ECON 272: Economic History of North America to 1913

The Colonial Origins of Divergence?

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Outline

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Divergence and Convergence

Figure: GDP per capita, selected countries, late 19th and early 20th centuries (Altman, 2003)

Table 1. ***continued***

	Argentina	Australia	Revised Canada	New Zealand	France	Germany	UK	USA
C. Per capita GDP index numbers (1870 = 100)								
1870	100	100	100	100	100	100	100	100
1880	na	121	116	121	113	109	109	130
1890	164	126	155	121	127	133	126	138
1896	na	104	144	129	143	150	133	143
1900	210	113	192	139	153	164	141	167
1910	292	147	278	172	158	184	144	202
1913	290	145	316	166	186	200	154	216
1925	299	150	306	171	222	197	151	256
1929	333	134	365	170	251	227	161	281
D. Per capita GDP index numbers (Canada = 100)								
1870	91	264	100	217	129	133	227	171
1880	na	276	100	227	126	125	214	192
1890	97	215	100	170	106	114	184	153
1896	na	191	100	194	129	139	210	170
1900	100	156	100	157	103	114	167	149
1910	96	140	100	134	74	88	118	125
1913	83	121	100	114	76	84	111	117
1925	89	130	100	121	94	86	112	143
1929	83	97	100	101	89	82	100	131

Sources: All output estimates except for the new Canada and the Firestone estimates are from Maddison *Monitoring* Tables D1-a and D1-d. The new Canada output estimates are derived from Altman Revised Table 1.

Divergence and Convergence

Figure: GDP per capita, selected countries, with regional breakdowns, late 19th and early 20th centuries (Altman, 2003)

Table 2. The Canadian provinces in an international context: per capita GDP and rankings 1891–1929

	1891	Ranking	1911	Ranking	1929	Ranking
A. Per capita GDP (1990 Geary-Khamis dollars)						
British Columbia	3,616	4	5,951	1	7,091	1
USA	3,396	5	4,970	4	6,907	2
Ontario	2,483	8	4,691	6	6,208	3
Canada (revised)	2,226	11	4,394	7	6,122	4
New Zealand	3,774	3	5,343	3	5,289	5
UK	4,099	2	4,715	5	5,255	6
Alberta	na	na	3,730	10	5,133	7
Australia	4,775	1	5,581	2	5,095	8
Quebec	1,882	15	3,320	13	4,940	9
Manitoba	2,764	6	4,069	8	4,820	10
France	2,354	10	2,937	16	4,666	11
Argentina	2,152	12	3,822	9	4,367	12
Germany	2,539	7	3,527	11	4,335	13
Saskatchewan	2,420	9	3,482	12	4,015	14
Nova Scotia	1,907	14	3,244	14	3,567	15
New Brunswick	2,046	13	3,009	15	2,961	16
Prince Edward Island	1,737	16	2,353	17	2,488	17

