The Rise of Europe
Atlantic Trade, Institutional Change and Economic Growth

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Overview

- From 1500 to 1800, Western Europe experienced a historically unprecedented period of sustained growth
- The "First Great Divergence" made this area substantially richer than Asia and Eastern Europe
- This paper
  - Establishes the patterns of economic growth in Western Europe during this era
  - Develops a hypothesis on the origins of the rise of Western Europe
  - Provides evidence supporting implication of this hypothesis

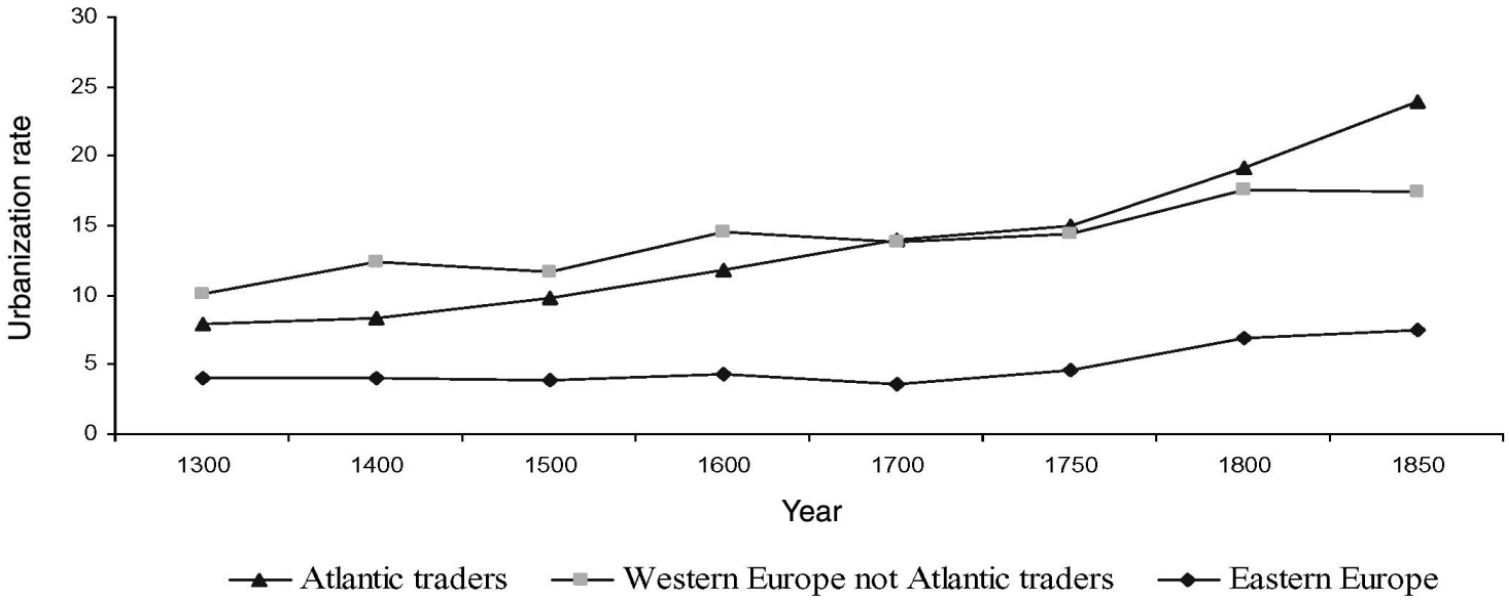
Overview - Cont'd

- This paper documents that the differential growth of Western Europe from 16th to early 19th century is accounted for by the growth of nations with access to the Atlantic Ocean
- Atlantic traders refers to nations most directly involved in trade and colonialism: Britain, France, the Netherlands, Portugal and Spain
- Atlantic trade refers to trade with New World and Asia via the Atlantic and includes colonialism- and slavery- related activities
- The rise of Europe between 1500 and 1850 is largely the rise of Atlantic Europe, different from European growth that took place before 1500

Data

- Bairoch et al.(1988): Urban population numbers on all European cities that had 5,000 or more inhabithats between 800 to 1800 B.C.
- Maddison(2001): GDP per capita from 1500 to 1820
- Bairoch et al.(1988): European city-level data. Investigates which urban centers were driving demographic and economic growth and contrasts the growth of Atlantic ports to other ports and to inland cities.

