The Wealth of Nations: Yesterday, Today & Tomorrow

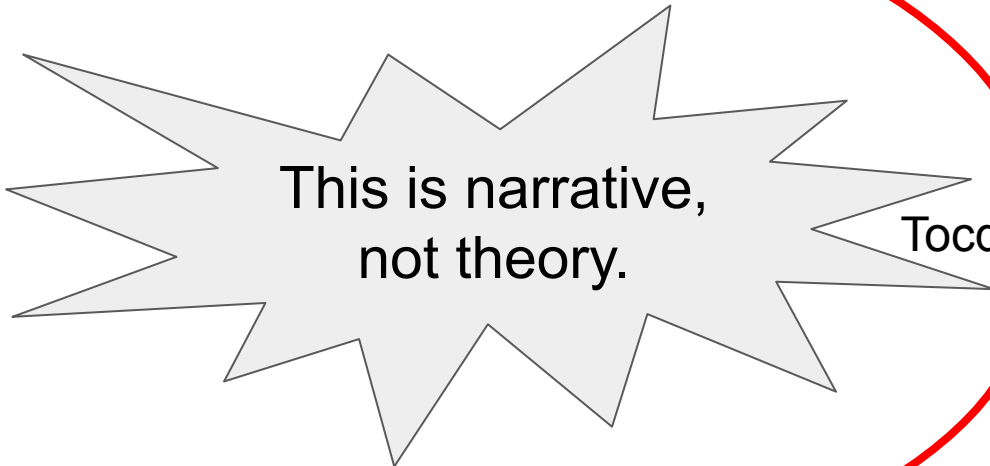Daniel Seligson
Anne E.C. McCants (MIT)

Overview

- Our premise
- The historiography
- Economic performance through time
- One page of theory
- A self-consistent model
- Polygamy
- The cost of climate change
- What the future holds
- Oil Rents
- Residuals

Our Premise

Economic History is amenable to theory,
in the sense common to the mathematical sciences.
How much so is yet to be determined.

The Historiography (of Economic History)