Divergence and Convergence

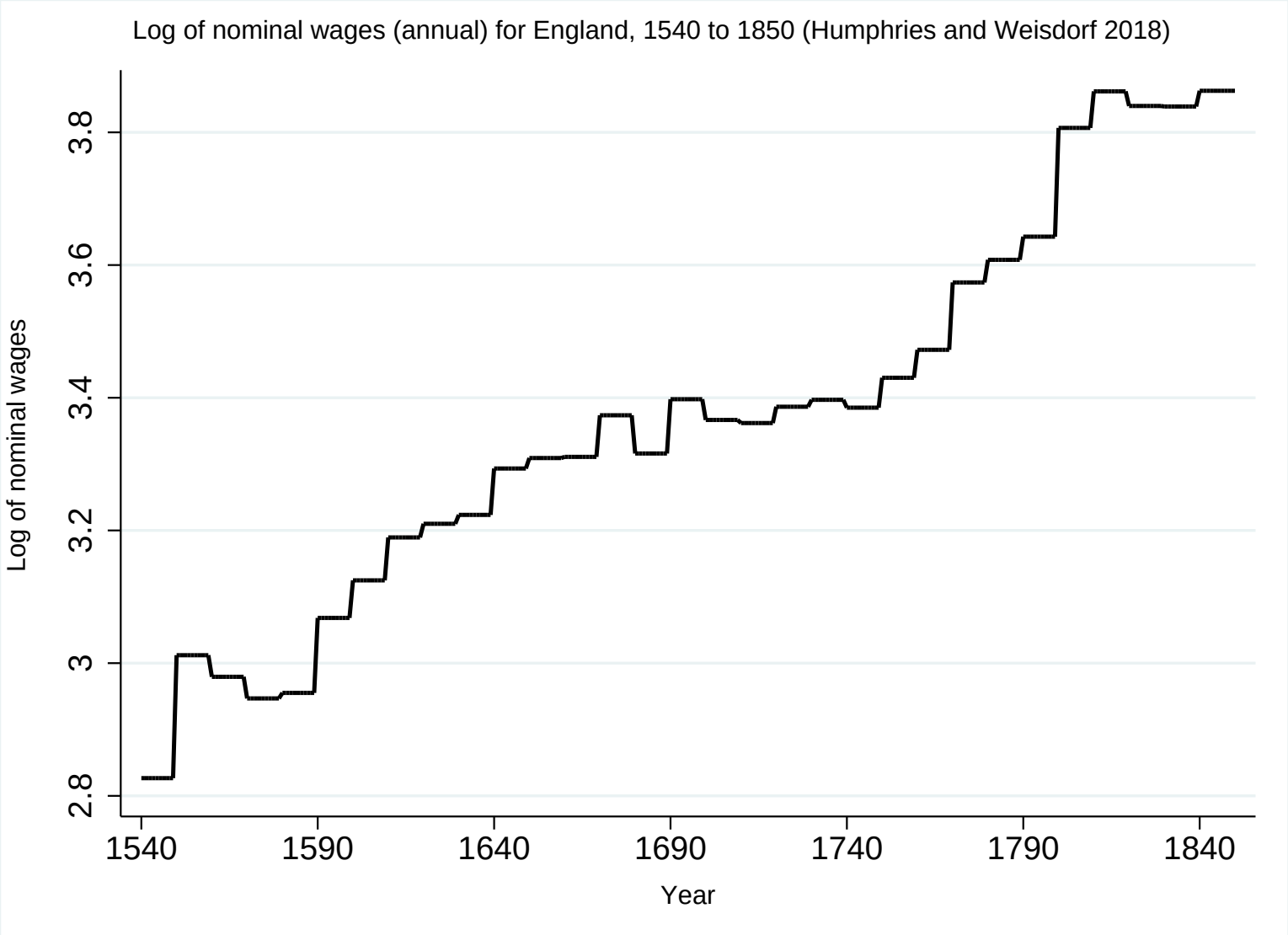
- How well do these patterns hold in the distant past?
- Are they there from the early colonial era?

Real Wages

- One commonly used approach is to rely on wages for comparable trades
  - Mostly rely on different types of workers in the construction industry (because most easily available) (Hopkins and Phelps-Brown, 1956).
- A good proxy for the marginal productivity of labor (if MPL ↑, incomes per capita *probably* (depending on changes in L supply and K stock) ↑:

  "Our knowledge of labour market conditions and the extent of regional migration seem to substantiate the view that wage rates may serve as a reasonable proxy for the average earnings of a particular socio-economic group as well as the marginal productivity of labour in the economy as a whole" (Allen et al., 2011)

Divergence and Convergence



Purchasing power parity

- Barring quality issues with regards to the wage data (Stephenson, 2018), the main issue is how to generate proper international comparisons and proper comparisons over time.
- Need a basket to compare over time - which is easy. However, we also need a basket that can be compared over space - this is harder because exchange rates are not proper ways of converting wages (see: *Balassa-Samuelson Effect* (hyperlink)