Preliminary Evidence



- Acemoglu et al.(2002): Close association between urbanization and income per capita
- Urbanization rate is the percentage of the population living in cities with more than 5,000 inhabitants
- Atlantic traders started with a lower average urbanization rate in 1300, tripled in the subsequent 550 years
- The rest of Western Europe had relatively high urbanization rate but grew at about the same rate as Eastern Europe from 1500 to 1850

Empirical Model

$$u_{jt} = d_t + \delta_j + \sum_{t \geq 1600} \alpha_t \cdot WE_j \cdot d_t + \sum_{t \geq 1500} \beta_t \cdot PAT_j \cdot d_t + X'_{jt} \cdot \gamma + \epsilon_{jt}$$

- u_{jt} is urbanization in country j at time t
- WE_j is a dummy for Western Europe
- d_t's are year fixed effects
- δ_j's are country fixed effects
- X_{jt} is a vector of other covariates
- PAT_j measure of potential for Atlantic trade:
  - a dummy for Atlantic trader
  - Atlantic coastline-to-area ratio, an exogenous measure of access to the Atlantic

Atlantic Trade and Urbanization

TABLE 2—ATLANTIC TRADE AND URBANIZATION
Dependent variable is country-level urbanization

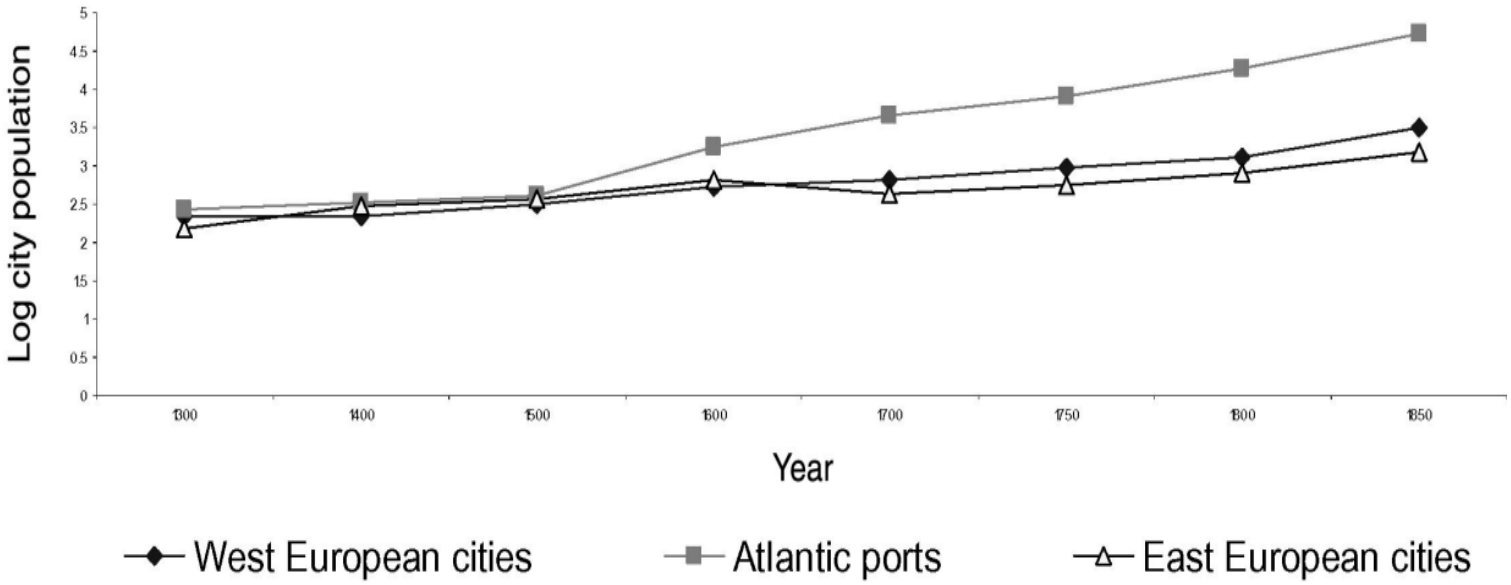
	Panel, 1300–1850 (1)	Panel, 1000–1850 (2)	Panel, 1300–1850 (3)	Panel, 1000–1850 (4)	Panel, 1300–1850, unweighted (5)	Panel, 1300–1850, with Asia (6)	Panel, 1300–1850, without Britain (7)	Panel, 1300–1850 (8)	Panel, 1000–1850 (9)	Panel, 1300–1850, unweighted (10)
			Potential for Atlantic trade is measured by:							
			Atlantic trader dummy					Atlantic coastline-to-area		
			Panel A: Flexible specification							
