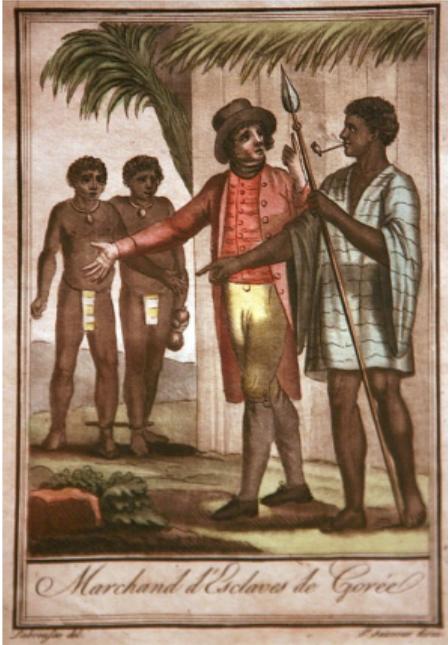# Lecture 3: The African Slave Trades

Williams College ECON 204:

Global Poverty and Economic Development

Professor: Pamela Jakiela
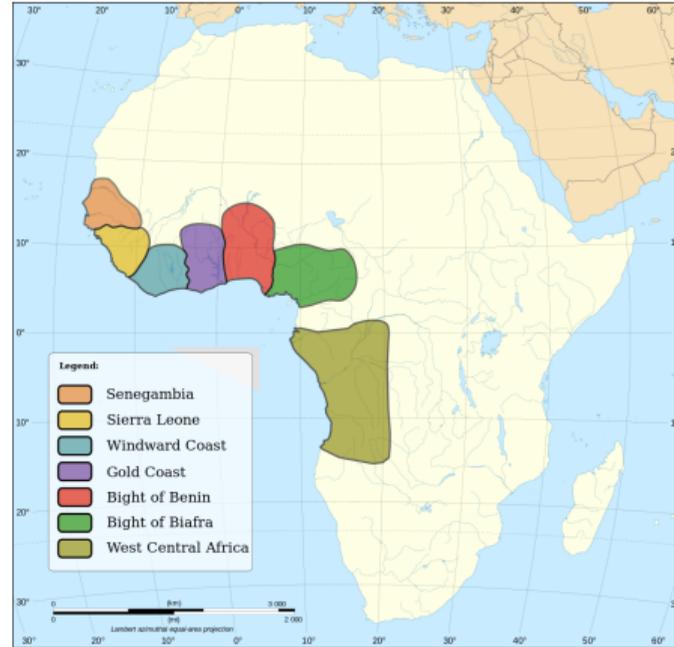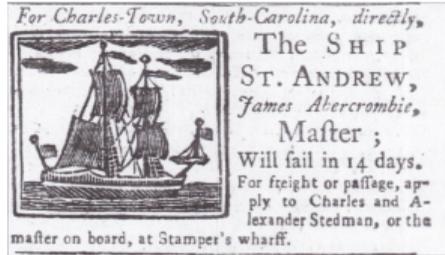
The Origins of the Slave Trade(s)

source: Jacques Grasset de Saint-Sauveur

source: Eric Gaba (2011)

The Triangle Trade

source: PA Gazette (1749)

source: Le Saphir (1741)

source: Williams Jackson

source: Francis Meynell (1846)

source: Kevin Harber (2010)

Empirical Strategy

*"If the slave trades are part of the explanation for why Africa is significantly poorer than the rest of the world today, then by looking within Africa, one should observe a pattern of development today that mirrors the past intensity of the slave trade. The poorest African countries should be the countries that had the greatest number of slaves taken during the slave trade."*

– Nunn (2015)

