Unfreedom (March 4, 2020a)

J. Bradford DeLong

Spring 2019
Evans 648
W 1:10-3:00 pm
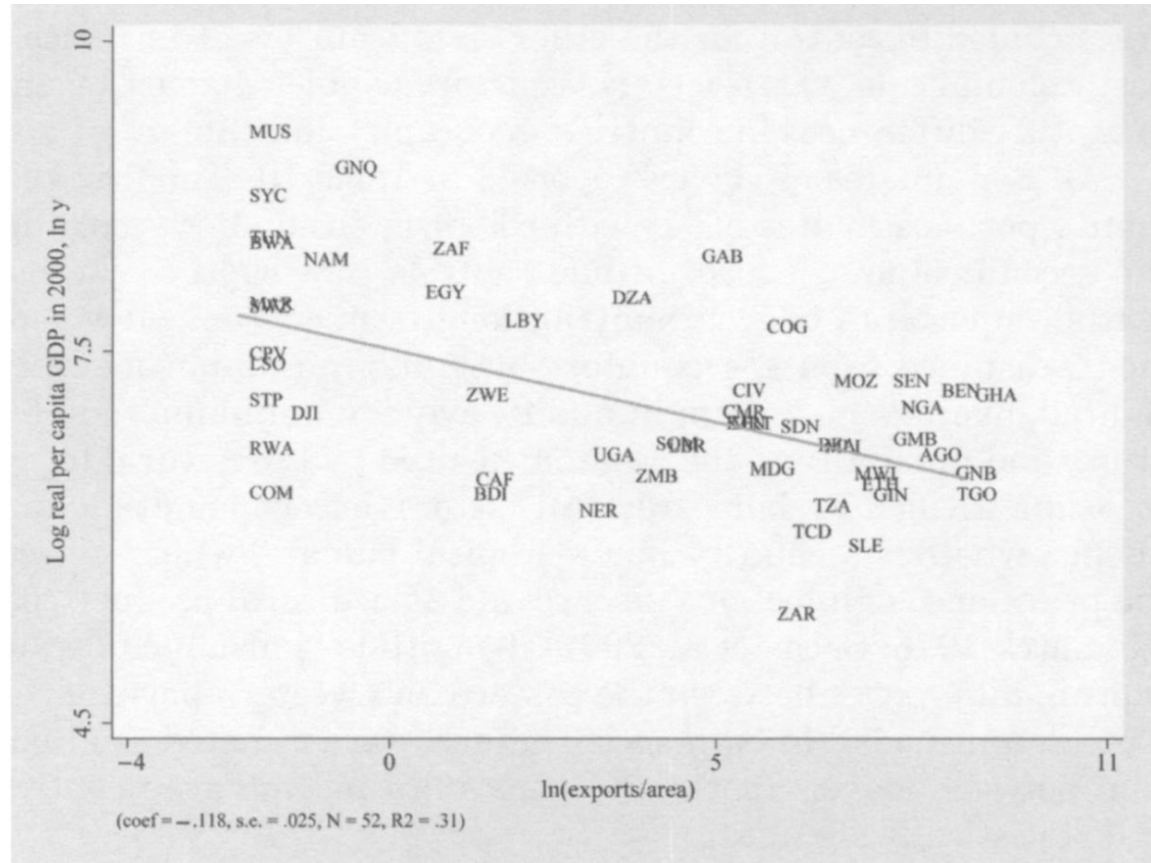
<https://bcourses.berkeley.edu/courses/1487686/>

<https://github.com/braddelong/public-files/blob/master/econ-210a-lecture-8a.pptx>

