Atlantic slavery's impact on European and British economic development

Ellora Derenoncourt*

Preliminary version.
Please do not cite or circulate without permission. Latest version here.

November 14, 2024

Abstract

The economics literature on Atlantic slavery attests to its negative long-run impact on development outcomes in Africa and the Americas. What was slavery's impact on Europe? In this paper, I test the hypothesis that slavery contributed to modern economic growth in Europe using data on European participation in the Atlantic slave trade. I estimate a panel fixed effects model and show that the number of slaving voyages is positively associated with European city growth from 1600-1850. A 10% increase in slaving voyages is associated with a 1.2% increase in port city population. Using a newly created dataset on British port-level trade, I show that for the UK, this effect is distinct from that of general overseas trade, which also increased during this period.

*Derenoncourt: Princeton University. Email: ellora.derenoncourt@princeton.edu. The author is grateful to Nathan Nunn, Suresh Naidu, Claudia Goldin, Robert Margo, Melissa Dell, James Robinson, and Leander Heldring and participants of the Harvard Development Tea seminar, the Harvard Economic History Graduate Seminar, and the Oxford Economic History Graduate Seminar for many excellent suggestions. The author thanks Caitlyn Schwarz and Eshwan Ramudu for their excellent research assistance.

1 Introduction

A growing body of literature attests to the negative impact of slavery on the former plantation colonies of the Americas and of the slave trade on African economic development (Heblich et al., 2024; Sokoloff and Engerman, 2000; Acemoglu et al., 2001; Nunn, 2008; Nunn and Wantchekon, 2009). What was the impact of Atlantic slavery on Europe?[1] This question lies at heart of the Williams hypothesis: the theory put forth by historian Eric Williams that profits from the Atlantic slave trade and plantations in the Americas helped finance the British industrial revolution. There is little econometric evidence, however, on this theory or on the relationship between the Atlantic slave economy and growth in Europe, more broadly.[2]

This paper looks at one facet of this economy, the Atlantic slave trade, and provides evidence of a positive effect of European participation in the trade on urban population growth from 1600-1850. Using a differences-in-differences estimation strategy in a panel setting, I test whether European slave trading ports grew faster than non-slave-trading ports and other coastal cities and whether, on the intensive margin, more slaving voyages were associated with greater population growth. To address the concern that these effects may be driven by larger cities selecting into the trade or secular trends in city population, I include city and time period fixed effects in all my specifications. This panel fixed effects approach mitigates selection issues by relying on variation within cities and over time to estimate the impact of the slave trade on city population. I show this approach is robust to a number of alternative sample specifications designed to refine the control group as well as the inclusion of country-by-time-period fixed effects.

To address the concern that other time varying factors at the city level explain both an increase in slaving voyages and a rise in city population, I restrict my attention to the UK where I am able to collect additional economic indicators for this time period. The most salient competing explanation is the growth in British overseas trade during this period, which is correlated with participation in the slave trade, but may have led to city growth through entirely distinct channels. To check that my results are not driven by the rise in overall trade, I collected a unique dataset on yearly trading activity for British ports from 1565-1799. I scraped the catalog descriptions of over 20,000 British port books

[1] By "Atlantic slavery," I am referring to the combination of slave-based production of goods and the trade in enslaved persons from Africa to the America.

[2] The economic history literature on Atlantic slavery and European development offers several hypotheses for how slavery could have impacted modern European growth: profits from the slave trade, expanding colonial markets for exports, or the importing of raw inputs produced by slave labor (Morgan, 2000; Inikori, 2002; Solow in Solow and Engerman, 2004). Some of this literature evaluates the plausibility of a link between the Atlantic slave-based economy and European economic growth or British economic growth using time series data.

stored at the National Archives at Kew. These descriptions contain information on the thickness of each book (the number of folios), which I use to create proxies for overseas (trade outside the UK) and coastal trade, each of which were recorded in separate books. I find that slaving voyages predict greater city growth, even when controlling for this measure of overseas trade activity.

My estimates of the impact of the slave trade on city growth are remarkably stable across the various specifications described above, including in the restricted UK sample. A 10% increase in slave voyages is associated with approximately a 1.2% increase in population. This effect is large. Taking the estimates from Nunn and Qian (2011) as a benchmark, where the authors find that a 1% increase in potato suitability increases city population by .03%, the effect of the slave trade is equivalent to increasing potato suitability by 40%. An alternative reference point is Dittmar's (2011) findings on the impact of the printing press on early modern growth in European cities. Early adoption of the printing press is associated with .17 log points greater city population from 1500-1600, or the same impact as a 1.4% increase in slave voyages.

This paper contributes to a long-standing debate on the importance of slavery for modern European growth. Launching this debate was historian Eric Williams who argued in his 1944 book, *Capitalism and Slavery*, that the profits from the slave trade figured decisively in financing the Industrial Revolution in England.[3] Several studies in economic history have subsequently expanded this hypothesis to include exposure to African and "New World"[4] demand and spillovers into industries downstream or upstream from slave trading. These studies rely primarily on national statistics on trade for Britain, qualitative evidence, or the predictions of general equilibrium trade models (Inikori, 2002; Morgan, 2000; Solow and Engerman, 2004; Darity,1982; Findlay, 1990). None, however, have used micro-level variation in exposure to the slave economy to quantitatively test the spirit of Williams' hypothesis.

In bringing this type of evidence to the question of the slave trade's impact on Europe, I contribute to a nascent literature in economics that uses microdata to evaluate slavery's role in economic development. Gonzalez, Marshall, and Naidu (2017) link credit reports to slave ownership records for Maryland in the early 1860s and find that the ability to use slaves as collateral gave slaveowners an advantage over other entrepreneurs. Fujiwara, Laudares, and Caicedo (2023) use variation in Spain and Portugal's use of African slave labor across a historical border in Brazil and find that more intense use of slaves is

[3]Williams also hypothesized a role for industrialization in the subsequent abolition of slavery. The interests of free trade advocates and abolitionists coincided on the question of slave trade and slavery, facilitating the transition to free labor in the 1830s.

