The Political Economy of Development: PPHA 42310

Lecture 8

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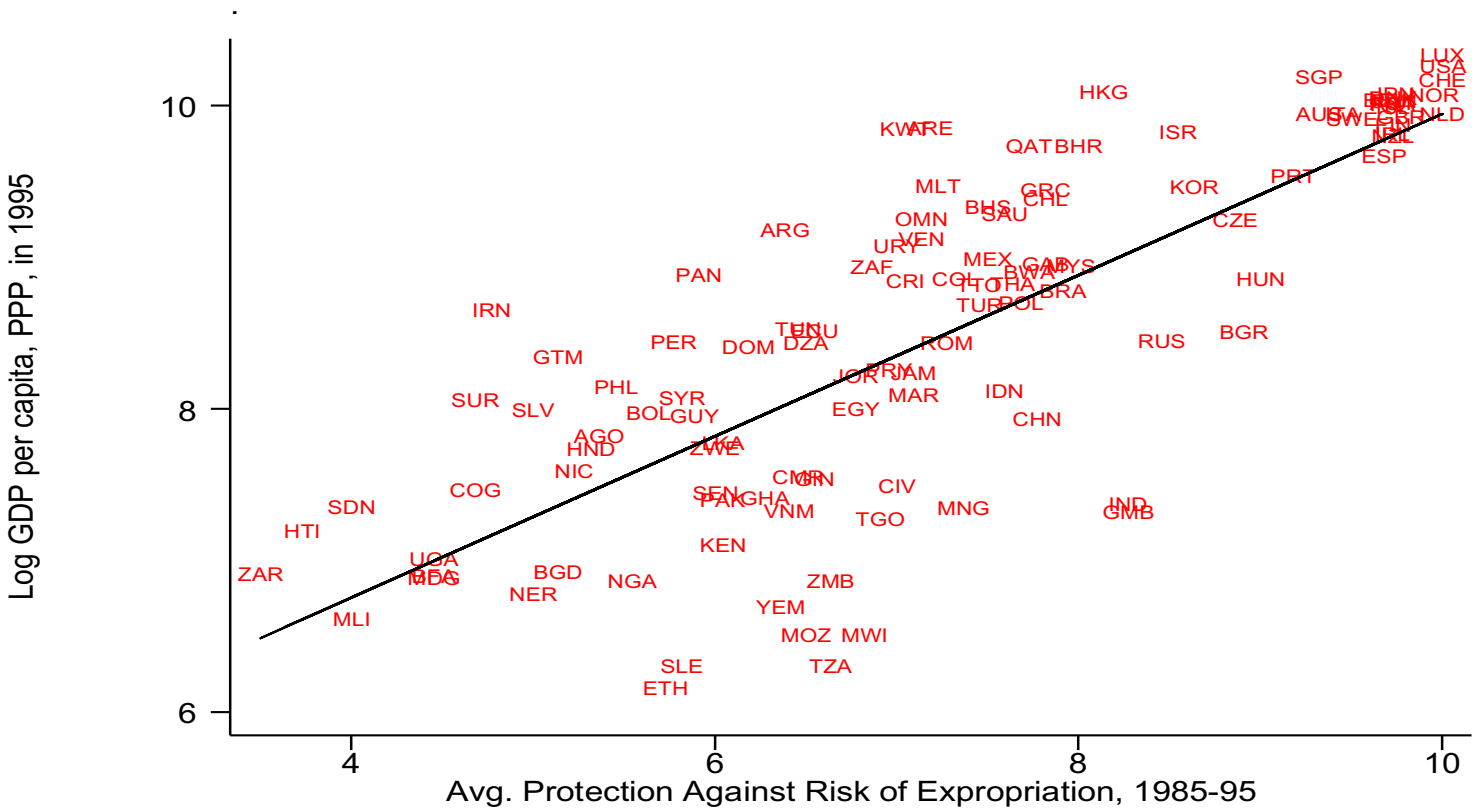
Roots of Different Equilibria

- We've now seen a few examples of different political equilibria.
- In some parts of the world we have high levels of public good provision and incomes and political institutions that support this (maybe by creating accountability, of political competition, or a balance of power).
- Maybe we also have social structures that support this (individualized societies that stop kinship networks capturing politics or don't lead to mass violence).
- But these institutions are certainly endogenous and we've seen some basic models of endogenous state capacity, democracy ...

Roots of Different Equilibria

- What can we say about where these equilibria come from? How come some parts of the world were able to establish equilibria that generates much more socially desirable outcomes?
- It's obvious that we have a far from complete understanding of this issue, and it's obviously a historical one.
- Many forces shaped the historical evolution of societies but let me focus on two on which there is some empirical evidence
  - European colonialism
  - labor coercion

Economic institutions and economic performance



Colonial Origins: Theory

- Theory: those with political power more likely to opt for good institutions when they will benefit from property rights and investment opportunities.
- Better institutions more likely when there are constraints on elites.
- The colonial context: Europeans more likely to benefit from good institutions when they are a significant fraction of the population, i.e., when they settle
- Lower strata of Europeans place constraints on elites when there are significant settlements.
- Thus: European settlements $\Rightarrow$ better institutions
- But Europeans settlements are endogenous. They may be more likely to settle if a society has greater resources or more potential for growth.
- Or less settlements when greater resources; East India Company and Spanish crown limited settlements.

Exogenous Source of Variation

- Look for exogenous variation in European settlements: the disease environment
- In some colonies, Europeans faced very high death rates because of diseases for which they had no immunity, in particular malaria and yellow fever.

Potential mortality of European settlers $\Rightarrow$ settlements $\Rightarrow$ institutions

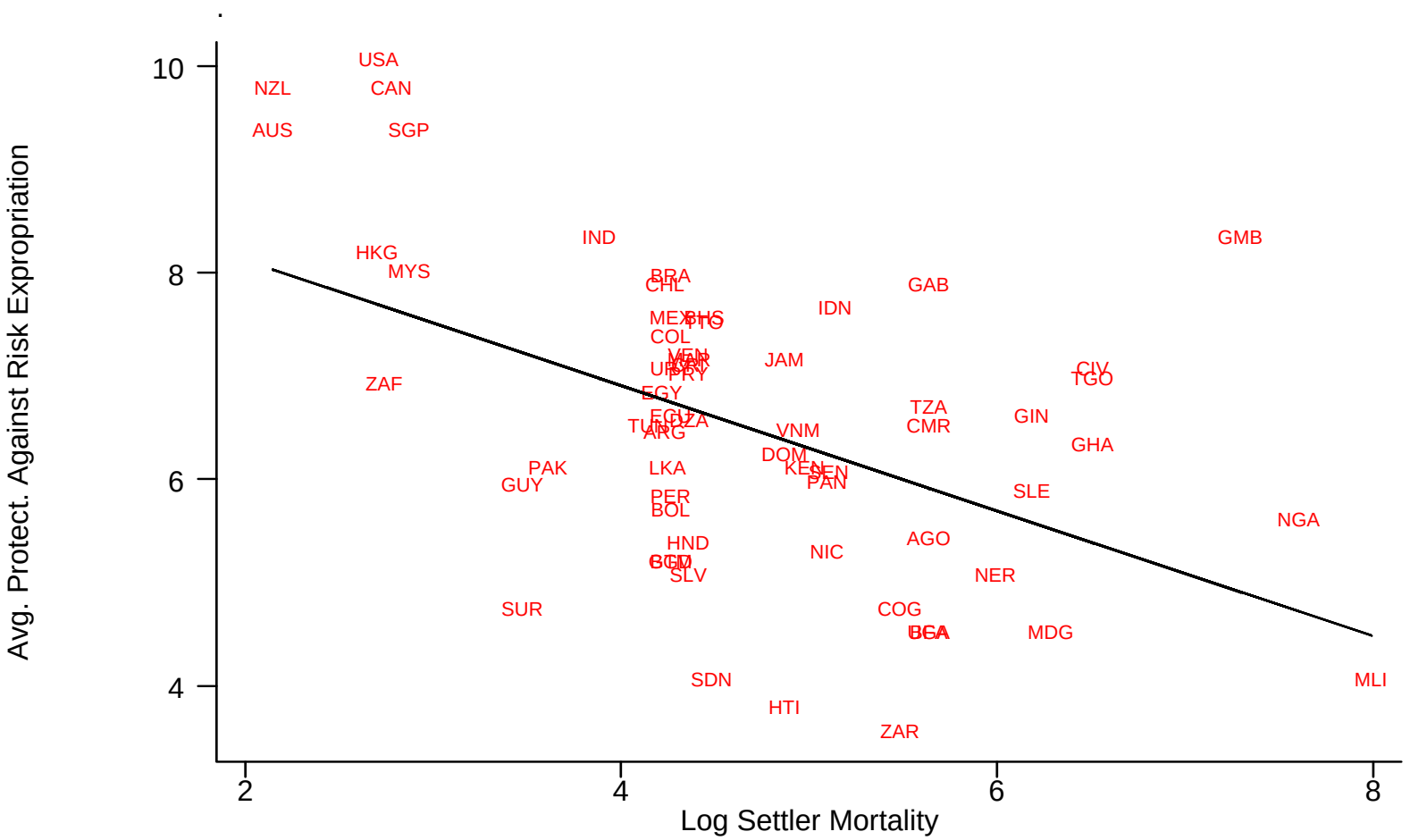
- Moreover, for many reasons, already discussed above, institutions persist; so

Potential mortality of European settlers $\Rightarrow$ settlements $\Rightarrow$ past institutions $\Rightarrow$ current institutions

Empirics: Colonial Origins of Comparative Development #1

- Empirical setup: Two Stage Least-Squares (2SLS)
- Second stage: log income per capita = f(current economic institutions)
- First stage: current economic institutions = g(settler mortality)
- Data on potential European settler mortality. Work by the historian Philip Curtin provides us with mortality rates of soldiers stationed in the colonies in the early 19th century. Supplemented by data on mortality of Catholic bishops in Latin America
- Current economic institutions proxied by protection against expropriation risk
- Useful to bear in mind that history generates variation in a cluster of broad institutions;
- Protection against expropriation risk proxying for many other sources of institutional variation

Settler mortality and current institutions



The first stage

First Stage Regressions:

