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

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Abstract

Why over the past five centuries did West European countries grow faster than, and come to dominate, the rest of the world? This paper documents a pattern in the Rise of (Western) Europe that is relevant in thinking about this question: much of the economic development of Europe between 1500 and 1850 is accounted for by the growth of Atlantic nations and Atlantic ports. Western European cities that are not Atlantic ports and West European nations without access to the Atlantic exhibited similar growth to their Eastern European counterparts between 1500 and 1850, while Atlantic ports and Atlantic nations grew much faster.

This evidence suggests that the opportunity to engage in Atlantic trade played an important role in the Rise of Europe, and weighs against theories that view post-1500 European growth as a direct consequence of some pre-existing European characteristics, such as culture, religion, Roman heritage, geography or pre-1500 European institutions. Instead, post-1500 European growth appears to have been shaped by the interaction between Atlantic trade and these other characteristics.

On the basis of the patterns we find in the data and our reading of historical developments during this era, we advance the hypothesis that the Rise of Europe reflects the effect of Atlantic trade and of institutional change induced by Atlantic trade. After the discovery of the New World and the trade routes from the Atlantic to Asia in the late 15th century, European trading activity grew remarkably. We argue that this growth in trade strengthened the commercial bourgeoisie in a number of Western European countries, and enabled commercial interests to demand and obtain changes in institutions to protect their property rights. We suggest that the indirect effects of Atlantic trade through institutional change, as well as its direct effect, account for much of Western European growth from 1500 to 1850. Moreover, we argue and document that the most significant institutional changes and consequently the most substantial economic gains occurred in nations with non-absolutist initial institutions, which enabled merchants to benefit from Atlantic trade. Therefore, the Rise of Europe seems to be driven by capitalist development resulting from the interaction between existing institutions and the economic opportunities offered by Atlantic trade.

Consistent with our interpretation, there is a strong relationship between institutional changes protecting the property rights of capital and the expansion of Atlantic trade; a large fraction of the differential increase in income in Western Europe can be explained as the effect of improved institutions on economic performance; and in regressions of European economic growth, there is a strong interaction term between measures of initial institutions and access to the Atlantic.

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"[C]ommerce and manufactures gradually introduced order and good government, and with them, liberty and security of individuals, among the inhabitants of the country, who had before lived almost in a continual state of war with their neighbours, and of servile dependency upon their superiors. This, though it has been least observed, is by far the most important of all of their effects." (Adam Smith, *The Wealth of Nations*, Book III, Chapter IV).

"The discovery of America, the rounding of the Cape, opened up fresh ground for the rising bourgeoisie. The East-Indian and Chinese markets, the colonization of America, trade with the colonies, the increase in the means of exchange and commodities generally, gave to commerce, to navigation, to industry, an impulse never before known, and thereby, to the revolutionary element in the tottering feudal society, a rapid development". (Marx and Engels, *The Communist Manifesto*).

1 INTRODUCTION

The world we live in—both our material standards of living and our society—has been shaped by the process of rapid economic growth that started in the 19th century and in Europe, more specifically in Western Europe. An explanation for Western European economic growth must therefore be part of any (unified) theory of the causes of long-run growth. It is now commonplace to see the roots of this rapid economic growth and the associated Industrial Revolution in the economic, political and social developments in (Western) Europe over the preceding centuries.[1] North and Thomas (1973), for example, take 1500 as the cutoff period between the pre-modern era and the modern period of growth, while Cipolla argues: "the Industrial Revolution was only the final phase, the coherent outcome of historical development which took place in Europe over the first seven centuries of our now expiring millennium" (1981, p. xiii). There is little agreement, however, on the causes of "the Rise of (Western) Europe".

This paper presents a new fact on the patterns of European economic development: almost all of the differential growth of Western Europe (European nations west of the Elbe) during the critical 16th, 17th and 18th centuries is accounted for by the differential

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[1]See, among others, North and Thomas (1973), Brenner (1977), Jones (1981), Hall (1985), Mann (1986), Rosenberg and Birdzell (1986), Bairoch (1988), and Mokyr (1990).

growth of countries with direct access to the Atlantic (Belgium, Britain, France, Ireland, the Netherlands, Portugal and Spain, in short, "Atlantic nations"). Moreover, Atlantic ports themselves are responsible for much of the Western European urban expansion during these centuries. Although many historians have noted the surge in a number of Atlantic ports and the importance of Britain and the Netherlands for economic growth during this period (e.g., de Vries, 1984, and Braudel, 1992), we are unaware of any other work documenting the extent of differential growth of Atlantic nations, and how this growth accounts for almost all of the differential growth of Western Europe relative to Eastern Europe.

We argue that these patterns weigh against theories of the Rise of Europe based on certain distinctive European characteristics dating back to the pre-1500 period, such as religion, culture, Roman heritage, European geography or even pre-1500 institutions. Instead, they favor theories that explicitly incorporate the importance of Atlantic trade, following the discovery of the New World and the passage to Asia via the Cape of Good Hope.

In the second part of the paper, we develop our own hypothesis to account for these facts. This hypothesis emphasizes the importance of Atlantic trade—that is, trade with the New World and as well as trade with Asia which predominantly relied on Atlantic shipping—for the process of Western European growth. But what was central to early European economic development was not the direct effect of Atlantic trade. In fact, in contrast to some existing accounts such as those of Eric Williams (1944), Andre Gunder Frank (1978), and Immanuel Wallerstein (1974-1980), it seems that profits made in Atlantic trade and the resources transferred from the New World and Asia cannot by themselves account for the Rise of Europe. Instead, as stressed by North and Thomas (1973), the rise of capitalist institutions, which constrained expropriation by various monarchies, encouraged commerce and production for the market, and enabled the emergence of new organizational forms and technologies, appear essential for Western European growth. North and Thomas link European institutional change to demographic factors and to the extent that they explain differences between European nations they do so by positing exogenous differences in political institutions. However, we argue that Atlantic trade was essential for the emergence and strengthening of capitalist institutions, and explain why it was the Atlantic nations, and more specifically, Britain and the Nether-

lands, that experienced the most rapid economic development. Our hypothesis is that trade enriched and strengthened the merchants of Atlantic nations, and enabled them to demand and obtain institutions to protect their property and commerce. We argue, therefore, that it was as much this indirect consequence of Atlantic trade as the direct profits that flowed from it that are responsible for the Rise of Europe.

It seems unlikely that it was simply the opportunity to trade in the Atlantic that unleashed the process of Western European growth, however. After all, Indian and Chinese merchants could have sailed the Atlantic to dominate trade with Europe, or the West African merchants could have sailed to the New World. But they did not. Moreover, the Vikings discovered the New World centuries earlier, but lacked the technology and institutions to trade with (or exploit) the native population of this continent and to benefit from this discovery (Crosby, 1986). Certain institutional structures and sufficient economic and social development therefore appear necessary to induce explorations and exploitation of profit opportunities.

Relatedly, the main beneficiaries of the trade with the New World and Asia were not Spain and Portugal, the first movers, but Britain and the Netherlands, the latecomers. Why? Our answer is that it was societies with an institutional structure that enabled merchants to get rich from trade that experienced the necessary institutional changes. In Spain and Portugal, the Crown was the main beneficiary of the early profits from trade and plunder, and this served to strengthen the Crown in its power struggle against the merchants rather than benefiting the merchants themselves. Based on this evidence and reasoning, our hypothesis is that the *interaction* between initial conditions, especially initial institutional structure and the degree of absolutism, and the opportunity to profit from Atlantic trade were essential for the Rise of Europe. In nonabsolutist countries, merchants got involved in Atlantic trade and enriched themselves, and then played an important role in inducing institutional developments, unleashing a much larger economic potential from the rest of the society, and arguably paving the way for industrialization.

The view that both Atlantic trade and initial institutions were important for post-1500 economic development also receives support from the experience of Italy. Although Venice and Genoa were arguably the most developed parts of Europe in the 15th century and possessed probably the most capitalist institutions at the time, they did not have

easy access to the Atlantic, especially given that Spain (and later Britain) controlled the Straits of Gibraltar. As a result, Italy did not take part in and benefit from Atlantic trade, so their institutions did not develop further and their economies stagnated. Therefore we argue, contrary to North and Thomas (1973), that although differences in initial institutions are important, they cannot explain the pattern of comparative development on their own—one needs to understand the role of the expansion of Atlantic trade.

At this level, our hypothesis on the origins of the Rise of Europe and our explanation for the facts that we document in the first part of the paper are speculative. Nevertheless, we provide a variety of quantitative and historical evidence to support our interpretation. We show that institutional changes in Atlantic nations can account for a large fraction of economic growth in these areas, and we also show that a major quantitative determinant of economic growth during this period is the interaction between initial institutions and the opportunity to trade in the Atlantic. Clearly, much more work is needed to compare our hypothesis to alternatives. Yet, we believe that the main fact documented in this paper is important in understanding the Rise of Europe, and future theories have to confront this fact, even if they disagree with our interpretation.

The rest of the paper is organized as follows. In the next section we outline the main patterns and our basic hypothesis, as well as argue why these issues are important in understanding the process of early growth and perhaps even the determinants of modern growth. Section 3 presents regression evidence on the Rise of the Europe, and shows that the patterns outlined in Section 2 are robust. It also discusses the implications of these patterns for existing theories of the Rise of Europe. Section 4 develops our hypothesis for the Rise of Europe and the role played by Atlantic trade in this process. In this section, we also provide historical evidence supporting our interpretation. In Section 5, we introduce a number of quantitative measures of European institutions for the period between 1300 and 1850, and show that their evolution is closely linked to Atlantic trade. This section also documents that the effect of institutions on economic performance can account for the importance of Atlantic trade in the process of European growth. Section 6 discusses the role of initial institutions in determining which countries took advantage of the opportunities presented by Atlantic trade. Section 7 concludes.

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2   Outline, Basic Patterns and Summary

Understanding the process of European growth is important both because our current society and economy are, in some sense, direct consequences of this process, and also because the takeoff of Europe likely contains useful lessons for understanding the determinants of long-run performance today. Nevertheless, there is little consensus on the fundamental causes of the Rise of Europe. Instead, there are many distinct and diverse theories.

Despite the richness of these various theories, it is useful to separate them into two broad sets of hypotheses. According to *the European distinctiveness hypothesis*, the Rise of Europe reflects certain distinctive European characteristics. This view maintains that the process of European growth started long before 1500, perhaps dating as far back as the Roman and ancient Greek times. While a number of scholars, most notably Max Weber (1905), Lynn White (1962), Eric Jones (1981), and David Landes (1988), stress cultural factors and the importance of Roman heritage, others, such as Eric Jones (1981), John Hall (1985), Michael Mann (1986) and Paul Kennedy (1987), emphasize the importance of competition among various polities and cultures in premodern Europe in leading to distinctive European institutions. Yet others, including again Jones (1981), and also Charles Tilly (1990) and Jared Diamond (1997), see at least part of Europe's distinctiveness as related to its geographic characteristics, especially those making the emergence of a single large empire impossible.

The alternative view, *the European transformation hypothesis*, sees the Rise of Europe as a result of significant changes that happened in the post-1500 era. One version of this hypothesis relates European transformation to the discovery of the New World and Atlantic sea routes to Asia. The most extreme form of this would be the view put forth by Eric Williams (1944), Andre Gunder Frank (1978), Immanuel Wallerstein (1974-1980), James Blaut (1993), and Kenneth Pomeranz (2000) that European growth reflects the transfer of resources from other parts of the world. A weaker version of this hypothesis would emphasize the interaction between the opportunities offered by Atlantic trade and certain institutional or other characteristics of European economies.[2]

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[2]After all, there must have been some distinctive characteristics of European nations circa 1500 that made them, and not, for example, the West African nations, the ones to discover the New World and the Atlantic see routes to Asia, or enabled them to colonize the New World instead of being colonized by the civilizations there.

Perhaps the most convincing version of the European transformation hypothesis is the view forcefully advocated by North and Thomas (1973), North (1981), and De Long and Shleifer (1993), that the rise of Europe is a consequence of the development of capitalist institutions providing property rights protection to merchants and producers, and broadly encouraging investment. North and Thomas (1973, p. 1) state: "the development of an efficient organization in Western Europe accounts for the rise of the West". But why did these institutions and efficient organizations develop in Europe? Why starting in the 16th century? And why only in certain parts of Europe?[3]

As discussed in the introduction, this paper documents a set of facts related to the process of European growth between 1500 and 1850, and hypothesizes new answers to these questions along the lines of the European transformation hypothesis, emphasizing both the importance of Atlantic trade and the development of capitalist institutions in Europe after 1500. The fact that is at the center of our paper is that *the Rise of Europe between 1500 and 1850 was to a large extent the rise of Atlantic nations and Atlantic ports.*

To document this fact, we make use of three different sources of data: (1) estimates of urbanization based on the urban population numbers of Bairoch, Batou and Chevre (1988) and population estimates of McEvedy and Jones (1978), as well as estimates of urbanization rates in Asia by Bairoch (1988). These estimates are available for a large number of countries dating back to 1000. Bairoch (1988, Ch. 1) and de Vries (1976, p. 164) argue that only areas with high agricultural productivity and a developed transportation network could support large urban populations. In addition, in Acemoglu, Johnson and Robinson (2002) we presented detailed evidence documenting that both in the time-series and the cross-section there is a close association between urbanization and income per capita. We therefore take urbanization as a proxy for GDP per capita in a country. (2) estimates of GDP per capita from Maddison (2001). These estimates start in 1500, and often are no more than educated guesses, especially before 1870. We

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[3]North and Thomas, following Postan (1975), emphasize the importance of demographic factors, particularly the Black Death, in the development of capitalist institutions. Yet population declines had occurred before the 14th century, and as Brenner (1977) emphasizes, population collapse in Eastern Europe led to a reintensification of feudalism rather than capitalism. Moreover, even if one accepts the demographic view, since the general trends in population were similar in much of Europe, it would not explain why economically efficient institutions emerged in Atlantic nations, and especially in Britain and the Netherlands, and not other places in Europe.

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therefore think of these GDP data as a check on our results using urbanization data. (3) estimates of the population of individual European cities from Bairoch, Batou and Chevre (1988). These data begin in 800, and there are estimates for every 100 years until 1700, then for every 50 years. However, Bairoch, Batou and Chevre emphasize that estimates before 1300 are very rough. We use their data beginning in 1300 to investigate which urban centers were driving demographic and economic growth, and also to contrast the growth of Atlantic ports to other European ports and to inland cities.

Figure 1 Panel A shows that urbanization in Western Europe grew significantly faster than in Eastern Europe after 1500.[4] In the figure, all series are normalized to the same value in 1300 to facilitate comparison. In 1300 there were already marked differences between these areas. While urbanization was 8.9 percent in Western Europe, it was only 4.1 percent in Eastern Europe, but 11 percent in Asia because of the relatively high estimates of urbanization in India and China at the time. In the subsequent centuries, there was considerable divergence. While urbanization in Western Europe grew by almost a factor of 2.5, there was a substantially slower increase in Eastern Europe, and stagnation and decline in Asia.

But Panel B of Figure 1 shows that these differential trends are due in large part to growth by Atlantic nations.[5] Non-Atlantic Western Europe (Austria, Denmark, Germany, Italy, Norway, Sweden and Switzerland) started with a relatively high urbanization rate of 9.8 percent, but grew at approximately the same rate as Eastern Europe from 1500 to 1850, by a factor of less than 2, to reach 16.9 percent in 1850. Instead, Atlantic nations started with an average urbanization rate of 8.4 percent in 1300, which almost tripled in the subsequent 550 years to reach 24 percent in 1850 (see also Table 1).

Figure 2 Panels A and B show that the same pattern is present in the GDP per capita data. Average GDP per capita (based on Maddison's numbers) among non-Atlantic

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[4]For the purposes of this paper, Western Europe is taken to be Austria, Belgium, Britain, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland. Eastern Europe is all European countries to the east of the Elbe, including Russia. West European cities are all cities located in these countries. We refer to all non-Western European cities in Europe as "Eastern European". All averages are weighted by current population, using numbers from McEvedy and Jones (1978).

[5]In the regression analysis below, we use a more continuous variable to measure potential for Atlantic trade, instead of the Atlantic nation/non-Atlantic nation distinction here, which also takes into account that countries such as Denmark, Germany and Norway had access to the Atlantic.

Western European nations was $860 (in 1990 international Geary-Khamis dollars), and $723 among Atlantic nations. While GDP per capita rose by under 30 percent among Atlantic nations to $1109 in 1820, it increased by a factor of almost 2 among Atlantic nations to reach $1282. Note that the differential growth advantage of Atlantic Western Europe emerges mostly after 1600 and coincides with the surge in Atlantic trade, i.e., trade with the New World, and with Africa and Asia via the Atlantic. This is shown in Figure 3, which depicts three measures of Atlantic trade and indicates how Atlantic trade developed after the discovery of the New World and the passage to Asia around the Cape of Good Hope.[6]

Figure 4 uses city level data to further substantiate our main finding. The more rapid growth in Western Europe is driven almost entirely by Atlantic ports: non-Atlantic Western European cities behave very similarly to Eastern European cities.[7] Figure 5 shows that these post-1500 developments reflect growth in Atlantic ports, not simply growth in all European ports (and for this purpose also distinguishes Atlantic ports from North Sea ports). Figure 6 demonstrates that the timing of the rise of specific Atlantic ports coincides with the dominance of their respective countries in the Atlantic. We see Iberian Atlantic ports grow rapidly during the 16th century, Dutch Atlantic ports during the 17th century and French Atlantic ports during the 18th-century.[8]

What do these patterns imply about the fundamental causes of Western European growth? And why did Atlantic ports surge after 1500? Theories based on the European

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[6]Our measure of Atlantic trade is constructed as follows: we start with the estimate of the Royal Geography Society (1997, pp. 34-35) of the number of Atlantic voyages in 1400 and 1500. From 1500 onwards, we assume that the number of voyages grew at the same rate as overall Atlantic trade, and use the growth rates of overall trade provided by O'Rourke and Williamson (2001). O'Rourke and Williamson exclude the slave trade, so we add total number of slave trade voyages from Eltis et. al. (1999).

[7]These figures use data from a balanced panel of 169 West European cities and 24 East European cities. To be in this panel, a city must be present in the original data for every year. We present results from a much larger unbalanced data set below. A list of Atlantic ports is given in the Appendix.

[8]British Atlantic ports are not shown in this figure since they grow so rapidly from 1700 that this makes the rest of the pattern hard to see.

The patterns shown in Figures 4-6 are consistent with existing direct evidence on the growth of Atlantic ports. Bairoch (1988, p. 140) states: "Lisbon, with a population of some 15,000 in 1200, became with its new population of 130,000 one of the dozen or so great cities of the first years of the seventeenth century. Amsterdam, a simple fishing village with a population of perhaps 1,000 in 1300, had nearly 50,000 around 1600 and 200,000 by the start of the eighteenth century." In the meantime, the population of Seville rose from 45,000 to 135,000 during the 1500s and then fell back to 72,000 in 1700 and dropped further after its port partially silted up in the early 1700s.

distinctiveness hypothesis could only explain these facts as the continuation of some pre-1500 trends. But the evidence reviewed below suggests that these patterns emerge after 1500, and are related to the discovery of the New World and the passage around the Cape of Good Hope.

These patterns therefore weigh in favor of theories based the European transformation hypothesis, and specifically those emphasizing the importance of Atlantic trade. Probably the most straightforward of these theories is the one originally formulated by Eric Williams (1944), arguing that the profits from trade with the New World and slavery spurred European growth. This explanation is popular among many Marxist historians. For example, Gunder Frank (1978) argues that the transfer of silver and gold from the New World was essential to kick start capital accumulation in Europe. In a much-quoted passage, he states: "The production of these precious metals was the principal functional contribution of the New World regions to the expansion of trade in the world, the accumulation of capital in the European metropolis and the development of capitalism" (p. 44). However, it is also possible that Atlantic trade played an important role in the Rise of Europe not because of its direct effects, but *indirectly by unleashing other social changes.*

Whatever the exact mechanism, the surge in Atlantic trade shown in Figure 3 and the profits from this trade undoubtedly contributed to economic growth in Europe. But existing evidence suggests that neither the profits generated by international trade nor the volume of trade were large enough to be directly responsible for the process of growth in Europe. For example, O'Brien (1982) estimates that, even with the most favorable calculations, total flow of profits to Britain from international trade with less developed regions of the world amounts to less than half of gross British investment at the time, so given reasonable saving rates, the contribution of trade with the rest of the world to European capital accumulation is modest. He concludes that trade with these regions "... could in no way be classified as decisive for economic growth of Western Europe". Engerman (1972) reaches similar conclusions regarding the effect of the slave trade on British capital formation. So on the basis of available evidence it appears that Atlantic trade was not the "engine" of European growth solely through its direct impact on profits or resources, though undoubtedly greater trading opportunities did contribute to growth (see Morgan, 2000, for an overview of this debate).

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We therefore lean towards an explanation emphasizing the indirect, in addition to direct, effects of Atlantic trade. More specifically, we argue that Atlantic trade had a powerful indirect effect on Western European growth through its impact on *institutional change*.

Our hypothesis is that the Rise of Europe resulted from the development of capitalist institutions, which themselves emerged, at least in part, as a consequence of the rise of Atlantic trade. Perhaps the most enduring consequence of the Atlantic trade was the shift in the balance of power between the monarchy and commercial interests, and the consequent development of capitalist institutions protecting the property rights of commercial and subsequently industrial interests. Long-distance trade required guarantees for merchants making these long-term investments, and necessitated changes in institutions. More important, the profits from Atlantic trade increased the economic and political power of the commercial interests, and the Western European (Atlantic) bourgeoisie demanded and obtained more protection and more political power, eventually rising to political and social supremacy.

We therefore argue, following North and Thomas (1973) and North (1981), that capitalist growth relied him the development of capitalist institutions. But we also suggest that capitalist institutions in turn needed the nascent bourgeoisie to gain strength, which they did in Europe thanks to the rise of Atlantic trade. Hence, our answer to the question of "why in Europe" and "why beginning in the 16th century" emphasizes *the effect of international trade on institutional development*: from 1500 onwards the rise in Atlantic trade strengthened European commercial interests and enabled them to obtain the institutional changes necessary for capitalist growth.[9]

The theory of institutions underlying this interpretation is one where institutional change, even when socially beneficial, will be resisted by some social groups because it will reduce their economic rents, and because groups that gain from the process of institutional change cannot commit to compensate the losers. Accordingly, the process of institutional change involves significant conflict between different social groups (see North, 1981, Olson, 1982, and Acemoglu and Robinson, 2000b, 2002). In the case of

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[9]Naturally, the argument that Atlantic trade strengthened European commercial interests does not imply that without Atlantic trade, the European bourgeoisie would not have eventually secured the development of capitalist institutions. In fact, before the rise of Atlantic trade, merchants dominated North Italian city states.

Europe, we also document that the rise of institutions protecting the commercial and industrial interests was indeed the result of conflict between different social classes. In addition, we show a close association between the development of capitalist institutions and Atlantic trade: capitalist institutions developed in countries with major Atlantic ports and in the immediate aftermath of the rapid expansion of Atlantic trade. Moreover, changes in institutions that appear to have been driven by Atlantic trade account for the bulk of the increase in income in Western Europe, as well as the differences in economic performance among Western European nations between 1500 and 1850.

Notice that a key link in our theory is the strengthening of merchants as a result of the profits from Atlantic trade. The extent to which merchants benefited from Atlantic trade was not uniform among Atlantic nations, however. While the primary beneficiaries from trade in Britain and the Netherlands were the merchants, in Spain and Portugal trade was tightly controlled by absolutist monarchs, and a substantial fraction of the revenues went to their coffers. As a result, Atlantic trade enriched and strengthened British and Dutch merchants, whilst also strengthening the Spanish and Portuguese monarchies in their power struggle against nascent and more "progressive" social groups. Therefore, our theory suggests that the beneficial effects of Atlantic trade should be more pronounced when initial institutions give more power to the commercial bourgeoisie, and offers an explanation for why it was the British and the Dutch that were the main beneficiaries of the growth opportunities offered by Atlantic trade, and not Spain and Portugal which had started the 16th century with highly absolutist regimes.

