Markets after the jihads

Economic integration in French West Africa, 1914-1954

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A preliminary VICI note

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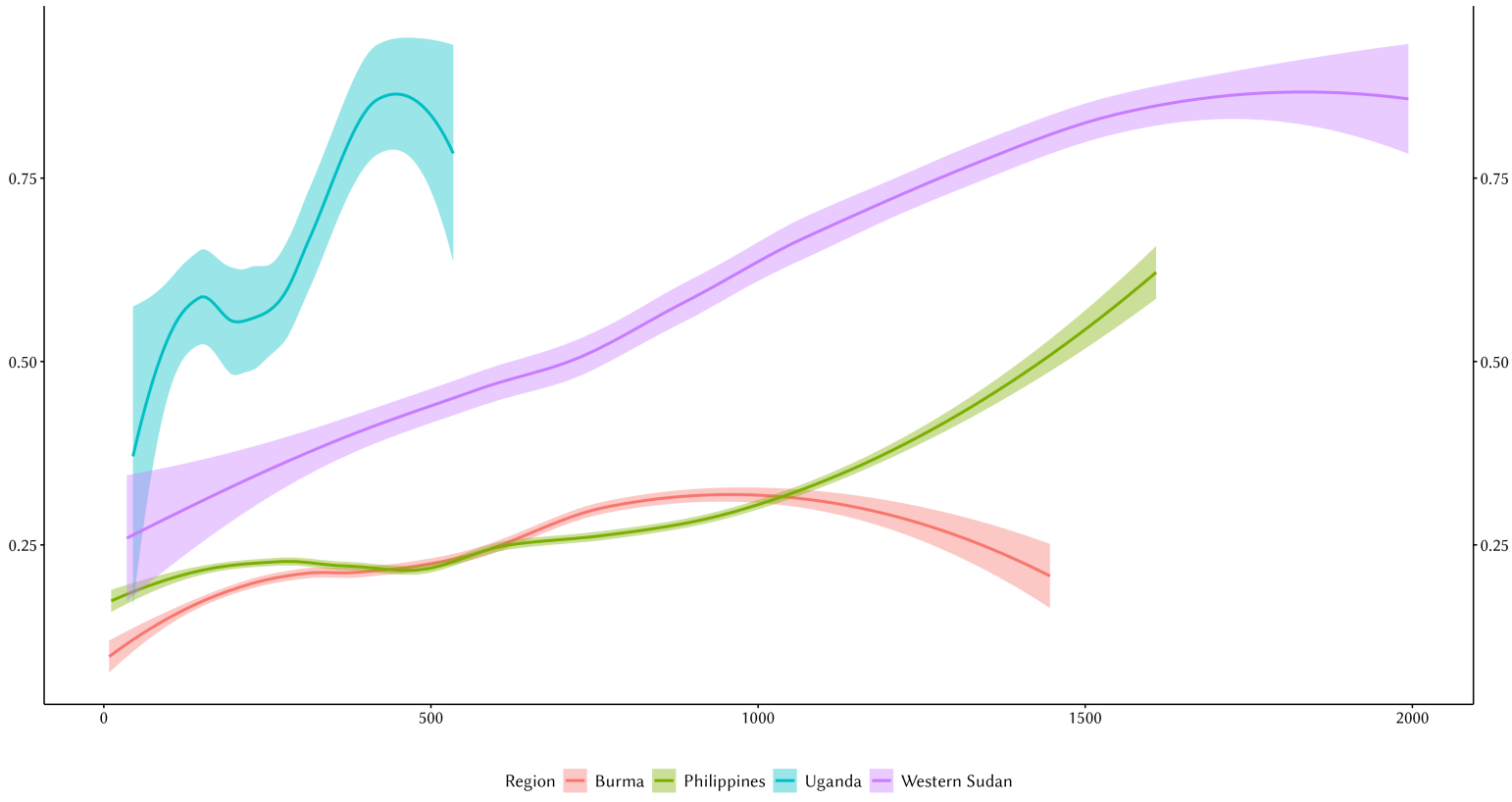
- Estimate $\pi = \beta_0 + \beta_1 \log(\text{distance}) + \epsilon$ and take $\widehat{\beta}_1$ as our estimate of the price of distance

In a graph


0.75
0.50
0.25
0
500
1000
1500
2000
Region
Burma
Philippines
Uganda
Western Sudan

The price of distance in interwar SE Asia & Africa

	$\hat{\beta}_1$	Source/nature of prices
Burma	**0.020** (0.011)	Rice prices, by district, from *Season and Crop* reports.
Philippines	**0.036** (0.016)	Rice prices, by province, *Statistical Yearbooks of the Philippines; Report of the Agricultural Department*
Uganda	**0.1** (0.056)	Maize prices from Frankema, De Haas, Joshipura and Westland, East Africa Food Price Database
Western Sudan	**0.303** (0.063)	Millet prices, from Westland 2025 (this presentation)

What do we know about market integration in colonial Africa?