Data

- Two types of data:
  - ▶ Data on the **number** of slaves shipped out from each African port
  - ▶ Data on the **ethnicity** of slaves at their destinations
- Three steps in the estimation:
  - ▶ Calculate the number of slaves shipped out from each African port
  - ▶ Calculate the number of slaves of each ethnicity based on ratios in destination locations
  - ▶ Map slaves from each ethnicity to present-day countries
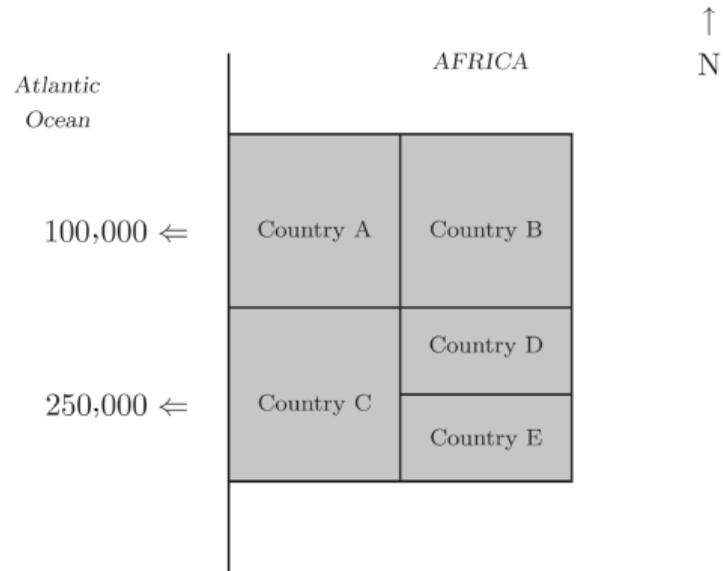
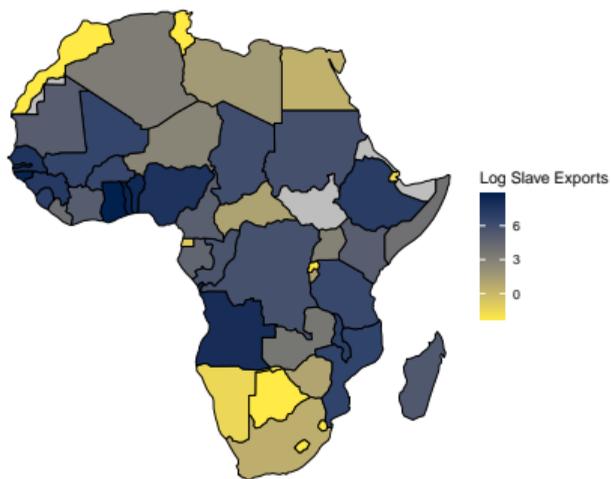# Data on Ethnic Groups
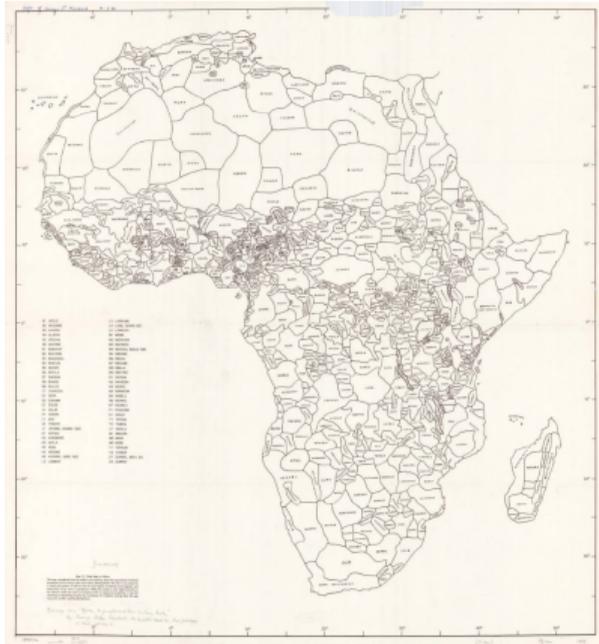
Estimating Slave Exports

Ethnic Groups and Current Borders

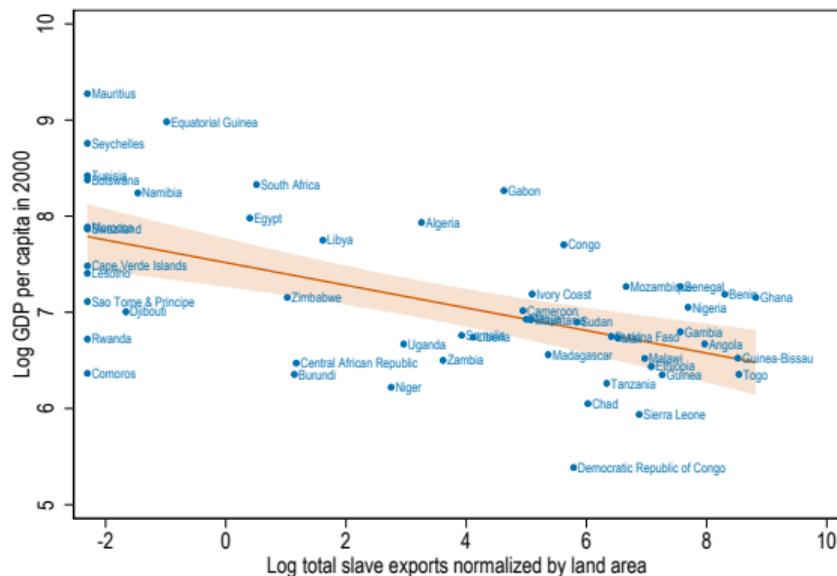

Ports → Ethnicities → Countries

Slave Exports

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

$$GDP_c = \alpha + \beta Slaves_c$$

- GDP_c = log GDP per capita
- $Slaves_c$ = slave exports

Ordinary Least Squares (OLS) Regression
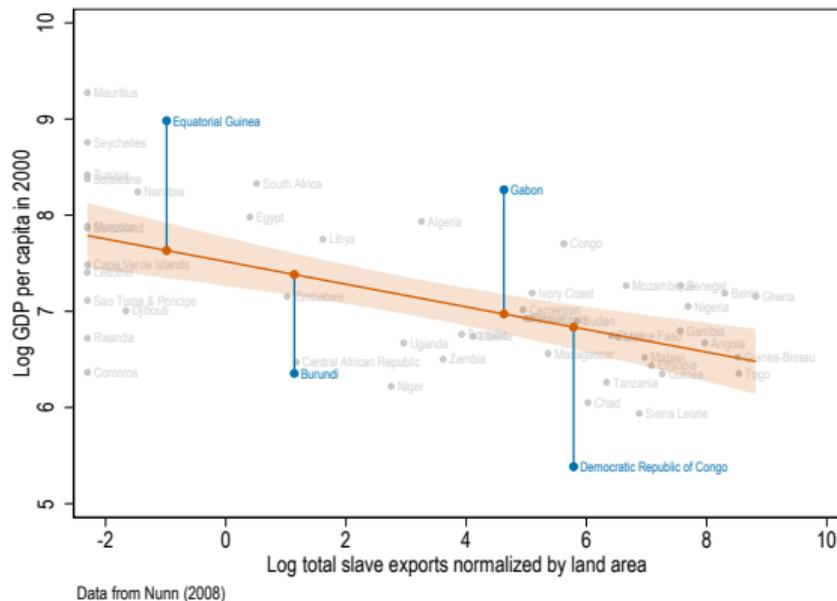
Data from Nunn (2008)