The patterns of West European growth we document in this paper are in line with the emphasis of a number of historians, including, among others, Bairoch (1988), Braudel (1992), Davis (1973a), de Vries (1984), and de Vries and van der Woude (1997). For example, de Vries (1984, p. 141) writes: "In every period capitals and ports contribute substantially to European urban growth, but in the period 1600-1750 they are pre-eminent... Of the ports, Atlantic ports active in inter-continental trade are most conspicuous in 1600-1750." Nevertheless, we are unaware of any other studies that document the quantitative importance played by Atlantic nations and Atlantic ports, or note that the differential growth of Western Europe is largely accounted for by the growth of Atlantic nations.

On the theoretical side, our approach could be viewed as a "marriage" between the

emphasis placed by Marxist historians on the rise of the bourgeoisie and the development of the world economy (e.g., among others, Williams, 1944, Gunder Frank, 1978, Wallerstein, 1974-1980, and Hobsbawm, 1999, and for the British case Dobb, 1946, Hill, 1969, Brenner, 1993) and the emphasis on the development of capitalist institutions and secure property rights in Western Europe by North and Thomas (1973), North (1981) and De Long and Shleifer (1993). We agree with North and Thomas, and also with Jones (1981, p. 85) when he writes: "Economic development in its European form required above all freedom from arbitrary political acts concerning private property". And yet, differently from these approaches, we offer an explanation for why strong private property rights emerged in Western Europe and starting in the 16th century based on the importance of Atlantic trade for the development of capitalist institutions.

Our theoretical approach is also related to Rogowski (1989), who links political coalitions to factor prices, which are in turn determined by the patterns of trade. For example, he argues that the coalition of Iron and Rye emerged in Germany, and not Britain, because of differences in factor endowments which led to different political coalitions. Rogowski does not offer an explanation for the emergence of capitalist institutions, however, and differently from us, does not emphasize how trade might determine institutional development by strengthening the bourgeoisie.

3   Atlantic Trade and the Rise of Europe

The previous section presented evidence suggesting that the takeoff of Western Europe after 1500 is largely accounted for by rapid growth among Atlantic nations, and that the urban expansion of Western Europe is driven mostly by the phenomenal growth of Atlantic ports. In this section, we use regression analysis to quantify these results further and show that they are robust to a variety of controls and specifications. We will also discuss the implications of these results for the two major hypotheses on the origins of European growth: the European distinctiveness and European transformation hypotheses.

3.1   Economic Growth in Western Europe

We start with data on cross-country differences in economic development. As noted before, in this exercise we use data on the patterns of urbanization from Bairoch, Batou

and Chevre (1988) and Bairoch (1988), and also Maddison (2001)'s estimates of GDP per capita. Table 1 gives some raw numbers for urbanization and income per capita at various dates. The first column is for the whole sample and is unweighted. The second column is weighted by current population, so gives a better sense of the aggregate changes. The remaining columns give weighted means for Atlantic nations (Belgium, Britain, France, Ireland, the Netherlands, Portugal and Spain), and for non-Atlantic Western European countries (Austria, Denmark, Germany, Italy, Norway, Sweden and Switzerland), for Eastern European countries and for the Asian countries in our sample. These numbers are directly comparable to those shown in Figures 1-3, and reinforce the patterns depicted there. In the regression analysis, we will report both weighted and unweighted results.

The bottom third of the table also gives our estimates of constraints on the executive, which we will use to measure institutions. This variable is described in greater detail and used in Section 5.

Our main measure of economic prosperity is the urbanization rate in the country. Figures 1A and 1B above show the evolution of urbanization rates in Western and Eastern Europe, and contrast the behavior of Atlantic and non-Atlantic nations. We can test the idea that West European growth after 1500 was due primarily to growth in countries with a high potential for Atlantic trade more formally using regressions of the following form:

$$ u_{jt} = d_t + \delta_j + \sum_{t \geq 1500} \alpha_t \cdot WE_j \cdot d_t + \sum_{t \geq 1500} \beta_t \cdot PAT_j \cdot d_t + X'_{jt} \cdot \gamma + \varepsilon_{jt}, \qquad (1) $$

where u_{jt} is urbanization (percent of the population living in urban areas) in country j at time t, and WE_j is a dummy indicating whether the country is in Western Europe, the d_t's denote year effects and the δ_j's denote country effects, X_{jt} is a vector of other covariates, and ε_{jt} is a disturbance term. In addition, PAT_j is the potential for Atlantic trade (i.e., it is a time-invariant characteristic of the country). The notation $\sum_{t \geq 1500}$ stands for a full set of interactions after date 1500.

Columns 1-3 of Table 2 only include the interaction terms between the Western-Europe dummy and the post-1500 dates, and show the differential growth of Western European countries relative to Eastern Europe. Column 1 includes data only for 1300-1850 and is unweighted, while column 2 extends the sample back to 1000. Column 3 is

the same as column 1, but weights each observation by population, so countries such as Britain, Germany, France and Italy become more important, and smaller European nations become less important. The estimate of 0.039 for Western Europe×1850 in column 1 implies that between 1300-1400 and 1850, Western European countries experienced a 4 percentage point faster increase in urbanization relative to Eastern European countries. The corresponding estimate of 0.047 in column 2 implies somewhat faster growth when the base period is taken to be 1000-1400. Column 3 shows substantially faster Western European growth when observations are weighted by population: now the differential growth of Western Europe between 1300-1400 and 1850 is over 7 percentage points.

Column 4 allows differential growth for countries by their potential for Atlantic trade, as captured by the term $\sum_{t\geq 1500} \beta_t \cdot PAT_j \cdot d_t$. Our baseline measure of potential for Atlantic trade is the ratio of the country's Atlantic coastline to its total land area, and for this baseline estimate we treat North Sea coast as equivalent Atlantic coast, thus giving positive Atlantic coastline to area numbers for Denmark, Germany, and Norway. We choose this coding as our baseline, since it is less favorable to our hypothesis (these three countries did not engage in much Atlantic trade and did not grow very fast until the 19th century).[10] Significant (and positive) estimates of β_t's imply that countries with a greater potential for Atlantic trade grew faster during the post-1500 era. The estimates in column 4 show significant effects from the Atlantic trade interactions, especially after 1700. Furthermore, the inclusion of these Atlantic trade interactions explains the *entire* differential growth of Western European nations relative to Eastern Europe. For example, the estimate for the interaction Western Europe×1850, α_{1850}, is now essentially 0 instead of 0.039 before.

The coefficients on the interaction between our measure of potential for Atlantic trade and time are statistically and economically significant. For example, the estimate for 1850, 4.58, implies an approximately 6 percentage points more urbanization growth in the Netherlands than in Italy between 1400 and 1850 (the Atlantic coastline to area ratio for the Netherlands is 0.013 and for Italy it is 0). This explains about half of the differential 12 percentage point actual urbanization growth between Italy and the

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[10]Information on the length of coastline and the land area of particular countries is taken from Integrated Coastline Management (on the web at http://icm.noaa.gov/country/ICM-pro.html). We use only Atlantic coastline, i.e., omitting any coast in the Mediterranean or the Baltic. Details are provided in the Appendix.

Netherlands from 1300-1400 to 1850.

Notice also that the estimate of β_{1500} in this column, that is the differential growth of Atlantic nations between 1300-1400 and 1500, is insignificant and small. This is reassuring, since the interaction between potential for Atlantic trade and the 1500 dummy can be thought of as a "specification check", since Atlantic trade was very small before the 16th century. The fact that β_{1500} is insignificant shows that there is no differential trade by exposure to Atlantic trade *before* Atlantic trade actually becomes important.

Equation (1) allows for an arbitrary pattern of differential growth in Atlantic nations. One might conjecture that this differential growth of Atlantic ports should be related to the volume of Atlantic trade. For this reason, in the rest of the table we estimate more restrictive models of the form

$$u_{it} = d_t + \delta_j + \sum_{t \geq 1500} \alpha_t \cdot WE_j \cdot d_t + \beta \cdot PAT_j \cdot \ln AT_t + X'_{jt}\gamma + \varepsilon_{jt}, \qquad (2)$$

where AT_t denotes total volume of Atlantic trade as defined above (see, in particular, footnote 6). The estimate of β, the coefficient on the interaction term between the (log) volume of Atlantic trade and potential for Atlantic trade at the country level, is highly significant, while the interaction terms between Western Europe and post-1500 dates are again insignificant. For example, α_{1850} is again 0. Moreover, the R^2 of this more restrictive regression is almost the same as the regression reported in column 4, 0.82 versus 0.83. This shows that the interaction between potential for Atlantic trade and post-1500 dates is likely capturing the importance of Atlantic trade, not some other parallel process.[11]

The measure of Atlantic coastline to area used in columns 4 and 5 treats Denmark, Germany and Norway as Atlantic nations. Column 9 reports results using an alternative measure which excludes the North Sea coastline, with very similar results.[12]

Other columns in Table 2 presents results from weighted regressions (column 7), from the extended sample from 1000 to 1850 (column 6), adds data from Asia (column 8)

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[11]We obtain similar results using measures of Atlantic trade that exclude slave trade.

[12]For our country level analysis, we follow our key sources in using the modern definition of countries. Therefore in our baseline estimates, we have only one estimate for Germany and Italy. If we split Italy into all its constituent political entities in 1500, we would increase the number of observations in our sample but all of the additional observations would show the same pattern: no Atlantic coastline, no real participation in Atlantic trade, and no significant growth in urbanization. See below for more detailed analysis at the city level.

and uses alternative measures of potential for Atlantic trade (columns 10 and 11). In column 10, the measure of potential for Atlantic trade is the average fraction of the population living in Atlantic ports over the whole sample period. In column 11, we simply use a dummy for Atlantic nation (defined as Belgium, Britain, France, Ireland, the Netherlands, Portugal and Spain). The results are similar to our baseline results.

Table 3 provides regression evidence illustrating the same pattern using estimates of GDP per capita from Maddison (2001). We report estimates from models of the following form:

$$\log y_{jt} = d_t + \delta_j + \sum_{t \geq 1600} \alpha_t \cdot WE_j \cdot d_t + \sum_{t \geq 1600} \beta_t \cdot PAT_j \cdot d_t + X'_{jt} \cdot \gamma + \varepsilon_{jt}, \qquad (3)$$

where y_{jt} is income per capita in country j at time t, and as before, WE_j is a dummy indicating whether the country is in Western Europe, the d_t's denote year effects and the δ_j's denote country effects, X_{jt} is a vector of other covariates, and ε_{jt} is a disturbance term. In addition, PAT_j is again the ratio of Atlantic coastline to area. Maddison reports GDP per capita for 1500, 1600, 1700, 1820 and 1870. We take 1500 as the base year, and add interactions between our measure of potential for Atlantic trade, PAT_j, and the post-1600 dates to capture the importance of Atlantic trade for the country (so there is no specification test for pre-existing trends using the interaction between PAT_j and 1500). Output numbers for 1870 are already heavily influenced by differential industrialization experiences of various countries.[13] So our baseline specification stops in 1820, but we also report regressions that extend the sample to 1870.

Parallel to our results in Table 2, Western European countries grow faster after 1500. The interaction terms between potential for Atlantic trade and the post-1600 dummies are significant and reduce the effect of Western Europe, but in the unweighted regressions, they do not totally make the Western European effect insignificant. However, in the weighted regression of column 7, the Western European effects once again become insignificant.

Column 3 of the table report more structured models similar to (2) where instead of unrestricted interactions between time dummies and PAT_j, we include $\beta \cdot PAT_j \cdot \ln AT_t$.

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[13]In Acemoglu, Johnson and Robinson (in progress), we argue that to understand the differential industrialization patterns one has take into account the differential defensive modernization responses of a number of countries, such as Germany and Austria.

Thus the estimating equation is now:

$$\log y_{jt} = d_t + \delta_j + \sum_{t \geq 1600} \alpha_t \cdot WE_j \cdot d_t + \beta \cdot PAT_j \cdot \ln AT_t + X'_{jt}\gamma + \varepsilon_{jt}. \qquad (4)$$

This more restrictive specification also shows that the differential growth of Western Europe after 1600 is closely linked to the rise of Atlantic nations.

Overall both Table 2 and Table 3 show the same pattern: when the effect of Atlantic trade is not taken into account, the estimates of α_t's are significant, positive and large—Western Europe is growing faster than Eastern Europe. Once Atlantic trade interactions are included (using either the unstructured or the more restrictive models), α_t's are typically no longer significant, or are, at the very least, reduced substantially, while the effect of Atlantic trade is very strong. We interpret this evidence as suggesting that the differential growth of Western Europe is driven by growth in countries that were engaged in Atlantic trade. Remarkably, the more restrictive specifications (2) and (4) give essentially identical results and an almost identical R^2 to the unstructured regressions, lending further support to the notion that these interactions are linked to Atlantic trade.

3.2 OTHER DETERMINANTS OF ECONOMIC PERFORMANCE

The models in Tables 2 and 3 do not control for other potential determinants of economic performance. In Tables 4 and 5, we add a variety of covariates to these models, including wars, interactions between Roman heritage and time, interactions between religion and time, and interactions between latitude and time. The overall patterns are not affected.

Weber and Landes single out religion as an important determinant of economic and social development. To assess the importance of religion we allow protestant countries to grow at differential rates by interacting a dummy for being a majority protestant country in 1600 with post-1700 dates.[14] The p-values from the joint significance tests reported

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[14] We use the historical encyclopedia of Langer (1972) as the basis for coding our religion variables (checking for more updated information in Stearns 2001). The following countries were majority Protestant in 1600: Britain, the Czech Republic, Denmark, Finland, the Netherlands, Norway, Sweden, Switzerland. Germany was largely Protestant, but the balance between Protestant and Catholic remained unclear until the end of the 1600s. The specification reported in our regression tables codes Germany as Protestant in 1600, but we have also tried coding Germany as Catholic. We have also tried a more complete alternative specification in which religion is coded directly as Catholic, Muslim, Orthodox or Protestant, with essentially identical results.

in columns 1 and 2 show that when the dependent variable is the urbanization rate, these interactions are not significant, i.e., there is no differential growth for Protestant countries once we allow for the effects of Atlantic trade. In contrast, Table 5 shows that with log GDP per capita as the dependent variable, there is a significant effect from these religion×year interactions, but this has little impact on the pattern of differential growth between Western and Eastern Europe, or between Atlantic and non-Atlantic nations.

Following the work by Tilly (1990), many political scientists view war as an important factor in the process of state building and subsequent economic development (more explicitly the idea is that countries that fight many wars will develop an effective state apparatus and bureaucracy, and this will facilitate economic development). To assess the importance of wars, in columns 3 and 4 we include a variable which is the average number of years of war (per year) during the previous period.[15] We find that this variable itself is insignificant in the urbanization regressions, though marginally significant in GDP regressions, but has no effect on the patterns documented so far.

A number of historians including Jones (1981) and Landes (1998) see the roots of Western European growth in the Roman Empire (see also Anderson, 1974a), and perhaps in the culture of Ancient Greece. To investigate whether Roman heritage is important we created a dummy that indicates whether a country was part of the Roman Empire.[16] We then interact this variable with post-1500 dates to see whether there is differential growth depending on the extent of Roman heritage (columns 5 and 6). These interactions are insignificant, and do not affect the patterns reported in the previous tables.

In columns 7 and 8 we add interactions between distance from the equator (measured

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[15]Kohn (1999) documents European wars from about 1000AD. He lists the dates of each war, together with a brief explanation of participants, duration and intensity. We exclude purely civil wars and colonial wars that took place outside of Europe. We calculate the average number of years of war in a time interval before each date in our dataset: for the preceding 100 years through 1700 and for the preceding 50 years for 1750, 1800, and 1850. We have experimented with alternative codings (e.g., dropping "minor" wars), but our main results are not affected. Kohn (1999) does not appear to provide reliable information on the wars of Finland, Greece, Slovakia, and Turkey during this period, so we drop these countries from regressions involving the "wars per year" variable.

[16]Coded from Langer (1972). Any country that was ever part of the Roman empire receives a value of one; other countries receive a value of zero. The following countries had a "Roman Heritage" according to this source: Belgium, Britain, France, Italy, the Netherlands, Portugal, Spain, and Switzerland. In our base case we do not include Bulgaria, Greece, Romania, Yugoslavia, Turkey, as these countries arguably had their Roman traditions eradicated by a long period of Ottoman rule. Including this set of countries weakens the "Roman Heritage" effect further.

as the latitude of the nation's capital) and the post-1500 dates to see whether the move of economic activity away from Southern towards Northern Europe can explain the rise of Atlantic ports. These variables are again insignificant and their addition does not affect the importance of Atlantic trade.

As a final check, in column 9 we exclude Britain. This weakens our results since Britain is the country that best fits our story. Nevertheless, the overall pattern remains unchanged.

3.3 Urban Expansion and Atlantic Ports

Both as a check on our findings using aggregate urbanization rates and GDP per capita estimates, and also to find out what areas were driving the expansion of Atlantic nations, we next turn to the data on the population of individual cities compiled by Bairoch, Batou and Chevre (1988). Figure 4 in Section 2 shows that the urban expansion of Western Europe was driven by cities that were Atlantic ports. We now document this pattern in more detail using regression evidence.

Table 6 estimates models of the following form:

$$\log U_{it} = d_t + \delta_i + \sum_{t \geq 1500} \alpha_t \cdot WE_i \cdot d_t + \sum_{t \geq 1500} \beta_t \cdot AP_i \cdot d_t + X'_{it} \cdot \gamma + \varepsilon_{it}, \qquad (5)$$

where U_{it} is urban population in city i at time t, WE_i is a dummy indicating whether the city is in Western Europe, and AP_i is a dummy indicating whether the city is an Atlantic port.[17] The d_t's denote year effects and the δ_i's denote city effects, X_{it} is a vector of other covariates, and ε_{it} is a disturbance term. All our city level regressions are weighted by average urban population during 1300-1850.

The interaction terms between the Western-Europe dummy and the post-1500 dates, the $WE_i \cdot d_t$ terms, capture the differential growth of Western Europe starting in 1500. Similarly, the interaction terms between the Atlantic port dummy and the post-1500 dates, the $AP_i \cdot d_t$'s, allow differential growth in Atlantic ports from 1500 onwards. The α_t's and β_t's are the key parameters of interest. A positive estimate of α_t implies that

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[17]See the Data Appendix for exact definition and list of Atlantic ports in our panel. In the baseline regressions, we do not classify Danish, Norwegian and German North Sea ports, in particular, Hamburg and Bergen, as Atlantic ports. This is to stack the cards against us, since these cities grew relatively rapidly, but did not directly take part in Atlantic trade. The results are stronger when the cities are included as Atlantic ports.

Western European cities grew faster than other cities between 1300-1400 and date t, while positive estimates of β_t capture the differential growth of Atlantic ports between 1400 and date t. The interaction between the Atlantic port dummy and 1500 can again be thought of as specification tests, checking whether there are differential trends between Atlantic ports and other cities before the rise of Atlantic trade. The sample for all regressions in Table 6 is the balanced panel of cities for which we have observation in each date.[18]

In column 1, only the interaction terms between the Western-Europe dummy and the post-1500 dates are included. This column also uses only data from the Bairoch et al. data set, so exclude data from Asian cities. The estimates show more rapid growth in West European cities from 1600s onwards. For example, the coefficient of 0.47 on the interaction term between the Western-Europe dummy and the 1700 dummy indicates that between 1400 and 1700 West European cities grew, on average, 60 percent (≈ 0.47 log points) more relative to East European cities.

Column 2 reports the interaction terms between the Atlantic-port dummy and the post-1500 dates, i.e., the $AP_i \cdot d_t$ terms. These interaction terms are positive and statistically and economically very significant. For example, the coefficient of 1.29 on the interaction between the Atlantic-port dummy and the 1700 dummy implies that Atlantic ports grew approximately 260 percent (≈ 1.29 log points) relative to other cities between 1300-1400 and 1700. More important, once the interaction terms between Atlantic ports and the post-1500 dummies are included, the Western European interaction terms are no longer significant. This implies that Western European cities grew on average faster than other European cities between 1500 and 1850 because Atlantic ports, which are all located in Western Europe, were growing very rapidly. The interaction between the Atlantic port dummy and 1500 is positive, but insignificant, so there does not appear to be significant differential pre-1500 trends between Atlantic port and other West European cities (see also Figure 4).

In column 3, we again turn to more structured specification of the effect of Atlantic

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[18] The focus on a balanced panel of cities avoids problems of "composition bias", which would result from the fact that cities enter the data set only once they exceed a certain threshold (typically 5,000 people). For example, if an area is growing rapidly, many cities will also grow in population and exceed the relevant threshold, but the addition of many cities with population around 5,000 will reduce the average population of the cities in this area. We look at a larger sample of cities in Table 8 below.

trade and estimate models of the form

$$\log U_{it} = d_t + \delta_i + \sum_{t \geq 1500} \alpha_t \cdot WE_i \cdot d_t + \beta \cdot AP_i \cdot \ln AT_t + X'_{it}\gamma + \varepsilon_{it} \qquad (6)$$

where recall that AT_t is total volume of Atlantic trade. Once again, the estimate of β is highly significant, and the R^2 of these more restrictive regression is almost the same as the regression reported in column 2. More important, the inclusion of the interaction term between the Atlantic port dummy and Atlantic trade is again sufficient to make the interaction between the Western-Europe dummy and the post-1500 dates insignificant. This gives further support to the notion that growth in Atlantic ports and Atlantic trade are intimately related: in the post-1500 period, these two growth processes follow exactly the same pattern.

Column 4 drops London and Amsterdam to show that the results are not driven by these two major cities. The results are very similar to those reported in columns 2 and 3. Finally, columns 5 and 6 add data for Asian cities, so now West European cities are being compared to both Eastern European and Asian cities. We only have continuous data on 10 Asian cities for the whole period from Chandler (1987) (and in addition sporadic observations on many more Asian cities which we will use in Table 8 below). The addition of the Asian cities has little effect on the results.[19]

Table 7 parallels Tables 4 and 5 and adds the same covariates at the city level when available. The results are essentially the same as in Tables 4 and 5, and none of these variables that have been suggested as important determinants of European success appear to be significant or affect the pattern that we have documented so far. The only noteworthy difference from Tables 4 and 5 is that the interaction terms between distance from the equator and time are now also significant, especially after 1700, though they do not affect the differential pattern of growth by Atlantic ports. The significance of these interactions presumably reflects the shift of urban populations away from Portuguese and Spanish cities to British and Dutch ports. Recall, however, that these interactions between time and distance from the equator were not significant in the cross-country regressions.

All the estimates shown so far use a balanced panel of cities. As discussed in footnote 18, this avoids potential "composition biases" due to the addition of smaller cities in

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[19]In the specifications reported in Table 2, we do not include interactions between an Asian city dummy and the post-1500 dates. Including such interactions has no effect on the results.

later dates. On the other hand, it is important to know whether the importance of Atlantic ports for Western European growth holds in a larger sample of cities. In Table 8, we look at a larger set of cities between four dates 1300, 1500, 1700 and 1850. The first three columns include cities for which we have data in both dates. This sample is larger than the one used in Tables 6 and 7, since the criterion for inclusion there was no missing observations at all dates between 1300 and 1850. In all columns, the same pattern emerges: there is no differential growth of Atlantic ports between 1300 and 1500, but significantly faster growth between 1500 and 1700, and also between 1500 and 1800. Moreover, as in Tables 6 and 7, allowing differential growth for Atlantic ports explains all of the faster growth of Western Europe relative to Eastern Europe between 1500 and 1700. When Asian cities are included, the Western European effect between 1500 and 1800 is significant even after controlling for Atlantic ports, capturing the fact that Western European cities are growing considerably faster than Asian cities, which now form the comparison group together with Eastern European cities.

Is there something special about ports in the post-1500 period, or is it Atlantic ports that are behaving differently after 1500? Figure 5 in Section 2 and Table 9 here provide evidence on this question. The figure shows the behavior of total population in Atlantic port cities, Mediterranean port cities and North Sea port cities (see the Appendix for definitions). While Atlantic ports grew very rapidly in the post-1500 dates, Mediterranean ports, if anything, contracted relative to other cities. North Sea ports also show more rapid growth than other cities. We conjecture that the more rapid growth of North Sea ports is related to the fact that the cities had access to the Atlantic, and probably also benefited secondary trade created by the opening of Atlantic routes.

