Colonization and African Development Institutions & Investments

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London Business School

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Colonization and African Development. Introduction

Outline

1. **Introduction**
   - Mechanisms/Channels
   - Modern Economics Research Approach
2. **Unbundling Colonization**
   - 2.1 **Infrastructure, Investments** [roads, railroads]
   - 2.2 **Extractive Institutions.** Coercion, Violence, Forced Labor, etc
   - 2.3 Human Capital [schools, clinics, medical campaigns], Missions
   - 2.4 Other

The Controversy. African Colonization

For Non-Africans

- **Malign View**
  - extraction, institutions, divide and rule, oppression, violence
  - dependency
  - inequality, political power
  - culture
- **Benign View**
  - schools, clinics
  - infrastructure [roads, railroads, capital investment]
  - culture [e.g., religion]

The Controversy on the fate of Cecil Rhodes statute



Oxford



Cape Town

Colonial Legacies and Long-Run Development. Macro/Global Approaches

Non-Africa Centered Viepoints

- **Institutions. Colonial Strategy.** Acemoglu, Johnson, and Robinson (AER 2001, QJE 2002)
- **Legal System. Identity of Colonial Power**. La Porta, Lopez-de-Silanes, Shleifer, and Vishny (JPE 1998, JEL 2006)
- **Economic and Political Inequality.** Engerman and Sokoloff (1997, 1998, 2001); Easterly (JDE 2007)
- **Human Capital.** Glaeser, La Porta, Lopez-de-Silanes, and Shleifer (2004); Gallego ; Easterly and Levine (JEG 2014)

Macro Counterfactual Question. What If?

The Challenging Question

- **No colonization**. hard, as there are spillovers
  - absolutely no influence
  - smaller influence? [Ethiopia, Liberia]
- **Organic African development** [states, education, infrastructure]
  - Precolonial institutional development. Evolution?
    - state consolidation
    - innovation (market size and public goods)
    - technology adoption
  - Impact of preceding slave trades very harmful [Nunn (2008, 2017)]
    - state consolidation
    - market size effects, population
    - extraction, oppression

African Colonization. Some Aspects

Bundle Treatment

- **Colonial Institutions [forced labor, indirect rule, oppression]**
- **Infrastructure** [roads, railroads, ports]
- **Human Capital Investments** [education, health]
- **Cultural Aspects** Social Capital, Trust, Beliefs, Norms
- **Economic Structure and Dependency** [e.g., cash crops, mining]
- **Political and Economic Power.** (Ethnic) Inequality, Chiefs' Role
- **Border and Country Design.** State Artificiality, Ethnic Partitioning, Country Size and Shape, Heterogeneity
- **Psychology**

Colonial Legacies. Identification

One-Way Causal Effect. Micro and Meso Approaches

Average Treatment Effects

- move beyond data patterns, correlations [although we learn a lot from graphical correlational analyses
- **causation**
  - quasi-random assignment [roads, railroads, institutions]
  - "treatment" unrelated to other relevant factors [conditional on observables]

Colonial Legacies. Identification, cont.

Average Treatment Effect

- **policies** [direct vs indirect rule], **investments** [railroads], institutions [forced labor] are often strategic [non-random]
- **many influencing factors and driving forces**
  - geography, ecology, location, disease environment
  - driven often by historical [precolonial] features [e.g., slave trades, political centralization]
- **extract quasi-random component** [cond. on relevant factors]
  - Historical "accidents" [think of reasonable counterfactual]
  - (very) local identification [in search of quasi-random assignment]

Colonial Legacies. Identification, cont.

Tricky, Challenging Issues

1. **Policies and interventions go handy** [direct rule alongside educational and infrastructure investments]
2. **Spatial spillovers** [positive or negative]
   - aggregation. economic theory may be useful [impose some structure]
3. **Measurement error**. Historical data
   - classical [lower significance and model explanatory power]
   - may not be classical [e.g., early vs late missions]
4. **Heterogeneity.**

Colonial Legacies. Heterogeneity

Differential Effects

- significant heterogeneity across continents, colonies, regions
- differences in "narrow" treatment. need unbundling institutions, etc
- different strategies over time
- interactive effects with other "exogenous" developments [Industrial Revolution, Science, Demographic Transition]

Colonial Legacies. Inequality

Regional, Ethnic, and Religious Inequality

- Regional Inequality. Agglomeration Effects
- Ethnic Inequality and Political Power [plus ethnic markers]
  - Ethnic favoritism. political power
  - Ethnic repression and civil wars
- Race [Caste]
- Religious Inequality
- Rural-Urban.
  - Post-independence trade and development policies
  - Ideology, political power, independence movements [Gancia-Ponce and Wantchekon (2022)]

Colonial Legacies. Aggregation. Back to the Big Question

From Micro/Meso to Macro

- Move beyond local average treatment effects [LATE]
- Type and extent of experiment
  - roads-railroads; population, economic activity
  - schools, clinics
  - institutions
- **Aggregation.**
  - Quantify empirically spillovers. *reduced form*
  - Economic theory. *structural* [Donaldson and Hornbeck (QJE 2016), Allen and Donaldson (2020), Van Patten and Mendez-Chacon (ECMA 2022)]

Colonial Legacies. Modern Economics Research

Africa, Americas, India, Asia, elsewhere

- **Africa**
- **Latin America**. Dell (ECMA 2011), Valencia-Caicedo (QJE 2018), Montalvo and Reynal-Querrol (2020).
- **India**. Iyer (RECSTAT, 2011), Banerjee and Iyer (AER 2004), Donaldson (AER 2018)
- **East Asia.** Dell and Olken (RESTUD 2019);
- **Elsewhere**.

Colonial Legacies and Long-Run African Development.

Examples. Micro/Regional/Case-Studies

- Forced Labor, Oppression, and Extraction. Lowes and Montero (QJE 2021)
- Indirect (Native) Rule: Iyer (RECSTAT, 2011)
- Empowerment of Local Elites and Chiefs. Acemoglu, Reed, and Robinson (JPE 2014)
- Schools, Health, and Human Capital: Nunn (AER PP 2010, 2014), Wantchekon et al. (QJE 2012); Lowes and Montero (AER 2021)
- Roads and Railroads: Kerby, Jedwab, and Moradi (EJ 2017), Jedwab and Moradi (RECSTAT 2018)
- Capital Investments. Huillery (AEJ-Applied, 2009)

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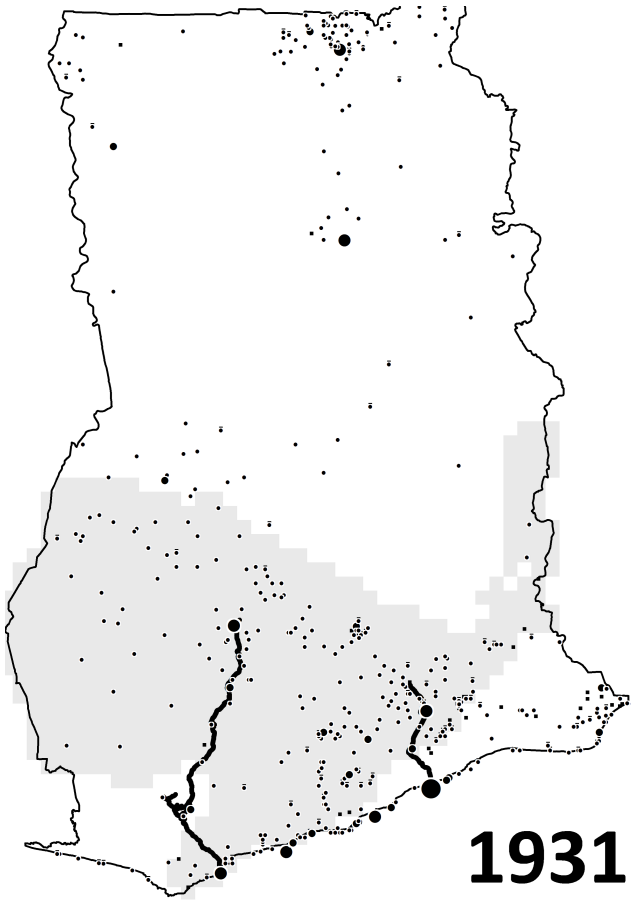
Colonial Infrastructure Investments and Development.

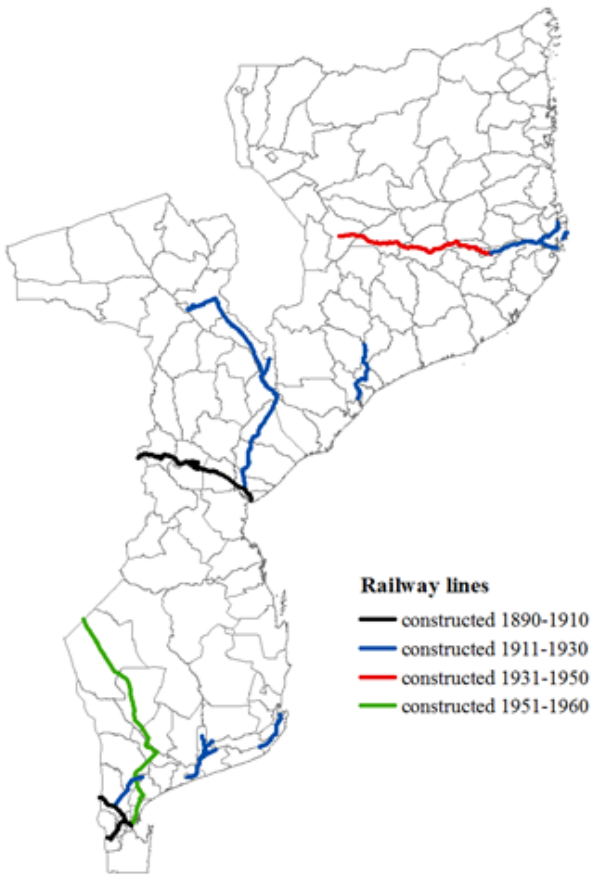
The Argument

- **Colonization -> Infrastructure Investments => Capital Accumulation => Industrialization**
  - Optimism at the time. Cecil Rhodes, Vladimir Lenin, Hobson
  - Industrialization and the Big Push; Exit Poverty Traps [P. Rosenstein-Rodan (1943)]
  - Transportation investments and spatial development [D. Donaldson, T. Allen, C. Arkolakis, etc]

