

AMBO UNIVERSITY
WOLISO CAMPUS
SCHOOL OF GRADUATE STUDIES
COLLEGE OF BUSINESS & ECONOMICS
INSTITUTIONAL ECONOMICS
LECTURE 6
INSTITUTIONS AND DEVELOPMENT

1/25/2019

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Lecture content

1. Introduction
2. Determinants of long term development
3. Institutions causing growth
 - Acemoglu, Johnson, Robinson (2001)
 - Kaufmann and Kraay ()
 - Rodrik and Trebbi (2002)
4. Measurement issues and reversal effects
 - Glaeser et al (2004)

Introduction

□ Look at the following data:

Countries	Per capita GDP (USD)	Year
Ethiopia	632	2014
China	6,621	2006
Brazil	7,826	2006
Poland	13,349	2006
Malaysia	10,091	2006
Nigeria	1,008	2006
USA	14,937	1950
USA	31,910	1999

Introduction...

- ❑ Basic Question: What causes these differences in income over time and across countries?
- ❑ Can it be explained by:
 - ✓ Physical capital accumulation?
 - ✓ Human resources quality (Education)?
 - ✓ Technology/innovation?
 - ✓ Geography?
 - ✓ Institutional quality
 - ✓ Trade/integration, or what else?

Determinants of long term development

- Immediate causes of growth:
 - ✓ Physical/human capital accumulation,
 - ✓ Technological change (endogenous)
- These are proxy causes for growth.
- The basic question: why did some countries manage to accumulate and innovate more rapidly than others?

Determinants of long term...

- Deeper determinants of economic growth:
 1. Geography
 2. Trade/integrations
 3. Institutions
- Determine which country will innovate and accumulate more rapidly than others.

Determinants of long term...

- Long term economic development is complex phenomena.
- Some variables are results of human choice and others are endogenous.
- The challenges are:
 1. How to measure the variables?
 2. Identifications of channels through which the variables affect growth?
 3. Which variable is more important than others? Are the variables additive or interact?

Determinants of long term...

1. Measurements:

- Geography:

- ✓ Distance from equator,
- ✓ Percentage of land mass located in the tropics
- ✓ Average temperature,
- ✓ Share of population living in temperate zone,
- ✓ Log settler mortality,

Determinants of long term...

- Integration/trade:
 - ✓ Flows of trade
 - ✓ Trade barriers
 - ✓ Trade/GDP

Determinants of long term...

- Institutions:

- ✓ Democracy,
- ✓ Executive constraints,
- ✓ Expropriation risk (property rights),
- ✓ Government effectiveness,
- ✓ Constitutional review,
- ✓ Proportional representation,
- ✓ Rule of law,
- ✓ Other check and balance measures

Determinants of long term...

2. Channels through which the variables affect growth?

i. Geography:

- Affects economic development through affecting:
 - ✓ Climate changes, agricultural productivity,
 - ✓ Endowments of natural resources,
 - ✓ Diffusion of knowledge and technology, from advanced areas
 - ✓ Disease burden,
 - ✓ Trade/transaction costs
 - ✓ Quality of institutions

Determinants of long term.....

ii. Integration/trade:

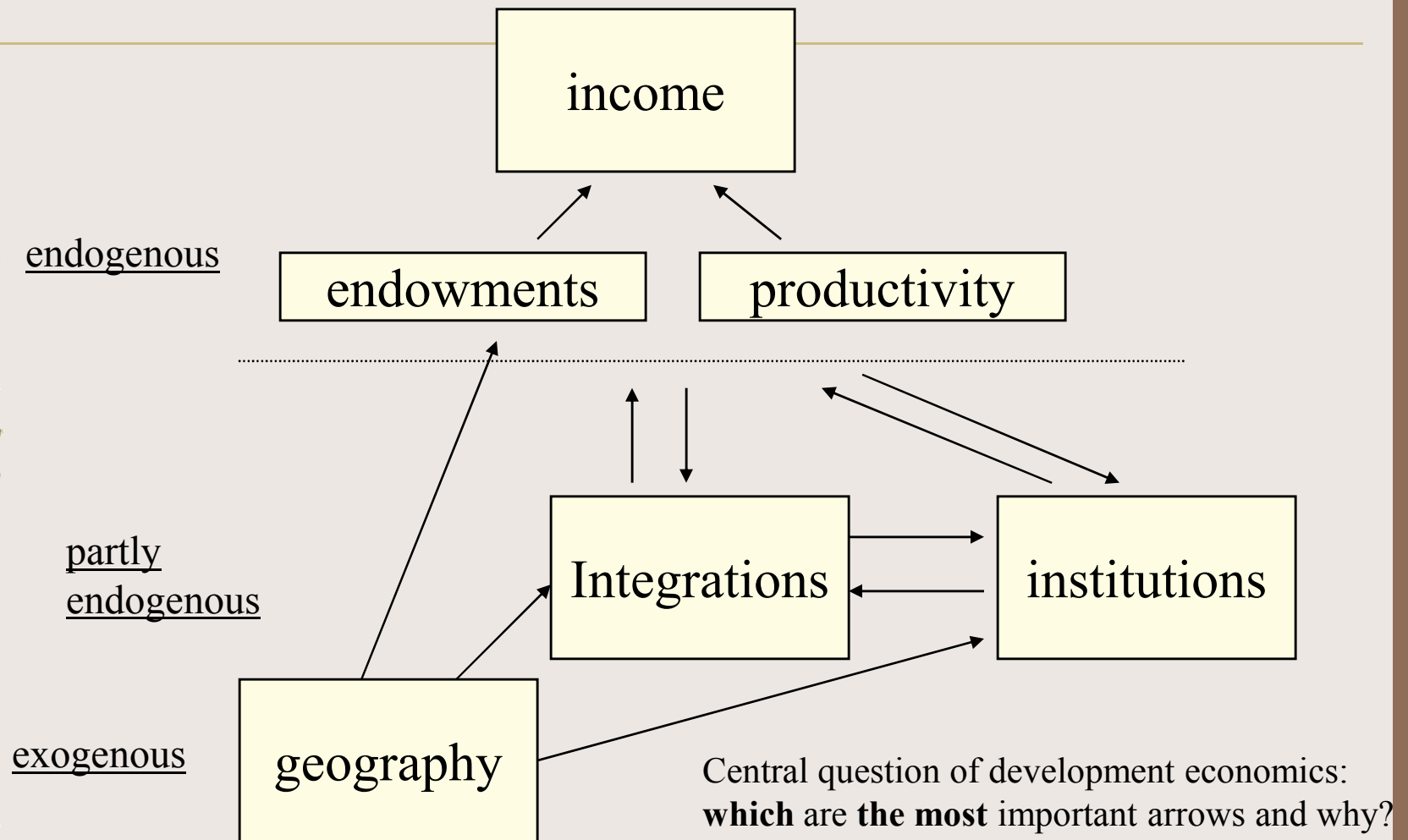
- More complex channel:
 - ✓ Direct effect on economic development,
 - ✓ Indirect effect via affecting institutions
 - ✓ And reversal effects of economy on integration, institutions and then economic effects.

Determinants of long term...