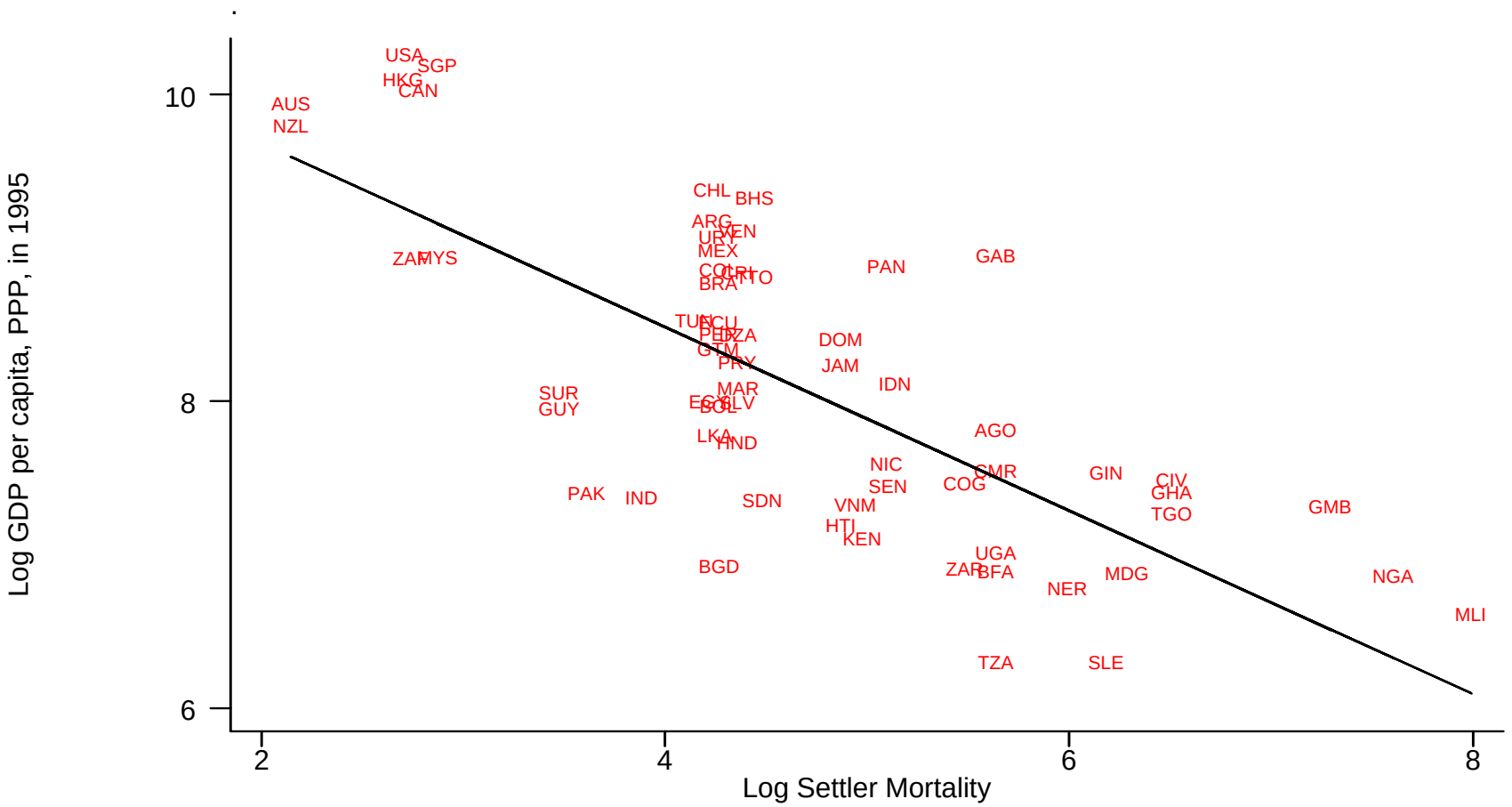
Dependent variable is protection against risk of expropriation

	All former colonies	All former colonies	All former colonies	Without neo-Europes
Settler Mortality	-0.61	-0.5	-0.43	-0.37
	(0.13)	(0.15)	(0.19)	(0.14)
Latitude		2.34		
		(1.37)		
Continent Dummies (p-value)			[0.25]	
R-Squared	0.26	0.29	0.31	0.11
Number of Observations	63	63	63	59

Standard errors in parentheses

Sample limited to countries for which have GDP per capita data

The reduced form: settler mortality and income per capita today



The causal effect of institutions: basic 2SLS estimates

	Second Stage Regressions: *Dependent variable is log GDP per capita in 1995*			
	All former colonies	All former colonies	All former colonies	Without neo-Europes
Protection Against Risk of Expropriation, 1985-95	0.99 (0.17)	1.11 (0.26)	1.19 (0.39)	1.43 (0.45)
Latitude		-1.61 (1.57)		
Continent Dummies (p-value)			[0.09]	
Number of Observations	63	63	63	59

The causal effect of institutions: robustness

Second Stage Regressions: all former colonies
Dependent variable is log GDP per capita in 1995
Instrument is:

	Log Settler Mortality	Log Settler Mortality	Log Settler Mortality	Log Settler Mortality	Yellow Fever
Protection Against Risk of Expropriation, 1985-95	1.07 (0.27)	0.98 (0.17)	0.87 (0.32)	1.18 (0.84)	0.82 (0.22)
Temperature (p-value)	[0.71]				
Humidity (p-value)		[0.64]			
Malaria			-0.28 (0.59)		
Life Expectancy				-0.014 (0.07)	
Number of Observations	63	63	62	62	63

Empirics: Colonial Origins of Comparative Development #2

- Is the empirical approach valid?
- Clearly no reverse causality, mortality rates refer to two centuries ago
- Is the exclusion restriction of the 2SLS valid?
- Plausible: yellow fever, malaria and gastrointestinal diseases affecting Europeans had much less effect on native inhabitants, who had acquired and genetic immunity.
- Mortality rates of local troops very similar in different regions despite very large differences in European mortality rates.

Empirics: Colonial Origins of Comparative Development #3

- Is the empirical approach valid? (continued)
- Check validity further by controlling for potential sources of direct effect, including latitude, measures of geography, current prevalence of malaria and life expectancy.
- Use only variation due to yellow fever, which is now mostly eradicated, thus less likely to have direct effect.
- Use over identification tests to check validity of instrument.
- Also note that if the instrument is valid, it solves the errors-in-variables problem.
- These checks all support the validity of the approach.
- Note: not estimating the causal effect of being colonized vs. not colonized

Main Results

- Very large causal effects of institutions on long-run growth.
- Differences in institutions account for over $\frac{3}{4}$ of the variation in income per capita today (long-run effect)
- Robust in different subsamples
- Robust to controlling for continent dummies
- Robust to controlling for latitude, whether landlocked, temperature, humidity
- Robust to controlling for current prevalence of malaria and life expectancy
- Robust when exploiting only yellow fever
- Overidentification tests supportive.
- Also no evidence of any effect of geography or religion on long run growth

The Role of Geography

- No causal effect of geography.
- How do we think of the correlation between geography (e.g., latitude) and income?
- This is caused by omitted factors;
- Geography correlated with institutions because of the natural experiment of European colonialism.
- Tropical areas ended up with worse institutions, because they tended to be richer and more densely-populated circa 1500. They attracted fewer European settlers.
- Also no universal causal effect of geography on institutions.
- Relationship created in a particular historical juncture.

Long Run Effects of Coercion

- A systematic fact is that coercion of workers and people is involved in the creation of extractive institutions. In all parts of the world the transition towards inclusive institutions has coincided with reductions in coercion.
- This is true in Europe with the collapse of serfdom in the late Medieval period. It is clear that the parts of Europe (East of the Danube) where serfdom lasted longer are much less developed economically and did not benefit until the 20th century (after the abolition of serfdom) from the Industrial Revolution.
- Understanding the role of coercion, rather than simply the impact of extractive institutions, is difficult but today I want to show you that it has left a long and negative shadow in terms of its impact of economic development.

Slavery and the Slave Trade

- Perhaps the most studied example of the impact of labor coercion is the African slave trade.
- There is a large academic literature (see Chapter 12 of WNF) on how the slave economy and its legacy kept the US South relatively poor until the 1950s and 1960s.
- Slavery had ancient roots in Africa but it is also clear that the emergence of large external markets for slaves led to the intensification of slavery within Africa (WNF Chapter 9)
- Most slaves seem to have been captured in wars and states grew based on slaving (Oyo, Dahomey and Asante in West Africa).
- The warfare and general reduction in population have been hypothesized to have reduced the size and centralization of African states and even to have made African populations more ethnically fragmented.

Some Estimates of the Economic Impact in Africa

- Nathan Nunn has constructed some estimates of the negative effects of the slave trade on income per-capita in Africa.
- To do this he used a very wide variety of sources, mostly shipping records, plantation records and sales receipts, from which he took the ethnicity/origin of the slaves. he used this data to construct estimates of where slaves came from in Africa and he matched this to the modern nation states.
- He found that the intensity of slaving is negatively correlated with income per-capita today and also institutional quality.
- The quantitative effects are large and significant. For example, a fall of one standard deviation in the extent of slaving raises income per-capita from the mean of \$1,249 to \$1,864 a 50% increase.
- Nevertheless, to go from the maximal amount of slaving (Angola) to zero would only raise income per-capita by 150%, far less than the income gap between Africa and rich countries today.

Magnitude of the Slave Trades

Slave Trade	1400–1599	1600–1699	1700–1799	1800–1913	1400–1913
trans-Atlantic	188,108	597,444	8,253,885	3,709,081	12,748,518
trans-Saharan	700,000	435,000	865,000	1,066,143	3,066,143
Red Sea	400,000	200,000	200,000	505,400	1,305,400
Indian Ocean	200,000	100,000	428,000	395,300	1,123,300
Total	1,488,108	1,332,444	9,746,885	5,675,924	18,243,361
Total/year	7,441	13,324	97,469	50,230	35,562

Data Sources

1. Shipping Data
    - Know the total number of slaves exported from each port or region of Africa.

2. Ethnicity Data
    - Observe the ethnic origins of a subsample of slaves shipped outside of Africa.

Shipping Data

- Atlantic slave trade.
  - Know port of embarkation.
- Indian Ocean slave trade.
  - Know region of embarkation.
- Saharan slave trade.
  - Know slaves' destinations.
  - Know which caravan slaves arrived on.
- Red Sea slave trade.
  - Know port of embarkation.

Ethnicity Data

- Atlantic slave trade.
  - 46 samples, 88,616 slaves, 480 ethnicities
- Indian Ocean slave trade.
  - 4 samples, 11,651 slaves, 30 ethnicities
- Saharan slave trade.
  - 3 samples, 6,057 slaves, 24 ethnicities
- Red Sea slave trade.
  - 1 sample, 5 slaves, 2 ethnicities

Table 2: Slave Ethnicity Data: Trans-Atlantic Slave Trade

Region	Years	Num. Ethnic.	Num. Obs.	Record Type
Valencia, Spain	1482–1516	25	2,651	Crown Records
Dominican Republic	1547–1591	11	27	Records of Sale
Peru	1548–1560	16	207	Records of Sale
Mexico	1549	12	83	Plantation Accounts
Peru	1560–1650	27	7,573	Notarial Records
Lima, Peru	1583–1589	15	288	Baptism Records
Colombia	1589–1607	6	20	Various Records
Mexico	1600–1699	26	406	Records of Sale
Dominican Republic	1610–1696	20	55	Government Records
Chile	1615	6	140	Sales Records
Lima, Peru	1630–1702	33	411	Parish Records
Peru (Rural)	1632	25	307	Parish Records
Lima, Peru	1640–1680	33	936	Marriage Records
Colombia	1635–1695	6	19	Slave Inventories
Guyane (French Guiana)	1690	12	69	Plantation Records
Colombia	1716–1725	19	58	Government Records
French Louisiana	1717–1769	109	6,315	Notarial Records
Dominican Republic	1717–1827	8	15	Government Records
South Carolina	1732–1775	39	907	Runaway Notices
Colombia	1738–1778	11	109	Various Records
Spanish Louisiana	1770–1803	109	6,615	Notarial Records
St. Dominique (Haiti)	1771–1791	30	5,433	Sugar Plantations
St. Dominique (Haiti)	1778–1791	36	1,293	Coffee Plantations
Guadeloupe	1788	8	55	News Paper Report
Cuba	1791–1840	55	3,218	Slave Registers
St. Dominique (Haiti)	1796–1797	51	5,723	Plantation Inventories

