

Disease Environments, the Mortality of Europeans,

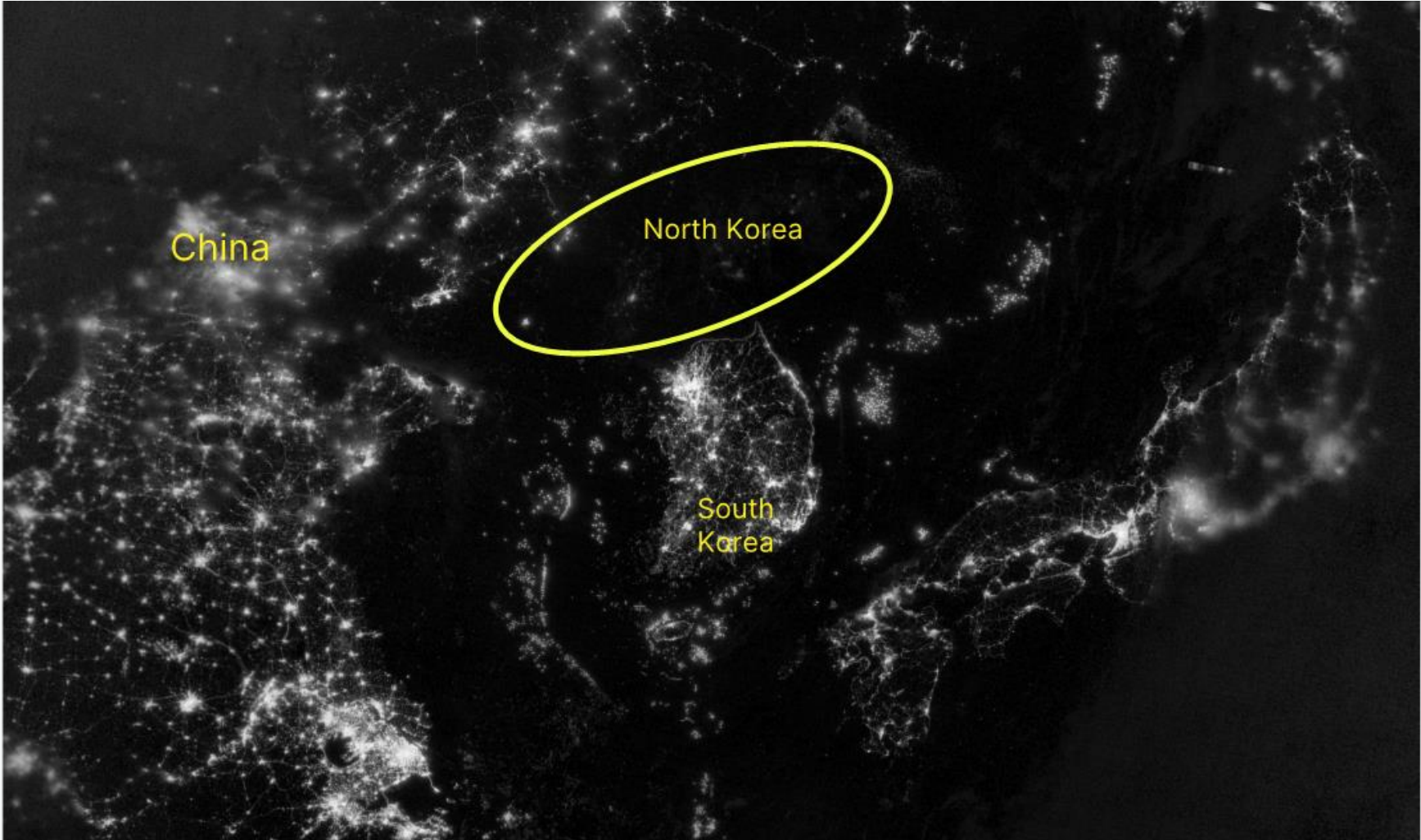
— AND THE —

Creation of Institutions in the Colonial Era

SIMON JOHNSON • MIT SLOAN • MIT SHAPING THE FUTURE OF WORK INITIATIVE

Nobel Lecture, Stockholm • December 8, 2024

North Korea: A totalitarian regime with low per capita income (and not much light at night)



The Korean Peninsula at Night, 2010s

South Korea's opposition protesting at the National Assembly in Seoul on December 4, 2024



December 4, 2024

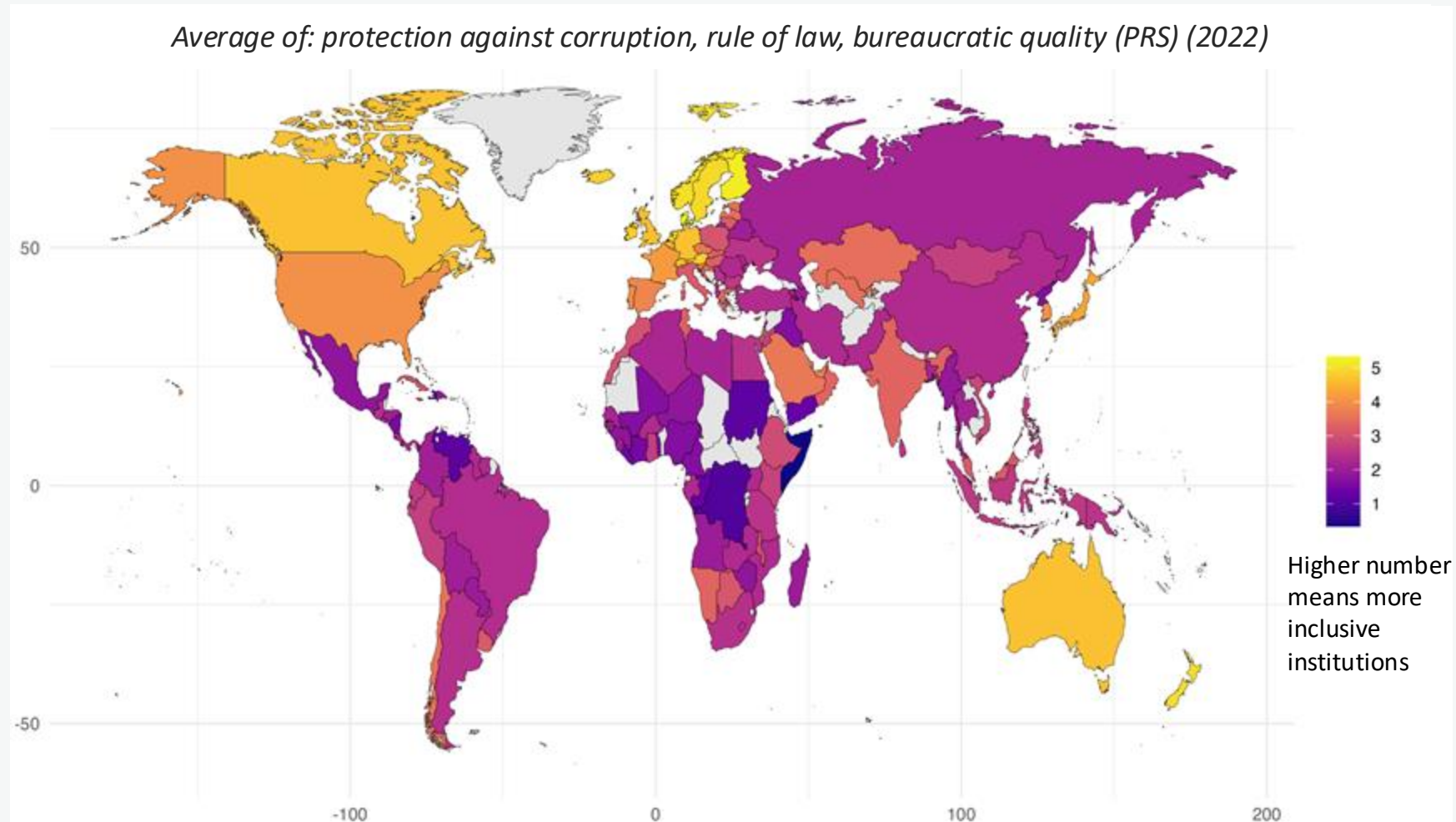
Institutions vary greatly across countries: from more extractive to more inclusive

Inclusive institutions

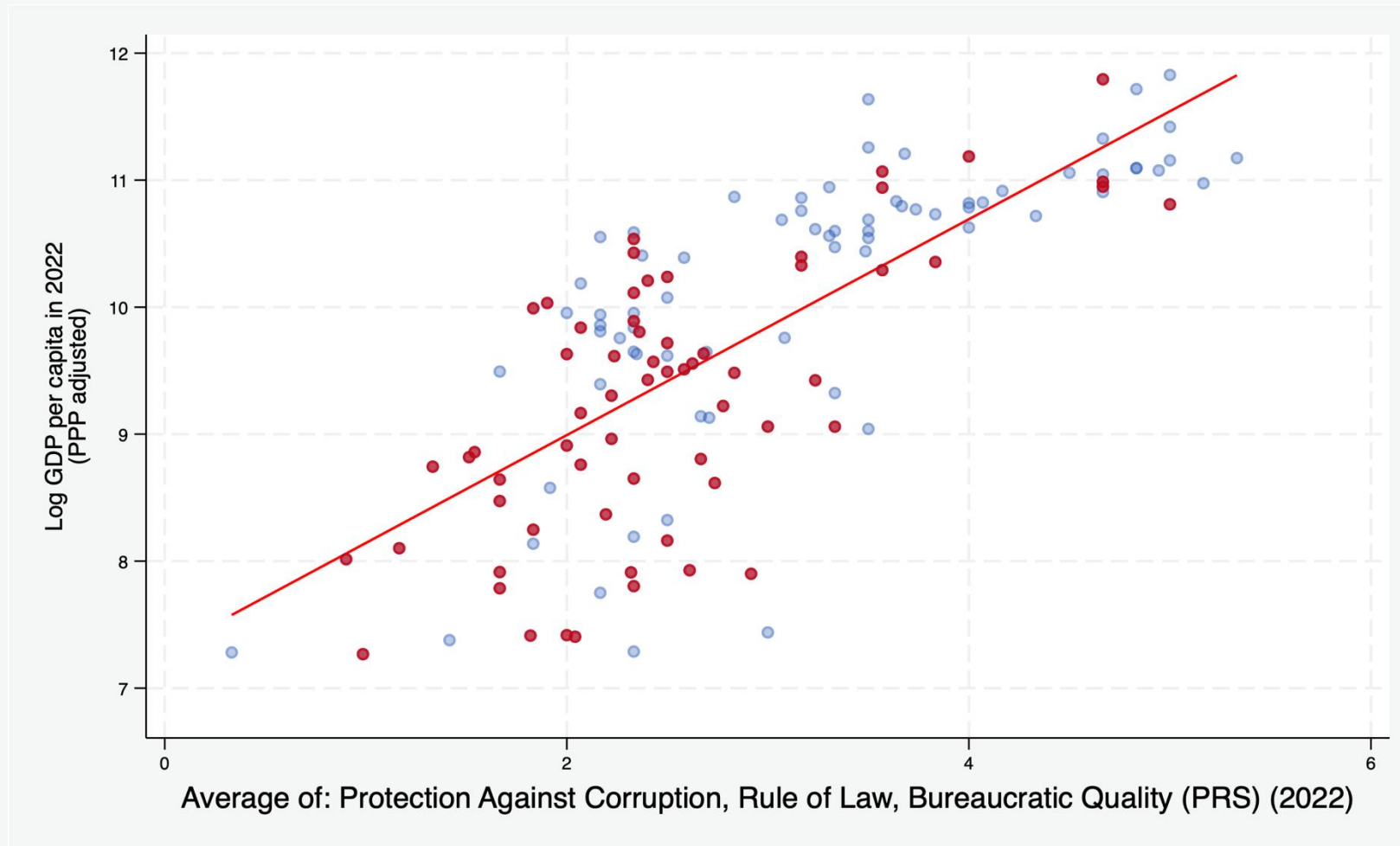
- Economic and political rights for broad cross-section of society