iii. Institutions

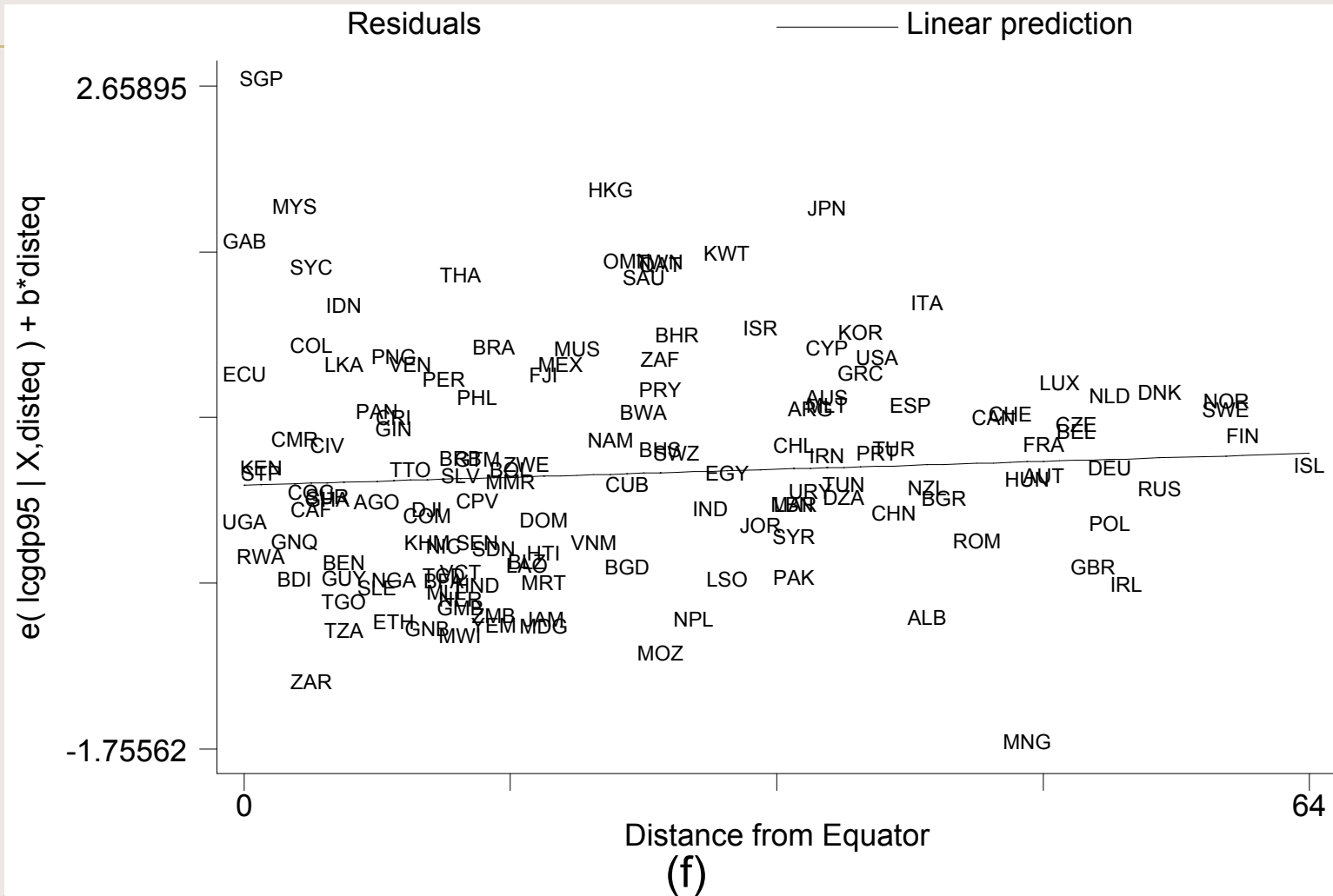
- More complex to identify:
 - ✓ Direct: Institutions promoting growth,
 - ✓ Indirect: economic growth promoting institutional quality

Determinants of long term...

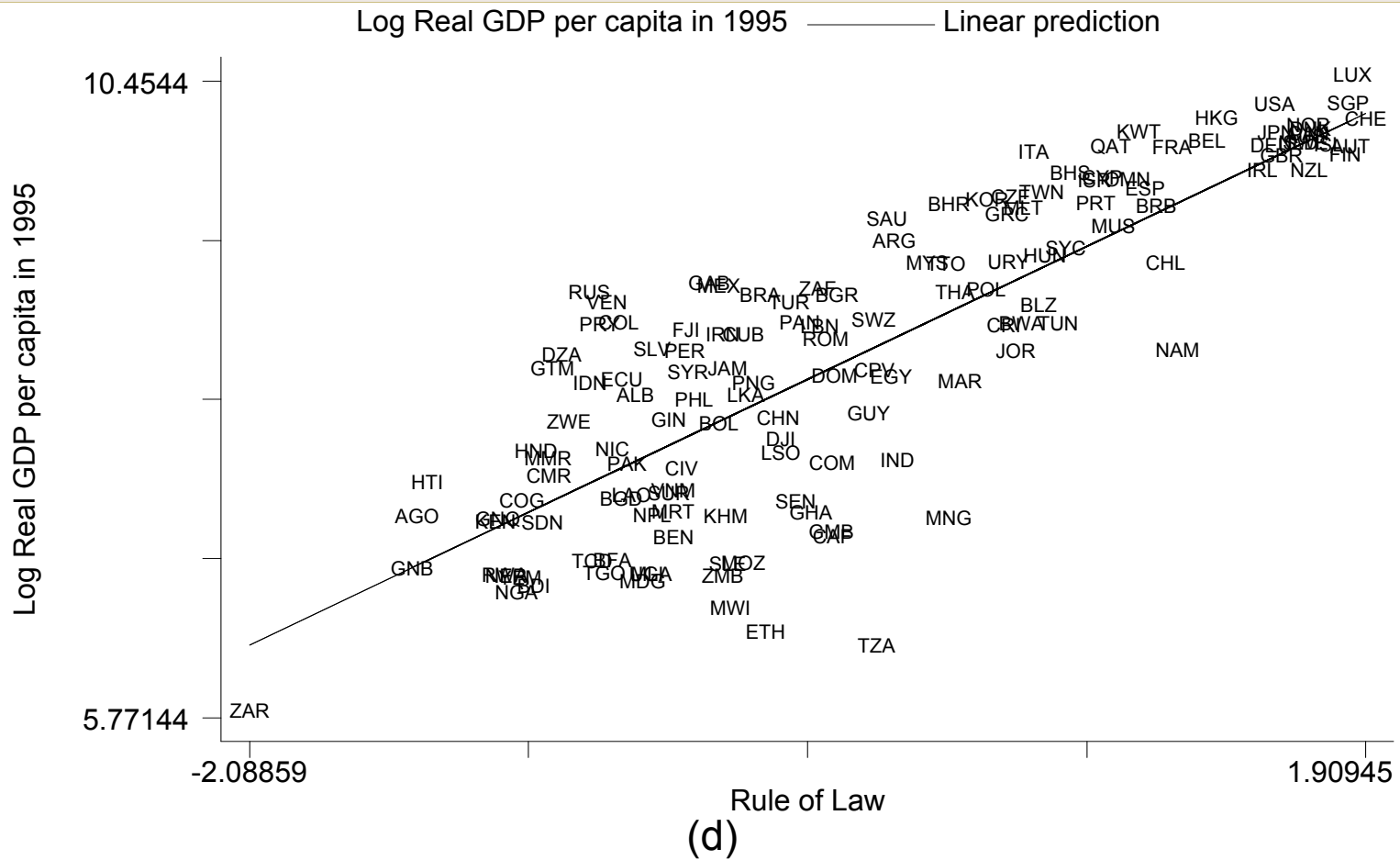


Source: Adapted from Rodrik and Trebbi(2002)

Determinants of long term...



Determinants of long term...



Determinants of long term...

3. Which variable is more important than others? Are the variables additive or interact?

- Different lines of arguments:

1. Primacy of institutions:

- ✓ Acemoglu, Johnson, Robinson (2001)

- ✓ Kaufmann and Kraay ()

- ✓ Rodrik and Trebbi (2002)

- ✓ Easterly and Levine (2003)

2. Reversal effects on institutions

- ✓ Glaeser et al (2004),

- ✓ Sachs (2003), Albouy (2006)

Institutions causing growth

1. Acemoglu, Johnson, Robinson (2001):

□ Basic arguments:

- ✓ Differences in European mortality rates to estimate the effect of institutions on economic performance.
- ✓ Europeans adopted very different colonization policies in different colonies, with different associated institutions.

Institutions causing growth....

- ✓ In places where Europeans faced high mortality rates, they could not settle and were more likely to set up extractive institutions.
- ✓ These institutions persisted to the present. Exploiting differences in European mortality rates as an instrument for current institutions, to estimate large effects of institutions on income per capita.

Institutions causing growth....