Very, very little. (Exceptions: Boshoff and Fourie (2017) for South Africa; Tadei, Aslanidis and Martinez (2024)).

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- Equally, colonial rule has often been seen as the catalyst for Smithian growth - declining transport costs with infrastructure investment (railways, roads)
- unlike for much of colonial Asia, colonial governments generally did not systematically collect and publish prices of staple foodstuffs like millet, rice, maize, cassava and yams outside capital cities (for British colonies) - we have price series for *capital cities* but rarely anywhere else.

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- Shows that **falling transport costs** account for a significant proportion of this convergence, but not all of it
- Shows that **precolonial state formation** sometimes had a significant impact on price integration—though only for some products and in within some states

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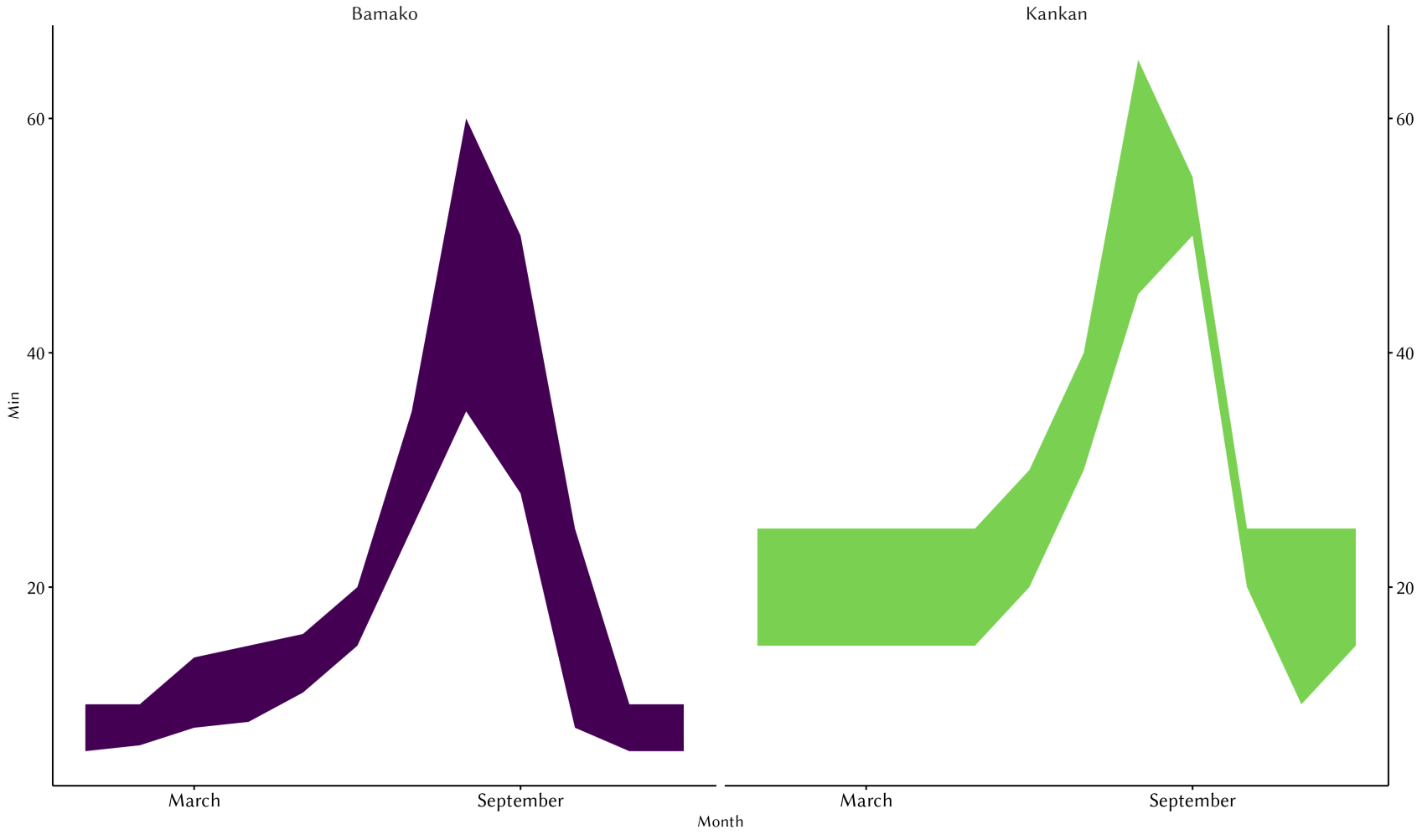
- Arid tropics - 9 months of the year (or thereabouts) no rain
- A mix of cash crops (cotton; groundnuts; some rubber; sisal)
- This has major implications for the structure of staple markets - thin (unpredictable surpluses), poorly integrated (high transport costs without water) and highly seasonal