[4]By "New World," I am referring to North and South America and the Caribbean.

associated with higher income and income inequality in Brazil today. This paper examines a much earlier episode in the economic history of slavery—the Atlantic slave trade. Detailed and near exhaustive records of the trade allow me to include cities from several European countries in my analysis and to exploit variation in slave-trading activity over time within these cities. My findings from this very different setting are consistent with this recent literature that finds slavery contributed to the economic development of the West.

The rest of the paper proceeds as follows. In section 2, I give a brief account of European involvement in the Atlantic slave trade. In section 3, I describe the data sources, my measure of slave trade participation, and the newly constructed dataset of British early modern trading activity. I present my empirical design and results in section 4. In section 5, I discuss mechanisms suggested by the economic history literature and their consistency with my findings, as well as the quantitative implications of my findings. Section 6 concludes.

2 Historical background: Europe and the slave trade

The first Atlantic slaving voyages followed quickly on the heels of initial European contact with West Africa in the first half of the 15th century. In 1444, over 200 slaves arrived in Portugal from West Africa, one decade after the first Portuguese ship rounded Cape Bojador on the north coast of modern day Western Sahara. The early phase of the trade (1450-1600) was dominated by the Spanish and Portuguese, whose joint crown issued monopoly contracts for and collected taxes from all legal slave voyages. During this period and prior to European colonization of the Americas, slaves were captured or purchased in Africa primarily for sale in Europe (Eltis, 2001; Thomas, 1997).

As indigenous populations in the New World were decimated by European disease, war, and forced labor policies, demand for New World workers increased, especially in those areas where settlement by Europeans was made difficult by local disease environments (Acemoglu et al. 2001). France and England enter the trade in 1544 and 1562, respectively, and the Dutch in 1607 (Thomas, 1997). Thus, began the era of the triangular trade in which European commodities were shipped to the African coast and exchanged for slaves who were then transported and sold in the Americas. On the return journey, plantation crops produced by slave labor were carried to Europe for processing and re-export.

The peak of the Atlantic triangle trade occurred in the late 18th century, with 80% of

slaves transported after 1700 (Curtin, 1969). This was also the era of British dominance of the trade; it is possible that British voyages overtook Spain as early as the 17th century.[5] The historical trajectory of the triangle trade witnessed other important changes, including a transition to free trade from highly controlled mercantilism, laws governing the number of slaves per ton on ships, and major wars that disrupted the balance of power among trading nations.

For much of the history of the triangle trade and in all major countries involved, slaving voyages were sent out under royal auspice, through the form of monopoly licenses issued to particular traders or the formation of national companies, such as the Royal African Company in England. One reason for the high levels of government involvement aside from mercantilist policy writ large was the revenue to be gained by taxing the voyages. Another reason is that the voyages themselves required substantial upfront investment. By one historian's characterization, to outfit a voyage one needed "the same kind of sum... as would be needed to buy a large house... in a fashionable street in Paris" (Thomas, 1997, p. 293). Those voyages which did not fall under government licenses were thus typically carried out by partnerships of six to seven merchants who bore the costs and risks of the expeditions together. The trade witnessed the rise of dynastic slaving families, and many slave trading companies were organized around blood relations. Despite the rise of elite slaving families, the slave trade also permeated into society more broadly. In smaller ports such as Whitehaven, professionals of all kinds invested in the trade. And slave traders themselves frequently engaged in philanthropy, founding schools and libraries and donating to charities (Thomas, 1997).

By the 1770s, however, an abolitionist movement in England had emerged demanding an end to the slave trade on moral grounds (Morgan, 2000, p. 36). In 1807, the British parliament abolished the slave trade and enforced the ban on an international scope via treaties with other nations and enforcement by the British Royal Navy. The last slaving voyage left Liverpool as late as 1867; however, the voyage was condemned by authorities and never reached its final destination. The last recorded slaving voyage to arrive in the Americas did so in 1870 and was part of the Cuban trade which thrived well into the 19th century (Thomas, 1997).

Over the hundreds of years spanning the slave trade, countries that participated in the trade grew at a faster rate on average than their non-slave trading counterparts. Figure **??** captures this basic trend. By some mechanism, therefore, the two phenomena were linked; either thriving places selected into slave trading, and thus the slave trade

[5]The authors of TASTDB acknowledge a bias in their coverage of the triangle trade: the lack of Iberian records results in an underrepresentation of the early part of the phase and of Spanish and Portuguese voyages.

was a consequence rather than a cause of growth, or, indeed, the slave trade served as a path to sustained future economic growth.

3 Data

3.1 The Atlantic slave trade

My measure of European port city participation in the Atlantic slave trade come from The Trans-Atlantic Slave Trade Database (TASTD) constructed by Eltis et al. (1999). I use information on the voyage's port of departure to assign slave voyages to European ports for each year in the database. I then aggregate yearly voyages by European ports to the century level to match the frequency of my data on European city population and British industrialization. The measure I use in empirical specifications is the log of (1+ Slave Voyages), where cities that did not participate in the slave trade during that century are assigned zero slave voyages for that period.[6] Figure **??** shows the incidence of slave voyages across Europe by 1850.

3.2 The British port books

I construct a new dataset of port-level trade for the UK using information on the British port books series held at the British National Archives (TNA). The collection contains approximately 20,000 port books documenting ships and goods entering and exiting British ports each year from 1565-1799. While no better resource exists for understanding the development of port-level trade during this period, the books remain largely underutilized because of the costly process of manuscript digitization and transcription. Further, many of the books are damaged or eroding making them impossible to read while others are missing entirely. One major omission is the London port books for 1697-1799, many of which were destroyed for administrative convenience (Aldridge, 2009).