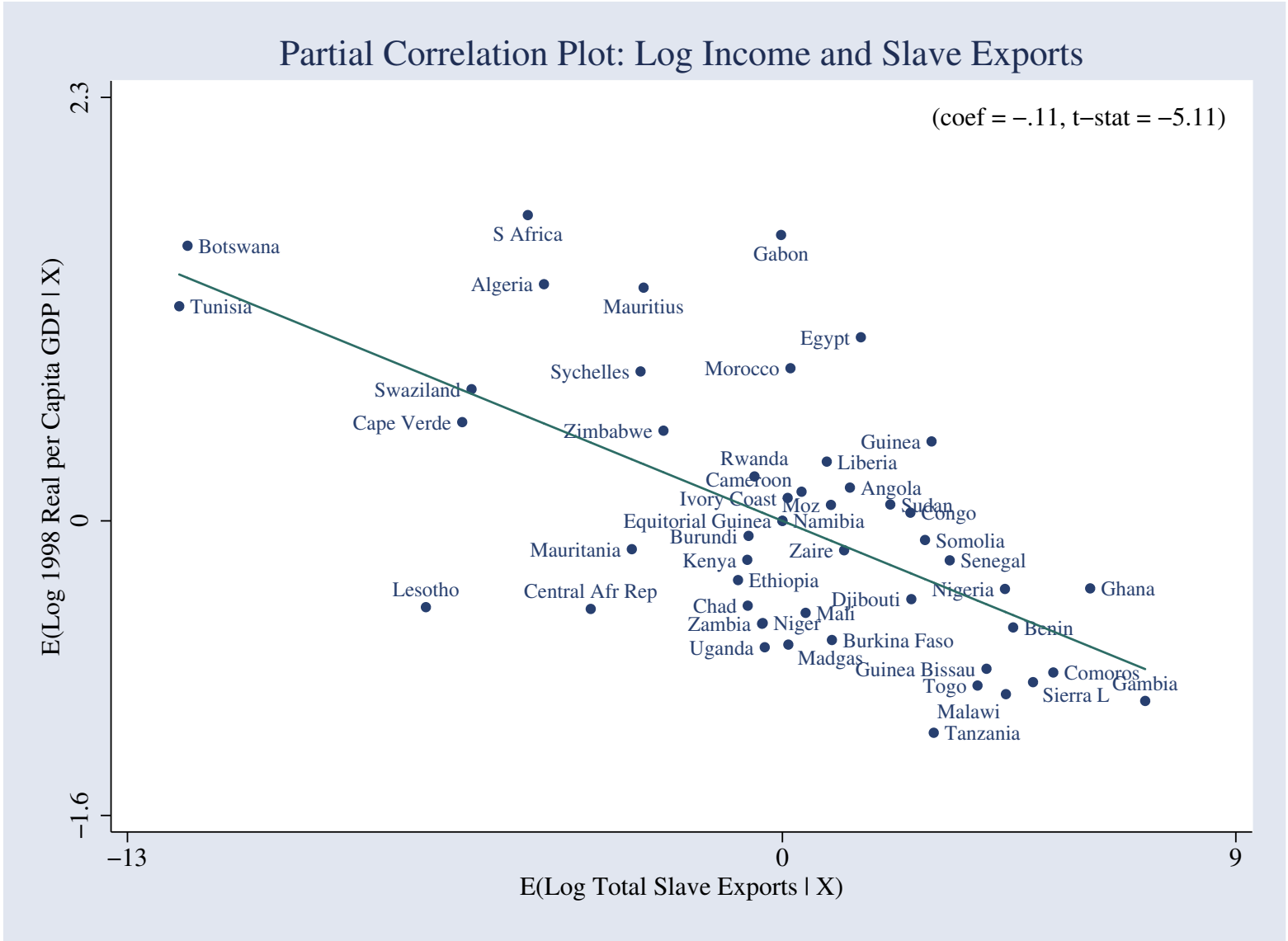
Table 2: Slave Ethnicity Data: Trans-Atlantic Slave Trade, continued

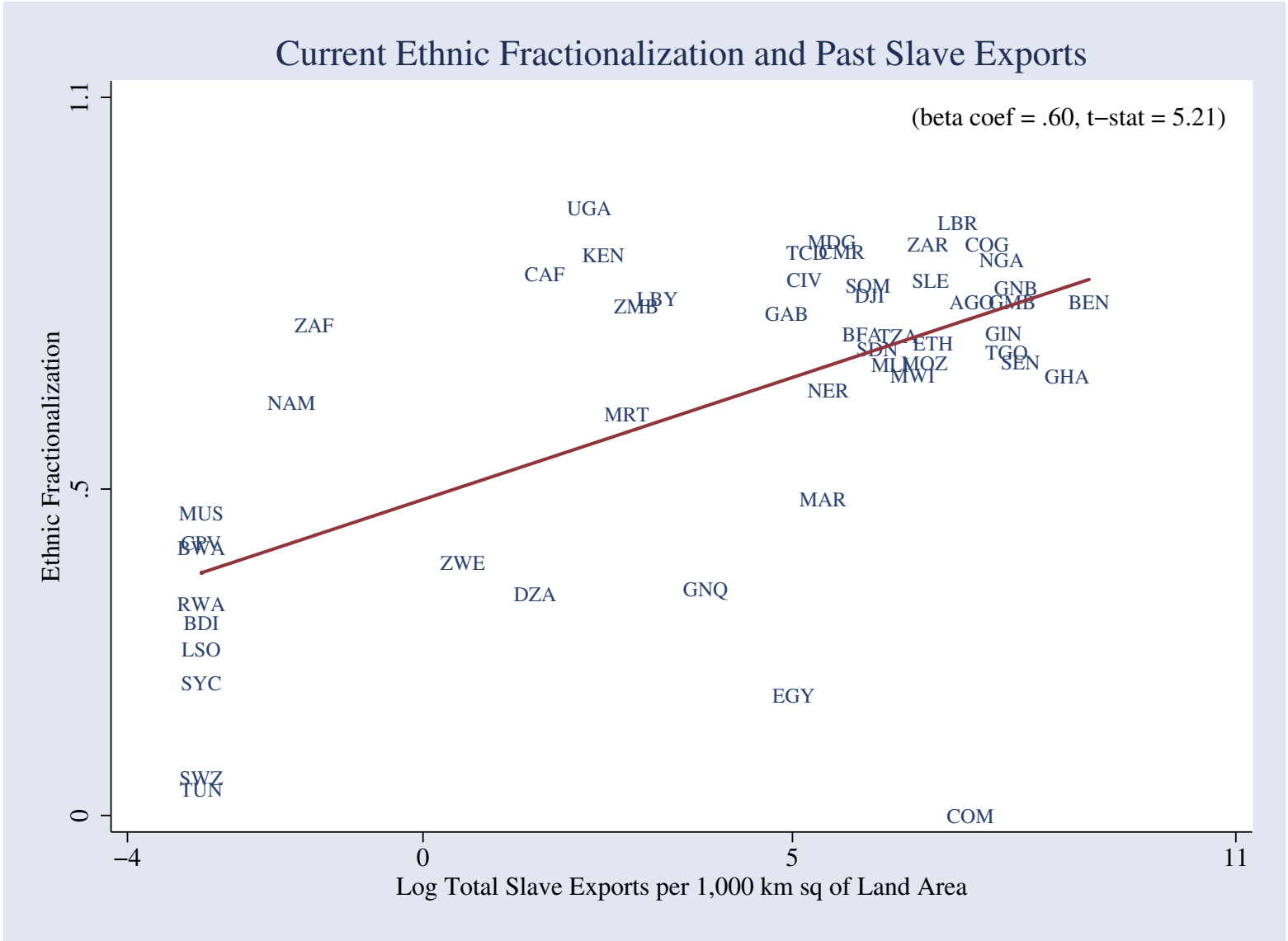
Region	Years	Num. Ethnic.	Num. Obs.	Record Type
American Louisiana	1804–1820	109	5,389	Notarial Records
From Central Sudan	1804–1850	58	108	Slave Interviews
Salvador, Brazil	1808–1842	19	662	Records of Manumission
Trinidad	1813	115	13,346	Slave Registers
St. Lucia	1815	44	2,638	Slave Registers
St. Kitts	1817	36	2,886	Slave Registers
Berbice (Guyana)	1819	40	1,142	Slave Registers
Salvador, Brazil	1819–1836	14	1,105	Manumission Certificates
Salvador, Brazil	1820–1835	13	1,341	Probate Records
Sierra Leone	1821–1824	68	638	Child Registers
Rio de Janeiro, Brazil	1826–1837	36	1,906	Prison Records
Anguilla	1827	8	30	Slave Registers
Rio de Janeiro, Brazil	1830–1852	470	4,034	Free Africans' Records
Rio de Janeiro, Brazil	1833–1849	39	1,735	Death Certificates
Salvador, Brazil	1835	13	277	Court Records
Salvador, Brazil	1838–1848	11	250	Slave Registers
Sierra Leone	1848	63	7,302	Linguistic and British Census
Salvador, Brazil	1851–1884	13	410	Records of Manumission
Salvador, Brazil	1852–1888	10	294	Slave Registers
Kikoneh Island, Sierra Leone	1896–1897	11	190	Fugitive Slave Records
Total			**88,616**	

Table 3: Slave Exports, 1400–1913: Top 10 countries

Country	Atlantic Exports	Indian Ocean Exports	Saharan Exports	Red Sea Exports	**Total Exports**	**Percent of Total**
Nigeria	1,997,342	0	329,185	0	**2,326,526**	**13%**
Zaire	2,184,318	0	0	0	**2,184,318**	**12%**
Angola	2,095,149	0	0	0	**2,095,149**	**12%**
Ghana	1,459,691	0	0	0	**1,459,691**	**8%**
Ethiopia	0	0	449,023	768,701	**1,217,724**	**7%**
Sudan	0	0	910,593	263,456	**1,174,049**	**7%**
Benin	916,913	0	12,050	0	**928,963**	**5%**
Mozambique	327,773	382,884	0	0	**710,657**	**4%**
Congo	706,931	0	0	0	**706,931**	**4%**

Data source: PWT and author's calculations


Partial Correlation Plot: Log Income and Slave Exports
(coef = −.11, t−stat = −5.11)
E(Log 1998 Real per Capita GDP | X)
2.3
0
−1.6
−13
0
9
E(Log Total Slave Exports | X)
Botswana
S Africa
Gabon
Algeria
Mauritius
Tunisia
Egypt
Sychelles
Morocco
Swaziland
Cape Verde
Zimbabwe
Guinea
Rwanda
Liberia
Cameroon
Angola
Ivory Coast
Moz
Sudan
Congo
Equitorial Guinea
Namibia
Burundi
Somolia
Mauritania
Zaire
Senegal
Kenya
Ethiopia
Lesotho
Central Afr Rep
Nigeria
Ghana
Djibouti
Chad
Mali
Zambia
Niger
Benin
Burkina Faso
Uganda
Madgas
Guinea Bissau
Comoros
Togo
Gambia
Sierra L
Malawi
Tanzania


