Internet and Nation Building in Africa

Preliminary results

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Motivation

- **Trust in national institutions** promotes state legitimacy, civic engagement, social cohesion
  - Crucial concern in Africa since the post-colonial era
- However, the **nature of trust** is key for expecting favorable outcomes
- **High levels of trust in institutions can be misleading** if citizens are uninformed or uninterested

  $\rightarrow$ Such **default trust** can disrupt accountability mechanisms, weakening the political power of citizens and their relationship with the nation

Motivation

Most African capitals lie in peripheral areas rather than central locations

- Large parts of the population live far from their capital city
- 80% of African constitutions feature highly centralized states *(Kuperman, 2015)*
- Institutions struggle to reach remote areas
  - Lack of state presence in remote areas *(Provenzano, 2024)*

    $\rightarrow$ Spatial disparities in state interaction

Motivation

- Information about governance can be obtained through **direct experience** or **communication networks**
- Remote populations:
  - are less likely to directly encounter governance wrongdoing due to the **lack of state presence**
  - consume news less frequently due to the **lack of access**

$\rightarrow$ **Remote populations are more prone to showing default trust in institutions**

Motivation

- **Access to new channels of information** about government activities can **reshape perceptions** of institutions in remote areas

  $\rightarrow$ **Expanding internet access** can enhance information consumption and **reduce spatial disparities** in institutional trust

Replace default trust with critical evaluation to restore accountability mechanisms needed for nation-building

Research question

How does the diffusion of mobile internet affect political accountability in remote areas?

- Hypothesis:
  - **H1**: **Living in remote areas is associated with higher levels of institutional trust**
  - **H2**: **Expanding internet access mitigates spatial disparities in institutional trust**

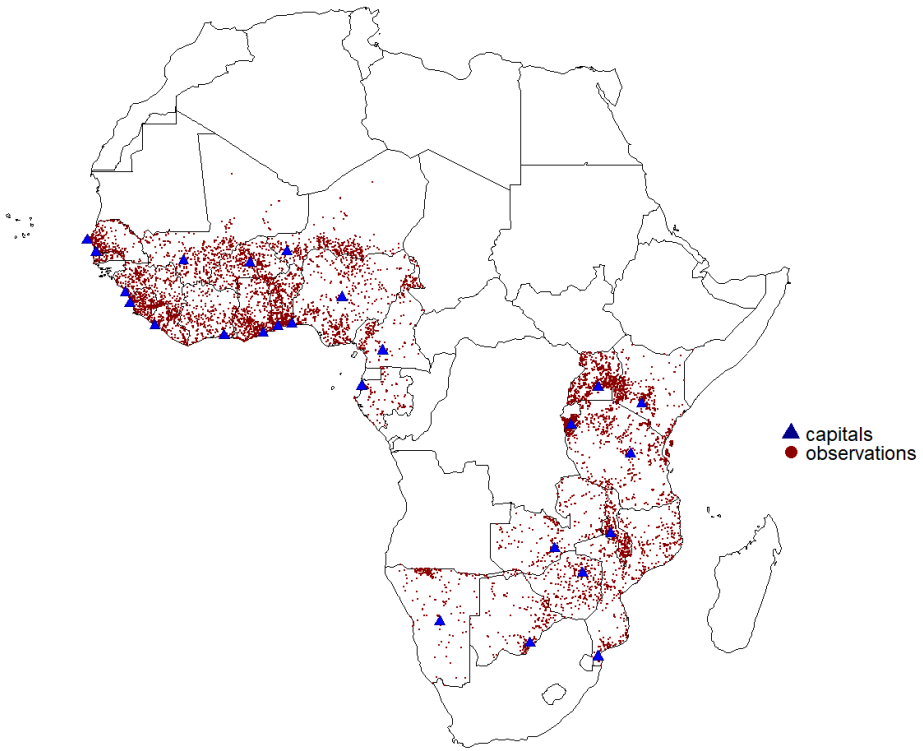
Literature contribution

- Institutional trust and nation building
  - *e.g. Aghion et al. (2010), Algan and Cahuc (2013), McKay et al. (2019)*
    → **High levels of trust can be misleading for nation building**
- Political economy of the capital city
  - *e.g. Mann (1993), Michalopoulos and Papaioannou (2014), Campante et al. (2019), Provenzano (2024)*
    → **Distance to the capital city shapes institutional perceptions**
- Internet role in accountability and governance information
  - *e.g. Manacorda & Tesei (2020), Guriev et al. (2021), Cariolle et al. (2024)*
    → **Expanding internet access can enhance accountability mechanisms**