Aristotle: Climate & Geography shape Opportunity, Culture, and Outcomes
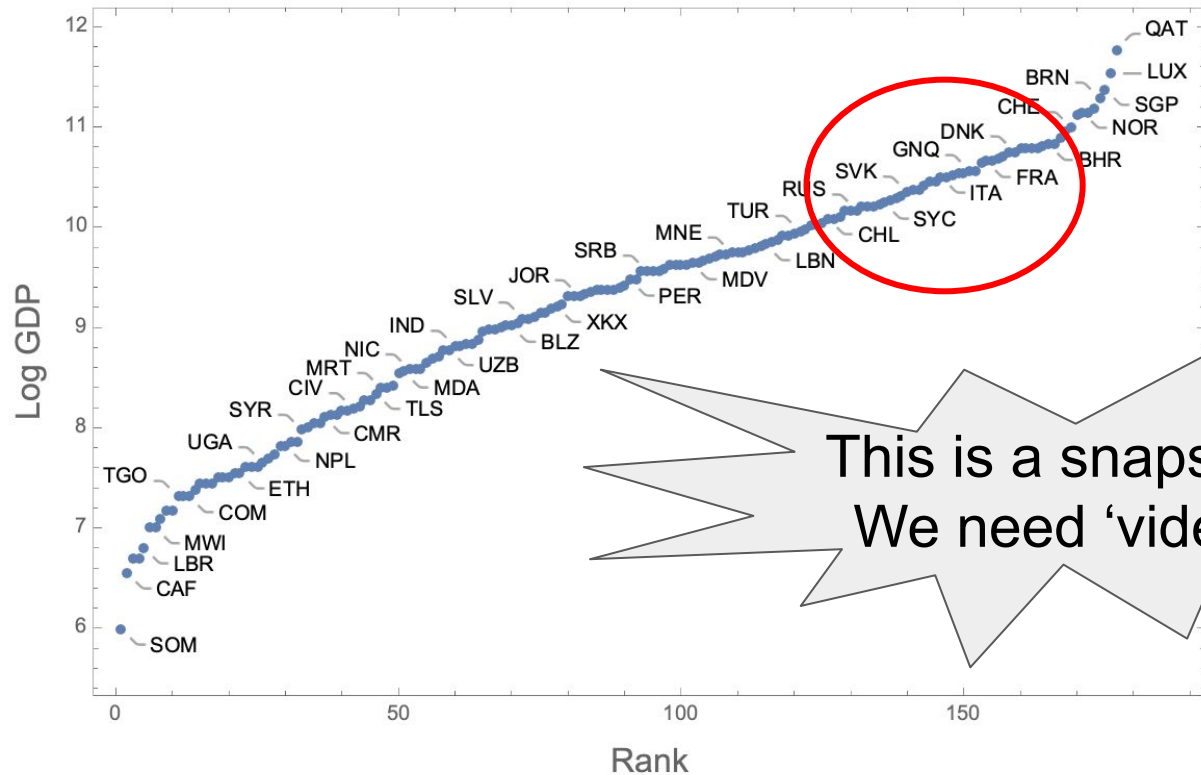
This is narrative, not theory.
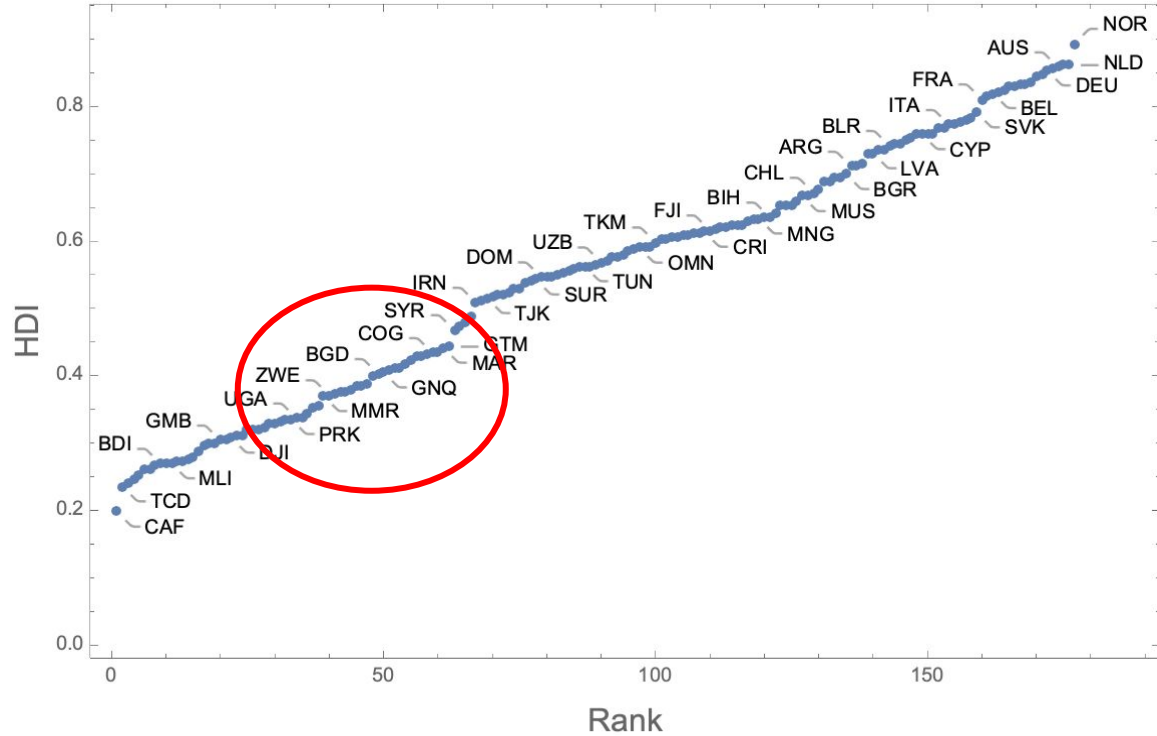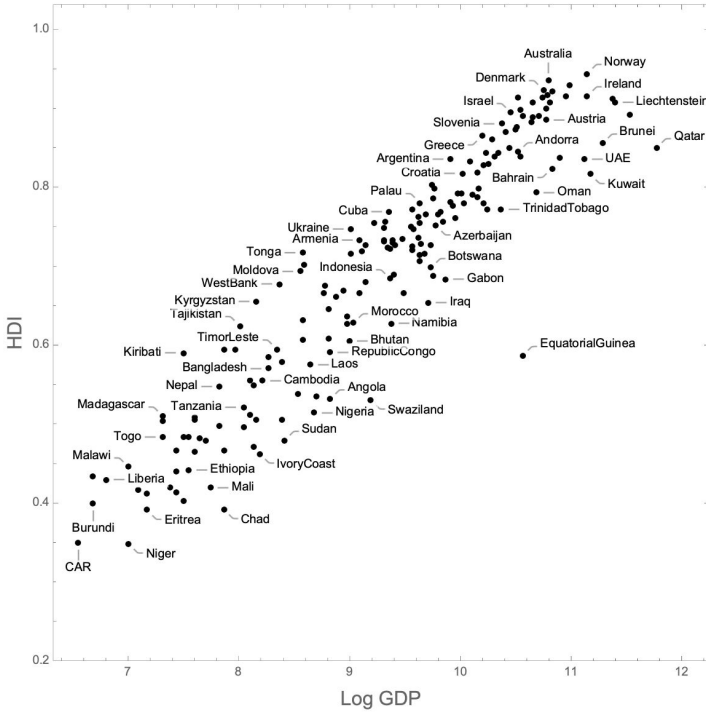
Tocqueville: Culture > Written Law, Climate ↓