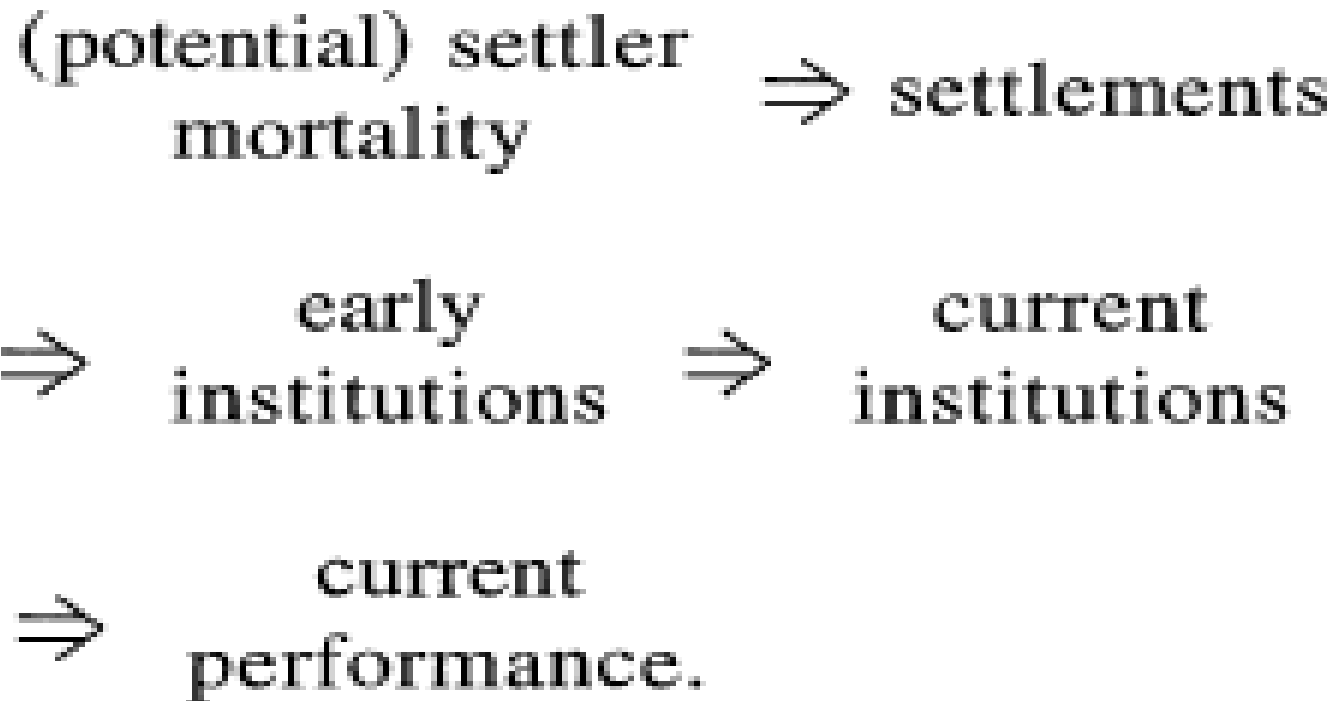
- The premises:
- Political institutions → Policy choice
- dependable institutions (property rights)
- incentive to invest in human and physical infrastructure → efficiency and productivity
- more out put per person → economic performance

Institutions causing growth....

- The premises:
- Geography → dependable institutions
→ incentive to invest in human and physical infrastructure → efficiency and productivity
→ Economic growth.
 - Institutional view of development

Institutions causing growth....

- Schematic representation of the argument:



Institutions causing growth....

- OLS and 2 SLS regression:

$$\text{Log } y_i = \mu + \alpha R_i + \delta x_i + \varepsilon_i \dots \dots \dots (1)$$

$$R_i = \lambda_R + \beta_R C_i + \gamma x_i + v_{Ri} \dots \dots \dots (2)$$

$$C_i = \lambda_c + \beta_c S_i + \gamma x_i + v_{ci} \dots \dots \dots (3)$$

$$S_i = \lambda_s + \beta_s \log M_i + \gamma x_i + v_{si} \dots \dots \dots (4)$$

$$R_i = \theta + \beta \log M_i + \delta x_i + v_i \dots \dots \dots (5)$$

$Y = \text{GDP per capita in 1995 in } \$ (\text{PPP a day}) .$

$R = \text{Institutional Proxy (current institutions)}$

$X = \text{Other controls}$

$C = \text{early institutions}$

$S = \text{Early settlement}$

$M = \text{Settler mortality 17th - 19th century}$

Institutions causing growth....

- Identification strategy:
 - ✓ use S_i or C_i as an instrument for R_i in equation (1).
- Limitation:
 - ✓ settlers are more likely to migrate to richer areas and early institutions reflect other characteristics that are important for income today,
 - ✓ C_i and S_i could be correlated with error term - invalid identification.

Institutions causing growth....

- ✓ use the mortality rates faced by the settlers, $\log M_i$, as an instrument for R_i .
- ✓ $\log M_i$ is uncorrelated with error term.
- ✓ mortality rates of settlers between the seventeenth and nineteenth centuries have no effect on income today other than through their influence on institutional development.

Institutions causing growth....

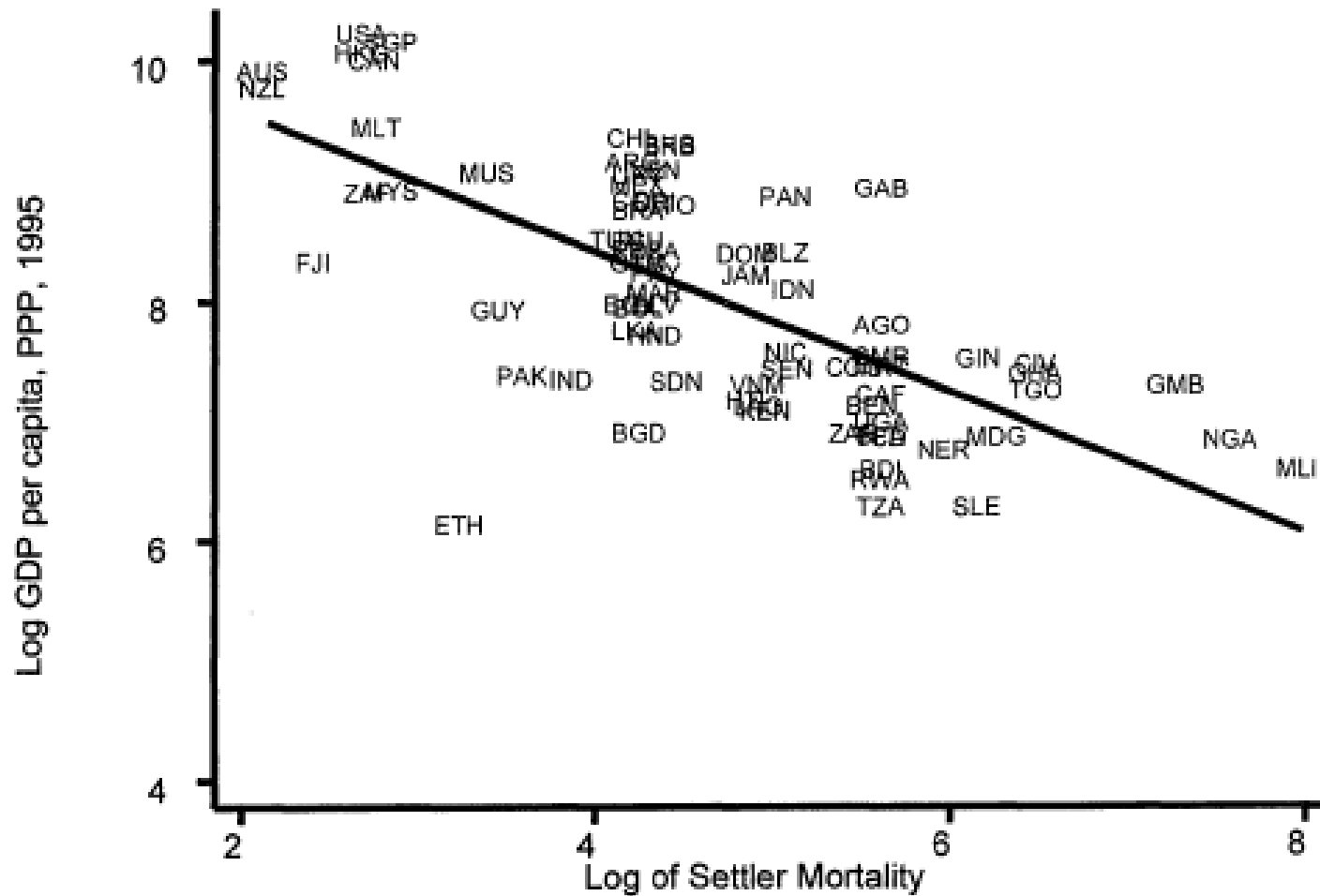


FIGURE 1. REDUCED-FORM RELATIONSHIP BETWEEN INCOME AND SETTLER MORTALITY

Institutions causing growth....

