeman group

Margin Plots - Ghana

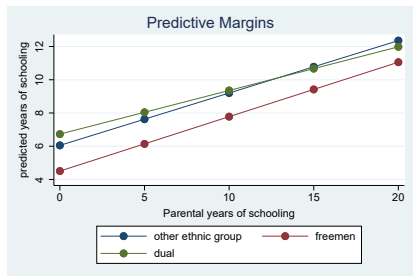


Figure 4: Ghana

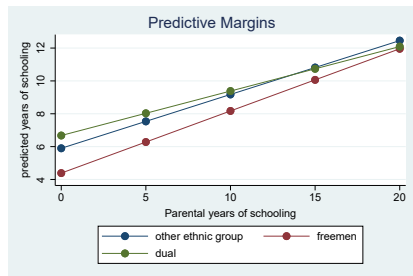


Figure 5: Ghana-full controls