Institutionalists: Written Law >> Culture, Climate ↓↓, Geography ↓↓

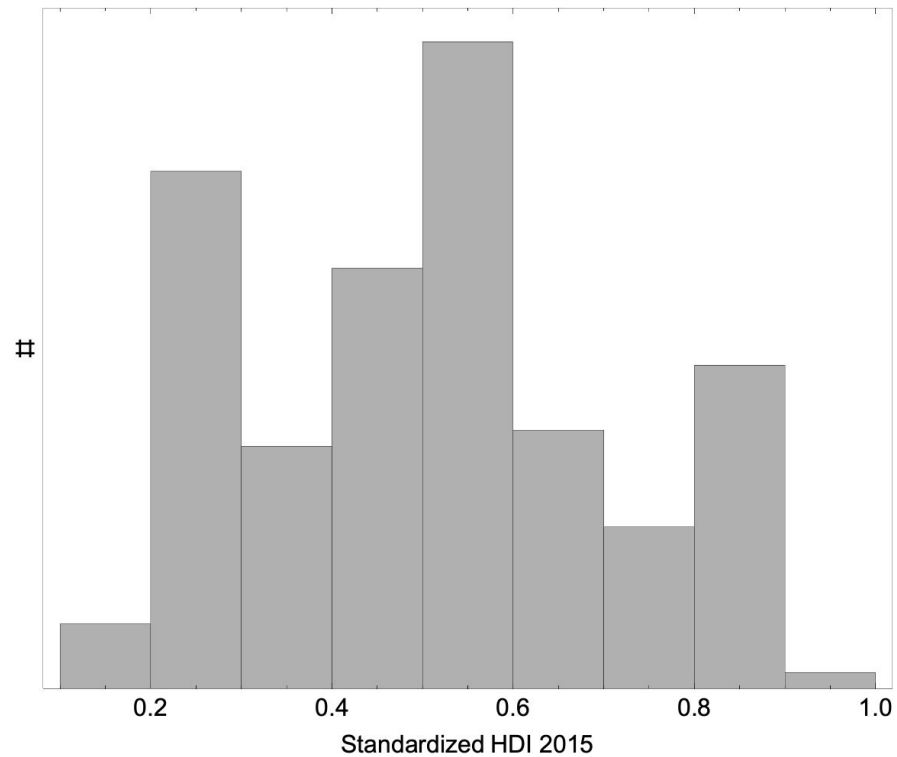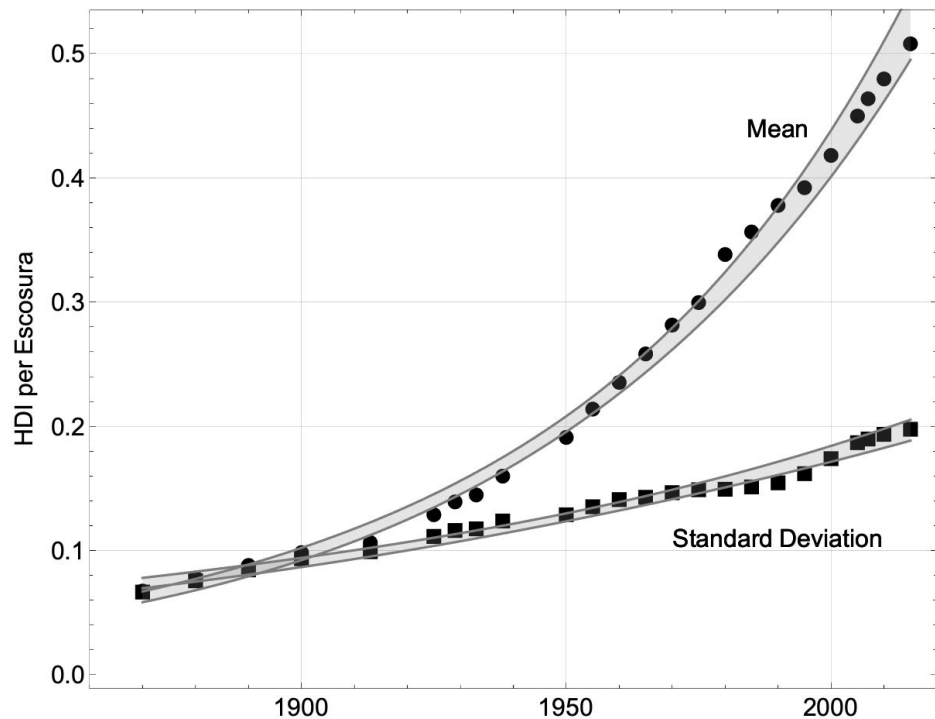# Economic History demands analysis over time

This is a snapshot.
We need 'video'.