Table 9 reports estimates from models of the following form:

$$\log U_{it} = d_t + \delta_i + \sum_{t \geq 1500} \alpha_t \cdot WE_i \cdot d_t + \sum_{t \geq 1500} \beta_t \cdot AP_i \cdot d_t + \sum_{t \geq 1500} \beta_t^M \cdot ME_i \cdot d_t + \sum_{t \geq 1500} \beta_t^N \cdot NS_i \cdot d_t + X_{it}' \gamma + \varepsilon_{it}$$

(7)

where ME_i is a dummy for Mediterranean port and NS_i is a dummy for North Sea port. The results confirm those shown in Figure 5. Also note that although North Sea ports grew faster than other cities after 1500, they do not even come close to explaining the overall differential growth of Western European cities. It is precisely the differential growth of Atlantic port cities in the post-1500 period that accounts for the more rapid expansion of Western Europe.

The evidence presented so far shows an important interaction between potential for Atlantic trade and post-1500 economic development (and urban growth). What are the implications of this finding for various hypotheses on the origins of the Rise of Europe?

According to the theories based on the European distinctions hypothesis, the Rise of Europe reflects exceptional characteristics of European society and economy. These exceptional characteristics may be the Roman/Ancient Greek heritage (Landes and Jones), religion (Landes and Weber), the fragmentation of Europe among distinct polities (Jones, Mann, Hall, and Mokyr), or yet others. The distinctive feature of all of these theories is that they see the process of European growth as dating back to the centuries before 1500 (in some cases to much earlier periods). The patterns we have documented so far do not support these theories. If the Rise of Europe can be explained by some pre-1500 characteristics alone, why did Atlantic nations and Atlantic ports take off after 1500? And why does the growth of Atlantic nations and Atlantic ports account for almost all of the growth of Western Europe during this critical period of economic growth?[20]

So at the very least, hypotheses based on European distinctiveness have to argue that European exceptionality lies in making it possible for European nations take advantage of the opportunities offered by Atlantic trade and that it is not these exceptional characteristics of Europeans that are, by themselves, responsible for the Rise of Europe. In other words, it should be the *interaction* between European exceptionality and the opportunities offered by Atlantic trade that is driving the Rise of Europe. Therefore, these views have to explicitly allow for a form of *European transformation.*

This brings us to the European transformation hypothesis, especially to those versions linking European transformation to Atlantic trade. As noted above, perhaps the most popular version of this hypothesis is that the Rise of Europe reflects the transfer of resources from the New World, or at the very least, the contribution of profits from this trade to capital accumulation in Europe. This thesis was first put forth by Eric Williams, and has been developed by dependency theorists such as Andre Gunder Frank

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[20]As an additional piece of evidence against these theories, the regression analysis in Tables 4, 5 and 7 offers no evidence that any of the variables that have been suggested as important components of European exceptionality played a major role in the Rise of Europe (i.e., none of these variables are consistently significant or ever change the overall pattern of rapid Atlantic growth combined with comparable growth between Eastern Europe and non-Atlantic Western Europe).

and world-system theorists such as Immanuel Wallerstein.

The fact that there was a large amount of trade after the discovery of the New World and the Atlantic routes to Asia suggests that there were at least some intramarginal rents/returns from Atlantic trade. So it is undoubtedly true that trade with these areas contributed to European growth. The question is whether it was the decisive factor. Here, quantitative analysis by economic historians, including, among others, Engerman (1972), O'Brien (1982), Bairoch (1993, chapter 5), and Engerman and O'Brien (1981), find that the volume of trade and the profits generated by trade appear to be too small to account for much of European growth directly, even taking possible externalities and the consumer surplus generated by trade into account. For example, Bairoch (1993) calculates that commodity trade between Western Europe and the rest of the world amounted to less than 4 percent of the GNP of Western Europe.

O'Brien calculates that, under assumptions very favorable to the importance of international trade, total profits from British trade with less developed regions of the world during the late 18th century were approximately £5.6 million, while total gross investment during the same period stood at £10.3 million. The same numbers during the early 19th century were, respectively, £15.9 million and £34.3 million. During this period, the aggregate savings rate was between 12 and 14 percent, so if we assume that this savings rate also applies to profits from trade, the contribution of profits from trade to aggregate capital accumulation would be between 5.5 and 7.5 percent. Even with considerably higher savings rates, this contribution remains relatively small

In view of these numbers and other assessments by economic historians, it appears unlikely that the major role of Atlantic trade in the Rise of Europe that we have documented can be accounted for solely by the direct effect of increased international trade.

This makes us lean towards a view where the Rise of Europe reflects some sort of transformation, but this transformation was not driven by the direct profits from Atlantic trade alone. Instead, it likely reflects the indirect impact of Atlantic trade, unleashing some other social changes. In the next section, we outline our hypothesis which develops a theory along these lines.

4   Our Hypothesis

Our main hypothesis is that a major contributor to the process of Western European growth between 1500 and 1850 is institutional change induced by Atlantic trade. Atlantic trade enriched and strengthened a group of merchants, and via this channel, contributed to the emergence of capitalist institutions. A secondary hypothesis that follows from our main hypothesis is that this process took place mainly in countries without absolutist regimes at the end of the 15th and the beginning of the 16th century, because Atlantic trade did not strengthen the merchant class much in absolutist countries. If true, our main and secondary hypotheses explain the patterns that we have documented so far, and also why it was Britain and the Netherlands, and not Spain and Portugal, that experienced the emergence of capitalist institutions and rapid pre-industrial economic growth. In this section, we spell out these hypotheses in more detail and provide historical evidence to support our interpretation. Section 6 contains a more detailed contrast of Britain and the Netherlands on the one hand and Spain and Portugal on the other.

4.1   The Argument

Our main hypothesis can be broken into 4 subhypotheses:

1. The emergence of capitalist institutions was essential for Western European growth.

2. Capitalist institutions are favored by commercial interests, but not always welcome by the whole society.

3. Institutions favored by economically and politically powerful groups are more likely to prevail.

4. Atlantic trade strengthened the commercial interests.

Together these four subhypotheses make up our basic hypothesis: Atlantic trade generated large profits for a segment of the bourgeoisie in Western Europe, and this group could demand and obtain significant institutional reforms protecting their property rights. With their newly gained property rights, the bourgeoisie of West European nations invested more, traded more and prepared the foundations for industrialization.

We next spell out these subhypotheses in more detail and provide some historical evidence in support of each, and , especially for the fourth subhypothesis.

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4.1.1 The emergence of capitalist institutions was essential for Western European growth.

Capitalist institutions protect the property rights of commercial and industrial capitalists especially from the Crown and other powerful interests, reduce the hold of landed aristocracy on rural labor and more generally on other factors of production, potentially increasing the supply of various factors to commerce and industrial areas, and ultimately bring the bourgeoisie and the middle class to political power.

At some level the notion that capitalist growth requires enforcement of property rights is obvious, even to the level of being tautological. Eric Jones quotes the 19th-century historian William Cunningham to forcefully emphasize this point: "A man will not risk what he has in trade, except for the prospect of very large gains, if he is likely to be robbed by pirates, or to be oppressed by the government if he is successful in business." (1981, p. 85). North emphasizes the same point in formulating his theory of European growth: "The most convincing explanation for the Industrial Revolution as an acceleration the rate of innovation is...a combination of better specified and enforced property rights and increasingly efficient and expanding markets...[directing]... resources into new channels." (1981, p. 166).

Marxist historians also link European growth to the emergence of the capitalist regime (though they do not use the term "institutions" in the sense that North and we do). Although in Marxist thought institutions/"superstructure" are mostly seen as an outcome of deeper economic forces ("substructure"), Marx did argue that institutional structures such as feudalism and the "Asiatic model of production" were inconsistent with capitalism. He also thought of institutional change as stemming from conflict. This type of model was used to explain the evolution of political institutions in 17th century England, first by Engels (1892) and then by Dobb (1946). It is subsequently developed in greater detail by, among others, Christopher Hill (1986), and Robert Brenner (1993), as well as non-Marxist historians such as R.H. Tawney (1941a,b), Barrington Moore (1966), Lawrence Stone (1972), Robert Ashton (1979) and Steven Pincus (1998,2002). These scholars all emphasize the idea that the evolution of political institutions can be explained by social conflict, itself in part resulting from economic change. These changes gave rise to new groups with commercial or capitalistic interests, the "gentry" and the "bourgeoisie," who fought to change institutions to remove the threat of arbitrary

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taxation and state predation, and to secure their property rights and the profits from commerce. Hill (1969, p. 13), for example, writes "movements in population and prices were roughly similar all over Europe during this period [1530-1780] but the Netherlands and England were unique in having successful political revolutions which led to greater commercial influence over governments." It was this commercial influence that enabled British and Dutch growth.

4.1.2 Capitalist institutions are not always welcome by the whole society.

Although capitalist institutions increase total output and economic growth, they often harm the economic interests of the monarchy and the landed interests. In particular, limitations on the taxation power of the state reduce the rents of the Crown and other groups within the nobility. Similarly, the weakening of feudal labor relations and the migration of labor from rural to urban areas typically hurt the economic interests of the landed aristocracy (unless they can somehow successfully transition into commercial agriculture or other commercial businesses). Moreover, with the rise of the bourgeoisie to political power, many of the policies that protect the economic interests of landed groups are discontinued. The repeal of the Corn Laws in 1846 in Britain is a salient example.

Despite the fact that capitalist institutions will increase total surplus in the society, it is often impossible for the emerging commercial and industrial interests to compensate the monarchy and the landed interests that are losing as a result of these changes. The main reason for this is that the groups that will gain from institutional changes cannot commit to compensate the losers. More specifically, the institutional changes that provide secure property rights to the commercial and industrial interests also curtail the political power of the monarchy and the landed aristocracy. In addition, as the bourgeoisie gains economic power, it will also gain political power. Both factors imply that after the development of capitalist institutions, there will be limited redistribution away from the winners, the bourgeoisie, to compensate the losers, the Crown and large segments of the landed interests.

Because the monarchy and the landed aristocracy expect to lose from the emergence of capitalist institutions, they will often oppose it. The classic account of the rise of capitalist institutions in England by Barrington Moore expresses this as follows (1966,

p. 21): "Both the capitalist principle and that of parliamentary democracy are directly antithetical to the ones they superseded and in large measure overcame during the Civil War..." Moore goes on to argue that the emergence of capitalist institutions in England happened against the wishes of the landed interests (1966, chapter 1). This account also receives support from other historians. For example, Hill (1961) writes of the 17th-century landed aristocracy: "in general the official attitude to industrial advance was hostile, or at best indifferent. It was suspicious of social change and social mobility, of the rapid enrichment of capitalists, afraid of the fluctuations of the market and of unemployment, of vagabondage, and social unrest ....the Elizabethan Codes aimed at stabilizing the existing class structure, the location of industry and the flow of labor supply by granting privileges and by putting hindrances in the way of mobility and the freedom of contract."

4.1.3 Institutions favored by powerful group are more likely to prevail.

History is full of examples where powerful groups are able to impose their institutional choices on the rest of the society, regulating the allocation of political power in the future and constraining other groups' actions.[21]

In the context of the emergence of capitalist institutions, it is clear that the nascent bourgeoisie needs and wants these institutions, while typically landed interests oppose them. As a result, there will be frequent conflicts over the control of political power and the state, and on how to reform institutions. In his history of Europe in the 18th century, George Rude describes the situation as follows (1972, p. 175): "It was inevitable...that tensions should arise and demands be voiced for an extension of authority by one or other of the principal contenders and for a share in government by those who had been hitherto excluded".

Therefore, the evolution of institutions typically reflects the relative power of various

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[21]The emergence of democratic institutions in Western Europe during the 19th century is one example. In most instances, democratization occurred when groups excluded from political power were strong and wanted to change the prevailing institutions so that they could share power in the future (see Acemoglu and Robinson, 2000a). Another example, is the introduction of proportional representation into Western European countries which Rokkan (1970) showed was due to conservative parties attempting to undermine the electoral strength of socialists. A final interesting example is the Napoleon's imposition of the "Napoleonic" legal codes in France and the territories he occupied to increase his control of judges and the administration of justice.

groups in the society: when the bourgeoisie becomes more powerful, the emergence of capitalist institutions becomes more likely. Again Barrington Moore argues that: "...in England the chief carriers of what was eventually to be a modern and secular society were...men of commerce in both the countryside and the towns" (1966, p. 13). And capitalist institutions emerged because capitalist groups were powerful enough during certain periods. In North's words "control of the state was, for a brief period of time, in the hands of groups whose self-interest promoted the growth of market forms of resource allocation" (1981, p. 180).

4.1.4 Atlantic trade strengthened the nascent bourgeoisie.

The political power of the nascent bourgeoisie, to a large extent, reflected its economic power. As the commercial interests became richer they could demand and obtain reforms. This was both because other groups in the society needed their economic cooperation, and also because their economic power often bought them military power, or at least the power to undertake social unrest and mount threats to the regime. Examples of the bourgeoisie using its economic power to disrupt the system, and in fact disrupt it quite violently, include the English Civil War in the 1640's and the social unrest leading up to the 1832 Reform Act in England, the Dutch rebellion against the Spanish Empire beginning in 1572, and the 1789 Revolution in France.

With the surge in Atlantic trade, the economic power of commercial and industrial interests grew considerably. Even though O'Brien's estimates imply that the contribution of profits from international trade to capital accumulation was small, the size of these profits were gigantic. O'Brien's numbers also imply that these profits were about 5.5 to 7.5 percent of GDP, and more significantly, they were concentrated in the hands of a relatively small section of the bourgeoisie.

Many historians also emphasize the importance of merchants and especially of merchants engaged in Atlantic trade in the transformation of British and Dutch institutions (see Brenner, 1973, 1993, Stone, 1972, Ashton, 1979, 1996, Pincus, 1998, 2002, on Britain; and Isreal, 1995, de Vries and van der Woude, Ch 11, on the Netherlands).

In the next subsection, we provide detailed evidence from the British and Dutch cases that Atlantic trade indeed strengthened the commercial bourgeoisie in these countries, and via this channel, played an important role in the emergence of capitalist institutions.

In the British case, the Crown fell to the Tudor dynasty in the late 15th century which ruled until Elizabeth I died without children in 1603. This led to James VI of Scotland becoming James I of England and the start of the Stuart dynasty. He was followed on the throne by his son Charles I in 1625. This period witnessed intense conflict between the Crown and other social groups on the extent of the powers of the monarchy and the security of private property.

Charles I dissolved his third parliament in 1629 and attempted to rule without parliament, raising taxes in an unconstitutional way and using the Star Chamber to manipulate legal decisions in his favor. Charles's reign slowly disintegrated into the Civil War in 1642. The Civil War and the Glorious Revolution of 1688, where James II was deposed and replaced by William of Orange and a constitutional regime, are seen as two milestones towards the emergence of British capitalist institutions constraining the monarchy, though the emphasis placed on each varies from historian to historian. For example, North and Weingast (1989), following Macaulay (1849), and Trevelyan (1938), emphasize the importance of the Glorious Revolution. Indeed, these changes brought by the Glorious Revolution were crucial for the emergence of a constitutional monarchy and dominance of parliament, particularly with respect to fiscal matters, the consolidation of the rule of law and the end of the threat of a predatory monarch. Yet the struggle for these institutions began in the reign of Elizabeth I, for example when the Commons obstructed the creation of monopolies and the sale of titles, and they were established initially by the Long Parliament in 1641 where Charles I made many critical concessions. After the Restoration of the monarchy in 1660 parliament kept most of what it had won until the struggle with James II.

For our purposes, however, the relative importance of the Civil War and the Glorious Revolution in the development of capitalist institutions is secondary. What is important is that both of these major changes came as a result of political conflict between the monarchy and bourgeois interests demanding protection for their property and commerce. Evidence on this comes from several places. The traditional view of Macaulay and Trevelyan emphasized the unity of merchants against the Crown. Although Pearl (1961) argued that there were divisions between groups such as the Merchant Adventurers who benefited from monopolies granted by the Crown and new merchants, who

did not, the more recent evidence presented by Ashton (1979, 1996) convincingly shows that merchants, even those who enjoyed monopolies, tended to oppose the Crown. Ashton argues (1996, p. 3) "the majority of the City fathers, far from being the natural supporters of Stuart absolutism at the end of the period of Charles I's personal rule in the late 1630's, were as alienated from royal policies as were the vast majority of the political nation."

Detailed analyses of the initial members of the Long Parliament in 1640 indeed show that a significant majority of merchants supported the Parliamentarian cause, see for example Keeler (1954) and Brunton and Pennington (1954). The latter authors, for example, document that of the 552 members of the Long Parliament, 50-70 were "members whose wealth came chiefly from trade" (Brunton and Pennington, 1954 p.54).[22] A wealth of evidence shows that not only did the members of the Commons from the City of London (the main center of mercantile activity) support Parliament against the King, but so did those with London interests who represented non-London constituencies. Brunton and Pennington (1954, p. 60) note "All but one of these Londoners were, like the City members, on the Parliamentary side." Southampton, Newcastle and Liverpool all had two MP's and they all supported the Parliament. The two MP's for Bristol, Humphrey Hooke and Richard Long were Royalists, but this simply reflected the intra-merchant conflict noted by Pearl (1961) (see, for example, Sacks, 1991). Indeed, Sacks (p. 230-247) shows that trading, commercial and industrial interests outside of the local monopolistic trading company, the Merchant Adventures, were Parliamentarians. Brunton and Pennington (1954, p. 62) also note "in the country as a whole there was probably was a prepondernace of Parliamentarian feeling among merchants."[23]

More recent historical analyses tend to support the view that mercantile interests were central to political conflict in the 17th century and, moreover, were Parliamentarian. Brenner (1993, p. 316) states:

"The political activities and alignments of London's merchant community

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[22]This in itself shows the great social mobility of the age since in 1584 mercantile interests were practically unrepresented in the House of Commons (see Neale, 1949).

[23]There are some other regularities about who sided with who in the Civil War which are consistent with our thesis. Brunton and Pennington (1954, p. 178) note the existence of "the predominantly Royalist North and West and the predominantly Parliamentarian South and East." The South and East were the most prosperous, commercial and modern areas of the country. See Hughes (1998) for a general discussion of this issue and Broxap (1972) for the intra-Lancashire pattern.

both expressed and helped determine the character of City and national conflict in the period leading up to the outbreak of Civil War. From November 1640, London politics and national politics became ever more inexorably intertwined, and overseas merchants played key roles at both levels."

In his seminal book Stone (1972, p. 144) writes:

"... other important merchant elements can now be identified, men interested especially in the American trades, in New England colonization, and in breaking the monopoly of the East India and Levant Companies. They were new men in new fields of entrepreneurial endeavor who chafed at the political and economic stranglehold of the older established monopolistic oligarchies. These men were important members of the group of radicals who seized control of London at a critical moment in 1641, and so swung the power and influence of the city decisively on the side of Parliament."

Overall it appears that commercial interests were among the major supporters of in the Parliamentarian forces in the Civil War, and an important force in the process of the development of capitalist institutions. Moreover, because mercantile interests in the City of London supported Parliament, London was Parliamentarian and this was critical in the ultimate victory of the Parliament because of the resources and manpower it made available.[24]

The economic policies after 1649 and the final triumph of the Parliament are consistent with the rising power of merchants. Most significant were the Navigation Acts of 1651 and 1660 which restricted trade in British colonies to British ships and merchants (see Farnell, 1964, Cooper, 1972, and Guaci, 2001). One immediate effect was that British merchants could capture the lucrative slave trade from the Dutch, since the Navigation Acts banned the Dutch from supplying slaves to the British West Indian colonies. Holmes (1993, p. 64) refers to the African slave trade as "manifestly a child of

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[24]Other prominent interpretations of the English Civil War have emphasized various factors apart from those we stress here. Russell (1990) emphasizes the idea that the Civil War was a plot by the traditional aristocracy to regain power it had lost under the Tudors. Many, for example, Morrill (1993), stress the role of religious differences in determining who supported which side, and more recent work by Manning (1996) stresses more general class conflict. Nevertheless, although there are doubtless elements of truth in most of these approaches, the general role of mercantile interests seems undeniable.

the Navigation Act, which illegalised the activities of the Dutch slavers who had hitherto supplied the labour needs of the British planters."

A similar argument which emphasizes the critical role of mercantile interests in the Glorious Revolution of 1688 has recently been developed by Pincus (1998, 2001, 2002). He notes (2002, p. 8) "the debate, for which 1688-89 was aturning point, was ... about whether England should be a commercial or an agrarian society." He then documents how James II by favoring the East India Company and granting monopoly privileges alienated the merchant class who as a reaction played a key role in the Glorious Revolution. For example, Pincus (2002, p. 32-33) notes that:

> "...[the reaffirmation of] the royal right to create exclusive trading monopolies ... clearly angered large segments of the English mercantile community... The exclusive trading rights which ... James II insisted upon deprived merchants all over the kingdom, and the entire Jewish community, of access to trade. No wonder the merchant community so spectacularly truned against the regime... No wonder the merchant community poured money into William of Orange's coffers in 1688."

He concludes (p. 34) "England's merchant community actively supported William's plan for invasion, and provided a key financial prop to the regime in the critical early months." The Glorious Revolution then led to a whole series of policies which initiated the financial revolution, particularly the founding of the Bank of England and, with the exception of the East India Company, the wholesale demise of monopoly charters (see Carruthers, 1996).

Turning to the Dutch case, to say that the history of the Netherlands during the 16th and early 17th centuries is the history of the struggle between merchants, especially the wealthy and politically powerful Regents, and the Habsburg monarchy would be a fair characterization. While the monarchy tried to increase its tax revenues from the Netherlands, the merchants tried to minimize taxes and to obtain security for their property, and fought for independence from Spain.

An early milestone was the granting of the Grand Privilege of 1477 which gave the States General of the Burgundian Netherlands the right to gather on their own initiative and curbed the right of the ruler to raise taxes. However, by 1493 Maximilian of

Habsburg reversed the privileges. After 1552, war with France increased the Habsburgs' fiscal needs and led them to impose a large tax burden on Netherlands. In 1556 when Charles V abdicated in favor of his son Philip II, the Netherlands rejected his first set of fiscal demands, only grudgingly paying up in 1558 under their own terms.

Growing resentment, both religious and fiscal, led in 1572 to a series of uprisings against the Hapsburgs, mostly orchestrated by commercial interests (see Israel 1995), and in line with this de Vries and van der Woude (1997, p. 369) argue that "urban economic interests ultimately believed it advantageous to escape the Habsburg imperial framework". In the case of Amsterdam, de Vries and van der Woude (1997, p. 365) note:

> "the ruling faction instinctively chose the cautious path of loyalty to Catholicism and the Habsburg regime... Their opponents included most of the city's international merchants.....[I]n 1578 a new Amsterdam city council threw the city's lot in with the Prince of Orange... among the merchants returning from... exile were [those whose families] and several generations of their decendents would long dominate the city."

Thereafter it was the wealthy, predominantly protestant merchants, the Regents, that dominated the city and state politics. de Vries and van der Woude (1997, p. 587) in their analysis of the relationship between soico-economic position and political infleunce note the that the richest people consisted of those "6 to 8% of urban households with incomes in excess of 1,000 guilders per year. This was the *grote burgerij* from whom was drawn the political and commercial leadership of the country. Here we find, first and foremost, the merchants."[25]

Full independence for the Dutch Republic was not secure until the Peace of Westphalia in 1648 and in this prolonged war against the Habsburgs, the role of merchants was central. de Vries and van der Woude (1997, p. 366) argue that it was "the traditional pillars of the maritime economy ... that supported and strengthened the young Republic in its hour of need." Moreover, the strength of capitalists who had made their wealth in Atlantic trade was essential in the war over independence against the

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[25]For example, de Vries and van der Woude (1997, p. 587) show how merchants dominated the governments of Leiden and Rotterdam.

Spanish Empire, and in the subsequent strengthening of capitalists institutions in the Netherlands. Dutch bankers and trading companies financed the independence war and dictated policy. Adams (1994, p. 329) quotes Elias in arguing that "The leading edge of commercial expansion shifted to the colonial and rich trades, and the merchants engaged in colonial trades, proclaiming the need for the states to help merchants secure wider opportunities in the Indies, swept into power in Amsterdam in 1601".

