Economics 270c
Graduate Development Economics

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Graduate Development Economics

Lecture 4 – February 6, 2007

Lecture 1: Global patterns of economic growth and development (1/16)

The political economy of development
Lecture 2: Inequality and growth (1/23)
Lecture 3: Corruption (1/30) – Guest lecture by Ben Olken

Lecture 4: History and institutions (2/6)
Lecture 5: Democracy and development (2/13)
Lecture 6: Ethnic and social divisions (2/20)
Lecture 7: Economic Theories of Conflict (2/27)
Lecture 8: War and Economic Development (3/6)

Human resources
Lecture 9: Human capital and income growth (3/13)
Lecture 10: Increasing human capital (3/20)
Lecture 11: Health and nutrition (4/3)
Lecture 12: The Economics of HIV/AIDS (4/10)
Lecture 13: Labor markets and migration (4/17)

Lecture 14: Environment and development (4/24)
Lecture 15: Social Learning and Technology Adoption (5/1)

- Referee report #1 graded – passed back at end of class
- Referee report #2 due next Tuesday February 13th

Lecture 4 outline

(1) Historical explanations for economic development

(2) Bockstette et al (2003)

(3) Acemoglu, Johnson, and Robinson (2001)

(4) Albouy (2006)

(1) History and economic growth

- Cross-country empirical growth research is plagued by problems of endogeneity, omitted variables

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- Cross-country empirical growth research is plagued by problems of endogeneity, omitted variables

- Historical data is attractive because it is not subject to reverse causality, at least

- However, the results are often subject to multiple plausible interpretations

(2) Bockstette et al (2003, *J of Ec Growth)*

- "When it comes to explaining differences in both recent economic growth rates and attained levels of economic development, it is clear that history does matter" (p. 365)

- Greater "state antiquity" is associated with faster economic growth, higher income in the 20th century

  E.g., China versus Zambia

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- Greater "state antiquity" is associated with faster economic growth, higher income in the 20th century

  E.g., China versus Zambia

- Why?

  (1) Experienced administrators

  (2) Popular attitudes supporting the state (legitimacy)

  (3) Common language, identity (e.g., China, England)

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  (iii) Did the authority control at least 50% of the current national territory (q_3=1), 25-50% of territory (q_3=0.75), 10-25% of territory (q_3=0.5), or less than 10% (q_3=0.3)?

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- The measure of state strength over each 50 year period *t* since 1 A.D. for country *i* is $q_{1,it} * q_{2,it} * q_{3,it}$

(2) Bockstette et al (2003, *J of Ec Growth)*

- The overall national index of state antiquity is then:

$$statehist_i = \frac{\sum_{t=0}^{39} \frac{(q_{1,it} * q_{2,it} * q_{3,it})}{(1+\delta)^t}}{\sum_{t=0}^{39} \frac{1}{(1+\delta)^t}} \in [0,1]$$

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- $Statehist_{CHINA} = 1$
- $Statehist_{ZAMBIA} = 0.066$

Table 1. Regional averages of *statehist5* (weighted by 1960 population).

	Statehist5
Europe	0.79
Asia	0.79
Middle East & North Africa	0.64
Sub-Saharan Africa	0.32
Latin America/Caribbean	0.30
North America	0.20
Oceania	0.16
Total	0.41

Table 2. Correlations with *statehist5*.

Political and Institutional Quality Indicators	Assassinations	Riots	Government Crises
Correlation	−0.1733‡	0.1869‡	0.2627*
Sample size	96	92	99
	Political stability	Lack of corruption	Lack of Government repudiation of contracts
Correlation	0.2437‡	0.3800*	0.5005*
Sample size	62	90	90
	Lack of expropriative risk	Rule of law	Bureaucratic quality
Correlation	0.4559*	0.3995*	0.3911*
Sample size	90	90	90
Social and Demographic Indicators	Ethno-linguistic fragmentation	Social development§	Population density 1960
Correlation	−0.2985*	0.4468*	0.1974*
Sample size	98	39	103
	Trust	Civic norms	
Correlation	0.1227	0.3077*	
Sample size	29	29	
GDP and Growth Indicators	GDP pc 1960	GDP pc 1970	GDP pc 1980
Correlation	0.2463†	0.3380*	0.3746*
Sample size	101	101	101
	GDP pc 1990	GDP pc 1995	GDP growth 1960–1995
Correlation	0.4589*	0.4747*	0.5317*
Sample size	101	101	94

Notes: *Statistically significant at the 0.01 level; †Statistically significant at the 0.05 level; ‡Statistically significant at the 0.10 level; §Excludes Latin America/Caribbean.

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Table 3. Regressions with *statehist5* using growth (1960–1995) as the dependent variable.