Extractive institutions

- Main purpose is to transfer resources to the elite



Institutions are more inclusive where GDP per capita is higher



● Former European colonies (AJR 2001 sample)

● All other countries

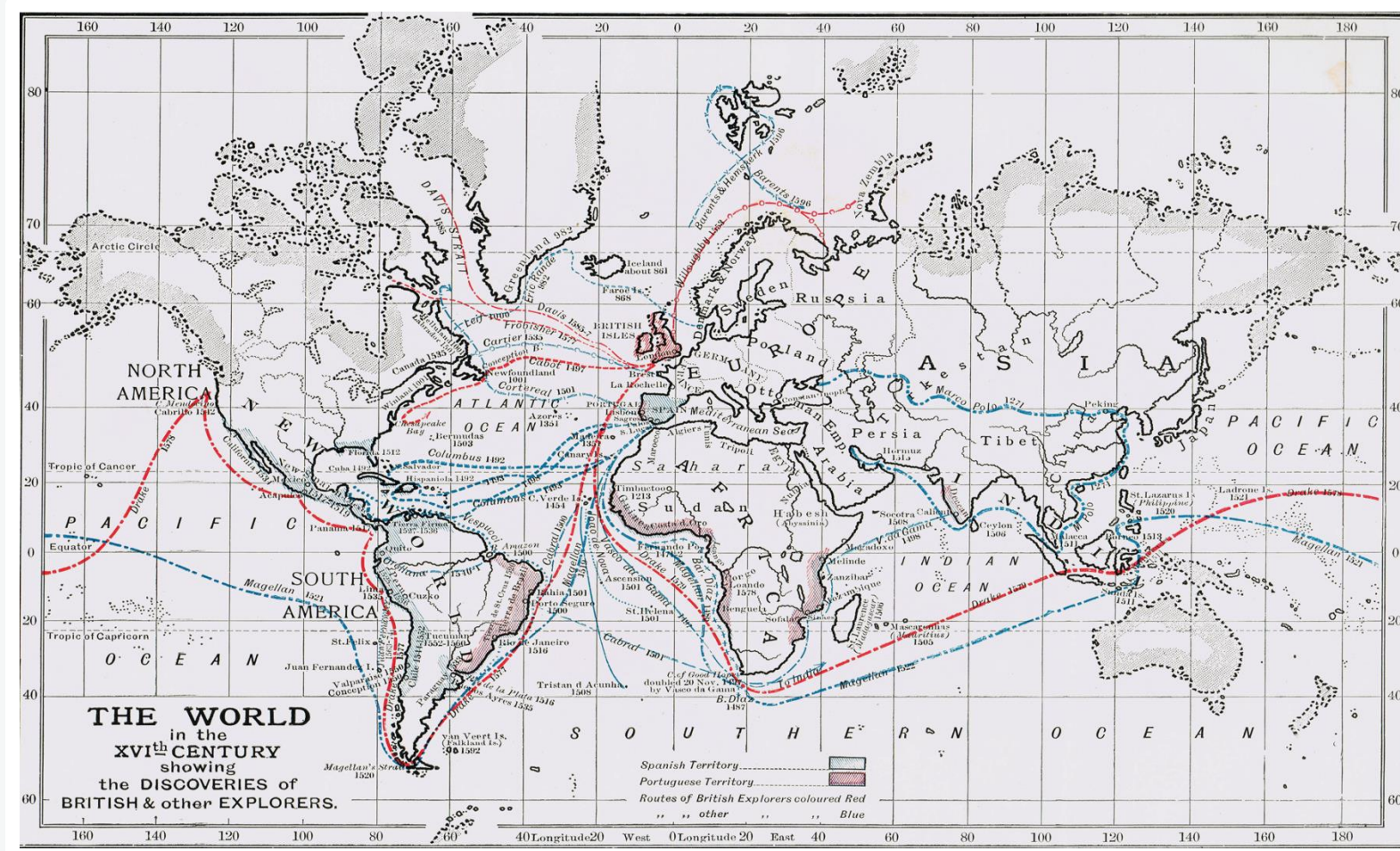
What's the origin story for inclusive vs. extractive institutions?

European empires had very different outcomes for institutions in different places



Map of the British Empire, circa 1860

For five hundred years, Europeans tried to establish colonies everywhere, but with varying results...



Map of 16th Century European Exploration

Infectious disease wiped out some attempted European settlements

“Hither Thy Shall Come, and No Further..”



Death waiting in Panama, 1904



French Panama Canal Laborer Cemetery

Over 400 years, Europeans grasped that disease environments affected their life expectancy

If 1,000 young adult male Europeans migrated in early 1800s, there were three zones of death for them...

- Extremely high
 - West Africa: ~**500** would die in the first year
- High
 - West Indies: **85-130** per annum would die
 - India: **40-70** per annum would die
- Low
 - Northern US/Canada: **15** per annum would die

In Britain/France: 15-20 would die

Showing the Deaths and Fatal Diseases among the Depôts of Corps serving in the WEST INDIES, in each Year from 1st January 1830 to 31st March 1837.

Classes of Diseases.	Years .	Strength							Total for whole Period.	
		1830	1831	1832	1833*	1834	1835	1836	Aggregate Strength.	Total by each Disease.
Fever.	Specific Diseases.									
	Diol.	2551	2952	3511	4794	3316	3462	2921	23,537	68
Eruptive Fevers.	Diol.	5	13	11	17	3	6	13	68	68
	Diol.	..	..	2	1	1	..	1	5	5
Diseases of the Lungs.	Pneumonia . . . . .	..	1	5	2	1	2	12	26	26
	Hæmoptysis . . . . .	..	1	1	3	1	1	1	8	8
	Phthisis Pulmonalis . . . . .	..	22	24	35	27	40	25	196	226
	Catarrhus Chronicus . . . . .	..	..	1	4	..	2	..	9	9
	Asthma . . . . .	..	1	..	..	..	..	..	1	1
Diseases of the Liver.	Hepatitis . . . . .	..	1	..	..	..	1	..	2	2
	Diol.	..	..	..	..	1	..	..	1	1
Diseases of the Stomach and Bowels.	Gastritis . . . . .	..	..	..	..	1	..	..	1	1
	Enteritis . . . . .	..	..	..	..	1	..	..	1	1
	Hæmatemesis . . . . .	..	..	..	..	1	..	..	1	1
	Diarrhoea . . . . .	..	..	2	..	1	..	..	3	3
Epidemic Cholera.	Cholera Epidemica . . . . .	..	..	14	9	4	..	..	27	27
	Diol.	..	..	..	..	1	1	..	2	2
Diseases of the Brain.	Phrenitis . . . . .	..	..	2	..	1	..	..	3	3
	Apoplexia . . . . .	..	..	2	..	1	..	..	3	3
	Palsy . . . . .	..	..	1	..	1	..	..	2	2
	Delirium Tremens . . . . .	..	..	..	..	1	..	..	1	1
Dropsies.	Anasarca . . . . .	..	..	1	..	1	..	..	2	2
	Hydrothorax . . . . .	..	1	..	..	1	..	..	2	2
	Ascites . . . . .	..	1	1	..	..	..	..	2	2
All other Diseases.	Rheumatismus . . . . .	..	..	1	1	..	..	1	3	3
	Phlegmon et Abscessus . . . . .	..	..	1	..	..	..	..	1	1
	Apostoma Lumbare . . . . .	..	1	..	..	..	..	..	1	1
	Fistula . . . . .	..	..	1	1	1	..	..	3	3
	Syphilis . . . . .	..	..	..	1	..	..	..	1	1
	Cæchexia Syph. . . . .	..	1	..	..	..	..	..	1	1
	Fractura . . . . .	..	..	2	..	..	..	..	2	2
	Vulnus Scapularium . . . . .	..	..	..	1	..	..	..	1	1
	Cynanche Tonsillaris . . . . .	..	..	..	2	..	..	..	2	2
	Gutta . . . . .	..	..	..	1	..	..	..	1	1
Suicide, Accidents, &c.	Morbus Cordis . . . . .	..	..	1	..	..	..	..	1	1
	Aneurisma Arter. . . . .	..	..	..	..	..	..	..	1	1
	Hæmorrhagia . . . . .	..	..	..	..	..	1	..	1	1
	Purpura Hæmorrhagica . . . . .	..	..	..	1	..	..	..	1	1
	Scrophula . . . . .	..	..	..	1	..	..	..	1	1
	Erysipelas . . . . .	..	1	1	1	..	1	..	4	4
	Debilitas . . . . .	..	..	1	..	..	..	..	1	1
	Drowned . . . . .	..	2	3	..	1	..	3	10	10
	Strangled . . . . .	..	1	..	1	..	1	..	3	3
	Suicide . . . . .	..	1	..	2	2	1	3	9	9
Cause unknown . . . . .	..	1	..	2	8	5	2	23	23	
Total . . . . .	..	35	47	73	98	50	70	63	436	436

* This includes a period of 15 months.

Showing the Strength of the METROPOLITAN POLICE, the Number of Deaths, and the Average Daily Number of Men Sick, in the undermentioned Years.