The strength and interests of the Dutch merchants can also be seen in the following episode. Following Spain's offer to recognize Dutch independence if they withdrew from the East and the West Indies, the Dutch responded that "too many prominent personages in the Republic were involved in the East India Company for it to be disbanded" (Israel, 1985, p. 9).

4.3   IMPLICATIONS AND DISCUSSION

The above discussion outlined our hypothesis, that Atlantic trade strengthened the commercial interests in a number of Western European countries and contributed to the development of capitalist institutions, and provided historical evidence consistent with this hypothesis.

There is an additional channel via which Atlantic trade may have contributed to the emergence of institutions protecting the property rights of capitalists. It is clear that long distance trade and the associated activities require long-term investments. When property rights are insecure, these investments are unlikely to be undertaken. Realizing this, revenue-maximizing rulers may have found it beneficial to give credible institutional guarantees to merchants in order to encourage these investments and eventually increase their own revenues. This is somewhat reminiscent to the theory of the emergence of constraints on government repudiation of public debt in England suggested by North and Weingast (1989). Although our reading of the relevant history makes us believe that the greater contribution of Atlantic trade to the development of capitalist institutions was by strengthening the bourgeoisie in its fight against the monarchy, the relative roles of the two mechanisms in Western European institutional changes is not essential for our overall story.

Irrespective of the exact mechanism, Atlantic trade appears to have played a major role in the institutional transformation of the British and Dutch societies by the early

18th century, and perhaps of the French society by the 19th century. As a result, the institutions for capitalist growth were in place in Western Europe, or as evocatively described by North and Thomas (1973, p. 155-6):

> "By 1700 the institutional framework of England provided a hospitable environment for growth. The decay of industrial regulation and the declining power of guilds permitted mobility of labor and innovation in economic activity; this was later further encouraged by the Statute of Monopolies patent law. The mobility of capital was encouraged by joint stock companies, goldsmiths, coffee houses and the Bank of England, all of which lowered transaction costs in the capital markets; and, perhaps most important, the supremacy of parliament and the embedding of property rights in the common law put political power in the hands of men anxious to exploit the new economic opportunities and provided the essential framework for a judicial system to protect and encourage productive economic activity."

And British and Dutch merchants and industrialists took advantage of this environment, traded, invested and generated economic growth.

Our hypothesis emphasizes the importance of Atlantic trade for beneficial institutional change. Notice, however that it does not maintain that there exists a universal link between international trade and improvements in institutions. First, as was the case in Spain and Portugal, if merchants are not the main beneficiaries of the profits from trade, we should not expect the emergence of capitalist institutions. Moreover, international trade may strengthen groups that favor the status quo, or non-capitalist institutions. Over the same period, trade with Western Europe may have strengthened the landed aristocracy in Eastern Europe, or even led to the emergence of highly absolutist and extractive institutions there, for example with the second serfdom (Brenner, 1977). Similarly, trade with Europe was almost undoubtedly important for the power of sugar planters in the Caribbean, who maintained highly extractive institutions based on slavery and forced labor (e.g., Williams, 1944).

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5 Atlantic Trade and Institutional Change

We now attempt to substantiate our hypothesis further by providing empirical evidence on the link between the emergence of capitalist institutions and conflict between different social groups, and on the role of Atlantic trade in institutional change.

5.1 Measuring Institutions

A prerequisite for this exercise is a measure of capitalist institutions. Unfortunately, no such measure exists for the period that we are analyzing. So as a first step, we attempted to create a measure of institutions for European countries between 1300 and 1850. We started with the definition of "constraints on the executive" from Gurr's Polity data set. This is a useful concept since it measures limitations on the arbitrary use of power by the executive (the monarchy or the president, but for the time period that we analyzing, naturally the monarchy). More specifically, the Gurr data set gives a score between 1 to 7 for every (independent) country starting in 1800, with 1 corresponding to the least level of constraint.

We follow the Polity IV coding handbook in using the following criteria for coding "constraints on the executive" (Marshall and Jaggers, 2000). A value of 1 means "there are no regular limitations on the executive's actions," 3 means "there are some real but limited restraints on the executive," 5 means "the executive has more effective authority than any accountability group, but is subject to substantial constraints by them," and 7 means "accountabilty groups have effective authority equal to or greater than the executive in most activity." Values of 2, 4, and 6 are used for intermediate values. In practice we find that while there may be disagreement about the precise values used in particular years, the general level of constraint on the executive is not controversial. For example, the absolutist regimes of France and Spain clearly had much less constraint on the executive than did the Netherlands after independence or England after the Civil War. Details on our coding strategy and the full series are given in the Appendix.

The measure of constraints on the executive is not ideal for our purposes, however, since during European history a number of significant constraints on monarchs were imposed by the nobles, and did not necessarily serve to protect the rights of the bourgeoisie. For example, in much of the 1500-1750 period, Poland had a highly constrained executive. But there was relatively little protection for (urban) merchants—most of the

rights rested with the nobility.

For this reason, we modified the definition of "constraints on the executive" to create an alternative measure, which we refer to as "protection for capital". The coding of this measure depends on the formal rights given to urban merchants, particularly their protection in the event of a dispute with the nobility or monarch. A code of 1 indicates that these merchants have no effective protection against arbitary confiscation by the ruler (e.g., as was the case in most absolutist regimes). A code of 3 indicates that there are some city charters that give some rights to merchants, for example to be tried in courts run by their peers. A code of 5 indicates that the merchants and the "middle classes" have effective parliamentary representation. A code of 7 indicates that the government is formed by and largely influenced or controlled by merchants and middle classes. Other codes indicate intermediate values. In practice, our view of the appropriate coding was based on our assessment of constraint on the executive, adjusted by available evidence on legal protections for merchants. We believe that the "protection of capital" is a better proxy for capitalist institutions, while the "constraints on the executive" measure makes comparison with Polity IV data set easier.

For 1800 and 1850 we use the Polity coding for "constraint on the executive", where available. For earlier values of "constraint on the executive" and for "protection of capital," we coded these measures ourselves, as well as asking an able research assistant to code them independently from the same sources (and without knowing our hypothesis!). The main source for this exercise was Langer (1972), a classic historical encylopedia, written with a focus on constitutional events. We supplemented this work with the more recent edition by Stearns (2001). The two different codings generally agreed, and the Appendix describes how we constructed the final coding when there is plausible disagreement.[26]

In addition, we also determined whether each major institutional change happened amidst significant social conflict. Most of the major changes towards capitalist institutions in European between 1300 and 1850 were driven by significant social and polit-

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[26]We have also checked our results using the three codings of institutions in De Long and Shleifer (1993). While their measures of institutions are somewhat different, for example awarding a much "better" score to feudal systems than does coding based on the Polity criteria, the overall results using their codes are the same. The important point is that in their coding as in ours, republics have more protection for capital than absolutist regimes. This point is both critical to our empirical analysis and fairly uncontroversial.

ical conflict: the Dutch revolt, the Civil War in England, and the French Revolution. Through 1800, almost all institutional changes happened amidst significant conflict, and according to our interpretation, *because of* significant conflict. In other words, this reading of the historical evidence is consistent with the view that capitalist institutions were not *given* by the monarchy and landed aristocracy, they were *taken* by the bourgeoisie.

5.2 EXPLAINING EUROPEAN INSTITUTIONAL CHANGES

Table 10 relates our measures of institutions to Atlantic trade. In particular, it estimates models of the following form

$$I_{jt} = d_t + \delta_j + \sum_{t \geq 1500} \alpha_t \cdot WE_j \cdot d_t + \sum_{t \geq 1500} \beta_t \cdot PAT_j \cdot d_t + X'_{jt} \cdot \gamma + \varepsilon_{jt}, \qquad (8)$$

where I_{jt} is the measure of institutions in country j at time t (constraints on the executive in the first part and protection for capital in the second part) and as before, WE_j is a dummy indicating whether the country is in Western Europe, the d_t's denote year effects and the δ_j's denote country effects, X_{jt} is a vector of other covariates, and ε_{jt} is a disturbance term. This equation is identical to (1), except for the dependent variable. PAT_j is the potential for Atlantic trade, again measured as the ratio of Atlantic coastline to area as in our baseline specification. The interaction between the potential for Atlantic trade and the post-1500 dates captures the importance of Atlantic trade for institutional changes.

Significant estimates of α_t's imply that there were differential developments of capitalist institutions in Western Europe after 1500. This can be seen in columns 1 and 8. When we include the interaction terms with Atlantic trade, i.e., the $PAT_j \cdot d_t$'s terms, this leads to significant estimates of β_t's, indicating that there is a close connection between Atlantic trade and the development of capitalist institutions. Also the inclusion of the interaction terms with Atlantic trade weakens the differential improvement in Western European institutions relative to Eastern European institutions, but contrary to our results for urbanization, income per capita and city growth, there is still a substantial differential Western European effect here.

Other columns in these tables use the same covariates as in Tables 4 and 5. There is no robust evidence indicating that being Protestant, having more wars, having a Roman

heritage or being further north led to greater institutional change after 1500.[27] Overall these results suggest that there were greater strides towards capitalist institutions in nations with a greater potential to engage in Atlantic trade, more or less around the time of the surge in Atlantic trade.

5.3 Institutional Changes and European Growth

Next we turn to a discussion of the relationship between institutional change and economic growth in Europe. A number of economic and social historians, most notably North and Thomas (1973), North (1981) and Jones (1981), have argued that economic growth in Europe was driven by the security of merchants' and industrialists' property rights. But there is relatively little direct evidence on this point. The only exception is De Long and Shleifer (1993) who investigate the relationship between European institutions and urban growth. They find that more absolutist institutions that concentrated power in the hands of the monarchy reduced city growth in Europe. However, De Long and Shleifer are not exploiting exogenous variation in institutions, so it might be reverse causality, i.e., it might be city growth that is causing institutional development, or altogether omitted factors leading to both changes.

Here we also present evidence linking economic growth to institutional changes, but using a different strategy. The discussion so far has established that Atlantic trade has generated a move towards capitalist institutions. This provides us with a source of useful variation in institutions. However, Atlantic trade is *not* an ideal instrument, since it may have (almost certainly has) a direct effect on growth. What is not clear is whether the

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[27]In our base estimates we measure institutions in Northern Italy and we ascribe "Italian" GDP per capita and urbanization to Northern Italy. Adding Southern Italy would strengthen our results. This region was relatively rich in 1500 (although slightly less prosperous than Northern Italy), with somewhat weaker constraint on the executive. Over the next 300 years it did not participate actively in Atlantic trade, stagnated in economic terms and did not improve its institutions, so adding this country to our data would be equivalent to adding another country like Austria—it would increase our ability to distinguish between Atlantic and non-Atlantic Western Europe. More generally, coding Germany and Italy in a more detailed way reduces our standard errors as it increases the number of observations. Moreover, the regional variation within both countries is consistent with our conclusions—there is no sign of a region prospering in the same way as the Atlantic regions grew.

Further robustness checks we carried out include checking the effect of lowering the evaluation of early institutions for England. This actually helps our analysis, because the increase in British institutions provides a great deal of the positive effect of Atlantic trade on institutions and of institutions on overall economic performance in our data.

direct effect of Atlantic trade is large enough that it invalidates an instrumental-variables strategy or not. So we exploit a number of different strategies to control for the direct effect of Atlantic trade or to test whether the major effect of Atlantic trade was through the institutional changes that it induced.

We start by estimating instrumental-variable models using variation in institutions induced by Atlantic trade, and then explicitly investigate whether (and how much) Atlantic trade has a direct effect on growth using overidentification tests and other methods.

In particular, we first estimate the following model:

$$u_{jt} = d_t^u + \delta_j^u + \sum_{t \geq 1500} \alpha_t^u \cdot WE_j \cdot d_t + \phi^u \cdot I_{jt} + X_{jt}' \cdot \gamma^u + \varepsilon_{jt}^u, \tag{9}$$

which is similar to (1), except that the measures of institutions, the I_{jt}'s, are also included on the right-hand side. In estimating this equation, we treat institutions, I_{jt}, as endogenous, with the corresponding first stage:

$$I_{jt} = d_t^1 + \delta_j^1 + \sum_{t \geq 1500} \alpha_t^1 \cdot WE_j \cdot d_t + \beta^1 \cdot PAT_j \cdot \ln AT_t + X_{jt}' \cdot \gamma^1 + \varepsilon_{jt}^1. \tag{10}$$

Then, we perform an overidentification test comparing the estimate of ϕ^u to the estimate that is obtained by using the alternative first stage,

$$I_{jt} = d_t^2 + \delta_j^2 + \sum_{t \geq 1500} \alpha_t^2 \cdot WE_j \cdot d_t + \sum_{t \geq 1500} \beta_t^2 \cdot PAT_j \cdot d_t + X_{jt}' \cdot \gamma^2 + \varepsilon_{jt}^2. \tag{11}$$

This equation adds a number of instruments to the specification and (10), and an overidentification test comparing the estimate of ϕ from using the first-stage equation (10) to the estimate from using the first-stage equation (11) is informative about whether the major role of Atlantic trade is through the institutional changes that it induces. We then repeat this exercise using log income per capita as the left-hand side variables in (9).

Table 11 reports the results of this exercise. The results support the notion that the major channel via which Atlantic trade contributed to growth was through institutional change. Columns 1 and 2 show that the coefficients from using the more and the less restrictive IV specifications are very similar. As an easy interpret version of the overidentification test, in columns 3 and 4 we include individual interaction terms between

specific dates and potential for Atlantic trade (while instrumenting for institutions using $PAT_j \cdot \ln AT_t$), and find that these are never significant. Moreover, remarkably the estimates of the effect of institutions on urbanization or income per capita remain very similar to the estimates in columns 1 and 2.

As an alternative strategy to investigate whether the major effect of Atlantic trade could be working through institutional change, we use estimates of the causal effect of constraints on the executive obtained from the instrumental-variables approach in Acemoglu, Johnson and Robinson (2001). That paper used a different strategy to estimate the causal effect of institutions on economic performance in the sample of former European colonies. The instrument proposed in that paper was the mortality rates faced by European settlers. These mortality rates are a key determinant of settlements of Europeans in the colonies and the subsequent institutional development of these countries. The mortality rates are calculated from the mortality of soldiers, bishops, and sailors stationed in the colonies between the seventeenth and nineteenth centuries, and are a plausible instrument for the institutional development of the colonies, since in areas with high mortality Europeans did not settle and were more likely to develop extractive institutions. The exclusion restriction implied by this IV strategy is that, conditional on the other controls, the mortality rates of European settlers more than 100 years ago have no effect on GDP per capita today, other than their effects through institutional development. This is plausible, since these mortality rates were much lower than the mortality rates faced by the native population who had developed a high degree of immunity to the two main killers of Europeans, malaria and yellow fever.

Here we use these mortality rates as an instrument for constraints on the executive, and estimate the effect of this measure of institutions on growth in former colonies to obtain an estimate of the effect of institutions on economic performance, ϕ^* (ϕ^{u*} for urbanization and ϕ^{Y*} for GDP). We then impose this estimate in our sample. More specifically, we estimate equation (9) above imposing $\phi^Y = \phi^{Y*}$ or $\phi^u = \phi^{u*}$ where ϕ^{Y*} and ϕ^{u*} are the 2SLS estimate of the effect of constraint on the executive on log income and urbanization levels obtained by using settler mortality as an instrument (or in other words, we are using $\log Y_{jt} - \phi^{Y*}I_{jt}$ or $u_{jt} - \phi^{u*}I_{jt}$ as the left-hand side variables). We used two estimates for each of ϕ^{Y*} and ϕ^{u*}, one exploits the long-run relationship between institutions and income, while the other one exploits shorter-term variation,

and is naturally smaller.[28]

The question is whether, once we control for the effect of institutions in this way, there is still differential growth between nations with high Atlantic-trade activity and non-Atlantic nations. If the answer is no, this gives further support to the notion that the effect of Atlantic trade is working through institutional development.

This procedure is valid if the measures of constraints on the executives are comparable between these two samples and if these institutions have similar effects in these two very different samples and environments. Of course, there is no guarantee that these assumptions are reasonable. Nevertheless, this exercise is a useful check on the overidentification tests. Columns 5 and 6 in the two panels of Table 11 report the results. We find that once we "impose" the effect of institutions using the estimate based on settler mortality, there is no significant positive effect of Atlantic trade on urbanization or log GDP per capita. Using the smaller estimates in column 5, we find that there seems to be no additional effect of Atlantic trade. When the use the larger estimates in column 6, we actually obtain some significant negative effects from Atlantic trade, consistent with the notion that the larger estimates are exaggerating the effect of institutional change on economic growth. Overall, this exercise suggests that much of the effect of Atlantic trade on income is working through the institutional changes induced by trade.

6   The Role of Initial Institutions

As emphasized in Section 4, a crucial link in our hypothesis that Atlantic trade induced the development of capitalist institutions is the presumption that it was mainly the mer-

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[28]To arrive at estimates for ϕ^Y or ϕ^u, we use the instrument for institutions from Acemoglu, Johnson and Robinson (2001). That paper estimated regressions of the form $\log Y_{j1995} = \bar{\phi}^Y I_j$, for the sample of former European colonies using settler mortality, $\log M_j$, as an instrument for long-run institutional differences. Using constraints on the executive as the measure of institutions gives an estimate of $\bar{\phi}^Y = 0.54$. However, in this equation $\bar{\phi}^Y$ measures the effect of institutions during a long period of time, since we are identifying the long-run (historically determined) component of institutions and the outcome of 250 years of growth. As an alternative, we estimate the following regression: $\log Y_{j1995} = \varphi \log Y_{j1970} + \tilde{\phi}^Y I_{j1970}$, with constraints on the executive in 1970, I_{j1970}, instrumented by $\log M_j$. This gives an estimate of $\tilde{\phi}^Y = 0.26$. We chose 0.26 as the baseline, since it is less favorable to our hypothesis (i.e., implies a smaller effect of institutions on economic outcomes), and also experimented with 0.54, which give smaller or even negative estimates of the direct effect of Atlantic trade. To obtain estimates for ϕ^u, we simply used the relationship estimated in Acemoglu, Johnson and Robinson (2002) between urbanization and log income, which implies that $\log Y_{jt} = 3.8u_{jt}$, and divided $\tilde{\phi}^Y$ and $\bar{\phi}^Y$ by 3.8. Using various different values around these estimates does not affect the basic finding in column 5.

chants, the groups in favor of institutional change, who benefited most from Atlantic trade. However, as discussed above, in the Spanish and Portuguese societies the monarchy was quite powerful at the turn of the 15th century and during the early stages of the 16th century, and as a result managed to tightly control overseas activities, and became perhaps the main beneficiary of the profits from trade and plunder from the New World and from Asia via the Atlantic. In this case, our hypothesis implies a much weaker tendency towards beneficial institutional change in Spain and Portugal. More generally, extending this reasoning leads to a secondary hypothesis from our theory: in areas where institutions placed absolute control of the state in the hands of the monarchy, we expect a weaker tendency towards institutional change and economic growth.

In this section, we provide econometric evidence to support this hypothesis, and document in greater detail how institutions differed between Britain and the Netherlands on the one hand and Spain and Portugal on the other. We also discuss briefly possible reasons for these initial differences in institutions.

6.1 Econometric Evidence

We would like to establish that it was predominantly societies with less absolutist ("better") initial institutions that took advantage of the opportunities offered by Atlantic trade. We will also take this opportunity to test against a related hypothesis which is nonetheless quite different from ours: that post-1500 developments simply reflect divergence between societies that had very different institutions at the turn of the 15th century (unrelated to the opportunity to engage in Atlantic trade). To test these ideas, we estimate models of the following form:

$$u_{jt} = d_t + \delta_j + \sum_{t \geq 1500} \alpha_t \cdot WE_j \cdot d_t + \beta \cdot \ln AT_t \cdot PAT_j + \sum_{t \geq 1500} \gamma_t \cdot I_{j,1500} \cdot d_t + \eta \cdot \ln AT_t \cdot PAT_j \cdot I_{j,1500} + \varepsilon_{jt},$$
(12)

where, as before, u_{jt} is the urbanization rate, $\ln AT_t$ is our measure of Atlantic trade, PAT_j is country j's potential for Atlantic trade, and $I_{j,1500}$ is a measure of country j's institutions (constraints on the executive or protection for capital) around 1500, which we also refer to as "initial institutions". In our regressions, all variables will be demeaned, so the coefficients are all evaluated at the mean values in the sample. The

$\gamma_t \cdot I_{j,1500} \cdot d_t$ terms allow any differential economic trends simply related to differences in initial institutions (independent from Atlantic trade). Significant coefficients on these interaction terms would imply that at least part of the post-1500 developments in Europe reflect divergent paths taken by countries with different initial institutions, independent of the effects of Atlantic trade. The table reports the p-value from a joint significance test for all of these interaction terms.

The variable $\ln AT_t \cdot PAT_j \cdot I_{j,1500}$ essentially tests our secondary hypothesis. A significant coefficient η implies that there were divergent paths taken by countries with different initial institutions, but this divergence relates significantly to whether they took advantage of the opportunities presented by Atlantic trade.

Panel A of Table 12 presents estimates from equation (12), while Panel B presents estimates from a similar equation with log income per capita as the dependent variable and Panel C shows regressions with institutions as the left-hand side variables, to document the role of the interaction between initial institutions and Atlantic trade for the development of capitalist institutions.

The results in all three panels are similar. The interaction between the aggregate measure of Atlantic trade and potential for Atlantic trade, $\ln AT_t \cdot PAT_j$, is significant by itself, and also when entered against the $\gamma_t \cdot I_{j,1500} \cdot d_t$ terms. This shows that the ability to take advantage of Atlantic trade was of major importance for post-1500 developments. When we add the triple interaction $\ln AT_t \cdot PAT_j \cdot I_{j,1500}$, this term is typically the only significant one.[29] This implies that the patterns reported so far are explained almost exclusively by societies with initial institutions constraining rulers, taking advantage of the opportunities presented by trade via the Atlantic.

In some sense, this is not surprising given the historical patterns. The "winners" of pre-modern Europe were Britain and the Netherlands, the two countries that started with relatively good institutions in 1500. Although Spain and Portugal took advantage of the resources transferred from the New World during the 16th century, they neither developed capitalists institutions to support economic growth nor experienced notable economic development. As we will argue in more detail below, this seems highly related

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[29]In Panel B, when the interaction term between institutions and potential for Atlantic trade, $\ln AT_t \cdot PAT_j \cdot I_{j,1500}$, is included, $\ln AT_t \cdot PAT_j$ has a negative and significant coefficient reinforcing the conclusion that nations with absolutist institutions did not benefit at all from the opportunity to trade in the Atlantic.

to the fact that they started around 1500 with strong absolutist regimes that controlled overseas activity and became the main beneficiaries of the gains from trade and plunder. Italy, or more accurately the Italian city states, which started with highly capitalistic institutions around 1500, also did not experience further development. The evidence in Table 12 explains these patterns by the fact that Spain and Portugal started the era of pre-modern economic development with relatively bad and absolutist institutions, while Italy did not have as easy access to the Atlantic as Britain and the Netherlands. Britain and the Netherlands were the winners because they had both relatively good institutions to start with and easy access to the Atlantic.

6.2 Historical Perspective

We have so far painted a picture in which societies with relatively non-absolutist initial institutions circa 1500 and with easy access to the Atlantic developed rapidly in the centuries after 1500, and this development was in large part driven by commercial growth under relatively capitalist institutions. In the meantime, societies with highly absolutist institutions and those without easy access to the Atlantic failed to develop such capitalist institutions and did not experience similar economic development. The empirical results presented so far, especially those in Table 12, are consistent with this picture. Is it also consistent with historical evidence?

Our reading of the relevant history suggests that the answer is yes. The classic account of the rise of Atlantic economies by Davis starts with the following statement:

> "this book shows that the common economic forces that pervaded Western Europe, and the infuences arising from its participation in transatlantic enterprise, were so modified by each country's particular natural; resources and political and social structure that the final outcome was a diversity of courses of development. This is to state the obvious; the economic history of Western Europe in the seventeeth and eighteenth centuries embraces both the rapid rise of the English and the catastrophic decline of the Spanish economy." (Davis, 1973b, p. xi).