p-value for Western Europe × year dummies, 1600–1850	[0.00]	[0.00]	[0.45]	[0.09]	[0.80]	[0.00]	[0.12]	[0.09]	[0.01]	[0.78]
Potential for Atlantic trade × 1500			0.016	0.0086	0.055	0.014	0.018	0.50	0.38	0.75
			(0.021)	(0.019)	(0.026)	(0.022)	(0.016)	(0.68)	(0.65)	(0.87)
Potential for Atlantic trade × 1600			0.006	−0.004	0.0495	0.0054	0.0085	0.21	0.03	0.94
			(0.023)	(0.021)	(0.028)	(0.028)	(0.018)	(0.68)	(0.64)	(0.94)
Potential for Atlantic trade × 1700			0.032	0.022	0.071	0.032	0.024	1.81	1.64	2.01
			(0.021)	(0.019)	(0.028)	(0.026)	(0.016)	(0.63)	(0.58)	(0.94)
Potential for Atlantic trade × 1750			0.032	0.022	0.073	0.032	0.023	2.16	1.99	2.60
			(0.021)	(0.018)	(0.028)	(0.025)	(0.015)	(0.62)	(0.57)	(0.94)
Potential for Atlantic trade × 1800			0.048	0.038	0.110	0.047	0.028	3.30	3.12	3.76
			(0.019)	(0.017)	(0.028)	(0.023)	(0.015)	(0.57)	(0.51)	(0.94)
Potential for Atlantic trade × 1850			0.085	0.076	0.115	0.084	0.043	5.05	4.88	4.67
			(0.018)	(0.016)	(0.028)	(0.022)	(0.014)	(0.51)	(0.44)	(0.94)
R-squared	0.87	0.85	0.89	0.87	0.82	0.84	0.93	0.94	0.92	0.83
Number of observations	192	240	192	240	192	208	184	192	240	192
			Panel B: Structured specification							
p-value for Western Europe × year dummies, 1600–1850	[0.00]	[0.00]	[0.35]	[0.06]	[0.83]	[0.00]	[0.11]	[0.16]	[0.02]	[0.81]
Potential for Atlantic trade × volume of Atlantic trade			0.011	0.0083	0.016	0.011	0.005	0.75	0.65	0.62
			(0.0024)	(0.0020)	(0.0034)	(0.0029)	(0.0018)	(0.07)	(0.06)	(0.11)
R-squared	0.87	0.85	0.88	0.86	0.81	0.84	0.92	0.92	0.90	0.82
Number of observations	192	240	192	240	192	208	184	192	240	192