Main Data

- Afrobarometer surveys accross 20 Sub-Saharan countries: wave 5 to 7 (2011-2018)
  - Geolocated data, N $\approx$ 85 000
  - Public attitude survey on democracy, governance, media consumption
  - Construction of distance variables
- Collins Bartholomew's Mobile Coverage Explorer: 2G/3G network coverage (2011-2018)
  - 1×1-kilometer binary grid cells
  - ADM2 level mean coverage
  - Weighted by UN-adjusted population density grid

Figure 1: Respondents and capital cities



Empirical Strategy - Distance on institutional trust (1)

Effect of distance to the capital city on institutional trust

- OLS

$$trust_{ict} = \beta_0 + \beta_1 distance_{ict} + BX_i + \mu_{ct} + \varepsilon_{ict} \quad (1)$$

  - $trust_{ict}$: mean of trust measures in parliament, president and electoral commission (values between 0 and 3)
  - $distance_{ict}$: normalized distance measure (values between 0 and 1) $\rightarrow$ *e.g. Michalopoulos and Papaioannou (2014)*
  - X_i : set of individual controls
  - μ_{ct} : country $\times$ round fixed effects
  - ϵ_{ict} : error term
  - Robust standard errors clustered at the ADM2 x round level

Empirical Strategy - Distance on institutional trust (2)

- Border discontinuity design

- Similar identification strategy as *Michalopoulos and Papaioannou (2014), de Figueiredo et al. (2023), Provenzano (2024)*

- We use Murdock's (1959) historical ethnic homeland map and assume that post-colonial African borders were established independently of ethnic regions

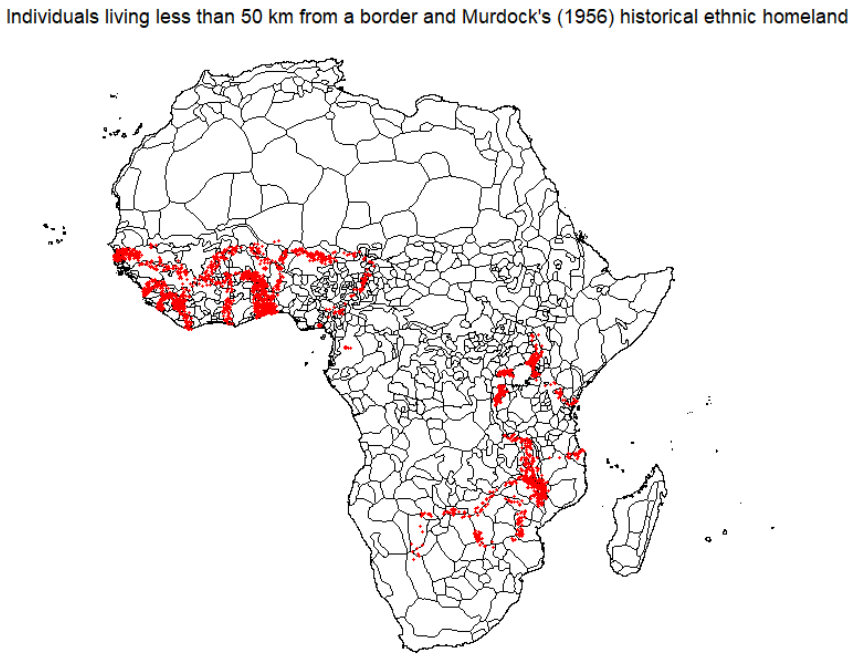
- **Main assumption:** Two individuals living in the same historical ethnic region share similar unobserved characteristics

Figure 2: Historical ethnic homeland map

Empirical Strategy - Distance on institutional trust (2)

- We limit our sample to individuals living within a 50 km (40km) radius of each side of a border

Figure 3: Observations along borders



$$trust_{ict} = \beta_0 + \beta_1 distance_{ict} + BX_i + \nu_{\mathbf{e}} + \mu_{ct} + \varepsilon_{ict} \quad (2)$$

Empirical Strategy - Internet on spatial disparities

Effect of internet use on institutional trust by distance

- OLS

$$trust_{ict} = \beta_0 + \beta_1 distance_{ict} + internet\_use_{ict} + \textbf{distance} \times \textbf{internet\_use}_{ict} + BX_i + \mu_{ct} + \varepsilon_{ict} \quad (3)$$

$internet\_use_{ict}$: "how often do you use internet" (values between 0 and 3)