Railroads in Gold Coast and Mozambique

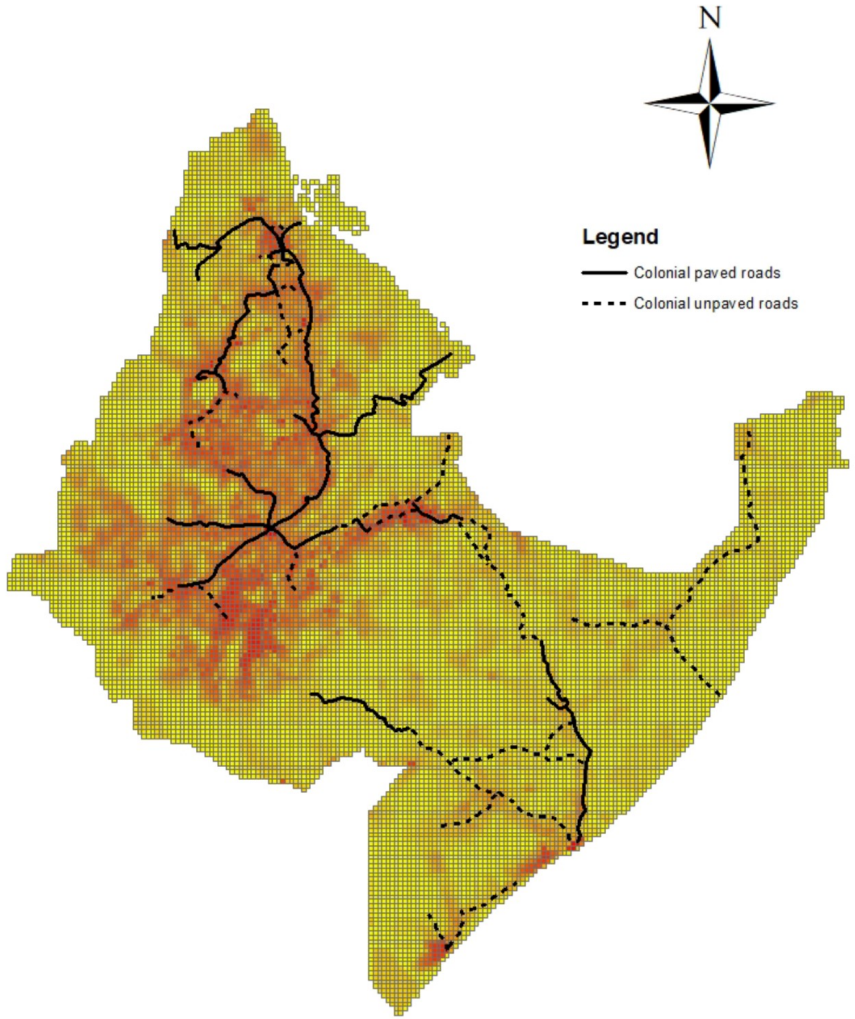
But Limited Investments



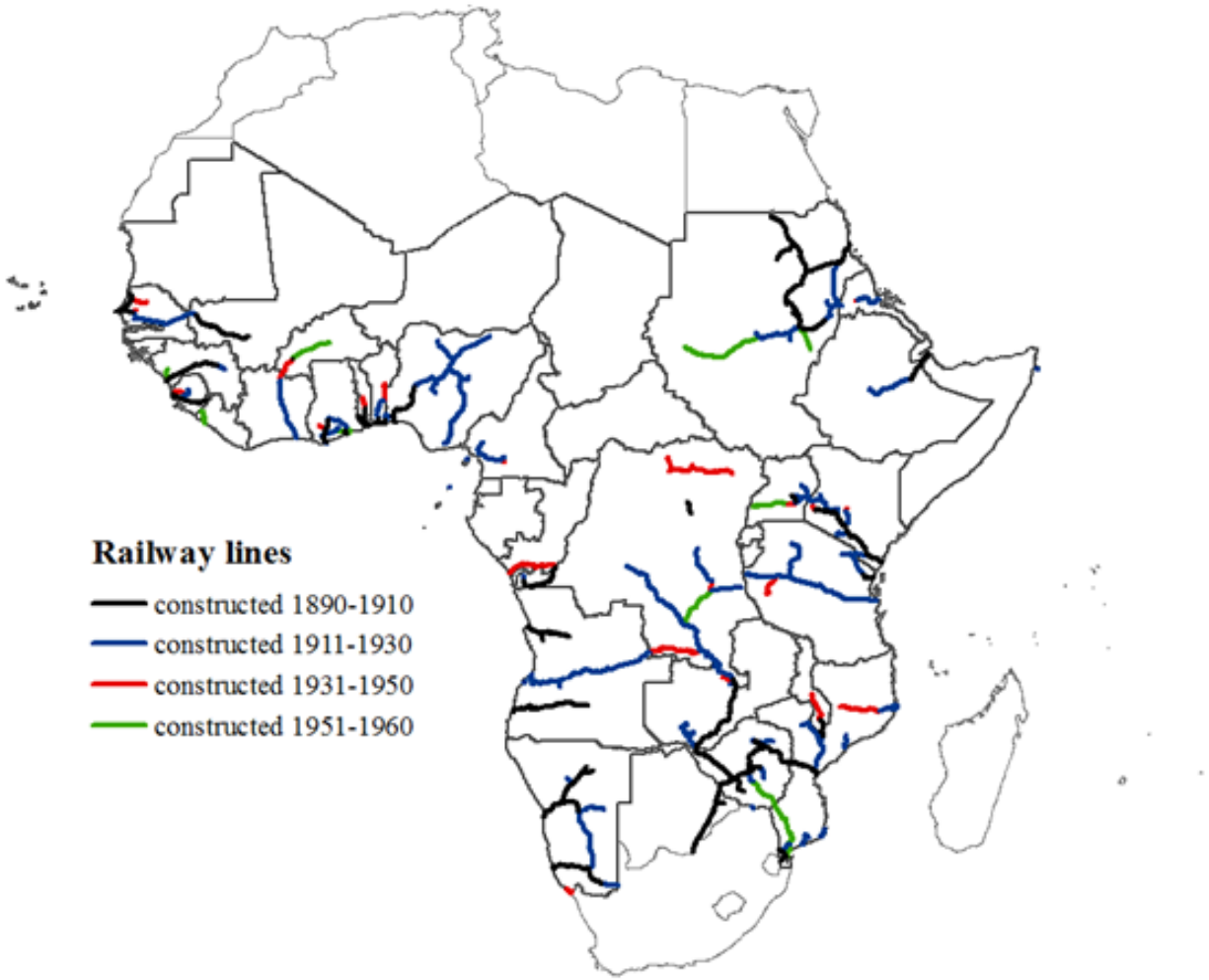


Colonial Railroads in Ethiopia

Limited Investments



The Problem. Colonial Railroads (not SA and NA)



Colonial Railroads and Roads in Africa

Empirical Literature

- **Sub-Saharan Africa and Ghana**. Jedwab and Moradi (RECSTAT 2015)
- **Kenya**. Jedwab, Kerby and Moradi (EJ 2016)
- **Horn of Africa. Ethiopia**. Bertazzini (JEG 2022)
- **Nigeria**. Okoye, Pongou, and Yokossi (JDE 2019)
- **South Africa**. Herranz-Loncan and Fourie (EREH 2018)
- **Colonial British West Africa.** Chaves, Engerman, and Robinson (2014)
- **Review**. Kerby, Jedwab, and Moradi (2017)

Railroads and Roads and Spatial Development

Other Related Literature

- **Sub-Saharan Africa**. Storeygard (RESTUD 2016)
- **Sub-Saharan Africa post-Independence**. Jedwab and Storeygard (JEEA 2022)
- **Ethiopia, Nigeria**. Atkin and Donladson (2021)
- **Mozambique. Mined Transportation Network**. Chiovelli, Michalopoulos, and Papaioannou (2019)
- **India**. Donaldson (AER 2019); Andrabi and Kuehlwien (JEH 2010)
- **United States, 1870-1890**. Donaldson and Hornbeck (QJE 2016)

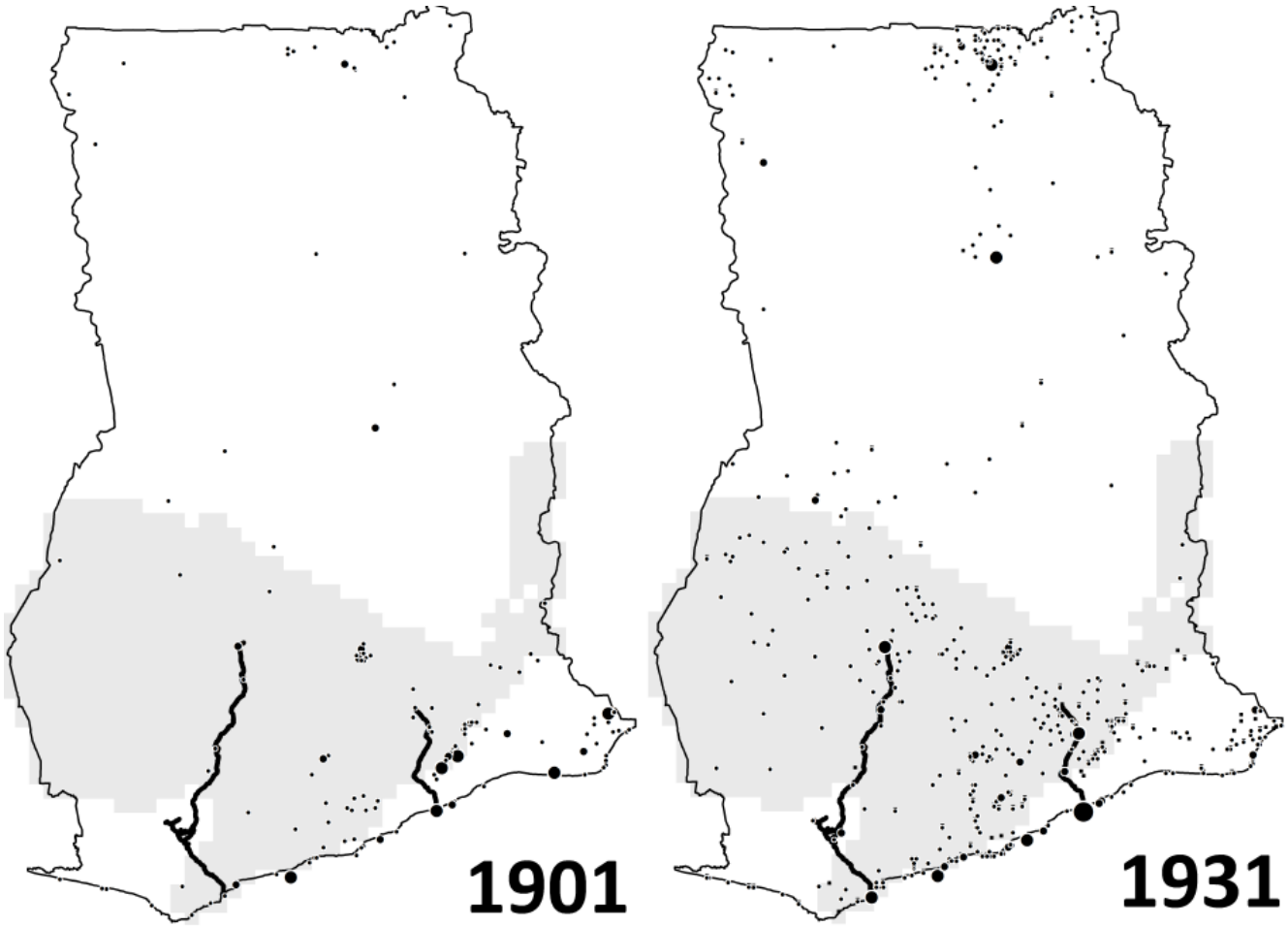
Colonial Railroads Impact

E. Kerby, R. Jedwab and A. Moradi. Colonial Railroads and Agglomeration in Sub-Saharan Africa

- **Colonial Roads, Population Density, and Development**
  - Impact [short, medium, and long-run]
  - Mechanisms. Persistence and Agglomeration
- **Applications**
  - Ghana. Jedwab and Moradi (RECSTAT 2016)
  - Kenya. Jedwab, Kerby and Moradi (EJ 2016)
  - Ethiopia. Bertazzini (JEG 2022)
  - Sub-Saharan Africa. Jedwab and Moradi (RECTAT 2016), Jedwab and Storeygard (JEEA 2022)