Reading Nunn

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

- 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

The Data

TABLE II

ESTIMATED TOTAL SLAVE EXPORTS BETWEEN 1400 AND 1900 BY COUNTRY

Isocode	Country name	Trans-Atlantic	Indian Ocean	Trans-Saharan	Red Sea	All slave trades
AGO	Angola	3,607,020	0	0	0	3,607,020
NGA	Nigeria	1,406,728	0	555,796	59,337	2,021,859
GHA	Ghana	1,614,793	0	0	0	1,614,793
ETH	Ethiopia	0	200	813,899	633,357	1,447,455
SDN	Sudan	615	174	408,261	454,913	863,962
MLI	Mali	331,748	0	509,950	0	841,697
ZAR	Democratic Republic of Congo	759,468	7,047	0	0	766,515
MOZ	Mozambique	382,378	243,484	0	0	625,862
TZA	Tanzania	10,834	523,992	0	0	534,826
TCD	Chad	823	0	409,368	118,673	528,862
BEN	Benin	456,583	0	0	0	456,583
SEN	Senegal	278,195	0	98,731	0	376,926
GIN	Guinea	350,149	0	0	0	350,149
TGO	Togo	289,634	0	0	0	289,634
GNB	Guinea-Bissau	180,752	0	0	0	180,752
BFA	Burkina Faso	167,201	0	0	0	167,201
MRT	Mauritania	417	0	164,017	0	164,434
MWI	Malawi	88,061	37,370	0	0	125,431
MDG	Madagascar	36,349	88,927	0	0	125,275
COG	Congo	94,663	0	0	0	94,663
KEN	Kenya	303	12,306	60,351	13,490	86,448
SLE	Sierra Leone	69,607	0	0	0	69,607
CMR	Cameroon	66,719	0	0	0	66,719
DZA	Algeria	0	0	61,835	0	61,835
CIV	Ivory Coast	52,646	0	0	0	52,646
SOM	Somalia	0	229	26,194	5,855	32,277
ZMB	Zambia	6,552	21,406	0	0	27,958
GAB	Gabon	27,403	0	0	0	27,403
GMB	Gambia	16,039	0	5,693	0	21,731
NER	Niger	133	0	0	19,779	19,912
LBY	Libya	0	0	8,848	0	8,848
LBR	Liberia	6,790	0	0	0	6,790
UGA	Uganda	900	3,654	0	0	4,554
ZAF	South Africa	1,944	87	0	0	2,031
CAF	Central African Republic	2,010	0	0	0	2,010
EGY	Egypt	0	0	1,492	0	1,492
ZWE	Zimbabwe	554	536	0	0	1,089
NAM	Namibia	191	0	0	0	191
BDI	Burundi	0	87	0	0	87
GNQ	Equatorial Guinea	11	0	0	0	11
DJI	Djibouti	0	5	0	0	5
BWA	Botswana	0	0	0	0	0

Isocode	Country name	Trans-Atlantic	Indian Ocean	Trans-Saharan	Red Sea	All slave trades
CPV	Cape Verde Islands	0	0	0	0	0
COM	Comoros	0	0	0	0	0
LSO	Lesotho	0	0	0	0	0
MUS	Mauritius	0	0	0	0	0
MAR	Morocco	0	0	0	0	0
RWA	Rwanda	0	0	0	0	0
STP	São Tomé & Principe	0	0	0	0	0
SWZ	Swaziland	0	0	0	0	0
SYC	Seychelles	0	0	0	0	0
TUN	Tunisia	0	0	0	0	0

