

# Econ 210a: 2023-02-01 We 13:00 PST: DeLong: Domination & Unfreedom

Branko Milanovic, Peter H. Lindert, and Jeffrey G. Williamson. 2011. "Pre-Industrial Inequality." *Economic Journal* 121 (March): 255-272. <<https://www.jstor-org.libproxy.berkeley.edu/stable/41057775>>

Alberto Alesina, Paola Giuliano, & Nathan Nunn. 2013. "On the Origins of Gender Roles: Women and the Plough." *Quarterly Journal of Economics* 128 (May): 469-530. <<https://www.jstor-org.libproxy.berkeley.edu/stable/26372505>>

Karl Marx and Friedrich Engels. 1848. *Manifesto of the Communist Party* <<http://www.marxists.org/archive/marx/works/1848/communist-manifesto/>>

Nathan Nunn. 2008. "The Long-Term Effects of Africa's Slave Trades." *Quarterly Journal of Economics* 123 (May): 139-176 <<https://www.jstor-org.libproxy.berkeley.edu/stable/25098896>>



1

# Guesses & Major Features

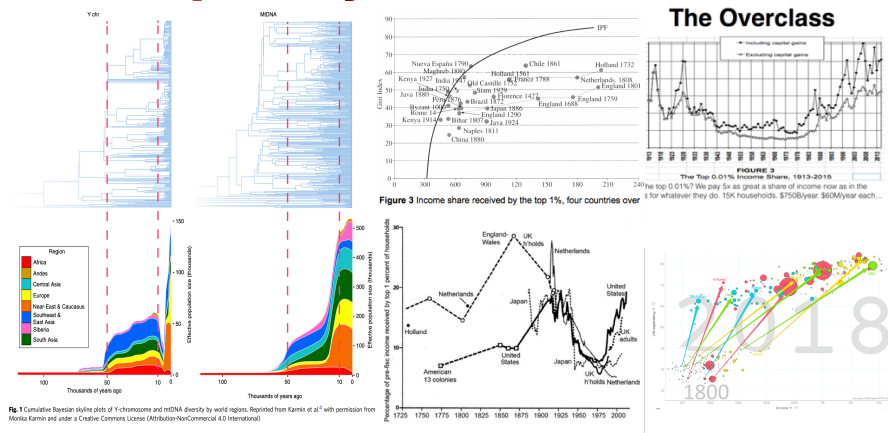
## Guesses at Global Longest-Run Global Economic Growth

Date	Real Income/Capita y	Population P (millions)	Total Income Y (billions)	Ideas Stock Level H	Ideas Growth Rate h		Population Growth n	Efficiency-Growth g
-8000	\$1,200	2.04	\$2.4	0.037	0.003%	Neolithic revolution	0.006%	0.000%
-6000	\$900	5.09	\$4.6	0.043	0.009%	"Tribal" mode of production	0.046%	-0.014%
-4000	\$900	10.5	\$9	0.062	0.018%	Final start of "urbanization"?	0.036%	0.000%
-3000	\$900	15	\$14	0.075	0.018%	Start of Bronze-Literacy age	0.037%	0.000%
-1500	\$900	37	\$33	0.117	0.030%	Bronze-Literacy mode of pro	0.060%	0.000%
-1000	\$900	50	\$45	0.136	0.030%	Start of Iron age	0.060%	0.000%
-400	\$900	103	\$93	0.195	0.060%	"Ancient" mode of domination	0.120%	0.000%
150	\$900	200	\$180	0.272	0.060%	High Antiquity	0.121%	0.000%
800	\$900	240	\$216	0.297	0.014%	Late-Antiquity Pause	0.028%	0.000%
1000	\$900	296	\$266	0.330	0.052%	Feudal mode of production	0.105%	0.000%
1500	\$900	500	\$450	0.429	0.052%	Commercial-Gunpowder-Empir	0.105%	0.000%
1770	\$1,100	750	\$825	0.643	0.149%	Imperial-Commercial Revolutio	0.150%	0.074%
1870	\$1,300	1299	\$1,689	1.000	0.442%	Steampower mode of produc	0.550%	0.167%
1930	\$3,000	1909	\$5,727	3.000	1.714%	Second-Industrial-Revolutio	0.641%	1.394%
1975	\$6,000	3678	\$22,069	9.000	2.269%	Mass-Production mode of pr	1.457%	1.540%
2020	\$12,000	7566	\$90,794	27.000	3.342%	Global-Value-Chain mode of	1.603%	1.540%
2100	\$50,000	10000	\$499,990	129,333	1.958%	Into the Future?	0.349%	1.784%