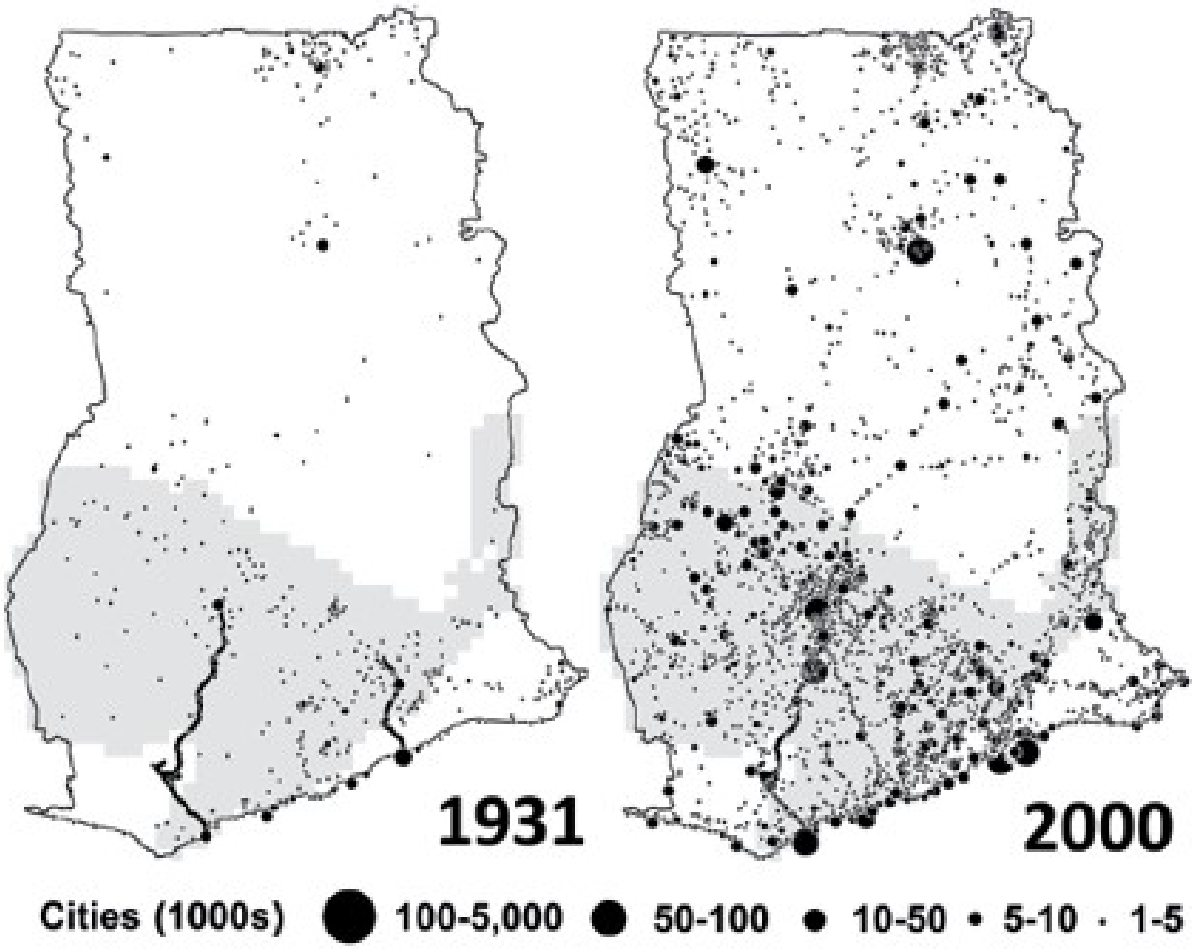
Colonial Railroads in Gold Coast

Limited Investments



Impact of Colonial Railroads in Ghana

Graphical Illustration. Population Dynamics



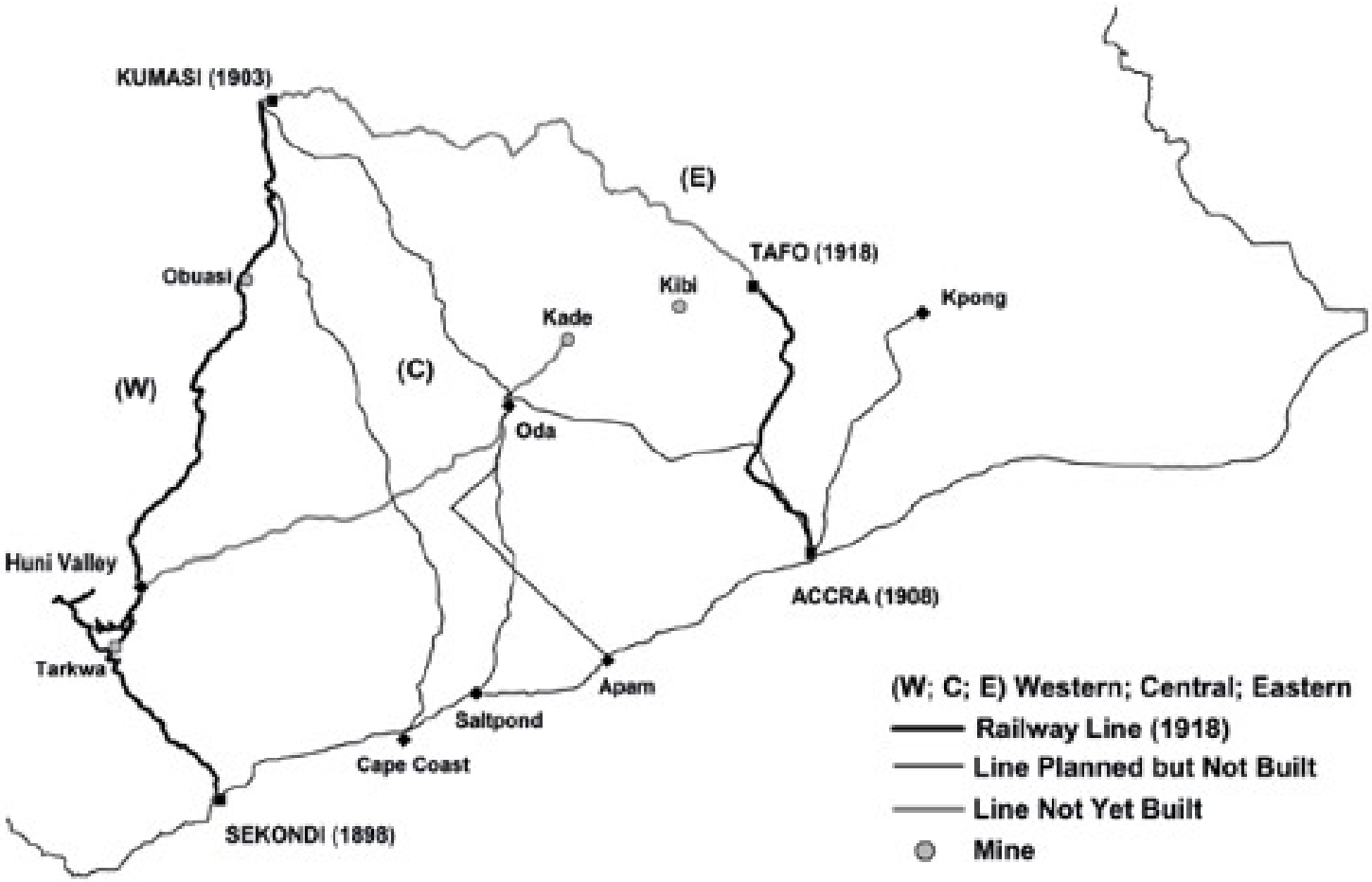
Impact of Colonial Railroads in Ghana

OLS Estimates

Dependent Variable (Z-Score; %):	Cocoa Prod. 1927	Rural Pop. 1931		Urban Pop. 1931		City 1/0 1931	Urb.Rate 1931
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rail 1918, 0-10 km	1.06***	0.68***	0.19	0.74***	-0.03	0.41***	6.23*
	(0.22)	(0.17)	(0.22)	(0.28)	(0.13)	(0.15)	(3.57)
Rail 1918, 10-20 km	0.83***	0.45**	0.17	0.09	-0.03	0.29*	2.34
	(0.22)	(0.19)	(0.14)	(0.10)	(0.10)	(0.18)	(4.98)
Rail 1918, 20-30 km	0.53***	0.38**	0.20	-0.07	-0.15	-0.21	-4.76
	(0.16)	(0.15)	(0.15)	(0.12)	(0.11)	(0.15)	(3.70)
Rail 1918, 30-40 km	0.39**	0.10	-0.03	0.06	0.02	-0.02	0.80
	(0.15)	(0.12)	(0.12)	(0.09)	(0.09)	(0.13)	(3.50)
Cocoa Prod. 1927 (Z-Score)			0.33***		0.13***		
			(0.07)		(0.04)		
Cocoa at Rail Station 1918 (Z-Score)			-0.03		0.43***		
			(0.02)		(0.15)		
Rural Pop. 1901 (Z-Score)	0.07*	0.51***	0.49***	0.16	0.11**	1.48	0.11**
	(0.04)	(0.05)	(0.05)	(0.10)	(0.05)	(0.05)	(1.07)
Urban Pop. 1901 (Z-Score)	-0.02	-0.09	-0.08	0.49***	0.45***	2.72**	0.22***
	(0.04)	(0.08)	(0.08)	(0.11)	(0.09)	(0.05)	(1.14)
Cell Controls	Y	Y	Y	Y	Y	Y	Y
Observations	554	554	554	554	554	554	554
R-squared	0.55	0.60	0.65	0.46	0.64	0.30	0.33

Actual and Counterfactual Railroads in Ghana

Actual and Planned but not Built Lines



Impact of Colonial Railroads in Ghana

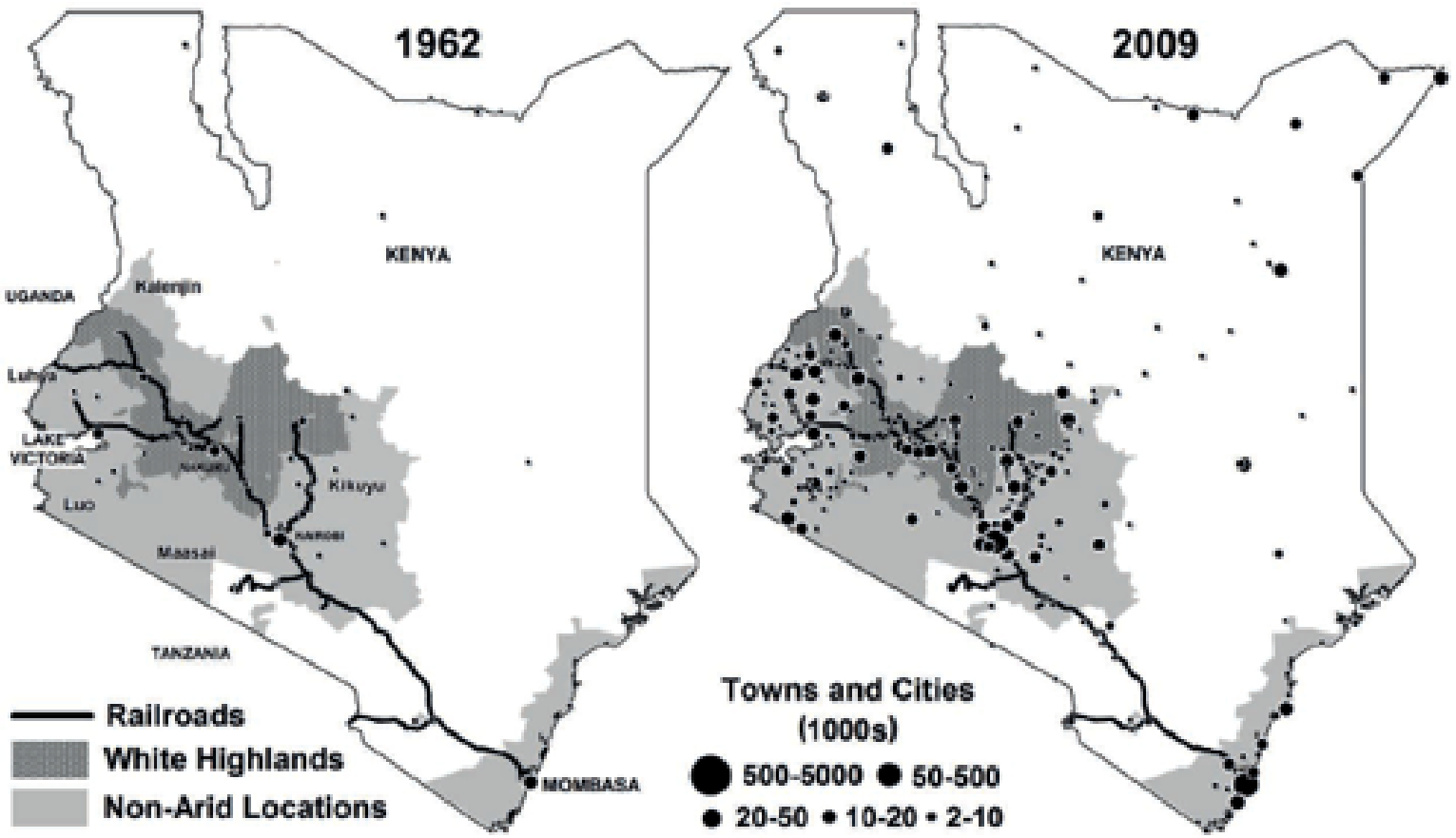
OLS Estimates. Further Evidence

Strategy:	*OLS*	*Ethnic*	*District*	*Long.Lat.*	*Min.Mil.*	*Placebo*	*C:Placebo*	*IV*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A:	*Dependent Variable = Cocoa Production (Z-Score) in 1927, Ghana*							
Rail 1918, 0-40 km	0.65***	0.83***	0.44***	0.42***	0.32**	-0.04	1.03***	0.79***
(Col.(6): Placebo)	(0.14)	(0.11)	(0.11)	(0.10)	(0.14)	(0.18)	(0.12)	(0.22)
Panel B:	*Dependent Variable = Urban Population (Z-Score) in 1931, Ghana*							
Rail 1918, 0-10 km	0.72**	0.75**	0.69**	0.74**	0.58*	0.08	1.11**	1.24**
(Col.(6): Placebo)	(0.28)	(0.30)	(0.34)	(0.31)	(0.32)	(0.09)	(0.41)	(0.63)
Panel C:	*Dependent Variable = Urban Population (Z-Score) in 2000, Ghana*							
Rail 1918, 0-10 km	0.80**	0.81**	0.62*	0.83**	0.76*	-0.03	1.06**	1.74**
(Col.(6): Placebo)	(0.36)	(0.37)	(0.32)	(0.39)	(0.45)	(0.11)	(0.43)	(0.65)
Panel D:	*Dependent Variable = Urban Population (Z-Score) in 1960, Africa*							
Rail 1918, 0-10 km	0.37***	0.37***	0.28***	0.37***	0.34***	0.32***	0.37***	0.31***
(Col.(6): Placebo)	(0.05)	(0.05)	(0.04)	(0.05)	(0.07)	(0.05)	(0.08)	(0.09)
Cell Controls	Y	Y	Y	Y	Y	Y	Y	Y

Notes: OLS regressions using data on 554 Ghanaian cells for the years 1901, 1931 and 2000 and 193,923 African cells for the years 1900 and 1960. Robust SEs clustered at the district level; * p<0.10, ** p<0.05, *** p<0.01. Ghana: We include the z-scores of the urban and rural populations in 1901. Table 1 lists the controls. Africa: We include country FE and the z-score of the urban population in 1900. Footnote 12 lists the controls. We drop the capital, first and second largest cities. Col. (2)-(3): We add 9 (755) ethnic group FE and 62 (2,304) district FE for Ghana (Africa). Col. (4): We add first, second, third and fourth order polynomials of the long. and lat. of the cell's centroid. Col. (5): The rail dummy is equal to one if the cell is within 10 km from the Western line (a line built for mining/military domination) for Ghana (Africa). Col. (6): The rail dummy is equal to one if the cell is within X = [40; 10] km from a placebo line. Col. (7): The control group (C:) is restricted to placebo cells. Col. (8): For Ghana, the instrument is a dummy equal to one if the cell is within 40 km from the straight lines Sekondi-Tarkwa-Obuasi-Kumasi and Accra-Kumasi. For Africa, it is a dummy equal to one if the cell is within 40 km from a straight line of the EMST network based on the initial urban network in 1900. We always drop the nodes. Panels A, B-C and D: The coeff. (F-stat.) of the instrument (1st stage) is 0.69*** (164), 0.17*** (20) and 0.08*** (92), respectively. See *Web Appendix* for data sources.

Impact of Colonial Railroads in Kenya

Graphical Illustration. Population Dynamics



Impact of Railroads in Ethiopia

OLS Estimates. Wealth and Public Goods

Panel A: Wealth	wealth index			
OLS	(1)	(2)	(3)	(4)
Road 1940, 0-10km	1.586***	1.087***	0.494**	0.563***
	(0.180)	(0.222)	(0.224)	(0.213)
Road 1940, 10-20km	0.187	0.007	0.008	-0.066
	(0.187)	(0.193)	(0.179)	(0.178)
R-squared	0.32	0.34	0.40	0.42
Ethnic FE	YES	YES	YES	YES
Precolonial controls	NO	YES	YES	YES
Colonial controls	NO	NO	YES	YES
Geographical controls	NO	NO	NO	YES

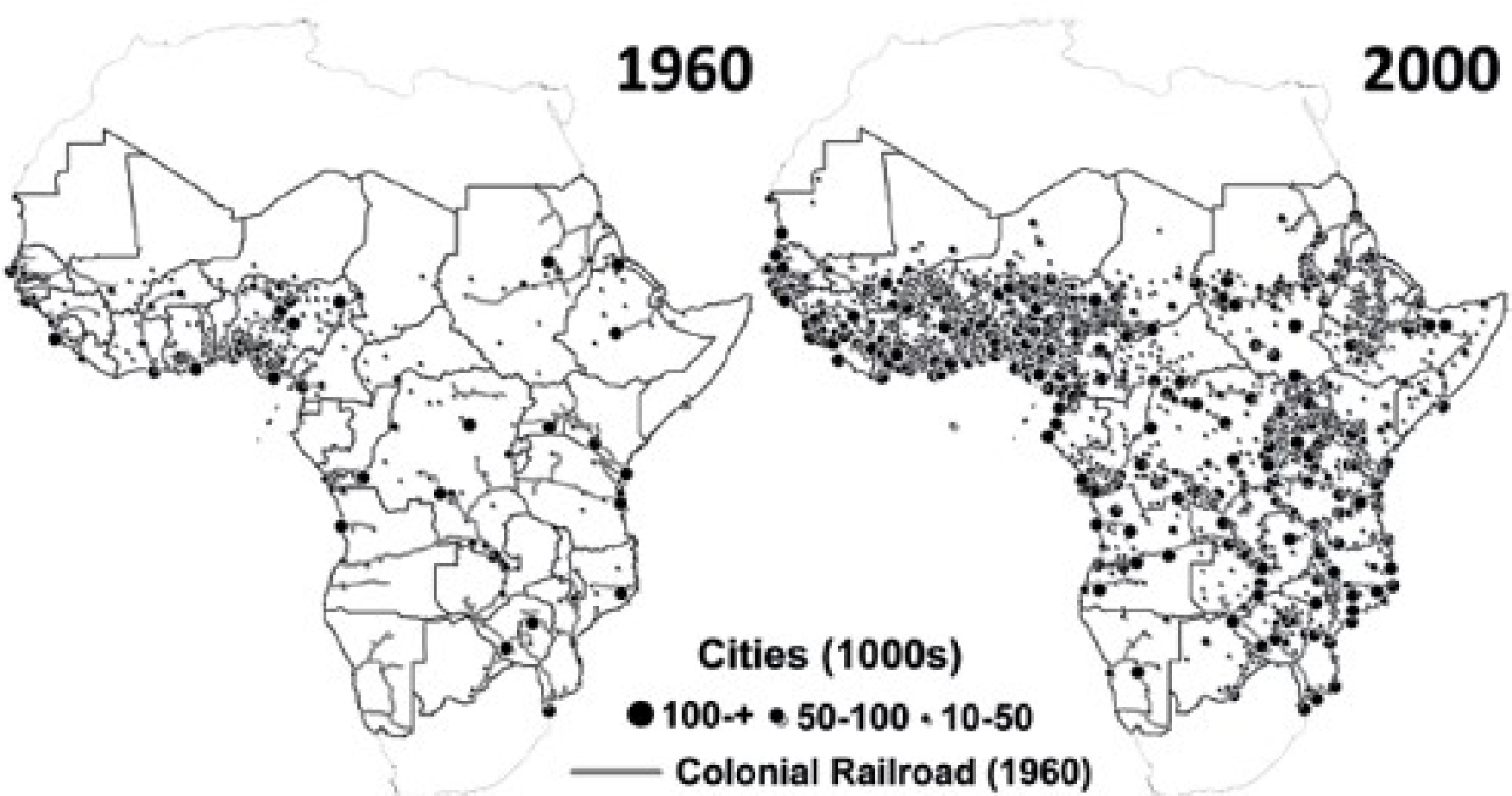
Impact of Railroads in Ethiopia

OLS Estimates (cont). Structural Transformation

Panel B: professions	professional	agricultural worker	services	skilled manual
PROBIT	(1)	(2)	(3)	(4)
Road 1940, 0-10km	0.0271***	-0.135**	0.0114***	0.0290*
	(0.0100)	(0.0658)	(0.00385)	(0.0159)
Road 1940, 10-20km	-0.00469	0.0442	0.000818	0.0127
	(0.0119)	(0.0577)	(0.00390)	(0.0168)
Observations	13,528	13,528	13,528	13,528
Precolonial controls	YES	YES	YES	YES
Colonial controls	YES	YES	YES	YES
Geographical controls	YES	YES	YES	YES