Robustness Check

TABLE 4—ROBUSTNESS CHECKS

	Panel, 1300–1850, controlling for religion	Panel, 1300 to 1850, controlling for wars	Panel, 1300 to 1850, controlling for Roman heritage	Panel, 1300 to 1850, controlling for latitude	Panel, 1500–1820, controlling for religion	Panel, 1500 to 1820, controlling for wars	Panel, 1500 to 1820, controlling for Roman heritage	Panel, 1500 to 1820, controlling for latitude
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Using Atlantic trader dummy measure of potential for Atlantic trade							
	Panel A: Dependent variable is level of urbanization				Panel B: Dependent variable is log GDP per capita			
p-value for Western Europe × year dummies, 1600–1850	[0.67]	[0.42]	[0.49]	[0.09]	[0.24]	[0.91]	[0.15]	[0.85]
Atlantic trader dummy × volume of Atlantic trade	0.013	0.011	0.011	0.011	0.089	0.070	0.125	0.078
	(0.002)	(0.003)	(0.003)	(0.002)	(0.013)	(0.017)	(0.017)	(0.015)
p-value for Protestant × year	[0.07]				[0.00]			
Wars per year in preceding century		−0.0006				0.075		
		(0.008)				(0.029)		
p-value for Roman heritage × year			[0.89]				[0.00]	
p-value for latitude × year				[0.11]				[0.00]
R-squared	0.89	0.89	0.89	0.89	0.97	0.95	0.97	0.97
Number of observations	192	176	192	192	96	88	96	96
	Using Atlantic coastline-to-area measure of potential for Atlantic trade							
	Panel C: Dependent variable is level of urbanization				Panel D: Dependent variable is log GDP per capita			
p-value for Western Europe × year dummies, 1600–1850	[0.19]	[0.23]	[0.39]	[0.09]	[0.99]	[0.98]	[0.71]	[0.81]
Coastline-to-area × volume of Atlantic trade	0.79	0.76	0.75	0.78	2.78	3.33	3.32	2.96
	(0.08)	(0.08)	(0.07)	(0.07)	(0.54)	(0.56)	(0.54)	(0.56)
p-value for Protestant × year	[0.51]				[0.05]			
Wars per year in preceding century		0.0082				0.033		
		(0.007)				(0.026)		
p-value for Roman heritage × year			[0.77]				[0.32]	
p-value for latitude × year				[0.52]				[0.38]
R-squared	0.93	0.93	0.92	0.93	0.97	0.96	0.97	0.97
Number of observations	192	176	192	192	96	88	96	96

Preliminary Evidence



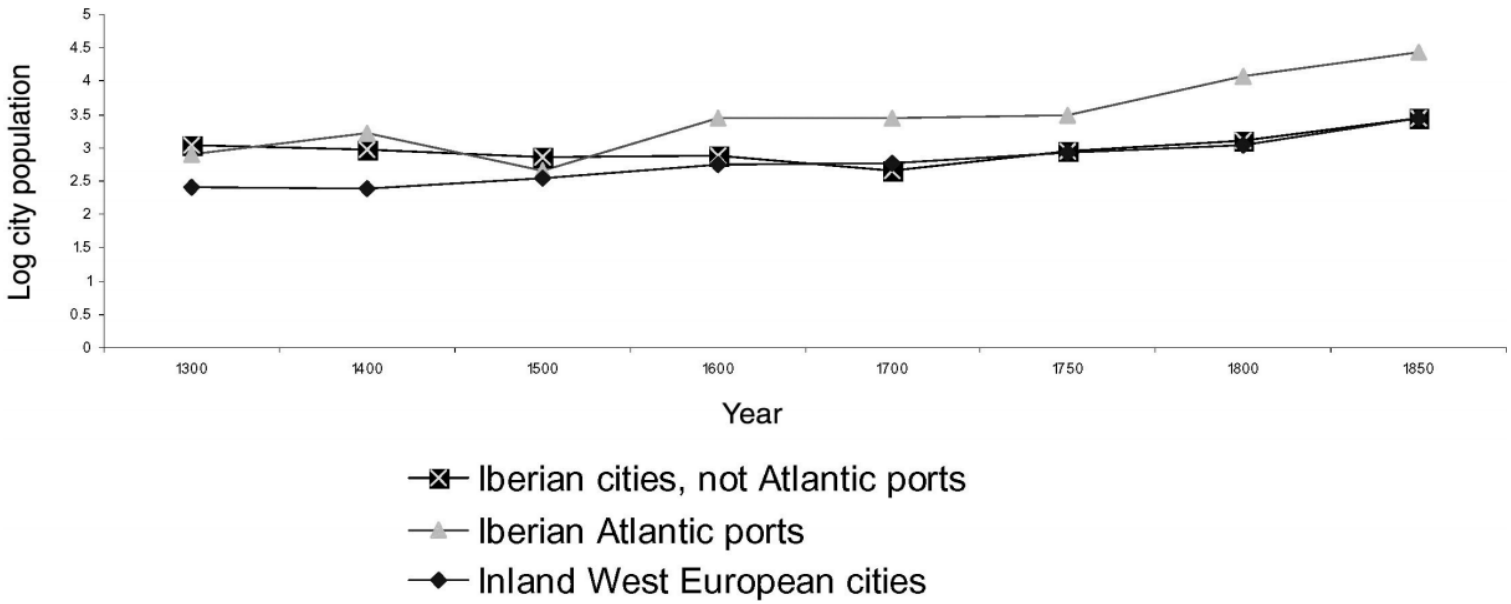
- Population of individual cities by Bairoch et al.(1988)
- Urban expansion of Western Europe was driven by ciites that were Atlantic ports

