

Development economics

Lecture 7: The role of culture and institutions in economic development (social capital)

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Role of institutions in economic development

Growth reexamined: institutions

History, factor endowments, institutions, and wealth of nations

Culture and persistence of institutions

Growth reexamined

- ▶ In previous lectures we have shown:
 - ▶ Huge differences in savings across rich and poor countries
 - ▶ Dramatic differences in investment in human capital across countries
 - ▶ Very low usage of efficient technologies in poor countries
 - ▶ Enormous differences in economic well-being within countries
- ▶ But we did not provide an ultimate answer to the question why the differences arise:
 - ▶ Why low savings?
 - ▶ Why low investment in education?
 - ▶ Why so little technology adoption?
 - ▶ Why persistent inequalities?
- ▶ Potential causes: *Institutions*

What are *institutions*?

- ▶ North (1990, p. 3): *"Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction."*
 - ▶ Recall: economics → people respond to incentives. Institutions help shape incentives.
- ▶ Distinguish between:
 - ▶ **Formal institutions:** codified rules (passed by governments, local administration)
 - ▶ **Informal institutions:** related to how formal institutions are used, social norms and their enforcement.

Why we need institutions?

- ▶ Securing **property rights**:
 - ▶ Constraints on politicians, elites, and everyone to prevent expropriation of others' properties.
 - ▶ Properties: both **physical** (land, buildings, machines...), and **intellectual** (inventions, patents...)
- ▶ **Contract enforcement**:
 - ▶ What is written will actually be delivered.
 - ▶ **Important update**: Now I'm deducting half of the class to the left 20% of their final exam grades. What do you think about this?
- ▶ No exclusion of citizens from participation on the above.

Why we need institutions?

- ▶ De Soto (2000, p. 15): *"Imagine a country nobody can identify who owns what, addresses cannot be easily verified, people cannot be made to pay their debts, resources cannot conveniently be turned into money, ownership cannot be divided into shares, descriptions of assets are not standardized and cannot be easily compared, and the rules that govern property vary from neighborhood to neighborhood or even street to street. You have just put yourself into life of developing country or a former communist nation."*
- ▶ *"This 80 percent majority is not [...] desperately impoverished. [...] When leaving the door of Nile Hilton, what you are leaving behind is not the high-technology world. [...] The people of Cairo have access to all these things. [...] What you are really leaving behind is the world of legally enforceable transactions on property rights."*

Property rights and wealth

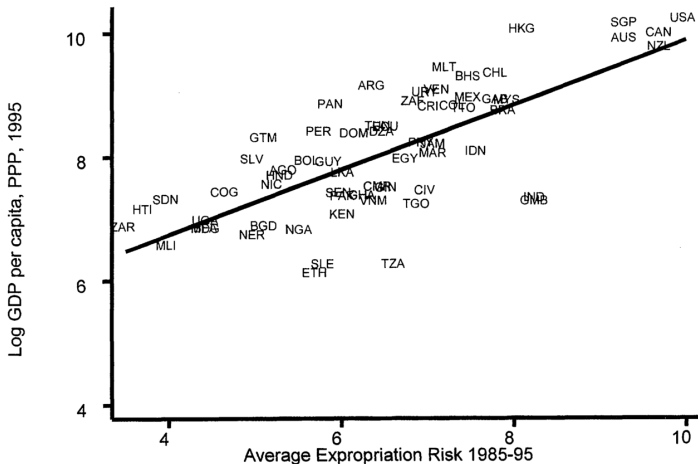


FIGURE 2. OLS RELATIONSHIP BETWEEN EXPROPRIATION RISK AND INCOME

Source: Acemoglu, Johnson, and Robinson (2001)

Corruption and wealth



Source: The Economist (2006)

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Hall and Jones (1999): Why Do Some Countries Produce So Much More Output Per Worker Than Others?

- ▶ Differences in per capita income across countries due to differences in *social infrastructure*?
- ▶ Model: Social infrastructure → Inputs and productivity → Per capita outcome
- ▶ When social infrastructure missing:
 - ▶ Private diversion (mafia, robberies)
 - ▶ Government diversion (expropriation, confiscatory taxation, corruption)
- ▶ Extreme cases: Niger vs. USA — social infrastructure able to explain the 35x difference between per capita incomes

Hall and Jones (1999): Why Do Some Countries Produce So Much More Output Per Worker Than Others?