Current Ethnic Fractionalization and Past Slave Exports
(beta coef = .60, t−stat = 5.21)
Ethnic Fractionalization
0
.5
1.1
−4
0
5
11
Log Total Slave Exports per 1,000 km sq of Land Area
UGA
KEN
CAF
ZMB
LBY
ZAF
NAM
MRT
MUS
CPV
BWA
RWA
BDI
LSO
SYC
SWZ
TUN
ZWE
DZA
GNQ
EGY
MAR
NER
GAB
CIV
TCD
CMR
MDG
LBR
ZAR
COG
NGA
SOM
DJI
SLE
GNB
AGO
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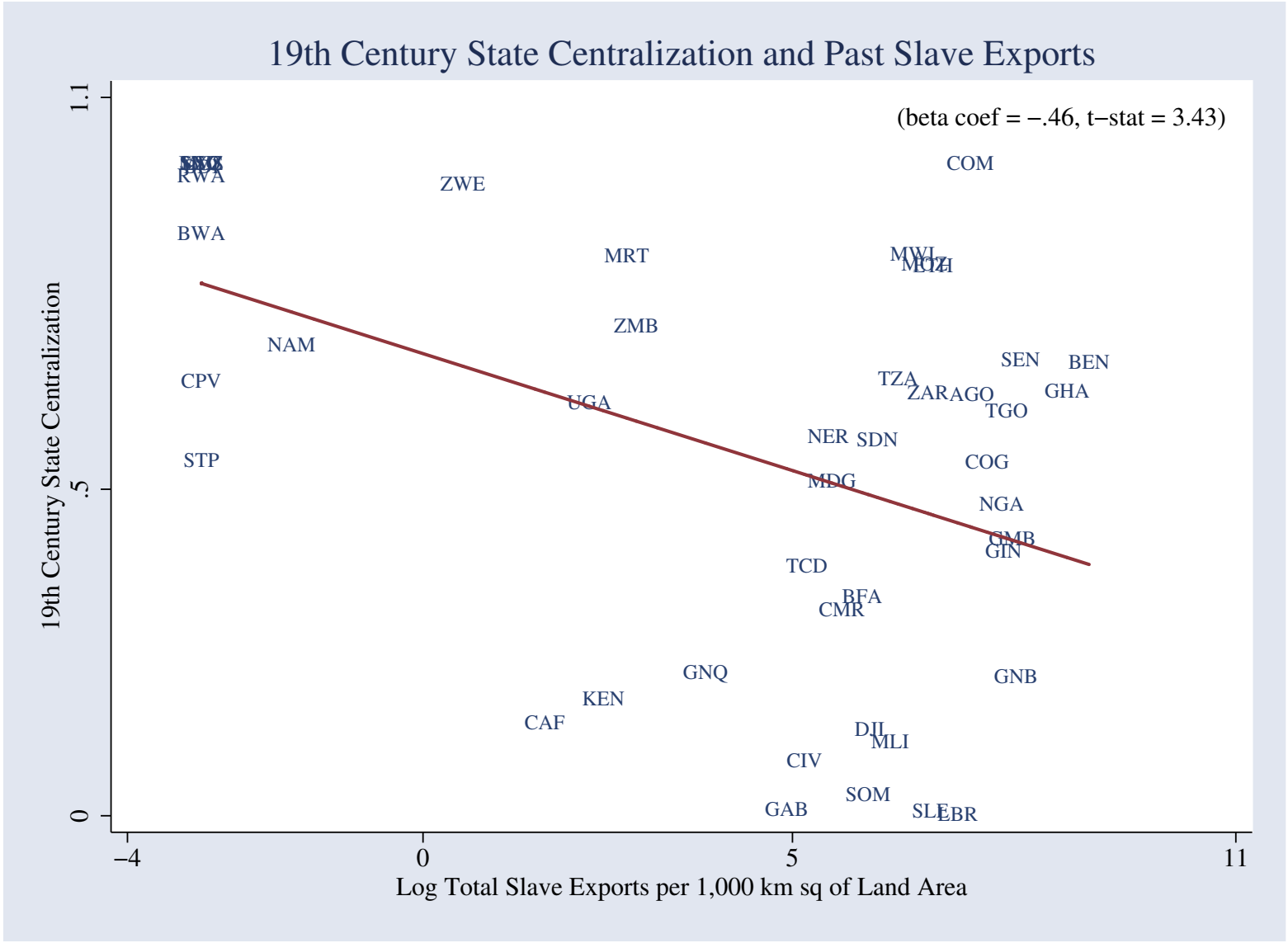
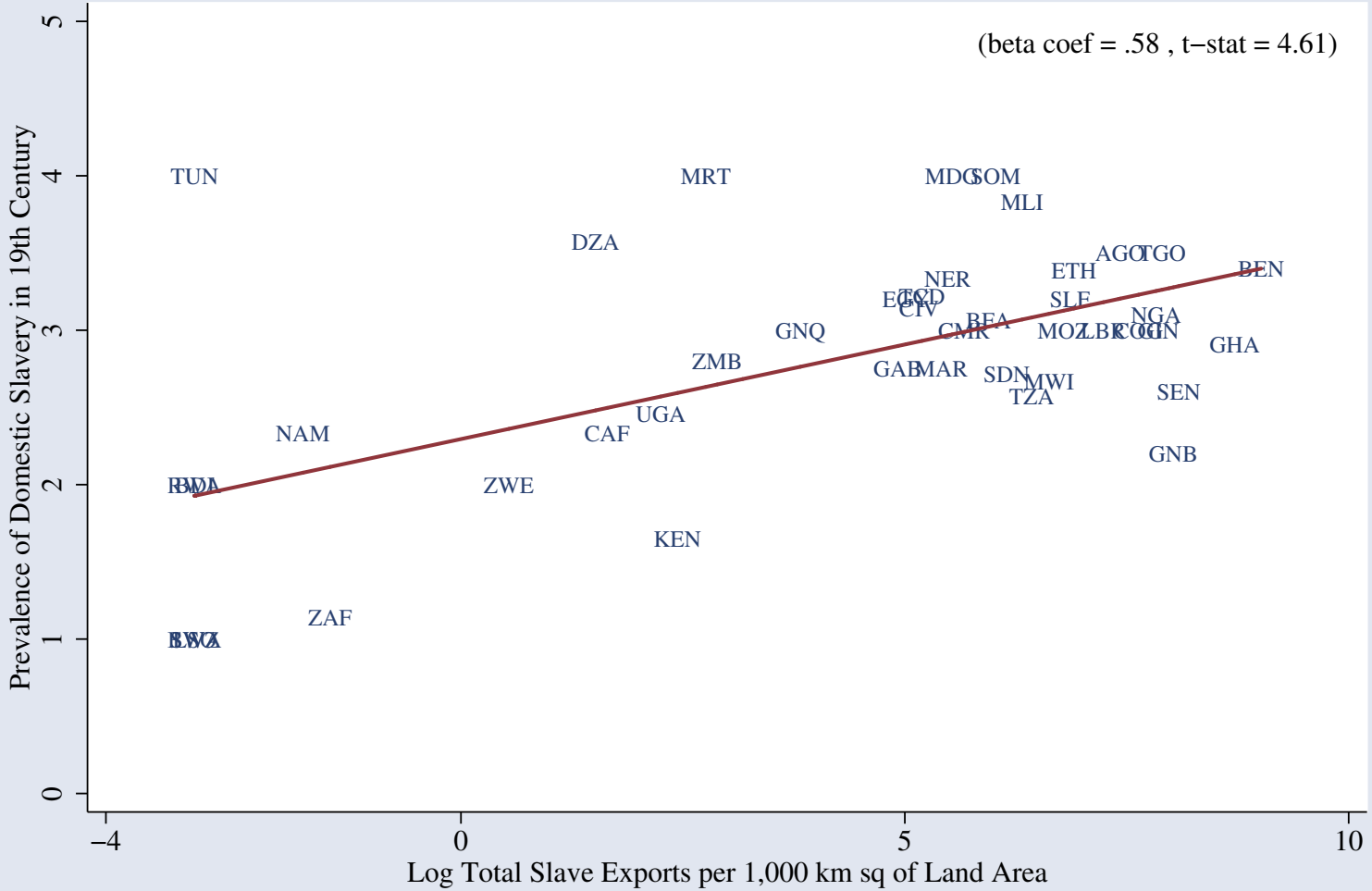

19th Century State Centralization and Past Slave Exports
(beta coef = −.46, t−stat = 3.43)
19th Century State Centralization
0
.5
1.1
−4
0
5
11
Log Total Slave Exports per 1,000 km sq of Land Area
RWA
ZWE
COM
BWA
MRT
MWI
ZMB
NAM
SEN
BEN
CPV
TZA
ZAR
AGO
GHA
UGA
TGO
NER
SDN
STP
COG
MDG
NGA
GMB
GIN
TCD
BFA
CMR
GNQ
GNB
KEN
CAF
DJI
MLI
CIV
SOM
GAB
SLE
LBR

Log Slave Exports and Domestic Slavery in the 19th Century



Data source: Ethnographic Atlast and author's calculations

TABLE III

RELATIONSHIP BETWEEN SLAVE EXPORTS AND INCOME

	Dependent variable is log real per capita GDP in 2000, ln y					
	(1)	(2)	(3)	(4)	(5)	(6)
ln(exports/area)	−0.112***	−0.076***	−0.108***	−0.085**	−0.103***	−0.128***
	(0.024)	(0.029)	(0.037)	(0.035)	(0.034)	(0.034)
Distance from equator		0.016	−0.005	0.019	0.023	0.006
		(0.017)	(0.020)	(0.018)	(0.017)	(0.017)
Longitude		0.001	−0.007	−0.004	−0.004	−0.009
		(0.005)	(0.006)	(0.006)	(0.005)	(0.006)
Lowest monthly rainfall		−0.001	0.008	0.0001	−0.001	−0.002
		(0.007)	(0.008)	(0.007)	(0.006)	(0.008)
Avg max humidity		0.009	0.008	0.009	0.015	0.013
		(0.012)	(0.012)	(0.012)	(0.011)	(0.010)
Avg min temperature		−0.019	−0.039	−0.005	−0.015	−0.037
		(0.028)	(0.028)	(0.027)	(0.026)	(0.025)
ln(coastline/area)		0.085**	0.092**	0.095**	0.082**	0.083**
		(0.039)	(0.042)	(0.042)	(0.040)	(0.037)
Island indicator				−0.398	−0.150	
				(0.529)	(0.516)	
Percent Islamic				−0.008***	−0.006*	−0.003
				(0.003)	(0.003)	(0.003)
French legal origin				0.755	0.643	−0.141
				(0.503)	(0.470)	(0.734)
North Africa indicator				0.382	−0.304	
				(0.484)	(0.517)	
ln(gold prod/pop)					0.011	0.014
					(0.017)	(0.015)
ln(oil prod/pop)					0.078***	0.088***
					(0.027)	(0.025)
ln(diamond prod/pop)					−0.039	−0.048
					(0.043)	(0.041)
Colonizer fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number obs.	52	52	42	52	52	42
R^2	.51	.60	.63	.71	.77	.80