YEARS .	Mean Strength	Number of Deaths.	Average Daily Sick.	Removed on Account of Ill Health.	REMARKS.
1830	3367*	19	77	} Not stated.	* The Police were not completely established until the latter end of May, 1830.
1831	3284	26	86		
1832	3392	35	85		
1833	3359	49	89		
1834	3400	25	92		
1835	3402	27	90		
1836	3414	29	91		† The numbers here stated are only those reported until by the surgeon; exclusive of these, many have voluntarily retired on account of bad health.
Total	23985	211	610		

Ratio per thousand of mean strength died 9
Ratio per thousand constantly sick 26

British troop sickness and mortality statistical report by A.M. Tulloch, H. Marshall, and T.G. Balfour of the Army Medical Department and War Office returns, 1839

Disease environments influenced European colonial strategies

Three settler mortality groups in the data: Extreme, High, and Low

Extreme (7+ times Europe):

In West Africa, Europeans generated huge profits with the slave trade and tried to minimize time on land

High (2-4 times Europe):

In India and the West Indies, Europeans tried to make as much money as possible before soon returning to England

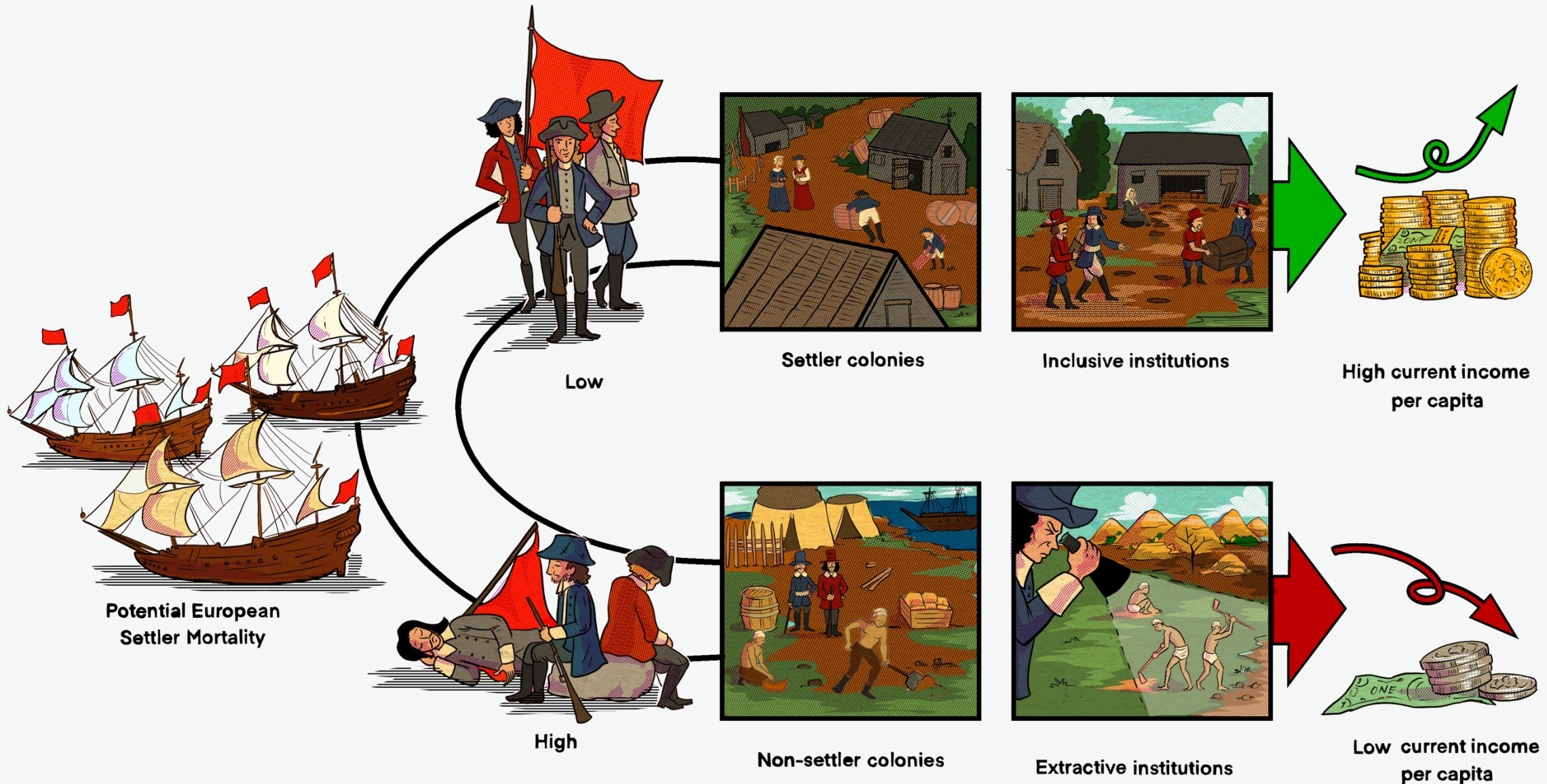
Low (similar to Europe):

Attracted European settlers to the United States, Canada, Australia, and New Zealand

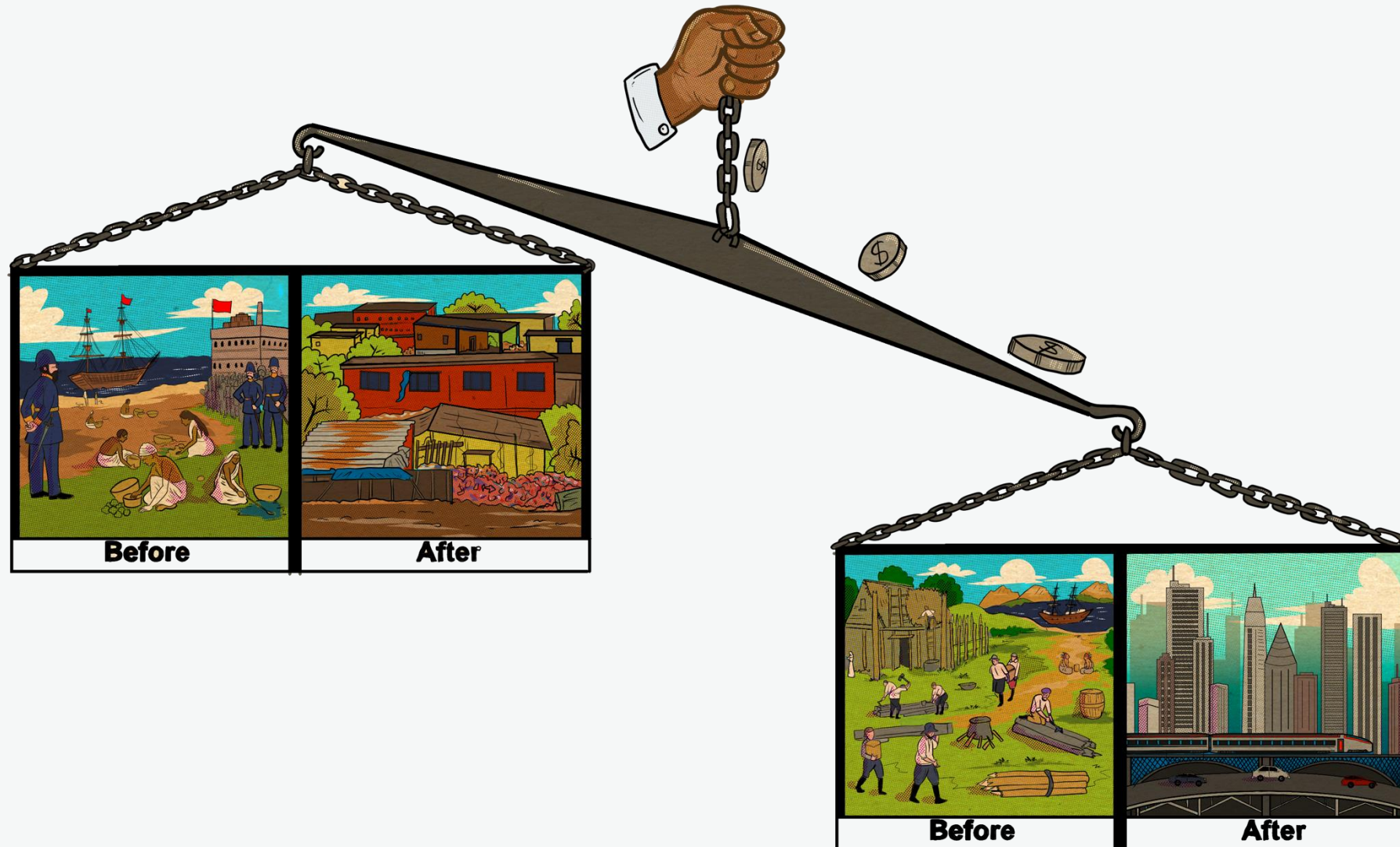


Colonial strategies resulted in two paths for institutions

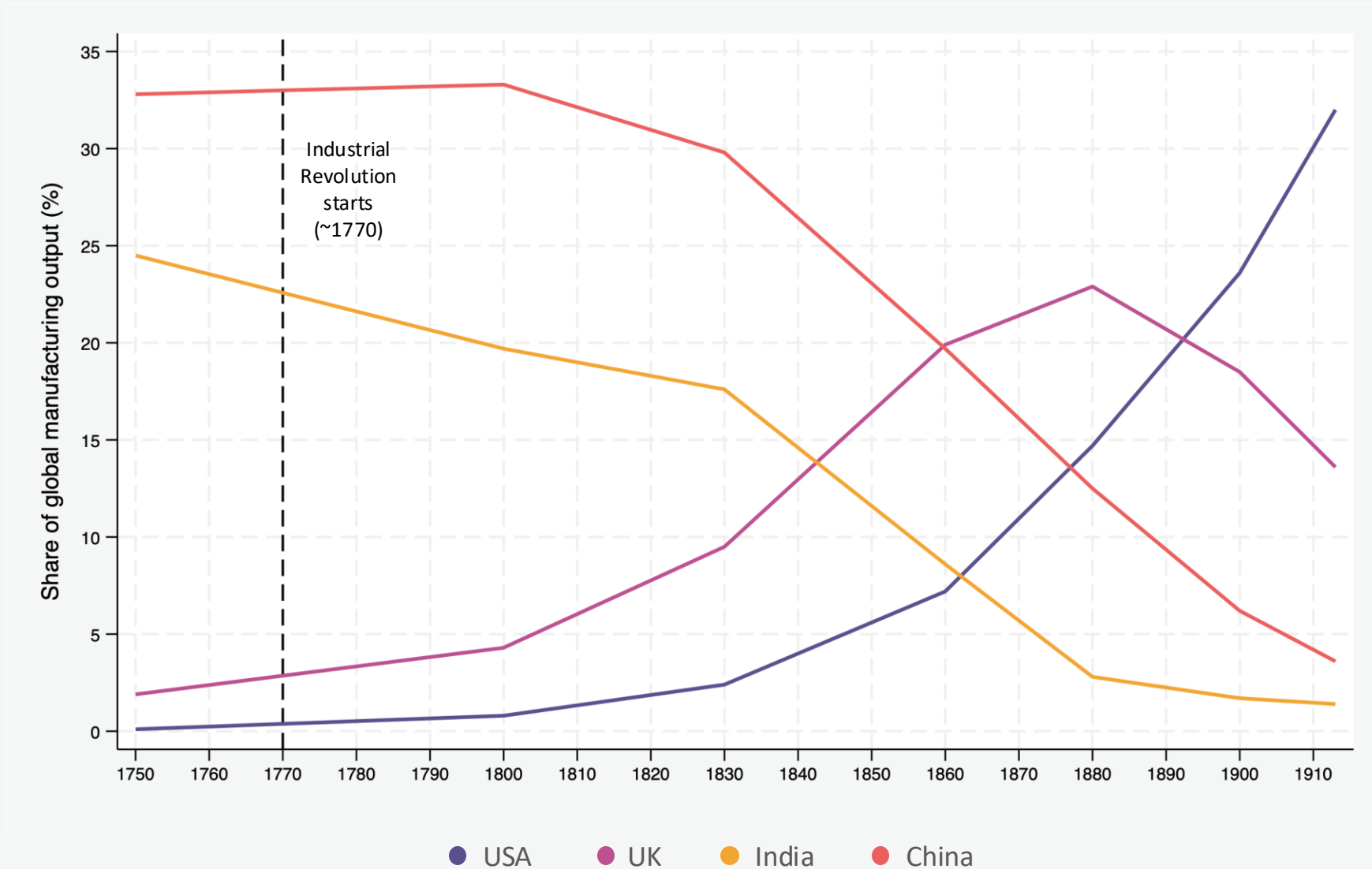
Across all European colonies, the Indigenous experience was brutal