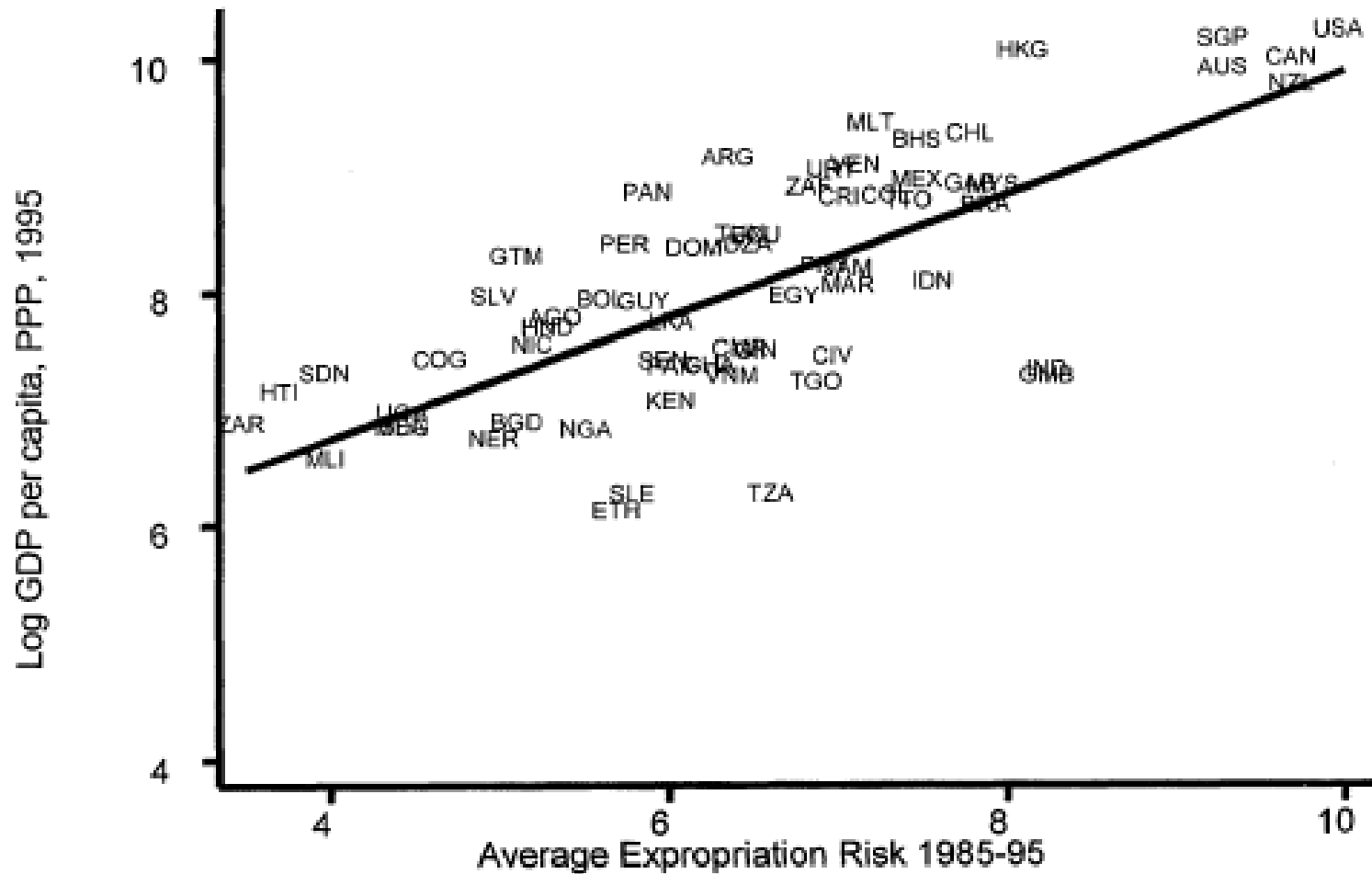


FIGURE 2. OLS RELATIONSHIP BETWEEN EXPROPRIATION RISK AND INCOME

Institutions causing growth....

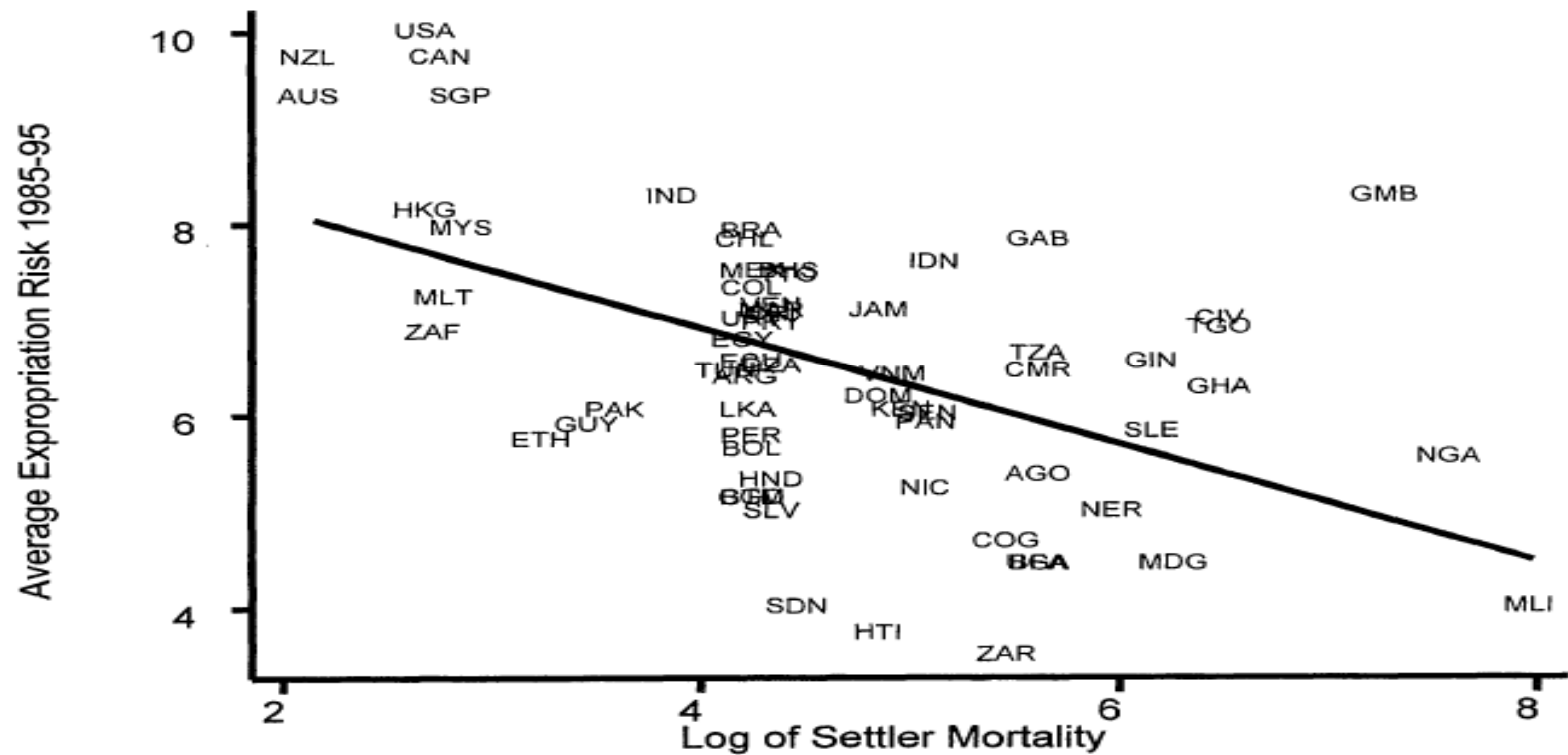


FIGURE 3. FIRST-STAGE RELATIONSHIP BETWEEN SETTLER MORTALITY AND EXPROPRIATION RISK

Institutions causing growth....