Impact of Colonial Railroads in Sub-Saharan Africa

Graphical Illustration. Population Dynamics

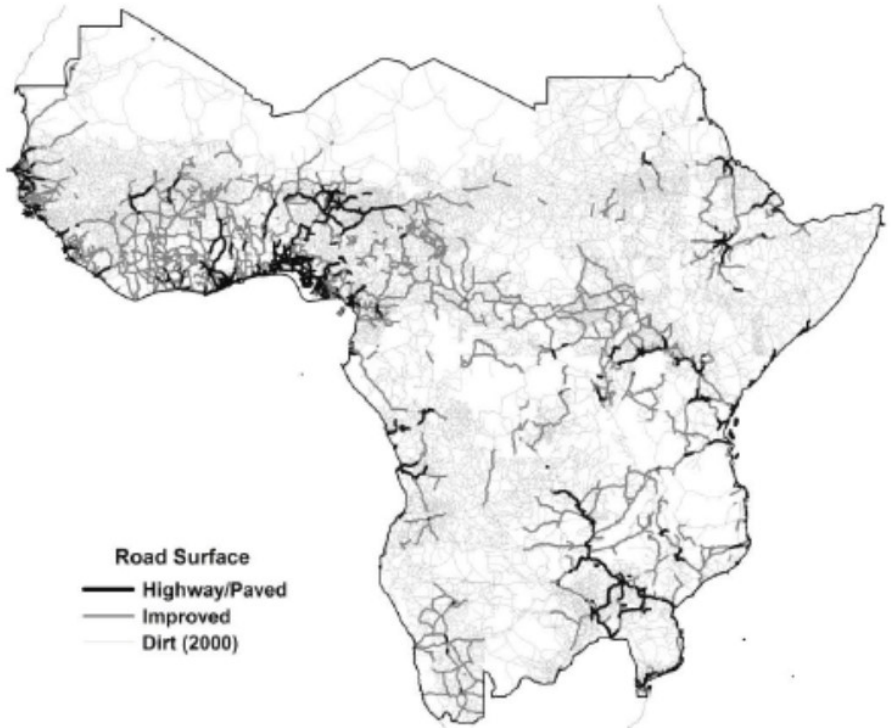


Spillovers Effects Transportation Infrastructure

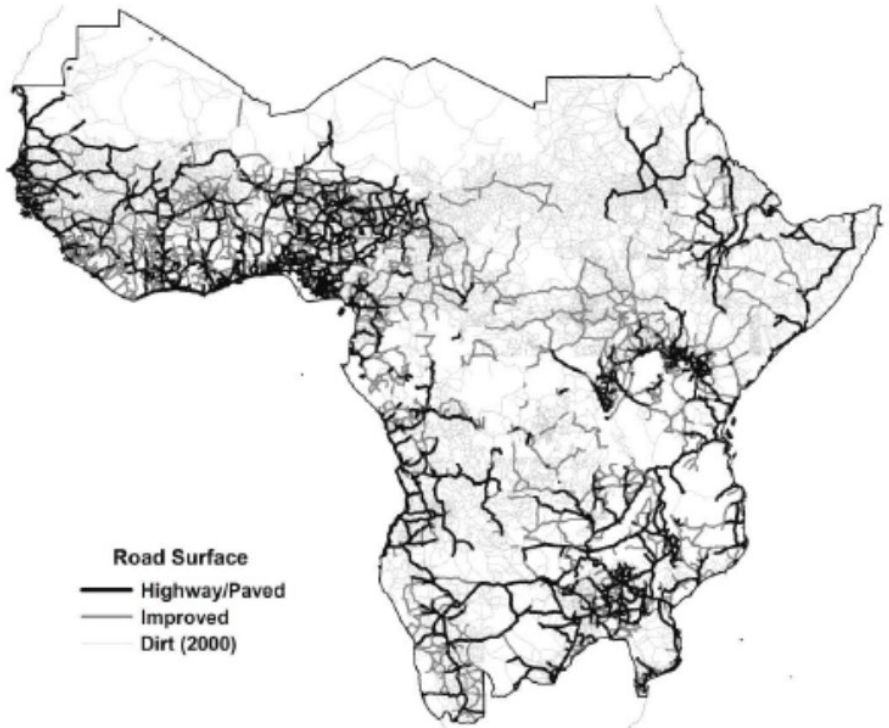
African Roads 1960 and 2010. 39 Countries

Figure 1: Road network and cities in the 39-country sample, 1960 and 2010

(a) Roads c. 1960



(b) Roads c. 2010



Impact of Roads in Sub-Saharan Africa. Market Access Effects on Luminosity

Jedwab and Storeygard (JEEA 2021)

	(1) OLS	(2) IV: Excl. 5	(3) IV: Excl. 10	(4) IV: Excl. 15
Δ^{t}_{t-10} ln MA	0.39	22.29**	43.98***	69.37***
	[3.06]	[9.97]	[11.98]	[18.56]
Δ^{t-10}_{t-20} ln MA	1.70	12.52	8.82	5.84
	[2.90]	[8.12]	[12.50]	[16.91]
Δ^{t-20}_{t-30} ln MA	0.84	3.90	0.71	-3.01
	[2.11]	[4.32]	[7.33]	[10.21]
Overall Effect	2.93	38.70***	53.51***	72.19***
	[5.22]	[11.39]	[18.31]	[26.49]

Summary. Colonial Infrastructure

Colonial Roads/Railroads and Long-Run Development

- **Local Effects. Endogeneity**
  - Population Density. Agglomeration.
  - Other Mechanisms. Complementary Investments
- **Heterogeneity**
  - Why? complementary factors? which ones?
  - more evidence
- **Spillovers and Aggregate Effects** [research in spatial economics]
- **Other Investments**
  - ports, airports
  - dams, energy stations

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Colonial Institutions and Strategy

Unbundling Colonial Institutions

- Oppression with **direct rule**
  - appointment of colonial administration chiefs. Gao (AER 2018)
  - district administrators/bureaucracy (e.g., India). Fergusson (2003)
- **Native** (Indirect) **Rule**
  - using pre-existing political structures and chiefs (e.g., Nigeria, Botswana, and India)
  - appointing new chiefs (e.g., Sierra Leone)
  - appointing chiefs from other ethnic groups and regions (e.g., Senegal)
- **Private Concession companies** (state-like function)
  - Congo Free State and Belgian Congo
  - Rhodesia
  - Liberia

Colonial Institutions and Strategy

Labor and Production Organization

- Labor arrangements
  - slavery
  - forced labor
  - serfdom
  - high (in kind) taxation
- Peasant economy with monopsonists [private companies, administration]
  - forced crop cultivation
- Large Plantations. Food shortages, famines, diversification

African Colonial Institutions and Long-Run Development

Empirical Literature and Case Studies

- **Forced Labour Practices and Oppression** (Lowes and Montero, QJE 2021; Waijenburg (2018), Archibong and Obikili (2018), Blouin (2016), Gancia-Ponce and Wantchekon (2020))
- **Indirect Rule & Chiefs** (Mamdani (1996); Acemoglu, Reed, and Robinson (JPE 2014), Lechler and McNamee (2018), (Acemoglu, Jonson and Robinson, 2003))
- **Taxation & State Capacity** (Bates (1983); Tadei (2017), Frankema and van Waijenburg (2014), Gardner (2012, Bolt and Gardner (2020)))

Macro Approach. Institutional Thesis (Acemoglu, Johnson, and Robinson (2001, 2002, 2005)

The Colonial Institutional Origins of Comparative Development

- **Extractive Colonial Institutions (Political Power) => Extractive Post-Independence Institutions (Political Power) => Underdevelopment**
  - Africa vs. Latin America, North America, Asia
  - within Africa analysis. Botswana
- Persistence
- Political and Economic Power [Inequality]
- Issues [earlier discussion]

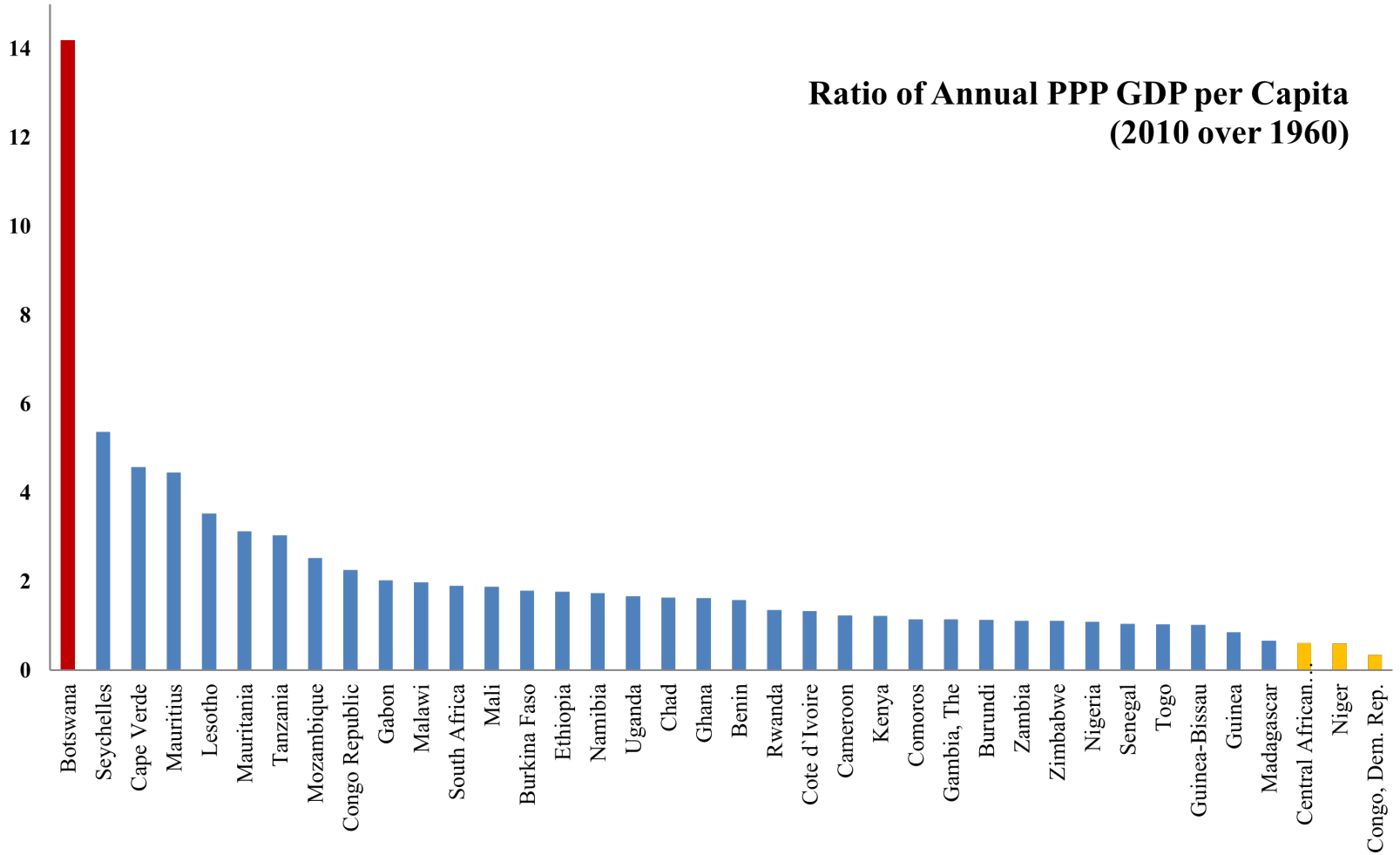
Colonial Institutions and Contemporary Development

Applications

1. **Congo Free State, Belgian Congo, Zaire, DRC** [Lowes and Montero (QJE 2021)]
2. **Botswana, An African Success Story** [Acemoglu, Johnson, and Robinson (2003)]
3. **Sierra Leone** [Acemoglu, Reed, and Robinson (JPE 2014)]
4. Nigeria [Archibong and Obikili]
5. many more..

Botswana. An African Success Story

An Illustrative Case



Botswana. An African Success Story

An Illustrative Case

- Highest GDP p.c. in Africa (non island): circa 17,039 USD in 2019. [Sierra Leone, 1,777 USD in 2019]
- Fastest growth in Africa post-independence (real p.c. GDP in PPP has risen 15 times).
- No conflict since independence.
- Democratic since independence
- Efficient use of natural resources, diamond wealth

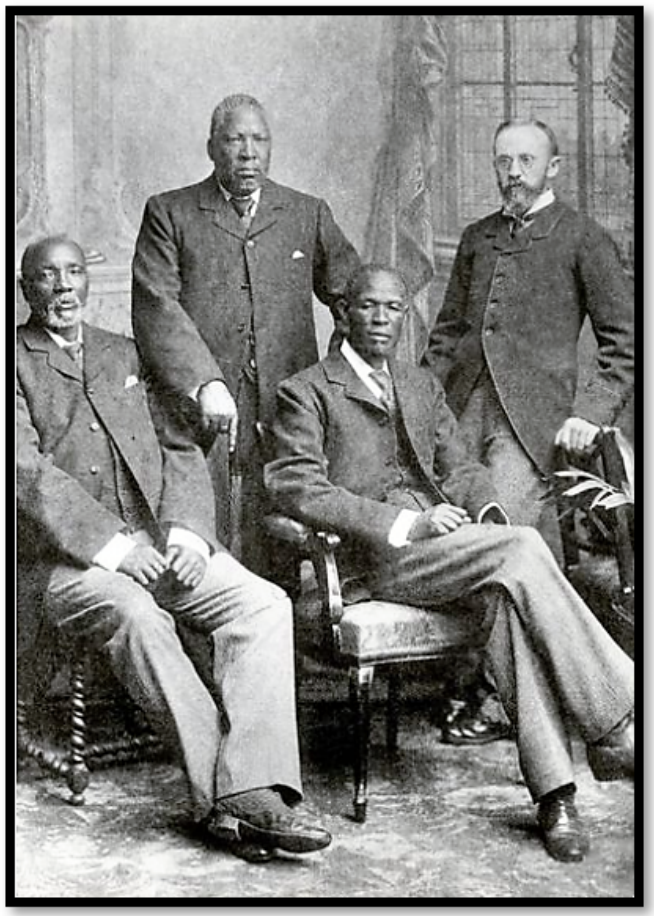
Botswana. An African Success Story. Why?