- ▶ Production function:

$$Y_i = K_i^\alpha (A_i H_i)^{1-\alpha}$$

- ▶ K_i ... capital stock
 - ▶ A_i ... labor-augmenting productivity
 - ▶ H_i ... human capital stock
- ▶ where $H_i = e^{\theta(E_i)} L_i$
 - ▶ $\theta(E_i)$... returns to education as in Mincer (1974)
- ▶ To decompose causes of wealth econometrically, rearrange to per capita (L_i) as:

$$y_i = \left(\frac{K_i}{Y_i} \right)^{\frac{\alpha}{1-\alpha}} h_i A_i$$

Hall and Jones (1999):

- Production function:

$$Y_i = K_i^\alpha (A_i H_i)^{1-\alpha}$$

- To decompose causes of wealth econometrically do:

$$Y_i^{\frac{1}{1-\alpha}} = [K_i^\alpha (A_i H_i)^{1-\alpha}]^{\frac{1}{1-\alpha}}$$

$$Y_i^{\frac{1-\alpha}{1-\alpha}} \times Y_i^{\frac{\alpha}{1-\alpha}} = K_i^{\frac{\alpha}{1-\alpha}} A_i H_i$$

$$Y_i = \left(\frac{K_i}{Y_i} \right)^{\frac{\alpha}{1-\alpha}} A_i H_i$$

- Now rearrange to per capita (L_i) as follows:

$$y_i = \left(\frac{K_i}{Y_i} \right)^{\frac{\alpha}{1-\alpha}} h_i A_i$$

Hall and Jones (1999):

$$y_i = \left(\frac{K_i}{Y_i} \right)^{\frac{\alpha}{1-\alpha}} h_i A_i$$

- ▶ Can be decomposed into:
 - ▶ differences in capital-output ratios
 - ▶ differences in average human capital
 - ▶ differences in productivity
- ▶ Note: Why not use $\frac{K_i}{L_i}$ rather than $\frac{K_i}{Y_i}$?
 - ▶ *Kaldor's stylized facts*: $\frac{K_i}{Y_i}$ constant over time, while $\frac{K_i}{L_i}$ grows.
 - ▶ Sidenote: also justifies Cobb-Douglas production function:
"Capital and Labor's share approximately constant over time"
- ▶ Productivity can be calculated as:

$$\log(A_i) = \log(y_i) - \frac{\alpha}{1-\alpha} \log\left(\frac{K_i}{Y_i}\right) - \log(h_i)$$

Hall and Jones (1999)

TABLE I
PRODUCTIVITY CALCULATIONS: RATIOS TO U. S. VALUES

Country	Y/L	Contribution from		
		$(K/Y)^{\alpha/(1-\alpha)}$	H/L	A
United States	1.000	1.000	1.000	1.000
Canada	0.941	1.002	0.908	1.034
Italy	0.834	1.063	0.650	1.207
West Germany	0.818	1.118	0.802	0.912
France	0.818	1.091	0.666	1.126
United Kingdom	0.727	0.891	0.808	1.011
Hong Kong	0.608	0.741	0.735	1.115
Singapore	0.606	1.031	0.545	1.078
Japan	0.587	1.119	0.797	0.658
Mexico	0.433	0.868	0.538	0.926
Argentina	0.418	0.953	0.676	0.648
U.S.S.R.	0.417	1.231	0.724	0.468
India	0.086	0.709	0.454	0.267
China	0.060	0.891	0.632	0.106
Kenya	0.056	0.747	0.457	0.165
Zaire	0.033	0.499	0.408	0.160
Average, 127 countries:	0.296	0.853	0.565	0.516
Standard deviation:	0.268	0.234	0.168	0.325
Correlation with Y/L (logs)	1.000	0.624	0.798	0.889
Correlation with A (logs)	0.889	0.248	0.522	1.000

The elements of this table are the empirical counterparts to the components of equation (3), all measured as ratios to the U. S. values. That is, the first column of data is the product of the other three columns.

Hall and Jones (1999)

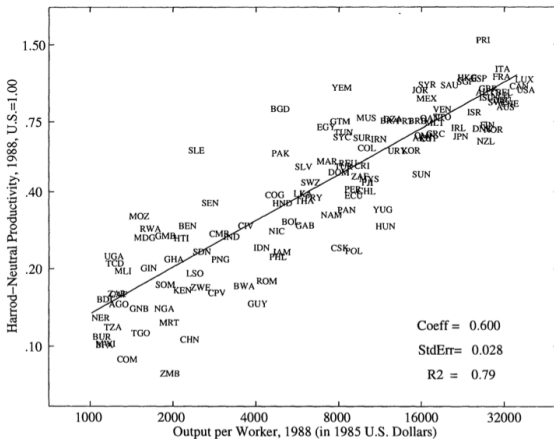


FIGURE I
Productivity and Output per Worker

Source: Hall and Jones (1999)

Hall and Jones (1999)