Welfare Ratios With Wages

- This is where the "welfare ratios" (WR) approach is quite useful. Developed by Allen (2001). WR take nominal incomes and divide them by the monetary cost of a basket of goods designed to capture "thresholds" of living standards.
- Basically, the basket is akin to a poverty line so that if if WR $\geq$. 1, you are *above* (or at) the poverty line by a factor equal to the obtained figure.
- The resulting ratios become standardized real wages that can be compared over space and time in the equivalent because it circumvents the problem of purchasing power parity.
- While the basket can be used to create welfare ratios with wages, incomes or wealth (which is an advantage). The downside is that you have to conceive a relevant basket.
    - Example: a basket with 2 million British Thermal Units of fuel consumption may work in Columbia, but this is death in Canada (Geloso, 2018)

Welfare Ratios with Wages

Table: Welfare Ratios with Bare Bones (WR-BB) (1688-1775 Average) based on Allen et al. (2012) and Geloso (2018)

Region	WR-BB	Region	WR-BB
Potosi	1.66	Quebec	2.50
Rural Mexico	1.84	Urban Mexico	3.11
Bogota	2.03	New England	3.50
Southern England	2.10	London	4.00
Paris	2.10		

GDP

- The downside with wages is that there geographical constraints to employment and that labor markets may differ in terms of premium/penalty for daily/annual employment.
- For example, one might sacrifice 5% on daily wage rates for the assurance to work annually or - reversely - ask 10% more if employment is unstable (Hatcher and Bailey, 2001).
- Geographic differences in constraints to employment are important - this is because one assumption of welfare ratios is that wage rates are multiplied by 250 days (generally) to proxy annual income. However, length of work year differs over space - a mere 42 extra days of work eliminates all of Canada's advantage over France (Geloso, 2018).

GDP

- This is why GDP, when available, is clearly a superior alternative.
- The upside of GDP is that, if computed in nominal terms, it can lend itself to welfare ratios - see Lindert and Williamson (2016).
- The downside is that it may require large quantities of information (Altman, 1988; Abad and van Zanden, 2016; Williamson, 2016).

GDP

- Three approaches to GDP calculation: Output, Income, Expenditures

  The output approach starts with a modern GDP estimate that reports a breakdown of value added by sector, and then works backwards by applying proxies for sector value-added time series, applying benchmark weights for aggregation (Williamson, 2016).

- The output approach is also known as "GDP at factor cost" = taking the market value of all production and then subtracting each sector's intermediate consumption.

GDP

- The income approach is also known as the *social tables* approach and has the longest tradition - going back to the 17th century (King, 1804).
- The idea is to take all the incomes of the different individuals and sum them up: "evidence on labor earnings and property incomes, building what are called social tables by occupation and location for benchmark years" (Williamson, 2016).
- The advantage from this method is that it not only constructs GDP, it also constructs a measure of inequality at the same time - see next slide based on Lindert and Williamson (2013). Others methods (such as the expenditures method) can be used to link between the benchmarks.