The effect of institutions was so dramatic that initially rich places became poor... and low-income places became rich

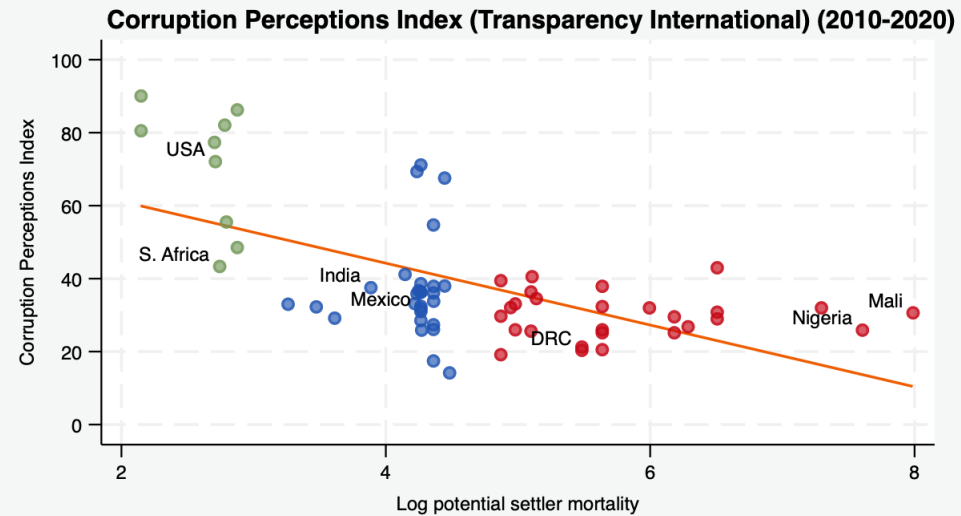
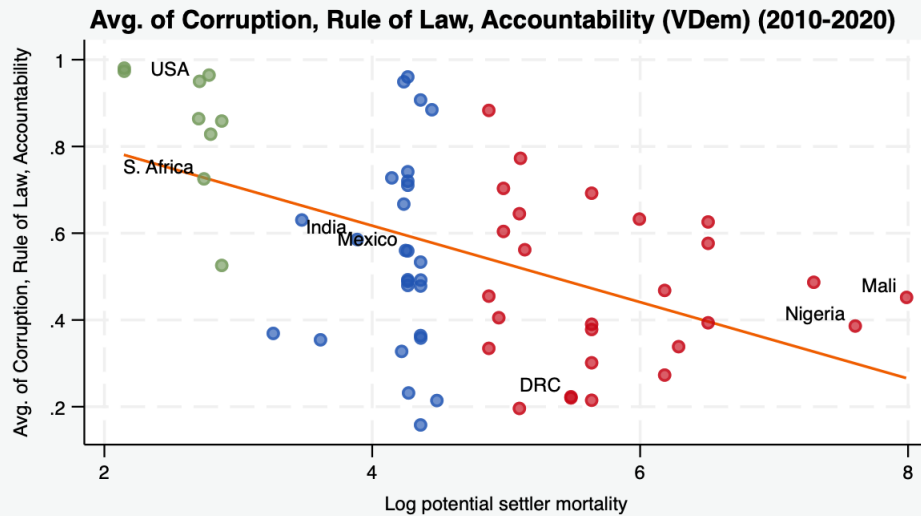
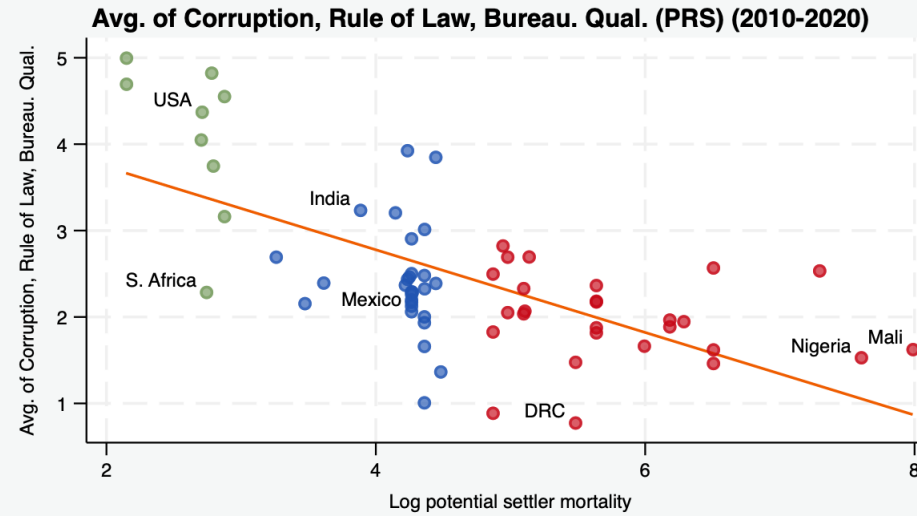
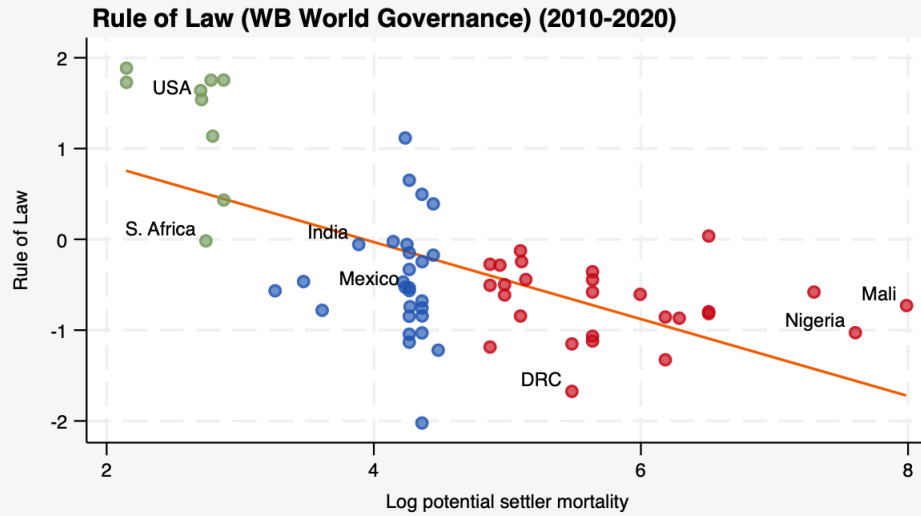


... because inclusive institutions made it easier to industrialize early



Data from Paul Bairoch. "International Industrialization Levels from 1750 to 1980."

Lower settler mortality is robustly correlated with more inclusive present-day institutions