Seasonality & thinness - some evidence from early 20th century



More on markets

- ‘millet is hardly purchased at all in normal times; the natives live on rice and fonio. Daily trade in millet does not exceed 300 kilograms. But in the rainy season, when all reserves are more or less exhausted, millet is sold regardless of how small the quantity. Africans come running from villages four or five days’ walk away at the news of the arrival of a shipment.’ (L’agriculture pratique des pays chauds’)

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  - What was the impact of this on staple markets?

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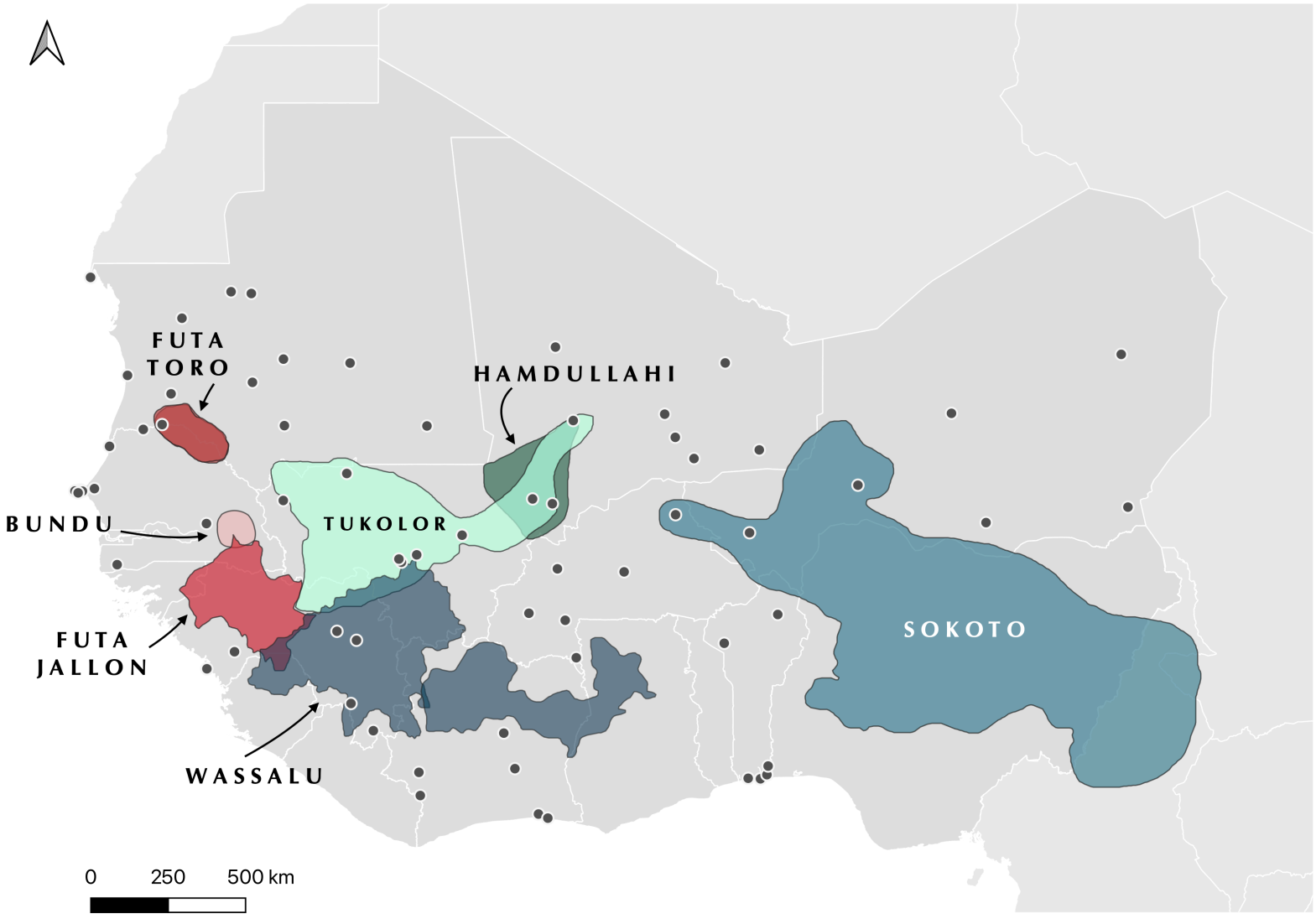
- Panel of *millet, rice and salt prices* from 1916-1955 across French West Africa