The archive's online catalog, however, contains descriptive information about each book, including the number of folios in each. Because the books contained only as many folios as needed to record the trade in that year, I use the number of folios in a book as a proxy for trade volume in that year. Separate books were kept for recording overseas versus coastal trade, so I am able to distinguish these two in constructing my trade proxies. I aggregate this measure to the century level to match the frequency of my

[6]The empirical results are not affected by using .01 instead of zero for the value of voyages when no voyages were sent.

outcome variables. In my empirical specifications, I use log of (1 + Port Book Folio Number) as the independent variable. Cities with no records of trade during that period are assigned zero folios for that period.[7] Figure **??** shows example of a page from a Gloucester port book recording ships registering at the port and the goods they carried. Figure **??** gives the time series of the overseas trade proxy for several British outports.

3.3 Historical city population for Europe

Data on city population are taken from Nunn and Qian (2011), and are originally from Bairoch et al. (1988) and DeVries (1984). Cities with populations of at least one thousand are included in the sample, with a total of 2206 cities overall. In this study, urban population growth will serve as a measure of economic development, following the use of urbanization as a proxy for income in a number of studies (Nunn and Qian, 2011; Acemoglu et al., 2001; Acemoglu et al., 2005). The panel on European city population spans 1000-1850 at 100-year intervals until 1700 and 50-year intervals thereafter. I restrict my analysis to the period overlapping with the slave trade: 1600-1850. I use log of city population in my empirical specifications.

Table 1 shows the average log of city population for slave trading and non-slave-trading coastal cities in Europe, the UK, and for the British outports. As can be seen from the table, city populations are typically larger in slave trading ports. Rather than rely on the suggestive cross sectional variation depicted here, the empirical analysis in the following section uses variation within cities over time to estimate the effect of slave trading on city population growth. The approach is described in greater detail in the next section.

4 Empirical strategy & results

The first part of my analysis uses panel fixed effects regressions to quantify the impact of the slave trade on city growth across Europe. Cities in the sample entered the slave trade at different times between 16th to the 19th century, and to varying degrees. For example, the city of Dublin sends a single voyage in 1716; Liverpool sends nearly 5,000 voyages beginning in 1696 and ending in 1861.[8] The panel fixed effects regression compares

[7] The empirical results are not affected by using .01 instead of zero for the value of folios when no folios are present.

[8] As mentioned in Section 2, the slave trade was abolished in the UK in 1807. The voyage of 1861 was the fourth sent from Liverpool after the banning of the trade. The ship was captured by authorities and did not transport any slaves.

log city population levels *within* a city at different levels of slave trade participation, controlling for period fixed effects. Thus, my estimation strategy exploits the variation in entry time, giving rise to plausible control groups for participants in the trade: their former city population at a different participation level. Further, in addition to expanding a standard differences-in-differences approach from two groups and two time periods to multiple groups and multiple periods, the use of a continuous treatment variable allows me to examine the effect of differing levels of slave trade participation on city population. In all of the specifications for European cities, I include country-by-year level fixed effects to account for any country-level shocks across centuries.

The main estimating equation is as follows:

$$y_{ct} = \beta SlaveVoyages_{ct} + \gamma X_{ct} + \delta_c + \delta_t + \delta_j \times \delta_t + \varepsilon_{ct} \tag{1}$$

For the specifications on European ports, y_{ct} is log city population for city c in time t, $SlaveVoyages_{ct}$ is log total slave voyages between $t-1$ and t (for the century 1600, the measure is slave voyages sent between the first recorded voyage in 1514 and 1600), X_ct is a vector of city-century level controls, such as estimated overall trade volume between $t-1$ and t, δ_c is a full set of city fixed effects, and δ_t is a full set of century (or half-century) fixed effects for the years 1600, 1700, 1750, 1800, 1850. The interaction term $\delta_j \times \delta_t$ captures country-by-century fixed effects.

In the main specifications, participation in the slave trade is measured by the number of slave voyages sent by city i between the year t and $t-1$, a variable constructed by aggregating information from TASTD up to the city-year level. Specifically, this measure is a positive and increasing number reflecting the number of voyages sent in the time between year t and $t-1$.

To ensure that my results are not being driven by any set of observations in particular, I include city and year fixed effects in all main specifications. These fixed effects control for unobserved heterogeneity, such as time-invariant city characteristics and common shocks to cities across centuries. To generate a plausible comparison group for slave-trading ports, I restrict my analysis to European cities within 65 kilometers of the coast, the maximum distance between any slave trading city in my sample and the coastline. For robustness, I expand and shrink this buffer to 100km and 50km, and the results are not sensitive to this choice of distance.[9]

The results presented in Table 2 show the impact of slave voyages on city population

[9]The results of this robustness check are available from the author upon request.

for different samples of European coastal cities: all coastal Europe, slave-trading Europe, and Atlantic Europe (Britain, France, Portugal, and Spain). The last column restricts the sample to cities which have participated in the trade at some point over the period. Figure **??** depicts this intensive margin effect of additional slave trading. The coefficient is stable across these different sample specifications, ranging from .116-.122%. The coefficient can be interpreted as follows: a 10% increase in slave voyages is associated with a 1.16-1.22% increase in city population.

All specifications have country-by-century fixed effects to capture shocks at the country level for a specific time period. For example, trade policies were determined at a national (or imperial) level. Thus, country-by-year fixed effects should capture any nation-level factors that may have effected city growth.[10]

The inclusion of city and century fixed effects mitigates the selection concerns raised earlier in the paper. However, time varying factors at the city level could be contributing both to increases in slave trading and increases in city population. The most important omitted factor of this type is other long distance trade: the slave trade in European cities may be correlated with other overseas trade, which was also expanding during this period. Thus, it's plausible the general increase in overseas trade that explains both the increase in slave voyages and the increase in city population for participating ports. In the next part of the empirical analysis, I focus attention on ports in the UK, where I am able to include measures of overseas trade constructed from descriptions of archival holdings at the National Archives in London.