1. The Neolithic Revolution from -8000 to -6000
2. The glacial pace of technological progress in the past—1870 to 2010 we saw, in an average year, 200 times the *h* of the early Agrarian Age. (And, of course, growth from a much, much higher pace.)
3. Nevertheless, the large cumulative magnitude of technological progress.
4. The acceleration of growth in the early Agrarian Age—6000 to the year 1
5. The Late-Antiquity Pause from 150 to 800
6. The Medieval Recovery
7. The Imperial-Commercial Age step-up in growth over 1500 to 1770.
8. The British Industrial Revolution Age from 1770 to 1870.
9. Modern Economic Growth from 1870 to 2010.
10. The Population Explosion and Demographic Transition from 1770 to 2100.
11. Whatever is going on now—if global warming and other problems do not interrupt Modern Economic Growth, what do we have to look forward to for the world of 2100?
12. Is this a misguided intellectual enterprise—focusing on *H*, and taking it to be something real and important rather than a distracting mental-fictional cloud-castle that does more to confuse than to enlighten us?

2

# Inequality & Distribution



3

# Inequality: Ideological Legitimation

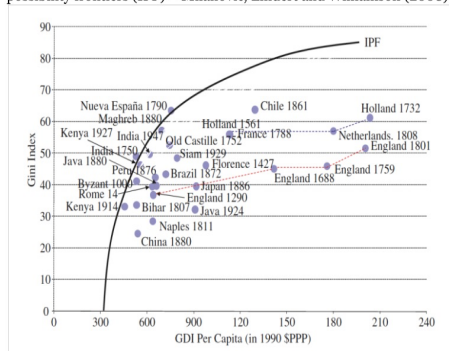
- Gilgamesh in his element:**
- "He has taken all their children, for is Gilgamesh not the shepherd of his people?"
  - "Gilgamesh does not leave a daughter to her mother, nor the maiden to the warrior, nor the wife to her husband."
  - "Yet Gilgamesh is the magnificent and glorious shepherd of his people."
  - "The gods heard the people's cry, and the gods of heaven beseeched the Lord of Uruk, Anu the god..."
- William Muss-Arnolt, trans.: The Man Who Has Seen All Things <<http://www.jasoncolavito.com/epic-of-gilgamesh.html>>



4

## Milanovic et al. (2010): Pre-Industrial Inequality

Pre-industrial inequalities: estimated Gini coefficients, and the inequality possibility frontiers (IPF) – Milanovic, Lindert and Williamson (2008)<sup>3</sup>

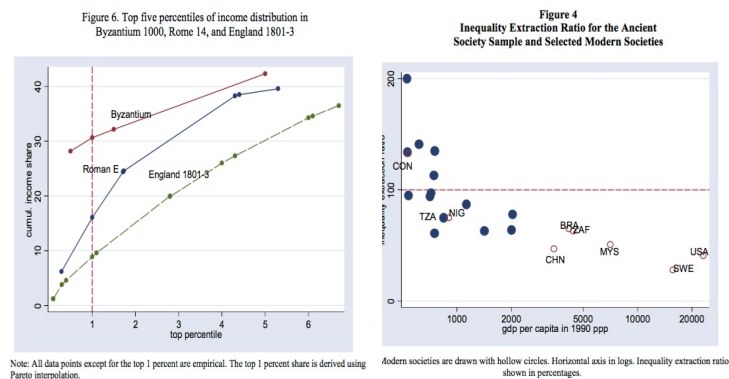


- The picture painted by this paper sees:
  - Pre-industrial inequality in wealth very large,
  - Pre-industrial inequality in income moderate—but at close to the maximum possible—and
  - Pre-industrial inequality in utility is very large indeed
    - Because of the subsistence cliff...
    - Because of the amount of oppression needed to push peasants to (and sometimes over) the subsistence cliff...

5

## Extraction Ratios Then and Now

- Extraction ratios, ancient societies and modern societies
- I really wish they would use some summary measures other than Gini coefficients...



6

## Assessing Pre-Industrial Inequality

- Pre-industrial societies were about as unequal as they could have been
- Modern societies are not notably more (or less) unequal than pre-industrial ones

### Questions:

- How much social pressure is required to push people down close to the limits of subsistence—as they were in pre-industrial civilizations?
- How durable were social roles and social classes? How much mobility was there?
- How to explain the absence of a clear trend over time in at least these measures of inequality?
- And how much are these numbers simply built on sand? Or mere cloud castles?