- IV

$$\textbf{distance} \times \textbf{internet\_use}_{ict} = \lambda_0 + \lambda_1 \textbf{distance} \times \textbf{internet\_coverage}_{rt} + BX_i + \mu_{ct} + v_{ict} \quad (4)$$

$\rightarrow$ Similar to *Guriev et al. (2021)*

Distance increases institutional trust

Table 1: Effect of distance to the capital on institutional trust

	Trust in institutions					
	OLS		BDD: 50km		BDD: 40km	
	(1)	(2)	(3)	(4)	(5)	(6)
Distance to the capital	0.224***	0.322***	0.432***	0.387***	0.475***	0.374**
	(0.03)	(0.03)	(0.14)	(0.14)	(0.14)	(0.15)
Standard controls	Yes	Yes	Yes	Yes	Yes	Yes
Country X Round FE	No	Yes	No	Yes	No	Yes
Murdock's area FE	No	No	Yes	Yes	Yes	Yes
Observations	83,877	83,877	18,294	18,294	16,893	16,893
Adjusted-R^2	0.021	0.052	0.117	0.166	0.117	0.169

Notes: Robust standard errors clustered at the ADM2 x round level for (1) and (2) and ethnic region for (3-6) are in parentheses. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ADM2 nighttime light.

Distance increases institutional trust

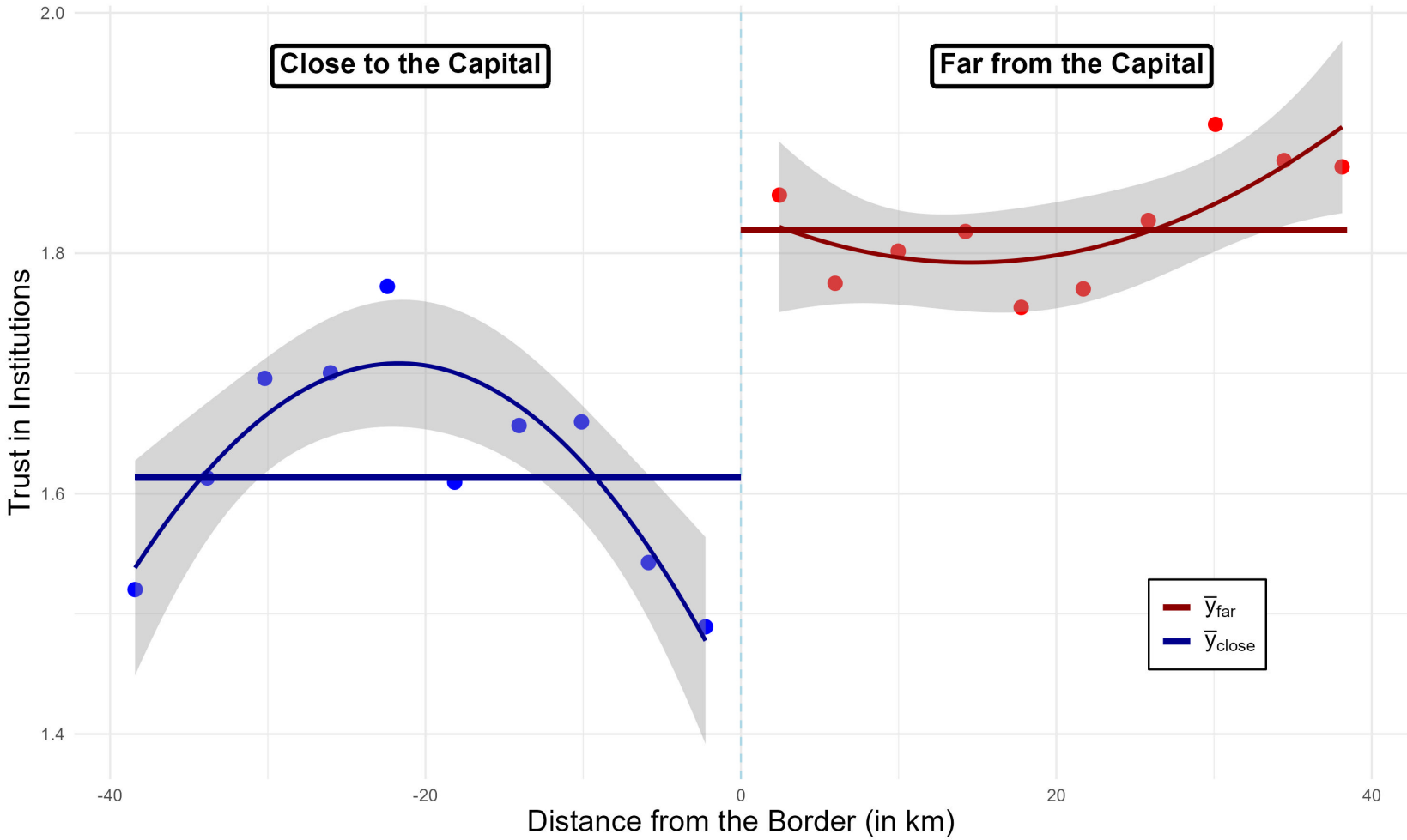


Figure 4: Border discontinuity - *Based on regression estimates from (4) of Table 1*

Internet mitigates spatial disparities

Table 2: Effect of internet on institutional trust by distance to the capital

	OLS	First Stage		2SLS
	Trust in institutions	Internet use	Distance × Internet use	Trust in institutions
	(1)	(2)	(3)	(4)
Distance to the capital	0.353***			0.533***
	(0.03)			(0.117)
Internet use	-0.012**			-0.316
	(0.01)			(0.24)
Distance to the capital × Internet use	-0.054***			-0.437***
	(0.01)			(0.14)
Internet coverage		0.179***	-0.184***	
		(0.06)	(0.03)	
Distance to the capital city × Internet coverage		0.063	0.733***	
		(0.10)	(0.07)	
SW *F* - Internet coverage	-	-	16.12	-	-
SW *F* - Distance × Internet coverage	-	-	90.80	-	-
Standard controls	Yes	Yes		Yes	Yes
Country X Round FE	Yes	Yes		Yes	Yes
Observations	83,877	83,877		83,877	83,877
Adjusted-R^2	0.164	0.358		0.262	-

Notes: Robust standard errors clustered at the ADM2 x round level are in parentheses. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ADM2 nighttime light.