	1	2	3†	4†	5†	6†	7†
Constant	0.049	0.029	0.036	0.021	0.029	0.035	0.029
	(2.692)*	(1.424)	(1.848)***	(1.06)	(1.51)	(1.6)	(1.04)
Log of GDP pc (1960)	−0.011	−0.009	−0.009	−0.009	−0.008	−0.009	−0.009
	(−4.237)*	(−3.119)*	(−3.515)*	(−3.01)*	(−3.21)*	(−3.21)*	(−2.62)**
Schooling	0.033	0.032	0.034	0.026	0.029	0.032	0.004
	(2.559)**	(2.654)*	(2.879)*	(2.33)**	(2.62)*	(2.71)*	(0.36)
Log of population growth (1960–1995)	−0.001	0.002	0.001	0.007	0.002	0.002	0.002
	(0.477)	(0.797)	(0.602)	(2.47)**	(0.86)	(0.85)	(0.72)
Log of investment rate (1960–1995)	0.017	0.014	0.014	0.012	0.013	0.014	0.009
	(5.854)*	(5.468)*	(5.396)*	(5.04)*	(5.51)*	(5.16)*	(2.64)*
Statehist5		0.025	0.021	0.029	0.021	0.025	0.028
		(3.586)*	(3.372)*	(4.45)*	(3.49)*	(3.63)*	(3.41)*
ICRG (Institutional Quality)				0.002			0.001
				(2.29)**			(1.39)
Population density (1960)					0.001		0.001
					(5.5)*		(6.01)*
ETHNIC						−0.004	−0.002
						(−0.84)	(−0.50)
East-Asia Pacific							0.014
							(2.82)*
Latin America							0.006
							(1.50)
Middle East and North Africa							0.01
							(2.72)*
North America							0.018
							(2.63)**
South Asia							0.0008
							(0.16)
Sub Saharan Africa							−0.0002
							(−0.03)
Western Europe							0.006
							(1.01)
Observations	88	88	87	77	86	82	73
R-square	0.47	0.58	0.58	0.65	0.65	0.6	0.77

Table 5. Regressions with *statehist5* using log of output per worker (1988) as dependent variable.

	(1)	(2)
Constant	8.897	8.558
	(14.78)*	(15.53)*
Statehist5	0.742	0.194
	(1.85)***	(0.50)
ETHNIC	− 0.182	− 0.131
	(− 0.73)	(− 0.58)
Population Density (1960)	0.041	0.015
	(2.21)**	(0.84)
East-Asia Pacific	− 0.06	− 0.493
	(− 0.11)	(− 0.93)
Latin America	− 0.099	− 0.297
	(− 0.17)	(− 0.57)
Middle East & North Africa	0.473	0.192
	(0.86)	(0.38)
North America	1.957	0.646
	(2.87)*	(0.94)
South Asia	− 0.695	− 0.619
	(− 1.13)	(− 1.11)
Sub-Saharan Africa	− 1.387	− 1.453
	(− 2.38)**	(−2.75)*
Latitude	− 0.011	− 0.008
	(− 3.02)*	(− 2.21)**
SI		1.642
		(4.31)*
Observations	93	93
R-squared	0.79	0.81

Notes: Data for log output per worker and latitude are from Hall and Jones (1999). Numbers in parentheses are *t* statistics. ETHNIC is the variable used in Easterly and Levine (1997). SI refers to ''social infrastructure'' in Hall and Jones (1999). * = significant at 0.01 level; ** = significant at 0.05 level; *** = significant at 0.10 level.

(2) More general lessons

- Some general points can be made about studies that use historical patterns as explanatory variables:

  1. Constructing historical measures is time-consuming and difficult, and has many potential pitfalls

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  3. Interpretation of reduced form historical relationships is often difficult, with multiple competing theories (institutions versus “culture”?)

  4. The policy implications of these studies are unclear

(3) Acemoglu et al (2001, *AER*)

- The most cited recent development economics article: 1212 citations on *Google Scholar* already

- Held up as strong evidence that "institutions matter" for economic development performance

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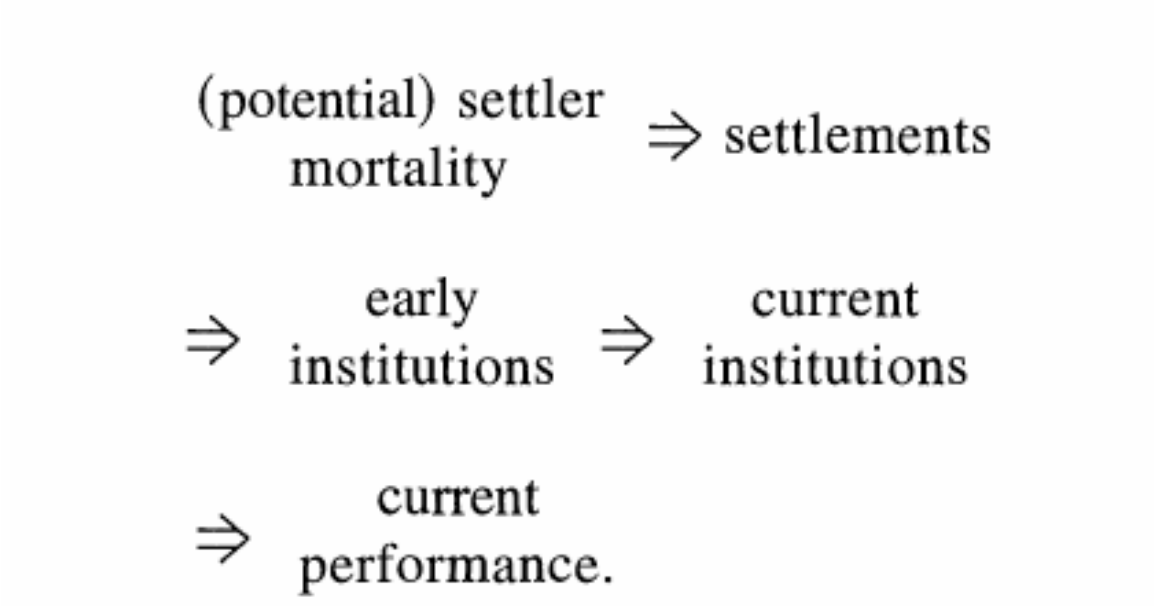
- Where European settlement was possible, imperial powers set up "better" institutions ("Neo-Europes", e.g., the U.S.) than in places where settlement was impossible for health reasons. In those areas "extractive institutions" were established (e.g., Belgian Congo)