Human Development Index, not GDP

Escosura's Time Series 1870-2015

Correlating the distribution to itself in the past

$$\mathcal{P}(t) = e^{-t/\tau}, \quad \tau = 626 \pm 12 \text{ yrs}$$
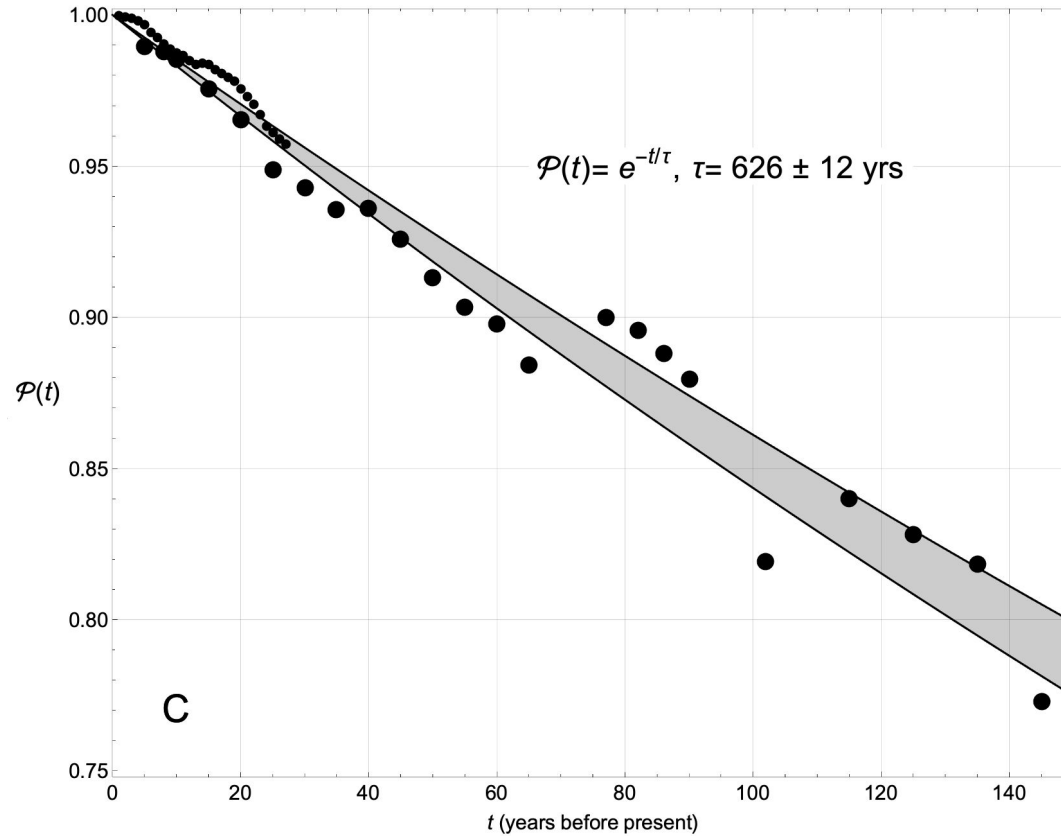
The standardized distribution is nearly invariant.

Standardized HDI 2015
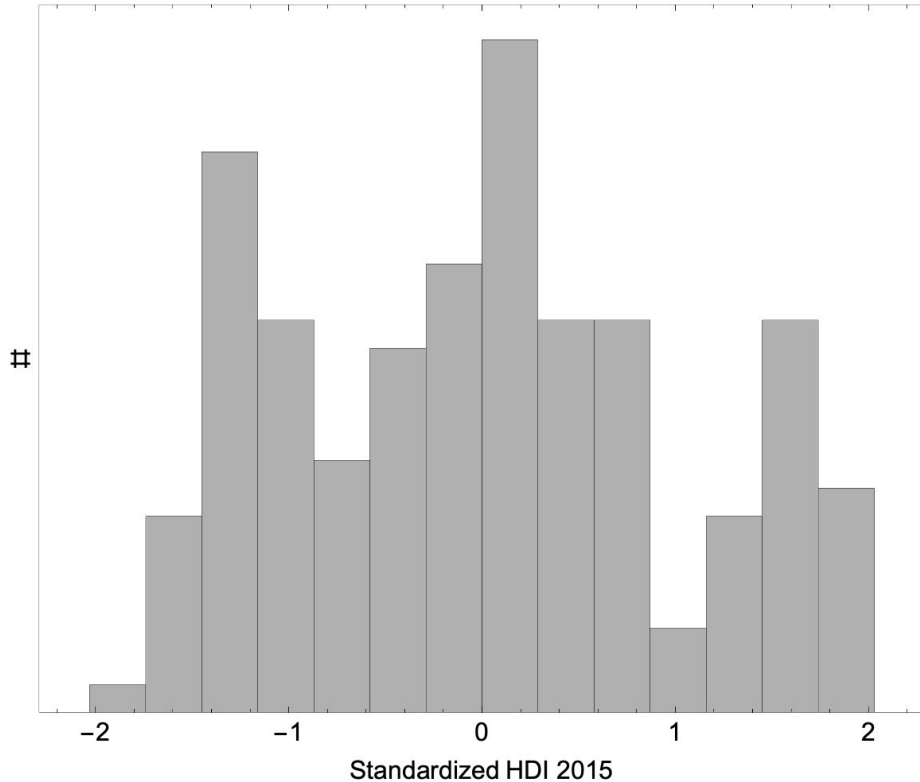
- Its 'drivers' are nearly constant on a time scale of a century.
- Written Law? No.
- Nature and Culture? Yes.