Consistent with our interpretation here, Davis and other historians emphasize the differences in the organization of trade between Britain and Spain, in particular, the

role played by monopoly companies, and how these differences determined who the main beneficiaries of the gains from overseas activities were. Davis, for example, shows that in Britain "most trade was carried on by individuals and small parternships, and not by the Company of Merchant Adventurers, the Levant Company....or others of their kind" (Davis, 1973b, p. 41). Davis continues (p. 43)

> "A few branches of trade were carried on by joint-stock companies, in which numbers of people pooled their capital to be put under a single management. These companies, all of them chartered by the crown ... involved trading beyond Europe. The earliest two of them—the Russia Company of 1555 and the Levant Company of 1581—both abandonned the joint stock and became associations of individuals trading privately... The Royal Africa Company of 1672, formed to carry on the slave trade, had to give way to private trade in 1698..Individual trade, regulated or not, was the norm, and among the joint-stock companies only the East India Company ever made a large contribution to the total of English overseas trade. The attempt, after 1698, to replace it by a company that simply regulated the operations of private traders collpased in 1709, because the Indian Ocean really was a special case."

This period also saw the abolition of the monopoly companies called the Merchant Adventurers, temporarily between 1621 and 1634, and permanently after 1689. As we noted earlier, these changes were a result of the changes in institutions and political power consummated by the Glorious Revolution.

In contrast, in Spain and Portugal, overseas activities were in the monopoly of a few companies, and tightly controlled by their monarchies. Cameron (1993, p. 127), for example, describes the situation as follows: "The spice trade in the East Indies of the Portuguese Empire was a crown monopoly; the Portuguese navy doubled as a merchant fleet, and all spices had to be sold through the *Casa da India* (India House) in Lisbon ... no commerce existed between Portugal and the East except that organized and controlled by the state" (see also Boxer, 1985). In Spain similarly colonial trade was a monopoly of the Crown of Castille, which they delegated to the *Casa de Contratación* (House of Trade) in Seville. This merchants guild was closely monitored by the government (Parry, 1966, Ch 2).

These initial differences in the organization of trade had a major effect on who benefited from trade, and the subsequent political development of the countries. While, as discussed above, Britain progressed down the path leading to capitalists institutions, the state became more absolutist in Spain and Portugal. For example, throughout the 16th century, the Spanish monarchy never called the Parliament, the Cortes. North and Thomas (1973) suggest that this was because the Spanish Crown did not need to raise additional revenues during this period, but it might equally likely be because the Crown was powerful enough that it could suppress these other groups.

Davis (1973a, p. 66) describes the extent of absolute control by the monarchy in Spain as follows: "the king was subject only to weak constitutional constraints. In the first decades of the 16th century the crown had reduced the pretensions of the Castillan nobility and towns, so that the representative body, the Cortes, could obstruct but not.... prevent royal tax raising."

These divergent institutional paths of Britain and Spain led to divergent outcomes. While secure property rights in Britain encouraged commerce, industry and production for the market, the Spanish economy crumbled under high taxes and insecure property rights. For example, the most common argument in the literature is that the Spanish decline resulted from a succession of kings bankrupting the country with high taxes and irresponsible fiscal policy (e.g., Kennedy, 1987). Davis (1973b, p. 146) concurs with this and notes that the Spanish business community were driven to the "desparing realization that its interests were always to be sacrificed to the needs of the government." The early classic by Earl Hamilton (1938, p. 175) also develops the same argument. He writes: "The unbearable burden of taxation at the end of the sixteenth century and throughout the seventeenth was an important factor in the decline of Spain."

All of these, at some level, appear as the outcome of a deeper cause: the lack of institutional constraints on the Spanish King, particularly of the sort that existed in England. Davis (1973b, p. 210) discussing the constraints on the monarchy in England contrasts it with Spain and France, and writes: "the financial check held back the crown from costly expenditure in wartime; the vast and ruinous outpouring of treasure which Philipp II or Louis XIV were able to continue over long periods was not matched by any English monarch until the responsibility for war became largely a parliamentary one after the Revolution of 1688."

So overall our hypothesis for why Britain, and later the Netherlands, took advantage of the opportunities to trade in the Atlantic and developed a capitalist economy, while Spain and Portugal failed do so, is in line with a large body of historical work.

What about Italy? Our hypothesis suggests that Italy did not developed as rapidly as Britain and the Netherlands because it lacked easy access to the Atlantic, and this made it harder for Italy to develop truly capitalist institutions, or perhaps maintain their existing institutional protection for merchants. Is this view plausible in the light of historical evidence? Unfortunately, there is little consensus on the causes of stagnation and decline in Italy. Nevertheless, most historians emphasize the facts that the Italian city states lost their foreign markets, e.g. Cipolla (1952, 1970), Rapp (1975, 1976), Braudel (1992, Ch 2). Cipolla argues (1970, p. 199) that the value of goods imported and exported from Genoa in 1700 was 1/3 of what it had been in 1600, and states that (p. 202) "the economic prosperity of Italy was fundamentally dependent on massive exports of manufactured articles (above all textiles), and on a huge volume of invisible exports such as banking and shipping services. The entire economic structure of the country depended on being able to sell abroad a large proportion of the goods it manufactured and of the services it could provide."

As an additional factor, Cipolla suggests that the guilds stopped innovation in Italy, in particular they forbid the production of exactly the type of lower quality goods that were taking their markets. In Venice (p. 206) "for almost the whole of the 17th century, the statutes of the guild prevented cloth from being made of the English and Dutch type, which had had so much success on the international markets. Moreover, the guild statutes not only demanded the production of a traditional type of goods, but also prevented the adoption of new methods of making these old products." He gives examples from both Venice and Genoa. He argues (p. 206) "when other nations were introducing numerous changes in their industrial organization, the paralyzing action of the local guilds put Italian industry at a disadvantage, reflected in higher production costs." Braudel (1992, p. 136) discussing Venice also argues that decline began "when the prosperity of the [guilds]... faced with the competition from northern cloth, was compromised by the high wages which its artisans refused to forego." Furthermore, Cipolla suggests that (p. 207) "The pressure of taxation in Italian states seems to have been too high, and badly conceived." This is somewhat similar to high taxes in Spain

and Portugal stifling growth.

The best of our knowledge, no historian has suggested an explanation for why the guilds became more powerful and taxes rose in Italy starting in the 16th century. One possibility is that the relatively "capitalistic" Italian institutions of the 15th century had ensured secure property rights and encouraged commerce until the 16th century. But, with the loss of export markets, the principal supporters of these institutions became weaker. Similarly, it is possible that previous supporters became highly entrenched and started to oppose further change, and without new markets attracting newcomers into commerce, more progressive political factions failed to emerge. As Cipolla notes (p. 210) "the development of Atlantic trade routes progressively and irreversibly eliminated the Italians from the international trade in spices and tropical products." With the weakening of these supporters of capitalist institutions, the tendency towards absolutism in Europe, sweeping through Spain and France, may have also affected Italy, leading to more insecure property rights and strengthening of vested interests, such as guilds, opposing economic progress. It is therefore possible to link the deterioration in Italian institutions, while British and Dutch institutions were improving, to the relative weakening of Italian merchants as compared to their British and Dutch counterparts, though we are unaware of any direct evidence supporting this interpretation.

This account of the pre-modern developments in Europe naturally raises the question of why Spain and Portugal were more absolutist than Britain and the Netherlands (and also perhaps why Venice and Genoa did not make more of an effort to expand into the Atlantic). These questions are beyond the scope of our study, but there are some obvious conjectures on the reasons why in institutions differed between Britain and the Netherlands on the one hand, and Spain and Portugal on the other.

The pre-1500 developments in Britain, including the balance of power between the Crown and the nobles, for example as encapsulated by the Magna Carta of 1215, placed a number of restrictions on the monarchy, even on those with absolutist tendencies such as Henry VII or Henry VIII, that were totally absent in Spain and Portugal.

In the context of the Netherlands, it has been argued that the political system was more "participatory" because of the peculiar problems of the area. First, these areas were faced with a collective action problems from the outset of their development because of their low elevation above sea level (thus the name Low Countries), creating constant

flooding. The solution that the Dutch society developed starting in the 10th century was to have a high degree of cooperation in towns, supported by relatively high degree of urban autonomy, so that their inhabitants could invest in land reclamation, and dam building and maintenance. Second, despite these efforts the quality of the land and soil was relatively poor, and this appears to have discouraged the formation of strong feudalistic structures (see de Vries and van der Woude, 1997).

In contrast, the fact that until late in the 15th century, Spain had to fight against the Moors may have also strengthened the central state there, and created a less favorable environment for merchants and industrialists in Spain than in Britain and the Netherlands. As a result, at the end of the 15th and the beginning of the 16th century, the state was much more absolutist in Spain, and also in Portugal, than in Britain and the Netherlands.[30]

That Italian city states did not have easy access to the Atlantic is also plausible, in fact even obvious. Although to sail from Venice to the Atlantic was not much harder than to sail from London or Amsterdam, it involved passage through the Straits of Gibraltar, which were controlled first by the Spaniards and then subsequently by the British. Given the fact that the 16th and 17th centuries are predominantly characterized by incessant wars between Britain, the Netherlands, Spain, Portugal and France for the control of the Atlantic, this situation must have made it impractical and difficult for the Venetians to venture into the Atlantic relative to the ease with which the British or Dutch could engage in trading and pirating activities in the Atlantic. This is not to deny that other factors, for example existing Venetian and Genovese investments in Mediterranean trade, may have reduced Italian interest in the Atlantic (either through a social opportunity cost argument, or reminiscent to Olson's 1982 , because of existing vested interests who did not want a switch from the Mediterranean to other trading routes). Nevertheless, it seems clear that Italian city states did not have easy access to the Atlantic at the turn of the 15th century, and this appears as a major factor in the weakening of their merchant class, and perhaps consequently in their inability to strengthen or even preserve their capitalist institutions.

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[30]On the origins of different state institutions, and in particular on the absence of absolutism, in Britain and the Netherland, see Anderson (1974b) and Ertman (1997).

7 CONCLUSION

This paper has documented a distinctive and interesting pattern in the process of European growth: during the critical period of European development, between 1500 and 1850, the growth of Atlantic nations and Atlantic ports accounts for most of the differential growth of Western Europe relative to other regions. In other words, the Rise of Europe between 1500 and 1850 was largely the rise of Atlantic nations and Atlantic ports.

We documented this fact using the panel data set of cities put together by Bairoch, Batou and Chevre (1988) and other sources on city growth, as well as estimates of income per capita based on Maddison's work and overall urbanization rates. We argued that this fact has important consequences for theories of the Rise of Europe. In particular, it appears that successful theories of European growth must give a prominent role to "Atlantic trade", and deemphasize the direct effects of pre-1500 trends and permanent European characteristics, such as religion, Roman heritage or European culture. Instead, it has to be the interaction between these factors and the opportunity to trade in the Atlantic that is responsible for the Rise of Europe.

Based on work by economic historians, we also suggested that the direct effect of Atlantic trade is too small to account for the entire role of Atlantic ports and Atlantic trade in the Rise of Europe. This leads us to believe that Atlantic trade's role in European growth must have also worked through an indirect channel. We argued that this channel works through the institutional changes that Atlantic trade induced.

Our hypothesis is that Atlantic trade generated large profits for a segment of the bourgeoisie in Western Europe, and this group could demand, obtain and sustain significant institutional reforms protecting their property rights. With their newly gained property rights, the bourgeoisie of Western European nations invested more, traded more and spurred economic growth. Our reading of European history is consistent with this interpretation, and we provided empirical evidence to further support this point of view.

The theory of European growth that emerges from this paper is quite different from many existing views. While it emphasizes the importance of property rights and institutions as in work by North (1981), North and Thomas (1973) and De Long and Shleifer (1993), it sees the roots of these institutions not in Roman heritage or pre-1500

developments, but mostly in the strengthening of the bourgeoisie thanks to Atlantic trade.

The foundations of capitalism, and most likely of modern growth, lie in the social and economic developments that took place in Europe from 1500 onwards. Understanding why these changes happened in Europe, and why not in other places and why not earlier, are first-order questions for a study of long-run development. But the process of European growth is undoubtedly multi-faceted. Any account of the history of a large and heterogeneous continent in terms of a few factors will be at best simplistic, at most misleading. We have been naive enough to advance not only an account based on a few factors, but much worse, a "single-factor" theory. And we are aware that many important aspects of the social and economic development of Western Europe are left out. Furthermore, unfortunately the data that would be necessary to strengthen our case are often missing or of only low quality. Therefore, most of the arguments advanced in this paper are no more than hypotheses. It is nonetheless our hope that these hypotheses are plausible and will encourage more and higher quality research on these topics.

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Data Appendix

Urbanization data

Our baseline data on European urban population are from Bairoch, Batou and Chèvre (1988). Bairoch, Batou and Chèvre start in 800 AD (although their data are more reliable from 1300 AD) and include all cities in Eastern and Western Europe that ever crossed a threshold of 5,000 inhabitants (p. ix). We also use Bairoch (1988) for his qualitative assessment of country-level data and his interpretation of some city-level information.[1]

Our data on city level population in Asia is from Chandler (1987). Asian cities only enter Chandler's data if they are above a threshold of 40,000 in the year under consideration. For overall urbanization estimates we use Bairoch (1988) which was based in part on Chandler, but which uses a threshold of 5,000 inhabitants when calculating urbanization. Bairoch (1988) also provides qualitative analysis and considerable supporting evidence.

We have checked Bairoch, Batou and Chèvre's estimates where possible against the data in de Vries (1984). De Vries's data, unfortunately, only start in 1500 AD and primarily cover Western Europe. For Western Europe, De Vries includes all cities with at least 10,000 inhabitants during 1500-1800. As a result, de Vries' urbanization estimates are generally lower, but the pattern over time – and the change associated with growth of Atlantic trade – is broadly similar.

For example, de Vries (p.39) agrees that the level of urbanization in 1500 was very low in the British Isles (2%) and low throughout northern Europe (3.3%) with the exception of the Low Countries (18.5%, with 21.1% in Belgium and 15.8% in the Netherlands). Urbanization was 6.1% in Spain and 12.4% for the whole of Italy (ranging from 11.4% in Central Italy to 15.1% in Northern Italy in 1550). This pattern is quite consistent with the numbers in Bairoch, Batou and Chèvre.

Irrespective of the precise definition of countries or the urbanization series we use, the available estimates support our main finding: the timing of urbanization increases during this period is closely correlated with increases in Atlantic trade. Bairoch (p.178-179, 1988) points out that "new patterns of trade centering on the Atlantic" affected urbanization. Using a threshold of 5,000 inhabitants, the biggest change was in the Netherlands, where urbanization rose from 8-12% in 1300 to 20-26% in 1500 and 38-49% in 1700 (the highest in Europe at that time). De Vries (p.39, Table 3.7, 1984), using a threshold of 10,000 inhabitants, shows a similar surge in urban percentage of total population: Portuguese urbanization jumped from 3% in 1500 to 11.5% in 1550 and 14.1% in 1600, Spanish urbanization rose from 6.1% in 1500 to 11.4% in 1600, Dutch urbanization was 15.8% in 1500 and 33.6% in 1700, and urbanization in England and Wales rose from 5.8% in 1600 to 16.7% in 1750. In contrast, urbanization changed little

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[1] Bairoch (1988) was originally published in 1985 in French. The English edition reflects some revisions made through February 1988. Bairoch, Batou and Chèvre (1988) provide in large part the data on Europe that underlies much of the analysis in Bairoch (1988). These two sources should be seen as highly complementary.

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over this period in countries not connected closely to Atlantic trade: German urbanization was 3.2% in 1500 and only 5.5% in 1800, Swiss urbanization was 1.5% in 1500 and 3.7% in 1800, and Polish urbanization was still only 1% in 1750.

Balanced Panel

Our balanced panel contains only cities for which we have urban population data in 1300, 1400, 1500, 1600, 1700, 1750, 1800, and 1850. This means we are including only cities that have been in existence (and for which there are archival data) for a relatively long period of time. Overall, we have 193 European cities in the balanced panel. We also have sufficient data on 11 Asian cities to add them to the panel for robustness checks.

There are 15 Atlantic ports in our balanced panel. This list comprises almost all the cities that became major Atlantic ports through 1850. In Britain we have Plymouth, London, Bristol, and Glasgow. (Britain also has the following North Sea ports in our balanced panel: Newcastle, King's Lynn, Edinburgh, and Aberdeen.) In Ireland we have Dublin. In the Netherlands we have Amsterdam, Dordrecht, and Middleburg. The Netherlands is a difficult country to code as most of the cities were on rivers or canals with easy access to the sea. We base our coding on whether a city is mentioned as a port in de Vries and van der Woude. Our alternative coding takes all Dutch cities connected by water to the coast as ports. In Belgium we have Antwerp, in France we have Rouen and Bordeaux, in Spain we have Seville and Santander, and in Portugal we have Porto and Lisbon.

The available evidence on cities that were involved in Atlantic trade, but which do not make it into our balanced panel, supports our conclusions. For example, Nantes became an important French slave-trading city, but does not make it into our balanced panel as we are missing data for 1400 (Bairoch, Batou and Chèvre, p.28). This city started with a population of 8,000 in 1300, reached 40,000 in 1700 and 77,000 in 1800, a pattern of growth that is quite similar to that in Bristol (a major British slave-trade port that is in our balanced panel.) Rotterdam, for which we do not have data before 1500, rose from 5,000 inhabitants in 1500 to 51,000 in 1700. Liverpool, for which we also do not have data before 1500, rose from 6,000 inhabitants in 1700 to 83,000 in 1800 and 376,000 inhabitants in 1850. Cádiz, for which we are missing data only for 1400, rose from 2,000 inhabitants in 1400 to 40,000 in 1700 and 70,000 in 1800.[2]

Institutions

We use the Polity coding rules to assign a value of Constraint on the Executive before 1800 (the details are in the main text). Where Polity IV provides a code for a country after 1800, we use that information. The earliest information in the Polity dataset is as follows, with the first year of this code indicated in brackets: 7 in the United Kingdom (in 1800), 1 in the Netherlands (in 1815, rising to 3 in 1840, 5 in 1848 and 6 in 1849), 5 in Belgium (in 1831, rising to 7 in 1853), 1 in France (in 1800, rising to 3 in 1814, 5 in 1830 and arriving, after some volatility, at 7 in 1877), 7 in Switzerland (in

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[2] Seville's port became partially blocked by a sandbar in 1718, and Cádiz became the official center for Spanish New World trade. In the eighteenth century, Cádiz accounted for 75% of Spanish trade with America (see http://www.andalucia.com/cities/cadiz/history.htm). After Spain lost its colonies at the start of the nineteenth century, Cadiz's population declined.

1848), 1 in Spain (in 1800, rising to 3 in 1820, falling back to 1 in 1823, rising again to 5 in 1837, but falling steadily though 1867 and only reaching 7 in 1876), 1 in Portugal (in 1800, rising to 3 in 1834), 1 in German states (in 1800, rising to 3 only after 1848), 1 in Austria (in 1800, rising to 3 after 1860), 1 in all Italian states (rising to 3 only with unification in 1861), 1 in Serbia (in 1830), 1 in Greece (in 1827), 1 in Sweden (in 1800, rising to 3 in 1812), 3 in Norway (in 1814), 1 in Denmark (in 1800, rising to 5 after 1848) and 1 in Russia (in 1800). In general, we use a 40-year window around a date, e.g., we code 1800 as the average of 1780, 1790, 1800, 1810 and 1820. This avoids distortion due to a few unusual years.

The principle we follow, using Langer (1972), is to look for formal rules that constrain the executive in a way that matches the Polity criteria. If a monarch acted in a constrained way, e.g., imposing low taxes, but only because he or she chose to do so, this does not amount to Constraint on the Executive. At the same time, however, we also look for evidence that formal rules were actually implemented.

Again we have to be careful when the political units that existed between 1500 and 1800 are not those that existed after 1800 (e.g., when the country entered the Polity dataset). To some extent therefore we have to map institutions at the level of political entities in 1500, e.g., the Duchy of Burgundy or the Hapsburg empire, into modern countries. For the most part this is not too difficult – Langer (1972) reports institutional developments at the level of modern countries, although we have to supplement his information on the Netherlands with more the detailed account in Israel (1995).

The main issues are with regards to Germany and Italy. Germany was comprised of many states during this period, but with only minor differences in institutions – all of them were run in a fairly autocratic fashion. With the exception of a few cities, we have not found evidence of strong constraint on the executive or protection for capital through 1800 anywhere in the modern borders of Germany.

Italy is more difficult because we know that institutions through 1500 at least were relatively pro-capital in the North and probably less so in the Papal States and in the Kingdom of Naples (see also De Long and Shleifer on the North vs. South differences). Of course, there was arguably also significant variation within Northern Italy, for example between Venice, Milan, Genoa and Florence. We use an average measure of institutions, with Southern, Central and Northern Italy having equal weights. Within Northern Italy we assign equal weights to Venice, Milan, Florence and Genoa.

The only other coding of institutions before 1800 is from De Long and Shleifer. The main difference in coding between following the Polity rules and using De Long and Shleifer (1993) is that the Polity coding rules imply feudal regimes had a weak constraint on the executive. De Long and Shleifer code regimes as either Free or Prince, and according to this scheme feudal regimes are "Free". Thus the move to absolutism in France after 1650 and Austria after 1500 (and by conquest, in Belgium and Italy) is a movement from Free to Prince, i.e., an equal and opposite move to that experienced by Britain when it moves from Prince to Free after 1650.[3] In contrast, the Polity rules imply that the constraint on the executive in France before 1500 was not as high as, for example, in Britain in 1700, so the move to absolutism is a lower "step down" in terms of institutional quality. However, the Polity rules applied to Langer (1972) produce the

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[3] De Long and Shleifer also code Tilly (1990) and use a scheme proposed by Putnam. All variants of their codings produce similar results for our analysis.

same qualitative conclusion as that of De Long and Shleifer for the period after 1500 – some countries got better institutions (Britain and Netherlands) and some got worse (France, Austria, and Spain).

We also use an alternative coding for the protection of capital. We did this independently, using Langer to adjust constraint on the executive, so that a protection only counts if it is for "capital" (i.e., urban-based merchants of some kind) not for the nobility. In this view, early feudal regimes are almost as bad as absolutism almost everywhere and Poland, for example, never has good institutions.

Precise codings of this nature will always be controversial. But the qualitative ranking of institutions does not seem to be in doubt. The main assessments and assumptions underlying our work are

1) Institutions were roughly similar in 1500, with "better" institutions in the Low Countries, Northern Italy and arguably Britain. In terms of the protection of capital, for example, Northern Italy was ahead of England and Spain in 1500 (a score of 3 vs. 2 for England and 1 for Spain). The only other places with a score of 3 in 1500 are Belgium and the Netherlands.

2) Institutions became worse from 1500 to 1750 in countries that experienced absolutist regimes (e.g., France, Austria, Italy, Germany and to some extent Spain). This seems quite uncontroversial – parliaments ceased to meet in general, religious (trading) minorities such as the Huguenots and Jews were mistreated and eventually expelled. In all these "absolutist" countries, constraint on the executive fell from an initial score of 2 or 3 to a score of 1. Institutions improved in France from the end of the eighteenth century, although the French Revolution was associated with considerable volatility of institutions.

3) Institutions "improved", in terms of stronger constraints on the executive and more protection of capital, from 1500 to 1700 in Britain and the Netherlands. In the Netherlands the key event was the struggle for independence, as discussed in the text. The independent Netherlands was probably the place between 1600 and 1750 with the strongest protection for the rights of capital – there was a nominal head of state, but the real power was at the level of cities and regional assemblies (see Israel 1995). Through 1850 institutions continued to improve in Britain, particularly with the steady strengthening of Parliament, but not in the Netherlands. According to the Polity data, Britain reached a score of 7 by 1800 (the highest possible measure of constraint on the executive) while the Netherlands, after a period of Napoleonic rule, reached only a 3 by 1840.