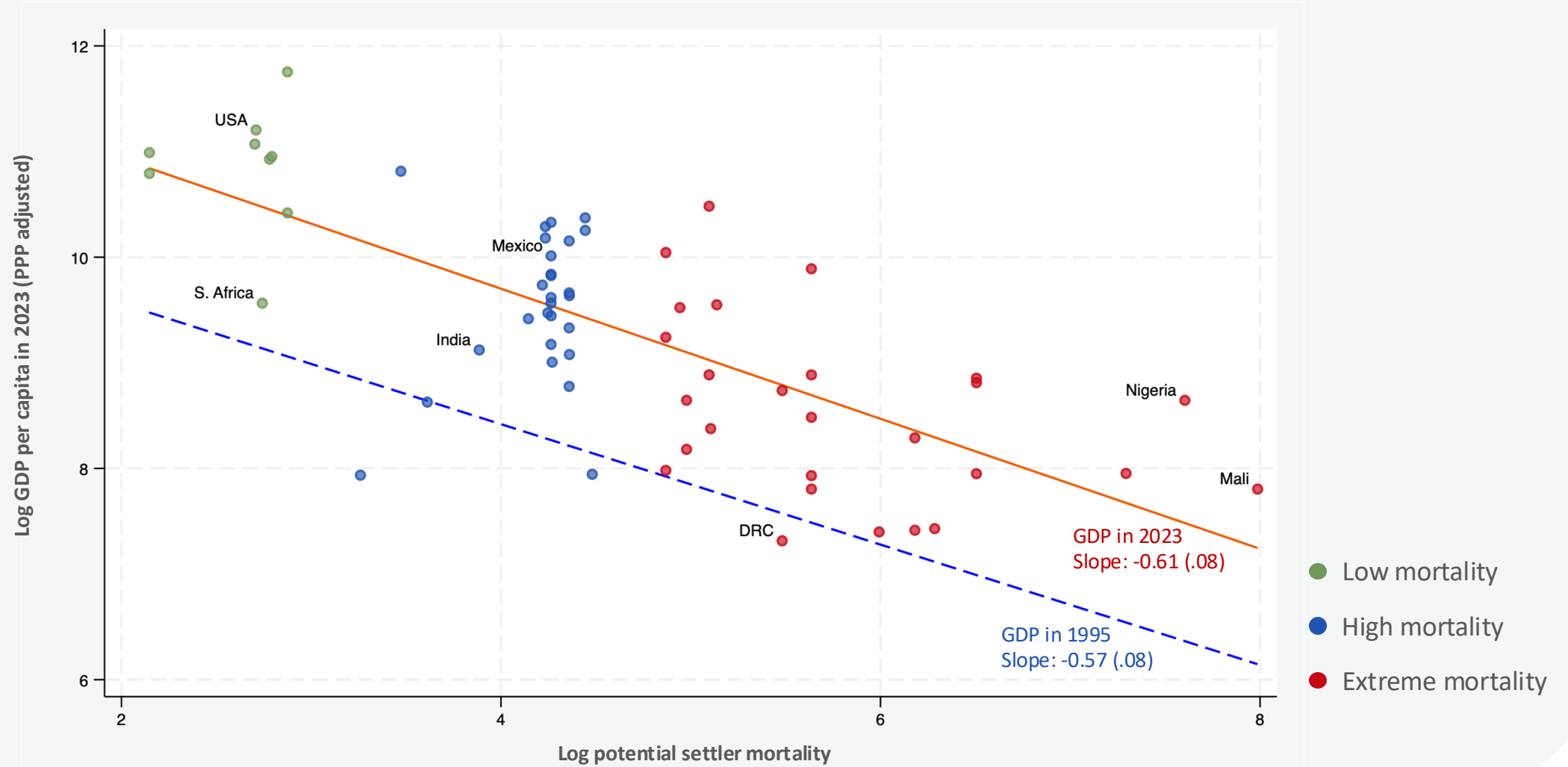


- Low mortality
- High mortality
- Extreme mortality

In the 1990s AND today: where European settler mortality was lower, GDP per capita higher

Three Disease Environments:

Low: Comparable to Europe, **High:** 2 to 4 times higher than Europe, **Extreme:** 7+ times higher than Europe



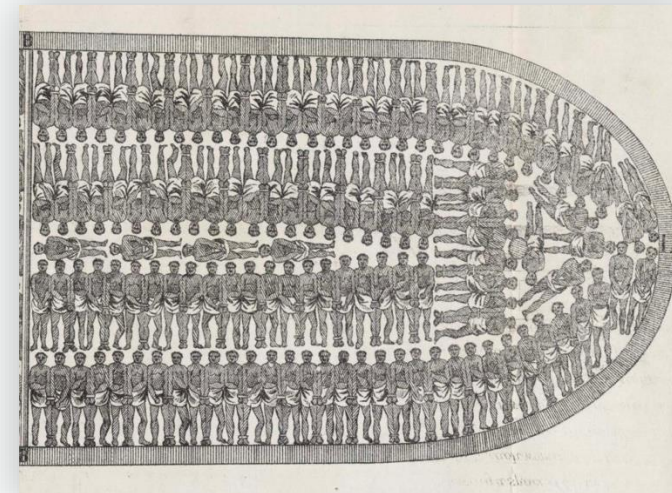
In-depth studies subsequently established the ways in which extractive institutions have persisted



Colonial India



Silver Mines of Peru



Slave Ship

Colonial India

- History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India (*Banerjee and Iyer 2005*)
- The Colonial Legacy in India: How Persistent are the Effects of Historical Institutions? (*Iyer and Weir 2024*)

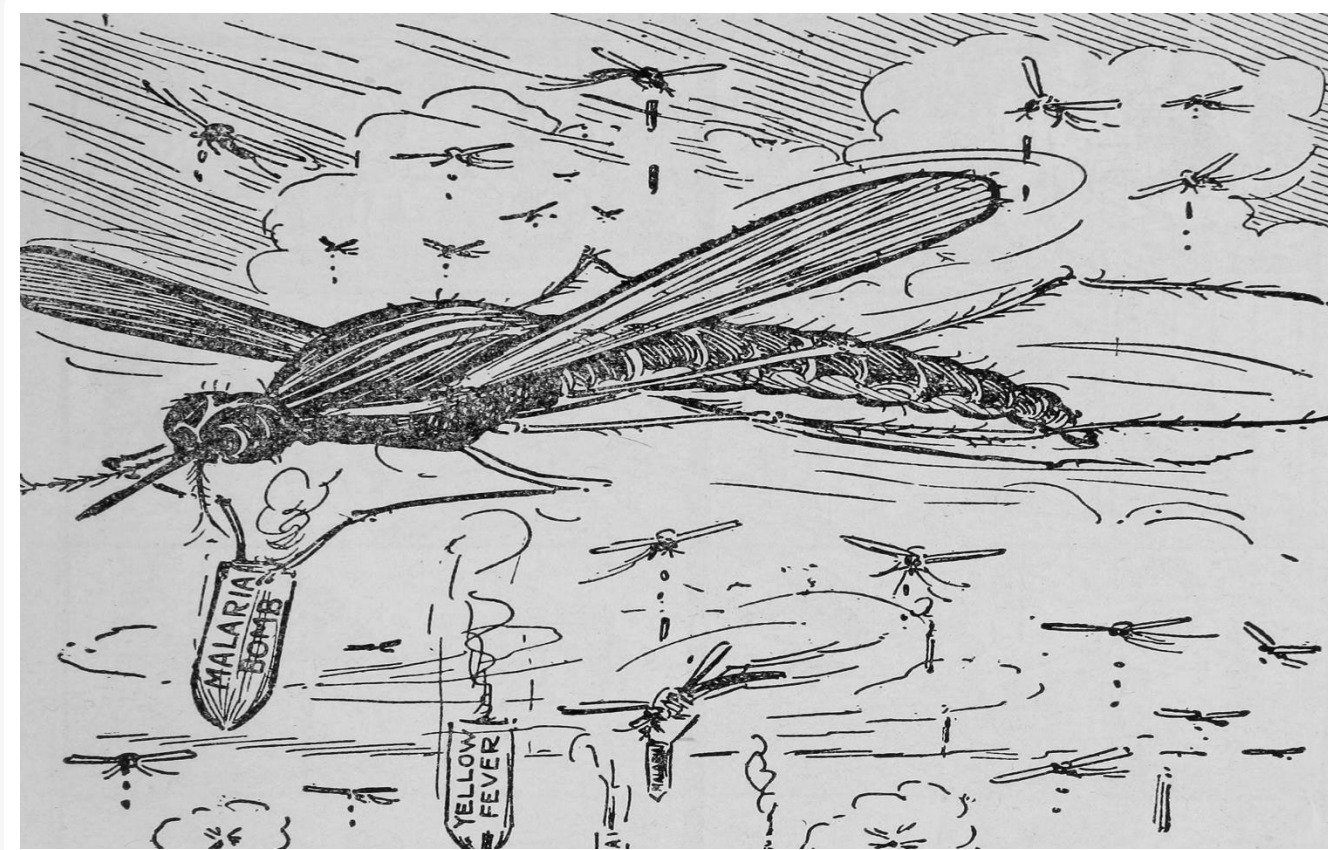
Peru and Java

- The Persistent Effects of Peru's Mining Mita (*Dell 2010*)
- The Development Effects of the Extractive Colonial Economy: The Dutch Cultivation System in Java (*Dell 2020*)

African Slave Trade

- The Long-Term Effects of Africa's Slave Trades (*Nunn 2008*)
- The Slave Trade and Origins of Mistrust in Africa (*Nunn and Wantcheckon 2011*)

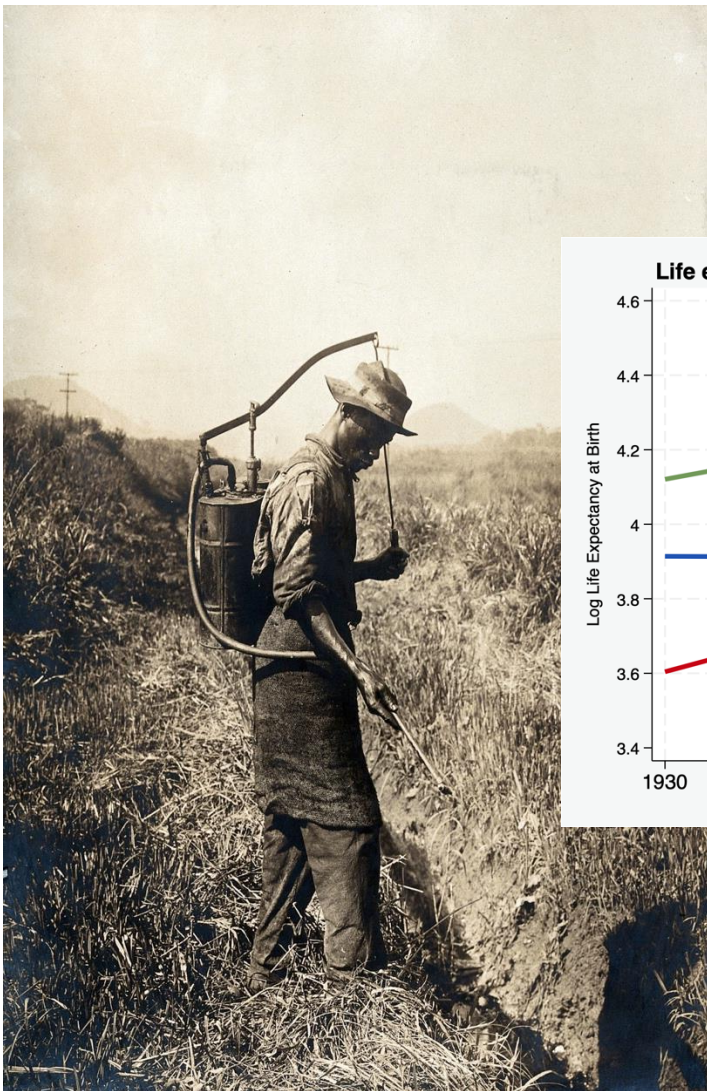
And then a medical breakthrough occurred:
global public health, from 1940s, saving millions of lives