- If historical institutions are persistent (a la Bockstette et al 2003), then this could have long-run consequences


(potential) settler mortality
⇒ settlements
⇒ early institutions
⇒ current institutions
⇒ current performance.

(3) Acemoglu et al (2001, *AER*)

- The key endogenous variable is “current institutions”. On p. 1370: “Since our focus is on property rights and checks against government power, we use the protection against risk of expropriation index from Political Risk Services as a proxy for institutions.”

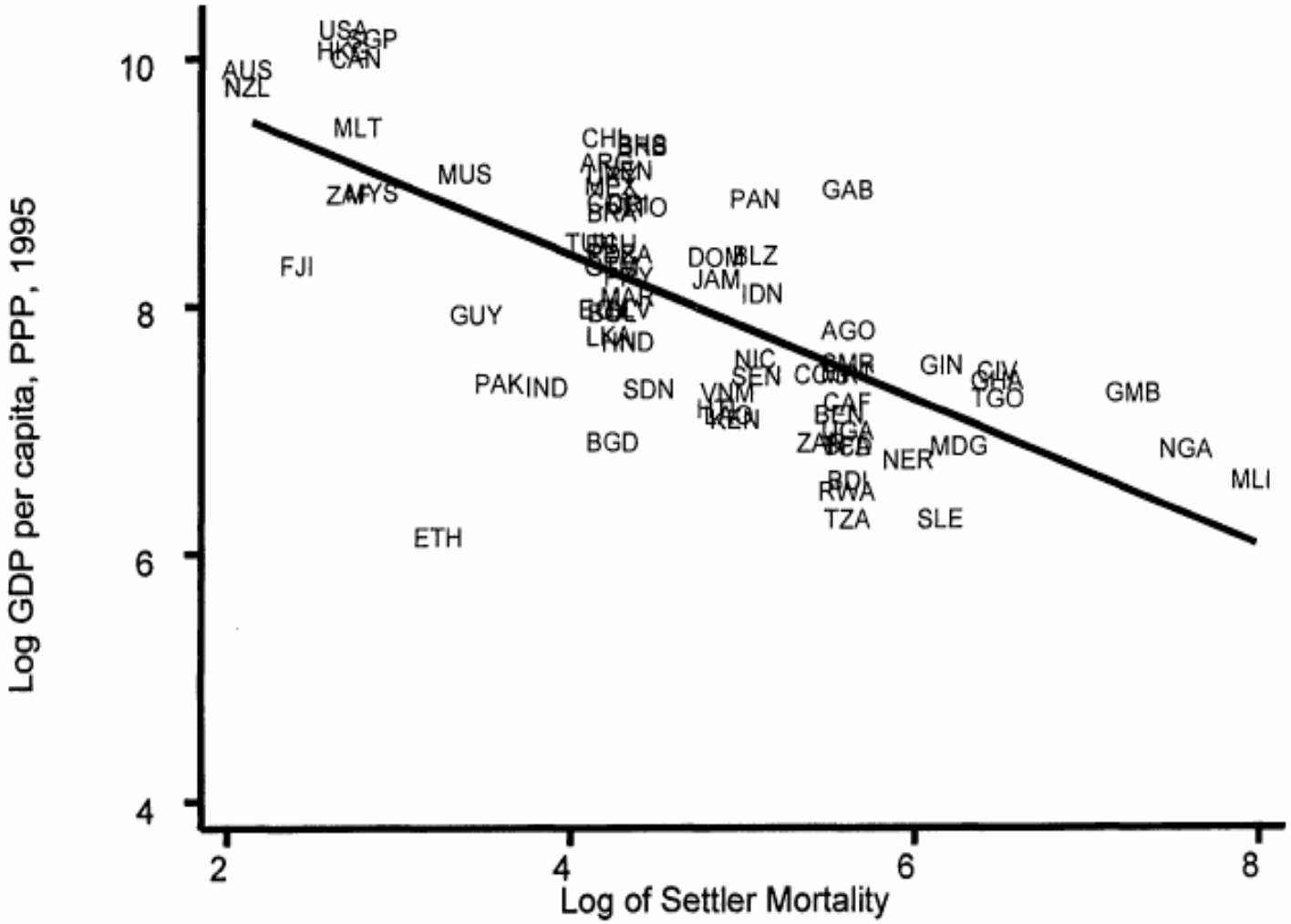


FIGURE 1. REDUCED-FORM RELATIONSHIP BETWEEN INCOME AND SETTLER MORTALITY

B. *Ordinary Least-Squares Regressions*

Table 2 reports ordinary least-squares (OLS) regressions of log per capita income on the protection against expropriation variable in a variety of samples. The linear regressions are for the equation

$$\log y_i = \mu + \alpha R_i + \mathbf{X}_i'\gamma + \varepsilon_i, \tag{1}$$

where y_i is income per capita in country i, R_i is the protection against expropriation measure, $\mathbf{X}_i$ is a vector of other covariates, and ε_i is a random error term. The coefficient of interest throughout the paper is α, the effect of institutions on income per capita.

B. *Institutions and Economic Performance*

Two-stage least-squares estimates of equation (1) are presented in Table 4. Protection against expropriation variable, R_i, is treated as endogenous, and modeled as

$$R_i = \zeta + \beta \log M_i + \mathbf{X}_i'\delta + v_i, \tag{5}$$

where M_i is the settler mortality rate in 1,000 mean strength. The exclusion restriction is that this variable does not appear in (1).

IV. Institutions and Performance: IV Results

A. *Determinants of Current Institutions*

Equation (1) describes the relationship between current institutions and log GDP. In addition we have