- ▶ But: **Why** do capital and productivity differ across countries?
 - ▶ Productive activities vulnerable to predation (need for protection and/or lower investment in otherwise profitable activities because of insecurity; diversion as a tax)
- ▶ Measuring social infrastructure: $S_i = \frac{GADP_i + IT_i}{2}$
 1. Index of government antidiversion policies (GADP): combines (i) law and order, (ii) bureaucratic quality, (iii) corruption, (iv) risk of expropriation, (v) government repudiation of contracts
 2. Openness to international trade (tariffs and quotas as opportunities for diversion)
 - 2.1 Sachs-Warner index: how many years between 1950-1994 a country open: (i) non-tariff barriers cover less than 40% of trade, (ii) average tariff rates less than 40%, (iii) black mkt premium less than 20%, (iv) non-socialist country, (v) no government monopoly on major exports.

Hall and Jones (1999)

- ▶ Original model: Social infrastructure → Inputs and productivity → Per capita outcome

$$\log(y_i) = \alpha + \beta S_i + \varepsilon_i$$

- ▶ Note: use restricted model with forced same coefficient for both measures of social infrastructure

Hall and Jones (1999)

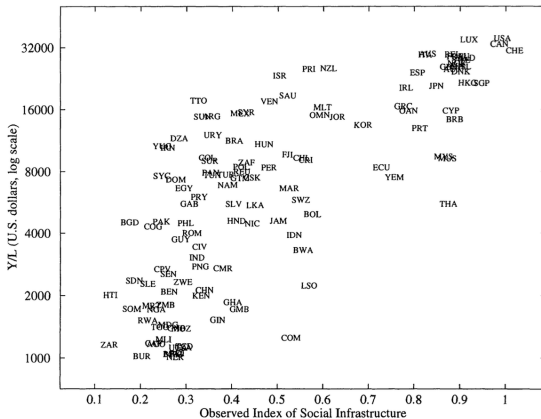


FIGURE II
Social Infrastructure and Output per Worker

Source: Hall and Jones (1999)

Hall and Jones (1999)

- ▶ But what if: Per capita outcome \rightarrow Social infrastructure (i.e. endogeneity of social infrastructure)

$$S_i = \gamma + \delta \log(y_i) + X\theta + u_i$$

- ▶ Q: Why might social infrastructure be endogenous?
- ▶ Solution: **Instrumental variables**

Hall and Jones (1999)

- ▶ Instruments used:
 - ▶ **Distance from the equator** — Europeans settled permanently in areas with similar climate (references to working paper resulting in Sokolof and Engerman, 2000; plus see Acemoglu, Johnson and Robinson, 2001)
 - ▶ Which **languages are spoken as first languages** (English, French, Spanish, Portuguese, German) — colonising countries set up different institutions (extractive vs. inclusive)

Hall and Jones (1999)

TABLE II
BASIC RESULTS FOR OUTPUT PER WORKER
 $\log Y/L = \alpha + \beta \bar{S} + \bar{\epsilon}$

Specification	Social infrastructure	OverID test <i>p</i> -value test result	Coeff test <i>p</i> -value test result	$\hat{\sigma}_{\bar{\epsilon}}$
1. Main specification	5.1432 (.508)	.256 Accept	.812 Accept	.840
<i>Alternative specifications to check robustness</i>				
2. Instruments:	4.998	.208	.155	.821
Distance, Frankel-Romer	(.567)	Accept	Accept	
3. No imputed data	5.323	.243	.905	.889
79 countries	(.607)	Accept	Accept	
4. OLS	3.289	—	.002	.700
	(.212)		Reject	

The coefficient on Social infrastructure reflects the change in log output per worker associated with a one-unit increase in measured social infrastructure. For example, the coefficient of 5.14 means that a difference of .01 in our measure of social infrastructure is associated with a 5.14 percent difference in output per worker. Standard errors are computed using a bootstrap method, as described in the text. The main specification uses distance from the equator, the Frankel-Romer instrument, the fraction of the population speaking English at birth, and the fraction of the population speaking a Western European language at birth as instruments. The OverID test column reports the result of testing the overidentifying restrictions, and the Coeff test reports the result of testing for the equality of the coefficients on the *GADP* policy index variable and the openness variable. The standard deviation of $\log Y/L$ is 1.078.

- For OLS: 0.01 increase in S_i is associated with an increase in per capita output of 3.29 percent
- For 2SLS: 0.01 increase in S_i is associated with an increase in per capita output of 5.14 percent

Source: Hall and Jones (1999)

Hall and Jones (1999)

TABLE IV
RESULTS FOR $\log K/Y$, $\log H/L$, and $\log A$
 $Component = \alpha + \beta \hat{S} + \bar{\epsilon}$

	Dependent variable		
	$\frac{\alpha}{1-\alpha} \log K/Y$	$\log H/L$	$\log A$
Social infrastructure	1.052 (.164)	1.343 (.171)	2.746 (.336)
OverID test (p)	.784	.034	.151
Test result	Accept	Reject	Accept
$\hat{\sigma}_{\bar{\epsilon}}$.310	.243	.596
$\hat{\sigma}_{Depvar}$.320	.290	.727

Estimation is carried out as in the main specification in Table II. Standard errors are computed using a bootstrap method, as described in the text.