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 (0.16)	1.00 (0.22)	1.28 (0.36)	1.21 (0.35)	0.58 (0.10)	0.58 (0.12)	0.98 (0.30)	1.10 (0.46)	0.98 (0.17)
Latitude		-0.65 (1.34)		0.94 (1.46)		0.04 (0.84)		-1.20 (1.8)	
Asia dummy							-0.92 (0.40)	-1.10 (0.52)	
Africa dummy							-0.46 (0.36)	-0.44 (0.42)	
"Other" continent dummy							-0.94 (0.85)	-0.99 (1.0)	
Panel B: First Stage for Average Protection Against Expropriation Risk in 1985–1995									
Log European settler mortality	-0.61 (0.13)	-0.51 (0.14)	-0.39 (0.13)	-0.39 (0.14)	-1.20 (0.22)	-1.10 (0.24)	-0.43 (0.17)	-0.34 (0.18)	-0.63 (0.13)
Latitude		2.00 (1.34)		-0.11 (1.50)		0.99 (1.43)		2.00 (1.40)	
Asia dummy							0.33 (0.49)	0.47 (0.50)	
Africa dummy							-0.27 (0.41)	-0.26 (0.41)	
"Other" continent dummy							1.24 (0.84)	1.1 (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 (0.06)	0.47 (0.06)	0.49 (0.08)	0.47 (0.07)	0.48 (0.07)	0.47 (0.07)	0.42 (0.06)	0.40 (0.06)	0.46 (0.06)
Number of observations	64	64	60	60	37	37	64	64	61

Notes: The dependent variable in columns (1)–(8) is log GDP per capita in 1995, PPP basis. The dependent variable in column (9) is log output per worker, from Hall and Jones (1999). "Average protection against expropriation risk 1985–1995" is measured on a scale from 0 to 10, where a higher score means more protection against risk of expropriation of investment by the government, from Political Risk Services. Panel A reports the two-stage least-squares estimates, instrumenting for protection against expropriation risk using log settler mortality; Panel B reports the corresponding first stage. Panel C reports the coefficient from an OLS regression of the dependent variable against average protection against expropriation risk. Standard errors are in parentheses. In regressions with continent dummies, the dummy for America is omitted. See Appendix Table A1 for more detailed variable descriptions and sources.

Institutions causing growth....

- ✓ The 'b' coefficient (mortality variable) in the first stage of the regression is negative and significant – higher mortality rate the worse institutions are.
- ✓ The beta coefficient is positive and significant implying institutions have a positive impact on current GDP level.
- ✓ If the US, Canada, Australia and New Zealand are omitted then the results are still robust.

Institutions causing growth....

- **Conclusion:**
- African countries are poorer is not due to cultural or geographic factors, but because of the existence of worse institutions in Africa.

Institutions causing growth...

- Criticisms against AJR (2001):
 - ✓ Proxy for institutions (risk of expropriation by the government) is not really picking up any permanent set of rules of a country.
 - ✓ Glaeser et al (2004) argues that risk of expropriation in itself is an outcome of what has gone before.
 - ✓ This measure of institutions also rises with (i) per capita GDP and is (ii) highly volatile.

Measurement issues and reversal effects

2. Reversal effects on institutions

- Glaeser (2004)

- Basic argument:

- ✓ Sees institutional quality as the outcome of policy choice,

Measurement issues

- ✓ Policy choice is not necessarily the result of constrained political government.
- ✓ Policy choice could be influenced by human capital; not by constraining the government.

Measurement issues.....

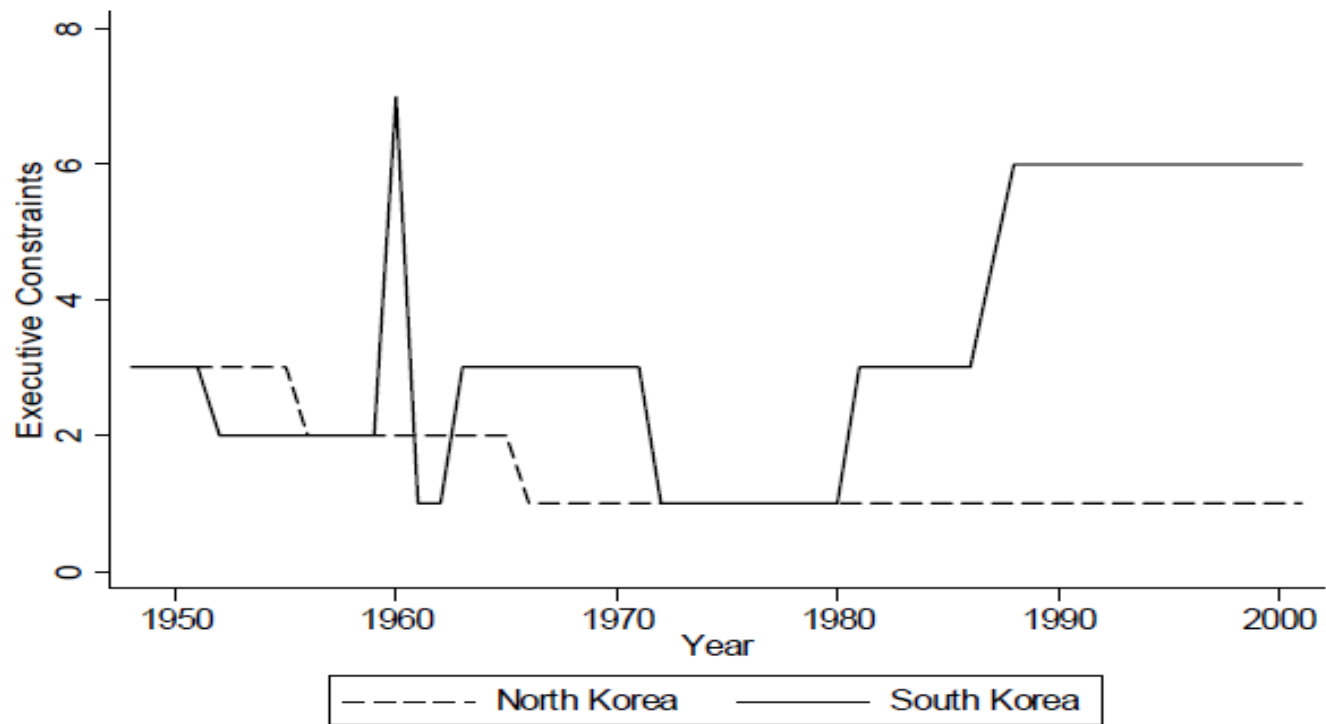
- The premises:
- Human capital → Policy choice →
 - dependable institutions (property rights)
 - Economic growth → Institutional quality
- Human capital view of development

Measurement issues

- Example: North vs. South Korea
 - ✓ both dictatorships between 1954-1980 ! both low quality scores
 - ✓ but the South was twice as rich by 1980
 - ✓ reflects different choices of dictators, not institutional constraints
 - ✓ on average South had higher . “institution score” between 1950-2000,
 - ✓ but these were the outcome of growth not its cause!!

Measurement issues

Figure 1: Executive Constraints 1948-2001
North versus South Korea



Measurement issues

□ Problems with Indices used:

- i. risk of expropriation
- ii. Government effectiveness
 - These are measures of outcomes, not constraints; and hence subjective and endogenous
 - In addition, constraints on the executive-reflects most recent election: very volatile

Measurement issues

- In contrast, human capital measured by years of schooling is less volatile and more persistent than institutional measures

Measurement issues

Table 3
Correlations of measures of institutions

	Log GDP per capita (2000)	Executive constraints (1960-2000)	Expropriation risk (1982-1997)	Autocracy -- Alvarez (1960-1990)	Government effectiveness (1998-2000)	Judicial independence (1995)	Constitutional review (1995)	Plurality (1975-2000)
Executive constraints (1960-2000)	0.7119 ^a							
Expropriation risk (1982-1997)	0.7906 ^a	0.6378 ^a						
Autocracy -- Alvarez (1960-1990)	-0.7388 ^a	-0.8567 ^a	-0.6864 ^a					
Government effectiveness (1998-2000)	0.7860 ^a	0.6349 ^a	0.8297 ^a	-0.5908 ^a				
Judicial independence (1995)	0.0279	0.3465 ^a	0.2629 ^b	-0.1907	0.3006 ^b			
Constitutional review (1995)	-0.0649	0.1904	0.1189	-0.0278	0.0482	0.2243 ^c		
Plurality (1975-2000)	-0.2620 ^a	-0.3570 ^a	-0.1918 ^b	0.2472 ^a	-0.2044 ^a	-0.0992	0.0040	
Proportional representation (1975-2000)	0.2947 ^a	0.3158 ^a	0.2172 ^b	-0.2151 ^b	0.2052 ^b	-0.1684	0.1284	-0.6118 ^a

a=significant at 1 percent; b=significant at 5 percent; c=significant at 10 percent.

Measurement issues

- From the above table (3):
 - ✓ traditional institutional indices are strongly correlated with each other and GDP per capita.
 - ✓ objective measures of constitutional constraints are at best weakly correlated

Measurement issues

- ✓ Development and Institutions are caused by human capital – Lipset (1960) argued that through greater education people would be likely and more able to resolve differences by negotiation and the role of “gun” replaced by court and legislation.
- ✓ Externality of higher initial education of a population is greater political and social stability as well as economic spill-overs in terms of productivity and technology.