$$R_i = \lambda_R + \beta_R C_i + \mathbf{X}_i'\gamma_R + \nu_{Ri}, \tag{2}$$

$$C_i = \lambda_C + \beta_C S_i + \mathbf{X}_i'\gamma_C + \nu_{Ci}, \tag{3}$$

$$S_i = \lambda_S + \beta_S \log M_i + \mathbf{X}_i'\gamma_S + \nu_{Si}, \tag{4}$$

TABLE 4—IV REGRESSIONS OF LOG GDP PER CAPITA

	Base sample (1)	Base sample (2)	Base sample without Neo-Europes (3)	Base sample without Neo-Europes (4)	Base sample without Africa (5)	Base sample without Africa (6)	Base sample with continent dummies (7)	Base sample with continent dummies (8)	Base sample, dependent variable is log output per worker (9)
Panel A: Two-Stage Least Squares									
Average protection against expropriation risk 1985–1995	0.94	1.00	1.28	1.21	0.58	0.58	0.98	1.10	0.98
	(0.16)	(0.22)	(0.36)	(0.35)	(0.10)	(0.12)	(0.30)	(0.46)	(0.17)
Latitude		−0.65		0.94		0.04		−1.20	
		(1.34)		(1.46)		(0.84)		(1.8)	
Asia dummy							−0.92	−1.10	
							(0.40)	(0.52)	
Africa dummy							−0.46	−0.44	
							(0.36)	(0.42)	
"Other" continent dummy							−0.94	−0.99	
							(0.85)	(1.0)	
Panel B: First Stage for Average Protection Against Expropriation Risk in 1985–1995									
Log European settler mortality	−0.61	−0.51	−0.39	−0.39	−1.20	−1.10	−0.43	−0.34	−0.63
	(0.13)	(0.14)	(0.13)	(0.14)	(0.22)	(0.24)	(0.17)	(0.18)	(0.13)
Latitude		2.00		−0.11		0.99		2.00	
		(1.34)		(1.50)		(1.43)		(1.40)	
Asia dummy							0.33	0.47	
							(0.49)	(0.50)	
Africa dummy							−0.27	−0.26	
							(0.41)	(0.41)	
"Other" continent dummy							1.24	1.1	
							(0.84)	(0.84)	
R^2	0.27	0.30	0.13	0.13	0.47	0.47	0.30	0.33	0.28
Panel C: Ordinary Least Squares									
Average protection against expropriation risk 1985–1995	0.52	0.47	0.49	0.47	0.48	0.47	0.42	0.40	0.46
	(0.06)	(0.06)	(0.08)	(0.07)	(0.07)	(0.07)	(0.06)	(0.06)	(0.06)
Number of observations	64	64	60	60	37	37	64	64	61