To move towards a more plausible counterfactual framework, I drop three major cities, which were also most well known for involvement in the slave trade: London, Bristol, and Liverpool.[11] This sample restriction allows me to focus on smaller towns for which alternative paths of development can be easily pictured. Several minor ports engaged in international trade never took part in the slave trade, sticking instead with European trading partners. My proxy for overseas trade allows me to distinguish between an overall long-distance trade effect and participation in the slave trade in particular.

Table 3 reports the results from this analysis. The first column shows the same specification as in Table 2, but restricting to the minor UK coastal towns. The estimate for slave voyages is slightly smaller and no longer statistically significant when I restrict

[10]Appendix Table A1 reports results without country-by-year shocks. Including country-by-year shocks improves the precision of the estimated effect of slaving voyages and also leads to a slightly larger coefficient, suggesting countervailing trends in population in countries with greater historical participation in the slave trade.

[11]Table A2 reports the association between slave voyages and population on the full sample of UK cities, including London, Bristol, and Liverpool, as well as for alternative samples of coastal UK towns. See the table notes for Table A2 for more details.

to the minor ports and include city and year fixed effects. In Column 2, I look at the effect of my proxy for general overseas trade on log city population. These are positively correlated, providing reassurance that my proxy captures true variation in trading activity, which is correlated with city size. In column 3, I include both measures. The effect of slave voyages is robust to including this control and is statistically significant at the ten percent level. Remarkably, the point estimate of the slave trades coefficient is again .12, consistent with my specifications in the full European sample.

Given that the proxy for overseas trade is in log folio units and the measure of slave trade participation is the number of voyages, it is difficult to compare these coefficients. I use a random sample of approximately 400 folio images to calculate the average number of ships recorded on each folio page. Figure **??** illustrates how the number of ships can be calculated. Each ship entry begins with the words "In the..." written in distinctive lettering. The mean number of ships recorded per folio in the random sample is approximately 7. I then calculate the implied number of voyages entering and exiting each UK outport. Appendix Table A3 reports the coefficients on number of inbound and outbound overseas voyages assuming 7 ships per folio. A 10% increase in total overseas voyages results in a 0.3% increase in population. The coefficient on slaving voyages is over twice the magnitude of the coefficient on general overseas voyages.[12] These results suggest that slaving voyages were associated with faster urban population growth than general overseas trade.

5 Discussion

The results presented above offer evidence that the Atlantic slave trade contributed to the economic development of Europe, as measured by the growth of the urban population. Economic historians studying the British context specifically, have put forth a number of explanations behind why the slave trade and slavery more broadly may have had this stimulatory effect on domestic economic activity. First arguing this was Eric Williams in his seminal 1944 book *Capitalism and Slavery*, where he argued that the profits from the slave trade figured decisively in funding the Industrial Revolution in England.[13]

[12]My primary measure of slave trade participation is the number of outgoing slaving voyages. The number of "inbound" slaving voyages can calculated using the port of return in Europe. I sum the number of inbound and outbound voyages to generate a measure of slave trade participation at the port level that is more comparable to my measure of general overseas voyages. Results are reported in Table A4. The estimated coefficient on slave trade participation is less precise but the magnitude remains over twice the size of that on general overseas voyages.

[13]Williams also hypothesized a role for industrialization in the subsequent abolition of slavery. The interests of free trade advocates and abolitionists coincided on the question of slave trade and slavery,

Following Williams' text, a numbers debate ensued, challenging the magnitude of slave trade profits, their importance for overall investment, and structural economic change. The extremely high profit rates initially proffered by scholars of the slave trade have been revised downwards, from as high as 50% to between 7 and 8% (Morgan, 2000). Barbara Solow's (1985) work revisiting the question of the slave trade's influence nevertheless comes out strongly in favor of the Williams hypothesis, suggesting that the magnitudes of the slave trade's contribution to national income and investment to be large and significant. Further, Solow supports the notion that Williams' thesis can be expanded to European economic growth in general, citing Darity (1982), who calibrates a three-sector trade model showing European gains from the triangular trade and losses for Africa and the Americas.

Direct profits from slave-trading, however, remain just one channel through which the triangle trade may have affected European economic development. Morgan (2000) suggested, for example, that spillovers to sectors upstream and downstream from slavery spurred economic development. Long distance Atlantic trade was critical in the extension and development of credit markets, financial instruments, and the insurance industry, all key sectors for economic growth. Further, among industries downstream from the slave trade and plantation agriculture, cotton textile manufacturing served as the site of critical innovations related to the industrial development in the 19th century (Inikori, 2002; Beckert, 2014; Juhasz, 2018).