States and prices



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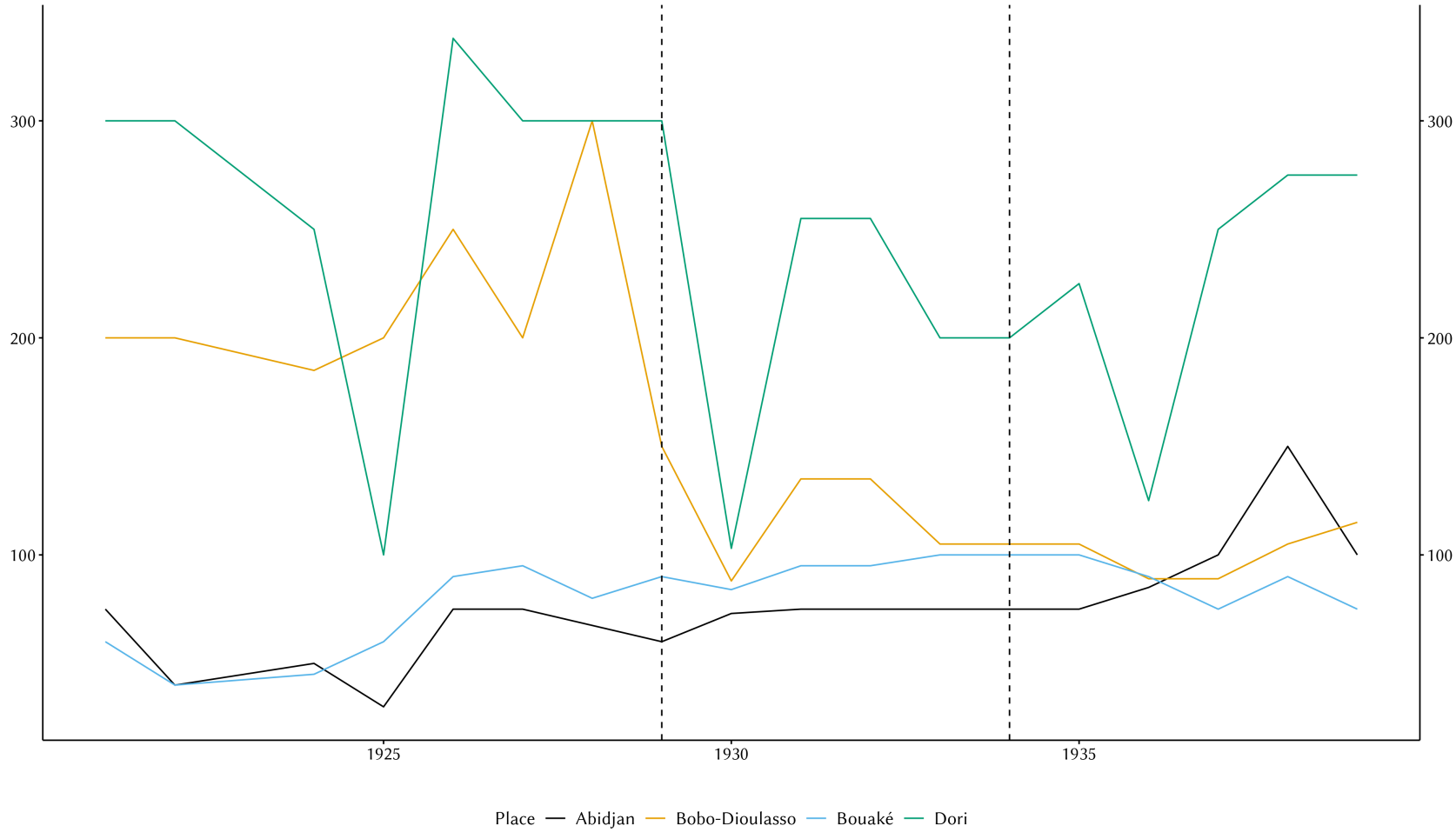
- Create a network representation of transport links in FWA (rail, road, water) and calculate least cost paths between towns in the price dataset.