The Scatter

- Do we need instruments?
- What are our instruments?
  - What is our first stage?
  - Is this a "weak instrument"?
  - Under what circumstances is a strong instrument "weak"?
- Do we need channels?
- What are our channels?
- What would a Bayesian say about the publication filter?
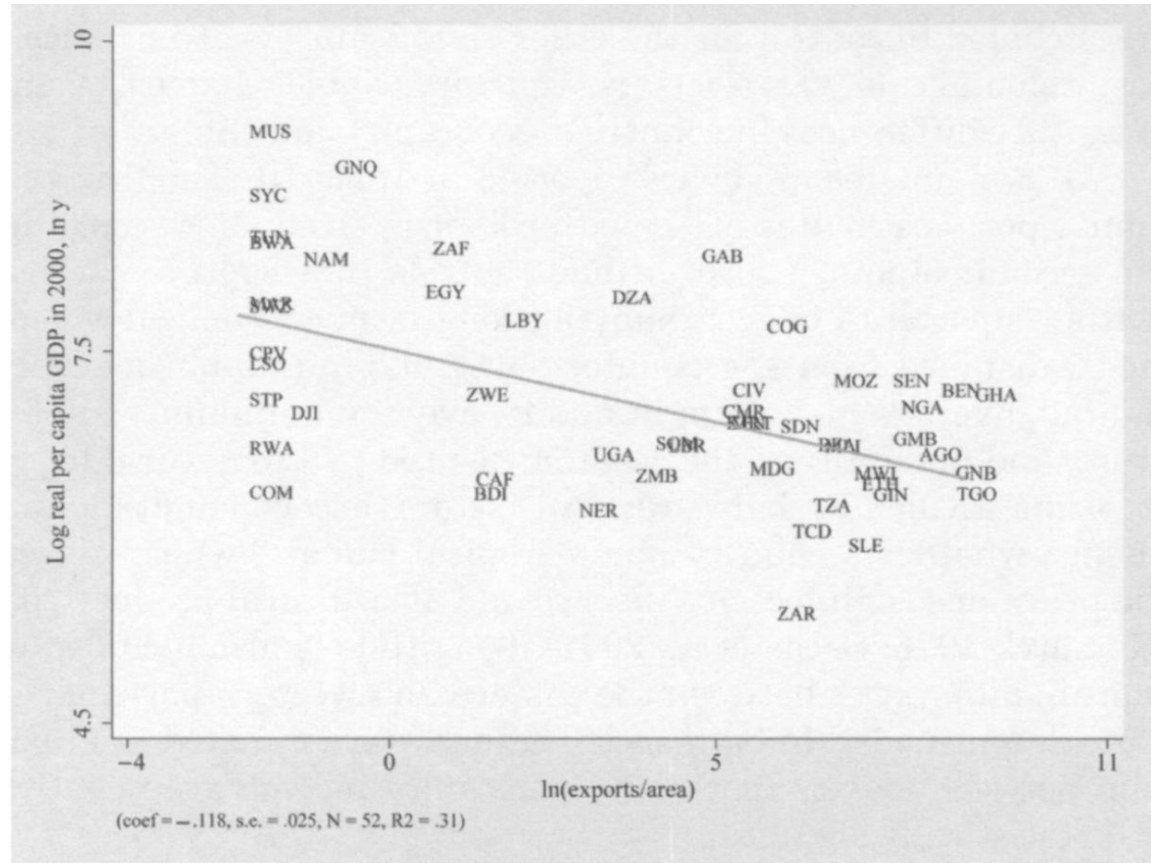
FIGURE III
Relationship between Log Slave Exports Normalized by Land Area, ln(exports/area), and Log Real Per Capita GDP in 2000, ln y

The Regressions

<div style="text-align:center">RELATIONSHIP BETWEEN SLAVE EXPORTS AND INCOME</div>

	(1)	(2)	(3)	(4)	(5)	(6)
	— Dependent variable is log real per capita GDP in 2000, $\ln y$					
ln(exports/area)	−0.112***	−0.076***	−0.108***	−0.085**	−0.103***	−0.128***
	(0.024)	(0.029)	(0.037)	(0.035)	(0.034)	(0.034)
Distance from		0.016	−0.005	0.019	0.023	0.006
equator		(0.017)	(0.020)	(0.018)	(0.017)	(0.017)
Longitude		0.001	−0.007	−0.004	−0.004	−0.009
		(0.005)	(0.006)	(0.006)	(0.005)	(0.006)
Lowest monthly		−0.001	0.008	0.0001	−0.001	−0.002
rainfall		(0.007)	(0.008)	(0.007)	(0.006)	(0.008)
Avg max humidity		0.009	0.008	0.009	0.015	0.013
		(0.012)	(0.012)	(0.012)	(0.011)	(0.010)
Avg min		−0.019	−0.039	−0.005	−0.015	−0.037
temperature		(0.028)	(0.028)	(0.027)	(0.028)	(0.025)
ln(coastline/area)		0.085**	0.092**	0.095**	0.082**	0.083**
		(0.039)	(0.042)	(0.042)	(0.040)	(0.037)
Island indicator				−0.398	−0.150	
				(0.529)	(0.516)	
Percent Islamic				−0.008***	−0.006*	−0.003
				(0.003)	(0.003)	(0.003)
French legal origin				0.755	0.643	−0.141
				(0.503)	(0.470)	(0.734)
North Africa				0.382	−0.304	
indicator				(0.484)	(0.517)	
ln(gold prod/pop)					0.011	0.014
					(0.017)	(0.015)
ln(oil prod/pop)					0.078***	0.088***
					(0.027)	(0.025)
ln(diamond					−0.039	−0.048
prod/pop)					(0.043)	(0.041)
Colonizer fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number obs.	52	52	42	52	52	42
R^2	.51	.60	.63	.71	.77	.80