Mild Colonial Interference coupled with Sound and Strong Precolonial Institutions

1. **Precolonial Political Institutions**. Tswana
   - Kgotla assembly of adult males debating politics
   - checks and balances on chiefs (hierarchical structure), dispersed political power
   - private ownership of cattle (public ownership of land)
2. **Light Colonization**
   - "In 1895, three Tswana chiefs (Dikgosi), travelled to Britain to plea to Queen Victoria for Rhodes not to control the Protectorate.
   - Tswana chiefs (with legitimacy) and institutions (debate, representation) persisted
   - Labor reserve

Tswana Chiefs in London 1895

An Illustrative Case



Chiefs Khama, Sebele and Bathoen with Rev W.C. Willoughby of the London Missionary Society



The three Dikgosi Monument at Gaborone, Botswana

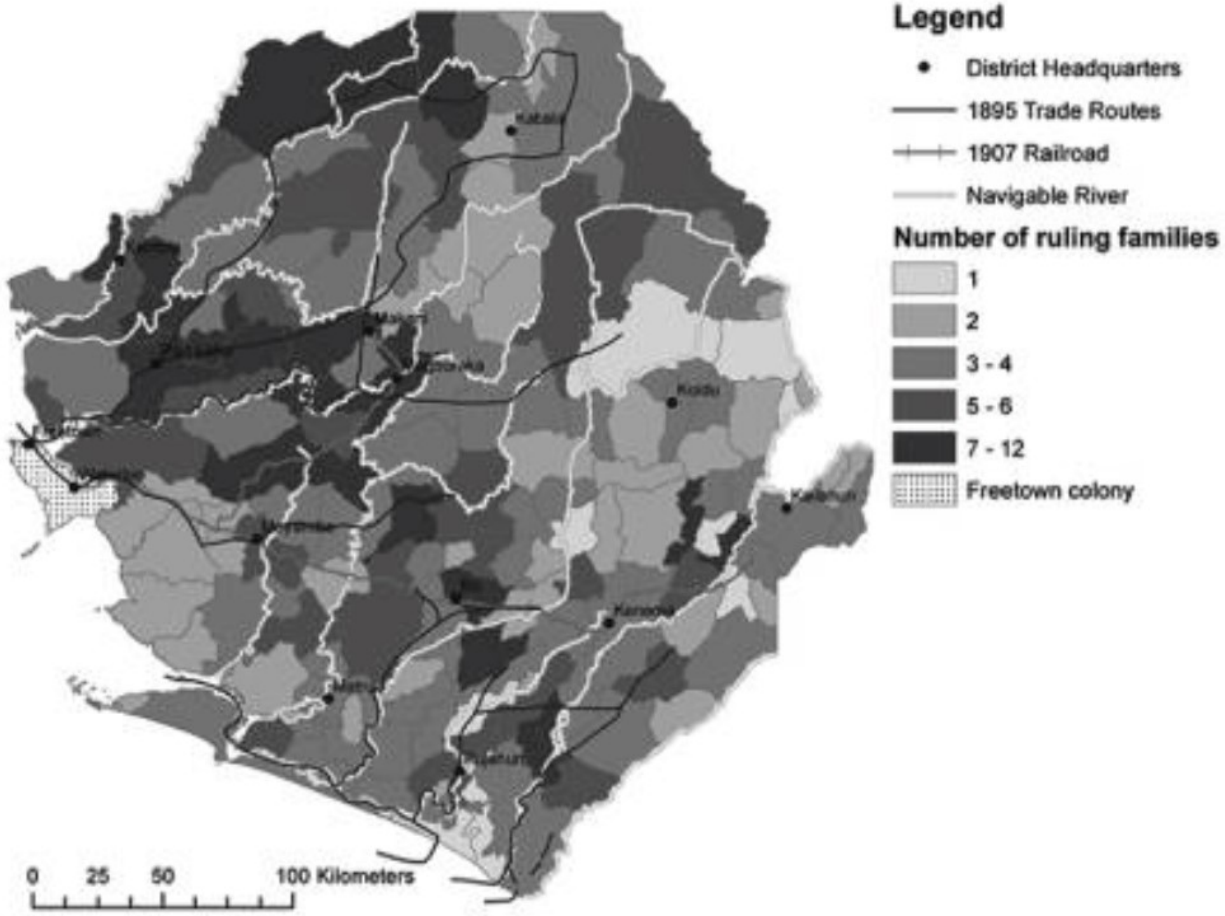
Sierra Leone

Another Illustrative Case

- Lowest GDP p.c. in Africa (non island): 1,777 USD in 2019
- No growth (lightly negative) in Africa post-independence.
- Decades-long civil conflicts.
- Politically unstable
- Inefficient use of natural resources, blood diamonds

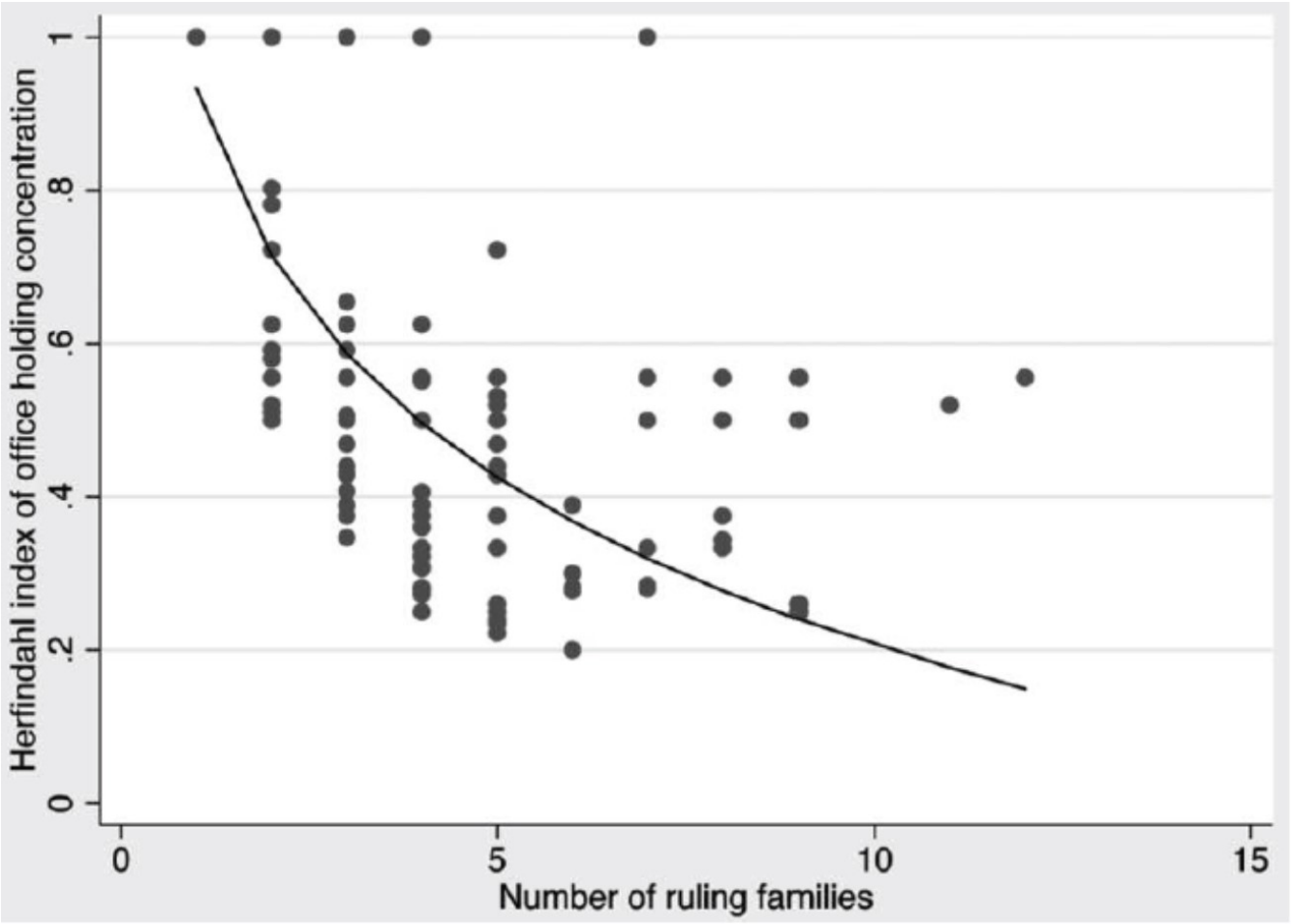
Colonial Sierra Leone

Chiefdoms. Late 19th century



Sierra Leone. Political Power from Colonization to Contemporary Times

Contemporary Political Concentration and Colonial-Era Political Power



Early Development and Number of Ruling Families

Chiefs Power and Early Development

	Dependent Variable									
	1900 Tax per 100 km^2 (1)	1900 Tax per 1,000 1963 Population (2)	1900 Tax per 1,000 1963 Population (3)	1930s Mining Permits (4)	Distance to Coast (5)	Distance to River (6)	Distance to 1895 Trade Routes (7)	Distance to 1907 Railroad (8)	Minimum Distance to Major Towns (9)	Predicted Literacy (10)
ln(number of ruling families)	−26.07	−2.94	−3.19	.01	−2.73	−.98	−2.35	−6.78	−10.80	.010
	(29.64)	(6.07)	(6.13)	(.06)	(5.07)	(1.19)	(2.81)	(3.27)	(3.84)	(.006)
Amalgamation	62.42	.86	1.01	−.04	8.33	1.22	4.04	6.88	8.46	−.011
	(78.00)	(9.95)	(10.28)	(.10)	(6.74)	(2.04)	(3.23)	(4.70)	(5.67)	(.007)
Number of chiefs recalled	12.38	−.60	−.38	.01	.73	.82	.83	−.30	.17	−.000
	(10.99)	(1.47)	(1.44)	(.01)	(1.21)	(.35)	(.50)	(.76)	(.88)	(.001)
Thousands of strangers			−.71							
			(.58)							
R^2	.32	.41	.41	.22	.86	.18	.57	.72	.80	.74
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	87	86	86	149	149	149	149	149	149	149
Outcome mean	85.31	27.56	27.56	.17	105.33	9.18	20.19	44.19	79.21	.307
Outcome standard deviation	117.57	29.28	29.28	.38	65.61	7.22	19.94	30.34	44.27	.044

Sierra Leone. Colonial-Era Political Competition and Contemporary Development

Reduced-Form Relationship

	Dependent Variable			
	Nonagricultural Employment Census (1)	Asset Wealth Index DHS (2)	Asset Wealth Index NPS (3)	Housing Quality Index NPS (4)
	A. Baseline Specification			
ln(number of ruling families)	.016	.260	.028	.058
	(.008)	(.136)	(.010)	(.023)
χ^2 test p-value			[.068]	[.011]
R^2	.051	.057	.063	.094
	B. Baseline Specification with Additional Geographic Controls			
ln(number of ruling families)	.012	.199	.025	.038
	(.006)	(.131)	(.010)	(.020)
χ^2 test p-value			[.067]	[.026]
R^2	.052	.080	.066	.105
Observations	2,790,000	4,994	5,054	5,077
Chiefdoms	149	117	149	149
District fixed effects	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes

Sierra Leone. Why?

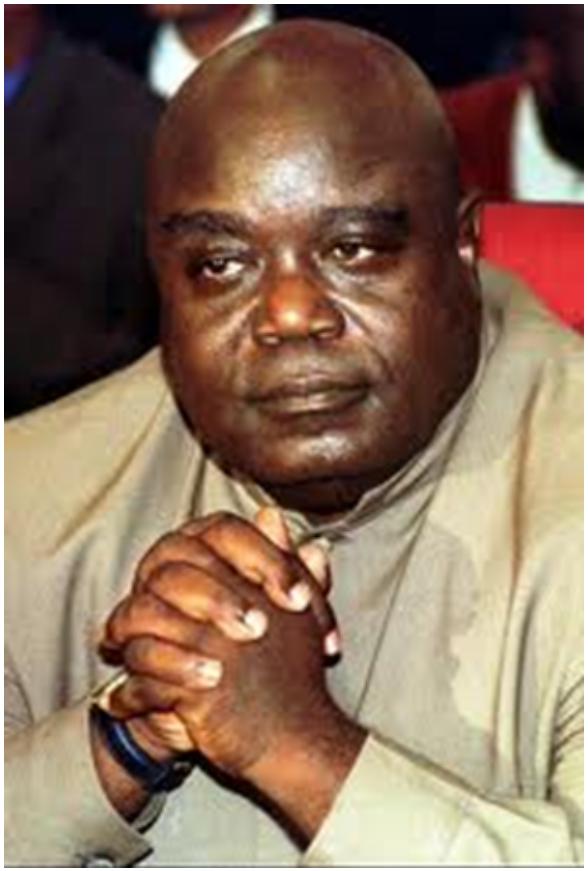
State Capacity and Elite Power

- **weak state capacity**. Colonial Times $->$ Independence $->$ Civil-War $->$ Today
- **Checks and Balances on De-Facto Political Power**
- **Empowerment of Despotic Rule, Unconstrained**. Mamdani (1996)
- **Persistence of Political and Economic Power**.

Institutional Legacies in Congo



Joseph Kabila



Laurent Kabila

Institutional Legacies in Congo, cont.