$GDP_c = \alpha + \beta Slaves_c + \varepsilon_c$

- GDP_c = log GDP per capita
- $Slaves_c$ = slave exports
- $\widehat{GDP_c}$ = predicted value of GDP_c
- ε_c = the residual

OLS Example: Negative, Statistically Significant
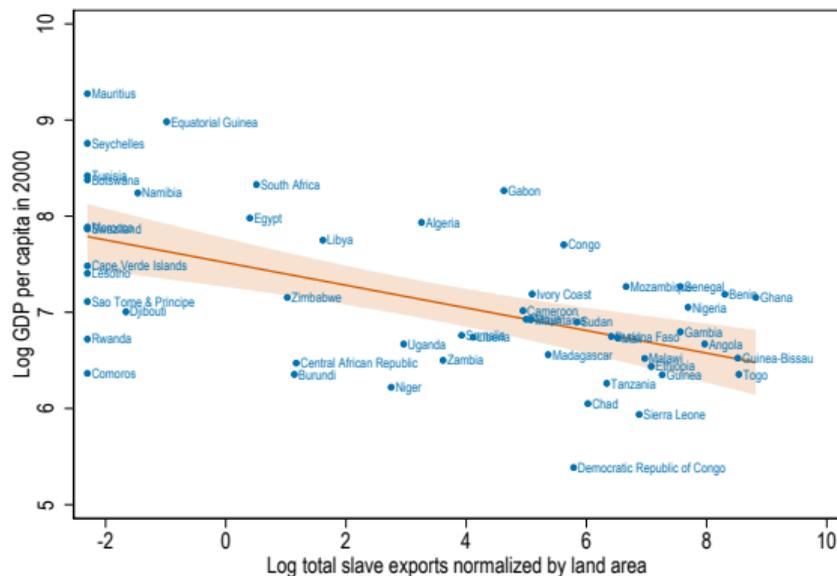
Data from Nunn (2008)

	(1)
	OLS
Log Slave Exports	-0.118***
	(0.025)
Constant	7.517***
	(0.126)

Standard errors in parentheses. ***, **, * indicates statistical significance at the 99, 95, and 90 percent confidence level.

OLS Example: Negative, Not Statistically Significant

Data from Nunn (2008)
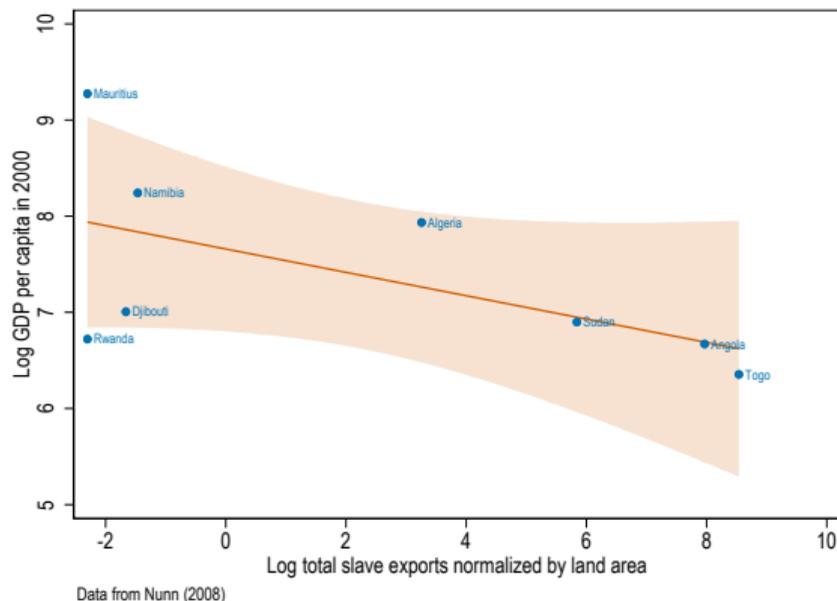
	(1)
	OLS
Log Slave Exports	-0.121
	(0.071)
Constant	7.659***
	(0.350)

Standard errors in parentheses. ***, **, * indicates statistical significance at the 99, 95, and 90 percent confidence level.

Data from Nunn (2008)

	(1)
	OLS
Log Slave Exports	0.006
	(0.100)
Constant	7.830***
	(0.212)

Standard errors in parentheses. ***, **, * indicates statistical significance at the 99, 95, and 90 percent confidence level.

Means Differ Across Groups (MENA Region, Islands, Other Countries)

Data from Nunn (2008)

Data from Nunn (2008)

Data from Nunn (2008)

	(1)
	OLS
Normalized Slave Exports	-0.101***
	(0.031)
Constant	0.000***
	(0.095)

Standard errors in parentheses. ***, **, * indicates statistical significance at the 99, 95, and 90 percent confidence level.

Multivariate Regression: Adding Controls

	(1)	(2)
	OLS	OLS
Log Slave Exports	-0.118***	-0.101***
	(0.025)	(0.031)
MENA Region		0.415
		(0.337)
Island		0.168
		(0.392)
Constant	7.517***	7.397***
	(0.126)	(0.177)

Standard errors in parentheses. ***, **, * indicates statistical significance at the 99, 95, and 90 percent confidence level.