7

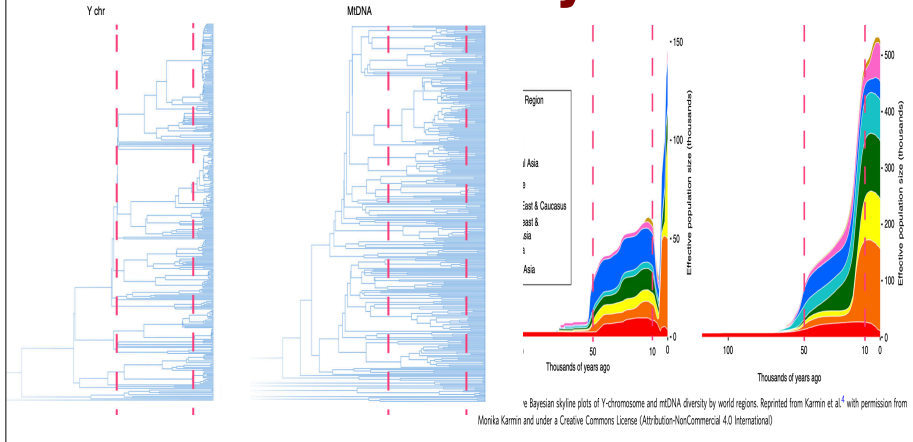
## ON THE ORIGINS OF GENDER ROLES: WOMEN AND THE PLOUGH\*

ALBERTO ALESINA  
PAOLA GIULIANO  
NATHAN NUNN

The study examines the historical origins of existing cross-cultural differences in beliefs and values regarding the appropriate role of women in society. We test the hypothesis that traditional agricultural practices influenced the historical gender division of labor and the evolution of gender norms. We find that, consistent with existing hypotheses, the descendants of societies that traditionally practiced plough agriculture today have less equal gender norms, measured using reported gender-role attitudes and female participation in the workplace, politics, and entrepreneurial activities. Our results hold looking across countries, across districts within countries, and across ethnicities within districts. To test for the importance of cultural persistence, we examine the children of immigrants living in Europe and the United States. We find that even among these individuals, all born and raised in the same country, those with a heritage of traditional plough use exhibit less equal beliefs about gender roles today. *JEL* Codes: D03, J16, N30.

8

# Patriarchy...



9

## ALESINA, GIULIANO & NUNN (2010)

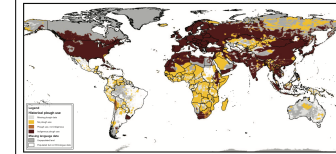


TABLE I  
Traditional plough use and female labor force participation in 2000: OLS estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable: Traditional participation of female relatives to make in the following tasks:							
Control variables:							
Female labor force participation in 2000	0.26	0.20	0.45	0.25	0.46	0.35	0.25
Mean of dep. var.	0.26	0.20	0.45	0.25	0.46	0.35	0.25
Traditional plough use	-0.0000***	-0.108***	-0.021**	-0.107***	-0.108***	-0.109***	-0.094***
Observations	169	169	169	169	169	169	169
R-squared	0.02	0.04	0.07	0.02	0.04	0.07	0.03

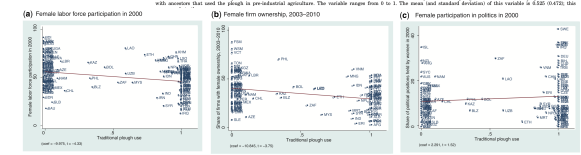
TABLE II  
Traditional plough use and female labor force participation in 2000: IV estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable: Traditional participation of female relatives to make in the following tasks:							
Control variables:							
Female labor force participation in 2000	0.26	0.20	0.45	0.25	0.46	0.35	0.25
Mean of dep. var.	0.26	0.20	0.45	0.25	0.46	0.35	0.25
Traditional plough use	0.26	0.20	0.45	0.25	0.46	0.35	0.25
Observations	169	169	169	169	169	169	169
R-squared	0.02	0.04	0.07	0.02	0.04	0.07	0.03

Note: The unit of observation is the ethnic group. In the first three panels, we use the traditional plough use as an instrument for female labor force participation. The traditional plough use is instrumented by the traditional plough use in the region of origin. The traditional plough use is instrumented by the traditional plough use in the region of origin. The traditional plough use is instrumented by the traditional plough use in the region of origin.

TABLE IV  
COUNTRY-LEVEL OLS ESTIMATES WITH HISTORICAL AND CONTEMPORARY CONTROLS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:								
Female labor force participation in 2000								
Share of firms with female ownership, 2003-2010								
Share of political positions held by women in 2000								
Average effect size (AES)								
Mean of dep. var.	21.35	21.35	35.17	21.35	21.35	21.35	21.35	21.35
Traditional plough use	-12.601***	-12.930***	-15.241***	-16.587***	-4.831***	-5.120***	-0.743***	-0.845***
Historical controls	(2.964)	(3.527)	(4.060)	(4.900)	(1.782)	(2.041)	(0.080)	(0.091)
Agricultural stability	6.073	7.181*	0.803	4.322	2.198	1.081	0.202*	0.342**
Rural climate	(8.890)	(4.170)	(5.447)	(6.971)	(2.850)	(2.240)	(0.139)	(0.139)
Tropical climate	-9.218***	-10.900***	-10.422***	-3.712	-6.046***	-4.180*	-0.402***	-0.06
Presence of large animals	(2.487)	(3.070)	(3.702)	(5.713)	(2.094)	(2.390)	(0.094)	(0.103)
Political hierarchies	-2.015	-2.190	2.707	5.810	1.518	4.498	0.005	0.201
Economic complexity	(0.372)	(0.670)	(0.745)	(0.417)	(0.380)	(4.120)	(0.121)	(0.144)
Observations	179	179	179	179	179	179	179	179
Adjusted R-squared	0.17	0.36	0.11	0.13	0.27	0.27	0.28	0.30
R-squared	0.40	0.41	0.18	0.22	0.21	0.24	0.28	0.31