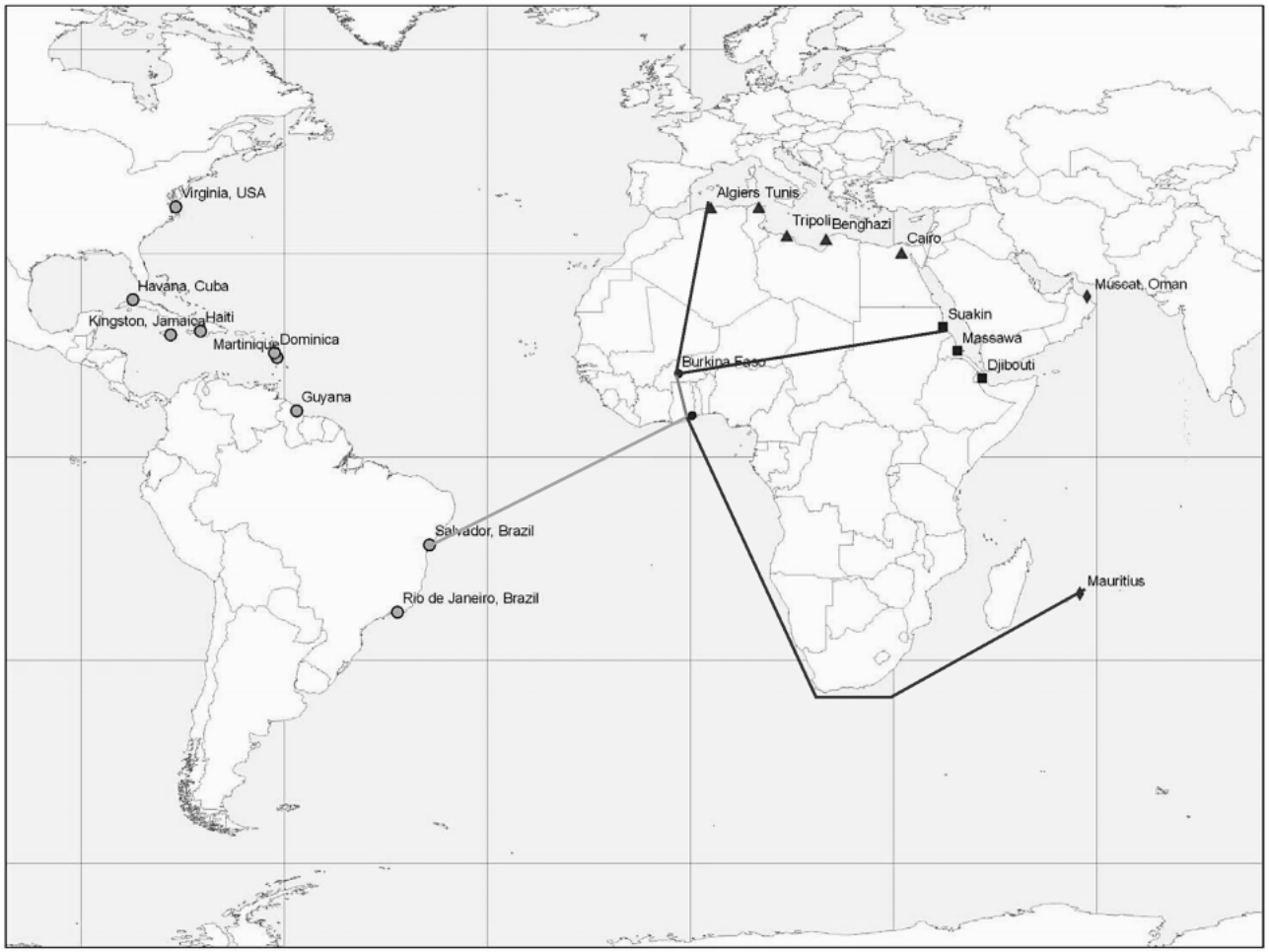


FIGURE V
Example Showing the Distance Instruments for Burkina Faso

TABLE IV

ESTIMATES OF THE RELATIONSHIP BETWEEN SLAVE EXPORTS AND INCOME

	(1)	(2)	(3)	(4)
Second Stage. Dependent variable is log income in 2000, $\ln y$				
ln(exports/area)	-0.208^{***}	-0.201^{***}	-0.286^{*}	-0.248^{***}
	(0.053)	(0.047)	(0.153)	(0.071)
	$[-0.51, -0.14]$	$[-0.42, -0.13]$	$[-\infty, +\infty]$	$[-0.62, -0.12]$
Colonizer fixed effects	No	Yes	Yes	Yes
Geography controls	No	No	Yes	Yes
Restricted sample	No	No	No	Yes
F-stat	15.4	4.32	1.73	2.17
Number of obs.	52	52	52	42
First Stage. Dependent variable is slave exports, ln(exports/area)				
Atlantic distance	-1.31^{***}	-1.74^{***}	-1.32^{*}	-1.69^{**}
	(0.357)	(0.425)	(0.761)	(0.680)
Indian distance	-1.10^{***}	-1.43^{***}	-1.08	-1.57^{*}
	(0.380)	(0.531)	(0.697)	(0.801)
Saharan distance	-2.43^{***}	-3.00^{***}	-1.14	-4.08^{**}
	(0.823)	(1.05)	(1.59)	(1.55)
Red Sea distance	-0.002	-0.152	-1.22	2.13
	(0.710)	(0.813)	(1.82)	(2.40)
F-stat	4.55	2.38	1.82	4.01
Colonizer fixed effects	No	Yes	Yes	Yes
Geography controls	No	No	Yes	Yes
Restricted sample	No	No	No	Yes
Hausman test (p-value)	.02	.01	.02	.04
Sargan test (p-value)	.18	.30	.65	.51

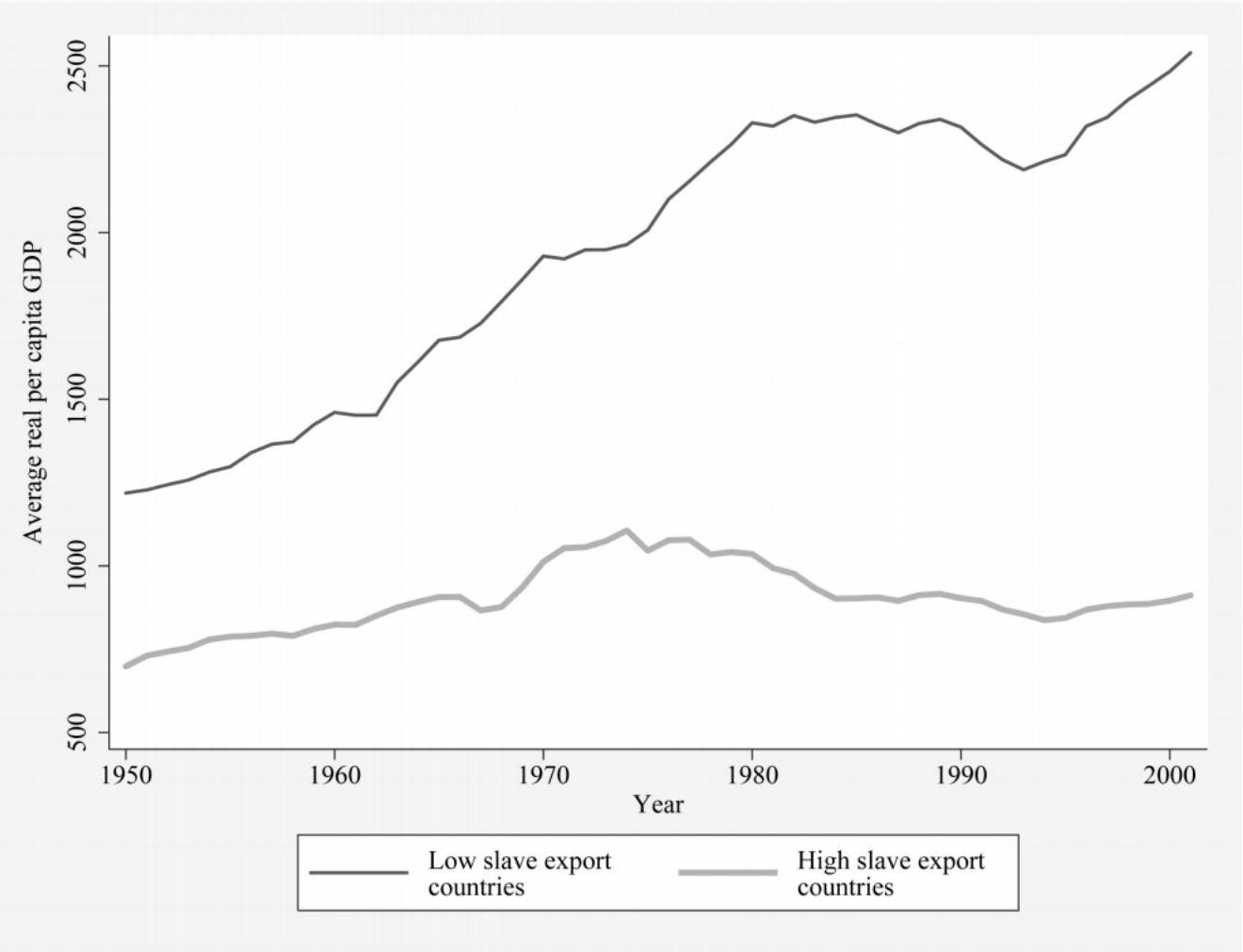


FIGURE VIII
Paths of Economic Development Since 1950

Why did Africa specialize in Exporting Slaves?

- One line of argument (the 'Domar Hypothesis') emphasizes that slavery became endemic in Africa because population density was low. This meant that if there had been a labor market wages (marginal product of labor) would have been very high, hence there was a big incentive to enslave in order to avoid paying high wages.
- This argument suggests that slaves would have been very productive if used in Africa.
- So why were slaves sold and shipped to the Americas?
- This becomes even more puzzling when we observe the huge inefficiencies (if that doesn't sound too inhumane) in this process. Around 10-20% of captives died en route between Africa and the Americas. Far more died in the violence of capture or on the way to be sold (Joseph Miller estimated that 50% of the slaves caught in the interior of Angola died before being sold at the coast).

So why the Export?

- The most compelling (to me) approach is that though it could be that the physical marginal product of labor was high in Africa, the efficiency of the economy was actually low because economic institutions did not encourage production.
- One reason is that in places which lacked centralized states there was feuding/raiding/insecurity of property rights, recall the Nuer in the Sudan. This made the return to production and to labor low, even if the physical product was high.
- Another example would be the form of property rights to land which did not promote security of tenure and undermined investment incentives.
- Thus when opportunities to sell labor to Europeans came, the opportunity cost of doing so was low.

The Role of Slavery and the Slave Trade

- Very plausible that the slave trade had significant negative effects along the lines postulated by many historians and quantified by Nunn.
- But the effect on income is much less than the income differences between Africa and the rest of the world.
- Also, as Jan Vansina pointed out in Central Africa, one sees very similar institutional dynamics in places which were and which were not impacted by the slave trade.
- The slave trade and domestic slavery are part of the story of why Africa is poor, but they are part of a path dependent process. Africa *selected* into the slave trade because its institutions were already bad.

Slavery and Trust

- Nathan Nunn extended his work with a fascinating study on the impact of the slave trade on inter-personal trust in modern Africa.
- He extended his slave database to the ethnicity level (rather than just working with the country as the unit of analysis).
- He matched the slave trade data with contemporary data from the Afrobarometer on the extent to which people trust each other.