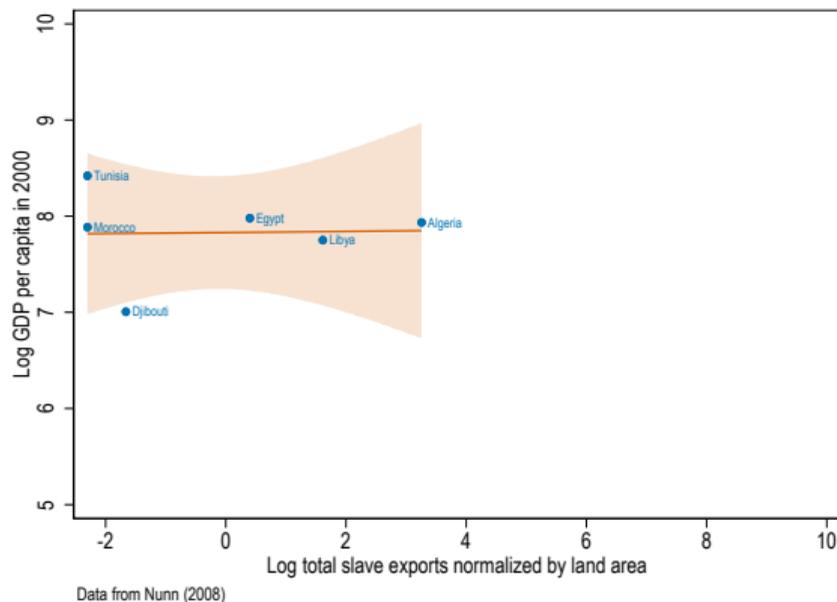$\longleftrightarrow$

	(1)
	OLS
Normalized Slave Exports	-0.101***
	(0.031)
Constant	0.000***
	(0.095)

Standard errors in parentheses. ***, **, * indicates statistical significance at the 99, 95, and 90 percent confidence level.
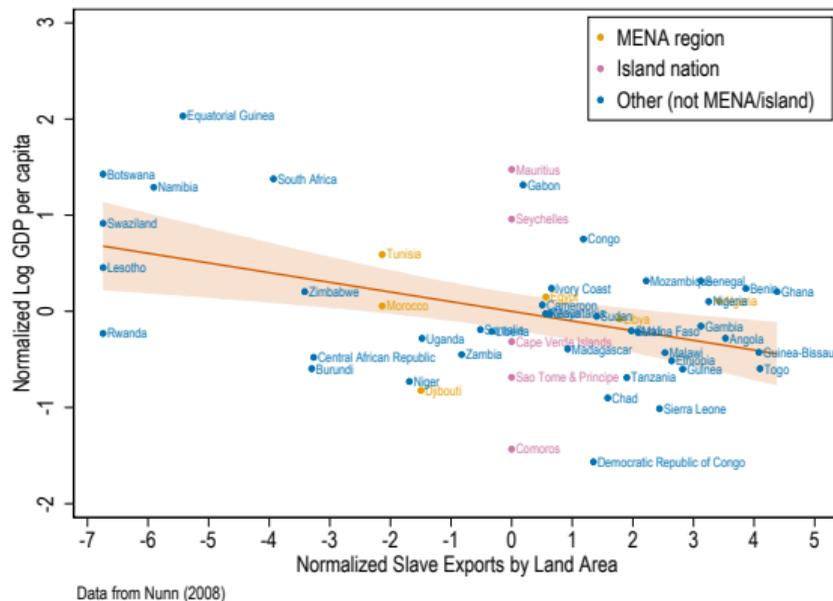
Slave Exports and GDP: Multivariate OLS

Data from Nunn (2008)

	(1)
	OLS
Residualized Slave Exports	-0.093***
	(0.020)
Constant	0.000
	(0.055)

Standard errors in parentheses. ***, **, * indicates statistical significance at the 99, 95, and 90 percent confidence level.

After partialling absolute latitude, longitude, rainfall, humidity, temperature, log coastline, percent Muslim, log gold production per capita, log oil production per capita, log diamond production per capita, dummies for colonizers and legal origin

Fact: Per Capita Income and Slave Exports Are Correlated

Possible explanations for the association between GDP per capita and slave exports:

- A causal relationship: exposure to the slave trade **caused** (slow) economic development

- Reverse causality: (slow) economic development caused exposure to the slave trade

- Omitted variables: other factor negatively correlated with slave trade causes development

- A spurious relationship: correlation is just noise (unlikely because statistical significance)

Causality: Did the Slave Trade Target Less-Developed Areas?
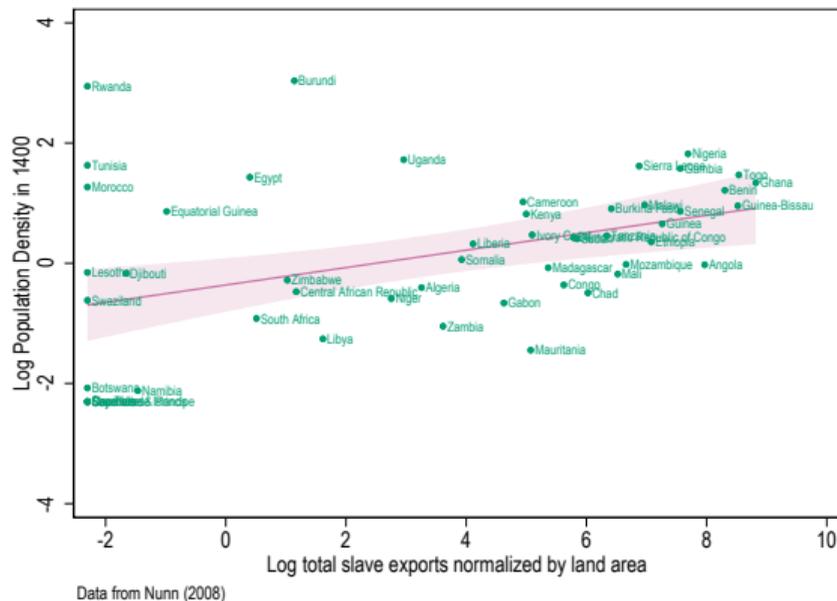
Data from Nunn (2008)