10

## ALESINA, GIULIANO & NUNN (2010)

- What are the origins of gender roles?
- The authors test a hypothesis by Ester Boserup (1970) that ancient societies' adoption of plough cultivation created a gendered division of labor that has persisted to the present day
  - The persistence is argued to be directly due to cultural norms, not just institutions, being transmitted across generations
- To test this, they combine a data on preindustrial societies' use of the plough with contemporary measures of female labor force participation, as well as other outcomes and attitudes on gender
- They find a substantial association between traditional plough use and FLFP, female firm ownership
- The results are robust to the inclusion of controls for historical and contemporary characteristics of ethnic groups
  - Suitability of the environment for agriculture, presence of domesticated animals, a tropical climate, political complexity and economic development
  - War, terrain ruggedness, experience of communism, European influence, oil production per capita, religious factors, Engels' hypothesis
- To establish a causal connection, the authors use an instrumental variables approach that relies on the suitability of local land for crops that are compatible with plough use
  - The IV estimates are (larger) and statistically significant
- To argue that the cultural transmission of values plays a significant role, they utilize data on immigrants' beliefs on gender and their labor force participation

11

## (MINOR) QUIBBLES AND COMMENTS

- What is the exact mechanism at play?
  - The analysis using immigrants' attitudes about gender does find persistence but suggests about 35-50% of the variation might be cultural
  - This still might not be an precise estimate due to the unrepresentative sample
- Kelly (2020) claims a number of studies on persistence fail to account for spatial autocorrelation and that doing so leads one to find statistically insignificant results
  - Voth (2020) responds that Kelly selectively chooses outcomes and specifications from original studies
  - In fact, many studies do include appropriate spatial controls, but Kelly ignores those specifications
- Voth (2020) claims too few persistence studies find null results
  - For example, one should expect to find effects of witch burnings on beliefs about gender, but no such study exists
- Historical plough use does not fully explain the variation in gender roles and attitudes today, and female labor force participation or participation in politics are not the only relevant variables for gender equality

12

# Blowing Up the Problematic

Karl Marx & Friedrich Engels (1848): *Manifesto of the Communist Party* <<http://www.marxists.org/archive/marx/works/1848/communist-manifesto/>>:

“In proportion as... capital, is developed, in the same proportion is the modern working class... labourers, who live only so long as they find work, and who find work only so long as their labour increases capital... must sell themselves piecemeal, are a commodity... consequently exposed to all the vicissitudes of competition, to all the fluctuations of the market.

“Owing to the extensive use of machinery... he becomes an appendage of the machine, and it is only the most simple, most monotonous, and most easily acquired knack, that is required of him.... In proportion, therefore, as the repulsiveness of the work increases, the wage decreases... the burden of toil also increases...



13

# Come the Millennium!

“The bourgeoisie is unfit... to rule because it is incompetent to assure an existence to its slave within his slavery, because it cannot help letting him sink into such a state, that it has to feed him, instead of being fed by him. Society can no longer live under this bourgeoisie, in other words, its existence is no longer compatible with society....

“The development of Modern Industry, therefore, cuts from under its feet the very foundation on which the bourgeoisie produces and appropriates products. What the bourgeoisie therefore produces, above all, are its own grave-diggers. Its fall and the victory of the proletariat are equally inevitable...



14

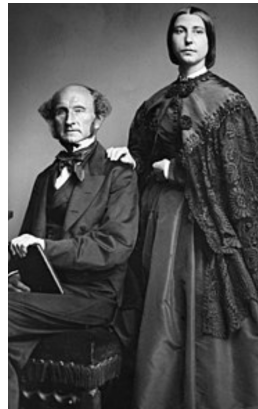
# Cf.: John Stuart Mill, 1873

Hitherto it is questionable if all the mechanical inventions yet made have lightened the day's toil of any human being.

They have enabled a greater population to live the same life of drudgery and **imprisonment**, and an increased number of manufacturers and others to make fortunes. They have increased the comforts of the middle classes.

But they have not yet begun to effect those great changes in human destiny, which it is in their nature and in their futurity to accomplish.

Only when, in addition to just institutions, the increase of mankind shall be under the deliberate guidance of judicious foresight, can the conquests made from the powers of nature by the intellect and energy of scientific discoverers, become the common property of the species, and the means of improving and elevating the universal lot...