The main case for using the protection of capital rather than just constraint on the executive is that it allows us to differentiate more clearly between two distinct sets of pre-1500 institutions. In both the Netherlands and Spain there were monarchs (the Duke of Burgundy and then the Hapsburgs in the case of the Low Countries) facing only limited constraints on the executive.[4] But merchants in the Netherlands definitely had strong

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[4] According to Langer (1972), the Cortes (parliament) had some significant powers in Castille around 1400 in Spain. However, this did not last, in part because the monarch gained access to large cash revenues in the form of gold and silver from the New World. City charters and customary rights provided some constraint on the executive in the Low Countries, primarily by

protections than did most merchants in Spain (with the possible exception of Catalonia, which obviously does not have easy access to the Atlantic).

limiting the ability of the sovereign to tax. The constraint on the executive was probably higher in the Netherlands, but not by much in 1400: we assign a score of 3 to the Netherlands and a score of 2 to Spain.

Table 1

	Whole Sample, unweighted	Whole Sample, weighted	Atlantic Western Europe	Non-Atlantic Western Europe	Eastern Europe	Asia
			Weighted by population			
Urbanization in 1300	6.5	9.9	8.4	9.8	4.1	11.0
	(5.2)	(3.2)	(3.3)	(6.2)	(3.3)	(0.7)
Urbanization in 1400	7.6	10.3	9.8	10.7	3.9	11.1
	(9.5)	(3.6)	(8.4)	(5.9)	(1.5)	(0.5)
Urbanization in 1500	8.2	10.6	10.7	10.7	4.0	11.5
	(7.5)	(3.4)	(6.8)	(5.1)	(1.8)	(0.7)
Urbanization in 1600	9.6	11.7	13.5	14.1	4.4	12.0
	(7.6)	(4.0)	(7.9)	(8.6)	(2.7)	(0.7)
Urbanization in 1700	10.7	11.2	14.5	13.0	3.7	11.6
	(8.5)	(4.1)	(7.4)	(7.4)	(2.2)	(0.7)
Urbanization in 1800	14.1	10.2	19.1	17.2	7.0	8.9
	(9.1)	(4.9)	(7.8)	(7.7)	(3.3)	(1.4)
GDP per capita in 1500	613.83	608.3	722.7	860.4	506.9	575
	(153.0)	(118.0)	(56.7)	(220.2)	(78.2)	(35.5)
GDP per capita in 1600	714.5	630.5	906.6	917.1	578.3	576.8
	(220.4)	(144.2)	(153.2)	(164.2)	(112.3)	(35.3)
GDP per capita in 1700	822.9	622.2	1060.6	993.6	636.0	574.2
	(339.1)	(208.1)	(310.2)	(106.1)	(136.1)	(35.3)
GDP per capita in 1820	937.7	691.7	1281.6	1108.6	719.5	575.5
	(370.9)	(264.5)	(344.9)	(80.8)	(174.9)	(45.7)
Constraint on Executive in 1500	1.63	1.73	1.80	1.94	1.46	
	(0.74)	(0.80)	(0.59)	(1.02)	(0.79)	
Constraint on Executive in 1600	1.59	1.53	1.65	1.50	1.45	
	(0.97)	(0.84)	(1.15)	(0.60)	(0.79)	
Constraint on Executive in 1700	1.74	1.52	1.96	1.19	1.30	
	(1.26)	(1.17)	(1.71)	(0.61)	(0.76)	
Constraint on Executive in 1800	2.11	2.18	4.16	1.29	1.00	
	(1.76)	(1.83)	(1.72)	(0.96)	(0.00)	
Atlantic Coast-to-Area (broad definition)	0.0048	0.0016	0.0110	0.0020	0.00	0.00
	(0.0110)	(0.0068)	(0.0170)	(0.0041)		
Atlantic Coast-to-Area (narrow definition)	0.0042	0.0014	0.0110	0.00	0.00	0.00
	(0.0110)	(0.0067)	(0.0166)			
Average Population in Atlantic Ports	0.96	0.28	2.23	0.00	0.00	0.00
	(2.35)	(1.23)	(2.92)			

First column is unweighted means; other columns are mean values weighted by total population in year indicated. Standard deviation is in parentheses. Urbanization is percent population living in towns with a population of at least 5,000, from Bairoch, Batou and Chevre for Europe and from Bairoch for Asia. GDP per capita is from Maddison. Constraint on Executive is on a scale from 1 to 7, where a higher score indicates more constraints; the source is the Polity IV dataset. Atlantic Coast-to-Area is the ratio of Atlantic coastline to land area. The broad definition includes those parts of Germany, Denmark and Norway that are on the North Sea; the narrow definition sets the value of Atlantic coastline equal to zero for Germany, Denmark and Norway. Average population in Atlantic ports is the percent of population living in Atlantic ports in our balanced panel dataset on average from 1300 to 1850. For more detailed definitions and sources see Appendix Table 1.

Table 2

Dependent Variable is level of urbanization

	Panel, 1300-1850	Panel, 1000-1850	Panel, 1300-1850, weighted	Panel, 1300-1850	Panel, 1300-1850	Panel, 1000-1850	Panel, 1300-1850, weighted	Panel, 1300-1850, with Asia	Panel, 1300-1850	Panel, 1300-1850	Panel, 1300-1850
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
								Potential for Atlantic Trade is measured by:			
									Atlantic coastline-to-land area (narrow definition)	Average pop. in Atlantic ports	Dummy for Atlantic Nation
				Atlantic coastline-to-land area (broad definition)							
Western Europe x 1500	0.022	0.029	0.011	0.017	0.011	0.018	0.00078	0.0096	0.013	0.013	0.015
	(0.023)	(0.022)	(0.023)	(0.023)	(0.021)	(0.021)	(0.017)	(0.020)	(0.021)	(0.022)	(0.023)
Western Europe x 1600	0.008	0.016	0.032	-0.0003	-0.011	-0.001	0.016	(0.008)	-0.006	-0.007	-0.002
	(0.023)	(0.022)	(0.022)	(0.023)	(0.022)	(0.021)	(0.016)	(0.020)	(0.021)	(0.022)	(0.023)
Western Europe x 1700	0.037	0.044	0.046	0.018	0.014	0.024	0.025	0.016	0.019	0.018	0.024
	(0.023)	(0.022)	(0.020)	(0.023)	(0.022)	(0.022)	(0.015)	(0.020)	(0.021)	(0.022)	(0.024)
Western Europe x 1750	0.046	0.053	0.046	0.021	0.017	0.028	0.020	0.020	0.024	0.023	0.030
	(0.023)	(0.022)	(0.019)	(0.023)	(0.022)	(0.022)	(0.015)	(0.020)	(0.021)	(0.022)	(0.024)
Western Europe x 1800	0.023	0.030	0.058	-0.013	-0.0095	0.003	0.028	0.005	-0.002	-0.003	0.005
	(0.023)	(0.022)	(0.018)	(0.023)	(0.022)	(0.022)	(0.139)	(0.021)	(0.021)	(0.022)	(0.024)
Western Europe x 1850	0.039	0.047	0.073	-0.0056	-0.003	0.012	0.030	0.014	0.0074	0.0059	0.0159
	(0.023)	(0.022)	(0.017)	(0.023)	(0.022)	(0.022)	(0.013)	(0.021)	(0.021)	(0.023)	(0.025)
Potential for Atlantic Trade x 1500				0.47							
				(0.95)							
Potential for Atlantic Trade x 1600				0.85							
				(0.95)							
Potential for Atlantic Trade x 1700				1.92							
				(0.95)							
Potential for Atlantic Trade x 1750				2.51							
				(0.95)							
Potential for Atlantic Trade x 1800				3.67							
				(0.95)							
Potential for Atlantic Trade x 1850				4.58							
				(0.95)							
Total Atlantic Trade x					0.62	0.48	0.74	0.62	0.59	0.0024	0.0072
Potential for Atlantic Trade					(0.11)	(0.10)	(0.07)	(0.11)	(0.11)	(0.0005)	(0.0033)
R-Squared	0.79	0.74	0.87	0.83	0.82	0.77	0.93	0.81	0.82	0.81	0.79
Number of Observations	192	239	192	192	192	239	192	208	192	192	192

Standard errors are in parentheses. Panel regressions with full set of country and year dummies; regressions are unweighted unless otherwise stated. Dependent variable is level of urbanization (percent of population living in towns with more than 5,000 population.) Urbanization in Europe is from Bairoch, Batou and Chevre, and urbanization in Asia is from Chandler. We report results with four different measures of Potential for Atlantic trade: the ratio of Atlantic coastline to land area, defining the Atlantic broadly to include the North Sea (columns 4-8); the ratio of Atlantic coastline to land area, defining the Atlantic narrowly to exclude Germany, Denmark, Norway and half the coast of Britain (column 9); the average percentage population in Atlantic ports during 1300-1850 (column 10); and a dummy for whether or not a country has an Atlantic port (column 11). Total Atlantic Trade is the log average number of voyages per year. For more detailed data definitions and sources see Appendix Table 1.

Table 3

Dependent Variable is Log GDP per capita

	Panel, 1500-1820	Panel, 1500-1870	Panel, 1500-1820, weighted	Panel, 1500-1820	Panel, 1500-1820	Panel, 1500-1870	Panel, 1500-1820, weighted	Panel, 1500-1820, with Asia	Panel, 1500-1820	Panel, 1500-1820	Panel, 1500-1820
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
				Potential for Atlantic Trade is measured by:							
				Atlantic coastline-to-land area (broad definition)					Atlantic coastline-to-land area (restricted definition)	Average pop. in Atlantic ports	Dummy for Atlantic Nation
Western Europe x 1600	0.091	0.091	0.049	0.061	0.061	0.066	0.019	0.087	0.067	0.065	0.072
	(0.051)	(0.069)	(0.067)	(0.048)	(0.051)	(0.065)	(0.054)	(0.046)	(0.047)	0.048	(0.052)
Western Europe x 1700	0.164	0.164	0.060	0.117	0.112	0.124	0.010	0.161	0.127	0.122	0.134
	(0.051)	(0.069)	(0.064)	(0.049)	(0.051)	(0.066)	(0.052)	(0.047)	(0.048)	(0.049)	(0.053)
Western Europe x 1820	0.208	0.208	0.094	0.126	0.146	0.139	0.002	0.192	0.145	0.136	0.156
	(0.051)	(0.069)	(0.059)	(0.052)	(0.051)	(0.068)	(0.050)	(0.050)	(0.050)	(0.051)	(0.059)
Western Europe x 1870		0.344				0.242					
		(0.069)				(0.071)					
Potential for Atlantic Trade x 1600				3.79							
				(2.22)							
Potential for Atlantic Trade x 1700				6.67							
				(2.22)							
Potential for Atlantic Trade x 1820				7.97							
				(2.22)							
Potential for Atlantic Trade x 1870											
Total Atlantic Trade x Potential for Atlantic Trade					2.34	1.98	3.38	2.34	2.31	0.010	0.032
					(0.61)	(0.50)	(0.56)	(0.64)	(0.62)	(0.0029)	(0.018)
R-Squared	0.95	0.94	0.94	0.96	0.96	0.94	0.96	0.95	0.96	0.96	0.96
Number of Observations	104	130	96	104	104	130	96	120	104	104	104

Standard errors are in parentheses. Panel regressions with full set of country and year dummies; regressions are unweighted unless otherwise stated. Dependent variable is log GDP per capita, from Maddison (2001). We report results with four different measures of Potential for Atlantic trade: the ratio of Atlantic coastline to land area, defining the Atlantic broadly to include the North Sea (columns 4-8); the ratio of Atlantic coastline to land area, defining the Atlantic narrowly to exclude Germany, Denmark, Norway and half the coast of Britain (column 9); the average percentage population in Atlantic ports during 1300-1850 (column 10); and a dummy for whether or not a country has an Atlantic port (column 11). Total Atlantic Trade is the log average number of voyages per year. For more detailed data definitions and sources see Appendix Table 1.

Table 4

	Panel, 1300-1850, controlling for religion	Panel, 1300-1850, controlling for religion	Panel, 1300 to 1850, controlling for wars	Panel, 1300 to 1850, controlling for wars	Panel, 1300 to 1850, controlling for Roman heritage	Panel, 1300 to 1850, controlling for Roman heritage	Panel, 1300 to 1850, controlling for latitude	Panel, 1300 to 1850, controlling for latitude	Panel, 1300-1850, without Britain
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Western Europe x 1500	0.017	0.011	0.0074	0.0014	0.0053	-0.0037	0.016	0.009	0.015
	(0.023)	(0.022)	(0.025)	(0.023)	(0.027)	(0.026)	(0.023)	(0.022)	(0.022)
Western Europe x 1600	-0.004	-0.015	-0.013	-0.022	-0.005	-0.013	0.003	-0.005	0.002
	(0.023)	(0.023)	(0.026)	(0.023)	(0.027)	(0.026)	(0.023)	(0.022)	(0.022)
Western Europe x 1700	0.015	0.010	0.004	-0.0003	0.008	0.004	0.019	0.015	0.022
	(0.023)	(0.023)	(0.026)	(0.023)	(0.027)	(0.026)	(0.023)	(0.022)	(0.022)
Western Europe x 1750	0.019	0.015	0.010	0.007	0.020	0.018	0.021	0.015	0.024
	(0.023)	(0.023)	(0.026)	(0.023)	(0.027)	(0.026)	(0.023)	(0.022)	(0.022)
Western Europe x 1800	-0.012	-0.008	-0.019	-0.014	-0.023	-0.020	-0.010	-0.004	0.009
	(0.023)	(0.023)	(0.026)	(0.023)	(0.027)	(0.026)	(0.023)	(0.022)	(0.022)
Western Europe x 1850	-0.005	-0.030	-0.015	-0.011	-0.017	-0.015	-0.003	-0.001	0.004
	(0.023)	(0.024)	(0.026)	(0.023)	(0.027)	(0.026)	(0.023)	(0.022)	(0.023)
Potential for Atlantic Trade x 1500	0.47		0.50		0.33		0.47		
	(0.96)		(1.00)		(0.97)		(0.94)		
Potential for Atlantic Trade x 1600	0.75		0.95		0.79		1.18		
	(0.97)		(1.00)		(0.97)		(0.95)		
Potential for Atlantic Trade x 1700	1.84		1.83		1.79		2.07		
	(0.97)		(1.00)		(0.97)		(0.95)		
Potential for Atlantic Trade x 1750	2.47		2.54		2.51		2.50		
	(0.97)		(1.00)		(0.97)		(0.95)		
Potential for Atlantic Trade x 1800	3.72		3.72		3.56		4.06		
	(0.97)		(1.00)		(0.97)		(0.95)		
Potential for Atlantic Trade x 1850	4.59		4.59		4.44		4.81		
	(0.97)		(1.00)		(0.97)		(0.95)		
Total Atlantic Trade x Potential for Atlantic Trade		0.62		0.61		0.60		0.65	0.47
		(0.12)		(0.12)		(0.12)		(0.11)	(0.19)
p-value for Protestant x year effect	[0.94]	[0.97]							
Wars per year in preceding century			0.013	0.011					
			(0.011)	(0.011)					
p-value for Roman Heritage x Year					[0.94]	[0.93]			
p-value for Latitude x Year							[0.14]	[0.15]	
R-Squared	0.83	0.82	0.83	0.82	0.83	0.82	0.84	0.83	0.83
Number of Observations	192	192	176	176	192	192	192	192	184

Standard errors are in parentheses. Unweighted panel regressions with full set of country and year dummies. Dependent variable is level of urbanization (percent of population living in towns with more than 5,000 population.) Urbanization in Europe is from Bairoch, Batou and Chevre, and urbanization in Asia is from Chandler. All results measure the Potential for Atlantic trade as the ratio of Atlantic coastline to land area, defining the Atlantic broadly to include the North Sea. Total Atlantic Trade is the log average number of voyages per year. Protestant is a dummy for whether country was majority Protestant in 1600. Wars per year are in preceding century through 1700, 1700-1750 for 1750, 1750-1800 for 1800 and 1800-1850 for 1850. Roman heritage is dummy for whether country was in Roman empire and not subsequently in Ottoman empire. Latitude is distance from the equator for capital city of this country today. For more detailed data definitions and sources see Appendix Table 1.

Table 5

Dependent Variable is Log GDP per capita

	Panel, 1500-1820, controlling for religion	Panel, 1500-1820, controlling for religion	Panel, 1500 to 1820, controlling for wars	Panel, 1500 to 1820, controlling for wars	Panel, 1500 to 1820, controlling for Roman heritage	Panel, 1500 to 1820, controlling for Roman heritage	Panel, 1500 to 1820, controlling for latitude	Panel, 1500 to 1820, controlling for latitude	Panel, 1500-1820, without Britain
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Western Europe x 1600	0.034	0.042	0.034	0.039	0.035	0.036	0.030	0.035	0.045
	(0.049)	(0.046)	(0.058)	(0.053)	(0.061)	(0.058)	(0.054)	(0.050)	(0.051)
Western Europe x 1700	0.058	0.069	0.058	0.067	0.085	0.094	0.073	0.088	0.098
	(0.049)	(0.047)	(0.058)	(0.054)	(0.061)	(0.058)	(0.054)	(0.050)	(0.052)
Western Europe x 1820	0.077	0.076	0.070	0.069	0.146	0.145	0.1	0.099	0.118
	(0.049)	(0.049)	(0.058)	(0.056)	(0.061)	(0.060)	(0.054)	(0.053)	(0.056)
Potential for Atlantic Trade x 1600	3.02		3.68		3.16		3.41		
	(2.06)		(2.28)		(2.29)		(2.27)		
Potential for Atlantic Trade x 1700	5.40		6.05		6.12		6.15		
	(2.06)		(2.29)		(2.29)		(2.27)		
Potential for Atlantic Trade x 1820	6.97		8.87		8.28		7.89		
	(2.06)		(2.28)		(2.29)		(2.27)		
Total Atlantic Trade x Potential for Atlantic Trade		2.02		2.54		2.41		2.29	1.37
		(0.57)		(0.62)		(0.63)		(0.63)	(1.08)
p-value for Protestant x year effect	[0.001]	[0.001]							
Wars per year in preceding century			0.059	0.061					
			(0.03)	(0.028)					
p-value for Roman Heritage x Year					[0.55]	[0.49]			
p-value for Latitude x Year							[0.36]	[0.34]	
R-Squared	0.97	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Number of Observations	104	104	88	88	104	104	104	104	100

Standard errors are in parentheses. Unweighted panel regressions with full set of country and year dummies. Dependent variable is log GDP per capita, from Maddison (2001). All results measure the Potential for Atlantic trade as the ratio of Atlantic coastline to land area, defining the Atlantic broadly to include the North Sea. Total Atlantic Trade is the log average number of voyages per year. Protestant is a dummy for whether country was majority Protestant in 1600. Wars per year are in preceding century through 1700, 1700-1750 for 1750, 1750-1800 for 1800 and 1800-1850 for 1850. Roman heritage is dummy for whether country was in Roman empire and not subsequently in Ottoman empire. Latitude is distance from the equator for capital city of this country today. For more detailed data definitions and sources see Appendix Table 1.

Table 6
Balanced Panel City Data

Dependent Variable is log urban population

	Balanced Panel, 1300-1850	Balanced Panel, 1300-1850	Balanced Panel, 1300-1850	Balanced Panel, 1300-1850, without London and Amsterdam	Balanced Panel, 1300-1850, with Asia	Balanced Panel, 1300-1850, with Asia
	(1)	(2)	(3)	(4)	(5)	(6)
Western Europe x 1500	0.030	-0.005	-0.08	-0.0042	-0.052	-0.79
	(0.19)	(0.18)	(0.18)	(0.16)	(0.11)	(0.19)
Western Europe x 1600	0.061	-0.11	-0.12	-0.11	-0.052	-0.13
	(0.19)	(0.18)	(0.18)	(0.16)	(0.11)	(0.19)
Western Europe x 1700	0.47	0.17	0.24	0.17	0.17	0.23
	(0.19)	(0.18)	(0.18)	(0.16)	(0.11)	(0.19)
Western Europe x 1750	0.59	0.28	0.30	0.28	0.09	0.30
	(0.19)	(0.18)	(0.18)	(0.16)	(0.11)	(0.19)
Western Europe x 1800	0.53	0.19	0.21	0.18	-0.04	0.21
	(0.19)	(0.18)	(0.18)	(0.16)	(0.11)	(0.19)
Western Europe x 1850	0.65	0.26	0.22	0.25	0.09	0.22
	(0.19)	(0.18)	(0.18)	(0.16)	(0.11)	(0.19)
Atlantic port x 1500		0.15		-0.07	0.15	
		(0.13)		(0.17)	(0.14)	
Atlantic port x 1600		0.75		0.06	0.768	
		(0.13)		(0.17)	(0.14)	
Atlantic port x 1700		1.29		0.27	1.33	
		(0.13)		(0.17)	(0.14)	
Atlantic port x 1750		1.33		0.38	1.38	
		(0.13)		(0.17)	(0.14)	
Atlantic port x 1800		1.52		0.60	1.57	
		(0.13)		(0.17)	(0.14)	
Atlantic port x 1850		1.71		0.63	1.76	
		(0.13)		(0.17)	(0.14)	
Non-Slave Atlantic Trade x Atlantic Ports						
Total Atlantic Trade x Atlantic Ports			0.26			0.26
			(0.02)			(0.02)
R-Squared	0.81	0.84	0.84	0.82	0.88	0.88
Number of Observations	1544	1544	1544	1528	1624	1624

Standard errors are in parentheses. Weighted panel regressions with full set of city and year dummies; weights are average level of urban population in each city during the sample period. Dependent variable is log total urban population. All columns report balanced panel regressions for 1300, 1400, 1500, 1600, 1700, 1750, 1800 and 1850, using only cities for which we have data in all 8 time periods. The Atlantic port dummy equals one for a port on the Atlantic. Total Atlantic trade is log average voyages per year. For a list of Atlantic ports, see the data appendix.

Table 7
Balanced Panel City Data

Dependent Variable is log urban population

	Balanced Panel, 1300-1850	Balanced Panel, 1300-1850; controlling for religion	Balanced Panel, 1300-1850; controlling for religion	Balanced Panel, 1300-1850 controlling for war	Balanced Panel, 1300-1850; controlling for war	Balanced Panel, 1300-1850; controlling for Roman Heritage	Balanced Panel, 1300-1850; controlling for Roman Heritage	Balanced Panel, 1400-1850; controlling for latitude	Balanced Panel, 1400-1850; controlling for latitude
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Western Europe x 1500	0.030	-0.0042	-0.0540	-0.16	-0.26	0.03	-0.01	0.07	-0.0095
	(0.19)	(0.17)	(0.17)	(0.21)	(0.21)	(0.20)	(0.20)	(0.17)	(0.17)
Western Europe x 1600	0.061	-0.15	-0.2	-0.25	-0.28	-0.12	-0.13	-0.11	-0.013
	(0.19)	(0.17)	(0.18)	(0.20)	(0.20)	(0.20)	(0.20)	(0.17)	(0.17)
Western Europe x 1700	0.47	0.13	0.17	(0.07)	(0.02)	0.47	0.51	0.42	0.50
	(0.19)	(0.17)	(0.18)	(0.20)	(0.21)	(0.20)	(0.20)	(0.17)	(0.17)
Western Europe x 1750	0.59	0.24	0.24	0.01	0.02	0.74	0.76	0.56	0.59
	(0.19)	(0.17)	(0.17)	(0.20)	(0.20)	(0.20)	(0.20)	(0.17)	(0.17)
Western Europe x 1800	0.53	0.146	0.198	(0.13)	(0.12)	0.74	0.76	0.5	0.54
	(0.19)	(0.17)	(0.17)	(0.20)	(0.21)	(0.20)	(0.20)	(0.17)	(0.17)
Western Europe x 1850	0.65	0.215	0.198	-0.13	-0.17	0.88	0.86	0.67	0.64
	(0.19)	(0.17)	(0.17)	(0.20)	(0.20)	(0.20)	(0.20)	(0.17)	(0.17)
Atlantic port x 1500		0.15		0.15		0.16		0.098	
		(0.13)		(0.13)		(0.13)		(0.13)	
Atlantic port x 1600		0.43		0.78		0.77		0.699	
		(0.13)		(0.13)		(0.13)		(0.13)	
Atlantic port x 1700		0.99		1.33		1.38		1.15	
		(0.13)		(0.13)		(0.13)		(0.13)	
Atlantic port x 1750		1.04		1.41		1.45		1.18	
		(0.13)		(0.13)		(0.13)		(0.13)	
Atlantic port x 1800		1.23		1.60		1.66		1.34	
		(0.13)		(0.13)		(0.13)		(0.13)	
Atlantic port x 1850		1.43		1.81		1.87		1.47	
		(0.13)		(0.13)		(0.13)		(0.13)	
Total Atlantic Trade			0.20		0.27		0.28		0.22
			(0.02)		(0.02)		(0.02)		(0.014)
Protestant		0.82	0.86						
		(0.07)	(0.07)						
Average years of war				0.064					
				(0.066)					
Roman Heritage x 1500						-0.049	-0.102		
						(0.150)	(0.147)		
Roman Heritage x 1600						0.007	-0.011		
						(0.150)	(0.147)		
Roman Heritage x 1700						-0.42	-0.38		
						(0.15)	(0.15)		
Roman Heritage x 1750						-0.65	-0.64		
						(0.15)	(0.15)		
Roman Heritage x 1800						-0.77	-0.76		
						(0.15)	(0.15)		
Roman Heritage x 1850						-0.87	-0.89		
						(0.15)	(0.15)		
Latitude x 1500								0.022	0.017
								(0.0094)	(0.0094)
Latitude x 1600								0.027	0.027
								(0.0094)	(0.0094)
Latitude x 1700								0.071	0.075
								(0.0094)	(0.0094)
Latitude x 1750								0.079	0.080
								(0.0094)	(0.0094)
Latitude x 1800								0.090	0.092
								(0.0094)	(0.0094)
Latitude x 1850								0.11	0.12
								(0.0094)	(0.0094)
R-Squared	0.81	0.86	0.86	0.85	0.85	0.85	0.85	0.87	0.86
Number of Observations	1544	1544	1544	1480	1480	1544	1544	1544	1544

Standard errors are in parentheses. Weighted panel regressions with full set of city and year dummies; weights are average level of urban population in each city during the sample period. Dependent variable is log total urban population. All columns report balanced panel regressions for 1300, 1400, 1500, 1600, 1700, 1750, 1800 and 1850, using only cities for which we have data in all 8 time periods. The Atlantic port dummy equals one for a port on the Atlantic. Total Atlantic trade is log average voyages per year. For a list of Atlantic ports, see the data appendix.