Aristotle:

Tocqueville:

Institutionalists:
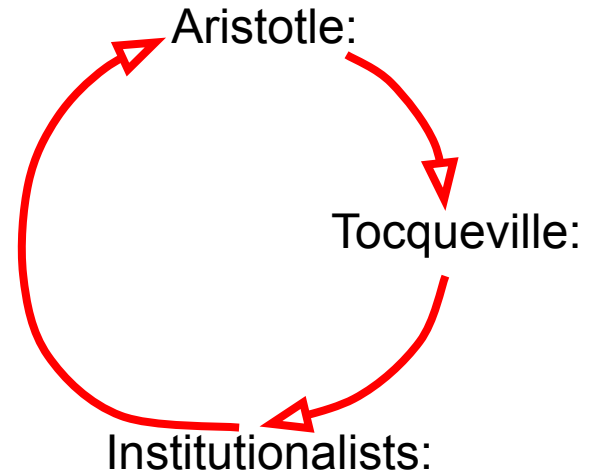
The equilibrium solution to a growth theory

$$\mu^k = \frac{1}{\lambda^k} \frac{1}{1-\alpha^k} f(\vec{x}^k)$$

- μ^k is development in a nation, k
- λ^k is the drag, friction, decay, entropy, irreversibility, or things falling apart.
- α^k is coupling of productive infrastructure to economic growth.
- f is a function over k-specific factors $\{x_1, x_2, \ldots\}$ that vary slowly.
- λ^k and α^k may also depend on $\{x_1, x_2, \ldots\}$.

To 1st order, we get $\rightarrow$ $\mu^k = \sum_{i=1}^{n} c_i x_i^k$

μ is a superposition of sources of development.

Can it be modeled? $\mu^k = \sum_{i=1}^{n} c_i x_i^k$ $|\mathcal{P}(t) = e^{-t/\tau} \dots$
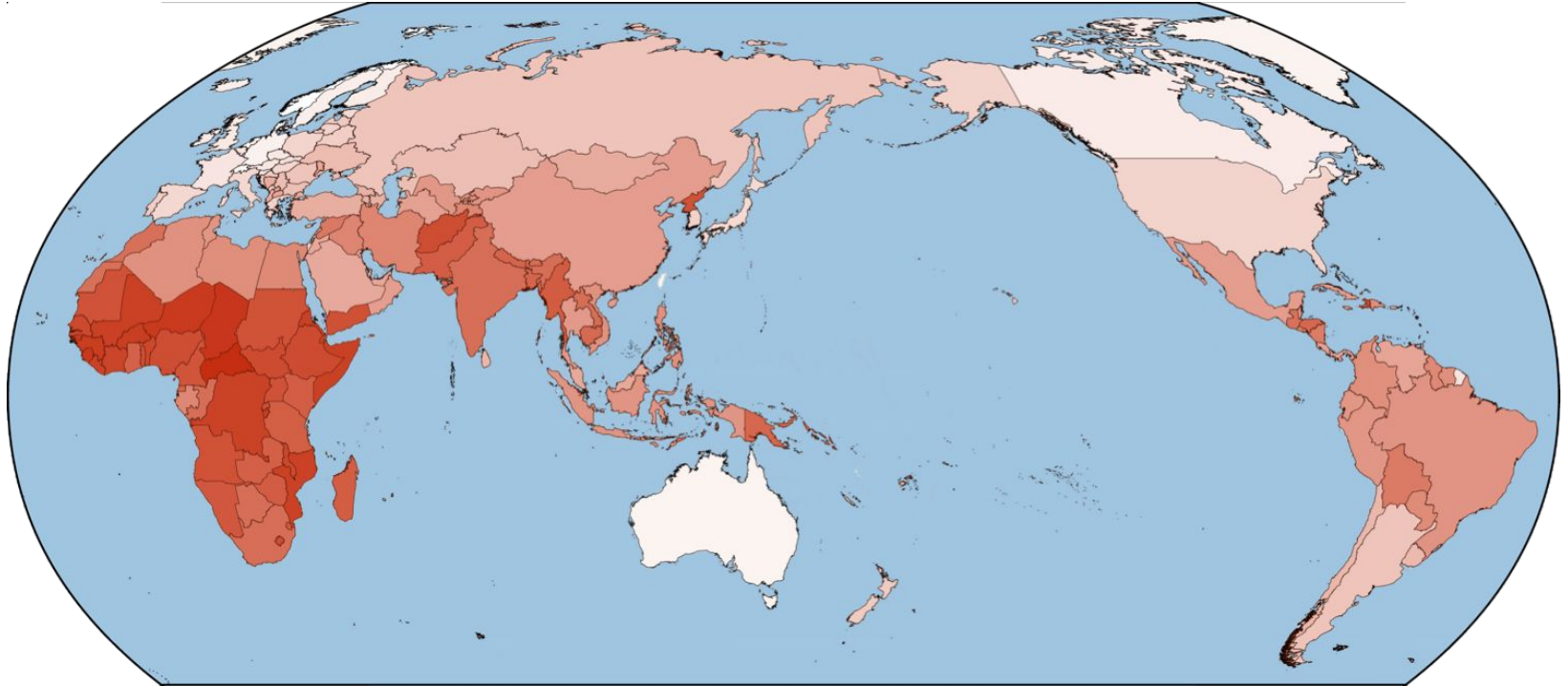
A very good model:
## Bayes optimal, geospatially sound, $R^2=0.85$