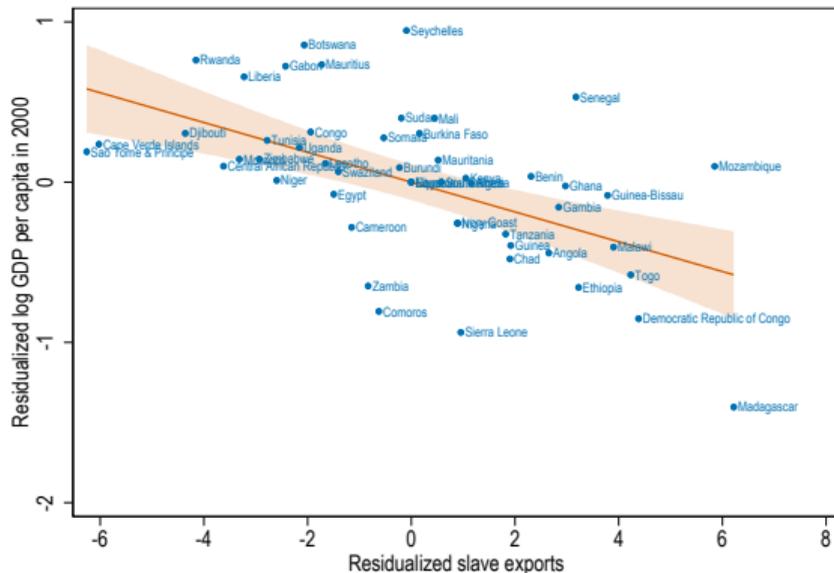|	(1)
	OLS
Log Slave Exports	0.145***
	(0.044)
Constant	-0.362
	(0.222)

Standard errors in parentheses. ***, **, * indicates statistical significance at the 99, 95, and 90 percent confidence level.

Causality: Did the Slave Trade Target Less-Developed Areas?
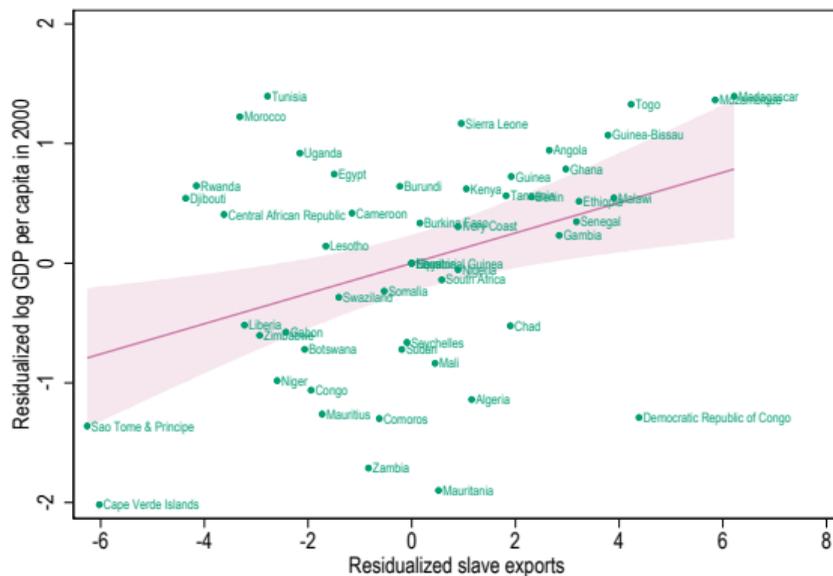
Data from Nunn (2008)

	(1)
	OLS
Residualized Slave Exports	0.126***
	(0.042)
Constant	0.000
	(0.118)

Standard errors in parentheses. ***, **, * indicates statistical significance at the 99, 95, and 90 percent confidence level.

After partialling absolute latitude, longitude, rainfall, humidity, temperature, log coastline, percent Muslim, log gold production per capita, log oil production per capita, log diamond production per capita, dummies for colonizers and legal origin

Causality: Using Distance to Ports and Destinations

Causality: Using Distance to Ports and Destinations

Nunn (2008) uses distance(s) to slave markets as **instrumental variables (IV)**

- Need a variable that predicts exposure to the slave trade

- Instrumental variable should not have a direct effect on the outcome

- Does variation in distance to slave markets predict current under-development?

Instrumental variables in practice:

- Regress slave exports on distance to markets, predict slave exports

- Regress income per capita on **predicted slave exports**

IV estimation suggests slave trade had causal impact on current development

Using Distance to Markets to Predict Slave Trade Exposure

Data from Nunn (2008)
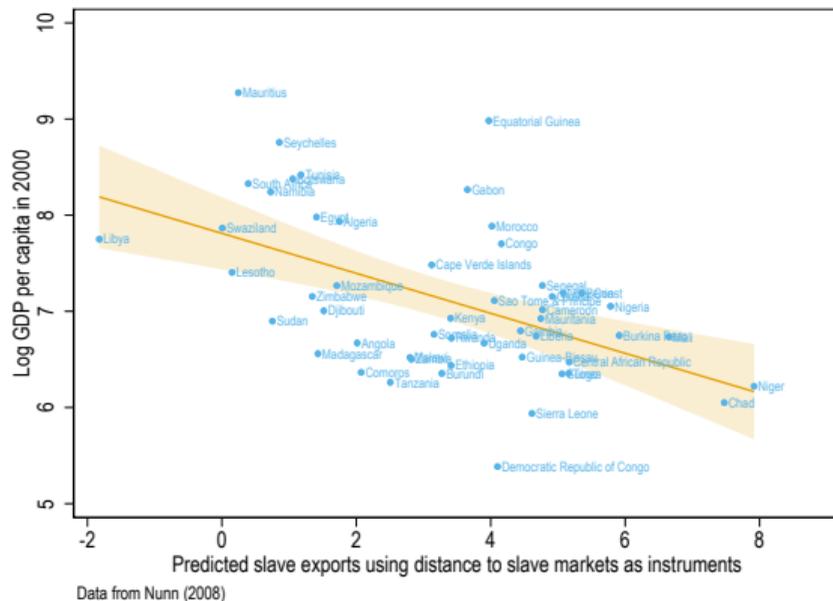
| | (1) |
	OLS
Predicted Slave Exports	-0.208***
	(0.052)
Constant	7.811***
	(0.120)

Standard errors in parentheses. ***, **, * indicates statistical significance at the 99, 95, and 90 percent confidence level.

What are the potential mechanisms?

Data from Nunn (2008)

	(1)
	OLS
Log Slave Exports	0.046***
	(0.007)
Constant	0.475***
	(0.037)

Standard errors in parentheses. ***, **, * indicates statistical significance at the 99, 95, and 90 percent confidence level.

Potential Mechanisms: Ethnolinguistic Fractionalization
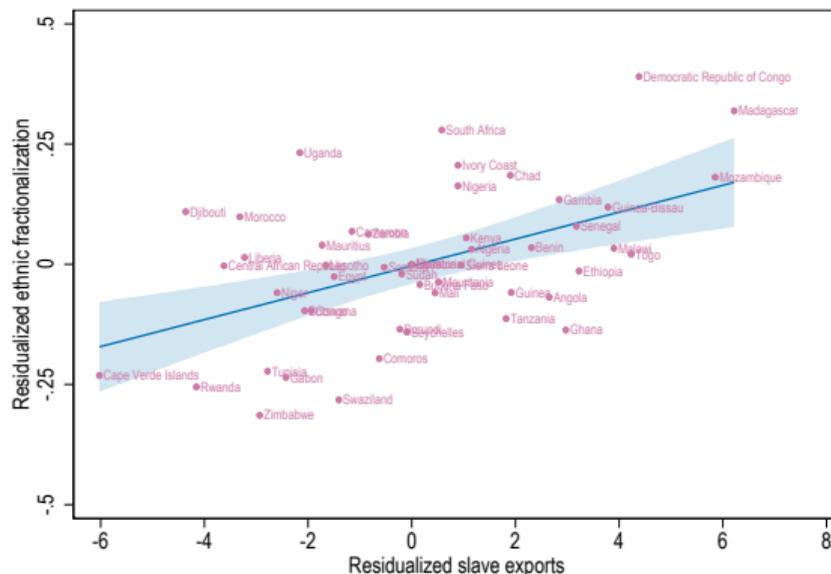
Data from Nunn (2008)

	(1) OLS
Residualized Slave Exports	0.028***
	(0.007)
Constant	-0.003
	(0.019)

Standard errors in parentheses. ***, **, * indicates statistical significance at the 99, 95, and 90 percent confidence level.

After partialling absolute latitude, longitude, rainfall, humidity, temperature, log coastline, percent Muslim, log gold production per capita, log oil production per capita, log diamond production per capita, dummies for colonizers and legal origin

Slave Exports by Ethnicity
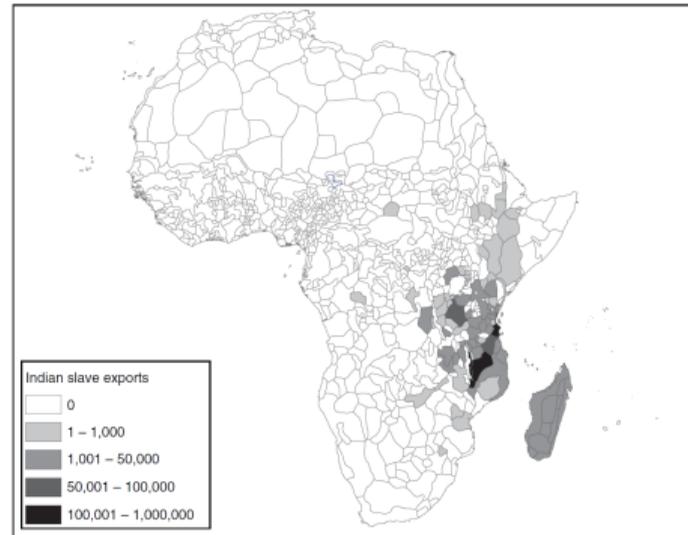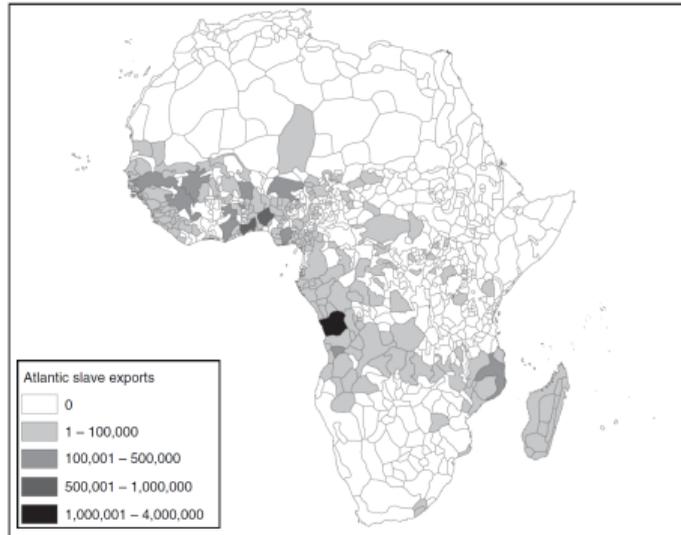
Trust