Growth of Atlantic Ports

TABLE 5—GROWTH OF ATLANTIC PORTS
Dependent variable is log city population

	Balanced panel, 1300–1850, weighted (1)	Balanced panel, 1300–1850, unweighted (2)	Balanced panel, 1300–1850, weighted (3)	Balanced panel, 1300–1850, unweighted (4)	Balanced panel, 1300–1850, weighted, without London and Amsterdam (5)	Balanced panel, 1300–1850, weighted, with full set of country × year interactions (6)	Balanced panel, weighted 1300–1850, with Asia (7)	Balanced panel, weighted 1300–1850, with Mediterranean and Atlantic ports (8)
Panel A: Flexible specification								
	Atlantic port		Potential Atlantic port		Atlantic port			
p-value for Western Europe × year dummies, 1600–1850	[0.34]	[0.05]	[0.30]	[0.16]	[0.28]	[0.30]	[0.41]	[0.32]
Atlantic port × 1500	−0.04	−0.05	0.027	0.048	−0.008	−0.072	−0.03	−0.05
	(0.19)	(0.20)	(0.17)	(0.16)	(0.20)	(0.20)	(0.20)	(0.19)
Atlantic port × 1600	0.36	0.46	0.41	0.43	0.41	0.36	0.36	0.40
	(0.16)	(0.20)	(0.14)	(0.16)	(0.17)	(0.17)	(0.16)	(0.16)
Atlantic port × 1700	0.71	0.62	0.76	0.76	0.297	0.47	0.71	0.74
	(0.14)	(0.20)	(0.13)	(0.16)	(0.17)	(0.17)	(0.15)	(0.15)
Atlantic port × 1750	0.70	0.71	0.79	0.89	0.26	0.46	0.7	0.72
	(0.14)	(0.20)	(0.13)	(0.16)	(0.16)	(0.16)	(0.15)	(0.14)
Atlantic port × 1800	0.79	0.92	0.95	1.10	0.32	0.57	0.799	0.84
	(0.14)	(0.20)	(0.12)	(0.16)	(0.15)	(0.15)	(0.14)	(0.14)
Atlantic port × 1850	1.09	1.00	1.19	1.23	0.48	0.46	1.09	1.10
	(0.13)	(0.20)	(0.12)	(0.16)	(0.14)	(0.14)	(0.14)	(0.13)
p-value for Mediterranean port × year dummies, 1500–1850								[0.19]
R-squared	0.92	0.79	0.92	0.80	0.89	0.95	0.94	0.92
Number of observations	1544	1544	1544	1544	1528	1544	1624	1544
Panel B: Structured specification								
p-value for Western Europe × year dummies, 1600–1850	[0.23]	[0.04]	[0.23]	[0.10]	[0.31]	[0.33]	[0.30]	[0.20]
Volume of Atlantic trade × Atlantic port	0.17	0.16	0.17	0.16	0.065	0.078	0.17	0.17
	(0.02)	(0.02)	(0.017)	(0.024)	(0.019)	(0.018)	(0.018)	(0.017)
p-value for Mediterranean Port × year dummies, 1500–1850								[0.14]
R-squared	0.92	0.79	0.92	0.79	0.89	0.95	0.94	0.92
Number of observations	1544	1544	1544	1544	1528	1544	1624	1544