	units	Δ**μ**	Δincome (%)	p-values	oomph
Climate	PET (C)	0.041	4.6	$8\otimes10^{-13}$	0.76
Geography	Elevation (100 m)	0.025	2.8	$4\otimes10^{-05}$	0.26
Oil Rents	Log per capita $	Q&A	Q&A	small	0.61
Socialism	Duration (yrs)	0.013	1.5	$1\otimes10^{-15}$	0.27
Iberian Colonialism	0/1	0.426	38	$9\otimes10^{-28}$	0.63
Post-WWII Civil War	Duration (yrs)	0.014	1.5	$4\otimes10^{-05}$	0.32
Polygamy	Prevalence (%)	0.076	8.3	$8\otimes10^{-13}$	1.19

Tested and rejected: aridity, latitude, ruggedness, other Empire, land mass, density, proximity, religion, ...

Polygamy breeds poverty
(forthcoming in *Social Science History*)

- Polygamy creates a chronic scarcity of marriageable females …
- … inducing normative behaviors not present where that scarcity is not present.
- Markets steer income flows to holders of scarce goods, ergo …
- Women are commodified and <u>fertility is high in 𝒫-states relative to *nP*-states</u>
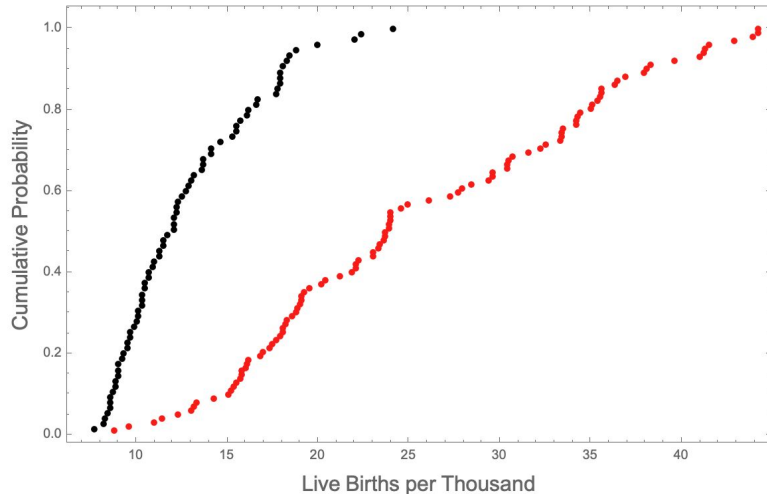
- Norms resist changes in written law and persist for centuries.
- Bodes poorly for the demographic transition.

Physics Envy

■ *Richard S. J. Tol is Professor of Economics, University of Sussex, Falmer, United Kingdom. He is also Professor of the Economics of Climate Change, Institute for Environmental Studies and Department of Spatial Economics, Vrije Universiteit, Amsterdam, Netherlands; Research Fellow, Tinbergen Institute, Amsterdam, Netherlands; and Research Fellow, CESifo, Munich, Germany. His email address is r.tol@sussex.ac.uk.*
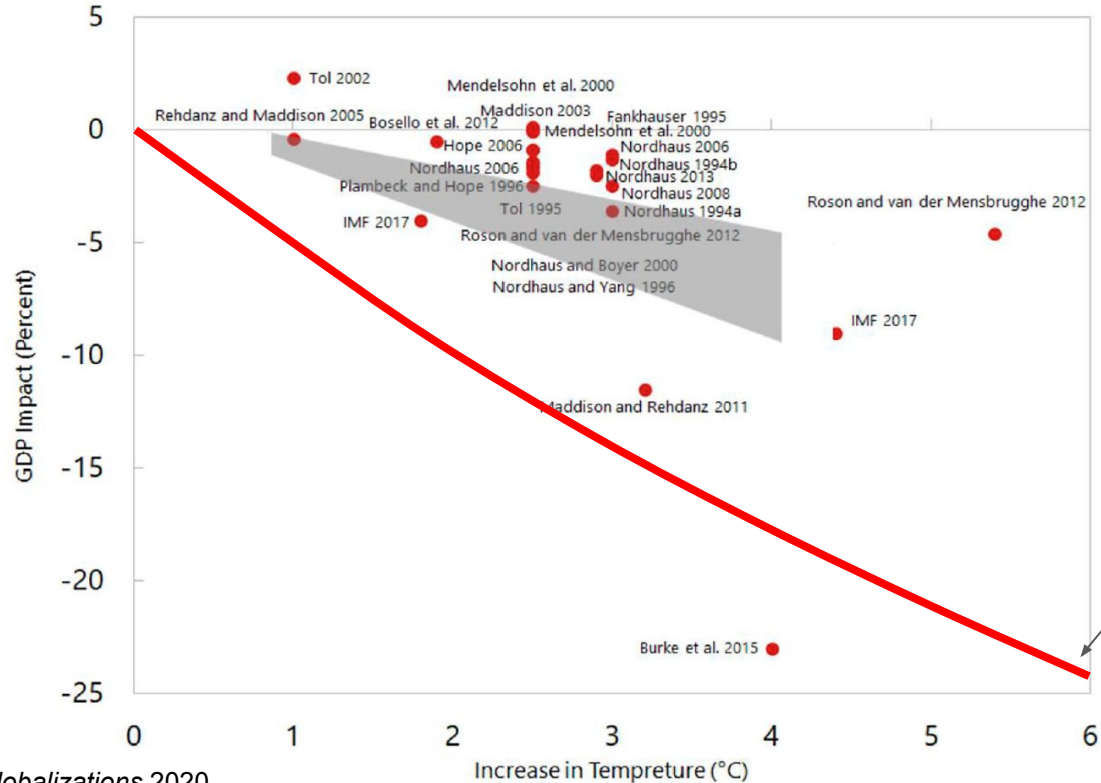
Richard Tol ✔ @RichardTol · Jun 17, 2019