Institutions as byproduct

Growth of GDP per capita (1960-2000) = $\alpha + \gamma_1 \log$ GDP per capita (1960) + γ_2 Log years of schooling (1960) + γ_3 (share of population living in temperate zone (1995) + β Institutional proxies

Measurement issues

Table 4
Economic growth, political institutions and human capital

The table shows OLS regressions for the cross-section of countries. The dependent variable in all specifications is the growth of GDP per capita for the period 1960-2000. The specifications include a constant but we do not report the estimates in the table. Robust standard errors are shown in parentheses. All variables are defined in Appendix 1.

	<i>Dependent variable is growth of GDP per capita 1960-2000</i>							
Log GDP per capita (1960)	-0.0114 ^a (0.0033)	-0.0136 ^a (0.0033)	-0.0112 ^a (0.0033)	-0.0122 ^a (0.0033)	-0.0141 ^a (0.0037)	-0.0130 ^a (0.0037)	-0.0090 ^a (0.0034)	-0.0105 ^a (0.0036)
Log years of schooling (1960)	0.0060 ^b (0.0025)	0.0076 ^a (0.0024)	0.0063 ^b (0.0024)	0.0060 ^b (0.0023)	0.0077 ^b (0.0032)	0.0073 ^b (0.0031)	0.0073 ^a (0.0025)	0.0080 ^a (0.0026)
Share of population living in temperate zone (1995)	0.0175 ^a (0.0049)	0.0132 ^a (0.0041)	0.0179 ^a (0.0046)	0.0104 ^c (0.0055)	0.0242 ^a (0.0049)	0.0231 ^a (0.0047)	0.0175 ^a (0.0050)	0.0184 ^a (0.0052)
Executive constraints (1960-2000)	0.0021 ^b (0.0008)							
Expropriation risk (1982-1997)		0.0040 ^a (0.0014)						
Autocracy -- Alvarez (1960-1990)			-0.0060 ^c (0.0032)					
Government effectiveness (1998-2000)				0.0075 ^a (0.0024)				
Judicial independence (1995)					-0.0041 (0.0057)			
Constitutional review (1995)						0.0047 (0.0064)		
Plurality (1975-2000)							0.0010 (0.0027)	
Proportional representation (1975-2000)								0.0019 (0.0031)
Observations	71	69	71	71	54	54	71	70
R ²	0.44	0.56	0.44	0.48	0.45	0.45	0.41	0.44

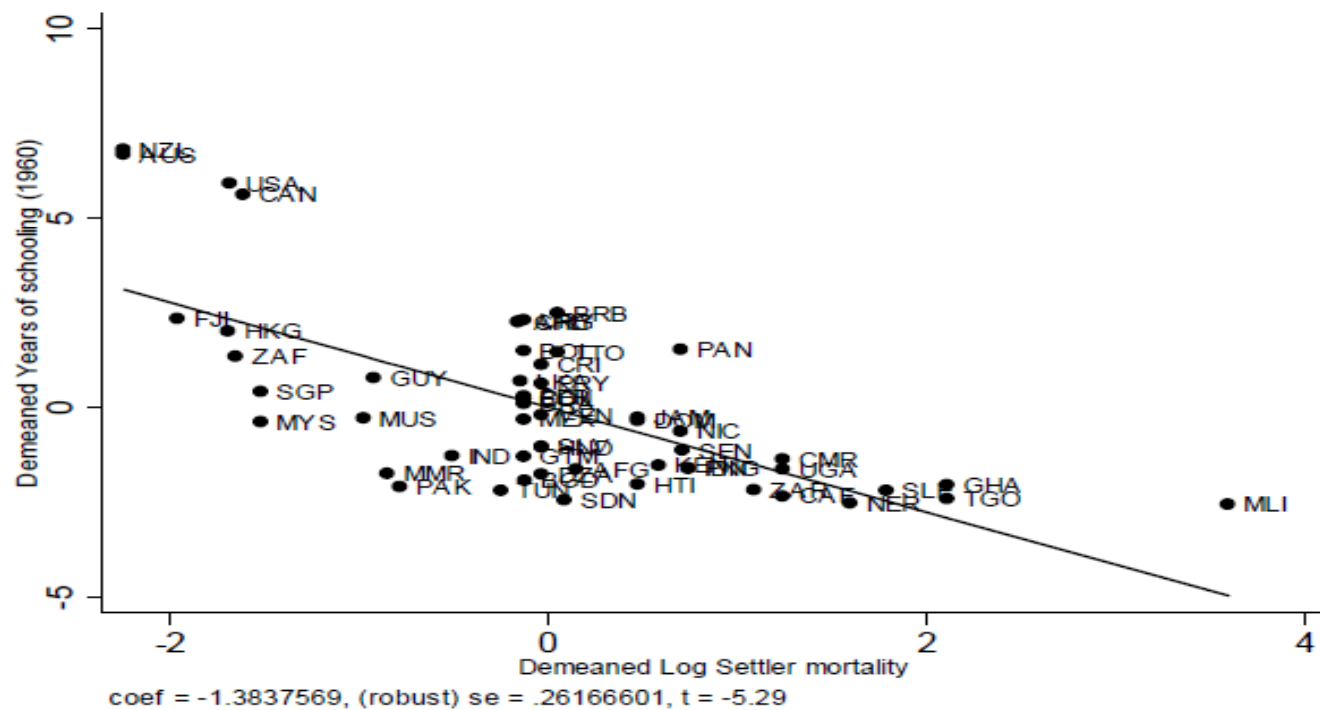
a=significant at 1 percent; b=significant at 5 percent; c=significant at 10 percent.

Measurement issues

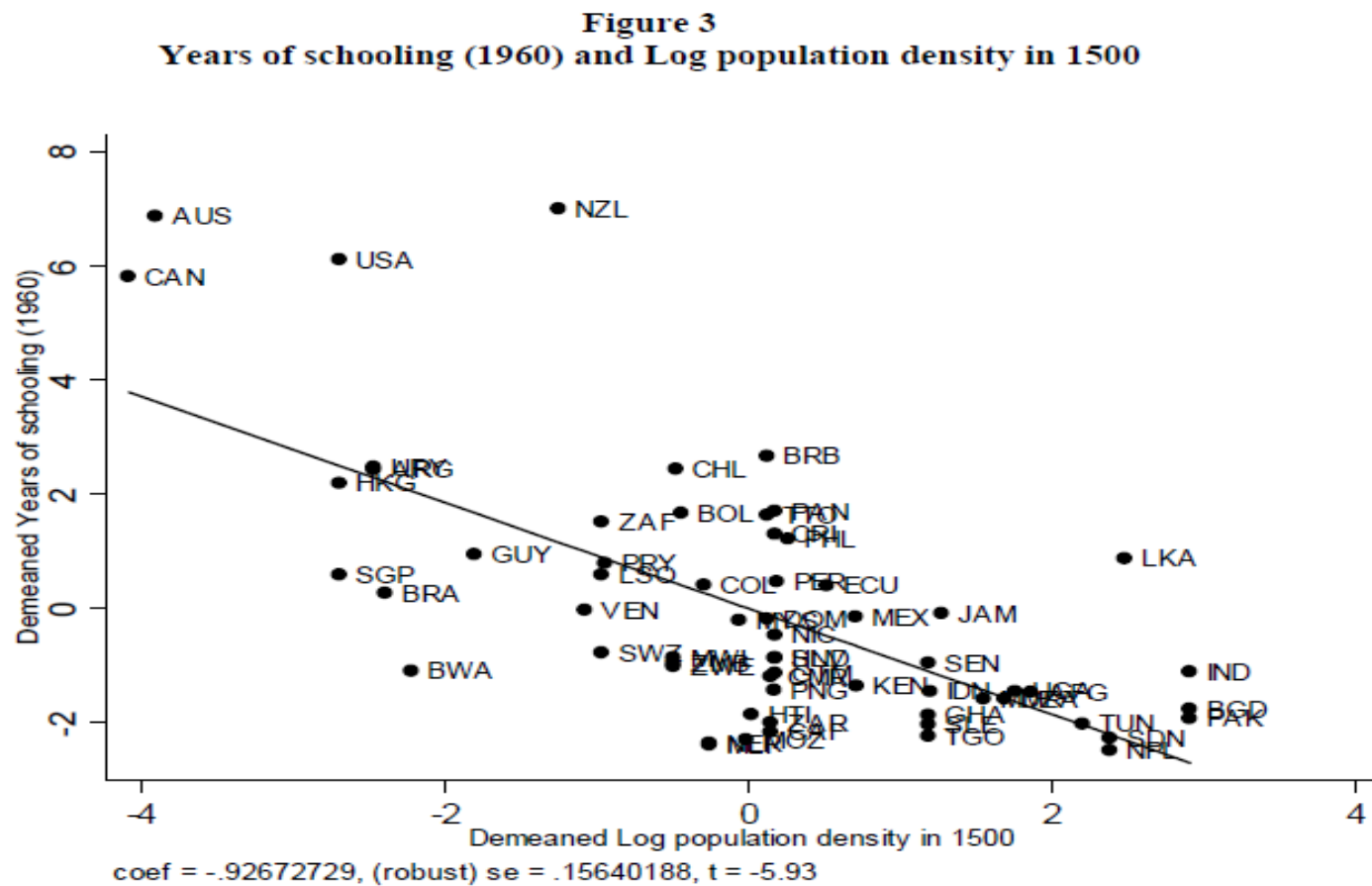
- Interpretations of Table 4 above:
 - ✓ Possibility of conditional convergence?
 - ✓ initial education (1960) is a strong predictor of subsequent economic growth.
 - ✓ The beta coefficients are only significant when the institutional proxies stand for outcomes (expropriation risk (82-90) or government effectiveness (98-2000)).
 - ✓ constitutional constraints are not.