Notes. OLS estimates of (1) are reported. The dependent variable is the natural log of real per capita GDP in 2000, $\ln y$. The slave export variable ln(exports/area) is the natural log of the total number of slaves exported from each country between 1400 and 1900 in the four slave trades normalized by land area. The colonizer fixed effects are indicator variables for the identity of the colonizer at the time of independence. Coefficients are reported with standard errors in brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

<div style="text-align:center">ESTIMATES OF THE RELATIONSHIP BETWEEN SLAVE EXPORTS AND INCOME</div>

	(1)	(2)	(3)	(4)
	Second Stage. Dependent variable is log income in 2000, $\ln y$			
ln(exports/area)	−0.208***	−0.201***	−0.286*	−0.248***
	(0.053)	(0.047)	(0.153)	(0.071)
	[−0.51, −0.14]	[−0.42, −0.13]	[−∞, +∞]	[−0.62, −0.12]
Colonizer fixed effects	No	Yes	Yes	Yes
Geography controls	No	No	Yes	Yes
Restricted sample	No	No	No	Yes
F-stat	15.4	4.32	1.73	2.17
Number of obs.	52	52	52	42
	First Stage. Dependent variable is slave exports, ln(exports/area)			
Atlantic distance	−1.31***	−1.74***	−1.32*	−1.69**
	(0.357)	(0.425)	(0.761)	(0.680)
Indian distance	−1.10***	−1.43***	−1.08	−1.57*
	(0.380)	(0.531)	(0.697)	(0.801)
Saharan distance	−2.43***	−3.00***	−1.14	−4.08**
	(0.823)	(1.05)	(1.59)	(1.55)
Red Sea distance	−0.002	−0.152	−1.22	2.13
	(0.710)	(0.813)	(1.82)	(2.40)
F-stat	4.55	2.38	1.82	4.01
Colonizer fixed effects	No	Yes	Yes	Yes
Geography controls	No	No	Yes	Yes
Restricted sample	No	No	No	Yes
Hausman test (p-value)	.02	.01	.02	.04
Sargan test (p-value)	.18	.30	.65	.51

Notes. IV estimates of (1) are reported. Slave exports ln(exports/area) is the natural log of the total number of slaves exported from each country between 1400 and 1900 in the four slave trades normalized by land area. The colonizer fixed effects are indicator variables for the identity of the colonizer at the time of independence. Coefficients are reported, with standard errors in brackets. For the endogenous variable ln(exports/area), I also report 95% confidence regions based on Moreira's (2003) conditional likelihood ratio (CLR) approach. These are reported in square brackets. The p-value of the Hausman test is for the Wu–Hausman chi-squared test. ***, **, and * indicate significance at the 1%, 5%, and 10% levels. The "restricted sample" excludes island and North African countries. The "geography controls" are distance from equator, longitude, lowest monthly rainfall, avg max humidity, avg min temperature, and ln(coastline/area).

Catch Our Breath…

- Ask a couple of questions?

- Make a couple of comments?

- Any more readings to recommend?