15

# Slave Trades & Slavery...

Nathan Nunn (2008): *The Long-Term Effects of Africa's Slave Trades* <<http://www.jstor.org/stable/pdfplus/25098896.pdf>>

- “Classical” Antiquity (-700 to 120): 30M?
- Africa-Atlantic Ocean: 17M?
- Africa-Indian Ocean (1 to 1900): 15M?
- Africa-Internal: ????
- Black Sea: (1300-1700): 3M?
- Mediterranean (north-to-south) (800-1800): 2M?
- Scandinavian: (750-1100): 2M?

16



## Nunn (2008) - The Long-Term Effects of Africa's Slave Trades

- Nunn studies the impact of the four simultaneous external slave trades in Africa between 1400-1900 on current economic development outcomes in the region
- First empirical evidence of negative relationship between the severity/intensity of the slave trade in a country and subsequent economic development
- Causal interpretation is hindered by selection concerns: countries more exposed to the slave trade could also be more underdeveloped to begin with
- Historical evidence suggests that more developed regions were actually more exposed to the slave trade
  - More prosperous areas also more densely populated
  - Least developed societies were often hostile and violent, making extraction of slaves difficult
  - OLS estimates provide a lower bound for the 'true' effect
- Nunn also uses instrumental variables: distances from each African country to the locations where slaves were demanded.
- Potential channels/mechanisms: internal warfare and kidnapping lead to state collapse and ethnic fractionalisation
  - Gun-slave cycle: insecurity due to slave trade -> need for weapons -> kidnapping of slaves in exchange for weapons -> exacerbation of insecurity
  - Reduced form relationship between intensity of slave trade in a country and ethnic fractionalisation

17

## Nunn: Consequences of Rum, Guns, and Slaves

- From 8 to 6.5 in the natural log...
- $\exp(1.5) = 4.5$
- Do we need controls?
- Or, rather, what controls do we need?
- What else might be going on here

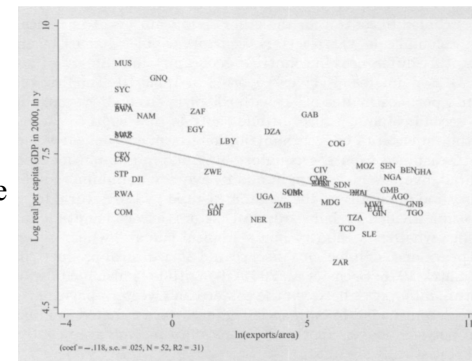


FIGURE III  
Relationship between Log Slave Exports Normalized by Land Area, ln(exports/area), and Log Real Per Capita GDP in 2000, ln y

18

## Nunn: Consequences of Rum, Guns, and Slaves

Dependent variable is log real per capita GDP in 2000, ln y	ESTIMATES OF THE RELATIONSHIP BETWEEN SLAVE EXPORTS AND INCOME				
	(1)	(2)	(3)	(4)	(5)
ln(exports/area)	-0.112*** (0.024)	-0.076*** (0.029)	-0.108*** (0.037)	-0.085** (0.035)	-0.128*** (0.034)
Distance from equator	0.018 (0.017)	-0.005 (0.020)	0.019 (0.018)	0.023 (0.017)	0.006 (0.017)
Longitude	0.001 (0.000)	-0.007 (0.006)	-0.004 (0.006)	-0.004 (0.006)	-0.009 (0.006)
Lowest monthly rainfall	-0.001 (0.007)	0.008 (0.008)	0.001 (0.007)	-0.001 (0.008)	-0.002 (0.008)
Avg max humidity	0.009 (0.012)	0.008 (0.012)	0.009 (0.012)	0.015 (0.011)	0.013 (0.010)
Avg min temperature	-0.019 (0.028)	-0.039 (0.028)	-0.005 (0.027)	-0.015 (0.026)	-0.037 (0.025)
Incoastal/area	0.085** (0.039)	0.097** (0.042)	0.065* (0.040)	0.082** (0.037)	0.083** (0.037)
Percent Islamic	0.000 (0.003)	-0.008** (0.003)	-0.009 (0.003)	-0.003 (0.003)	-0.003 (0.003)
French legal origin	0.708 (0.003)	0.645 (0.470)	-0.141 (0.734)		
North Africa indicator	0.382 (0.484)	-0.304 (0.484)			
ln(gold prod/pop)	0.011 (0.017)	0.014 (0.015)			
ln(iron prod/pop)	0.078*** (0.027)	0.088*** (0.025)			
ln(diamond prod/pop)	-0.039 (0.043)	-0.048 (0.041)			
Colonizer fixed effects	Yes	Yes	Yes	Yes	Yes
Number obs.	52	52	42	52	42
R <sup>2</sup>	.51	.60	.63	.71	.80