GDP

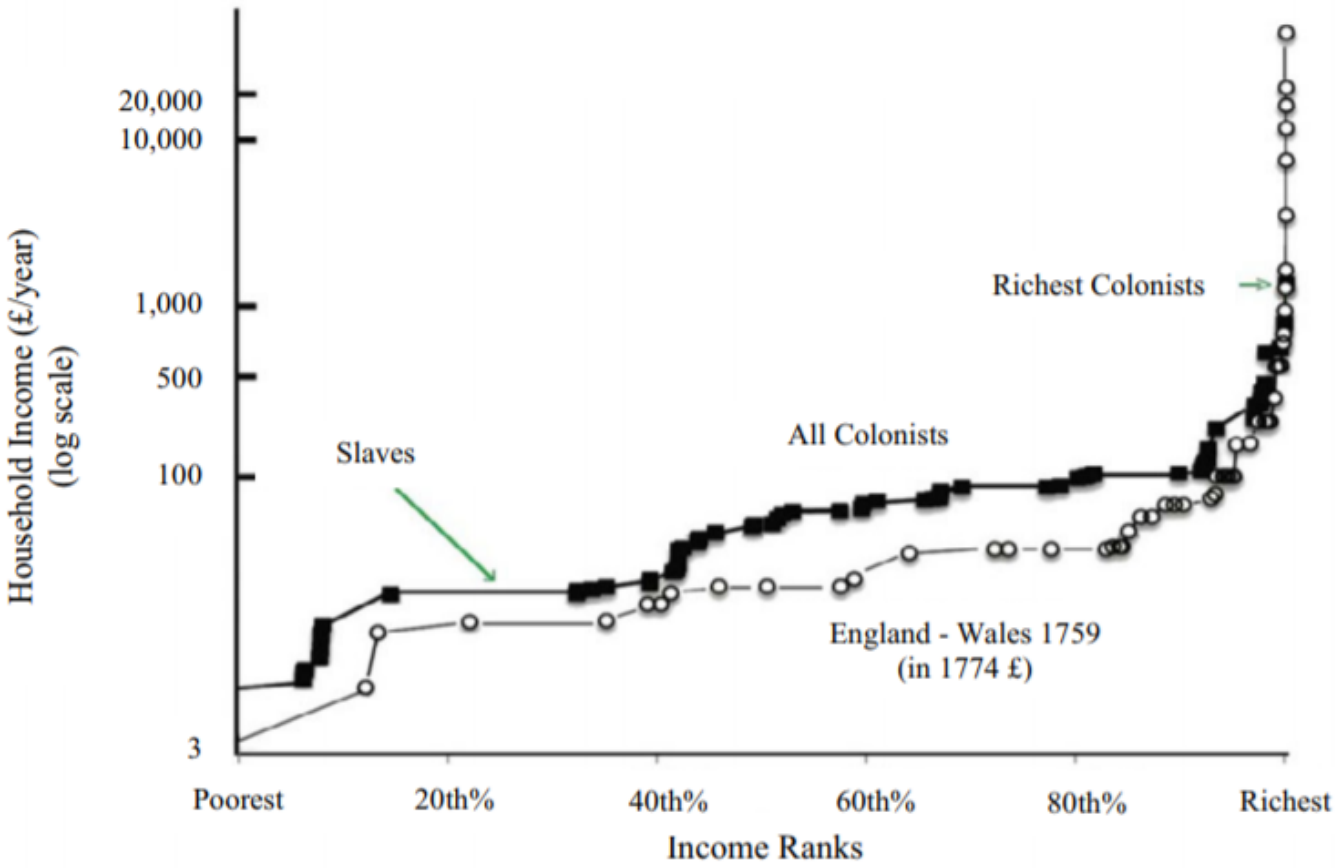


FIGURE 1
COMPARING AMERICAN AND ENGLISH INCOME RANKS IN THE LATE EIGHTEENTH CENTURY

GDP

- The expenditures approach is the one you are most familiar with because it is taught to you as soon as you enter a macroeconomics course (the value of all final goods and services consumed).
- The expenditures approach is also easy to use because of the ability to modelize demand the way you saw it in intro micro. Take the following function

$$C_A = W_1^{\alpha} \cdot P_N^{\beta} \cdot P_A^{\lambda} \tag{1}$$

- Where C_A is total agricultural consumption per capita, W is real wages in agriculture ,P_N is the price of non-agricultural goods and P_A is the price of agricultural goods. α, β, λ are the elasticities of each (we are assuming CES here) whose sum must equal zero.

GDP

- Since consumption must be equal to production (multiplied by an international trade factor - but here we will assume autarky for the sake of simplicity), C_A is equal to Y_A (agricultural output) and the latter, divided by its share (S_A) in the total economy will give you the total size of the economy. If one does not possess this information, the following can be done where π_a and π are agricultural and non-agricultural productivity and L_a and L are labor forces in each sector :

$$S_A = \frac{\pi_a \cdot L_A}{\pi \cdot L} \tag{2}$$

and

$$\pi_a = \frac{Y_a}{L_a} = \frac{W_a}{P_a} \tag{3}$$

and

$$\pi = \frac{Y}{L} = \frac{W}{P} \tag{4}$$

GDP

- Getting total income per capita γ is equal to:

$$\gamma = \frac{Y_a}{S_a} \tag{5}$$

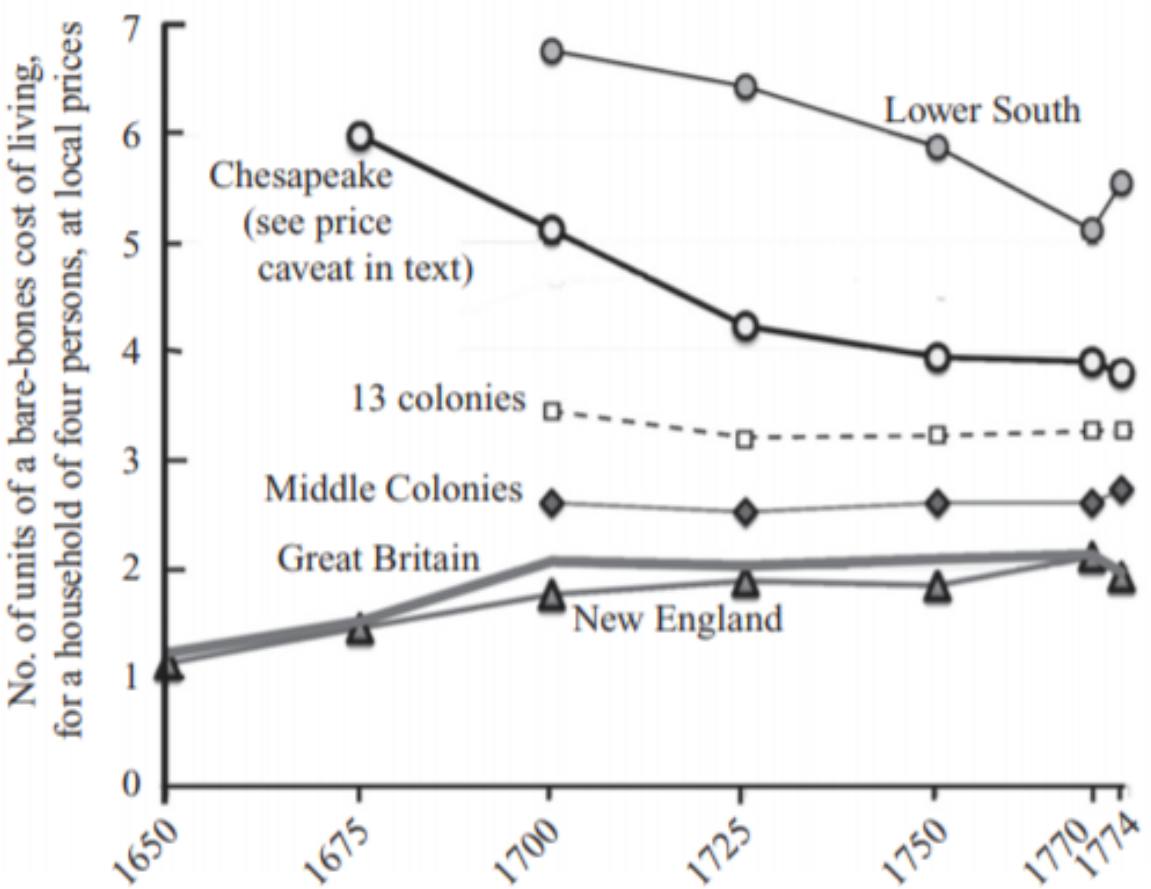
- You can use indexes of each of those values to arrive at values. And then you can link them with benchmark years for GDP in monetary terms (such as with a social tables or total output). Two examples below (one that is directly inspired from this system and one that has ressemblances).

GDP

Figure: GDP per capita of France as calculated by Ridolfi (2017) using the method described above

GDP

Figure: GDP per capita of American colonies and England calculated by Lindert and Williamson (2016) using similar methods as above



GDP per capita in 13 American colonies and Great Britain, 1650–1774

Inequality

- The social tables approach, as mentioned, is useful because it permits measures of inequality. But there are others.
- Inequality is a relevant piece of information to complement the existing ones: look at the graph from social tables above. You can see that *most* of the American income distribution was above *most* of the British income distribution. In other words, the rich in England were richer than the rich in America but the poor of the latter were richer than those of the former. This is important for migration (the poor would still gain from migration).