Notes…

Global and "Western" Numbers

Longest-Run Global Economic Growth (2019)

Date	ideas Level H	Total Real World Income Y (billions)	Average Real Income per Capita y (per year)	Total Human Population L (millions)		Rate of Population and Labor Force Growth n	Rate of Efficiency-of-Labor Growth g	Rate of Ideas-Stock Growth h
-68000	1.0	$0	$1,200	0.1				
-8000	5.0	$3	$1,200	2.5		0.005%	0.000%	0.003%
-6000	6.3	$6	$900	7		0.051%	-0.014%	0.011%
-3000	9.2	$14	$900	15		0.025%	0.000%	0.013%
-1000	16.8	$45	$900	50		0.060%	0.000%	0.030%
0	30.9	$153	$900	170		0.122%	0.000%	0.061%
800	41.1	$270	$900	300		0.071%	0.000%	0.035%
1500	53.0	$450	$900	500		0.073%	0.000%	0.036%
1770	79.4	$825	$1,100	750		0.150%	0.074%	0.149%
1870	123.5	$1,690	$1,300	1300		0.550%	0.167%	0.442%
2020	2720.5	$90,000	$11,842	7600		1.177%	1.473%	2.061%

- The Commercial Revolution acceleration appears *everywhere*
  - Due to globalization
  - And especially to the "Columbian Exchange"

"Western" Numbers

Global Growth: The Industrializing West (2019)

Date	ideas Level H	Total Real Income Y (billions)	Average Real Income per Capita y (per year)	Total "West" Population L (millions)		Rate of Population and Labor Force Growth n	Rate of Efficiency-of-Labor Growth g	Increasing Resources ρ	Rate of Ideas-Stock Growth h
-68000	1.0	$0.01	$1,200	0.005					
-8000	4.5	$0.12	$1,200	0.1		0.005%	0.000%	0.000%	0.002%
-6000	4.7	$0.18	$900	0.2		0.035%	-0.014%	0.000%	0.003%
-3000	7.5	$0.45	$900	0.5		0.031%	0.000%	0.000%	0.015%
-1000	15.0	$1.80	$900	2		0.069%	0.000%	0.000%	0.035%
0	23.7	$4.50	$900	5		0.092%	0.000%	0.000%	0.046%
800	30.0	$7.20	$900	8		0.059%	0.000%	0.000%	0.029%
1500	58.9	$25.00	$1,000	25		0.163%	0.015%	0.000%	0.096%
1770	101.0	$105.00	$1,400	75		0.407%	0.125%	0.257%	0.200%
1870	252.0	$490.00	$2,800	175		0.847%	0.693%	0.405%	0.914%
2020	8439.5	$40,000.00	$50,000	800		1.013%	1.922%	0.175%	2.341%

- Is 'the west' special between 800 and 1500?
  - Or is it just recovery from a Dark Age depression?

Reading Engerman and Sokoloff

Stanley Engerman and Kenneth Sokoloff (1994): Factor Endowments, Institutions and Differential Paths of Development among New World Economies <http://papers.nber.org/papers/h0066>:

- Engerman and Sokoloff: A historical take on the "reversal of fortune" and "institutions" literatures…

- Variables that "win" regressions:

- Not in sub-Saharan Africa

- Distance from the equator

- Source of your colonial settler population or your colonial administrators ("legal origins")

- Investment—especially equipment investment

- Look for instruments?

- Adding instruments—even invalid instruments—raises the r2 of the first stage…

- If you have "a lot" of instruments, you will get OLS…

- Staiger and Stock: need 10-20 observations per instrument…

- Tell stories?