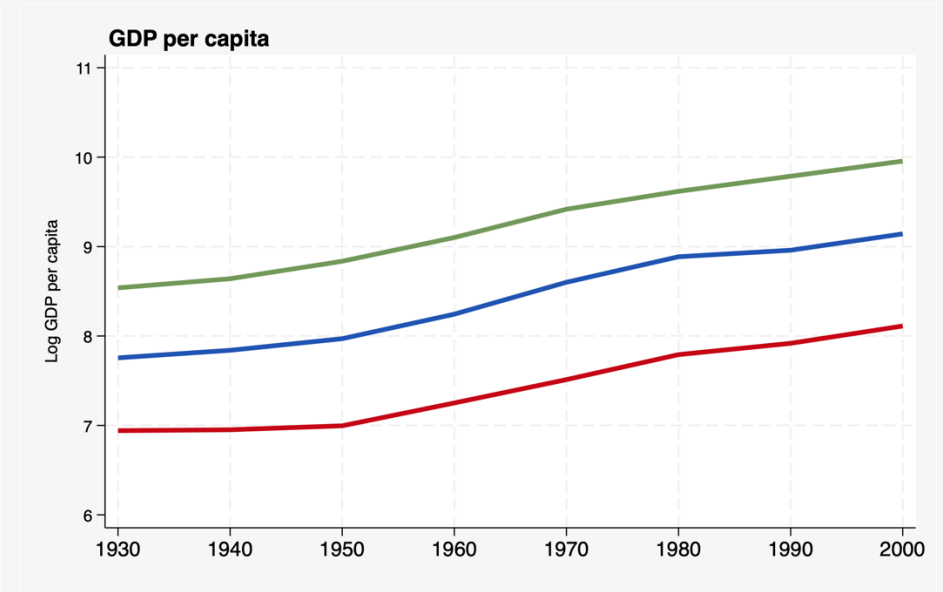
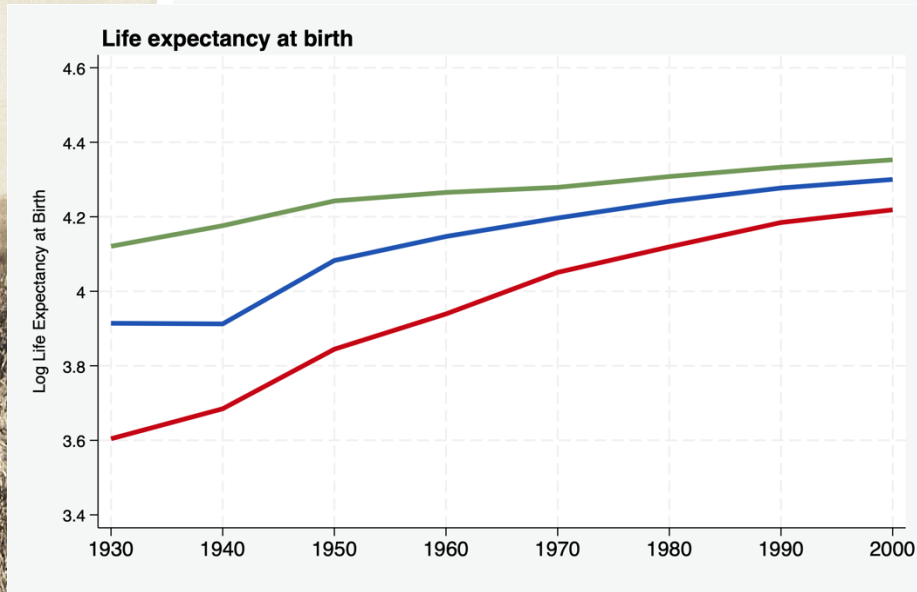
1902: Ronald Ross wins
Nobel Prize
“for his work on
malaria...” (breakthrough
in 1897)

Illustration from the book 'Epidemics, How to Meet Them', 1919

Life expectancy converged, but GDP per capita did not. Why?



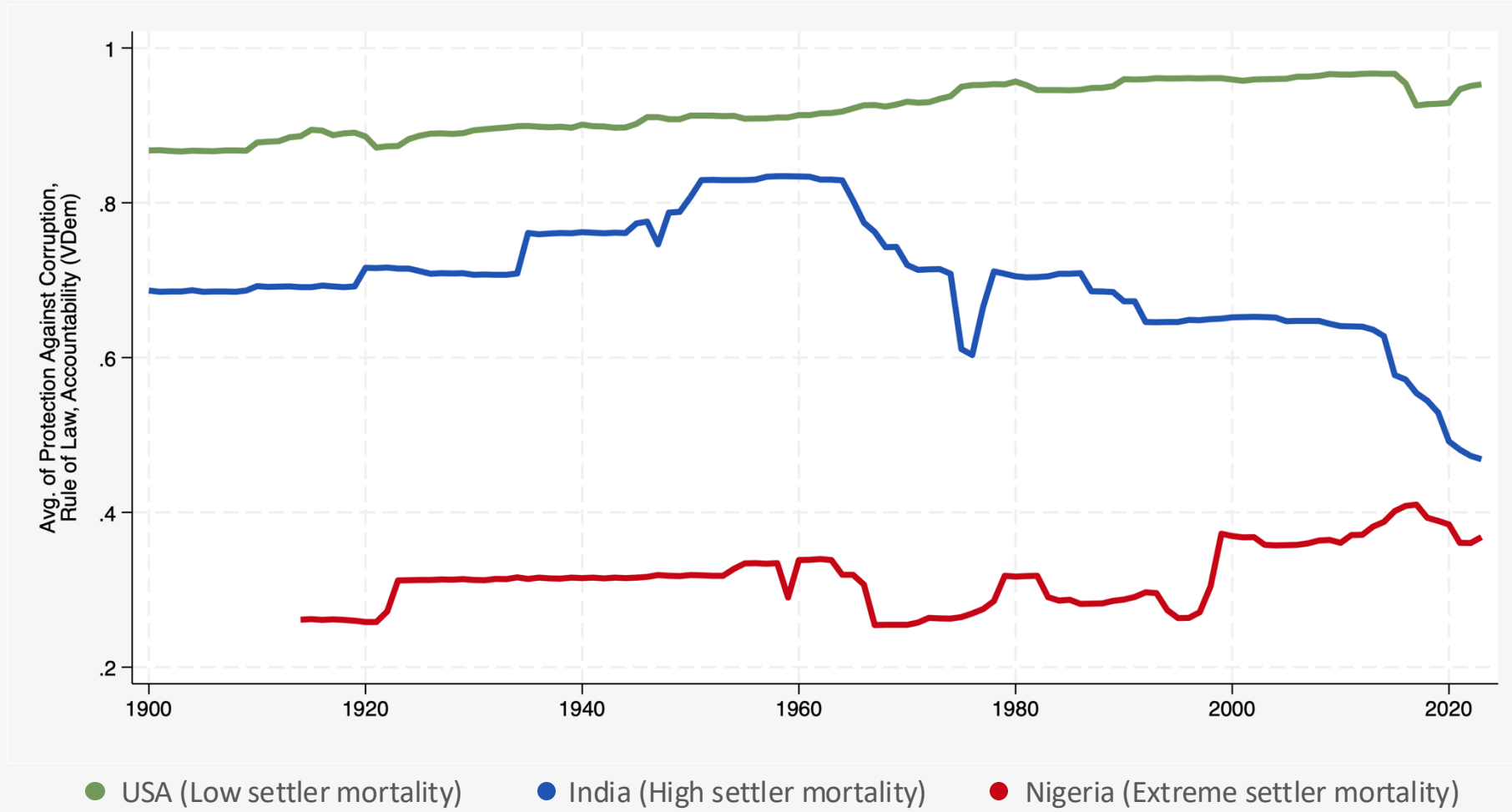
Mosquito Control Program Pesticide Application, Panama, 1910