TABLE 7—GEOGRAPHY AND HEALTH VARIABLES

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Instrumenting only for average protection against expropriation risk						Instrumenting for all right-hand-side variables			Yellow fever instrument for average protection against expropriation risk	
	Panel A: Two-Stage Least Squares										
Average protection against expropriation risk, 1985–1995	0.69	0.72	0.63	0.68	0.55	0.56	0.69	0.74	0.68	0.91	0.90
	(0.25)	(0.30)	(0.28)	(0.34)	(0.24)	(0.31)	(0.26)	(0.24)	(0.23)	(0.24)	(0.32)
Latitude		−0.57		−0.53		−0.1					
		(1.04)		(0.97)		(0.95)					
Malaria in 1994	−0.57	−0.60					−0.62				
	(0.47)	(0.47)					(0.68)				
Life expectancy			0.03	0.03				0.02			
			(0.02)	(0.02)				(0.02)			
Infant mortality					−0.01	−0.01			−0.01		
					(0.005)	(0.006)			(0.01)		
Panel B: First Stage for Average Protection Against Expropriation Risk in 1985–1995											
Log European settler mortality	−0.42	−0.38	−0.34	−0.30	−0.36	−0.29	−0.41	−0.40	−0.40		
	(0.19)	(0.19)	(0.17)	(0.18)	(0.18)	(0.19)	(0.17)	(0.17)	(0.17)		
Latitude		1.70		1.10		1.60	−0.81	−0.84	−0.84		
		(1.40)		(1.40)		(1.40)	(1.80)	(1.80)	(1.80)		
Malaria in 1994	−0.79	−0.65									
	(0.54)	(0.55)									
Life expectancy			0.05	0.04							
			(0.02)	(0.02)							
Infant mortality					−0.01	−0.01					
					(0.01)	(0.01)					
Mean temperature							−0.12	−0.12	−0.12		
							(0.05)	(0.05)	(0.05)		
Distance from coast							0.57	0.55	0.55		
							(0.51)	(0.52)	(0.52)		
Yellow fever dummy										−1.10	−0.81
										(0.41)	(0.38)
R^2	0.3	0.31	0.34	0.35	0.32	0.34	0.37	0.36	0.36	0.10	0.32

Appendix Table A2—Data on Mortality

Former colonies	Abbreviated name used in graphs	Log GDP per capita (PPP) in 1995	Average protection against expropriation risk 1985–1995	Main mortality estimate	Former colonies	Abbreviated name used in graphs	Log GDP per capita (PPP) in 1995	Average protection against expropriation risk 1985–1995	Main mortality estimate
Algeria	DZA	8.39	6.50	78.2	Jamaica	JAM	8.19	7.09	130
Angola	AGO	7.77	5.36	280	Kenya	KEN	7.06	6.05	145
Argentina	ARG	9.13	6.39	68.9	Madagascar	MDG	6.84	4.45	536.04
Australia	AUS	9.90	9.32	8.55	Malaysia	MYS	8.89	7.95	17.7
Bahamas	BHS	9.29	7.50	85	Mali	MLI	6.57	4.00	2940
Bangladesh	BGD	6.88	5.14	71.41	Malta	MLT	9.43	7.23	16.3
Bolivia	BOL	7.93	5.64	71	Mexico	MEX	8.94	7.50	71
Brazil	BRA	8.73	7.91	71	Morocco	MAR	8.04	7.09	78.2
Burkina Faso	BFA	6.85	4.45	280	New Zealand	NZL	9.76	9.73	8.55
Cameroon	CMR	7.50	6.45	280	Nicaragua	NIC	7.54	5.23	163.3
Canada	CAN	9.99	9.73	16.1	Niger	NER	6.73	5.00	400
Chile	CHL	9.34	7.82	68.9	Nigeria	NGA	6.81	5.55	2004
Colombia	COL	8.81	7.32	71	Pakistan	PAK	7.35	6.05	36.99
Congo (Brazzaville)	COG	7.42	4.68	240	Panama	PAN	8.84	5.91	163.3
Costa Rica	CRI	8.79	7.05	78.1	Paraguay	PRY	8.21	6.95	78.1
Côte d'Ivoire	CIV	7.44	7.00	668	Peru	PER	8.40	5.77	71
Dominican Republic	DOM	8.36	6.18	130	Senegal	SEN	7.40	6.00	164.66
Ecuador	ECU	8.47	6.55	71	Sierra Leone	SLE	6.25	5.82	483
Egypt	EGY	7.95	6.77	67.8	Singapore	SGP	10.15	9.32	17.7
El Salvador	SLV	7.95	5.00	78.1	South Africa	ZAF	8.89	6.86	15.5
Ethiopia	ETH	6.11	5.73	26	Sri Lanka	LKA	7.73	6.05	69.8
Gabon	GAB	8.90	7.82	280	Sudan	SDN	7.31	4.00	88.2
Gambia	GMB	7.27	8.27	1470	Tanzania	TZA	6.25	6.64	145
Ghana	GHA	7.37	6.27	668	Togo	TGO	7.22	6.91	668
Guatemala	GTM	8.29	5.14	71	Trinidad and Tobago	TTO	8.77	7.45	85
Guinea	GIN	7.49	6.55	483	Tunisia	TUN	8.48	6.45	63
Guyana	GUY	7.90	5.89	32.18	Uganda	UGA	6.97	4.45	280
Haiti	HTI	7.15	3.73	130	Uruguay	URY	9.03	7.00	71
Honduras	HND	7.69	5.32	78.1	USA	USA	10.22	10.00	15
Hong Kong	HKG	10.05	8.14	14.9	Venezuela	VEN	9.07	7.14	78.1
India	IND	7.33	8.27	48.63	Vietnam	VNM	7.28	6.41	140
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Appendix Table A2—Data on Mortality