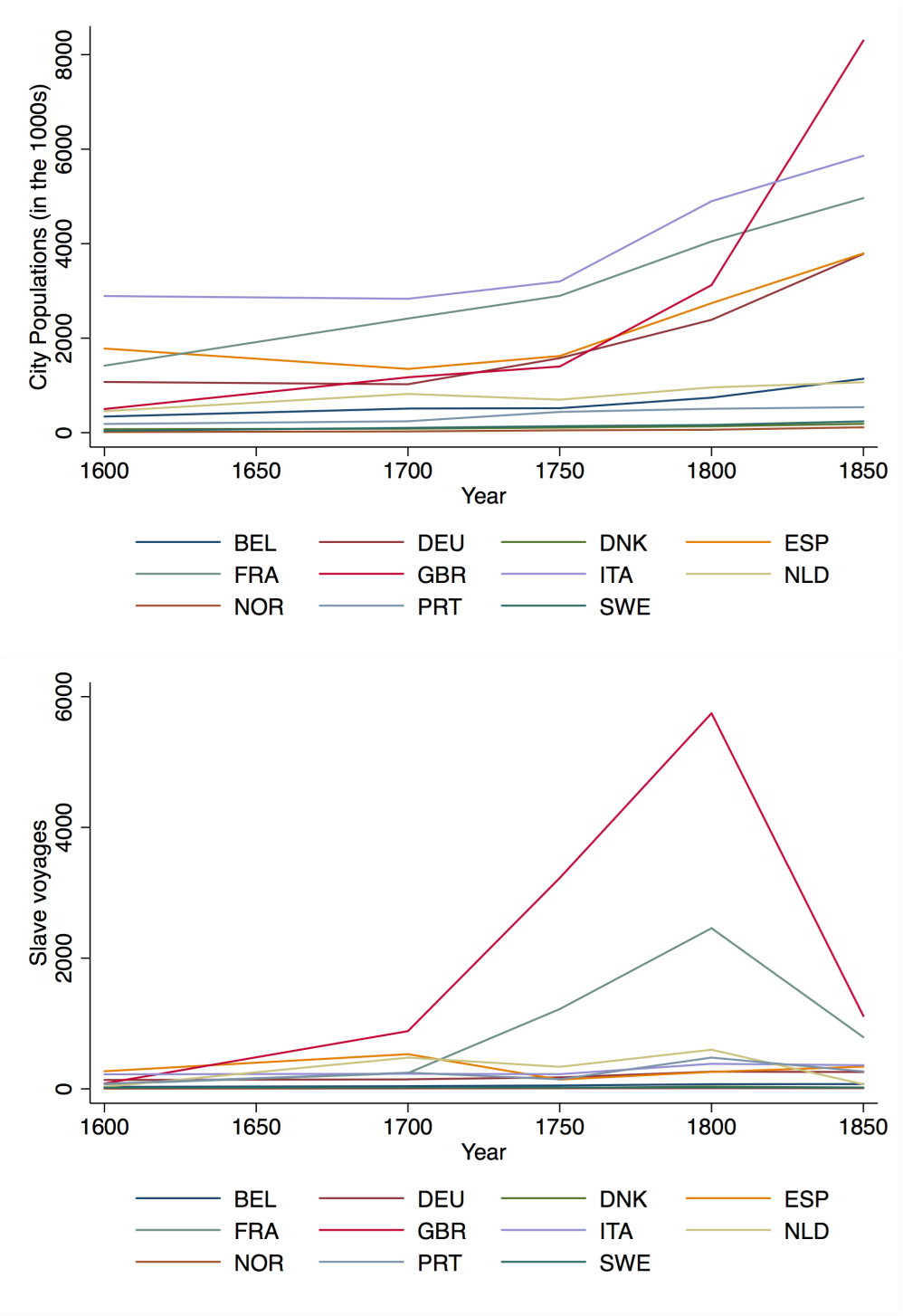
A third explanation highlights a market size effect: participation in the slave trade connected European ports to New World markets, increasing effective demand for domestically produced goods (Solow and Engerman, 2004). Tattersfield and Fowles (2011), for example, described how the opening up of the "African trade" to minor British outports allowed local merchants to solidify relationships with West Indian and North American planters, securing access to a previously untapped market for domestic manufactures. The hinterlands of slave trading ports, and of Liverpool in particular, would later become the powerhouses of the Industrial Revolution.

The analysis in this paper provides overall evidence that slave trading positively affected European and British economic development, inconsistent with the notion that the slave trade displaced potentially more lucrative economic activity or that growing ports simply selected into the trade. Relative to the counterfactual of sending fewer slaving voyages or not participating in the slave trade at all, a 10% increase in slave voyages is associated with 1.2% faster city growth, a result that is robust to several alternative specifications and definitions of the treatment and control groups. These

facilitating the transition to free labor in the 1830s.

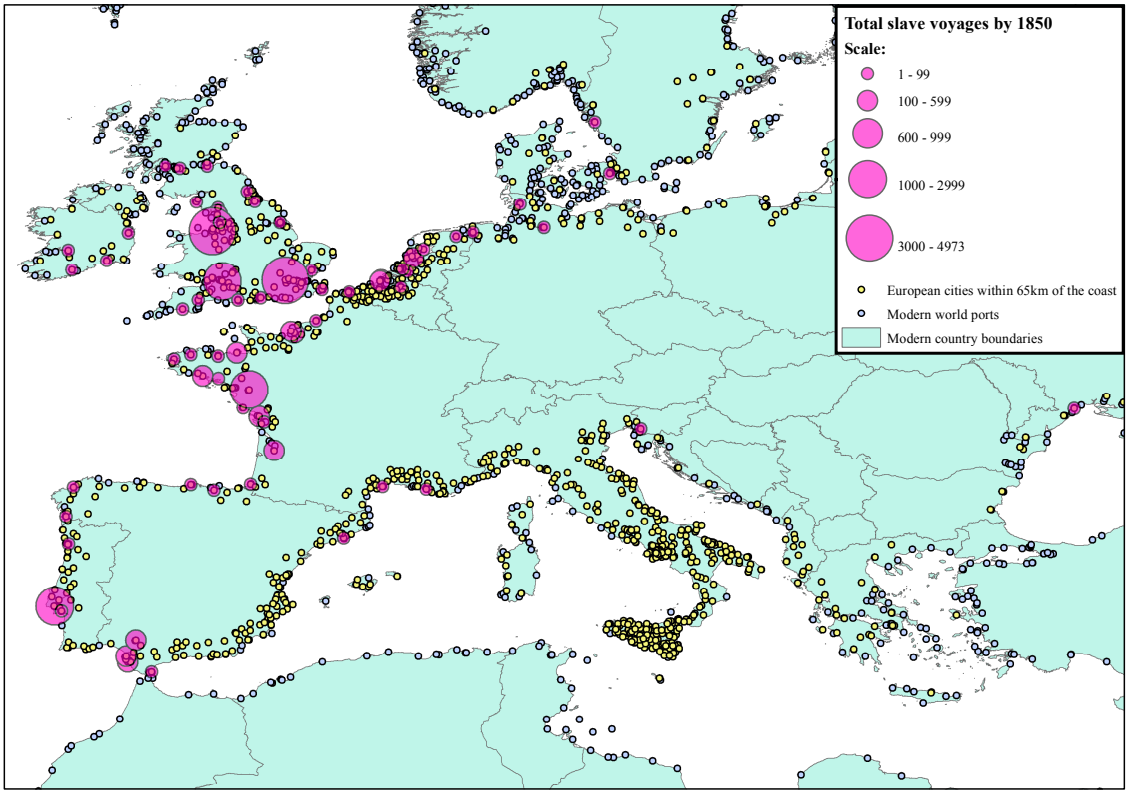
results do not, however, distinguish between any of the three explanations above. Further analysis and data collection of other trading activities of non-British ports, historical industrial activity in the UK, the trajectories of British slave ship owners and slave holders, and jurisdictional and geographic variation in the ability to participate in the trade is ongoing to separately assess the contribution of each of these channels.