Measurement issues

Figure 2
Years of schooling (1960) and Log settler mortality

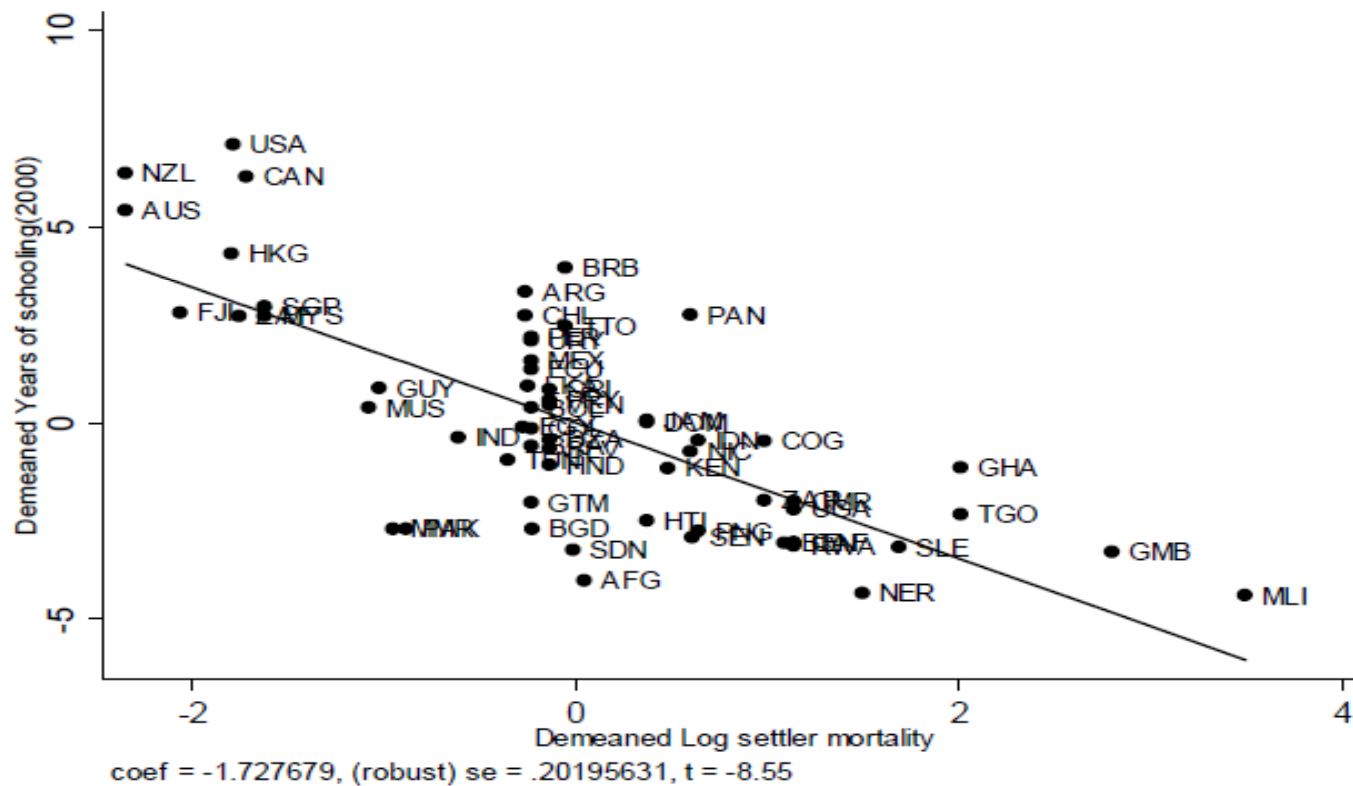


Measurement issues

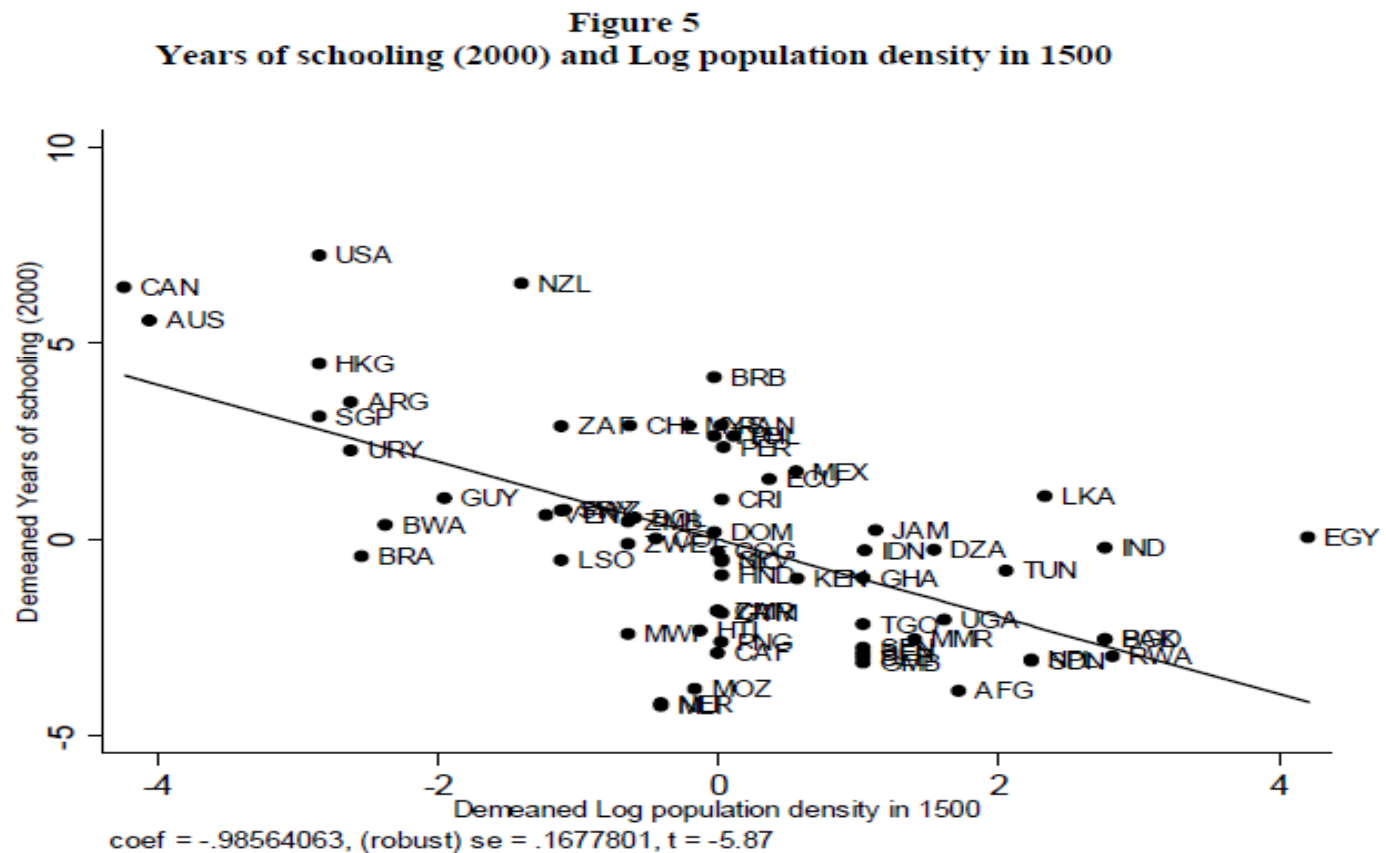


Measurement issues

Figure 4
Years of schooling (2000) and Log settler mortality

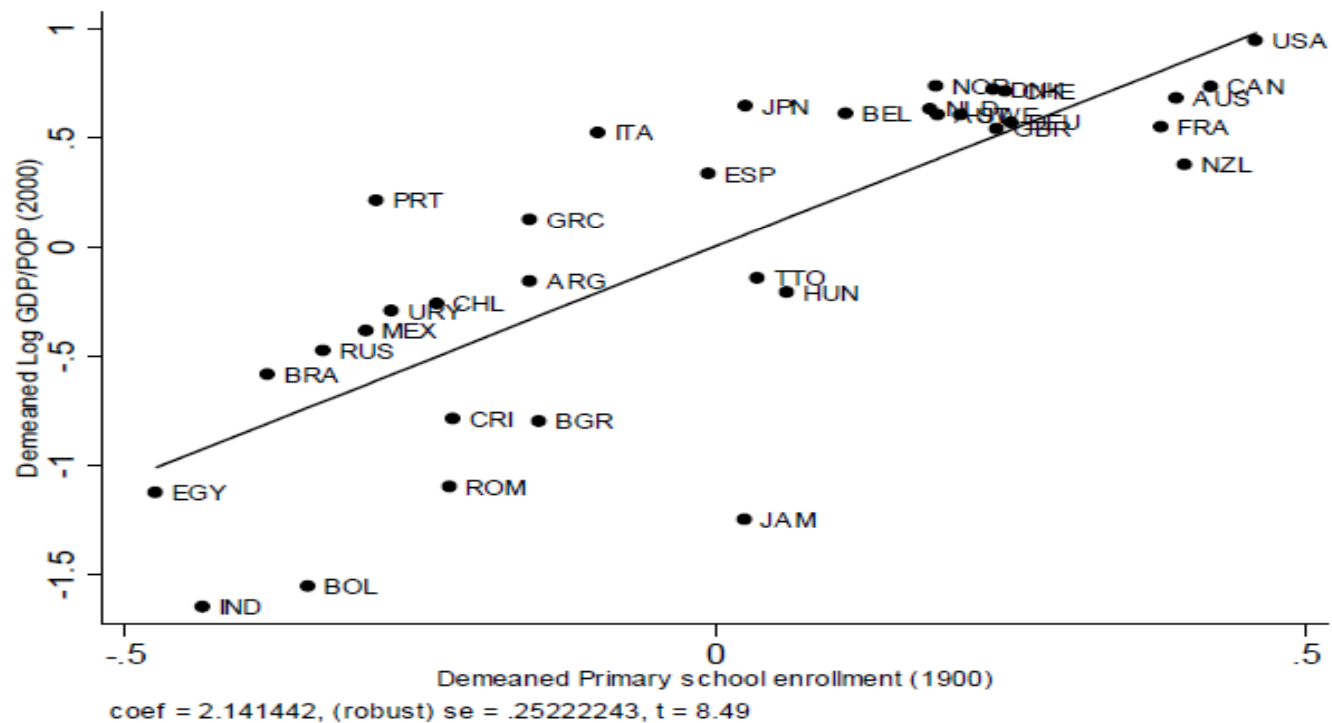


Measurement issues



Measurement issues

Figure 6
Log GDP per capita (2000) and Primary school enrollment (1900)



Measurement issues

Table 11
Economic development, instrumental variable regressions

The table shows instrumental variables regressions for the cross-section of countries. Panel A reports the second-stage estimates from instrumental variables regressions with first-stage estimates shown in Panel B. The dependent variable in both second-stage specifications is the log of GDP per capita in 2000. Panel B reports the first-stage estimates for two sets of instruments. The first specification instruments executive constraints and years of schooling using the log of settler mortality and French legal origin. The second specification instruments executive constraints and years of schooling using the log of population density in 1500 and French legal origin. The specifications in both stages include a constant but we do not report the estimates in the table. Robust standard errors are reported in parentheses. All variables are defined in Appendix 1.

<i>Panel A: Second-stage regressions</i>				
	Dependent variable is log GDP per capita in 2000			
	(1)		(2)	
Years of schooling (1960-2000)	0.7894 ^a		0.4836 ^b	
	(0.2753)		(0.1875)	
Executive constraints (1960-2000)	-0.3432		-0.2965	
	(0.2577)		(0.2410)	
Share of population living in temperate zone (1995)	-1.6969		-0.0863	
	(1.2053)		(0.7714)	
Observations	47		55	
R ²	0.31		0.5	
<i>Panel B: First-stage regressions</i>				
	Dependent variables:			
	Executive constraints (1960-2000)	Years of schooling (1960-2000)	Executive constraints (1960-2000)	Years of schooling (1960-2000)
Share of population living in temperate zone (1995)	-0.1195	3.4975 ^a	-0.0353	2.8397 ^a
	(0.7202)	(0.8044)	(0.8359)	(0.8933)
Log settler mortality	-0.8212 ^a	-1.0183 ^a		
	(0.2053)	(0.2293)		
Log population density in 1500			-0.3737 ^b	-0.6140 ^a
			(0.1582)	(0.1691)
French legal origin	-1.4124 ^a	-0.3770	-1.1988 ^b	-0.5329
	(0.4258)	(0.4757)	(0.4538)	(0.4850)
Observations	47	47	55	55
R ²	0.53	0.70	0.25	0.55
F-Test for excluded instruments		17.23		4.70
Correlation of predicted values of executive constraints and years of schooling		0.8182		0.8163

a=significant at the 1 percent; b=significant at the 5 percent; c=significant at 10 percent.

Measurement issues

Table 12