Former colonies	Abbreviated name used in graphs	Log GDP per capita (PPP) in 1995	Average protection against expropriation risk 1985–1995	Main mortality estimate	Former colonies	Abbreviated name used in graphs	Log GDP per capita (PPP) in 1995	Average protection against expropriation risk 1985–1995	Main mortality estimate
Algeria	DZA	8.39	6.50	78.2	Jamaica	JAM	8.19	7.09	130
Angola	AGO	7.77	5.36	280	Kenya	KEN	7.06	6.05	145
Argentina	ARG	9.13	6.39	68.9	Madagascar	MDG	6.84	4.45	536.04
Australia	AUS	9.90	9.32	8.55	Malaysia	MYS	8.89	7.95	17.7
Bahamas	BHS	9.29	7.50	85	Mali	MLI	6.57	4.00	2940
Bangladesh	BGD	6.88	5.14	71.41	Malta	MLT	9.43	7.23	16.3
Bolivia	BOL	7.93	5.64	71	Mexico	MEX	8.94	7.50	71
Brazil	BRA	8.73	7.91	71	Morocco	MAR	8.04	7.09	78.2
Burkina Faso	BFA	6.85	4.45	280	New Zealand	NZL	9.76	9.73	8.55
Cameroon	CMR	7.50	6.45	280	Nicaragua	NIC	7.54	5.23	163.3
Canada	CAN	9.99	9.73	16.1	Niger	NER	6.73	5.00	400
Chile	CHL	9.34	7.82	68.9	Nigeria	NGA	6.81	5.55	2004
Colombia	COL	8.81	7.32	71	Pakistan	PAK	7.35	6.05	36.99
Congo (Brazzaville)	COG	7.42	4.68	240	Panama	PAN	8.84	5.91	163.3
Costa Rica	CRI	8.79	7.05	78.1	Paraguay	PRY	8.21	6.95	78.1
Côte d'Ivoire	CIV	7.44	7.00	668	Peru	PER	8.40	5.77	71
Dominican Republic	DOM	8.36	6.18	130	Senegal	SEN	7.40	6.00	164.66
Ecuador	ECU	8.47	6.55	71	Sierra Leone	SLE	6.25	5.82	483
Egypt	EGY	7.95	6.77	67.8	Singapore	SGP	10.15	9.32	17.7
El Salvador	SLV	7.95	5.00	78.1	South Africa	ZAF	8.89	6.86	15.5
Ethiopia	ETH	6.11	5.73	26	Sri Lanka	LKA	7.73	6.05	69.8
Gabon	GAB	8.90	7.82	280	Sudan	SDN	7.31	4.00	88.2
Gambia	GMB	7.27	8.27	1470	Tanzania	TZA	6.25	6.64	145
Ghana	GHA	7.37	6.27	668	Togo	TGO	7.22	6.91	668
Guatemala	GTM	8.29	5.14	71	Trinidad and Tobago	TTO	8.77	7.45	85
Guinea	GIN	7.49	6.55	483	Tunisia	TUN	8.48	6.45	63
Guyana	GUY	7.90	5.89	32.18	Uganda	UGA	6.97	4.45	280
Haiti	HTI	7.15	3.73	130	Uruguay	URY	9.03	7.00	71
Honduras	HND	7.69	5.32	78.1	USA	USA	10.22	10.00	15
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- This weakens the first stage considerably, casting doubt on the entire empirical IV strategy. Confidence intervals increase dramatically
- There are several potential problems in the AJR series, including simple inconsistencies (in using their own sources using their own algorithm), selective use of barracks vs. campaign mortality, questionable attribution of mortality rates to other regional countries
- They also do not cluster disturbance terms correctly when the same mortality figure is used for multiple countries (total number of mortality figures=28 countries)

TABLE 1: SETTLER MORTALITY RATE REVISIONS TO ELIMINATE INCONSISTENCIES

Country	Old Rate	New Rate	Reason
Sudan	88.2	10.9	Earliest (non-zero) available rate.
Egypt	67.8	24.7	Earliest available rate.
Madagascar	536.04	75	Earliest available rate.
Mali	2940	400	All countries had rates based on campaigns in Mali. Rate of 2940 not a true annual rate. 400 earliest available annual rate for Mali.
Niger	400	400	
Angola, Burkina Faso, Cameroon, Gabon, & Uganda	280	400	
Congo & Zaire	240	100	Maximum not average previously used.
Kenya & Tanzania	145	dropped	Average rate not available.

Additional information on these revisions found in the main text and the Appendix. All data sources are used in Acemoglu et al. (2001).