TABLE V
FACTORS OF VARIATION: MAXIMUM/MINIMUM

	Y/L	$(K/Y)^{\alpha/(1-\alpha)}$	H/L	A
Observed factor of variation	35.1	4.5	3.1	19.9
Ratio, 5 richest to 5 poorest countries	31.7	1.8	2.2	8.3
Predicted variation, only measurement error	38.4	2.1	2.6	7.0
Predicted variation, assuming $r^2_{\hat{S},S} = .5$	25.2	1.9	2.3	5.6

The first two rows report actual factors of variation in the data, first for the separate components and then for the geometric average of the five richest and five poorest countries (sorted according to Y/L). The last two rows report predicted factors of variation based on the estimated range of variation of true social infrastructure. Specifically, these last two rows report $\exp(r\hat{\beta}_{IV}(\hat{S}_{max} - \hat{S}_{min}))$, first with $r = .800$ and second with $r^2 = .5$.

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Sokoloff and Engerman (2000)

- ▶ But why do countries have different levels of social infrastructure (or social capital)?
- ▶ US and Canada now among richest countries in the world. Central and South America rather considered a laggard.
- ▶ But from a historical perspective we would foresee a different story:
 - ▶ Voltaire: French and British fighting over North America during Seven Years' War (1756-63): madness, this "fighting over a few acres of snow."
 - ▶ After British won, repatriation considerations: should we take the island of Guadeloupe or Canada?
 - ▶ 1700: Caribbean richest (regardless of country of origin of colonization), Mexico on par with the US
- ▶ Being rich does not always produce good institutions (recall the correlation graph at the beginning).
 - ▶ What (might have) happened?

Sokoloff and Engerman (2000)

Table 1

The Record of Gross Domestic Product per Capita in Selected New World Economies, 1700–1997

	<i>GDP per capita relative to the U.S.</i>			
	<i>1700</i>	<i>1800</i>	<i>1900</i>	<i>1997</i>
Argentina	—	102	52	35
Barbados	150	—	—	51
Brazil	—	50	10	22
Chile	—	46	38	42
Cuba	167	112	—	—
Mexico	89	50	35	28
Peru	—	41	20	15
Canada	—	—	67	76
United States (GDP p.c. in 1985\$)	550	807	3,859	20,230

Notes and Sources: The relative GDP per capita figures for Latin American countries come primarily from Coatsworth (1998). Coatsworth relied extensively on Maddison (1994), and we draw our estimates for Canada and the United States in 1800 and 1900 from the same source (using linear interpolation to obtain the 1900 figures from 1890 and 1913 estimates). The GDP per capita estimates for Barbados in 1700 are from Eltis (1995). The 1997 figures are based on the estimates of GDP with purchasing power parity adjustments in World Bank (1999). Since there was no adjustment factor reported for Barbados in that year, we used that for Jamaica in our calculations. The 1700 figure for the United States was obtained from Gallman (2000), by projecting backward the same rate of growth that Gallman estimated between 1774 and 1800. Maddison (1991) has published alternative sets of estimates, which yield somewhat different growth paths (especially for Argentina) during the late nineteenth and early twentieth centuries, and he has a more positive assessment of Brazilian economic performance during the early nineteenth century than does Coatsworth, but the qualitative implications of the different estimates are essentially the same for our purposes.

Source: Sokoloff and Engerman (2000)

Sokoloff and Engerman (2000)

- ▶ Factor endowments at critical points of history (colonization) lead to differences in distribution of political power
- ▶ Three types of countries:
 1. Large-scale staple crop producers (e.g., Barbados, Cuba, Jamaica, Brazil)
 2. Mineral extractors (e.g., Mexico, Peru)
 3. Basic agricultural production (US, Canada)
- ▶ (1) and (2) needed lots of manual labor: either through import of slave labor (1) or through enslaving domestic population where there was plenty (2).
 - ▶ Legally codified inequality intrinsic to slavery created inequalities in political rights and institutional setting shaping the development centuries later.
 - ▶ Reason: value of keeping power too large to give up in unequal societies + more likely to crush dissent (Compare to situations of more equal countries.)