Dependent variable is log real per capita GDP in 2000, ln y	ESTIMATES OF THE RELATIONSHIP BETWEEN SLAVE EXPORTS AND INCOME			
	(1)	(2)	(3)	(4)
ln(exports/area)	-0.208*** (0.055)	-0.201*** (0.047)	-0.248** (0.153)	-0.248*** (0.071)
Distance from equator	0.018 (0.017)	-0.005 (0.020)	0.019 (0.018)	0.023 (0.017)
Longitude	0.001 (0.000)	-0.007 (0.006)	-0.004 (0.006)	-0.004 (0.006)
Lowest monthly rainfall	-0.001 (0.007)	0.008 (0.008)	0.001 (0.007)	-0.001 (0.008)
Avg max humidity	0.009 (0.012)	0.008 (0.012)	0.009 (0.012)	0.015 (0.011)
Avg min temperature	-0.019 (0.028)	-0.039 (0.028)	-0.005 (0.027)	-0.015 (0.026)
Incoastal/area	0.085** (0.039)	0.097** (0.042)	0.065* (0.040)	0.082** (0.037)
Percent Islamic	0.000 (0.003)	-0.008** (0.003)	-0.009 (0.003)	-0.003 (0.003)
French legal origin	0.708 (0.003)	0.645 (0.470)	-0.141 (0.734)	
North Africa indicator	0.382 (0.484)	-0.304 (0.484)		
ln(gold prod/pop)	0.011 (0.017)	0.014 (0.015)		
ln(iron prod/pop)	0.078*** (0.027)	0.088*** (0.025)		
ln(diamond prod/pop)	-0.039 (0.043)	-0.048 (0.041)		
Colonizer fixed effects	Yes	Yes	Yes	Yes
Number obs.	52	52	42	52
R <sup>2</sup>	.51	.60	.63	.71

Dependent variable is log real per capita GDP in 2000, ln y	ESTIMATES OF THE RELATIONSHIP BETWEEN SLAVE EXPORTS AND INCOME			
	(1)	(2)	(3)	(4)
ln(exports/area)	-0.208*** (0.055)	-0.201*** (0.047)	-0.248** (0.153)	-0.248*** (0.071)
Distance from equator	0.018 (0.017)	-0.005 (0.020)	0.019 (0.018)	0.023 (0.017)
Longitude	0.001 (0.000)	-0.007 (0.006)	-0.004 (0.006)	-0.004 (0.006)
Lowest monthly rainfall	-0.001 (0.007)	0.008 (0.008)	0.001 (0.007)	-0.001 (0.008)
Avg max humidity	0.009 (0.012)	0.008 (0.012)	0.009 (0.012)	0.015 (0.011)
Avg min temperature	-0.019 (0.028)	-0.039 (0.028)	-0.005 (0.027)	-0.015 (0.026)
Incoastal/area	0.085** (0.039)	0.097** (0.042)	0.065* (0.040)	0.082** (0.037)
Percent Islamic	0.000 (0.003)	-0.008** (0.003)	-0.009 (0.003)	-0.003 (0.003)
French legal origin	0.708 (0.003)	0.645 (0.470)	-0.141 (0.734)	
North Africa indicator	0.382 (0.484)	-0.304 (0.484)		
ln(gold prod/pop)	0.011 (0.017)	0.014 (0.015)		
ln(iron prod/pop)	0.078*** (0.027)	0.088*** (0.025)		
ln(diamond prod/pop)	-0.039 (0.043)	-0.048 (0.041)		
Colonizer fixed effects	Yes	Yes	Yes	Yes
Number obs.	52	52	42	52
R <sup>2</sup>	.51	.60	.63	.71

19

- What are our instruments?
- What is our first stage?
- Is this a "weak instrument"?
- Under what circumstances is an instrument that looks strong "weak"?
- Do we need channels?
- What are our channels?
- What would a Bayesian say about the publication filter and the file-drawer problem?

- Potential issues/concerns:
  - Low F-Stat (<4) for first-stage regressions (weak instruments problem)
  - Distance to slave markets may influence modern economic growth for reasons unrelated to the slave trade (e.g. trade costs)
  - Evidence on channels/mechanisms restricted by small number of observations (52 obs.)
    - North African countries, island nations

20

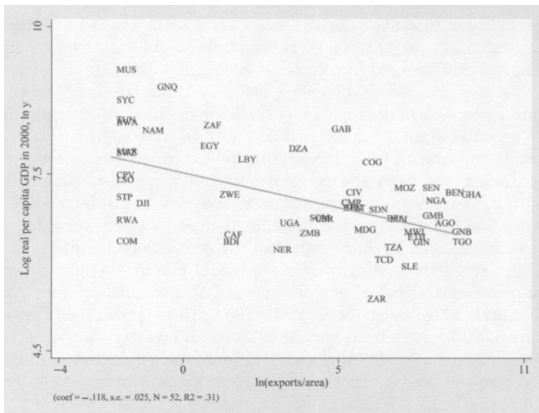
# The Shadow of Slavery

Nathan Nunn. 2008. "The Long-Term Effects of Africa's Slave Trades." *Quarterly Journal of Economics* 123 (May): 139-176. <<https://www.jstor.org/libproxy.berkeley.edu/stable/25098896>>