Was there convergence?

- Estimate σ-convergence (regress coefficient of variation on a time trend)

Sample	Millet	Rice	Salt
Full sample:	-0.166***	-0.188	0.004
River and rail connected only:	-0.241***	-0.230*	0.004
Not connected to river or rail:	-0.209***	-0.059.	-0.059

The impact of transport costs - graphically



The impact of transport costs

	Millet	Rice	Salt
All town pairs			
TC	0.420***	0.295***	0.466***
	(0.020)	(0.016)	(0.014)
Num.Obs.	24338	13469	21962
R2	0.603	0.421	0.638
Trading pairs only			
TC.	0.323***	0.184***	0.394***
	(0.055)	(0.027)	(0.032)
Num.Obs.	2986	2194	3058
R2	0.597	0.458	0.674

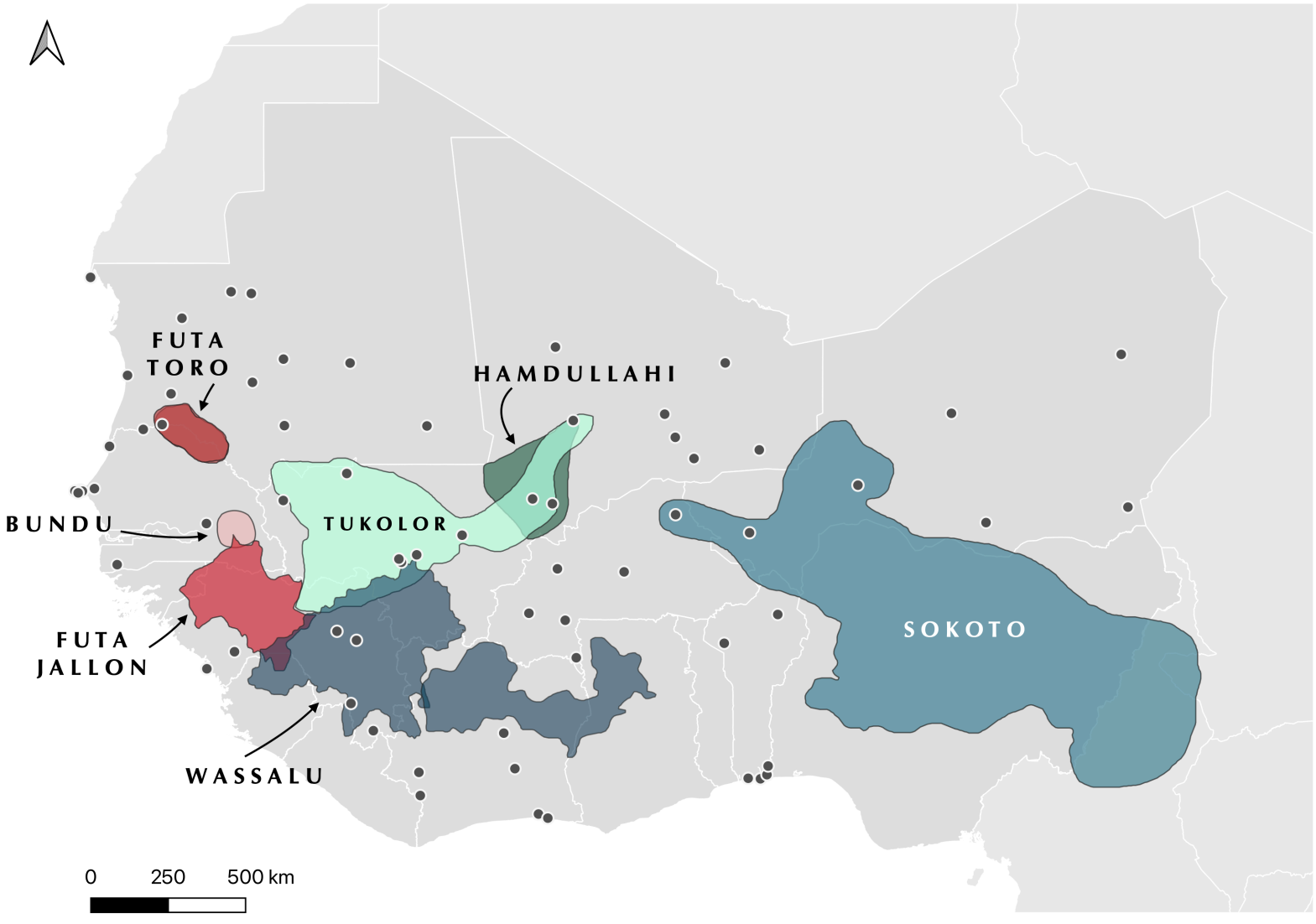
The impact of precolonial states

- I calculate correlation coefficients for town pairs, and adapting the strategy of Fenske and Kala (2021), estimate

$$\rho^{x}_{i,j} = \beta_0 + \beta_1 \text{Transport costs}_{i,j} + \Gamma \text{Empire dummies}_{i,j} + \Phi \text{Town}_i + \Psi \text{Town}_j + \Theta \text{Controls}_{i,j} + \epsilon_{i,j}$$

- Controls include (1) agricultural suitability (2) geophysical attributes (elevation, latitude, longitude, malaria prevalence, rainfall, temperature, soil quality, including correlations of rainfall and temperature as well as absolute differences) (3) data attributes (first year of correlation, last year of correlation, number of years)

Reminder: states and prices



The impact of precolonial states: millet

(Intercept)	1.006***	1.377***	1.445***	1.431***	12.041
	(0.136)	(0.205)	(0.209)	(0.299)	(34.900)