Sokoloff and Engerman (2000)

Laws Governing the Franchise and the Extent of Voting in Selected American Countries, 1840–1940

		<i>Lack of Secrecy In Balloting</i>	<i>Wealth Requirement</i>	<i>Literacy Requirement</i>	<i>Proportion of the Population Voting</i>
			1840–80		
Chile	1869	Y	Y	Y	1.6%
Costa Rica	1890	Y	Y	Y	—
Ecuador	1856	Y	Y	Y	0.1
Mexico	1840	Y	Y	Y	—
Peru	1875	Y	Y	Y	—
Uruguay	1880	Y	Y	Y	—
Venezuela	1880	Y	Y	Y	—
Canada	1867	Y	Y	N	7.7
	1878	N	Y	N	12.9
United States	1850 ^a	N	N	N	12.9
	1880	N	N	N	18.3

Source: Sokoloff and Engerman (2000)

Role of history in shaping institutions

- ▶ Now on slave trade from the other side of the ocean.
 - ▶ Further evidence on historical "experiments" predisposing countries to have worse institutions.
- ▶ One explanation for Africa's underdevelopment is its history of extraction, characterised by two events: the slave trades and colonialism.
 - ▶ On colonialism in readings: Acemoglu, Johnson, and Robinson (2001).

Nunn (2008): The long-term effects of Africa's slave trades

- ▶ Q: Does the intensity of slave trade predict wealth of African countries centuries later?
- ▶ Manning (1990, p. 124): *"Slavery was corruption: it involved theft, bribery, and exercise of brute force as well as ruses. Slavery thus may be seen as one source of precolonial origins for modern corruption."*
- ▶ Nunn collected the number of slaves exported from each country in Africa in each century between 1400 and 1900 by combining data from ship records on the number of slaves shipped from each African port or region with data from a variety of historical documents that report the ethnic identities of slaves that were shipped from Africa.

Nunn (2008): The long-term effects of Africa's slave trades

TABLE II
ESTIMATED TOTAL SLAVE EXPORTS BETWEEN 1400 AND 1900 BY COUNTRY

Isocode	Country name	Trans-Atlantic	Indian Ocean	Trans-Saharan	Red Sea	All slave trades
AGO	Angola	3,607,020	0	0	0	3,607,020
NGA	Nigeria	1,406,728	0	555,796	59,337	2,021,859
GHA	Ghana	1,614,793	0	0	0	1,614,793
ETH	Ethiopia	0	200	813,899	633,357	1,447,455
SDN	Sudan	615	174	408,261	454,913	863,962
MLI	Mali	331,748	0	509,950	0	841,697
ZAR	Democratic Republic of Congo	759,468	7,047	0	0	766,515
MOZ	Mozambique	382,378	243,484	0	0	625,862
TZA	Tanzania	10,834	523,992	0	0	534,826
TCD	Chad	823	0	409,368	118,673	528,862
BEN	Benin	456,583	0	0	0	456,583
SEN	Senegal	278,195	0	98,731	0	376,926
GIN	Guinea	350,149	0	0	0	350,149
TGO	Togo	289,634	0	0	0	289,634
GNB	Guinea-Bissau	180,752	0	0	0	180,752
BFA	Burkina Faso	167,201	0	0	0	167,201
MRT	Mauritania	417	0	164,017	0	164,434

Source: Nunn (2008)

Nunn (2008): The long-term effects of Africa's slave trades

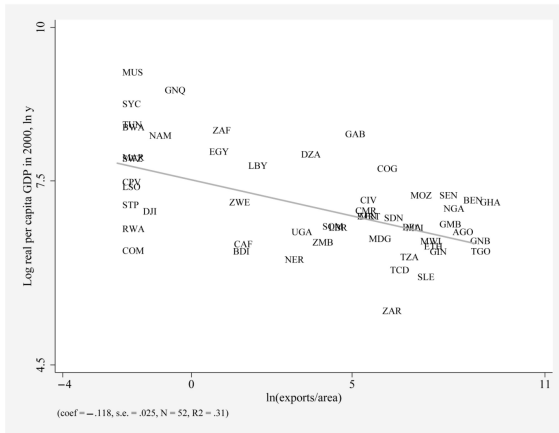


FIGURE III
Relationship between Log Slave Exports Normalized by Land Area,
 $\ln(\text{exports}/\text{area})$, and Log Real Per Capita GDP in 2000, $\ln y$

Source: Nunn (2008)