Figure 1: City population and slaving voyages, 1600-1850



Data sources: City population from Nunn and Qian (2011) and total slave voyages from the Trans-Atlantic Slave Trade Database (Eltis 2010).

Figure 2: Incidence of slaving voyages across Europe, 1500-1850



Notes: In yellow are the cities in the core sample: European cities within 65 km of the coast. In blue are modern world ports. *Data sources*: Slave voyages from the Trans-Atlantic Slave Trade Database (Eltis 2010).

Table 1: Average log city populations in slaving and non-slaving coastal cities

Year	Non slave trading	Slave trading
	Europe	
1600	8.735593	10.08126
1700	8.565579	10.06487
1750	8.929687	10.27573
1800	8.978466	10.15872
1850	9.353326	10.80642
	UK	
1600	8.172439	10.52987
1700	7.875931	9.648853
1750	8.830146	9.938923
1800	9.019231	10.07458
1850	9.942948	13.08968
	UK minor towns	
1600	8.158924	8.853665
1700	7.875931	9.06514
1750	8.830146	9.306883
1800	9.019231	9.703859
1850	9.942948	

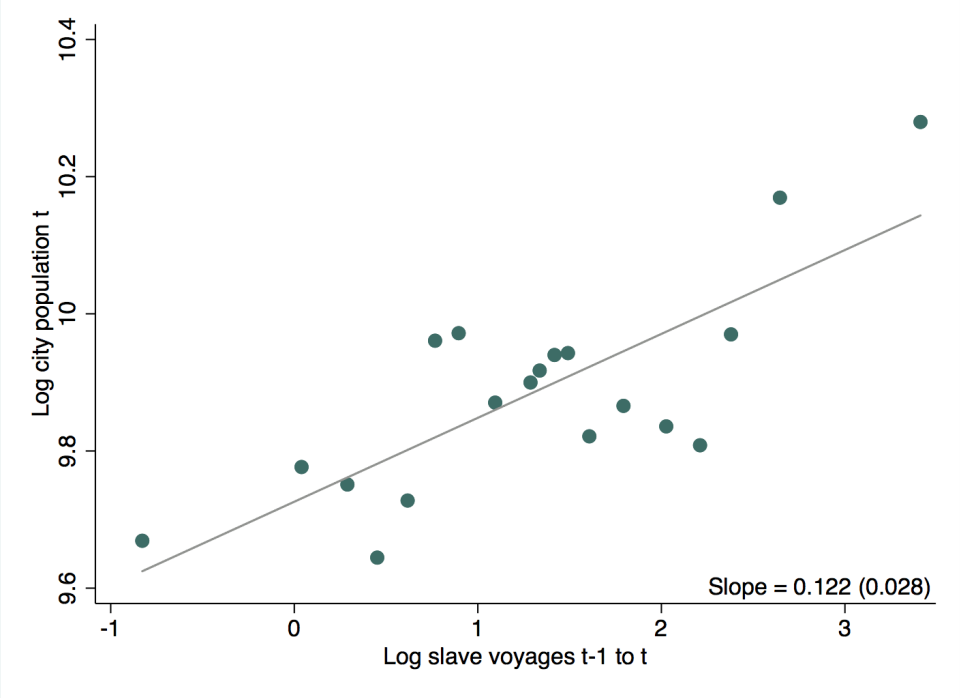
Notes: Average log city population for slave trading and non-slave-trading coastal cities in different European and UK samples. Coastal cities are defined as being within 65km of the coast, the farthest distance from the coast for any slave-trading city in the Trans-Atlantic Slave Trade Database.