The mortality rate of 14.9 AJR use for Hong Kong belongs to the British China Field Force who fought in 1860 during Arrow's War. As the rate was not annualized, and since most of the campaign was fought in Beijing where mortality was much lower than in Hong Kong, this rate cannot be considered a campaign rate for Hong Kong.

The rate of 17.7 used by AJR for Malaysia and Singapore is from a small sample in Penang, Malaysia. This mortality rate is repeated in Statistical Society of London (1841), which also gives a combined mortality rate of 20.0 for a much larger group of soldiers encompassing Penang, Malacca, and Singapore (p. 146). However, it should be kept in mind that the Portuguese and Dutch had been in this area for over 300 years.

For the United States, AJR use a barracks rate of 15 corresponding to northern American soldiers from 1829 to 1838, over two hundred years after the first permanent British colony, Jamestown, was established. The mortality rate of the Jamestown settlers was much higher than AJR's rate suggests: in the first year of settlement, 1607, Earle (1979) estimates that between 27 and 45 percent of colonists died from dysentery and typhoid.[13] Primarily because of a bad water

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[11] "The very high mortality rate for the Dutch East Indies (Indonesia) was unrepresentative for the same reason the Algerian figure was. These years included those of the Java War, with tough campaigns, high casualties from combat and high disease rates" (Curtin, 1989, p.18).

[12] Furthermore, the assumption in AJR's over-identification test that European settlement is exogenous is hard to maintain as colonists were attracted to places where economic prospects were favorable.

[13] Curtin (1998, p. 116) refers to this source, although he cites a higher mortality number, stating "In 1607 to 1624… settlers in Jamestown in Virginia died at an annual rate of about 500 per thousand, and the principal killer may have been typhoid."

The first Canadian colonists also died at high rates when first settling. During the first winter spent by the French, from 1535 to 1536 in what is now Quebec City, 25 out of 110 men died, producing the rate of 227, although the number would have likely been higher had they not discovered how to cure scurvy from the Indians (Trudel, 1973, p. 27). The next winter that mortality was recorded, from 1542 to 1543, 50 out of 200 died from scurvy (p. 47), leading the French to abandon their colony. The French returned in 1604 to Sainte Croix Island where 36 out of 79 died (p. 151) the first winter. The next winter spent at Quebec from 1609 to 1610 saw 13 die of scurvy and 7 die of dysentery out of 28 inhabitants. However within a few more years, the settlers learned how to overcome scurvy and build shelter adapted for the harsh winters and saw their mortality rates decline.

TABLE 2: FIRST STAGE ESTIMATES CUMULATIVELY ELIMINATING INCONSISTENT DATA CHOICES
(Dependent Variable: Expropriation Risk)

Control Variables	No Controls (1)	Latitude Control (2)	Without Neo-Europes (3)	Continent Dummies (4)	Continents Dummies & Latitude (5)	Mean Temp and Min Rain (6)	Percent European, 1975 (7)	Malaria in 1994 (8)
Panel A: Original data (N=64, J=36)								
Log mortality (β)	-0.61	-0.52	-0.40	-0.44	-0.35	-0.40	-0.42	-0.52
{homoscedastic s.e.}	{0.13}	{0.14}	{0.13}	{0.17}	{0.18}	{0.15}	{0.14}	{0.18}
☆(heteroscedastic-clustered s.e.)	(0.17)	(0.19)	(0.17)	(0.20)	(0.21)	(0.19)	(0.19)	(0.22)
p-value of log mortality	0.001	0.01	0.03	0.04	0.11	0.04	0.03	0.02
p-value of controls	-	0.17	-	0.40	0.34	0.01	0.02	0.40
Panel B: Sudan given earliest available non-zero rate (N=64, J=36)								
Log mortality (β)	-0.53	-0.42	-0.31	-0.32	-0.23	-0.31	-0.33	-0.38
(heteroscedastic-clustered s.e.)	(0.19)	(0.21)	(0.18)	(0.23)	(0.23)	(0.20)	(0.20)	(0.25)
p-value of log mortality	0.01	0.05	0.10	0.17	0.34	0.13	0.12	0.14
p-value of controls	-	0.14	-	0.29	0.24	0.01	0.02	0.22
Panel C: Egypt and Madagascar given earliest available rate, cumulative from panel B (N=64, J=36)								
Log mortality (β)	-0.50	-0.38	-0.28	-0.27	-0.17	-0.27	-0.29	-0.33
(heteroscedastic-clustered s.e.)	(0.19)	(0.21)	(0.18)	(0.21)	(0.22)	(0.19)	(0.20)	(0.25)
p-value of log mortality	0.01	0.08	0.14	0.22	0.46	0.18	0.15	0.20
p-value of controls	-	0.14	-	0.17	0.16	0.003	0.01	0.14
☆*Panel D: All Mali-based countries given the same rate, cumulative from panel C (N=64, J=34)*								
Log mortality (β)	-0.49	-0.36	-0.25	-0.24	-0.11	-0.24	-0.27	-0.29
(heteroscedastic-clustered s.e.)	(0.20)	(0.24)	(0.19)	(0.22)	(0.23)	(0.20)	(0.21)	(0.27)
p-value of log mortality	0.02	0.14	0.21	0.30	0.64	0.23	0.22	0.30
p-value of controls	-	0.17	-	0.15	0.13	0.00	0.01	0.14