Nunn (2008): The long-term effects of Africa's slave trades

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)
$\ln(\text{exports/area})$	-0.112*** (0.024)	-0.076*** (0.029)	-0.108*** (0.037)	-0.085** (0.035)	-0.103*** (0.034)	-0.128*** (0.034)
Distance from equator		0.016 (0.017)	-0.005 (0.020)	0.019 (0.018)	0.023 (0.017)	0.006 (0.017)
Longitude		0.001 (0.005)	-0.007 (0.006)	-0.004 (0.006)	-0.004 (0.005)	-0.009 (0.006)
Lowest monthly rainfall		-0.001 (0.007)	0.008 (0.008)	0.0001 (0.007)	-0.001 (0.006)	-0.002 (0.008)
Avg max humidity		0.009 (0.012)	0.008 (0.012)	0.009 (0.012)	0.015 (0.011)	0.013 (0.010)
Avg min temperature		-0.019 (0.028)	-0.039 (0.028)	-0.005 (0.027)	-0.015 (0.026)	-0.037 (0.025)
$\ln(\text{coastline/area})$		0.085** (0.039)	0.092** (0.042)	0.095** (0.042)	0.082** (0.040)	0.083** (0.037)
Island indicator				-0.398 (0.529)	-0.150 (0.516)	
Percent Islamic				-0.008*** (0.003)	-0.006* (0.003)	-0.003 (0.003)
French legal origin				0.755 (0.503)	0.643 (0.470)	-0.141 (0.734)
North Africa indicator				0.382 (0.484)	-0.304 (0.517)	
$\ln(\text{gold prod/pop})$					0.011 (0.017)	0.014 (0.015)
$\ln(\text{oil prod/pop})$					0.078*** (0.027)	0.088*** (0.025)
$\ln(\text{diamond prod/pop})$					-0.039 (0.043)	-0.048 (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

Nunn (2008): The long-term effects of Africa's slave trades

- ▶ So far: OLS estimates shows a relationship between slave exports and current economic performance.
- ▶ But: What if societies that were initially underdeveloped selected into the slave trades, and these societies continue to be underdeveloped today? What to do?

Nunn (2008): The long-term effects of Africa's slave trades

► Historical evidence on selection during slave trade

- *"Only societies with institutions that were sufficiently developed were able to facilitate trade with the Europeans."* (Nunn, 2008, p. 157)
- More prosperous areas also the most densely populated. Population density as a proxy for wealth (Acemoglu, Johnson, and Robinson, 2002)
- Most prosperous countries in 1400 most impacted by slave trades →

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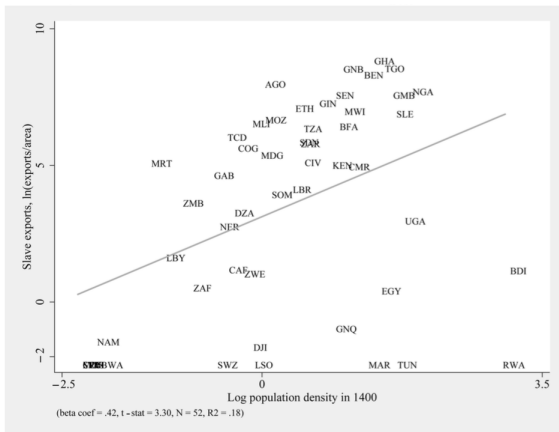


FIGURE IV
Relationship between Initial Population Density and Slave Exports

Source: Nunn (2008)

Nunn (2008): The long-term effects of Africa's slave trades

- ▶ **Instruments for slave trade:** *"location of demand that influenced the location of supply and not vice versa"* (Nunn, 2008, p. 160)
 1. Sailing distance from main importing places across Atlantic ocean (Virginia, USA; Havana, Cuba; Haiti; Kingston, Jamaica; Dominica; Martinique; Guyana; Salvador, Brazil; and Rio de Janeiro, Brazil)
 2. The sailing distance from the point on the coast to the closest of the two major slave destinations of the Indian Ocean slave trade (Mauritius and Muscat, Oman)
 3. Overland distance from a closest port of export for the trans-Saharan slave trade (Algiers, Tunis, Tripoli, Benghazi, and Cairo).
- ▶ Minimum distance used (average and median give similar results).

Institutions
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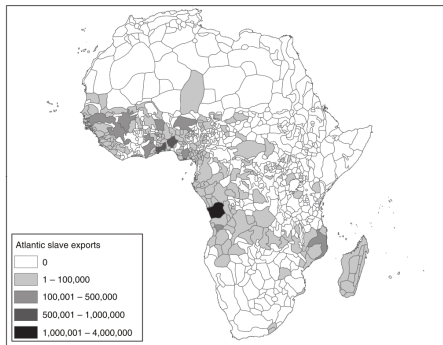
Growth
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History
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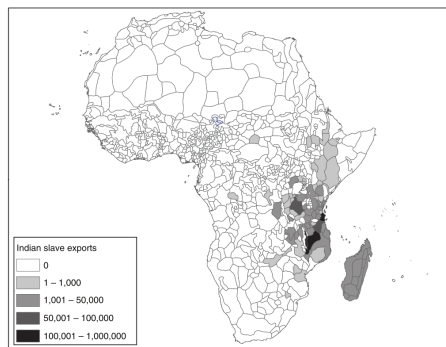
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Nunn (2008): The long-term effects of Africa's slave trades