Atlantic Port Effect



- Was the urban and economic expansion of Atlantic nations driven solely bu the growth of Atlantic ports?
- Almost all of the differential growth of Spain and Portugal comes from Atlantic ports
- Non-Atlantic parts of Spain and Portugal grew slowly than West European inland cities

Sub-hypothesis

- Evidence so far shows a significant relationship between potential for Atlantic trade and post-1500 economic development
- Subhypothesis for mechanism:
  - Political institutions placing limits and constraints on state power are essential for the incentives to undertake investments and for sustained economic growth
  - In early modern Europe, such political institutions were favored by commercial interests outside of the royal circle, but were not welcome by the monarchy and its allies
  - Institutions favored by economically and politically powerful groups are more likely to prevail
  - In countries with non-absolutist initial political institutions, Atlantic trade and colonial activity enriched and strengthened commercial interests, including new groups without ties to the monarchy

Hypothesis

Main Hypothesis: Atlantic trade contributed to the process of West European growth between 1500 and 1850, not only through direct economic effects, but also indirectly by inducing fundamental institutional change.

- In countries with easy access to the Atlantic and without a strong absolutist monarchy, Atlantic trade provided substantial profits and political power for commercial interests outside the royal circle
- This group demand and obtain significant institutional reforms protecting property rights
- With their newly gained power and property rights, merchants took advantage of the growth opportunities offered by the trade, invest and trade more and fueled the First Great Divergence

Political Institution

Acemoglu et al. constructed a measure of political institutions for European countries between 1300 and 1850

- Constraint on the Executive: measures limitations on the arbitrary use of power by the monarchy and is correlated with the security of property rights for merchants and the control over the monopoly of overseas trade by the monarchy
- Follow Gurr's Polity IV coding handbook, they give a score of between 1 to 7 for contraint on the executive to each country
- For 1800 and 1850, use Polity coding; Prior to 1850, coded using William L. Langer(1972) and Peter N. Strearns(2001)

Atlantic Trade and Institutions

TABLE 6—ATLANTIC TRADE AND INSTITUTIONS
Dependent variable is constraint on the executive

	Panel, 1300–1850 (1)	Panel, 1300–1850 (2)	Panel, 1300–1850 (3)	Panel, 1300–1850, controlling for religion (4)	Panel, 1300 to 1850, controlling for wars (5)	Panel, 1300 to 1850, controlling for Roman heritage (6)	Panel, 1300 to 1850, controlling for latitude (7)	Panel, 1300 to 1850, using Atlantic coastline-to-area measure of potential for Atlantic trade (8)	Panel, 1300 to 1850, using Atlantic coastline-to-area measure of potential for Atlantic trade (9)
p-value for Western Europe × year dummies, 1600–1850	[0.00]	[0.35]	[0.00]	[0.00]	[0.00]	[0.26]	[0.00]	[0.00]	[0.00]
Potential for Atlantic trade × 1500		−0.42						−20.83	
		(0.47)						(22.94)	
Potential for Atlantic trade × 1600		−0.14						10.94	
		(0.52)						(22.91)	
Potential for Atlantic trade × 1700		0.29						62.12	
		(0.48)						(21.14)	
Potential for Atlantic trade × 1750		0.32						81.45	
		(0.46)						(20.78)	
Potential for Atlantic trade × 1800		2.07						79.81	
		(0.44)						(18.97)	
Potential for Atlantic trade × 1850		2.96						72.25	
		(0.41)						(17.13)	
Potential for Atlantic trade × volume of Atlantic trade			0.42	0.45	0.43	0.39	0.43		12.99
			(0.06)	(0.06)	(0.06)	(0.06)	(0.06)		(2.31)
p-value for Protestant × year effect				[0.00]					
Wars per year in preceding century					−0.034				
					(0.20)				
p-value for Roman heritage × year						[0.05]			
p-value for latitude × year							[0.49]		
R-squared	0.75	0.85	0.81	0.84	0.81	0.82	0.81	0.81	0.79
Number of observations	192	192	192	192	176	192	192	192	192