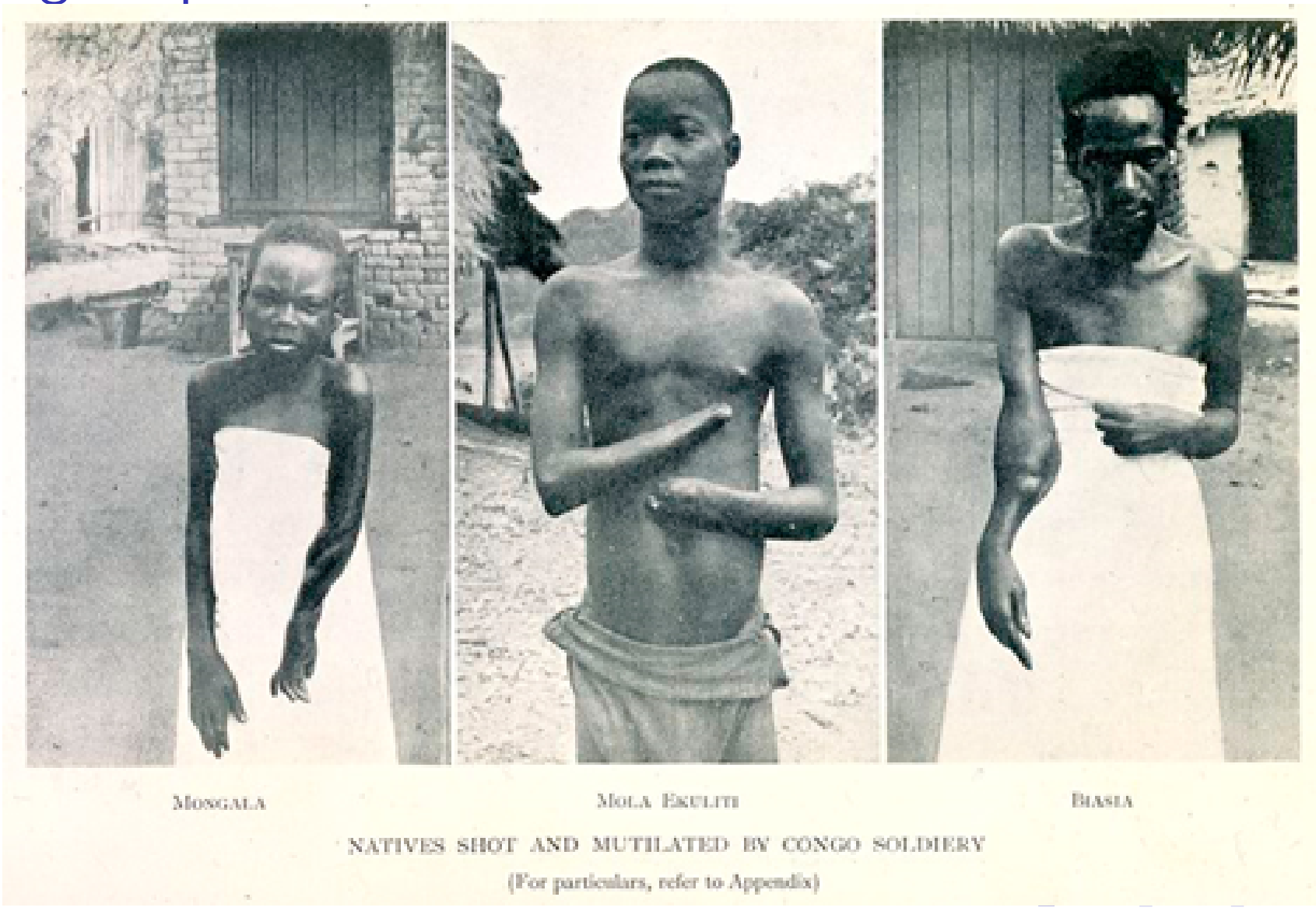


Mobutu Sese Soko



King Leopold II

King Leopold's Ghosts



Institutional Legacies in Congo, The Rule of the Chicotte



Empirical Research and Narrative

Economics Research Meets History

- **Lowes, Sara and Eduardo Monetro. (QJE 2021).** "Blood Rubber: The Effects of Labor Coercion on Institutions and culture in the DRC."
- **Hochtschild, Adam** *King Leopold's Ghost: A Story of Greed, Terror and Heroism in Colonial Africa.*
- **Conrad, Joseph**. *Heart of Darkness*

Motivation

- **Widespread Use of Forced Labor during African Colonization**
  - Congo Free State is the most notorious
  - forced labor, extraction (rubber) and oppression (mass killings); approx. 10 (out of 20) million people died in CFS between 1880-1920
  - Identification. Spatial RDD [as in Dell (2010) and other studies]
- **Impact of Colonial Concessions**
  - major facet of African colonization; under-researched

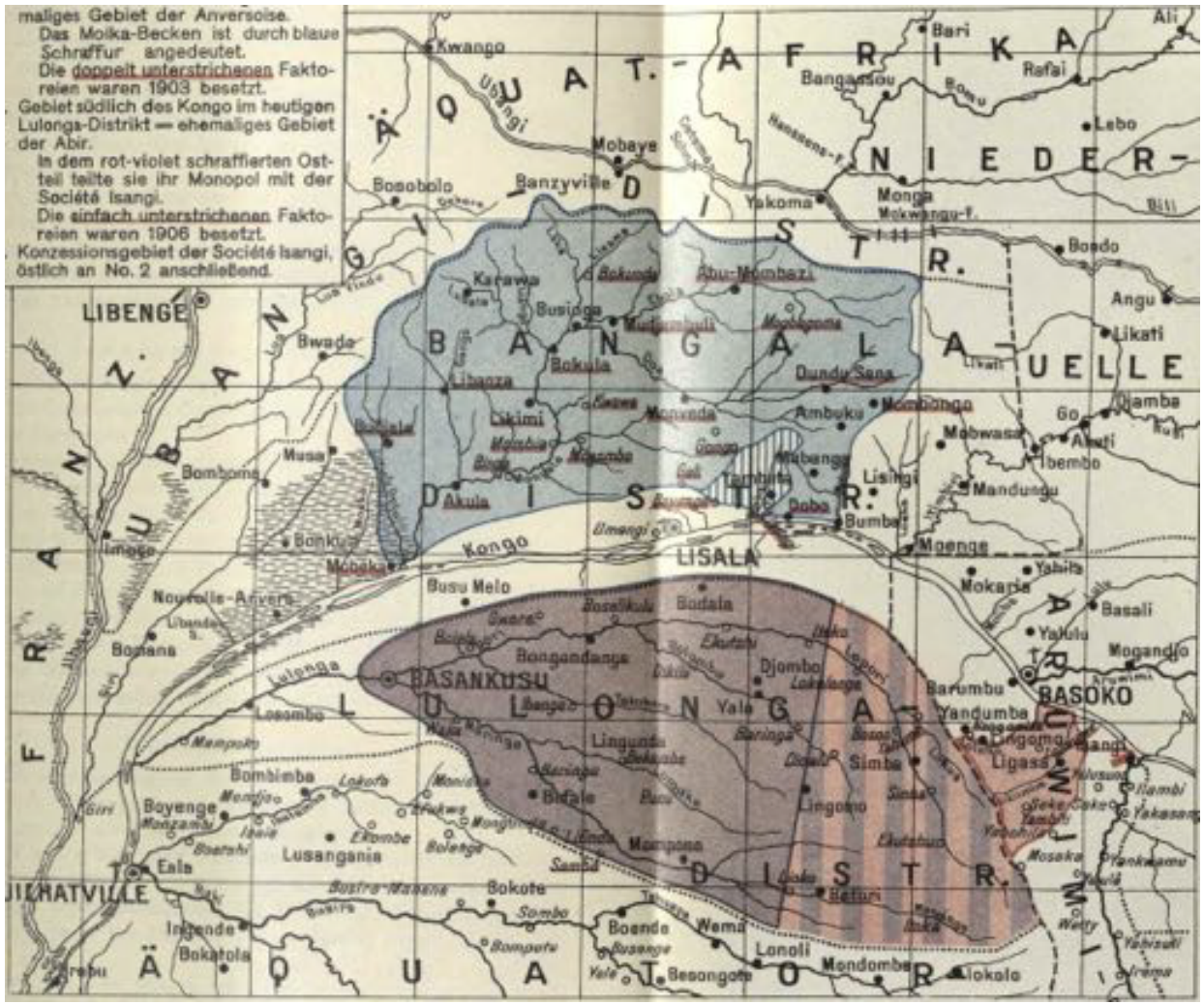
Research Questions

1. **How does historical exposure to extractive institutions in former rubber concessions affect development today?**
   - Lowel levels of education, wealth, and health inside former concessions
2. **What explains persistence?**
   - lower quality local institutions and more pro-social norms

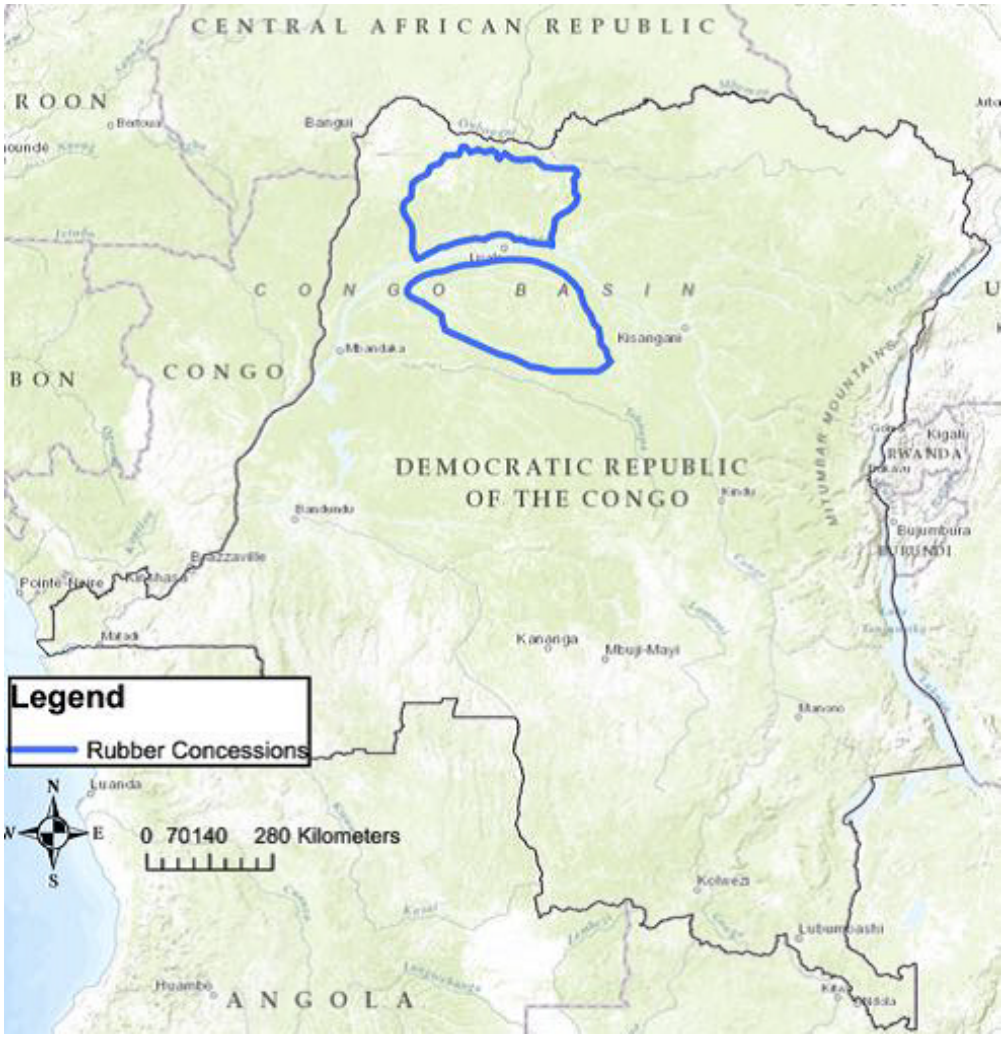
Colonial Concessions. ABIR and Anversoise

- King Leopold II acquired Congo as his **personal colony** in 1885
- Granted **concessions to private companies** in the Upper Congo basin in 1892
- The two largest companies were the Anglo Belgian India Rubber Company (ABIR) and Anversoise
- The CFS was the largest shareholder in both companies
- The Congo had a near monopoly on natural rubber at the time
- Concession boundaries established using salient geographic features - e.g., river basins

Concession Boundaries



Concession Boundaries in DRC



Forced Labor and Rubber Collection

- ABIR and Anversoise established posts throughout the concessions
- 1 or 2 Europeans assigned as rubber agents to a post
- Each agent made list of all men in the villages under his control - set
- Quotas of around 4 kilos of dried rubber every 2 weeks
- Villagers forced to collect rubber as a form of paying taxes
- European agents had 2 year contracts. They were paid $2,000$ BF a year and a 2% commission on all rubber collected

Coercion

- The CFS granted the companies with police powers and right of detention
- Companies developed their own militias, comprised of sentries recruited from other parts of Congo
- Each post had a force of 25 to 80 "post sentries" armed with rifles and 65 to 150 "village sentries" armed with muzzle-loading cap guns
- In case of rebellion, companies given support from *Force Publique* soldiers

Violence

- The post and village sentries, with oversight from the European agents, were responsible for ensuring compliance with the quotas
- Agents and sentries ruled through fear and intimidation
- Individuals severely punished if did not meet rubber quotas:
  - Imprisoned and put to work drying rubber
  - Took wife or kin hostage until quota met
  - Imprisoned chief of village
  - Deported to hard labor detention camps
  - Physical violence (whipping and burning)

Chiefs and Political Capture

- One of the village sentries in each village was assigned the position of kapita, or head sentry for the village
- The kapita would recruit 8 to 10 men to be body guards
- He would assert his authority through violence
- Village leaders and headmen were particularly targeted
- Anyone who challenged the kapita's authority could be killed
- Non-compliant chiefs were replaced, killed, or held captive
- Loss of authority and prestige because of inability to protect people
- Men's absence for prolonged periods of time left a power vacuum in villages to be filled by the kapita
- Kapita began to take on responsibilities of chief - such as resolving disputes among lineage members

Aftermath

- Casement Report released in 1904 detailing the abuses in the CFS
- Rubber supplies nearly exhausted in Upper Congo basin by 1905
- ABIR and Anversoise left CFS in 1906
- CFS becomes Belgian Congo in 1908
- After 1910 Congo faced competitive production of rubber from plantations in Southeast Asia and Brazil