Table 2: Log City Population on Log Slave Voyages

	(1) Europe	(2) Slave Traders	(3) Atlantic Traders	(4) Intensive Margin
Log slave voyages (outbound)	0.118***	0.116***	0.117***	0.122***
	(0.0318)	(0.0316)	(0.0388)	(0.0433)
City FE	Yes	Yes	Yes	Yes
Country X Year FE	Yes	Yes	Yes	Yes
N	3521	3208	1404	299
Number of Clusters	1017	906	413	68
R-squared	0.885	0.885	0.867	0.923

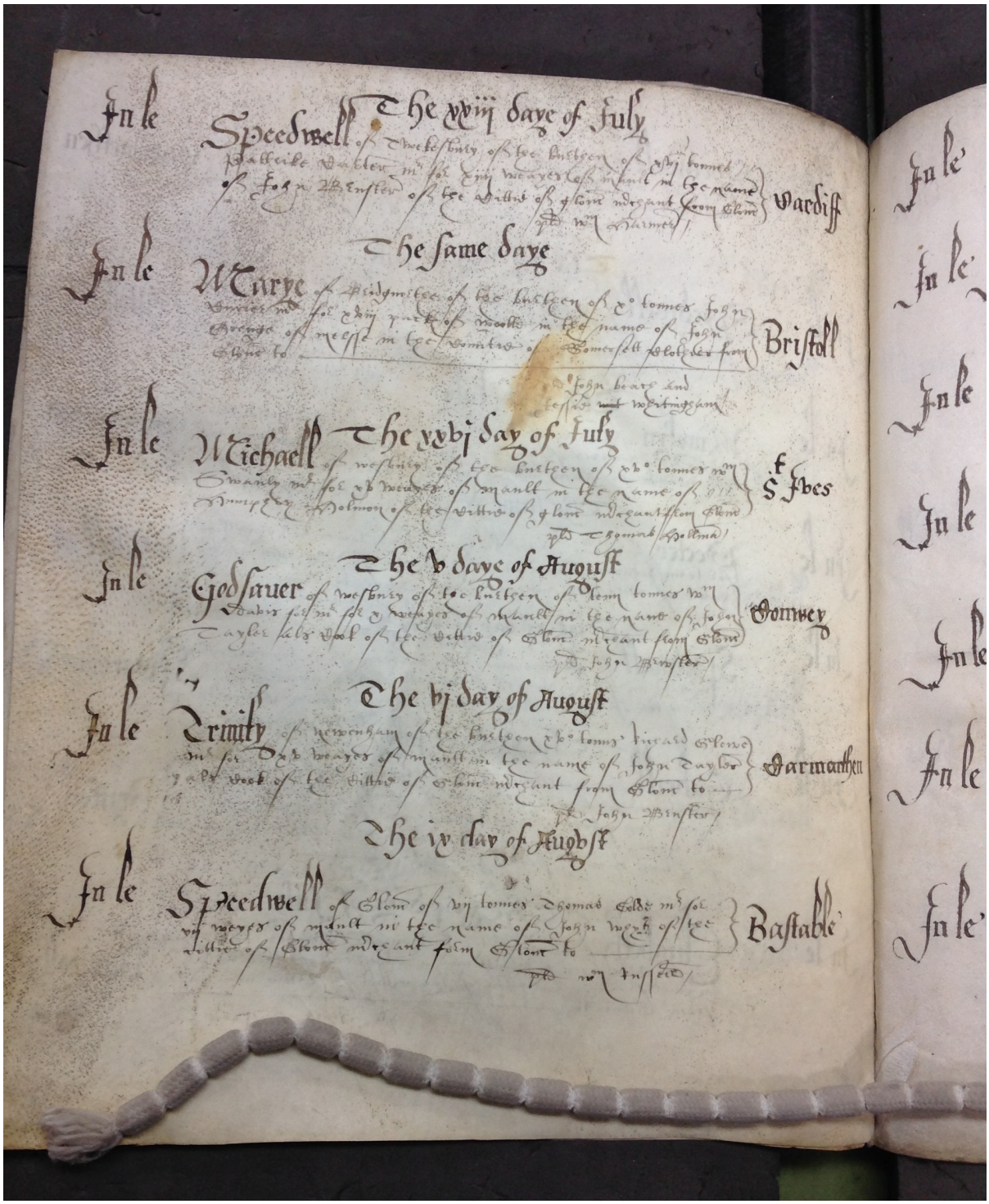
Notes: All samples restricted to cities within 65 km of the coast, the farthest distance from the coast for any slave trading city in the Trans-Atlantic Slave Trade Database sample. Column 2 restricts the sample to the slave trading countries: Britain, France, Portugal, Spain, Italy, Netherlands, Belgium, Germany, Denmark, Sweden, and Norway. Column 3 restricts to Britain, Portugal, France, and Spain. Variables are aggregated at the city-century level and span 1600-1850. Standard errors, clustered by city, in parentheses. Significance level: $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

Figure 3: Slaving voyages associated with greater city population growth across Europe



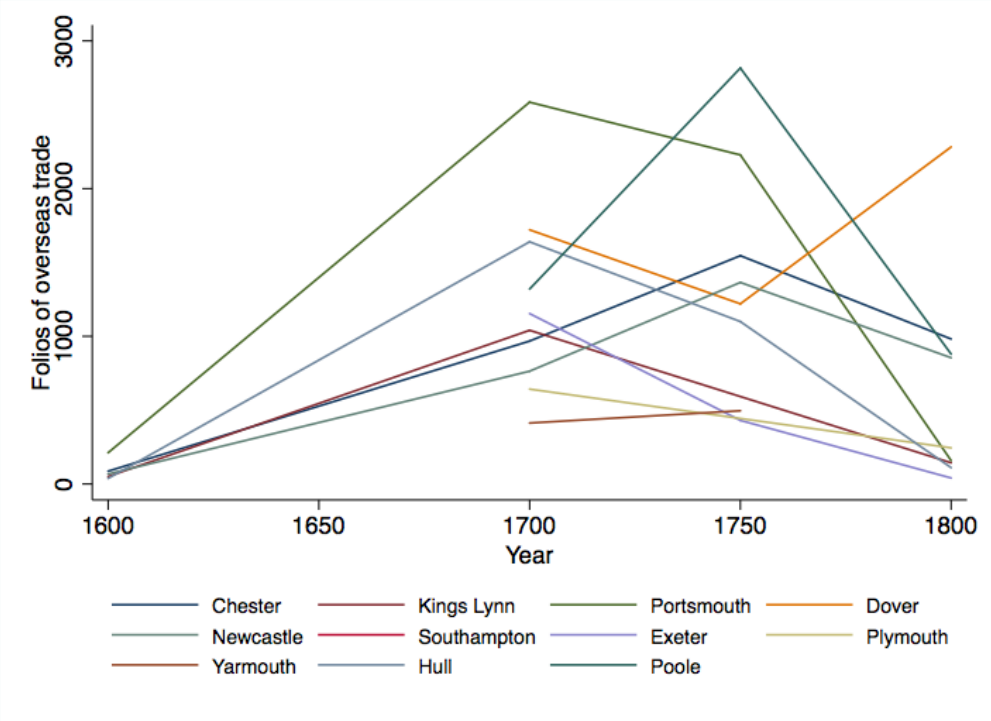
Notes: Binned scatterplot of the association between log of slave voyages sent by slave trading cities between century (or mid-century) $t-1$ and t and the log of their population in century t. Both the outcome and explanatory variable have been residualized on city and country-by-year fixed effects.