Graphs from Acemoglu and Johnson, "Disease and Development", 2007

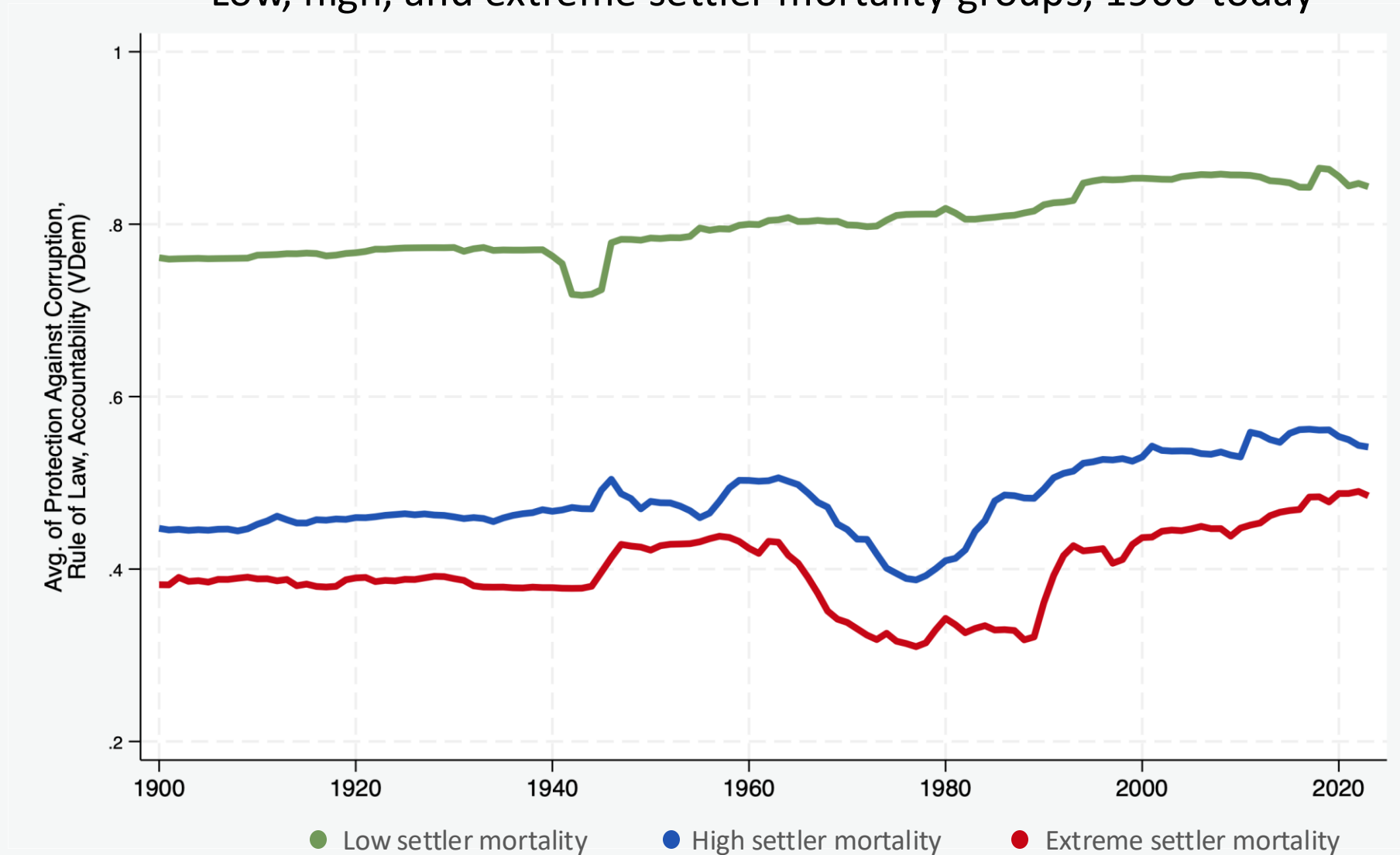
Because institutions are path dependent

USA, India, Nigeria, 1900-today

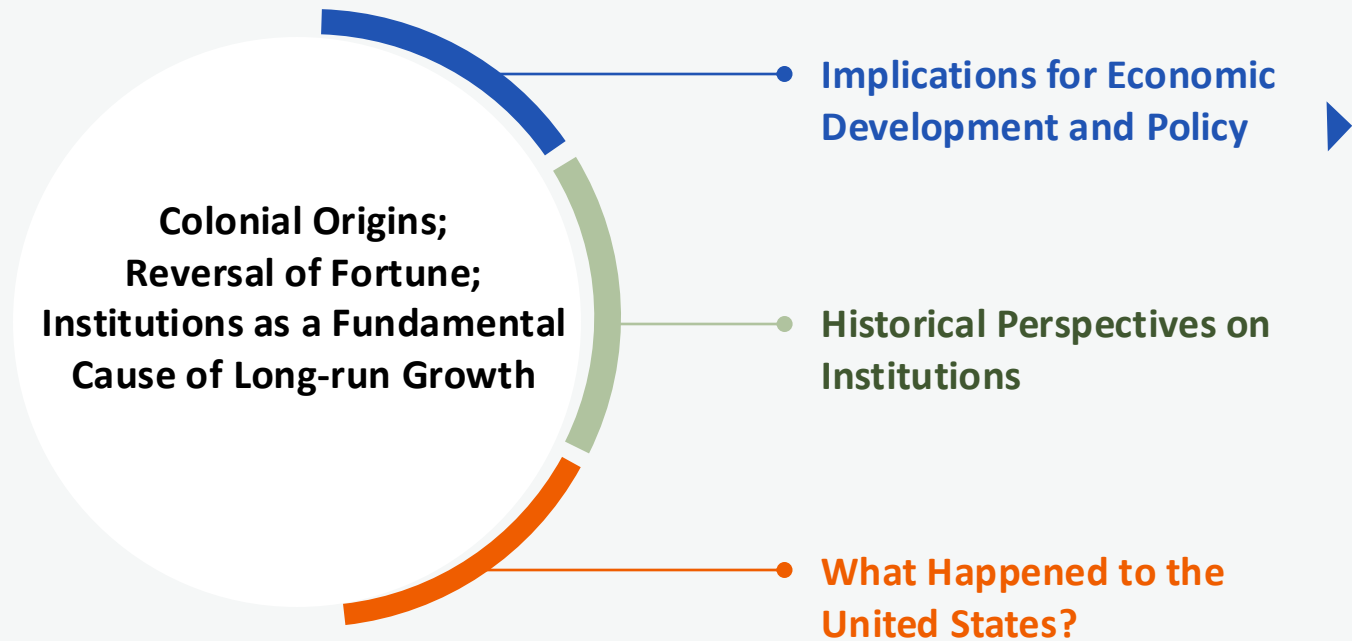


The path dependence of institutions across settler mortality groups

Low, high, and extreme settler mortality groups, 1900-today



Follow-up research and additional questions



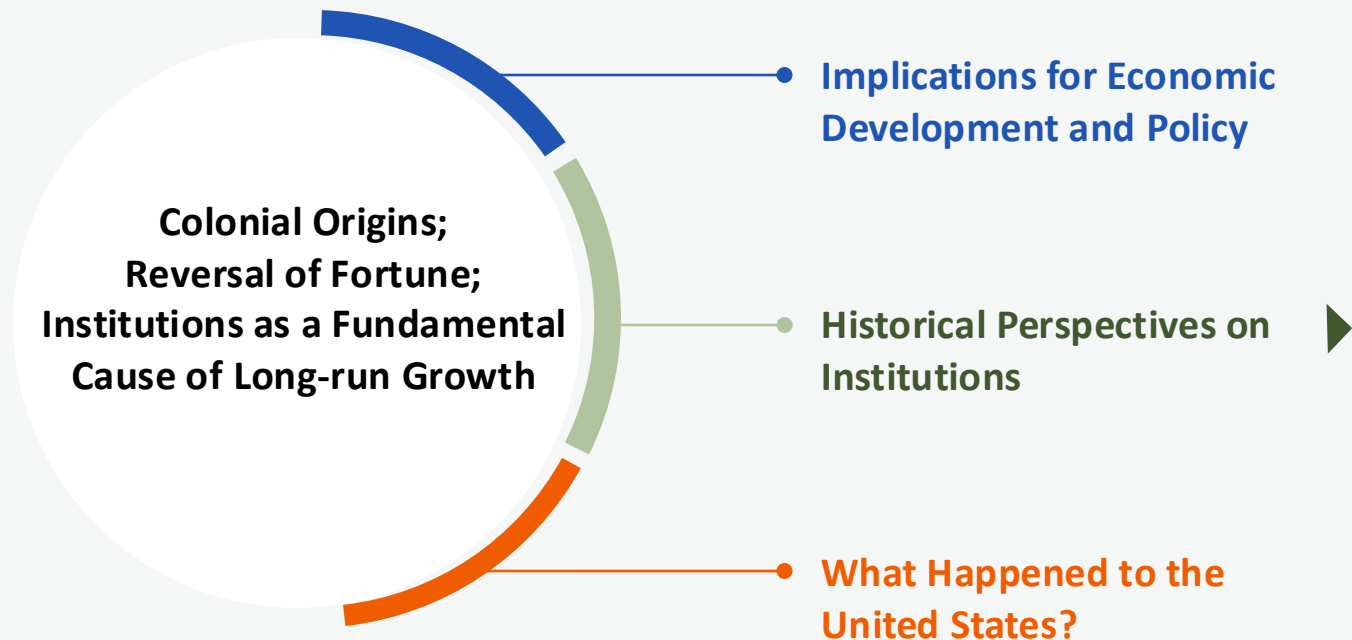
**Institutional Causes,
Macroeconomic Symptoms:
Volatility, Crises, and Growth**
*(Acemoglu, Johnson, Robinson,
and Thaicharoen 2003)*

Unbundling Institutions
(Acemoglu and Johnson 2005)

**Disease and Development:
The Effect of Life Expectancy
on Economic Growth**
(Acemoglu and Johnson 2007)

Population and Conflict
(Acemoglu, Ferguson, and Johnson 2007)

Follow-up research and additional questions



**The Rise of Europe:
Atlantic Trade, Institutional Change,
and Long Run Growth**

(Acemoglu, Johnson, and Robinson 2005)

Income and Democracy

(Acemoglu, Johnson, Robinson, and Yared 2008)

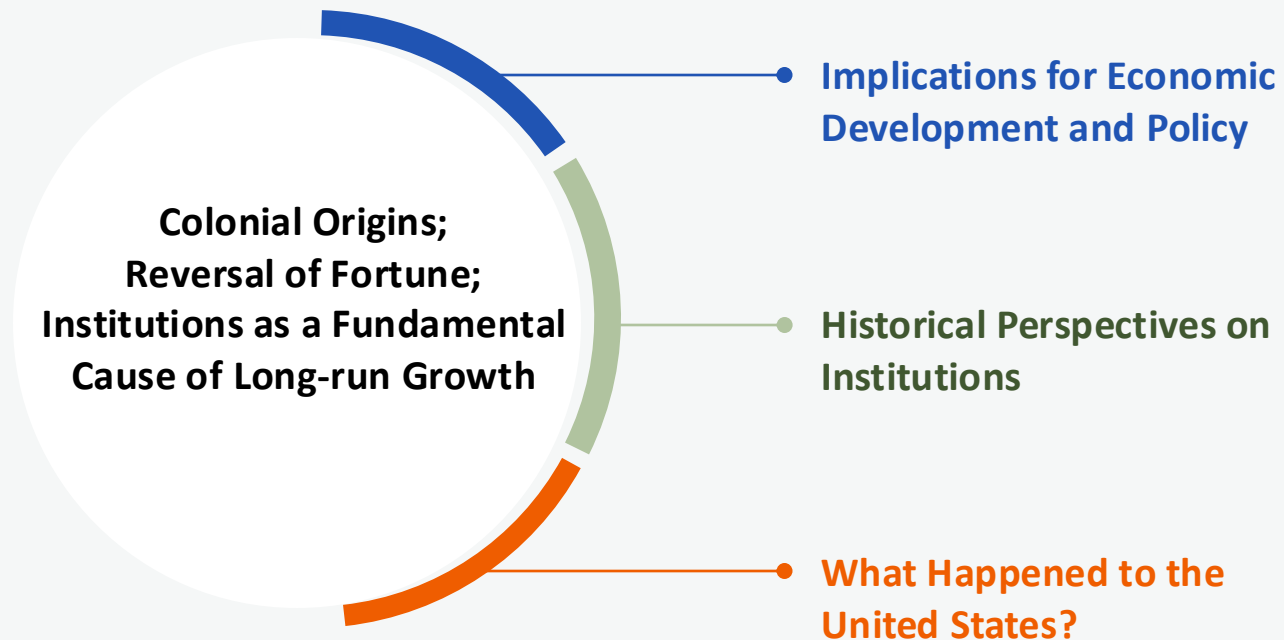
**The Consequences of Radical
Reform: The French Revolution**

*(Acemoglu, Cantoni, Johnson,
and Robinson 2011)*

**Learning from Ricardo:
Machinery and Labor in the Early Industrial
Revolution – and Today**

(Acemoglu and Johnson 2024)

Follow-up research and additional questions



13 Bankers: The Wall Street Takeover and the Next Financial Meltdown (*Johnson and Kwak, 2010*)

The Value of Political Connections in Turbulent Times

(*Acemoglu, Johnson, Kermani, Kwak, and Mitton 2016*)

Jump-Starting America: How Breakthrough Science Can Revive Economic Growth and the American Dream

(*Gruber and Johnson, 2019*)