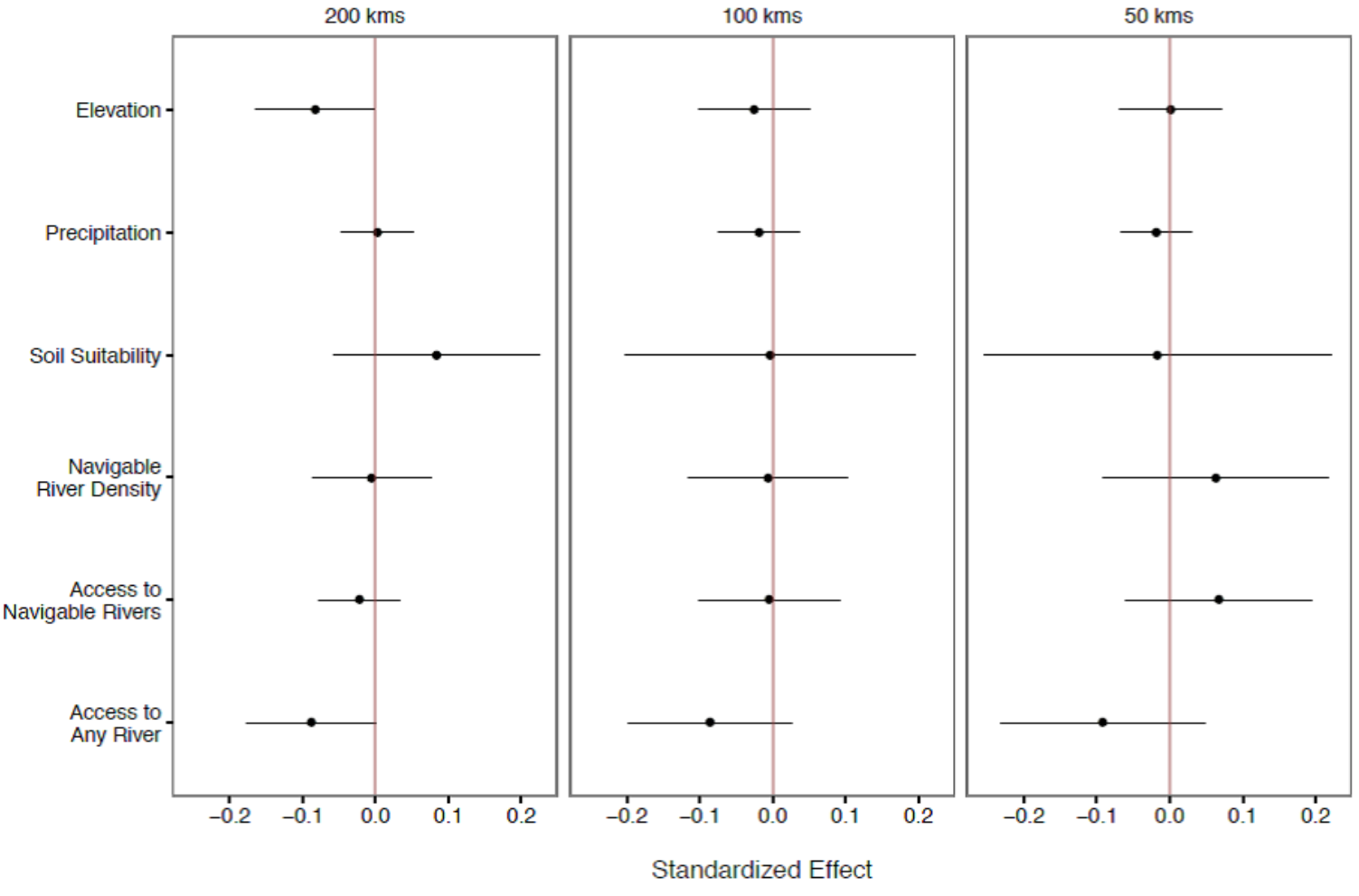
Identification. Spatial RDD

- **Specification**

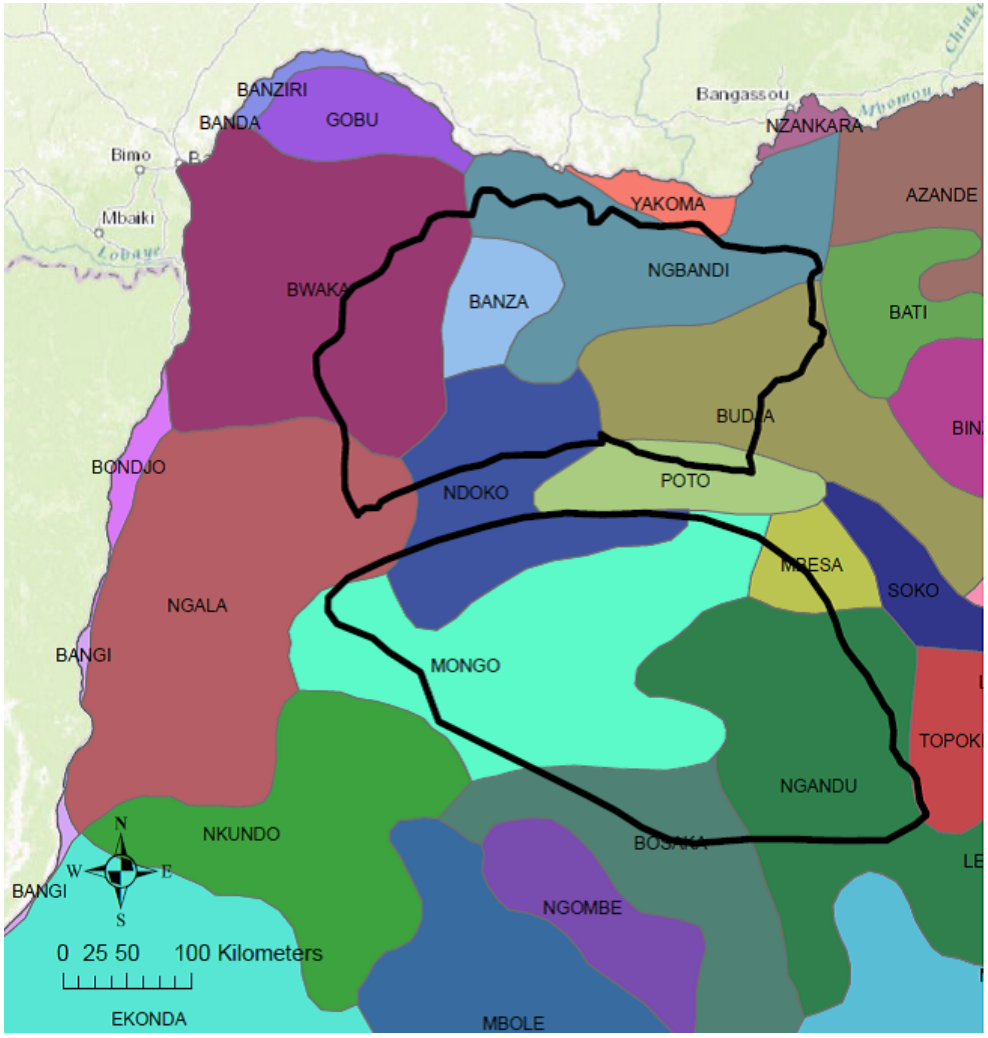
$$Y_{i,v} = a + \gamma CONCESSION_{i,v} + f(LOC_v) + X_i'\Gamma + \phi_j + \varepsilon_{i,v}$$

- $Y_{i,v}$: outcome, individual i in village v
- $CONCESSION_{i,v}$: Indicator, residing inside historical concession boundary
- $f(LOC_v)$: RD polynomial
- ϕ_j : district constants
- X_i' : individual controls

Identification. Balancedeness Tests



Ethnic Homelands

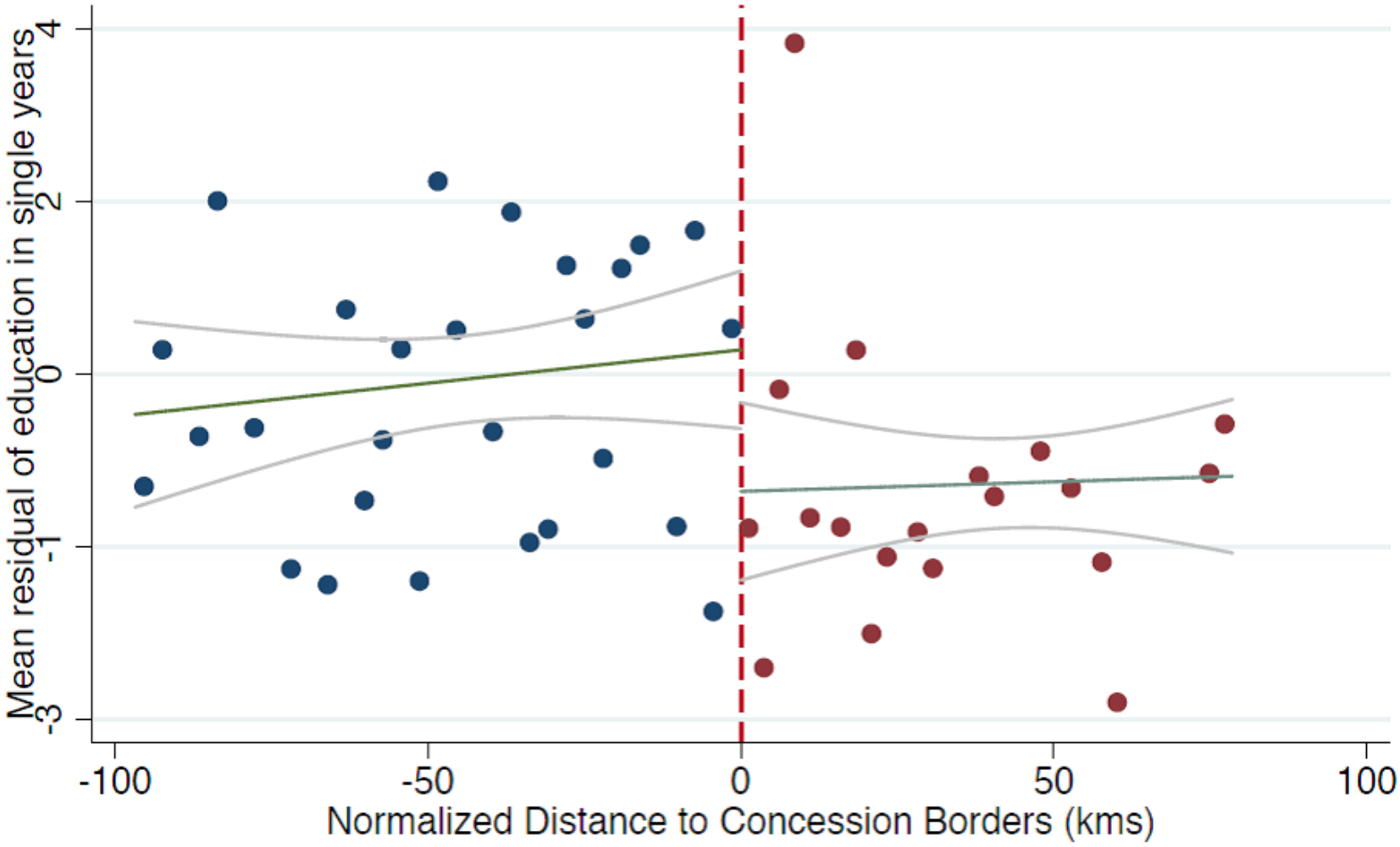


Results. Education

	Years of Education			*Literacy*		
Sample Within:	200 kms	100 kms	50 kms	200 kms	100 kms	50 kms
	(1)	(2)	(3)	(4)	(5)	(6)
Inside Concession	-1.100***	-1.385***	-1.648***	-0.226***	-0.284***	-0.345***
	(0.339)	(0.338)	(0.387)	(0.069)	(0.070)	(0.080)
Observations	5,670	4,274	2,623	5,648	4,266	2,619
Clusters	110	85	52	110	85	52
Mean Dep. Var.	5.628	5.109	5.209	1.170	1.065	1.077

Notes: Standard errors are clustered at the DHS cluster level. Regressions use a linear polynomial in latitude and longitude as the RD-polynomial. We include district fixed effects and control for age, age squared and gender. *Literacy* is a 0 to 2 categorical variable where 0 is cannot read at all and 2 is able to read a whole sentence. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Results Illustration. Education

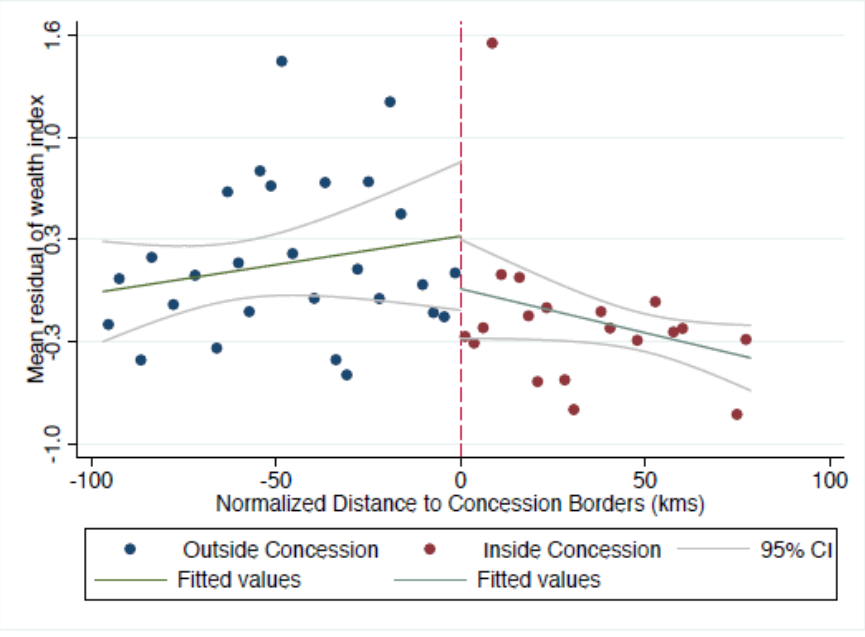


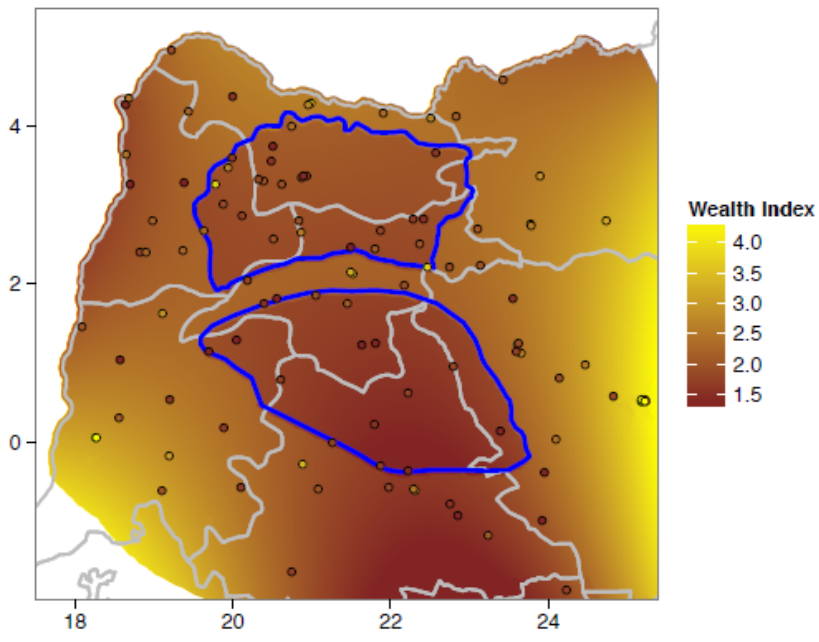
Results. WHS

	Wealth Index			*Wealth Factor*		
Sample Within:	200 kms	100 kms	50 kms	200 kms	100 kms	50 kms
	(1)	(2)	(3)	(4)	(5)	(6)
Inside Concession	-0.503***	-0.582***	-0.682***	-11,235*	-17,540***	-22,610***
	(0.142)	(0.143)	(0.200)	(5,720)	(5,152)	(7,115)
Observations	5,679	4,281	2,627	5,679	4,281	2,627
Clusters	110	85	52	110	85	52
Mean Dep. Var.	2.287	2.034	2.101	-30014	-46330	-43799