Table 8
City Level Data (not balanced panel)

Dependent Variable is log urban population

	Just European cities	Just European cities	European cities in balanced panel	European cities in balanced panel	European and Asian cities	European and Asian cities
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: 1300-1500						
1500 dummy	0.25	0.25	0.38	0.38	0.16	0.16
	(0.10)	(0.10)	(0.14)	(0.14)	(0.05)	(0.05)
Western Europe in 1500	-0.24	-0.26	-0.32	-0.33	-0.15	-0.17
	(0.11)	(0.11)	(0.15)	(0.15)	(0.07)	(0.07)
Atlantic port in 1500		0.23		0.12		0.23
		(0.15)		(0.17)		(0.16)
R-Squared	0.89	0.89	0.89	0.95	0.95	0.95
Number of Observations	686	686	386	386	1232	1232
Panel B: 1500-1700						
1700 dummy	0.25	0.25	0.14	0.14	0.33	0.33
	(0.11)	(0.10)	(0.19)	(0.17)	(0.06)	(0.05)
Western Europe in 1700	0.31	0.12	0.52	0.30	0.23	0.05
	(0.12)	(0.11)	(0.20)	(0.18)	(0.07)	(0.07)
Atlantic port in 1700		1.18		1.20		1.18
		(0.10)		(0.15)		(0.12)
R-Squared	0.89	0.91	0.87	0.90	0.92	0.93
Number of Observations	1030	1030	386	386	1086	1086
Panel C: 1500-1800						
1800 dummy	0.53	0.53	0.63	0.63	0.54	0.54
	(0.13)	(0.12)	(0.24)	(0.21)	(0.07)	(0.06)
Western Europe in 1800	0.47	0.24	0.45	0.16	0.46	0.24
	(0.14)	(0.13)	(0.26)	(0.23)	(0.09)	(0.08)
Atlantic port in 1800		1.32		1.38		1.32
		(0.12)		(0.18)		(0.13)
R-Squared	0.85	0.87	0.83	0.87	0.90	0.91
Number of Observations	1244	1244	386	386	1300	1300

Standard errors are in parentheses. Weighted panel regressions with full set of city and year dummies; weights are average level of urban population in each city during the sample period. Dependent variable is log total urban population. Panel A uses data only from 1300 and 1500, Panel B uses data only from 1500 and 1700, and Panel C uses data only from 1500 and 1800. The Atlantic port dummy equals one for a port on the Atlantic. For a list of Atlantic ports, see the data appendix.

Table 9

Dependent Variable is log urban population

	Balanced Panel, 1300-1850	Balanced Panel, 1300 1850; with Mediterranean ports	Balanced Panel, 1300 1850; with Mediterranean and Atlantic ports	Balanced Panel, 1300 1850; with Mediterranean and Atlantic ports	Balanced Panel, 1300-1850; with North Sea ports	Balanced Panel, 1300-1850; with North Sea and Atlantic ports	Balanced Panel, 1300-1850; with North Sea and Atlantic ports	Balanced Panel, 1300-1850; with all ports	Balanced Panel, 1300-1850; with all ports
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Western Europe x 1500	0.030	0.034	-0.0024	-0.0840	0.015	-0.025	-0.100	-0.026	-0.110
	(0.19)	(0.19)	(0.18)	(0.18)	(0.19)	(0.17)	(0.17)	(0.18)	(0.18)
Western Europe x 1600	0.061	0.060	-0.14	-0.14	0.044	-0.14	-0.15	-0.17	-0.18
	(0.19)	(0.19)	(0.18)	(0.18)	(0.19)	(0.17)	(0.17)	(0.18)	(0.18)
Western Europe x 1700	0.47	0.48	0.15	0.23	0.44	0.12	0.20	0.11	0.19
	(0.19)	(0.19)	(0.18)	(0.18)	(0.19)	(0.17)	(0.17)	(0.18)	(0.18)
Western Europe x 1750	0.59	0.60	0.27	0.29	0.56	0.23	0.25	0.21	0.23
	(0.19)	(0.19)	(0.18)	(0.18)	(0.19)	(0.17)	(0.17)	(0.18)	(0.18)
Western Europe x 1800	0.53	0.55	0.16	0.20	0.50	0.12	0.16	0.09	0.13
	(0.19)	(0.19)	(0.18)	(0.18)	(0.19)	(0.17)	(0.17)	(0.18)	(0.18)
Western Europe x 1850	0.65	0.68	0.25	0.22	0.61	0.18	0.15	0.17	0.14
	(0.19)	(0.19)	(0.18)	(0.18)	(0.19)	(0.17)	(0.17)	(0.18)	(0.18)
Mediterranean port x 1500		-0.52	-0.02	0.07				0.01	0.10
		(0.17)	(0.16)	(0.16)				(0.15)	(0.15)
Mediterranean port x 1600		0.009	0.209	0.214				0.24	0.25
		(0.17)	(0.16)	(0.16)				(0.15)	(0.15)
Mediterranean port x 1700		-0.22	0.12	0.04				0.17	0.09
		(0.17)	(0.16)	(0.16)				(0.15)	(0.15)
Mediterranean port x 1750		-0.25	0.10	0.07				0.16	0.13
		(0.17)	(0.16)	(0.16)				(0.15)	(0.15)
Mediterranean port x 1800		-0.21	0.19	0.16				0.27	0.22
		(0.17)	(0.16)	(0.16)				(0.15)	(0.15)
Mediterranean port x 1850		-0.43	0.01	0.04				0.09	0.13
		(0.17)	(0.16)	(0.16)				(0.15)	(0.15)
North Sea port x 1500					0.47	0.51	0.59	0.51	0.60
					(0.35)	(0.31)	(0.32)	(0.31)	(0.32)
North Sea port x 1600					0.51	0.70	0.71	0.75	0.75
					(0.35)	(0.31)	(0.32)	(0.31)	(0.32)
North Sea port x 1700					0.72	1.04	0.97	1.07	0.98
					(0.35)	(0.31)	(0.32)	(0.31)	(0.32)
North Sea port x 1750					0.91	1.24	1.22	1.27	1.24
					(0.35)	(0.31)	(0.32)	(0.31)	(0.32)
North Sea port x 1800					1.09	1.46	1.43	1.51	1.47
					(0.35)	(0.31)	(0.32)	(0.31)	(0.32)
North Sea port x 1850					1.23	1.67	1.69	1.67	1.71
					(0.35)	(0.31)	(0.32)	(0.31)	(0.32)
Atlantic port x 1500			0.15			0.17		0.18	
			(0.14)			(0.13)		(0.14)	
Atlantic port x 1600			0.81			0.80		0.84	
			(0.14)			(0.13)		(0.14)	
Atlantic port x 1700			1.35			1.37		1.40	
			(0.14)			(0.13)		(0.14)	
Atlantic port x 1750			1.40			1.43		1.46	
			(0.14)			(0.13)		(0.14)	
Atlantic port x 1800			1.60			1.63		1.68	
			(0.14)			(0.13)		(0.14)	
Atlantic port x 1850			1.77			1.83		1.85	
			(0.14)			(0.13)		(0.14)	
Total Atlantic Trade				0.26			0.27		0.28
				(0.02)			(0.02)		(0.02)
R-Squared	0.81	0.81	0.85	0.84	0.81	0.85	0.84	0.85	0.84
Number of Observations	1544	1544	1544	1544	1544	1544	1544	1544	1544

Standard errors are in parentheses. Weighted panel regressions with full set of city and year dummies; weights are average level of urban population in each city during the sample period. Dependent variable is log total urban population. All columns report balanced panel regressions for 1300, 1400, 1500, 1600, 1700, 1750, 1800 and 1850, using only cities for which we have data in all 8 time periods. The port dummies equal one if a city is a port on the relevant body of water. Total Atlantic trade is log average number of voyages per year. For a list of Atlantic ports see the data appendix.

Table 10

	Dependent Variable is Constraint on Executive							Dependent Variable is Protection of Capital						
	Panel, 1300-1850	Panel, 1300-1850	Panel, 1300-1850	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, 1300-1850	Panel, 1300-1850	Panel, 1300-1850	Panel, 1300-1850, controlling for religion	Panel, 1300 to 1850, controlling for wars	1850, controlling for Roman heritage	Panel, 1300 to 1850, controlling for latitude
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Western Europe x 1500	-0.20	0.04	-0.37	-0.37	-0.43	-0.20	-0.39	-0.03	-0.04	-0.27	-0.27	-0.31	-0.17	-0.25
	(0.42)	(0.42)	(0.39)	(0.39)	(0.43)	(0.46)	(0.41)	(0.41)	(0.39)	(0.36)	(0.36)	(0.40)	(0.43)	(0.38)
Western Europe x 1600	-0.02	0.02	-0.32	-0.49	-0.39	-0.32	-0.30	0.17	-0.07	-0.24	-0.35	-0.30	-0.30	-0.21
	(0.42)	(0.42)	(0.40)	(0.41)	(0.43)	(0.46)	(0.41)	(0.41)	(0.39)	(0.37)	(0.38)	(0.40)	(0.43)	(0.37)
Western Europe x 1700	0.42	0.05	0.06	-0.14	-0.03	0.32	0.04	0.50	-0.16	0.001	-0.18	-0.09	0.20	-0.02
	(0.42)	(0.42)	(0.40)	(0.41)	(0.44)	(0.47)	(0.41)	(0.41)	(0.39)	(0.37)	(0.38)	(0.41)	(0.43)	(0.38)
Western Europe x 1750	0.62	0.10	0.17	-0.05	0.16	0.39	0.15	0.70	-0.11	0.08	-0.11	0.06	0.26	0.06
	(0.42)	(0.42)	(0.40)	(0.41)	(0.44)	(0.47)	(0.41)	(0.41)	(0.39)	(0.37)	(0.39)	(0.41)	(0.44)	(0.38)
Western Europe x 1800	1.44	1.00	0.94	0.98	0.99	0.86	0.91	1.30	0.59	0.60	0.65	0.62	0.35	0.58
	(0.42)	(0.42)	(0.41)	(0.41)	(0.44)	(0.47)	(0.41)	(0.41)	(0.39)	(0.38)	(0.39)	(0.41)	(0.44)	(0.38)
Western Europe x 1850	2.18	1.60	1.51	1.56	1.61	1.03	1.50	2.10	1.27	1.18	1.15	1.25	0.75	1.14
	(0.42)	(0.42)	(0.42)	(0.42)	(0.46)	(0.47)	(0.42)	(0.41)	(0.39)	(0.39)	(0.40)	(0.42)	(0.44)	(0.39)
Potential for Atlantic Trade x 1500		-24.59							0.87					
		(16.95)							(15.79)					
Potential for Atlantic Trade x 1600		-4.01							24.28					
		(16.95)							(15.79)					
Potential for Atlantic Trade x 1700		38.21							66.50					
		(16.95)							(15.79)					
Potential for Atlantic Trade x 1750		53.39							81.68					
		(16.95)							(15.79)					
Potential for Atlantic Trade x 1800		45.40							71.84					
		(16.03)							(15.28)					
Potential for Atlantic Trade x 1850		59.05							83.84					
		(16.03)							(15.28)					
Total Atlantic Trade x Potential for Atlantic Trade			9.69	9.64	9.41	9.24	9.42			13.29	13.09	12.92	12.80	12.84
			(2.07)	(2.06)	(2.18)	(2.06)	(2.13)			(1.92)	(1.92)	(2.02)	(1.92)	(1.96)
p-value for Protestant x year effect				[0.11]							[0.27]			
Wars per year in preceding century					0.25							0.27		
					(0.21)							(0.20)		
p-value for Roman Heritage x Year						[0.17]							[0.16]	
p-value for Latitude x Year							[0.99]							[0.90]
R-Squared	0.74	0.79	0.77	0.78	0.77	0.78	0.77	0.74	0.82	0.80	0.82	0.81	0.82	0.81
Number of Observations	192	192	192	192	176	192	192	192	192	192	192	176	192	192

Standard errors are in parentheses. Unweighted panel regressions with full set of country and year dummies. Dependent variables are Constraint on Executive in columns 1-7 and Protection of Capital in columns 8-14, coded from Langer (1972), as explained in the appendix. All results measure the Potential for Atlantic trade as the ratio of Atlantic coastline to land area, defining the Atlantic broadl to include the North Sea. Total Atlantic Trade is the log average number of voyages per year. Religion is a dummy for whether country was majority Protestant in 1600. Wars per year are in preceding century through 1700, 1700-1750 for 1750, 1750-1800 for 1800 and 1800-1850 for 1850. Roman heritage is dummy for whether country was in Roman empire and not subsequently in Ottoman empire. Latitude is distance from the equator for capital city of this country today. Potential for Atlantic trade is ratio of Atlantic coastline to land area (broad definition). For more detailed data definitions and sources see Appendix Table 1.

Table 11

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Instrument is Total Atlantic Trade x Potential for Atlantic Trade	Instrument is Potential for Atlantic Trade x year dummies	Instrument is Total Atlantic Trade x Potential for Atlantic Trade	Instrument is Total Atlantic Trade x Potential for Atlantic Trade	No Instrument	No Instrument	No Instrument	No Instrument	Instrument is Total Atlantic Trade x Potential for Atlantic Trade	Instrument is Potential for Atlantic Trade x year dummies	Instrument is Total Atlantic Trade x Potential for Atlantic Trade	Instrument is Total Atlantic Trade x Potential for Atlantic Trade
	Using constraint on the executive								Using protection of capital			

Panel A: Dependent Variable is Urbanization

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Instrumenting for Institutions				Imposing Institutions estimate from Excolonies panel		Imposing Institutions estimate from Excolonies cross-section		Instrumenting for Institutions			
Measure of Institutions	0.063	0.048	0.072	0.070					0.046	0.041	0.049	0.029
	(0.018)	(0.012)	(0.023)	(0.068)					(0.011)	(0.009)	(0.012)	(0.020)
Potential for Atlantic Trade x 1500			2.38			0.014		0.019			-0.59	
			(1.88)			(0.007)		(0.012)			(1.24)	
Potential for Atlantic Trade x 1600			1.27			-0.005		-0.014			-0.18	
			(1.60)			(0.007)		(0.012)			(1.14)	
Potential for Atlantic Trade x 1700			-0.72			-0.002		-0.017			-1.16	
			(1.39)			(0.007)		(0.012)			(1.13)	
Potential for Atlantic Trade x 1750				-1.74		-0.005		-0.022				0.01
				(3.74)		(0.007)		(0.012)				(1.56)
Potential for Atlantic Trade x 1800				-0.01		0.004		-0.009				1.46
				(3.24)		(0.007)		(0.012)				(1.41)
Potential for Atlantic Trade x 1850				-0.06		0.008		-0.016				2.01
				(4.09)		(0.007)		(0.012)				(1.59)
Total Atlantic Trade x Potential for Atlantic Trade					-0.00028		-0.0032					
					(0.0008)		(0.0014)					
Number of Observations	192	192	192	192	192	192	192	192	192	192	192	192

Panel B: Dependent Variable is Log GDP per capita

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Instrumenting for Institutions				Imposing Institutions estimate from Excolonies panel		Imposing Institutions estimate from Excolonies cross-section		Instrumenting for Institutions			
Measure of Institutions	0.110	0.103	0.115	0.104					0.109	0.102	0.114	0.099
	(0.032)	(0.029)	(0.035)	(0.040)					(0.029)	(0.027)	(0.033)	(0.035)
Potential for Atlantic Trade x 1600			1.05			-0.022		-0.08			0.76	
			(2.22)			(0.021)		(0.05)			(2.09)	
Potential for Atlantic Trade x 1700			-0.91			-0.025		-0.10			-1.13	
			(2.38)			(0.021)		(0.05)			(2.28)	
Potential for Atlantic Trade x 1820				0.41		-0.030		-0.10				0.71
				(2.56)		(0.021)		(0.05)				(2.34)
Total Atlantic Trade x Potential for Atlantic Trade					-0.01		-0.028					
					(0.01)		(0.013)					
Number of Observations	104	104	104	104	104	104	104	104	104	104	104	104

Standard errors are in parentheses. Unweighted panel regressions with full set of country and year dummies. Dependent variable is Urbanization in Panel A and log GDP per capita in Panel B. Western Europe dummies interacted with years are included in all columns, but not reported to save space. Urbanization in Europe is from Bairoch, Batou and Chevre, and urbanization in Asia is from Chandler. Log GDP per capita is from Maddison. Constraint on the Executive and Protection of Capital are coded from Langer. All results measure the Potential for Atlantic trade as the ratio of Atlantic coastline to land area, defining the Atlantic broadly to include the North Sea. Total Atlantic Trade is the log average number of voyages per year. For more detailed data definitions and sources see Appendix Table 1.

Table 12

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A: Dependent Variable is Urbanization							
	Panel, 1300-1850	Panel, 1300-1850	Panel, 1300-1850	Panel, 1300-1850	Panel, 1000-1850	Panel, 1000-1850	Panel, 1000-1850	Panel, 1000-1850
Total Atlantic Trade x		0.62	0.62	0.15		0.48	0.47	-0.057
Potential for Atlantic Trade		(0.11)	(0.12)	(0.29)		(0.10)	(0.10)	(0.25)
p-value for Institutions in 1500 x year (1600, 1700, 1750, 1800, 1850)	[0.91]		[0.85]	[0.84]	[0.63]		[0.78]	[0.66]
Total Atlantic Trade x Institutions in 1500 x Potential for Atlantic Trade				0.51 (0.29)				0.56 (0.24)
R-Squared	0.79	0.82	0.83	0.83	0.74	0.77	0.77	0.79
Number of Observations	192	192	192	192	239	239	239	239
	Panel B: Dependent Variable is Log GDP per capita							
	Panel, 1500-1820	Panel, 1500-1820	Panel, 1500-1820	Panel, 1500-1820	Panel, 1500-1870	Panel, 1500-1870	Panel, 1500-1870	Panel, 1500-1870
Total Atlantic Trade x		2.34	2.27	-2.65		1.98	1.85	-3.10
Potential for Atlantic Trade		(0.62)	(0.62)	(1.47)		(0.54)	(0.54)	(1.27)
p-value for Institutions in 1500 x year (1600, 1700, 1750, 1800, 1850)	[0.31]		[0.00]	[0.14]	[0.20]		[0.31]	[0.06]
Total Atlantic Trade x Institutions in 1500 x Potential for Atlantic Trade				5.22 (1.43)				5.25 (1.24)
R-Squared	0.96	0.96	0.96	0.97	0.95	0.95	0.95	0.96
Number of Observations	104	104	104	104	130	130	130	130
	Panel C: Dependent Variable is Constraint on the Executive							
	Panel, 1300-1850	Panel, 1300-1850	Panel, 1300-1850	Panel, 1300-1850	Panel, 1500-1850	Panel, 1500-1850	Panel, 1500-1850	Panel, 1500-1850
Total Atlantic Trade x		9.69	9.55	-3.97		16.77	16.42	0.09
Potential for Atlantic Trade		(2.07)	(2.10)	(5.28)		(3.51)	(3.58)	(9.10)
p-value for Institutions in 1500 x year (1600, 1700, 1750, 1800, 1850)	[0.64]		[0.72]	[0.59]	[0.69]		[0.79]	[0.69]
Total Atlantic Trade x Institutions in 1500 x Potential for Atlantic Trade				14.38 (5.17)				17.31 (8.90)
R-Squared	0.74	0.77	0.77	0.79	0.78	0.82	0.82	0.83
Number of Observations	192	192	192	192	144	144	144	144

Standard errors are in parentheses. Unweighted panel regressions with full set of country and year dummies. Dependent variable is Urbanization in Panel A, log GDP per capita in Panel B, and Constraint on the Executive in Panel C. Western Europe dummies interacted with years are included in all columns, but not reported to save space. Urbanization in Europe is from Bairoch, Batou and Chevre, and urbanization in Asia is from Chandler. Log GDP per capita is from Maddison. Constraint on the Executive is coded from Langer. All results measure the Potential for Atlantic trade as the ratio of Atlantic coastline to land area, defining the Atlantic broadly to include the North Sea. Total Atlantic Trade is the log average number of voyages per year. For data definitions and sources see Appendix Table 1.