Role of Inital Institutions

To investigate whether predominantly societies with less absolutist initial institutions took advantage of the opportunities offered by Atlantic trade:

$$u_{jt} = d_t + \delta_j + \sum_{t \geq 1600} \alpha_t \cdot WE_j \cdot d_t + \beta \cdot ln\ AT_t \cdot PAT_j + \sum_{t \geq 1500} \gamma_t \cdot I_{j,1415} \cdot d_t + \eta \cdot ln\ AT_t \cdot PAT_j \cdot I_{j,1415} + \epsilon_{jt}$$

- u_{jt} is urbanization in country j at time t
- $ln\ AT_t$ measure of Atlantic trade
- PAT_j a dummy for Atlantic trader or Atlantic coastline-to-area ratio
- $I_{j,1415}$ is country j's initial institutions. Use average of its constraint on the monarchy in 1400 to 1500 for long term institutional differences in pre-1500 period

Inital Intitutions and Atlantic Trade

TABLE 7—INTERACTION BETWEEN INITIAL INSTITUTIONS AND ATLANTIC TRADE

	Using Atlantic trader dummy as measure of Atlantic trade									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Panel A: Dependent variable is urbanization									
	Panel, 1300–1850	Panel, 1300–1850	Panel, 1300–1850	Panel, 1300–1850	Panel, 1300–1850, unweighted	Panel, 1000–1850	Panel, 1000–1850	Panel, 1000–1850	Panel, 1000–1850	Panel, 1000–1850, unweighted
Atlantic trader dummy × volume of Atlantic trade		0.011 (0.002)	0.011 (0.002)	−0.0095 (0.0049)	−0.0026 (0.0062)		0.0082 (0.0020)	0.0084 (0.0020)	−0.012 (0.004)	−0.009 (0.005)
p-value for initial institutions × year (1600, 1700, 1750, 1800, 1850)	[0.61]		[0.51]	[0.71]	[0.85]	[0.12]		[0.08]	[0.42]	[0.92]
Volume of Atlantic trade × initial institutions × Atlantic trader dummy				0.021 (0.004)	0.017 (0.005)				0.021 (0.004)	0.022 (0.004)
R-squared	0.87	0.88	0.89	0.90	0.83	0.86	0.86	0.87	0.87	0.81
Number of observations	192	192	192	192	192	240	240	240	240	240
	Panel B: Dependent variable is Log GDP per capita									
	Panel, 1500–1820	Panel, 1500–1820	Panel, 1500–1820	Panel, 1500–1820	Panel, 1500–1820, unweighted	Panel, 1500–1870	Panel, 1500–1870	Panel, 1500–1870	Panel, 1500–1870	Panel, 1500–1870, unweighted
Atlantic trader dummy × volume of Atlantic trade		0.069 (0.016)	0.069 (0.016)	−0.068 (0.028)	−0.079 (0.028)		0.040 (0.017)	0.040 (0.017)	−0.123 (0.030)	−0.110 (0.028)
p-value for initial institutions × year (1600, 1700, 1750, 1800, 1850)	[0.40]		[0.31]	[0.004]	[0.08]	[0.66]		[0.64]	[0.01]	[0.58]
Volume of Atlantic trade × initial institutions × Atlantic trader dummy				0.14 (0.03)	0.12 (0.02)				0.16 (0.03)	0.11 (0.02)
R-squared	0.94	0.96	0.96	0.97	0.97	0.95	0.95	0.95	0.96	0.96
Number of observations	96	96	96	96	96	120	120	120	120	120

Conclusion

- Between 1500 and 1850, the growth of nations with access to the Atlantic, and the growth of Atlantic ports, account for most of the differential growth of Western Europe relative to Eastern Europe
- The rise of Europe between 1500 and 1850 was largely the rise of Atlantic Europe and the rise of Atlantic ports.
- Atlantic trade contributed to European growth through an indirect institutional channel as well as via its more obvious direct effects