Assassinated Nigerian prime minister Abubakar Tafawa Balewa... born in the north of... Nigeria... In 1944 he was sent to University College London, to be trained to become a schools inspector for the colonial administration. But earlier, back when he was twenty-two, in 1934, a colonial official named Rupert East had commissioned five novellas... in Hausa... to build up an "indigenous literature"....

Abubakar Tafawa Balewa contributed... In his short novel *Shaihu Umar (Elder Umar)*, the protagonist's students distract him from teaching them the Quran by asking him how he came to be a teacher. The story that follows is of his enslavement and its consequences: large-scale slave raids, kidnappings, adoptions by childless slavers, and more kidnappings. The protagonist finally meets up with his mother (she has been kidnapped and enslaved too, by the guards she had hired) in Tripoli. She sees that he is pious and prosperous, and then she promptly dies.

The vibe is that "people really will do terrible things for money" and that "the world is a Hobbesian war of all against all, but if you read the Quran really well, then you'll probably prosper, maybe."



21

# Weak Instruments...

Consider the simplest classical homoskedastic IV model:

$$y_t = \beta x_t + u_t$$

$$x_t = Z_t \pi + v_t,$$

**Not relevant instrument.** Imagine a situation when one has 1 endogenous regressor and 1 instrument which is independent of everything (totally irrelevant,  $\pi = 0$ ). That is, the instrument is not valid and  $\beta$  is not identified. The question is how  $\hat{\beta}_{IV}$  behaves? This should explain what we see in Bounder, Jaeger, Baker's (1995) "random quarter of birth" exercise:

$$\hat{\beta}_{IV} - \beta_0 = \frac{\sum Z_t u_t}{\sum Z_t v_t} = \frac{\frac{1}{\sqrt{T}} \sum Z_t u_t}{\frac{1}{\sqrt{T}} \sum Z_t v_t} \Rightarrow \xi_v,$$

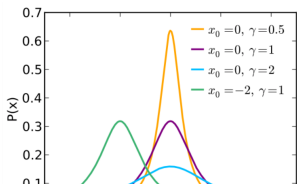
where  $(\xi_u, \xi_v)' \sim N(0, \Sigma)$ ,  $\Sigma = \begin{pmatrix} \sigma_u^2 & \sigma_{uv} \\ \sigma_{uv} & \sigma_v^2 \end{pmatrix}$ . Let  $\delta = \sigma_{uv}/\sigma_v^2$ , then  $\xi_u = \delta \xi_v + \xi$ , and  $\hat{\beta}_{IV} - \beta_0 \Rightarrow \delta + \frac{\xi}{\xi_v}$ .

Conclusions:

- $\hat{\beta}_{IV}$  is inconsistent (as expected, since  $\beta$  is not identified).
- $\hat{\beta}_{IV}$  is centered around  $\beta_0 + \delta$  (since  $\frac{\xi}{\xi_v}$  has symmetric distribution), which is the limit of OLS.
- Asymptotically  $\hat{\beta}_{IV}$  has heavy tails (since  $\frac{\xi}{\xi_v}$  has Cauchy distribution)

22

# The Cauchy Distribution



$$f(x; 0, 1) = \frac{1}{\pi(1 + x^2)}$$

The Cauchy distribution has the probability density function (PDF)<sup>[1][2]</sup>

$$f(x; x_0, \gamma) = \frac{1}{\pi \gamma \left[ 1 + \left( \frac{x - x_0}{\gamma} \right)^2 \right]} = \frac{1}{\pi \gamma} \left[ \frac{\gamma^2}{(x - x_0)^2 + \gamma^2} \right]$$

- The Cauchy distribution is:
  - the distribution of the x-intercept of a ray issuing from  $(x_0, \gamma)$  with a uniformly distributed angle.
  - the distribution of the quotient of two independent normals when the denominator normal is mean zero.
  - $\gamma$  = half the interquartile range = "probable error"
- Characteristics of the Cauchy:
  - Mean: undefined
  - Variance: undefined
  - MGF: does not exist
  - Skewness: undefined

23

# What Happened with Decolonization?

Reading: This paper seems to me to bury the lead—which is that it is the interaction of past slave-raiding and present decolonization that seems to be associated with very low present-day economic productivity.

What are the mechanisms that could generate such an association?