Figure 4: Sample page from the 1681 Gloucester port book



Notes: Image taken by author at the National Archives at Kew, UK. Each entry on the page above records a ship and its cargo entering the port of Gloucester.

Figure 5: Growth in overseas trade in selected British outports



Notes: Sum of folios of overseas trade over time for British outports with above median trade. *Data sources*: Data on number of folios are obtained from catalog descriptions of the port books available at http://discovery.nationalarchives.gov.uk/.

Table 3: City population on slave voyages with controls for overseas trade - minor UK towns only

	(1)	(2)	(3)
Log slave voyages (outbound)	0.0935		0.121*
	(0.0653)		(0.0687)
Log of proxy for overall overseas trade volume		0.0459*	0.0539**
		(0.0260)	(0.0258)
Year FE	Yes	Yes	Yes
City FE	Yes	Yes	Yes
N	345	345	345
Number of Clusters	133	133	133
R-squared	0.831	0.832	0.834

Dependent variable is log of city population. Sample is restricted to minor UK coastal towns (excludes London, Bristol, and Liverpool). Column 1 looks at the effect of slave voyages alone. Column 2 looks at the effect of overseas trade. Column 3 includes both log of slave voyages and log of overseas trade folios in the regression. Variables are aggregated at the city-century level and span 1600-1800.

Appendix A Additional tables and figures

Table A1: Log City Population on Log Slave Voyages

	(1) Europe	(2) Slave Traders	(3) Atlantic Traders	(4) Intensive Margin
Log slave voyages (outbound)	0.118***	0.112***	0.0862*	0.0797*
	(0.0422)	(0.0426)	(0.0516)	(0.0469)
City FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	3521	3208	1404	299
Number of Clusters	1017	906	413	68
R-squared	0.825	0.831	0.809	0.836

All samples restricted to cities within 65 km of the coast, the farthest distance from the coast for any slave trading city in the Trans-Atlantic Slave Trade Database sample. Column 2 restricts the sample to the slave trading countries: Britain, France, Portugal, Spain, Italy, Netherlands, Belgium, Germany, Denmark, Sweden, and Norway. Column 3 restricts to Britain, Portugal, France, and Spain. Variables are aggregated at the city-century level and span 1600-1850. Standard errors, clustered by city, in parentheses. Significance level: $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

Table A2: Log City Population on Log Slave Voyages

	(1) UK	(2) UK Intensive	(3) UK Minor Towns	(4) UK (Minor) Intensive
Log slave voyages (outbound)	0.140**	0.0910	0.0935	0.107
	(0.0599)	(0.0940)	(0.0653)	(0.0751)
Year FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
N	357	39	345	56
Number of Clusters	136	20	133	17
R-squared	0.871	0.951	0.831	0.873

Dependent variable is log of city population. Sample is restricted to coastal UK towns. Column 2 further restricts to slave trading coastal UK towns. Column 3 restricts to minor coastal UK towns (excludes London, Bristol, and Liverpool). Column 4 restricts to slave trading minor coastal UK towns. Variables are aggregated at the city-century level and span 1600-1800.

Table A3: City population on slave voyages with controls for overseas trade - minor UK towns only

	(1)	(2)	(3)
Log slave voyages (outbound)	0.0935		0.126*
	(0.0653)		(0.0676)
Log overseas voyages (inbound + outbound)		0.0355*	0.0424**
		(0.0194)	(0.0193)
Year FE	Yes	Yes	Yes
City FE	Yes	Yes	Yes
N	345	345	345
Number of Clusters	133	133	133
R-squared	0.831	0.832	0.834

Dependent variable is log of city population. Sample is restricted to minor UK coastal towns (excludes London, Bristol, and Liverpool). Column 1 looks at the effect of slave voyages alone. Column 2 looks at the effect of overseas trade. Column 3 includes both log of slave voyages and log of overseas trade voyages in the regression. Variables are aggregated at the city-century level and span 1600-1800.

Table A4: City population on slave voyages with controls for overseas trade - minor UK towns only

	(1)	(2)	(3)
Log slave voyages (inbound + outbound)	0.0770		0.102
	(0.0634)		(0.0681)
Log overseas voyages (inbound + outbound)		0.0355*	0.0414**
		(0.0194)	(0.0193)
Year FE	Yes	Yes	Yes
City FE	Yes	Yes	Yes
N	345	345	345
Number of Clusters	133	133	133
R-squared	0.831	0.832	0.834

Dependent variable is log of city population. Sample is restricted to minor UK coastal towns (excludes London, Bristol, and Liverpool). Column 1 looks at the effect of slave voyages alone. Column 2 looks at the effect of overseas trade. Column 3 includes both log of slave voyages and log of overseas trade voyages in the regression. Variables are aggregated at the city-century level and span 1600-1800.