Panel A. Transatlantic slave trade



Panel B. Indian Ocean slave trade



Source: Nunn and Watchkenson (2011)

Nunn (2008): The long-term effects of Africa's slave trades

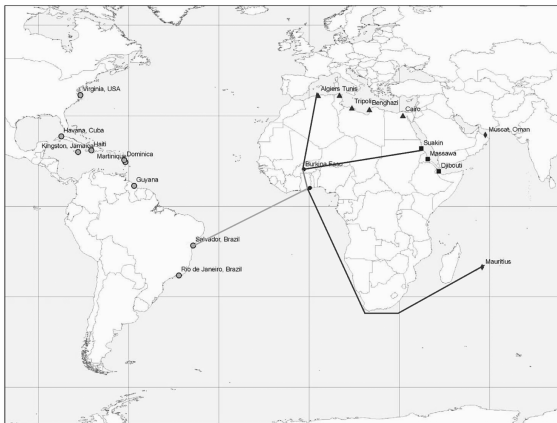


FIGURE V
Example Showing the Distance Instruments for Burkina Faso

Source: Nunn (2008)

Nunn (2008): The long-term effects of Africa's slave trades

First Stage. Dependent variable is slave exports, $\ln(\text{exports/area})$

Atlantic distance	-1.31*** (0.357)	-1.74*** (0.425)	-1.32* (0.761)	-1.69** (0.680)
Indian distance	-1.10*** (0.380)	-1.43*** (0.531)	-1.08 (0.697)	-1.57* (0.801)
Saharan distance	-2.43*** (0.823)	-3.00*** (1.05)	-1.14 (1.59)	-4.08** (1.55)
Red Sea distance	-0.002 (0.710)	-0.152 (0.813)	-1.22 (1.82)	2.13 (2.40)
<i>F</i> -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 (<i>p</i> -value)	.02	.01	.02	.04
Sargan test (<i>p</i> -value)	.18	.30	.65	.51

Source: Nunn (2008)

Nunn (2008): The long-term effects of Africa's slave trades

TABLE IV
ESTIMATES OF THE RELATIONSHIP BETWEEN SLAVE EXPORTS AND INCOME

	(1)	(2)	(3)	(4)
Second Stage. Dependent variable is log income in 2000, $\ln y$				
$\ln(\text{exports/area})$	-0.208*** (0.053) [-0.51, -0.14]	-0.201*** (0.047) [-0.42, -0.13]	-0.286* (0.153) [-∞, +∞]	-0.248*** (0.071) [-0.62, -0.12]
Colonizer fixed effects	No	Yes	Yes	Yes
Geography controls	No	No	Yes	Yes
Restricted sample	No	No	No	Yes
<i>F</i> -stat	15.4	4.32	1.73	2.17
Number of obs.	52	52	52	42

Source: Nunn (2008)

- Check: distance from slave ports used to determine wealth outside Africa: no effect. Q: Why such check needed?

Role of institutions in economic development

Growth reexamined: institutions

History, factor endowments, institutions, and wealth of nations

Culture and persistence of institutions

Nunn and Wantchekon (2011): The Slave Trade and the Origins of Mistrust in Africa

- ▶ But what is it about slave trade that caused worse institutions now?
 - ▶ Recall Manning (1990, p. 124): *"Slavery was corruption: it involved theft, bribery, and exercise of brute force as well as ruses."*
 - ▶ Add Nunn and Wantchekon (2011): *"Initially, slaves were captured primarily through state organized raids and warfare, but as the trade progressed, the environment of ubiquitous insecurity caused individuals to turn on others — including friends and family members — and to kidnap, trick, and sell each other into slavery (Koelle 1854; Hair 1965; Piot 1996)."*
- ▶ Does the mistrust prevail in societies exposed to most slave trade up until these days?

Nunn and Wantchekon (2011)

- ▶ Why the persistence?
 - ▶ Cultural anthropology: rules of thumbs (**social norms**) used for decision-making in environments where information acquisition costly or imperfect (Boyd and Richerson, 1985).
 - ▶ Social norms of mistrust towards others likely more beneficial than norms of trust in a society where you can get kidnapped by your cousin.
- ▶ Measuring trust: 2005 Afrobarometer survey
 - ▶ How much your trust your relatives / neighbors / locally elected government council / those in the same country from other ethnic groups / those from the same ethnic group?
 - ▶ Not at all / just a little / somewhat / a lot.