Share of people agreeing with the statement "most people can be trusted", 2014

Source: World Values Survey (2014)

OurWorldInData.org/trust • CC BY

Afrobarometer: Measuring Trust

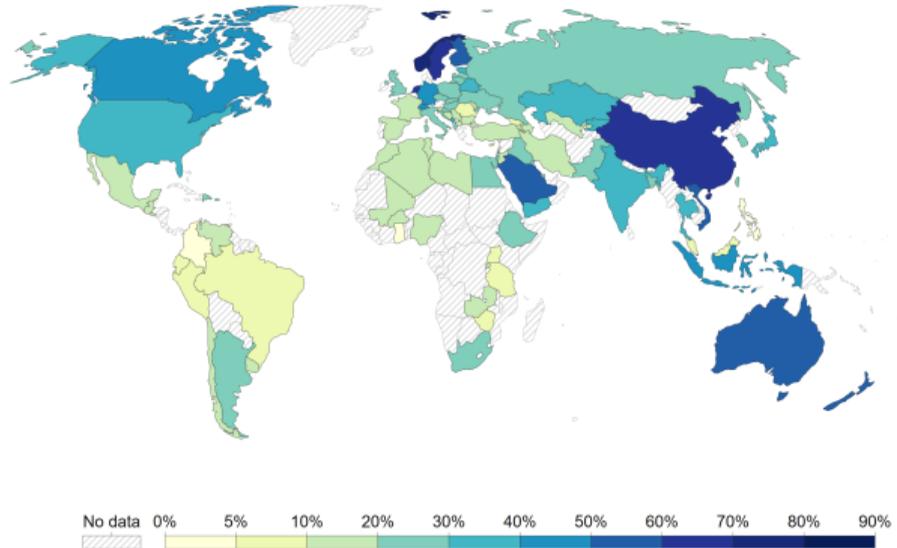| Response		How much do you trust each of the following:							
	Your relatives?		Your neighbors?		Your elected local government council?		People from your own ethnic group or tribe?		People from other ethnic groups?
Not at all	1,402	7%	2,719	13%	3,981	20%	2,797	14%	4,471	22%
Just a little	3,705	18%	5,770	28%	4,869	24%	6,304	31%	7,278	36%
Somewhat	5,154	25%	6,317	31%	5,314	26%	6,119	30%	5,266	26%
A lot	10,357	50%	5,774	28%	6,046	30%	5,282	26%	3,286	16%
Total	20,618	100%	20,580	100%	20,210	100%	20,502	100%	20,301	100%

Notes: The table reports summary statistics for five measures of trust from the 2005 Afrobarometer survey. The variables are from questions 55d, 84a, 84b, 84c, and 84d of the survey. Respondents have the option of answering "Don't know". The number of respondents answering this to each of the five questions (in order from the left to right columns) are: 43, 78, 1,484, 156, and 353. For some observations, the data are also listed as "missing". The number of respondents for which this is the case is: 5, 8, 8, 8 and 12. The Zimbabwe survey only asks about individuals' trust in the local council, and therefore for the four interpersonal trust questions an additional 1,036 potential observations are missing.

Source: Nunn and Wantchekon (2011)

The Impact of the Slave Trade on Trust

	Trust of relatives (1)	Trust of neighbors (2)	Trust of local council (3)	Intra-group trust (4)	Inter-group trust (5)
	TABLE 2—OLS ESTIMATES OF THE DETERMINANTS OF THE TRUST OF OTHERS				
ln (1+exports/area)	−0.133***	−0.159***	−0.111***	−0.144***	−0.097***
	(0.037)	(0.034)	(0.021)	(0.032)	(0.028)
Individual controls	Yes	Yes	Yes	Yes	Yes
District controls	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	20,062	20,027	19,733	19,952	19,765
Number of ethnicity clusters	185	185	185	185	185
Number of district clusters	1,257	1,257	1,283	1,257	1,255
R^2	0.13	0.16	0.20	0.14	0.11

Notes: The table reports OLS estimates. The unit of observation is an individual. Standard errors are adjusted for two-way clustering at the ethnicity and district levels. The individual controls are for age, age squared, a gender indicator variable, five living conditions fixed effects, ten education fixed effects, 18 religion fixed effects, 25 occupation fixed effects, and an indicator for whether the respondent lives in an urban location. The district controls include ethnic fractionalization in the district and the share of the district's population that is the same ethnicity as the respondent.

***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Source: Nunn and Wantchekon (2011)

Causality: Distance from the Coast

TABLE 5—IV ESTIMATES OF THE EFFECT OF THE SLAVE TRADE ON TRUST

	Trust of relatives (1)	Trust of neighbors (2)	Trust of local council (3)	Intragroup trust (4)	Intergroup trust (5)
Second stage: Dependent variable is an individual's trust					
ln (1 + exports/area)	−0.190***	−0.245***	−0.221***	−0.251***	−0.174**
	(0.067)	(0.070)	(0.060)	(0.088)	(0.080)
Hausman test (p-value)	0.88	0.53	0.09	0.44	0.41
R^2	0.13	0.16	0.20	0.15	0.12
First stage: Dependent variable is ln (1 + exports/area)					
Historical distance of ethnic group from coast	−0.0014***	−0.0014***	−0.0014***	−0.0014***	−0.0014***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Colonial population density	Yes	Yes	Yes	Yes	Yes
Ethnicity-level colonial controls	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes
District controls	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	16,709	16,679	15,905	16,636	16,473
Number of clusters	147 / 1,187	147 / 1,187	146 / 1,194	147 / 1,186	147 / 1,184
F-stat of excl. instrument	26.9	26.8	27.4	27.1	27.0
R^2	0.81	0.81	0.81	0.81	0.81

Notes: The table reports IV estimates. The top panel reports the second-stage estimates, and the bottom panel reports first-stage estimates. Standard errors are adjusted for two-way clustering at the ethnicity and district levels. The individual controls, district controls, ethnicity-level colonial controls, and colonial population density measures are described in Table 3. The null hypothesis of the Hausman test is that the OLS estimates are consistent.