- Correlations, causal experiments, case studies…

Patterns of Net Migration To, And

Wealthholding In, Categories of British Colonies

Net Migration (000) to	New England #	New England row %	Middle Atlantic #	Middle Atlantic row %	Southern #	Southern row %	West Indies #	West Indies row %
Whites, 1630-1680	28	11.0	4	1.6	81	31.9	141	55.5
Whites, 1680-1730	-4	-1.8	45	19.9	111	49.1	74	32.7
Whites, 1730-1780	-27	-10.7	101	40.1	136	54.0	42	16.7
Overall Whites, 1630-1780	-3	-0.4	150	20.5	328	44.8	257	35.1
Blacks, 1650-1680	0	-	0	-	5	3.7	130	96.3
Blacks, 1680-1730	2	0.47	5	0.9	64	12.0	461	86.7
Blacks, 1730-1780	-6	-0.9	-1	-0.2	150	23.4	497	77.7
Overall Blacks, 1650-1780	-4	-0.3	4	0.3	219	16.8	1088	83.2
Total, 1630-1680	28	7.2	4	1.0	86	22.1	271	69.7
Total, 1680-1730	-2	-0.3	50	6.6	175	23.1	535	70.6
Total, 1730-1780	-33	-3.7	100	11.2	286	32.1	539	60.4
Overall Total, 1630-1780	-7	-0.3	154	7.6	547	26.8	1345	66.0

Wealthholding, c. 1774

	New England	Middle Atlantic	Southern	West Indies
Total Wealth Per Capita (£)	36.6	41.9	54.7	84.1
Nonhuman Wealth Per Capita (£)	36.4	40.2	36.4	43.0
Total Wealth Per Free Capita (£)	38.2	45.8	92.7	1200.0
Nonhuman Wealth Per Free Capita (£)	38.0	44.1	61.6	754.3

Engerman and Sokoloff: "Reversal of Fortune" and "Institutions" Literatures

- Variables that "win" regressions:
  - Not in sub-Saharan Africa
  - Distance from the equator
  - Source of your colonial settler population or your colonial administrators ("legal origins")
  - Investment—especially equipment investment
- Look for instruments?
  - Adding instruments—even invalid instruments—raises the r^2 of the first stage…
  - If you have "a lot" of instruments, you will get OLS…
    - Staiger and Stock: need 10-20 observations per instrument…
- Tell stories?

New World Populations

The Distribution and Composition of Population

In New World Economies

Panel A

Composition of Population		White (%)	Black (%)	Indian (%)	Share In New World Population
Spanish America					
	1570	1.3%	2.5%	96.3%	83.5%
	1650	6.3	9.3	84.4	84.3
	1825	18.0	22.5	59.5	55.2
	1935	35.5	13.3	50.4	30.3
Brazil					
	1570	2.4	3.5	94.1	7.6
	1650	7.4	13.7	78.9	7.7
	1825	23.4	55.6	21.0	11.6
	1935	41.0	35.5	23.0	17.1
U.S. and Canada					
	1570	0.2	0.2	99.6	8.9
	1650	12.0	2.2	85.8	8.1
	1825	79.6	16.7	3.7	33.2
	1935	89.4	8.9	1.4	52.6

New World Growth

GDP per capita in 1985 U.S. $

	1700	1800	1850	1913	1989
Argentina	-	-	$874	$2,377	$3,880
Barbados	$736	-	-	-	5,353
Brazil	-	$738	901	700	4,241
Chile	-	-	484	1,685	5,355
Mexico	450	450	317	1,104	3,521
Peru	-	-	526	985	3,142
Canada	-	-	850	3,560	17,576
United States	490	807	1,394	4,854	18,317

Engerman and Sokoloff: Very Long Run Consequences of Being Ruled by Slave- or Serf-Masters

- Different labor systems as the result of the luck of history and "factor endowments"
- How do you establish an unfree labor system?
- How do you maintain an unfree labor system?
- What does having an unfree labor system do to elite incentives?
- Does the elite control the economy? If so, does it control it in its long-run interest?

TABLE 4

The Record of Gross Domestic Product

Per Capita in Selected New World Economies:

1700-1989

GDP per capita in 1985 U.S. $

	1700	1800	1850	1913	1989
Argentina	-	-	$874	$2,377	$3,880
Barbados	$736	-	-	-	5,353
Brazil	-	$738	901	700	4,241
Chile	-	-	484	1,685	5,355
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Canada	-	-	850	3,560	17,576
United States	490	807	1,394	4,854	18,317