Internet mitigates spatial disparities

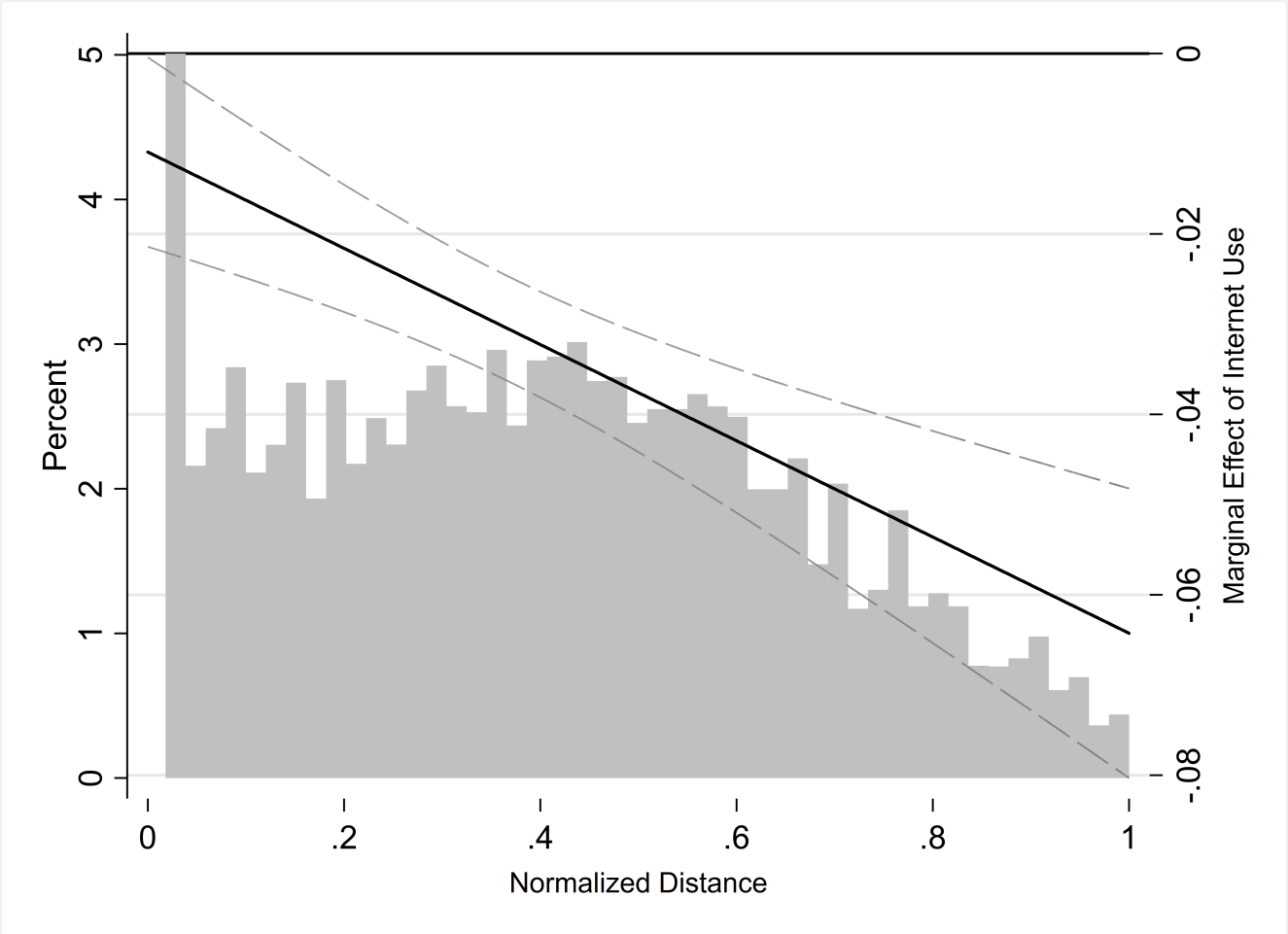


Figure 5: Marginal effect of internet use as a function of the distance to the capital

Internet mitigates spatial disparities

Table 3: Effect of internet on national outcomes by distance to the capital

	2SLS			
	National outcomes			Placebo
	Satisfaction in democracy	Democracy extent	Trust in ruling party	Local
	(1)	(2)	(3)	(4)
Distance to the capital	0.316***	0.342***	0.444***	0.295***
	(0.10)	(0.09)	(0.13)	(0.10)
Internet use	-0.251	-0.148	-0.574**	-0.602***
	(0.19)	(0.17)	(0.26)	(0.22)
Distance to the capital × Internet use	-0.229*	-0.315***	-0.356**	-0.111
	(0.12)	(0.11)	(0.16)	(0.12)
Standard controls	Yes	Yes	Yes	Yes
Country X Round FE	Yes	Yes	Yes	Yes
Observations	85,017	83,786	86,489	85,953

Notes: Robust standard errors clustered at the ADM2 x round level are in parentheses. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ADM2 nighttime light.

Internet enhances corruption perception

Table 4: Effect of internet on corruption perception by distance to the capital

	2SLS			
	National outcomes			Placebo
	President	Parliament	Judiciary	Local
	(1)	(2)	(3)	(4)
Distance to the capital	-0.286***	-0.302***	-0.296***	-0.202**
	(0.09)	(0.08)	(0.08)	(0.08)
Internet use	0.242	0.057	0.089	0.160
	(0.17)	(0.15)	(0.17)	(0.16)