TC(i,j)	-0.07***	-0.10***	-0.11***	-0.04	-0.04+
	(0.017)	(0.018)	(0.019)	(0.027)	(0.020)
Umarian	0.037	0.180***	0.178***	0.231***	0.146***
	(0.059)	(0.051)	(0.051)	(0.050)	(0.041)
Sokoto	0.048	0.093	0.109	0.058	0.019
	(0.173)	(0.131)	(0.131)	(0.127)	(0.104)
Wassoulou	-0.259	0.476*	0.417+	0.383+	-0.063
	(0.299)	(0.220)	(0.221)	(0.208)	(0.171)
Num.Obs.	586	586	586	586	586
R2	0.044	0.598	0.611	0.669	0.627

The impact of precolonial states: rice

(Intercept)	0.697***	1.579***	1.524***	0.759**	-72.975
	(0.125)	(0.148)	(0.244)	(0.282)	(61.387)
TC(i,j)	-0.02	-0.10***	-0.10***	0.07	-0.00
	(0.015)	(0.014)	(0.017)	(0.022)	(0.018)
Umarian	0.225***	0.022	0.021	0.104*	0.120**
	(0.034)	(0.046)	(0.046)	(0.046)	(0.041)
Sokoto	-0.080	0.719***	0.706***	0.610***	0.304**
	(0.152)	(0.126)	(0.127)	(0.125)	(0.112)
Wassoulou	0.262***	0.049	0.055	0.000	0.018
	(0.015)	(0.126)	(0.127)	(0.124)	(0.111)
Num.Obs.	902	902	902	902	902
R2	0.032	0.627	0.634	0.665	0.574

The impact of precolonial states: salt

(Intercept)	0.62***	1.10***	1.09**	1.13**	-134.9
	(0.15)	(0.21)	(0.348)	(0.42)	(88.08)
TC(i,j)	-0.1**	-0.1***	-0.1***	-0.1**	-0.1***
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)
Umarian	0.132*	0.079	0.066	0.075	0.055
	(0.064)	(0.065)	(0.065)	(0.068)	(0.047)
Sokoto	0.111	0.051	0.092	0.088	0.073
	(0.282)	(0.180)	(0.181)	(0.185)	(0.128)
Wassoulou	-0.023	-0.102	-0.094	-0.072	-0.192
	(0.131)	(0.180)	(0.181)	(0.183)	(0.127)
Num.Obs.	904	904	904	904	904
R2	0.028	0.388	0.403	0.413	0.341