***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Source: Nunn and Wantchekon (2011)

Causality: Distance from the Coast

TABLE 7—REDUCED FORM RELATIONSHIP BETWEEN THE DISTANCE FROM THE COAST AND TRUST WITHIN AFRICA AND ASIA

| | Trust of local government council | | | |
| | Afrobarometer sample | | Asiabarometer sample | |
	(1)	(2)	(3)	(4)
Distance from the coast	0.00039***	0.00031***	−0.00001	0.00001
	(0.00009)	(0.00008)	(0.00010)	(0.00009)
Country fixed effects	Yes	Yes	Yes	Yes
Individual controls	No	Yes	No	Yes
Number of observations	19,913	19,913	5,409	5,409
Number of clusters	185	185	62	62
R^2	0.16	0.18	0.19	0.22

Notes: The table reports OLS estimates. The unit of observation is an individual. The dependent variable in the Asiabarometer sample is the respondent's answer to the question: "How much do you trust your local government?" The categories for the answers are the same in the Asiabarometer as in the Afrobarometer. Standard errors are clustered at the ethnicity level in the Afrobarometer regressions and at the location (city) level in the Asiabarometer and the WVS samples. The individual controls are for age, age squared, a gender indicator, education fixed effects, and religion fixed effects.

***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Source: Nunn and Wantchekon (2011)

Causality: Distance from the Coast

| | Intergroup trust | | | | |
| | Afrobarometer sample | | WVS non-Africa sample | | WVS Nigeria |
	(1)	(2)	(3)	(4)	(5)
Distance from the coast	0.00039***	0.00037***	−0.00020	−0.00019	0.00054***
	(0.00013)	(0.00012)	(0.00014)	(0.00012)	(0.00010)
Country fixed effects	Yes	Yes	Yes	Yes	n/a
Individual controls	No	Yes	No	Yes	Yes
Number of observations	19,970	19,970	10,308	10,308	974
Number of clusters	185	185	107	107	16
R^2	0.09	0.10	0.09	0.11	0.06

Notes: The table reports OLS estimates. The unit of observation is an individual. The dependent variable in the WVS sample is the respondent's answer to the question: "How much do you trust <nationality> people in general?" The categories for the respondent's answers are: "not at all," "not very much," "neither trust nor distrust," "a little," and "completely." The responses take on the values 0, 1, 1.5, 2, and 3. Standard errors are clustered at the ethnicity level in the Afrobarometer regressions and at the location (city) level in the Asiabarometer and the WVS samples. The individual controls are for age, age squared, a gender indicator, an indicator for living in an urban location, and occupation fixed effects.

***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Source: Nunn and Wantchekon (2011)

Mechanisms: Trust vs. Expected Trustworthiness

TABLE 10—IDENTIFYING CHANNELS OF CAUSALITY

	Trust of relatives (1)	Trust of neighbors (2)	Trust of local council (3)	Intragroup trust (4)	Intergroup trust (5)
Ethnicity-based slave export measure	−0.155***	−0.182***	−0.100***	−0.169***	−0.090***
(baseline measure)	(0.029)	(0.029)	(0.023)	(0.033)	(0.030)
Location-based slave export measure	−0.045***	−0.045***	−0.045**	−0.043**	−0.047**
	(0.014)	(0.016)	(0.018)	(0.018)	(0.020)
Colonial population density	Yes	Yes	Yes	Yes	Yes
Ethnicity-level colonial controls	Yes	Yes	Yes	Yes	Yes
Baseline controls	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	15,999	15,972	15,221	15,931	15,773
Number of clusters	146/269	146/269	145/272	146/269	146/269
R^2	0.13	0.16	0.20	0.16	0.12

Notes: The table reports OLS estimates. The unit of observation is an individual. Standard errors are adjusted for two-way clustering at the ethnicity-based ethnicity level and at the location-based ethnicity level. "Ethnicity-based slave export measure" is our baseline measure of slave exports used throughout the article; it is the log of the number of slaves taken from an individual's ethnic group (normalized by land area). "Location-based slave export measure" is our alternative measure of slave exports, which is the log of the number of slaves taken from the location where an individual is currently living (normalized by land area). See Table 3 for a description of the baseline controls, the ethnicity-level colonial controls, and the colonial population density variables.

***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Source: Nunn and Wantchekon (2011)

Conclusions

Exposure to the slave trade predicts current underdevelopment:

- Slave exports explain 31 percent of variation in log GDP per capita in Africa

- Regions with higher population density in 1400 had higher exposure to the slave trade

- Being closer to slave trading ports and markets $\Rightarrow$ lower GDP per capita

Many potential mechanisms:

- Exposure to the slave trade created a culture of mistrust that persists today

- People who live near those whose ancestors were exposed to the slave trade trust their neighbors and local institutions less, suggesting a bad equilibrium with weak institutions