Anthropometric information

- Measures of "biological standard of living" are the final (greatest) complement: heights, nutrition, body mass index, infant mortality etc.
- However, we will discuss this in more details next class when we discuss the antebellum puzzle. Nevertheless, on the next slide you can see how useful it can be:

Anthropometric information

Table: Ranking of Wages and Incomes based on Arsenault Morin et al. (2017) and Geloso (2018)

	Rank for Heights	Rank for Income (WR)
French-Canadians	4	3
White Americans	1	1
Black Americans (Slaves)	2	-
Argentina	5	4
English-Canadian	3	-
Brazil	7	-
Central Mexico	8	5
Peru	9	6
France	10	7
England	6	2

Was Divergence There During Colonial Era?

So we have good signs that the United States was well ahead early on.
But it was exceptional even within North America.

The Acemoglu-Johnson-Robinson narrative

- To see how much "colonial origins" matter, there is a great paper we can use: Acemoglu et al. (2001)
- Their rationale was the following : high mortality rate for settlers $\rightarrow$ institution type (extractive or not) $\rightarrow$ economic development.

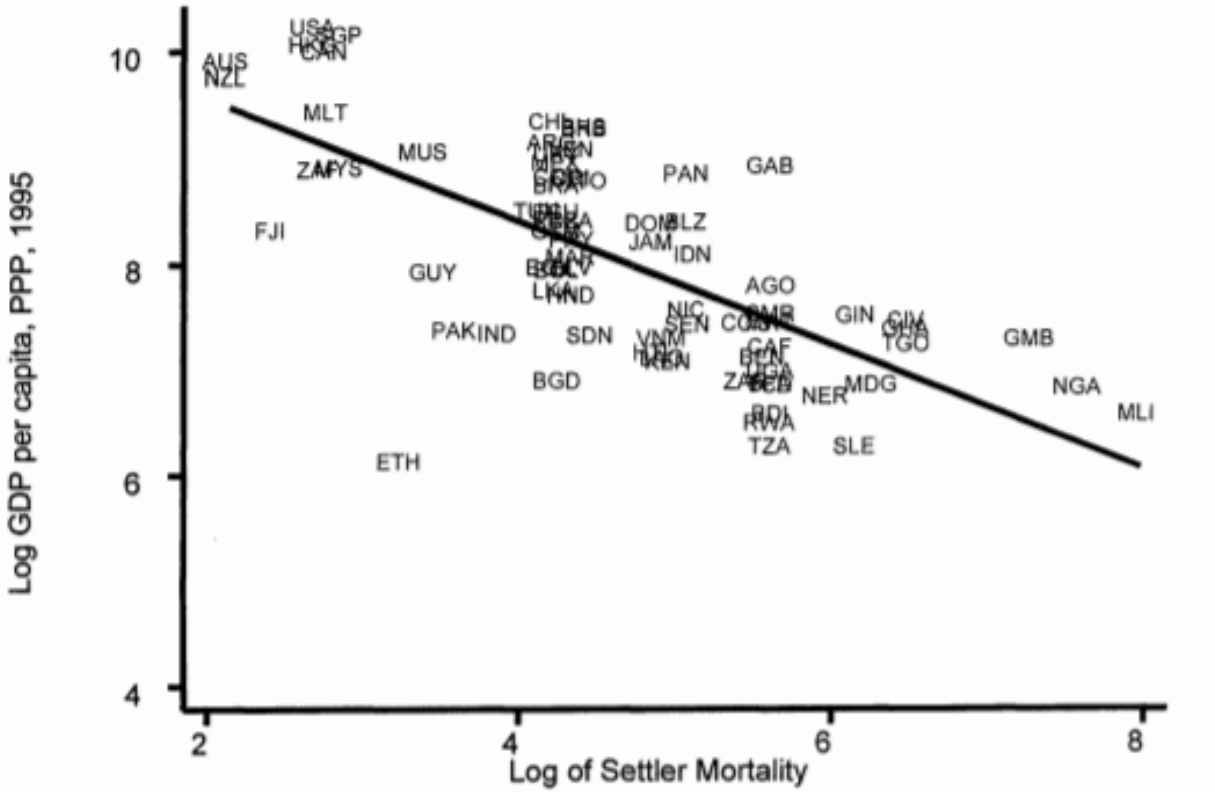


FIGURE 1. REDUCED-FORM RELATIONSHIP BETWEEN INCOME AND SETTLER MORTALITY

The Acemoglu-Johnson-Robinson narrative

- High settler mortality created incentives to try to extract the most out of a colony rather than develop it. Thus, where settler mortality was high, the incentives on the political market are geared towards extraction. Where it was lower, incentives were geared towards developing property rights:

  "Our argument rests on the following premises: (1) Europeans adopted very different colonization strategies, with different associated institutions. In one extreme (...) they went and settled in the colonies and set up institutions that enforced the rule of law and encouraged investment. In the other extreme (...) they set up extractive states with the intention of transferring resources rapidly to the metropole. These institutions were detrimental to investment and economic progress. (2) The colonization strategy was in part determined by the feasibility of European settlement."

The Acemoglu-Johnson-Robinson narrative

- The AJR narrative has been heavily questioned (Albouy, 2012; Auer, 2013) (mostly the mechanism and the data).
- However, no one contests the core insight : that incentives regarding initial institutions affected later institutions which still affect living standards today.

Engerman and Sokoloff

- As we saw in the readings, the Engerman and Sokoloff argument follows a similar narrative: geographic endowments $\rightarrow$ type of crops farmed $\rightarrow$ inequality $\rightarrow$ initial institutions that protect "elite power" $\rightarrow$ types of public goods invested (e.g. education) and quality of institutions now.