Panel A. Transatlantic slave trade

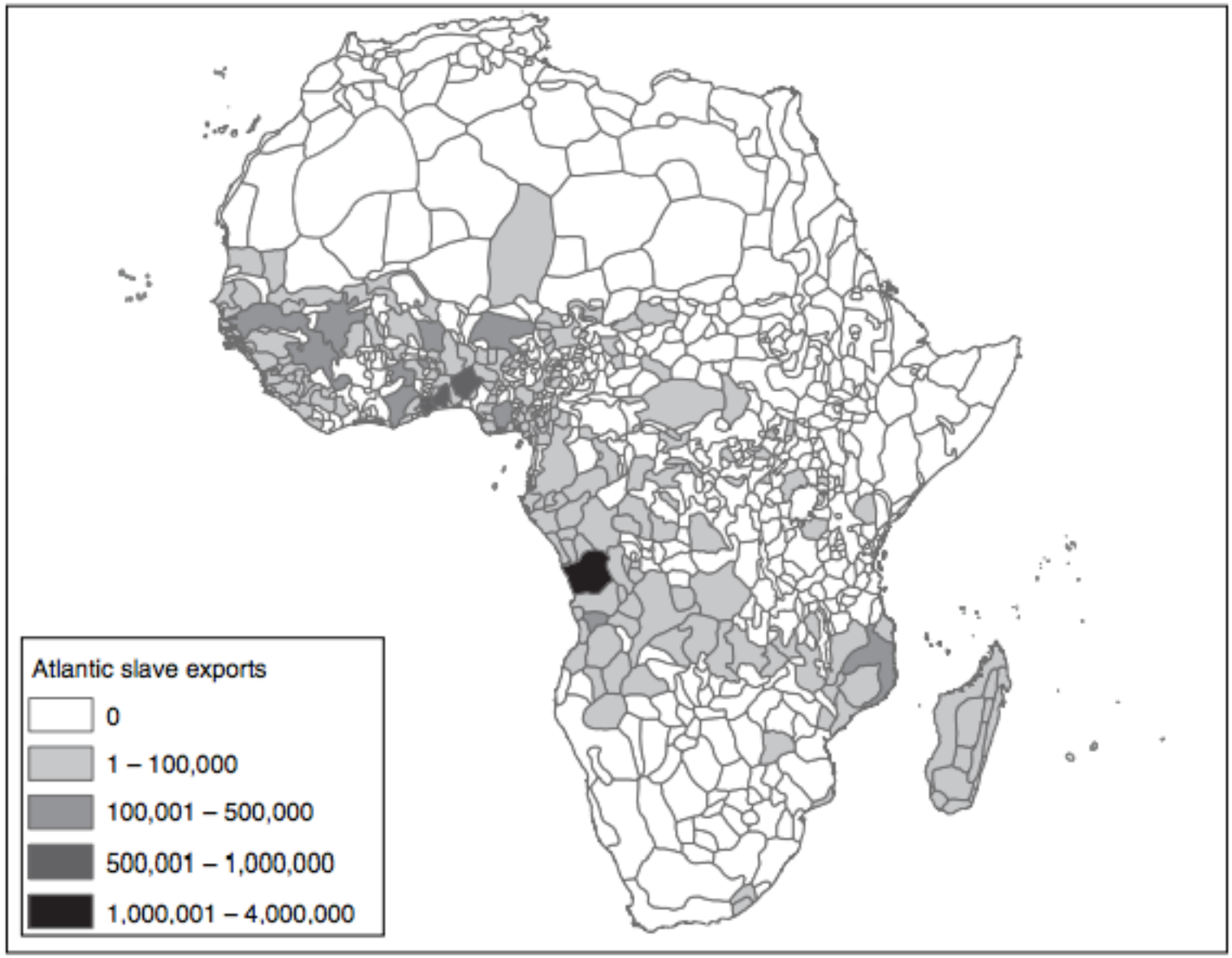


TABLE 1—OLS ESTIMATES OF THE DETERMINANTS OF TRUST IN NEIGHBORS

Dependent variable: Trust of neighbors	Slave exports (thousands) (1)	Exports/ area (2)	Exports/ historical pop (3)	ln (1 + exports) (4)	ln (1 + exports/ area) (5)	ln (1 + exports/ historical pop) (6)
Estimated coefficient	−0.00068	−0.019	−0.531	−0.037	−0.159	−0.743
	[0.00014]	[0.005]	[0.147]	[0.014]	[0.034]	[0.187]
	(0.00015)	(0.005)	(0.147)	(0.014)	(0.034)	(0.187)
	{0.00013}	{0.005}	{0.165}	{0.015}	{0.034}	{0.212}
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
District controls	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	20,027	20,027	17,644	20,027	20,027	17,644
Number of ethnicities	185	185	157	185	185	157
Number of districts	1,257	1,257	1,214	1,257	1,257	1,214
R^2	0.16	0.16	0.15	0.15	0.16	0.15

TABLE 2—OLS ESTIMATES OF THE DETERMINANTS OF THE TRUST OF OTHERS

	Trust of relatives (1)	Trust of neighbors (2)	Trust of local council (3)	Intra-group trust (4)	Inter-group trust (5)
ln (1 + exports/area)	−0.133***	−0.159***	−0.111***	−0.144***	−0.097***
	(0.037)	(0.034)	(0.021)	(0.032)	(0.028)
Individual controls	Yes	Yes	Yes	Yes	Yes
District controls	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	20,062	20,027	19,733	19,952	19,765
Number of ethnicity clusters	185	185	185	185	185
Number of district clusters	1,257	1,257	1,283	1,257	1,255
R^2	0.13	0.16	0.20	0.14	0.11

TABLE 5—IV ESTIMATES OF THE EFFECT OF THE SLAVE TRADE ON TRUST

	Trust of relatives (1)	Trust of neighbors (2)	Trust of local council (3)	Intragroup trust (4)	Intergroup trust (5)
Second stage: Dependent variable is an individual's trust					
ln (1 + exports/area)	−0.190***	−0.245***	−0.221***	−0.251***	−0.174**
	(0.067)	(0.070)	(0.060)	(0.088)	(0.080)
Hausman test (p-value)	0.88	0.53	0.09	0.44	0.41
R^2	0.13	0.16	0.20	0.15	0.12
First stage: Dependent variable is ln (1 + exports/area)					
Historical distance of ethnic group from coast	−0.0014***	−0.0014***	−0.0014***	−0.0014***	−0.0014***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Colonial population density	Yes	Yes	Yes	Yes	Yes
Ethnicity-level colonial controls	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes
District controls	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	16,709	16,679	15,905	16,636	16,473
Number of clusters	147 / 1,187	147 / 1,187	146 / 1,194	147 / 1,186	147 / 1,184
F-stat of excl. instrument	26.9	26.8	27.4	27.1	27.0
R^2	0.81	0.81	0.81	0.81	0.81

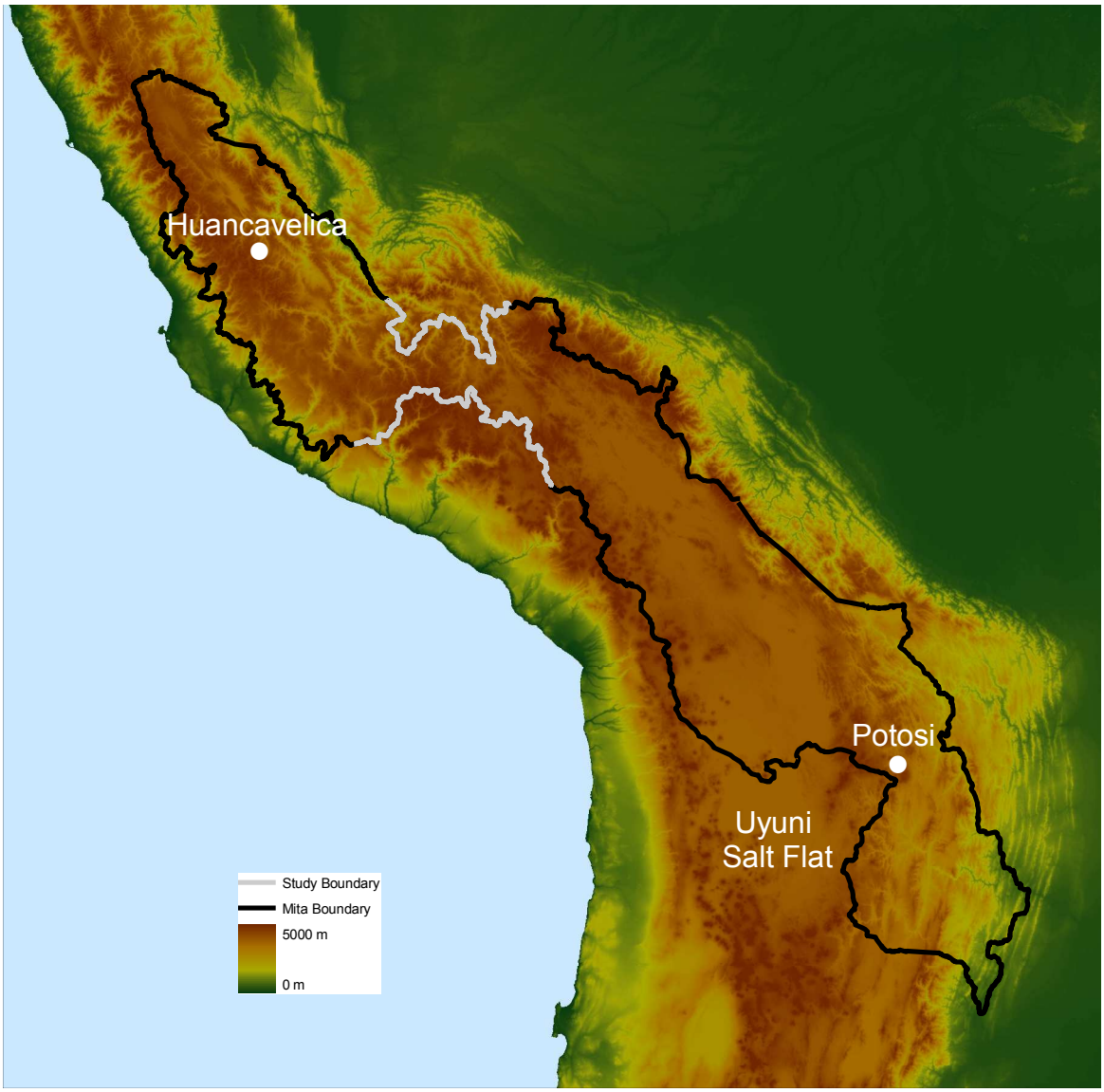
TABLE 8—REDUCED FORM RELATIONSHIP BETWEEN THE DISTANCE FROM THE COAST AND TRUST WITHIN AND OUTSIDE OF AFRICA

	Intergroup trust				
	Afrobarometer sample		WVS non-Africa sample		WVS Nigeria
	(1)	(2)	(3)	(4)	(5)
Distance from the coast	0.00039***	0.00037***	−0.00020	−0.00019	0.00054***
	(0.00013)	(0.00012)	(0.00014)	(0.00012)	(0.00010)
Country fixed effects	Yes	Yes	Yes	Yes	n/a
Individual controls	No	Yes	No	Yes	Yes
Number of observations	19,970	19,970	10,308	10,308	974
Number of clusters	185	185	107	107	16
R^2	0.09	0.10	0.09	0.11	0.06