**Margherita Bottero & Björn Wallace:** *Is There a Long-Term Effect of Africa's Slave Trades?*: 'Nunn (2008) found a negative relationship between past slave exports and economic performance within Africa. Here we investigate these findings and the suggested causal pathway in further detail. Extending the sample period back in time we reveal that the coefficient on slave exports did not become significantly negative until 1970, and that it was close to zero in 1960. While one potential explanation for this temporal pattern could be decolonization, we analyse other episodes of slave raiding outside Africa, and find evidence that questions the validity of such suggestion. In addition, our reading of the historical and anthropological literature differs from that of Nunn. For instance, taking a global rather than African perspective we find that the African slave trades cannot without difficulties explain the patterns of ethnic fractionalization that we observe today...

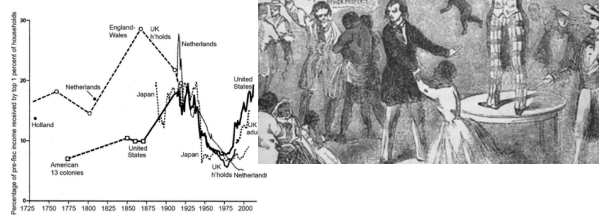
24

# Qualitative vs. Quantitative...

Frederick Law Olmsted. 1861. *The Cotton Kingdom: A Traveller's Observations on Cotton & Slavery in the American Slave States*. New York: Mason Bros., pp. 143-183. <<https://archive.org/details/cottonkingdomtra00olms>>



Figure 3 Income share received by the top 1%, four countries over



25

# Qualitative vs. Quantitative...

- “Exceptional large planters”—a small fraction of *slaveowners*, a large fraction of the *enslaved*.
- Household vs. plantation slavery: from the personal to the cash nexus
- “Negroes always working in large gangs, superintended by a driver with a whip...”
- “The large incomes of their owners enables them to select the best from the yearly exportations [of the enslaved] of Virginia and Kentucky, but also because they are systematically well-fed...”
- “The plantations are all large, but... display few signs of wealthy proprietorship...”

26

# Modern The Overclass

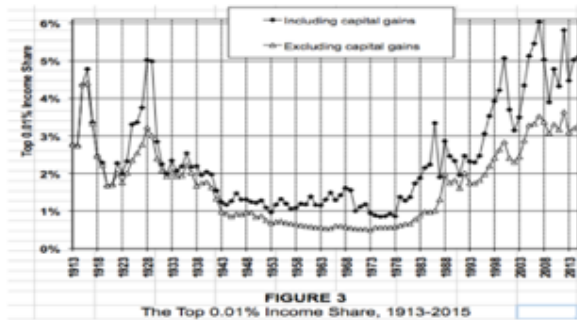
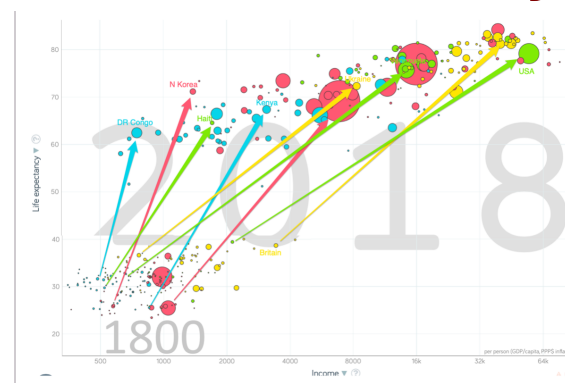


FIGURE 3  
The Top 0.01% Income Share, 1913-2015

- And the top 0.01%? We pay 5x as great a share of income now as in the 1970s for whatever they do. 15K households. \$750B/year. \$60M/year each...

27

# Cross-Country



28

## What Happens Next?: Thomas Piketty's Argument

### “Capital” keeps the real rate of return at 5%:

- In the Age of Social Democracy:
  - Population growth at 2%/year
  - Productivity growth at 2%/year
  - Conspicuous consumption/philanthropy/taxes at 3%/year
  - Means Old Capital gets eroded—the rich are entrepreneurs and enterprisers
- In a Gilded Age
  - Population growth at 0.5%/year
  - Productivity growth at 1%/year
  - CC/P/T at 2%/year
  - Means Old Capital becomes dominant—the rich are, eventually, heirs and heiresses, and are very rich indeed with very large voices in politics

29

## Six Sources of Rising U.S. Inequality—so Far

### Six factors that matter:

- The race between education and technology—upper middle class, the top 10% and above
- Dissipative sectors: finance—upper class & overclass, the top 1% & 0.1%
- Dissipative sectors: healthcare—upper class, top 1%
- Collapse of worker bargaining power—pushes down the bottom 60%
- Low-pressure economy—push down bottom 90%
- Winner take all—upper class, top 1%
- Three that do not:
  - “Bad trade deals”
  - Low-education immigration (save for its effects on earlier waves still not fully proficient in English)
  - Affirmative action (Arlie Hochschild)



30