The long shadow of institution

- The Mita system was a forced labor system in Peru from the late 16th to early 19th century. Limited to a specific area (Dell, 2010).
- Their effects had a long shadow:

Econometrica, Vol. 78, No. 6 (November, 2010), 1863–1903

THE PERSISTENT EFFECTS OF PERU'S MINING *MITA*

BY MELISSA DELL[1]

This study utilizes regression discontinuity to examine the long-run impacts of the *mita*, an extensive forced mining labor system in effect in Peru and Bolivia between 1573 and 1812. Results indicate that a *mita* effect lowers household consumption by around 25% and increases the prevalence of stunted growth in children by around 6 percentage points in subjected districts today. Using data from the Spanish Empire and Peruvian Republic to trace channels of institutional persistence, I show that the *mita*'s influence has persisted through its impacts on land tenure and public goods provision. *Mita* districts historically had fewer large landowners and lower educational attainment. Today, they are less integrated into road networks and their residents are substantially more likely to be subsistence farmers.

KEYWORDS: Forced labor, land tenure, public goods.

The long shadow of institution

- The difference is that Dell argues that the *haciendas* (the large plantations of Engerman and Sokoloff) actually emerged outside the *mita* system and were better able to produce public goods and protect property rights:

  "Because established landowners in non-mita districts enjoyed more secure title to their property, it is probable that they received higher returns from investing in public good" (Dell 2010).

- Thus, institutions do matter, but not in the way that Engerman and Sokoloff propose (according to Dell).

The long shadow of institution

- We can be agnostic about which explanations is correct. All of them emphasize institutions as having important (and long-lasting effects). The big challenge is really finding a convincing channel for explanining the divergence observed (or not observed if you contest the differences in living standards).
- Thus, there are two steps to this conversation: a) properly measuring living standards and the path that they followed (across many dimensions - inequality, wages (productivity), total income (which will include L and K), biological standard of living etc.) b) explaining the differences using econometric methods (Dell and AJR) or analytical narratives (Engerman and Sokoloff).

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