10K is less than the temperature distance between Alaska and Maryland (about equally rich), or between Iowa and Florida (about equally rich). Climate is not a primary driver of income.
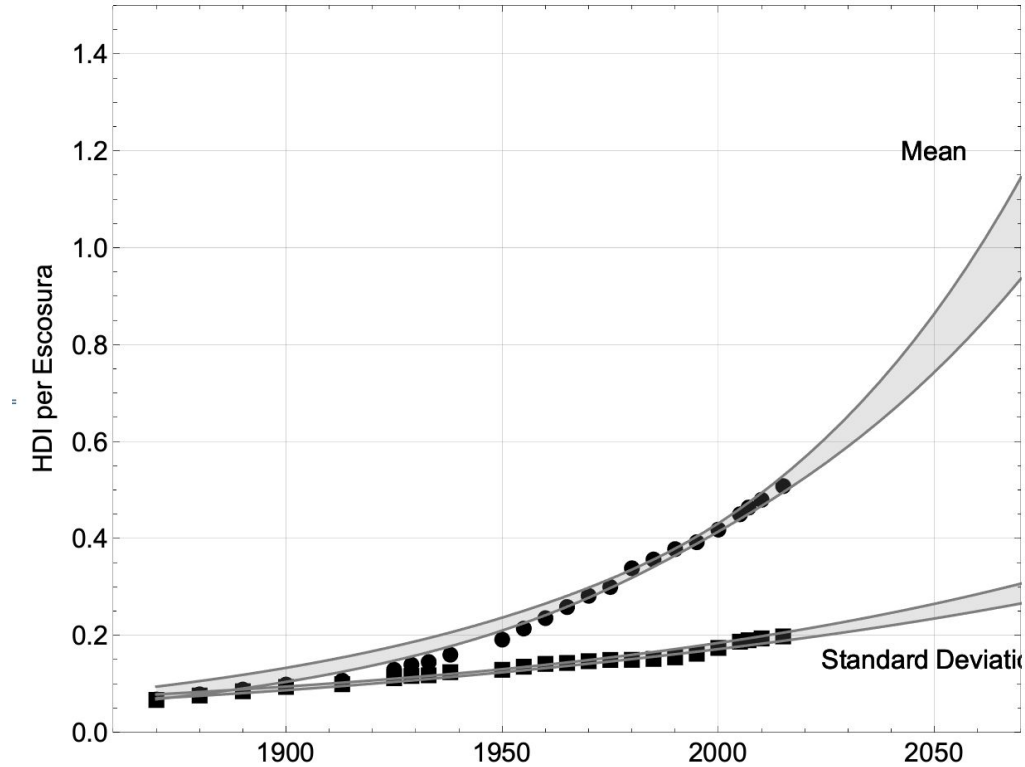
The Cost of Climate Change
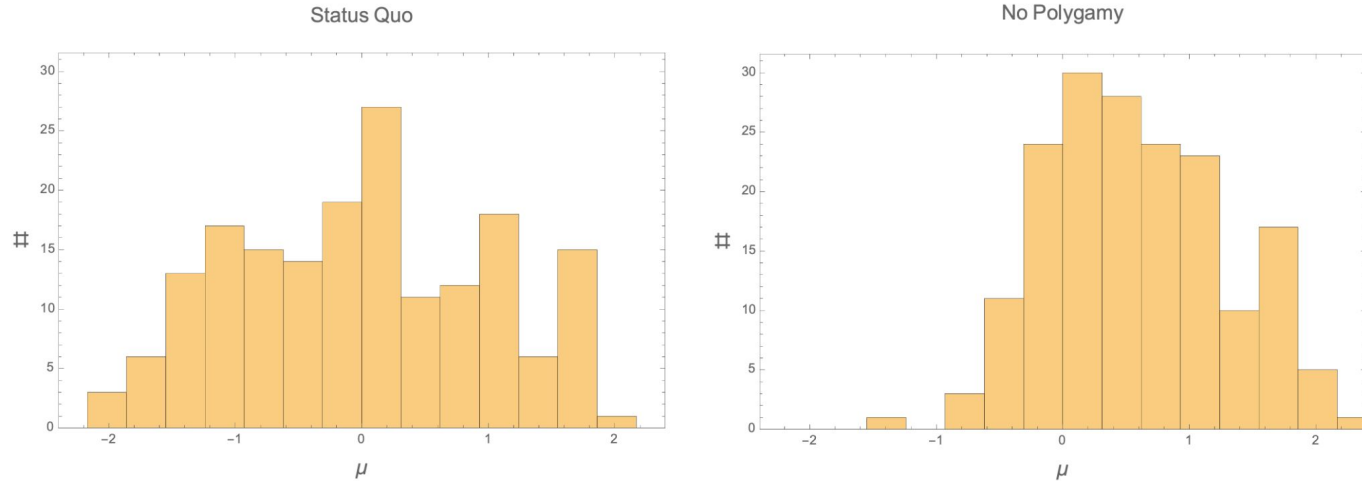