The table shows OLS regressions with country fixed effects for the cross-section of countries. The specifications include a constant and country fixed effects but we do not report the estimates in the table. Errors are clustered at the country level and reported in parentheses. All definitions are in Appendix 1.

<i>Panel A: Dependent variable is the 5-year change in years of schooling (t+5,t)</i>				
Years of schooling (t)	-0.0721 ^a (0.0237)	-0.0460 (0.0339)	-0.0707 ^a (0.0250)	-0.0691 ^a (0.0239)
Log GDP per capita (t)	0.2839 ^a (0.0790)	0.3978 ^a (0.1055)	0.2809 ^a (0.0797)	0.2825 ^a (0.0793)
Executive constraints (t)	-0.0099 (0.0118)			
Autocracy -- Polity IV (t)		0.0373 (0.0391)		
Autocracy -- Alvarez (t)			0.0065 (0.0080)	
Democracy (t)				-0.0094 (0.0074)
Observations	514	420	514	514
R ²	0.24	0.26	0.24	0.24
<i>Panel B: Dependent variables are the 5-year changes in political institutions (t+5,t)</i>				
	Change executive constraints	Change autocracy -- Polity IV	Change autocracy -- Alvarez	Change democracy
Years of schooling (t)	0.4975 ^a (0.1191)	-0.9092 ^a (0.1790)	-0.0958 (0.0707)	0.7004 ^a (0.1804)
Log GDP per capita (t)	0.0382 (0.4035)	0.5075 (0.6295)	-0.2675 (0.2022)	0.2918 (0.6055)
Executive constraints (t)	-0.5724 ^a (0.0716)			
Autocracy -- Polity IV (t)		-0.5471 ^a (0.0680)		
Autocracy -- Alvarez (t)			-0.8642 ^a (0.1032)	
Democracy (t)				-0.5145 ^a (0.0650)
Observations	499	499	349	499
R ²	0.33	0.32	0.47	0.30

a=significant at 1 percent; b=significant at 5 percent; c=significant at 10 percent.

Measurement issues

- Evidence for primacy of human capital:
 - ✓ Correlation of settler mortality with human capital is stronger than with institutions (Figures 2-5).
 - ✓ Educational investment in 1900 is a strong predictor of per capita income today (Fig 6).
 - ✓ effects of settlement act through both human capital and institutions (Table 11)

Measurement issues

- ✓ No effect of political institutions on human capital growth.
- ✓ initial level of schooling is a strong predictor of institutional outcomes.
- ✓ Institutions do matter

Institutions as byproduct

- Policy implications?
 - ✓ security of property, democratization, and constraints on government need not come first (East Asian “tigers” case).
 - ✓ countries that emerge from poverty accumulate human and physical capital under dictatorships, and then once they become richer, are increasingly likely to improve their institutions.

A graphic of a spiral-bound notebook with a brown cover and a light beige page. The spiral binding is on the left side. A horizontal line is drawn across the page, just above the main text.

THANK YOU

1/25/2019

Admassu Tesse (PhD)

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