Nunn and Wantchekon (2011)

► Estimation strategy:

$$\text{trust}_{i,e,d,c} = \alpha_c + \beta \text{slaveexports}_e + X'_{i,e,d,c} \Gamma + X'_{d,c} \Omega + X'_e \Theta + \varepsilon_{i,e,d,c}$$

- $\text{trust}_{i,e,d,c}$... natural log of one plus slave exports normalized by land area (measure normalized by the size of ethnic groups)
- e ... ethnic group
- d ... district
- c ... country
- $X'_{i,e,d,c}$... age, gender, urban/rural, religion, occupation
- $X'_{d,c}$... district ethnic fractionalization, share of the district's population that is of the same ethnicity as the respondent
- X'_e ... ethnicity-level variables capturing historical characteristics of ethnicities, and differing impacts of colonial rule on ethnic groups (prevalence of malaria, 1400 urbanization indicator variable, sophistication of precolonial settlements, precolonial sophistication of political institutions...)

Nunn and Wantchekon (2011)

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)
$\ln(1 + \text{exports/area})$	-0.133*** (0.037)	-0.159*** (0.034)	-0.111*** (0.021)	-0.144*** (0.032)	-0.097*** (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

Notes: The table reports OLS estimates. The unit of observation is an individual. Standard errors are adjusted for two-way clustering at the ethnicity and district levels. The individual controls are for age, age squared, a gender indicator variable, five living conditions fixed effects, ten education fixed effects, 18 religion fixed effects, 25 occupation fixed effects, and an indicator for whether the respondent lives in an urban location. The district controls include ethnic fractionalization in the district and the share of the district's population that is the same ethnicity as the respondent.

Source: Nunn (2011)

Nunn and Wantchekon (2011)

- ▶ But: what if ethnic groups that were inherently less trusting were more likely to be taken during the slave trades? How to control for this possible **reverse causality**?
- ▶ Already have some controls for ethnic group fixed effects (see previous slide), but still possibly some *omitted variables*?
- ▶ **Instrumental variables**: Historical distance of the ethnic group from the coast.

Nunn and Wantchekon (2011)

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*** (0.067)	−0.245*** (0.070)	−0.221*** (0.060)	−0.251*** (0.088)	−0.174** (0.080)
Hausman test (<i>p</i> -value)	0.88	0.53	0.09	0.44	0.41
<i>R</i> 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*** (0.0003)	−0.0014*** (0.0003)	−0.0014*** (0.0003)	−0.0014*** (0.0003)	−0.0014*** (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
<i>F</i> -stat of excl. instrument	26.9	26.8	27.4	27.1	27.0
<i>R</i> ²	0.81	0.81	0.81	0.81	0.81

Notes: The table reports IV estimates. The top panel reports the second-stage estimates, and the bottom panel reports first-stage estimates. Standard errors are adjusted for two-way clustering at the ethnicity and district levels. The individual controls, district controls, ethnicity-level colonial controls, and colonial population density measures are described in [Table 3](#). The null hypothesis of the Hausman test is that the OLS estimates are consistent.

Source: Nunn (2011)

Nunn and Wantchekon (2011)

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*** (0.00013)	0.00037*** (0.00012)	−0.00020 (0.00014)	−0.00019 (0.00012)	0.00054*** (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

Notes : The table reports OLS estimates. The unit of observation is an individual. The dependent variable in the WVS sample is the respondent's answer to the question: "How much do you trust <nationality> people in general?" The categories for the respondent's answers are: "not at all," "not very much," "neither trust nor distrust," "a little," and "completely." The responses take on the values 0, 1, 1.5, 2, and 3. Standard errors are clustered at the ethnicity level in the Afrobarometer regressions and at the location (city) level in the Asiabarometer and the WVS samples. The individual controls are for age, age squared, a gender indicator, an indicator for living in an urban location, and occupation fixed effects.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Source: Nunn (2011)

Nunn and Wantchekon (2011)

- ▶ How does the mistrust persist?
 1. General beliefs or "rules-of-thumb" based on mistrust transmitted from parents to children over time (**social norms**).
 2. Slave trade resulted in a deterioration of legal and political institutions. Because these institutions persist, individuals are not constrained to act in a trustworthy manner, leading to lower trust (**legal enforcement**).
- ▶ Both channels seem to be at play.

Word of caution

- ▶ **Do not take any single explanation of historical theories of development as a fact!**
- ▶ Big ideas sell well, but many paths could have been just due to mere coincidence, luck, or many other potential explanations:
 - ▶ See wide heterogeneity of economic outcomes for countries with very different social infrastructure (Hall and Jones, 1999), across South American countries (Sokoloff and Engerman, 2000), or in slave trade numbers (Nunn, 2008).