The Andean Mining Mitas

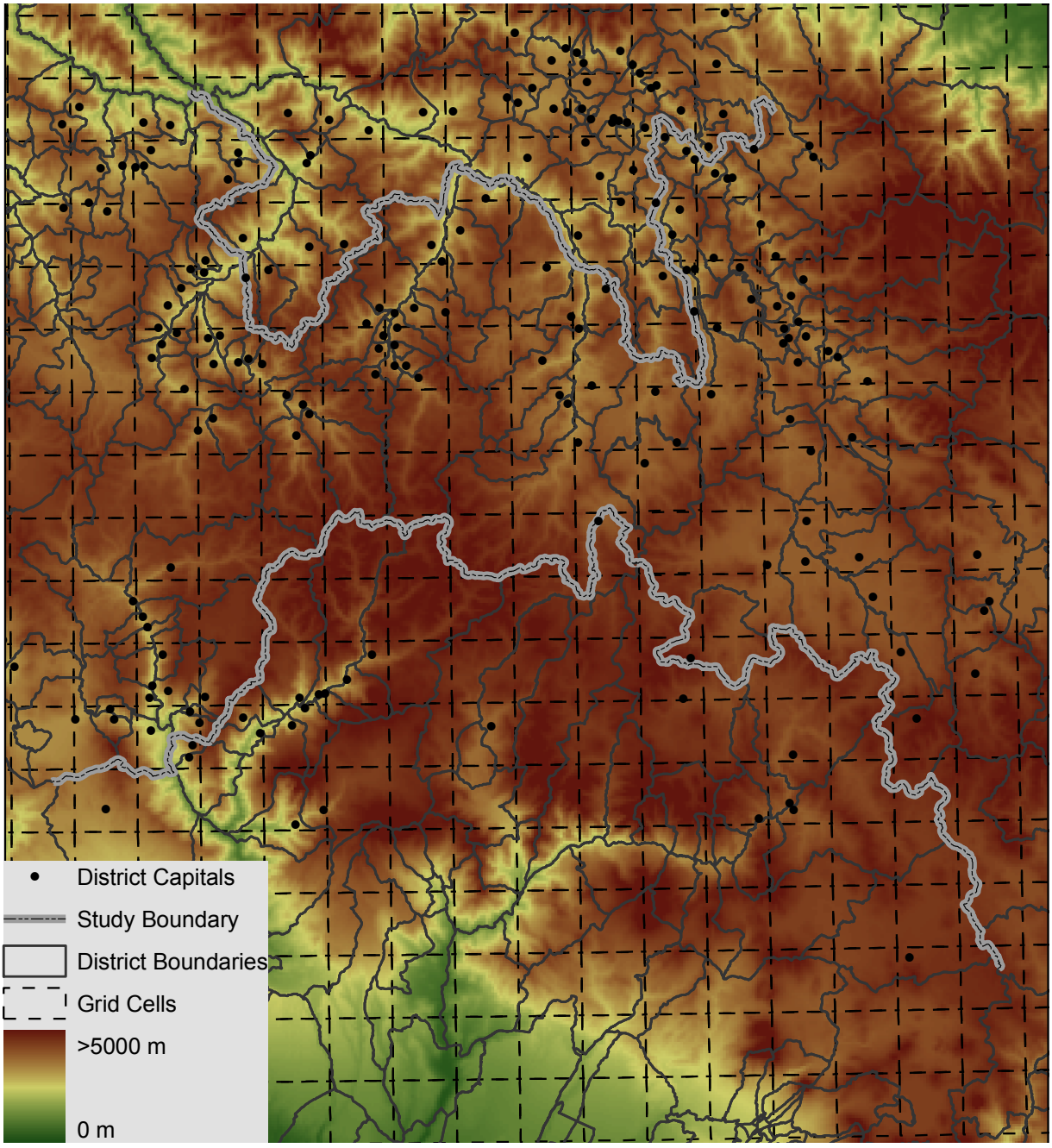
- This was one of the most important systems of forced labor in Latin America.
- In 1545 silver was discovered in El Cerro Rico (the rich hill) in Potosí. In the 1570s Viceroy Francisco de Toledo reorganized the colony of Peru with an eye to increasing the revenues of the colonial state. He organized in Potosí mita, which was to last until the 1820s. Other mitas operated, such as to the mercury mines in Huancavelica.
- The mita (mit'a in Quechua means "a turn") built on earlier Indian tribute systems for generating labor and basically stipulated that 1/7th of the adult males from a catchment area had to be in the mines of Potosí.

Figure 1



The *mita* boundary is in black and the study boundary in light gray. Districts falling inside the contiguous area formed by the *mita* boundary contributed to the *mita*. Elevation is shown in the background.

Figure 2



Mita districts fall between the two thick lines. The circles show district capitals within 50 kilometers of the *mita* boundary. The boundaries for the 20 x 20 km grid cells - used in Table 1 - are in light gray. District boundaries are in black, and elevation is shown in the background.

Did the Mita have a Persistent Effect?

- This has been investigated by Melissa Dell ('The Persistent Effects of Peru's Mining *Mita*") using a very nice research design exploiting the regression discontinuity methodology.
- She took micro World Bank Living Standards data from Peru and matched it to the boundary of the mita.
- One problem is that at some of the points on the boundary, altitude and ethnicity of dominant Indian group jumps all at the same time. Hence it is difficult to identify the effect of the mita as opposed to ethnicity or altitude. However, this is not for part of the border in Peru.
- She finds that average household consumption is about 1/3 lower in mita areas close to the boundary compared to non-mita areas.
- This is robust to controlling for all sorts of household characteristics.

Table 1: Summary Statistics

	Sample falls within: <100 km of *mita* boundary			<75 km of *mita* boundary			<50 km of *mita* boundary			<25 km of *mita* boundary		
	Inside	Outside	SE	Inside	Outside	SE	Inside	Outside	SE	Inside	Outside	SE
GIS Measures												
Elevation	4076	3948	[197.95] (89.25)	4128	3984	[174.90] (87.33)	4161	4045	[169.94] (91.02)	4115	4032	[142.01] (115.27)
Slope	5.80	7.66	[0.95]* (0.54)***	6.00	7.72	[0.92]* (0.57)***	6.09	7.36	[0.95] (0.62)**	6.42	7.39	[0.98] (0.86)
Observations	183	86		146	82		100	70		48	47	
% Indigenous	63.59	58.84	[11.21] (9.76)	71.00	64.55	[8.09] (8.14)	71.01	64.54	[8.47] (8.43)	74.47	63.35	[10.93] (10.52)
Observations	1112	366		831	330		683	330		329	251	
Log 1572 tribute rate	1.57	1.60	[0.04] (0.03)	1.57	1.60	[0.04] (0.03)	1.58	1.61	[0.05] (0.04)	1.65	1.61	[0.02]* (0.03)
% 1572 tribute to:												
Spanish Nobility	59.80	63.82	[1.39]*** (1.36)***	59.98	63.69	[1.56]** (1.53)**	62.01	63.07	[1.12] (1.34)	61.01	63.17	[1.58] (2.21)
Spanish Priests	21.05	19.10	[0.90]** (0.94)**	21.90	19.45	[1.02]** (1.02)**	20.59	19.93	[0.76] (0.92)	21.45	19.98	[1.01] (1.33)
Spanish Justices	13.36	12.58	[0.53] (0.48)*	13.31	12.46	[0.65] (0.60)	12.81	12.48	[0.43] (0.55)	13.06	12.37	[0.56] (0.79)
Indigenous Mayors	5.67	4.40	[0.78] (0.85)	4.55	4.29	[0.26] (0.29)	4.42	4.47	[0.34] (0.33)	4.48	4.42	[0.29] (0.39)
Observations	63	41		47	37		35	30		18	24	

Table 2: Living Standards

	Dependent variable is:								
	Log equivalent household consumption (2001)				*Stunted growth, children 6-9 (2005)*				
Sample Within:	<100 km of bound.	<75 km of bound.	<50 km of bound.	<25 km of bound.	<100 km of bound.	<75 km of bound.	<50 km of bound.	<25 km of bound.	border district
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
A: Quadratic Polynomial in Distance to Potosí									
Mita	-0.346***	-0.284**	-0.373***	-0.240	0.068***	0.063***	0.076***	0.062***	0.051**
	(0.104)	(0.107)	(0.128)	(0.172)	(0.024)	(0.024)	(0.025)	(0.022)	(0.024)
Elevation	-0.247**	-0.184	-0.163	-0.450	0.042*	0.050	0.071*	0.053	0.264***
	(0.119)	(0.179)	(0.174)	(0.273)	(0.025)	(0.031)	(0.040)	(0.053)	(0.072)
Slope	-0.019	-0.011	-0.003	-0.033	-0.005	-0.005	-0.004	-0.006	0.006
	(0.015)	(0.015)	(0.015)	(0.023)	(0.003)	(0.004)	(0.004)	(0.005)	(0.007)
R^2	0.053	0.045	0.054	0.051	0.050	0.018	0.014	0.029	0.052
B: Interacted Quadratic Polynomial in Distance to Mita Boundary									
Mita	-0.394	-0.531	-0.338	-1.327**	0.137**	0.126*	0.136*	0.128*	0.102**
	(0.272)	(0.322)	(0.352)	(0.482)	(0.070)	(0.072)	(0.072)	(0.065)	(0.051)
Elevation	-0.069	-0.093	-0.125	-0.474	0.067*	0.047*	0.058	0.090**	0.244***
	(0.172)	(0.155)	(0.179)	(0.321)	(0.034)	(0.028)	(0.036)	(0.045)	(0.066)
Slope	-0.011	-0.008	-0.009	-0.024	0.002	-0.002	-0.001	-0.004	0.006
	(0.019)	(0.015)	(0.018)	(0.026)	(0.004)	(0.004)	(0.004)	(0.005)	(0.007)
R^2	0.053	0.053	0.051	0.060	0.041	0.016	0.014	0.029	0.050
Geo. Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes
Boundary F.E.s	yes	yes	yes	yes	yes	yes	yes	yes	yes
Clusters	71	60	52	27	289	239	185	93	63
Observations	1,478	1,161	1,013	580	158,848	115,761	100,446	53,693	37,421

Mechanisms of Persistence

- Just as important as this finding is her evidence on mechanisms.
- She shows that today, a proximate explanation for why mita areas are poorer is that people there tend to be subsistence farmers and market a smaller proportion of their crop.
- One of the reasons for this seems to me infrastructure, density of roads is much less in mita areas.
- She also shows that historically haciendas formed outside the mita areas because the Spanish colonial state wanted to protect the labor fore for the mines from exploitation by creoles. The elites who controlled the haciendas seem to have been much better at getting public goods than people in the mita areas.