Figure 2: GDP Impact of Increases in Temperature

4.6% per °C

Figure by Steve Keen, *Globalizations* 2020
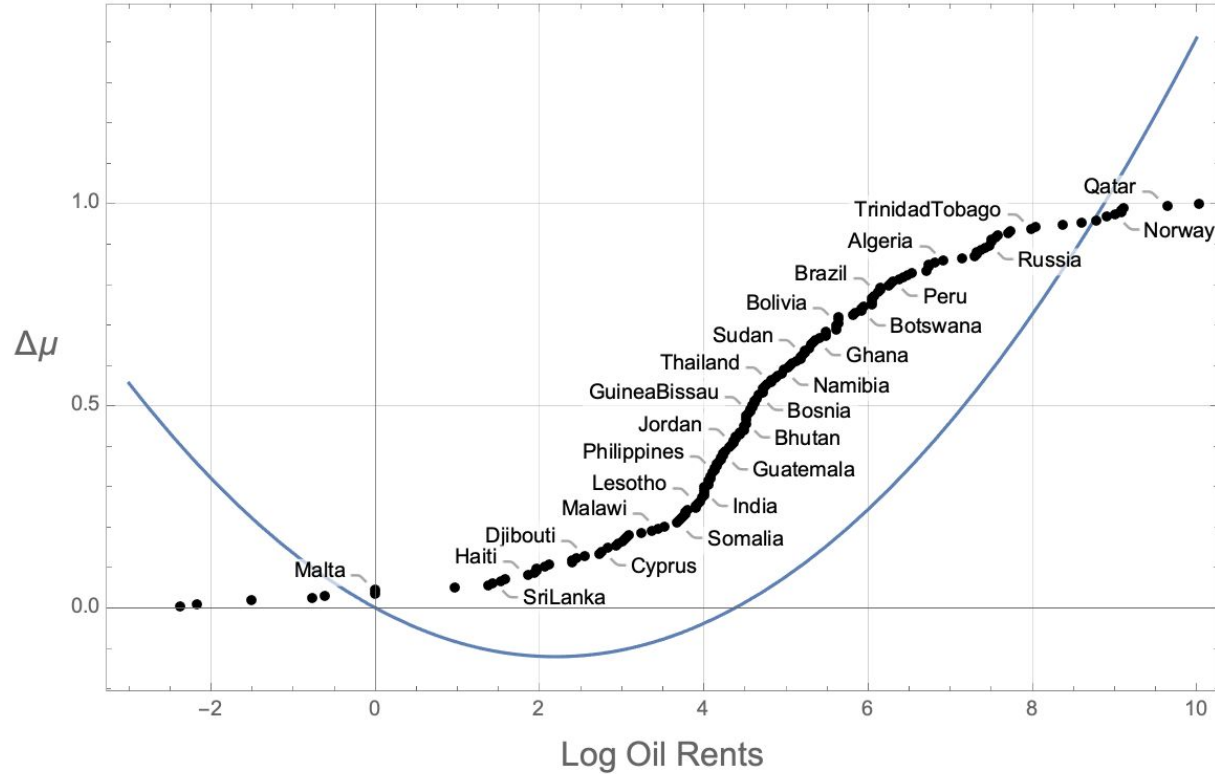
What does the future hold?

There are solutions to (1) poverty, but not (2) inequality.

1. Free, clean energy would mitigate the impact of climate on development.
2. Polygamy drives fertility, corruption, violence, and more.

But, norms are slow to change. See Slavery and Racism in the US. Eliminating polygamy and its (normative) effects is a centuries-long process.

Natural Resource Rents

Outliers(1)

Outliers(2)