Distance to the capital × Internet use	0.277***	0.321***	0.336***	0.129
	(0.10)	(0.09)	(0.10)	(0.09)
Standard controls	Yes	Yes	Yes	Yes
Country X Round FE	Yes	Yes	Yes	Yes
Observations	80,370	81,590	81,705	79,545

Notes: Robust standard errors clustered at the ADM2 x round level are in parentheses. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ADM2 nighttime light.

Stronger effects in autocratic and media-captured countries

Table 5: Variations by institution and media freedom

	2SLS			
	Institutions		Medias	
	Democratic	Autocratic	Free	Captured
	(1)	(2)	(3)	(4)
Distance to the capital	0.363	0.683***	0.364**	0.719***
	(0.25)	(0.15)	(0.17)	(0.13)
Internet use	-0.643	-0.065	-0.498*	0.080
	(0.48)	(0.31)	(0.27)	(0.27)
Distance to the capital × Internet use	-0.217	-0.638***	-0.303	-0.581***
	(0.28)	(0.20)	(0.22)	(0.17)
Standard controls	Yes	Yes	Yes	Yes
Country X Round FE	Yes	Yes	Yes	Yes
Observations	44,434	39,443	36,872	47,005

Notes: Robust standard errors clustered at the ADM2 x round level are in parentheses. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ADM2 nighttime light.

Upcoming research

- Explore another result:
  - National identification, vote, voter turnout
  - Variations in duration of internet exposure
- Explore the role of social medias
- Heterorogeneity: regime type, Sub-Saharan African regions, colonial legacy