Table 7: Education

	Dependent variable is:		
	Literacy	Mean years of schooling	Mean years of schooling
	1876	1940	2001
	(1)	(2)	(3)
A: Quadratic Polynomial in Distance to Potosí			
Mita	-0.024***	-0.219***	-0.806
	(0.006)	(0.081)	(0.486)
Elevation	0.015	0.047	0.156
	(0.014)	(0.134)	(0.855)
Slope	0.002*	0.020*	0.053
	(0.001)	(0.011)	(0.084)
R^2	0.393	0.313	0.018
B: Inter. Quad. Polynomial in Dist. to Mita Bound.			
Mita	0.006	-0.075	-0.241
	(0.019)	(0.172)	(1.331)
Elevation	0.010	0.040	0.199
	(0.012)	(0.102)	(0.632)
Slope	0.002*	0.018	0.023
	(0.001)	(0.011)	(0.078)
R^2	0.403	0.381	0.022
Geo. Controls	yes	yes	yes
Boundary F.E.s	yes	yes	yes
Mean Dep. Var.	0.036	0.470	4.457
Clusters	95	118	52
Observations	95	118	4,038

Table 8: Roads

	Dependent variable is:		
	Density of local road networks	Density of regional road networks	Density of paved/gravel regional roads
	(1)	(2)	(3)
A: Quadratic Polynomial in Distance to Potosí			
Mita	2.224	-40.587***	-35.666***
	(13.577)	(10.192)	(9.066)
Elevation	-83.651***	-19.971	4.887
	(22.725)	(13.918)	(11.719)
Slope	-7.965**	-4.467**	-2.433
	(3.308)	(1.810)	(1.653)
R^2	0.221	0.268	0.262
B: Inter. Quad. Polynomial in Dist. to Mita Bound.			
Mita	-15.409	-52.476**	-26.075
	(28.763)	(24.119)	(20.226)
Elevation	-80.645***	-27.615*	-7.921
	(21.331)	(14.059)	(11.657)
Slope	-6.969**	-4.851**	-2.494
	(3.274)	(1.867)	(1.718)
R^2	0.228	0.260	0.234
Geo. Controls	yes	yes	yes
Boundary F.E.s	yes	yes	yes
Mean Dep. Var.	85.34	33.55	22.51
Observations	185	185	185

Table 9: Consumption Channels

	Dependent variable is:		
	Percent of district labor force in agriculture - 1993	Agricultural household sells part of produce in markets - 1994	Household member employed outside the agricultural unit - 1994
	(1)	(2)	(3)
A: Quadratic Polynomial in Distance to Potosí			
Mita	0.091	-0.226***	-0.015
	(0.055)	(0.032)	(0.018)
Elevation	-0.015	-0.026	0.067**
	(0.091)	(0.037)	(0.031)
Slope	-0.003	-0.004	-0.002
	(0.009)	(0.006)	(0.003)
R^2	0.175	0.140	0.013
B: Interacted Quadratic Polynomial in Distance to Mita Boundary			
Mita	0.196	0.023	-0.039
	(0.150)	(0.055)	(0.066)
Elevation	-0.023	-0.124***	0.042
	(0.078)	(0.040)	(0.026)
Slope	0.005	0.005	-0.002
	(0.011)	(0.006)	(0.004)
R^2	0.194	0.154	0.011
Geo. Controls	yes	yes	yes
Boundary F.E.s	yes	yes	yes
Mean Dep. Var.	0.697	0.173	0.245
Clusters	179	178	182
Observations	179	160,990	183,596

Figure 3

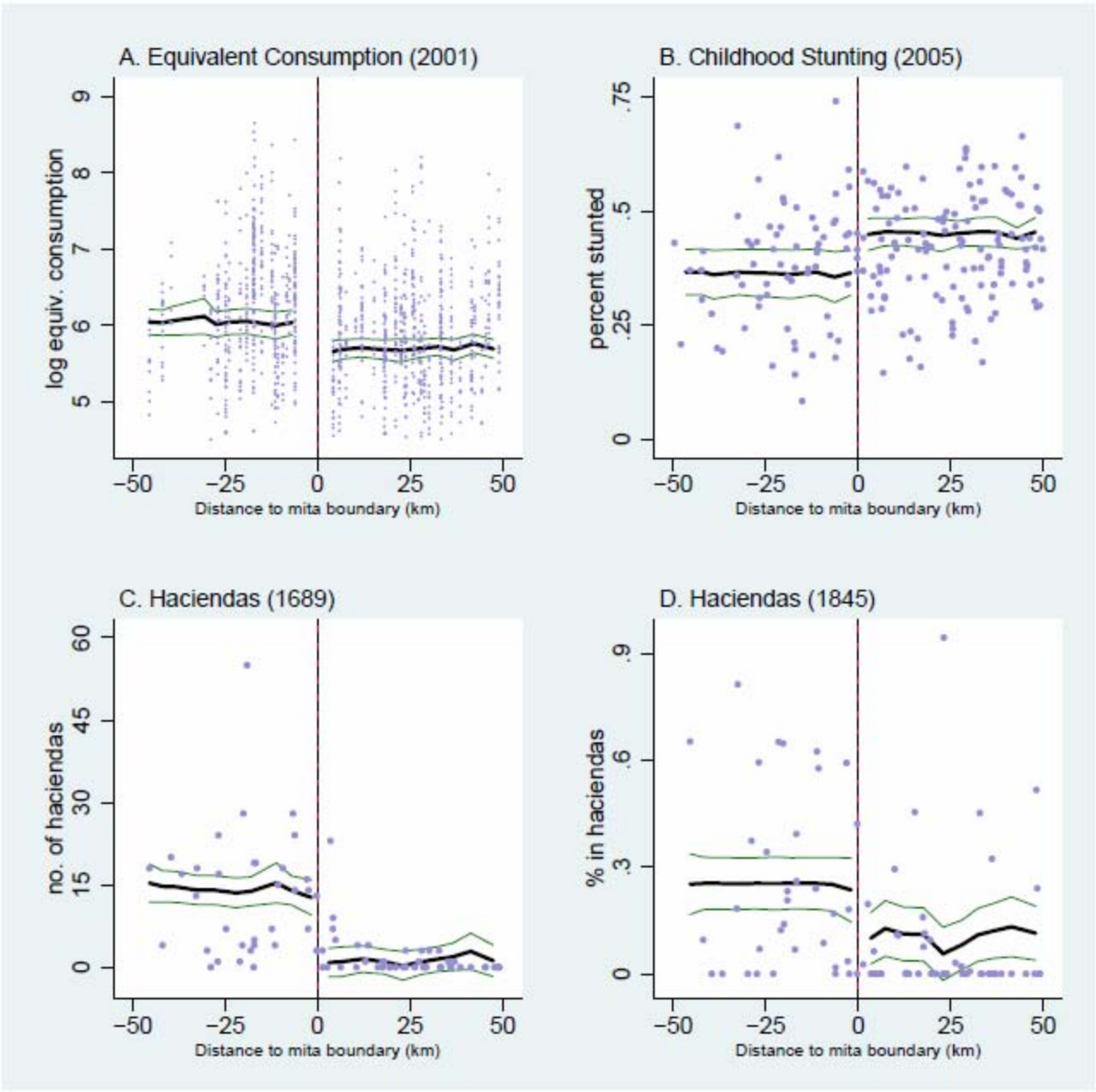
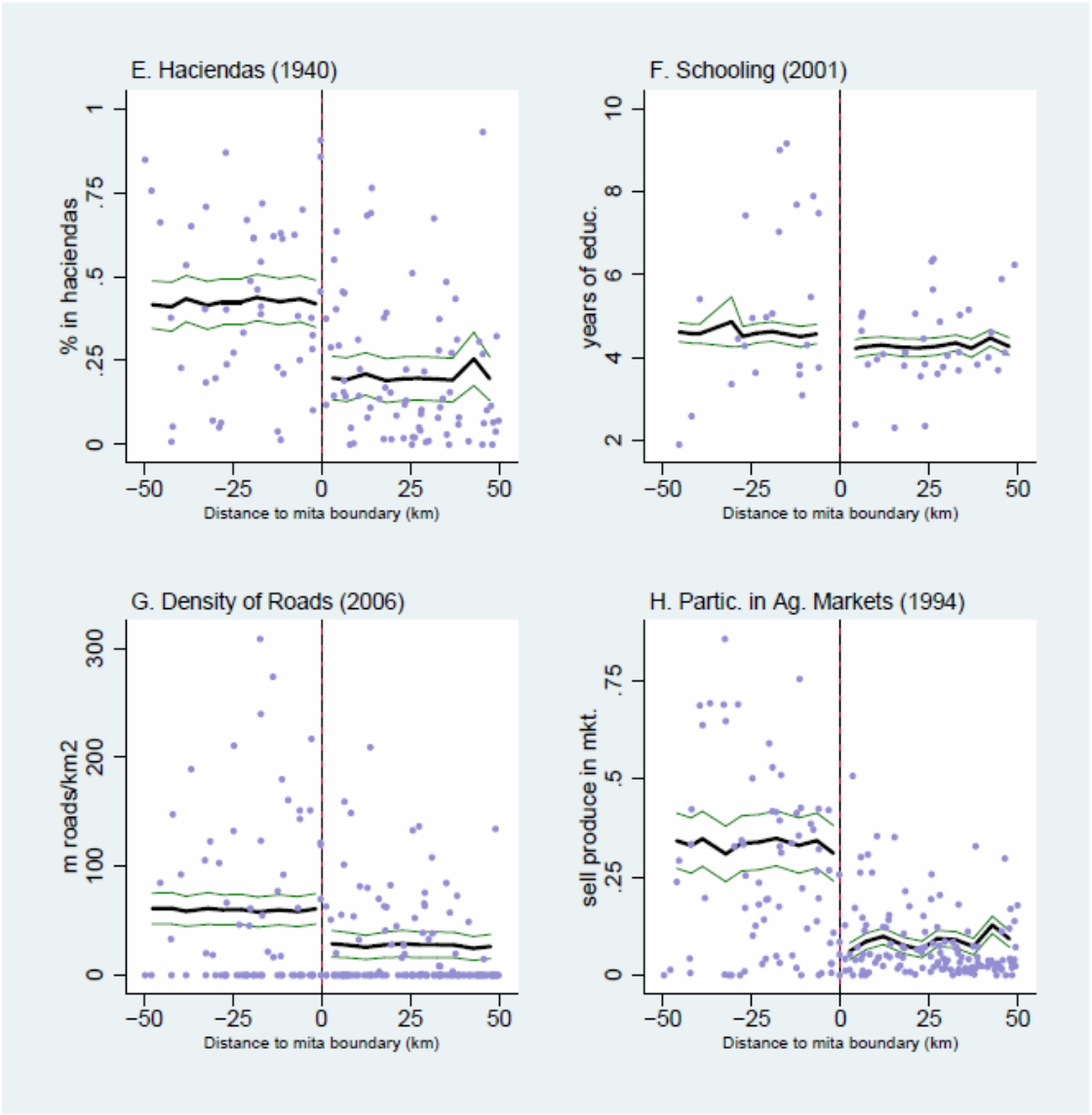

A. Equivalent Consumption (2001)
log equiv. consumption
5
6
7
8
9
−50
−25
0
25
50
Distance to mita boundary (km)
B. Childhood Stunting (2005)
percent stunted
0
.25
.5
.75
−50
−25
0
25
50
Distance to mita boundary (km)
C. Haciendas (1689)
no. of haciendas
0
15
30
45
60
−50
−25
0
25
50
Distance to mita boundary (km)
D. Haciendas (1845)
% in haciendas
0
.3
.6
.9
−50
−25
0
25
50
Distance to mita boundary (km)

Figure 3 (cont.)



This figure plots distance to the *mita* boundary against various outcomes. Circles to the left of the vertical line fall outside the *mita* catchment and circles to the right fall inside. The thick lines give predicted outcomes from a regression that includes a second order polynomial in distance to Potosí and the *mita* dummy, and the thin lines are 95% confidence bands.

The Long Shadow of Extractive Institutions

- One of the themes of WNF is that extractive institutions leave long path dependent shadows.
- I think that's pretty obvious in the case of the US.
- Still it doesn't mean that policy is irrelevant or you can't change things. Things did change for the better in the US South in the 1950s and 1960s.
- In Nunn's individual level data, though it is true that if you are a member of an ethnic group that was subject to more intensive slavery historically you tend to trust less today, it is also true that holding that constant, the more educated you are the more you trust people. Thus greater investment in education can overcome the legacy of the slave trade.