Notes: Standard errors are clustered at the DHS cluster level. Regressions use a linear polynomial in latitude and longitude as the RD-polynomial. We include district fixed effects and control for age, age squared, and gender. *Wealth Factor* is an index generated by the DHS using principal component of asset ownership. *Wealth Index* is a 1 to 5 categorical variable where 1 is poorest quintile and 5 is richest quintile from the Wealth Factor. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Results Illustration. WHS



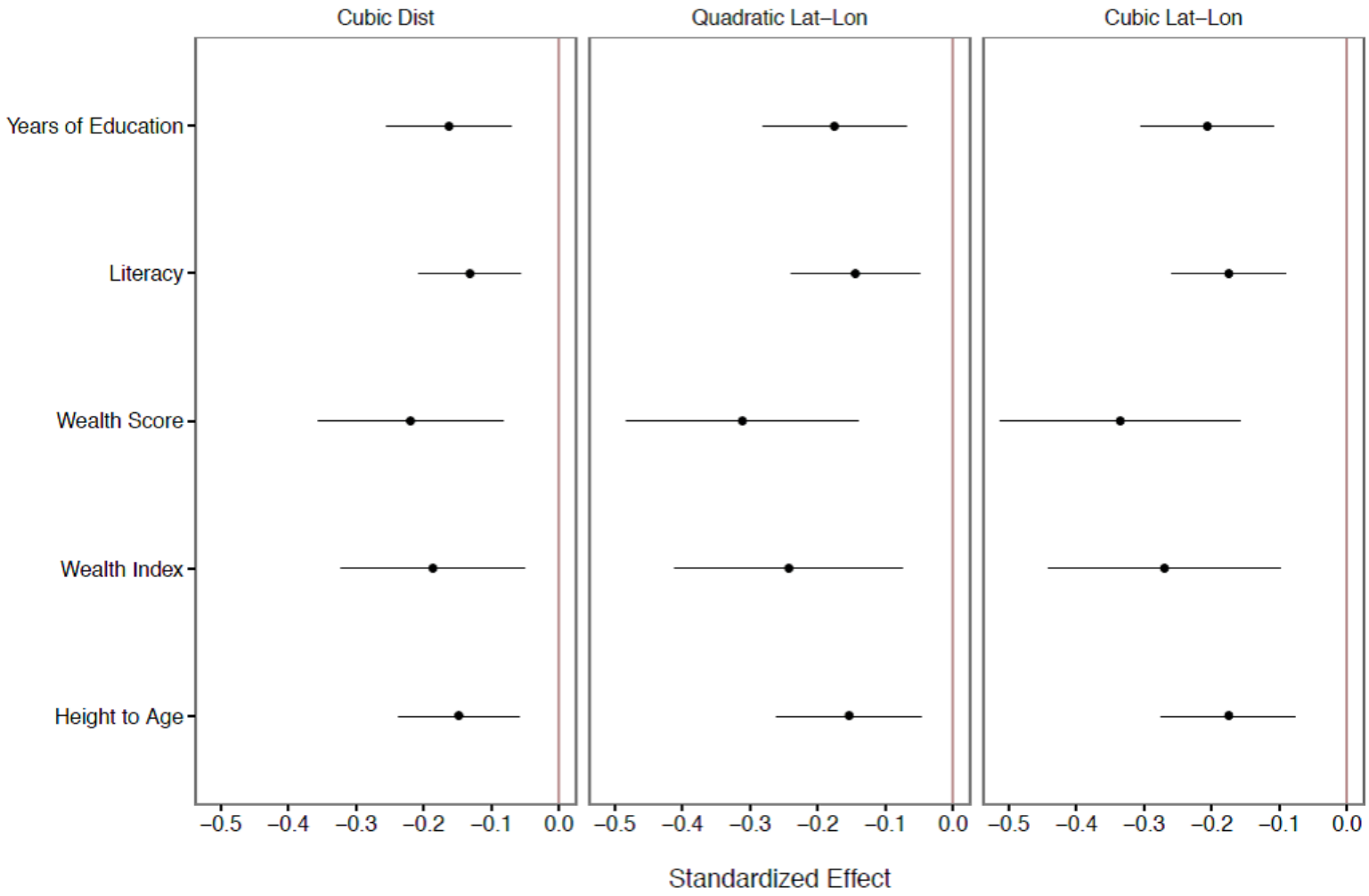


Results. Health

	Child Ever Vaccinated			*Child Ht/Age Percentile*			*Respondent Ht/Age Percentile*		
Sample Within:	200 kms	100 kms	50 kms	200 kms	100 kms	50 kms	200 kms	100 kms	50 kms
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Inside Concession	-0.077**	-0.075**	-0.069	-338.4**	-401.5**	-551.4**	-682.9***	-790.7***	-868.1***
	(0.035)	(0.035)	(0.043)	(162.7)	(167.6)	(231.8)	(214.3)	(211.9)	(277.8)
Observations	3,184	2,556	1,605	1,314	822	822	1,589	1,218	758
Clusters	110	85	52	110	85	52	110	85	52
Mean Dep. Var.	0.814	0.797	0.793	2523	2468	2472	2689	2602	2628

Notes: Standard errors clustered at the DHS cluster level. Regressions use a linear polynomial in latitude and longitude as the RD-polynomial. We include district fixed effects in all regressions. We control for age and age squared. The DHS health questions are only asked to a subset of female respondents. Respondent *Ht/Age Percentile* divides each respondent's height by her age and finds her percentile in the entire sample and normalizes this percentile to be within 0 and 10000. Similarly, Child *Ht/Age Percentile* divides each child's height by his or her age and finds his or her percentile in the entire sample and normalizes this percentile to be within 0 and 10000. *Child Ever Vaccinated* is an indicator variable equal to one if the respondent's child has ever been vaccinated. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Results. Robustness to RD Polynomial



Reduced-Form Spatial RDD Estimates. Summary

Lasting Impact

- Wealth [Public Goods]
- Education
- Health

Persistence

- The rubber extraction period was short (1892 to 1906)
- The concession companies left these areas over 100 years ago.
- Areas inside and outside former concessions are similar on key geographic characteristics
- **Why so much persistence??**

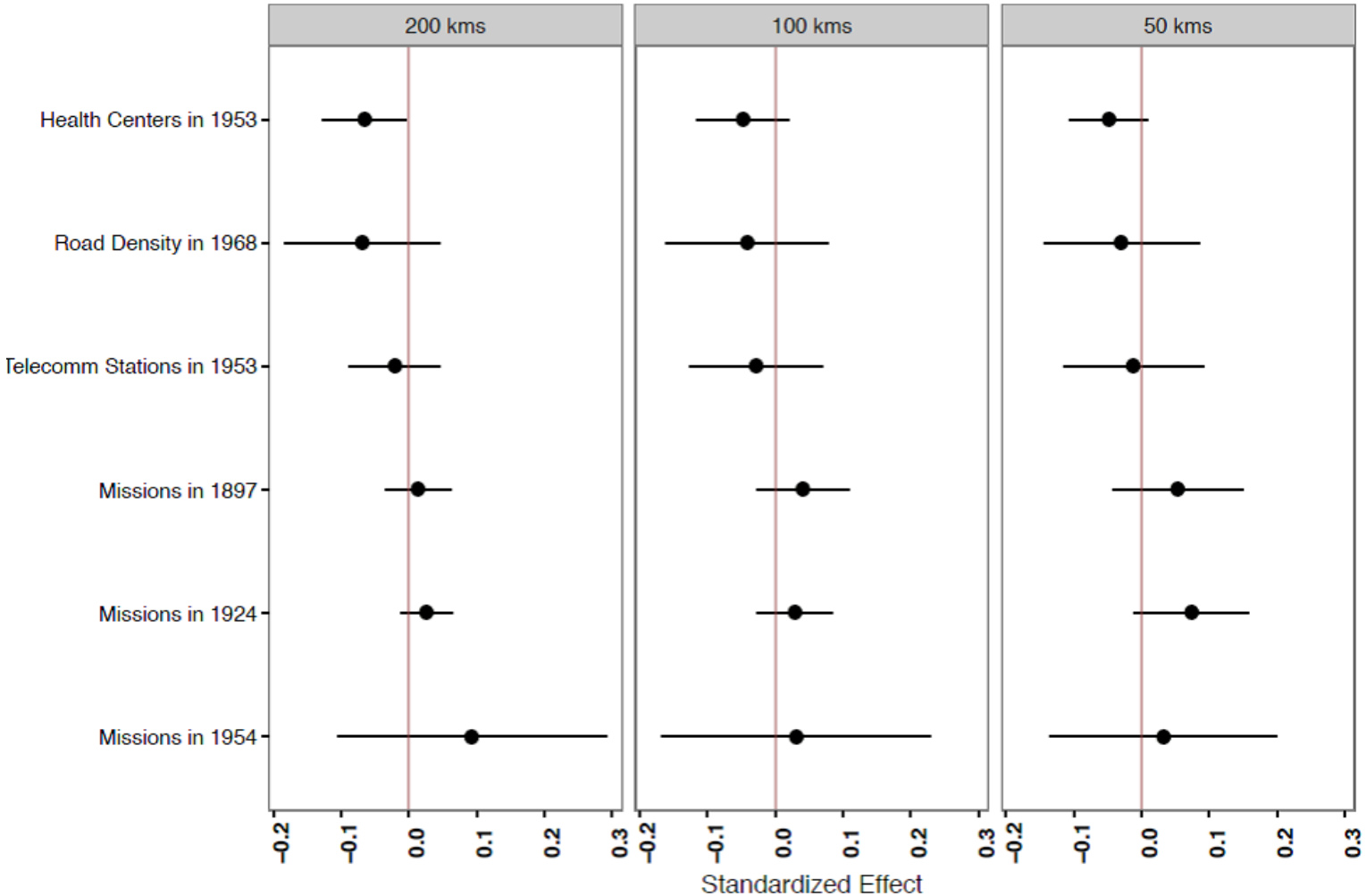
Persistence. Why?

- **Subsequent colonial (or post-independence) investments**
- **Selective migration**
- **Local institutions: Power of Chiefs and Local Authorities**
- **Culture: Beliefs, norms, trust**
- **Intergenerational persistence** [education, occupation, status]

Inertia. Subsequent Colonial Investments

- Infrastructure Investments
- Missionary Activity
- Health Centers

Inertia. Subsequent Colonial Investments. Results



Inertia. Local Institutions and Social Norms

Conduct Surveys and Behavioral Experiments

- Gemena, a town near the border of the former Anversoise concession
- Gemena was created by colonial administrators in the mid-1920s (after the CFS period) and therefore consists primarily of migrants from surrounding areas

Villages of Origin. Characteristics

	Individuals Within 200 kms of Concession Borders			
	Mean Inside	Mean Outside	Clustered S.E.	(p-value)
Years of Education	7.165	7.798	0.351	0.072
Obs.	231	233		
Student	0.091	0.093	0.024	0.907
Obs.	254	257		
Income: Last Week	11,770	13,312	2,907	0.596
Obs.	254	257		
Primary Earner	0.626	0.607	0.047	0.687
Obs.	254	257		
Married	0.839	0.794	0.032	0.167
Obs.	254	257		
Female	0.374	0.424	0.046	0.273
Obs.	254	257		
Age	39.260	39.988	1.269	0.566
Obs.	254	257		

Local Institutions. Chiefs' Role

	Chief Public Good Index (AES Coefficients)			*Chief Elected*		
Sample Within:	200 kms (1)	100 kms (2)	50 kms (3)	200 kms (4)	100 kms (5)	50 kms (6)
Inside Concession	-0.250***	-0.256***	-0.310***	-0.147*	-0.168**	-0.194**
	(0.095)	(0.097)	(0.107)	(0.078)	(0.079)	(0.085)
Mean Dep. Var.	–	–	–	0.51	0.51	0.52
Observations	274	250	204	277	255	209
Clusters	204	184	147	207	189	151

Notes: Standard errors clustered at the origin village level. Regressions include district fixed effects. *Chief Public Good Index* presents Average Effect Size estimates for the following questions: Is the chief in your village of origin responsible for providing (1) road maintenance, (2) new roads, (3) school maintenance, (4) land allocation, (5) protection of property rights, (6) tax collection, (7) jobs, (8) conflict arbitration, and (9) road brushing; all questions answered as a 0 to 2 categorical variable where 0 is Yes, 1 is Partially, and 2 is No. *Chief Elected* is an indicator variable equal to 1 if the village chief of a respondent's origin village is selected by elections. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Trust

	Trust Index (AES Coefficients)			*Closeness to Others Index (AES Coefficients)*		
Sample Within:	200 kms (1)	100 kms (2)	50 kms (3)	200 kms (4)	100 kms (5)	50 kms (6)
Inside Concession	0.122*	0.135*	0.108	0.173**	0.168**	0.243***
	(0.074)	(0.072)	(0.076)	(0.076)	(0.078)	(0.086)
Observations	511	465	365	497	453	354
Clusters	346	313	245	338	306	239

Sharing Norms

	Sharing Norms Index For Self (AES Coefficients)			*Sharing Norms Index For Village of Origin (AES Coefficients)*		
Sample Within:	200 kms (1)	100 kms (2)	50 kms (3)	200 kms (4)	100 kms (5)	50 kms (6)
Inside Concession	0.293***	0.280***	0.297**	0.150*	0.148*	0.115
	(0.108)	(0.106)	(0.117)	(0.091)	(0.089)	(0.098)
Observations	498	453	355	348	320	259
Clusters	337	304	237	243	221	176

Channels. Summary

- Exposure to **colonial extractive institutions** has undermined **long term development** of a region of Congo
- Use survey and experimental data to demonstrate how extractive institutions affected **local institutional quality and social norms**
  - **Local chiefs are less accountable** and of lower quality
  - **More pro-social norms** and stronger norms of redistribution inside concessions
- Effects of colonial extractive institutions **persist through changes in local institutions and social norms**
  - Evidence that institutions and culture substitutes in this setting - but not sufficient to improve development

Taking Stock

- Interesting and credible case study [other works, see the recent review of Michalopoulos and Papaioannou (JEL 2019)]
- Issues?
  - external validity; other concessions (in other countries and regions)
  - from local to aggregate effects
- Other colonial institutions [e.g., indirect rule]