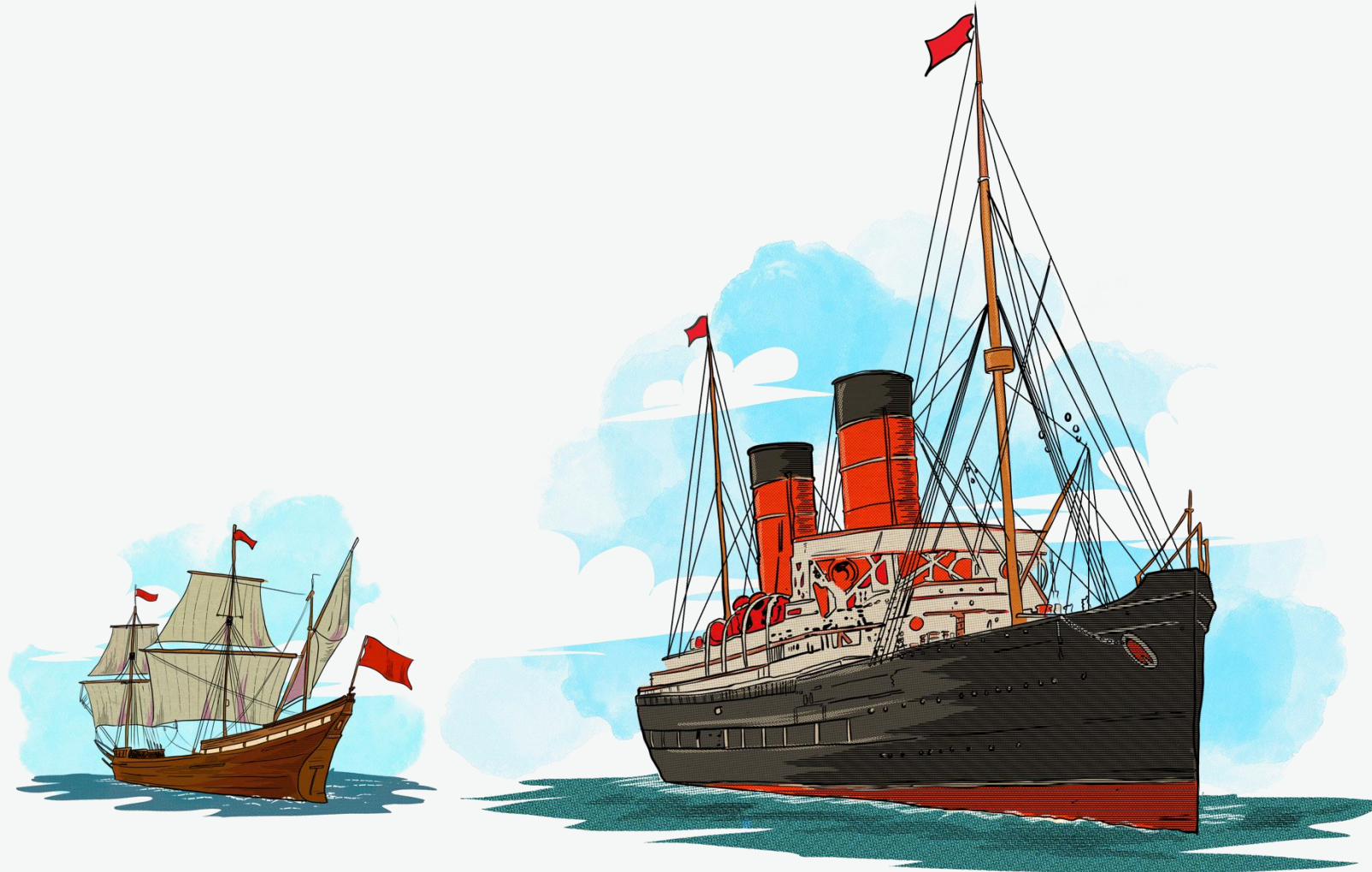
Power and Progress: Our Thousand-Year Struggle Over Technology and Prosperity

(*Acemoglu and Johnson, 2023*)

In sum, with a few dozen small ships, Europeans conquered the world and shaped modern institutions



As industry advanced in the 1800s (and ships became bigger),
the structure of European empires determined today's global division of labor



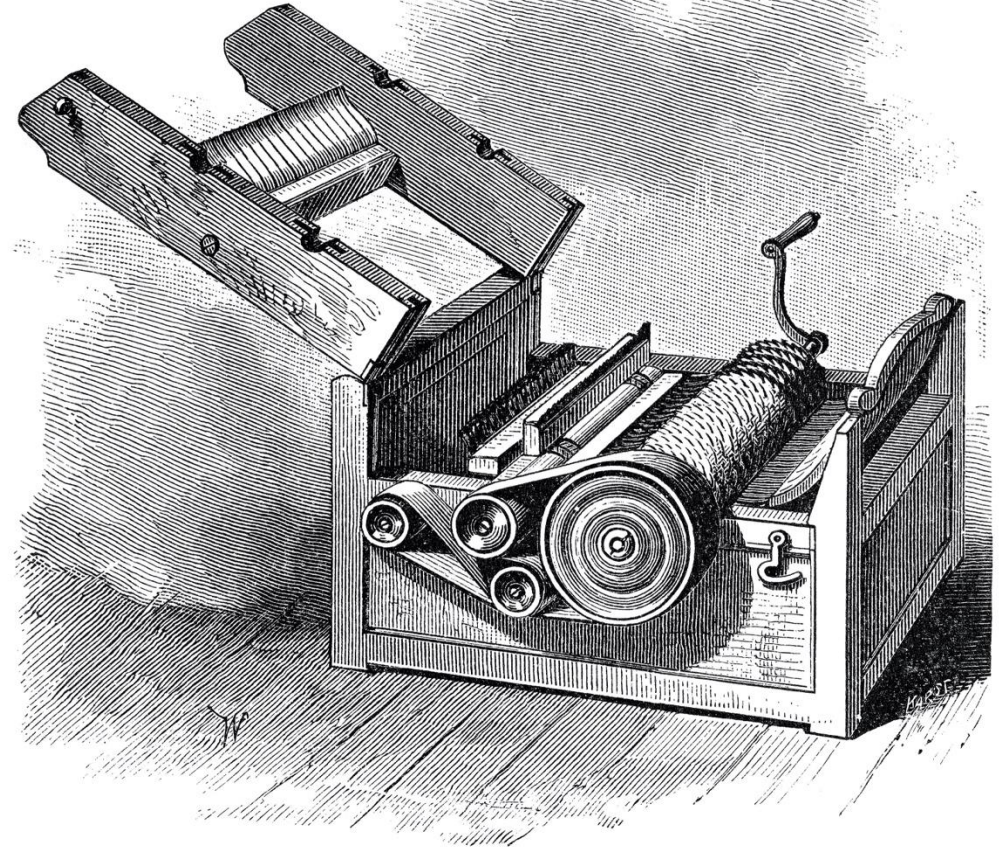
Now countries with strong institutions are better positioned to invent new technology, create more good jobs, and set the global rules



But new technologies create winners and losers

(Power and Progress, Acemoglu and Johnson, 2023)

The cotton gin facilitated the spread of slave plantations



Eli Whitney's cotton gin, 19th Century

**Henry Ford automated
production and created many
new tasks requiring expertise**



Henry Ford's Rouge Plant, 1919





**But “excessive automation”
shrinks the middle class and
undermines democracy**



Combine, soon entirely run by AI

What should we do?

Some projects at one engineering school (MIT)

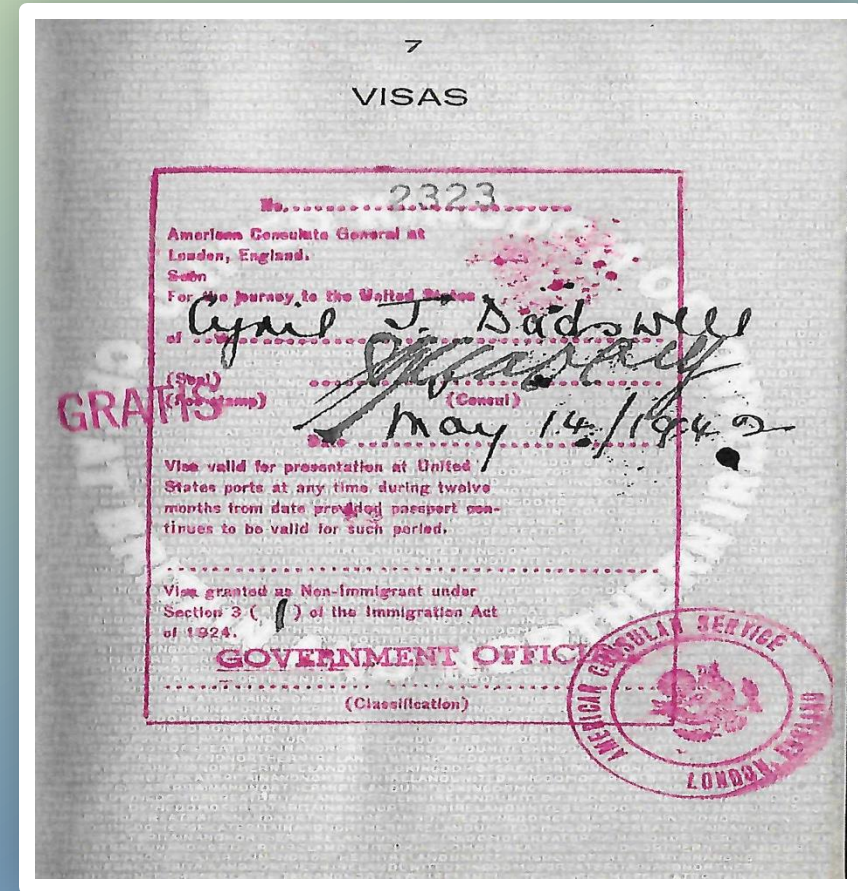
	Shared Prosperity	<ul style="list-style-type: none">• Redirect the development of technology (David Autor and Daron Acemoglu)• Create <i>Pro-Worker AI</i>, for more good jobs, including for those who did not go to 4-year college• Anticipate the rapid aging of global populations
	Global Public Health	<ul style="list-style-type: none">• Reimagine <i>Global Public Health</i> as an engineering problem (Michael Mina)• COVID was a disaster, but not because we lack scientific knowledge, technical talent, or strong specialists• Infectious disease remains – and will always be – a problem shared across all humanity
	What is it you are trying to invent?	<ul style="list-style-type: none">• AlphaFold: changes everything (John Jumper)• Private capital and entrepreneurship focused on AI: unlimited in its impact in North & South (Luis Videgaray)• “All of University”: bring together engineers, scientists, social scientists, and humanities (Liz Reynolds)
	The Prize	<ul style="list-style-type: none">• Rebuild trust in democratic institutions• Bring people together in the face of climate change and its awful consequences• Share the upside from Breakthrough Science (Jonathan Gruber): <i>(Alaska Permanent Fund, but for technology)</i>

Finally, on a personal note:

A page from Cyril Dadswell's passport,
United States Visa, issued May 14, 1942

(now in the Nobel Prize Museum)

1940-45: Scientific and technological
leadership passed from Europe to the
United States, never (yet) to return



Cyril Dadswell's Passport, US Visa, May 14, 1942

*With great power over technology comes
great responsibility...*

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- Cyril Dadswell passport, Simon Johnson