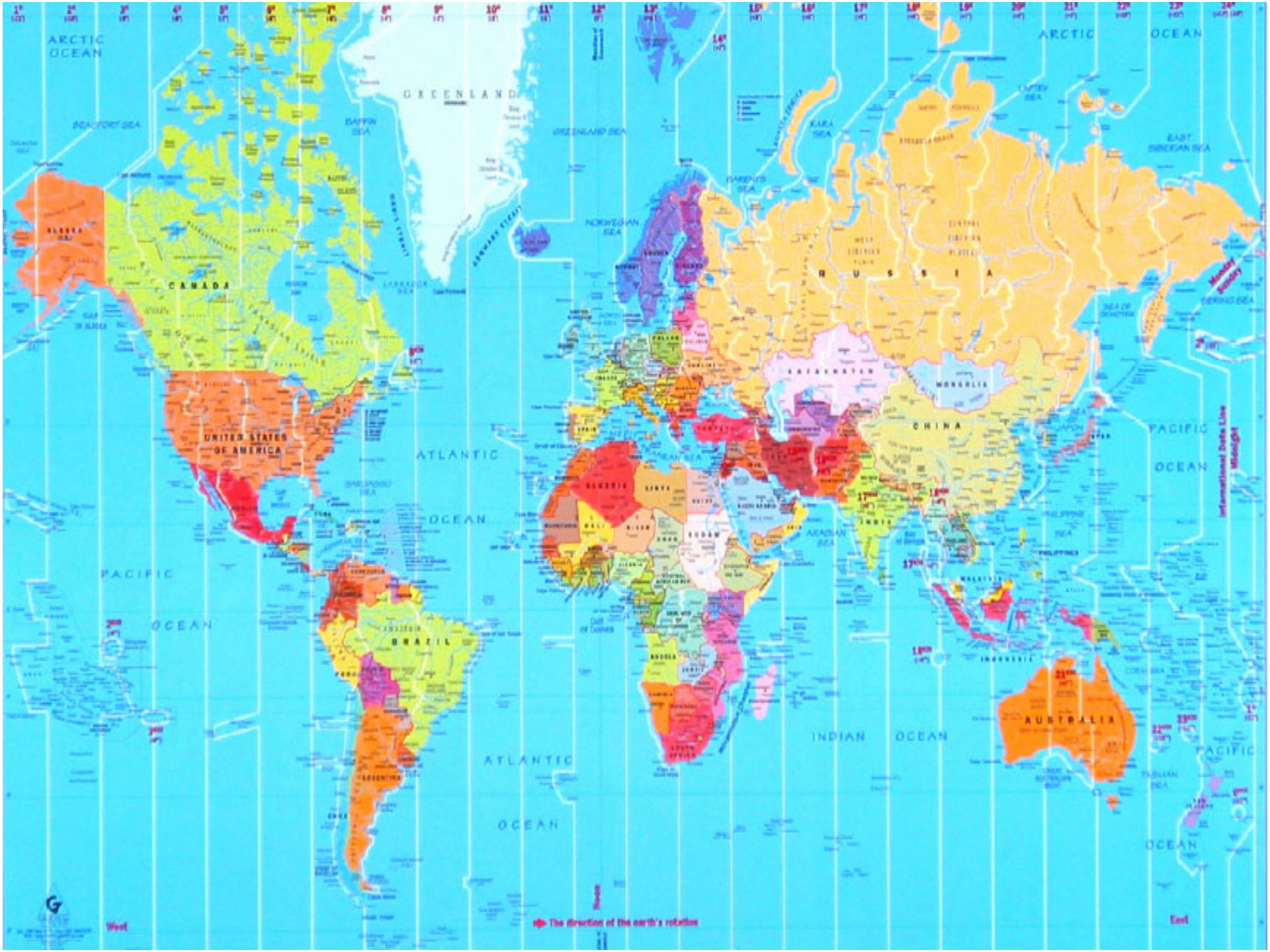
Whiteboard #1

Whiteboard #2

Whiteboard #3

Whiteboard #4

Whiteboard #5


ARCTIC OCEAN
GREENLAND
BEAUFORT SEA
BAFFIN SEA
GREENLAND SEA
NORWEGIAN SEA
BARENTS SEA
KARA SEA
LAPTEV SEA
EAST SIBERIAN SEA
CANADA
RUSSIA
ALASKA
UNITED STATES OF AMERICA
KAZAKHSTAN
MONGOLIA
CHINA
ATLANTIC OCEAN
PACIFIC OCEAN
BRAZIL
INDIA
INDONESIA
AUSTRALIA
INDIAN OCEAN
International Date Line
Midnight
West
East
The direction of the earth's rotation