Appendix Table A1
Variable Definitions and Sources

Variable	Description	Source
Log GDP per capita in 1500, 1600, 1700, 1820 and 1870	Logarithm of GDP per capita.	Maddison (2001)
Population in 1000, 1200, 1300, 1400, 1500, 1600, 1700, 1750, 1800, and 1850.	Total population.	McEvedy and Jones (1978)
Urban population in 1000, 1200, 1300, 1400, 1500, 1600, 1700, 1750, 1800, and 1850.	Population living in urban areas with a population of at least 5,000 in 1000, 1500, and 1700.	Bairoch, Batou and Chevre (1988), as described in the appendix. We use Bairoch (1988) for urbanization in Asia and Chandler for Asian city population.
Atlantic, Mediteranean, and North Sea ports	City that is on the Atlantic, Mediteranean or North Sea.	Bairoch, Batou and Chevre (1988) for cities; location from DK Publishing (1997).
Potential for Atlantic Trade: (1) Ratio of Atlantic Coastline to Land area, with broad definition of Atlantic	Length of Atlantic coastline divided by land area. Both assume modern borders. Atlantic coastline includes the whole coast of Portugal, Ireland, Belgium, the Netherlands, and Britain. It also includes half the coastline of Spain, two-thirds the coastline of France, half the coastline of Germany, one quarter the coastline of Denmark, and half the coastline of Norway.	Coastline is from Integrated Coastline Management (on the web.) Land area is from the World Bank, World Development Indicators, CD-Rom, 1999.
Potential for Atlantic Trade: (2) Ratio of Atlantic Coastline to Land area, with narrow definition of Atlantic	Length of Atlantic coastline divided by land area. Both assume modern borders. Atlantic coastline includes the whole coast of Portugal, Ireland, Belgium, the Netherlands, and half the coast of Britain. It also includes half the coastline of Spain and two-thirds the coastline of France.	Coastline is from Integrated Coastline Management (on the web.) Land area is from the World Bank, World Development Indicators, CD-Rom, 1999.
Potential for Atlantic Trade: (3) Average percent population living in Atlantic ports, 1300-1850	Population living in Atlantic ports divided by total population.	Urban population from Bairoch, Batou and Chevre (1988); total population from McEvedy and Jones (1978); location from DK Publishing (1997).
Potential for Atlantic Trade: (4) Dummy for whether country has an Atlantic port.	Equals one if a country has at least one Atlantic port; zero otherwise.	Bairoch, Batou and Chevre (1988) for cities; location from DK Publishing (1997).
Total Atlantic Trade	Average voyages per year equivalent	Non-Slave trade from O'Rourke and Williamson (2001); slave trade from Eltis et al (1999).
Average Protection against Expropriation Risk, 1985-95	Risk of expropriation of private foreign investment by government, from 0 to 10, where a higher score means less risk. We calculated the mean value for the scores in all years from 1985 to 1995.	Dataset obtained directly from Political Risk Services, September 1999. These data were previously used by Knack and Keefer (1995) and were organized in electronic form by the IRIS Center (University of Maryland). The original compilers of this data are
Constraint on Executive in 1800, 1850, 1960, 1970, 1990 and intervening years.	A seven category scale, from 1 to 7, with a higher score indicating more constraints. Score of 1 indicates unlimited authority; score of 3 indicates slight to moderate limitations; score of 5 indicates substantial limitations; score of 7 indicates execut	Polity IV dataset, downloaded from Inter-University Consortium for Political and Social Research. Variable described in Gurr 1997.
Constraint on Executive from 1000 to 1800	A seven category scale, from 1 to 7, with a higher score indicating more constraints. Score of 1 indicates unlimited authority; score of 3 indicates slight to moderate limitations; score of 5 indicates substantial limitations; score of 7 indicates executive parity or subordination. Scores of 2, 4, and 6 indicate intermediate values.	Coded by authors from Langer (1972)
Protection of Capital from 1000 to 1850.	A seven category scale, from 1 to 7, with a higher score indicating more constraints. Score of 1 indicates no protection; score of 3 indicates slight to moderate protection (e.g., city charters); score of 5 indicates substantial protection (e.g., legislative representation for merchants); score of 7 indicates complete protection (e.g., merchants control the executive.) Scores of 2, 4, and 6 indicate intermediate values.	Coded by authors from Langer (1972)
Religion Variables	Majority religion of city or country.	Coded by authors from Langer (1972).
Roman Heritage	Coded equal to one for countries that were part of the Roman empire and not subsequently part of the Ottoman empire.	Coded by authors from Langer (1972).
Wars per year	Number of years of war in preceding 50 or 100 years. Civil wars and colonial wars outside Europe are excluded.	Coded by authors from Kohn (1999)
Latitude	Absolute value of the latitude of the country, scaled to take values between 0 and 1, where 0 is the equator.	Country data from La Porta et al (1999). City data from Bairoch, Batou and Chevre (1988).

Appendix Table 2

Country	Date	Urbanization	GDP per capita	Constraint on Executive	Protection of Capital
Albania	1000	0.00	.	1	1
Albania	1100		.	1	1
Albania	1200	12.50	.	1	1
Albania	1300	12.50	.	1	1
Albania	1400	1.00	.	1	1
Albania	1500	2.50	462	1	1
Albania	1600	21.00	516	1	1
Albania	1700	15.33	566	1	1
Albania	1750	8.00	.	1	1
Albania	1800	28.00	636	1	1
Albania	1850	21.80	871	1	1
Austria	1000	0.00	.	1	1
Austria	1100		.	1	1
Austria	1200	0.96	.	1	1
Austria	1300	1.30	.	1	1
Austria	1400	2.16	.	1	1
Austria	1500	3.15	707	1	1
Austria	1600	4.52	837	1	1
Austria	1700	7.40	993	1	1
Austria	1750	9.85	.	1	1
Austria	1800	12.73	1218	1	1
Austria	1850	15.75	1863	1	1
Belgium	1000	8.25	.	3	3
Belgium	1100		.	3	3
Belgium	1200	15.67	.	3	3
Belgium	1300	17.04	.	3	3
Belgium	1400	48.13	.	3	3
Belgium	1500	30.08	875	3	3
Belgium	1600	22.80	976	2	2
Belgium	1700	29.77	1144	2	2
Belgium	1750	23.02	.	2	2
Belgium	1800	22.80	1319	4	4
Belgium	1850	25.38	2697	5	5
Bulgaria	1000	8.75	.	1	1
Bulgaria	1100		.	1	1
Bulgaria	1200	5.79	.	1	1
Bulgaria	1300	14.20	.	1	1
Bulgaria	1400	5.07	.	1	1
Bulgaria	1500	12.13	462	1	1
Bulgaria	1600	8.24	516	1	1
Bulgaria	1700	10.08	566	1	1
Bulgaria	1750	8.94	.	1	1
Bulgaria	1800	14.25	636	1	1
Bulgaria	1850	13.48	871	1	1
China	1000	2.50	.	.	.
China	1100		.	.	.

Country	Date	Urbanization	GDP per capita	Constraint on Executive	Protection of Capital
China	1200	1.40	.	.	.
China	1300	2.40	.	.	.
China	1400	2.80	.	.	.
China	1500	2.20	600	.	.
China	1600	1.80	600	.	.
China	1700	1.90	600	.	.
China	1750	1.80	.	.	.
China	1800	1.60	600	.	.
China	1850	1.50	530	.	.
Czech Republ	1000	0.80	.	1	1
Czech Republ	1100		.	1	1
Czech Republ	1200	0.50	.	1	1
Czech Republ	1300	3.70	.	2	1
Czech Republ	1400	4.84	.	2	1
Czech Republ	1500	4.60	707	2	1
Czech Republ	1600	3.44	837	2	1
Czech Republ	1700	3.67	993	1	1
Czech Republ	1750	3.58	.	1	1
Czech Republ	1800	4.86	1218	1	1
Czech Republ	1850	4.17	1863	1	1
Denmark	1000	0.00	.	1	1
Denmark	1100		.	1	1
Denmark	1200	0.00	.	1	1
Denmark	1300	0.00	.	3	1
Denmark	1400	1.80	.	2	1
Denmark	1500	2.17	738	2	1
Denmark	1600	10.57	875	1	1
Denmark	1700	10.75	1039	2	2
Denmark	1750	12.00	.	2	2
Denmark	1800	13.50	1274	1	1
Denmark	1850	12.53	2003	5	5
England	1000	5.71	.	1	1
England	1100		.	1	1
England	1200	2.39	.	1	1
England	1300	4.49	.	3	2
England	1400	5.17	.	3	2
England	1500	6.42	762	2	2
England	1600	9.92	1043	3	3
England	1700	17.16	1405	5	5
England	1750	18.80	.	6	6
England	1800	28.80	1931	7	7
England	1850	39.03	3487	7	7
Finland	1000	0.00	.	1	1
Finland	1100		.	1	1
Finland	1200	0.00	.	1	1
Finland	1300	0.00	.	1	1
Finland	1400	1.00	.	1	1

Country	Date	Urbanization	GDP per capita	Constraint on Executive	Protection of Capital
Finland	1500	2.00	453	1	1
Finland	1600	3.00	538	1	1
Finland	1700	3.33	638	1	1
Finland	1750	2.36	.	1	1
Finland	1800	3.38	781	1	1
Finland	1850	4.20	1140	1	1
France	1000	3.92	.	1	1
France	1100		.	1	1
France	1200	5.53	.	3	1
France	1300	6.94	.	2	1
France	1400	8.07	.	2	1
France	1500	7.60	727	2	1
France	1600	7.80	841	1	1
France	1700	10.98	986	1	1
France	1750	12.07	.	1	1
France	1800	13.96	1230	4	5
France	1850	16.71	1876	5	5
Germany	1000	5.97	.	1	1
Germany	1100		.	1	1
Germany	1200	4.67	.	1	1
Germany	1300	6.97	.	1	1
Germany	1400	8.17	.	1	1
Germany	1500	8.60	676	1	1
Germany	1600	8.95	777	1	1
Germany	1700	7.58	894	1	1
Germany	1750	10.08	.	1	1
Germany	1800	12.86	1058	1	1
Germany	1850	14.09	1821	1	1
Greece	1000	5.50	.	1	1
Greece	1100		.	1	1
Greece	1200	2.59	.	1	1
Greece	1300	10.08	.	1	1
Greece	1400	9.10	.	1	1
Greece	1500	3.50	462	1	1
Greece	1600	5.53	516	1	1
Greece	1700	4.00	566	1	1
Greece	1750	3.62	.	1	1
Greece	1800	12.89	636	1	1
Greece	1850	9.10	871	1	1
Hungary	1000	0.40	.	1	1
Hungary	1100		.	1	1
Hungary	1200	0.00	.	2	1
Hungary	1300	0.56	.	2	1
Hungary	1400	1.90	.	2	1
Hungary	1500	3.28	462	2	1
Hungary	1600	1.84	516	1	1
Hungary	1700	7.20	566	1	1

Country	Date	Urbanization	GDP per capita	Constraint on Executive	Protection of Capital
Hungary	1750	13.55	.	1	1
Hungary	1800	15.08	636	1	1
Hungary	1850	20.73	871	1	1
India	1000	0.80	.	.	.
India	1100		.	.	.
India	1200	0.80	.	.	.
India	1300	0.80	.	.	.
India	1400	1.20	.	.	.
India	1500	1.80	550	.	.
India	1600	1.90	550	.	.
India	1700	1.00	550	.	.
India	1750	1.50	.	.	.
India	1800	1.60	533	.	.
India	1850	2.10	533	.	.
Ireland	1000	6.33	.	1	1
Ireland	1100		.	1	1
Ireland	1200	4.00	.	1	1
Ireland	1300	7.63	.	3	2
Ireland	1400	2.50	.	3	2
Ireland	1500	2.38	526	2	2
Ireland	1600	1.36	615	2	2
Ireland	1700	5.00	715	4	4
Ireland	1750	8.50	.	5	5
Ireland	1800	9.83	839	6	6
Ireland	1850	10.77	1775	6	6
Italy	1000	12.26	.	1	1
Italy	1100		.	3	3
Italy	1200	10.06	.	3	3
Italy	1300	16.15	.	3	3
Italy	1400	16.73	.	3	3
Italy	1500	15.82	1100	3	3
Italy	1600	23.77	1100	2	2
Italy	1700	21.53	1100	1	1
Italy	1750	21.03	.	1	1
Italy	1800	25.63	1117	1	1
Italy	1850	23.44	1499	1	1
Japan	1000	3.90	.	.	.
Japan	1100		.	.	.
Japan	1200	3.70	.	.	.
Japan	1300	2.50	.	.	.
Japan	1400	1.50	.	.	.
Japan	1500	0.20	500	.	.
Japan	1600	4.80	520	.	.
Japan	1700	6.30	570	.	.
Japan	1750	6.20	.	.	.
Japan	1800	6.60	669	.	.
Japan	1850	6.10	737	.	.

Country	Date	Urbanization	GDP per capita	Constraint on Executive	Protection of Capital
Netherlands	1000	0.00	.	2	1
Netherlands	1100		.	2	1
Netherlands	1200	2.00	.	2	2
Netherlands	1300	12.00	.	3	3
Netherlands	1400	17.83	.	3	3
Netherlands	1500	28.89	754	3	3
Netherlands	1600	28.60	1368	5	5
Netherlands	1700	38.10	2110	5	5
Netherlands	1750	31.65	.	5	5
Netherlands	1800	39.55	1821	4	4
Netherlands	1850	35.23	2753	6	6
Norway	1000	0.00	.	1	1
Norway	1100		.	1	1
Norway	1200	0.00	.	1	1
Norway	1300	3.00	.	1	1
Norway	1400	0.00	.	1	1
Norway	1500	2.00	640	1	1
Norway	1600	2.80	760	1	1
Norway	1700	4.50	900	1	1
Norway	1750	6.67	.	1	1
Norway	1800	7.00	1104	3	1
Norway	1850	7.67	1432	1	1
Poland	1000	0.00	.	1	1
Poland	1100		.	2	1
Poland	1200	1.02	.	2	1
Poland	1300	0.94	.	3	1
Poland	1400	2.84	.	3	1
Poland	1500	4.43	462	3	1
Poland	1600	7.72	516	3	1
Poland	1700	3.30	566	3	1
Poland	1750	4.36	.	3	1
Poland	1800	5.51	636	1	1
Poland	1850	6.88	871	1	1
Portugal	1000	2.50	.	1	1
Portugal	1100		.	1	1
Portugal	1200	5.00	.	1	1
Portugal	1300	6.88	.	1	1
Portugal	1400	8.11	.	2	1
Portugal	1500	16.64	632	1	1
Portugal	1600	9.25	773	2	2
Portugal	1700	12.10	854	2	2
Portugal	1750	19.64	.	2	2
Portugal	1800	18.69	963	2	2
Portugal	1850	15.89	997	3	3
Romania	1200	2.00	.	1	1
Romania	1300	3.67	.	1	1
Romania	1400	2.80	.	1	1

Country	Date	Urbanization	GDP per capita	Constraint on Executive	Protection of Capital
Romania	1500	4.65	462	1	1
Romania	1600	4.85	516	1	1
Romania	1700	5.72	566	1	1
Romania	1750	5.54	.	1	1
Romania	1800	5.05	636	1	1
Romania	1850	6.51	871	1	1
Russia	1000	3.80	.	1	1
Russia	1100		.	1	1
Russia	1200	1.82	.	1	1
Russia	1300	4.23	.	1	1
Russia	1400	3.97	.	1	1
Russia	1500	2.91	500	1	1
Russia	1600	2.62	553	1	1
Russia	1700	2.46	611	1	1
Russia	1750	4.08	.	1	1
Russia	1800	6.29	689	1	1
Russia	1850	7.05	943	1	1
Serbia	1000	3.14	.	1	1
Serbia	1100		.	1	1
Serbia	1200	0.00	.	1	1
Serbia	1300	2.58	.	1	1
Serbia	1400	3.53	.	1	1
Serbia	1500	4.98	462	1	1
Serbia	1600	7.49	516	1	1
Serbia	1700	6.00	566	1	1
Serbia	1750	3.87	.	1	1
Serbia	1800	7.77	636	1	1
Serbia	1850	6.08	871	1	1
Spain	1000	24.25	.	1	1
Spain	1100		.	1	1
Spain	1200	6.96	.	2	1
Spain	1300	11.79	.	2	1
Spain	1400	9.98	.	2	2
Spain	1500	14.15	698	1	1
Spain	1600	20.95	900	1	1
Spain	1700	16.86	900	1	1
Spain	1750	17.08	.	1	1
Spain	1800	24.07	1063	2	2
Spain	1850	25.53	1376	4	4
Sweden	1000	0.00	.	1	1
Sweden	1100		.	1	1
Sweden	1200	0.45	.	1	1
Sweden	1300	1.63	.	1	1
Sweden	1400	3.29	.	1	1
Sweden	1500	4.25	695	2	1
Sweden	1600	4.10	824	2	1
Sweden	1700	6.80	977	3	2

Country	Date	Urbanization	GDP per capita	Constraint on Executive	Protection of Capital
Sweden	1750	6.90	.	3	2
Sweden	1800	6.56	1198	3	3
Sweden	1850	6.86	1664	3	3
Switzerland	1000	0.33	.	1	1
Switzerland	1100		.	1	1
Switzerland	1200	2.40	.	1	1
Switzerland	1300	2.38	.	2	2
Switzerland	1400	8.50	.	2	2
Switzerland	1500	6.63	742	2	2
Switzerland	1600	5.20	880	3	3
Switzerland	1700	6.48	1044	3	3
Switzerland	1750	8.13	.	4	4
Switzerland	1800	7.89	1280	5	5
Switzerland	1850	12.96	2202	7	7
Turkey	1000	6.20	.	1	1
Turkey	1100	.	.	1	1
Turkey	1200	4.50	.	1	1
Turkey	1300	3.00	.	1	1
Turkey	1400	4.80	.	1	1
Turkey	1500	5.90	572	1	1
Turkey	1600	12.00	575	1	1
Turkey	1700	12.20	571	1	1
Turkey	1750	10.40	.	1	1
Turkey	1800	9.10	575	1	1
Turkey	1850	10.10	543	1	1

Czech republic represents Czechoslovakia. Serbia represents former Yugoslavia.

Figure 1, Panel A

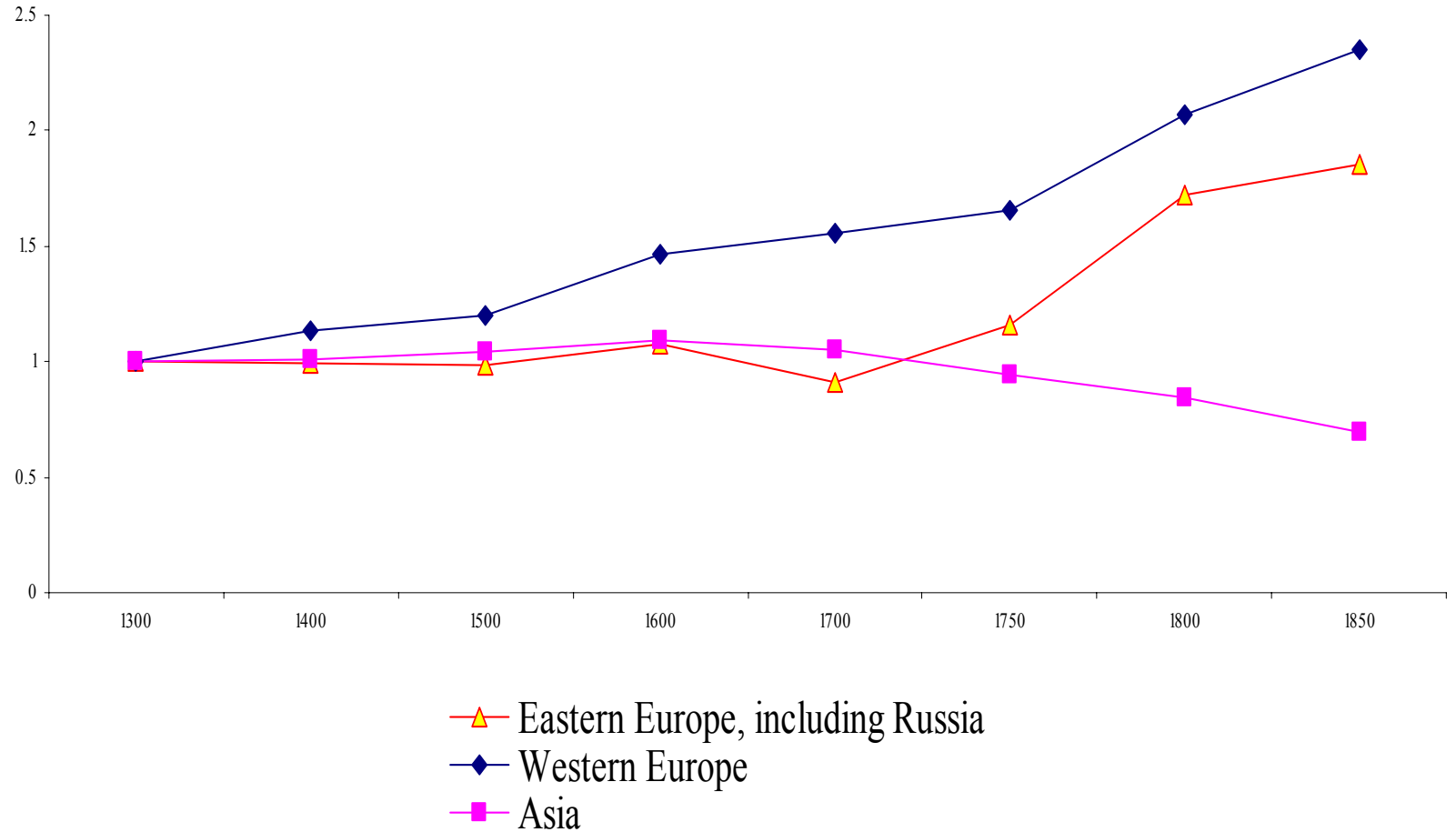**Urbanization rates (normalized with 1300=1), from Bairoch et al weighted by current population**

Eastern Europe, including Russia
Western Europe
Asia

Figure 1, Panel B

**Urbanization rates (normalized with 1300=1), from Bairoch et al
weighted by current population**

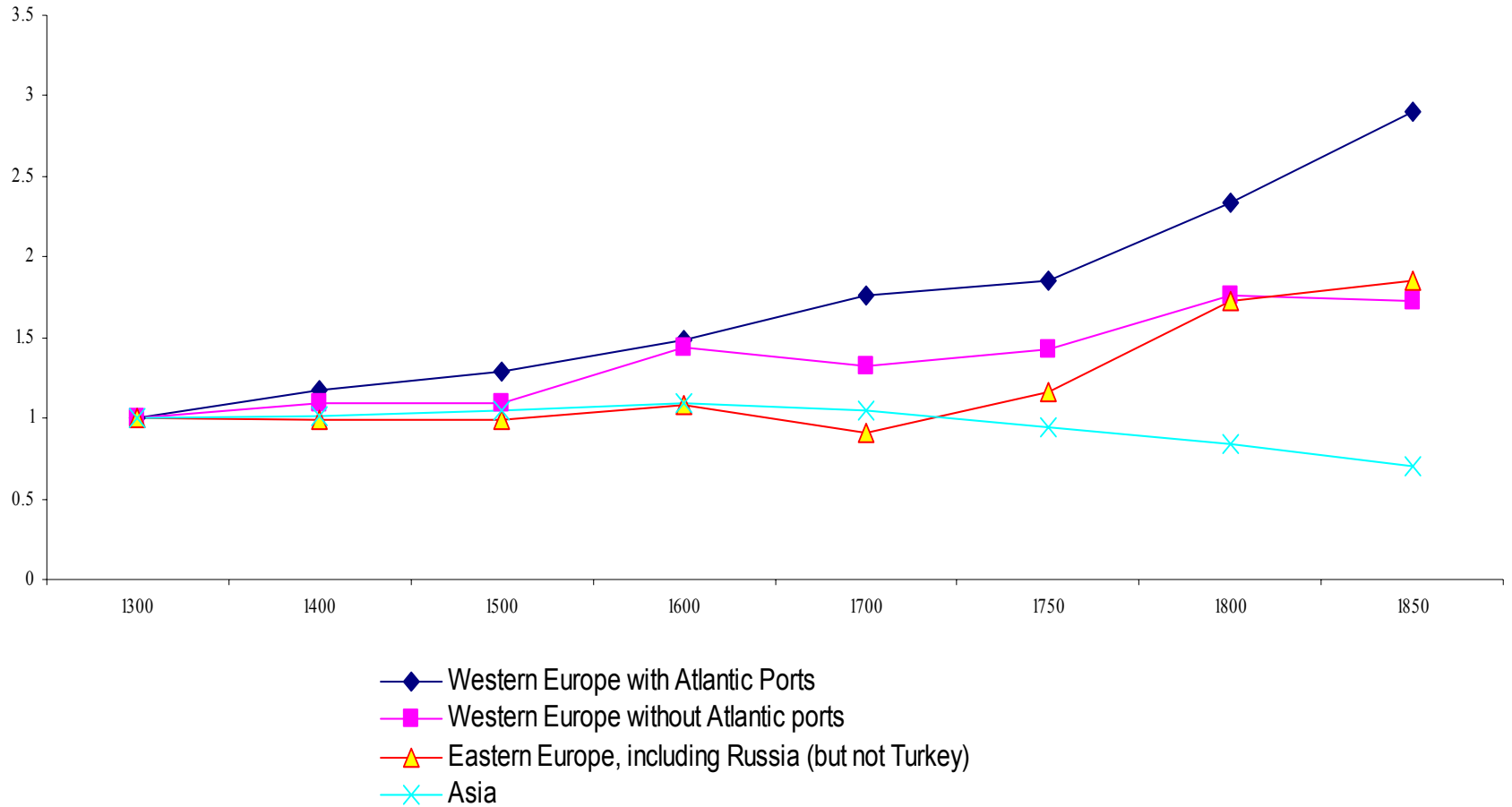- ◆ Western Europe with Atlantic Ports
- ■ Western Europe without Atlantic ports
- △ Eastern Europe, including Russia (but not Turkey)
- ✕ Asia

Figure 2, Panel A

GDP per capita from 1500
(from Maddison)
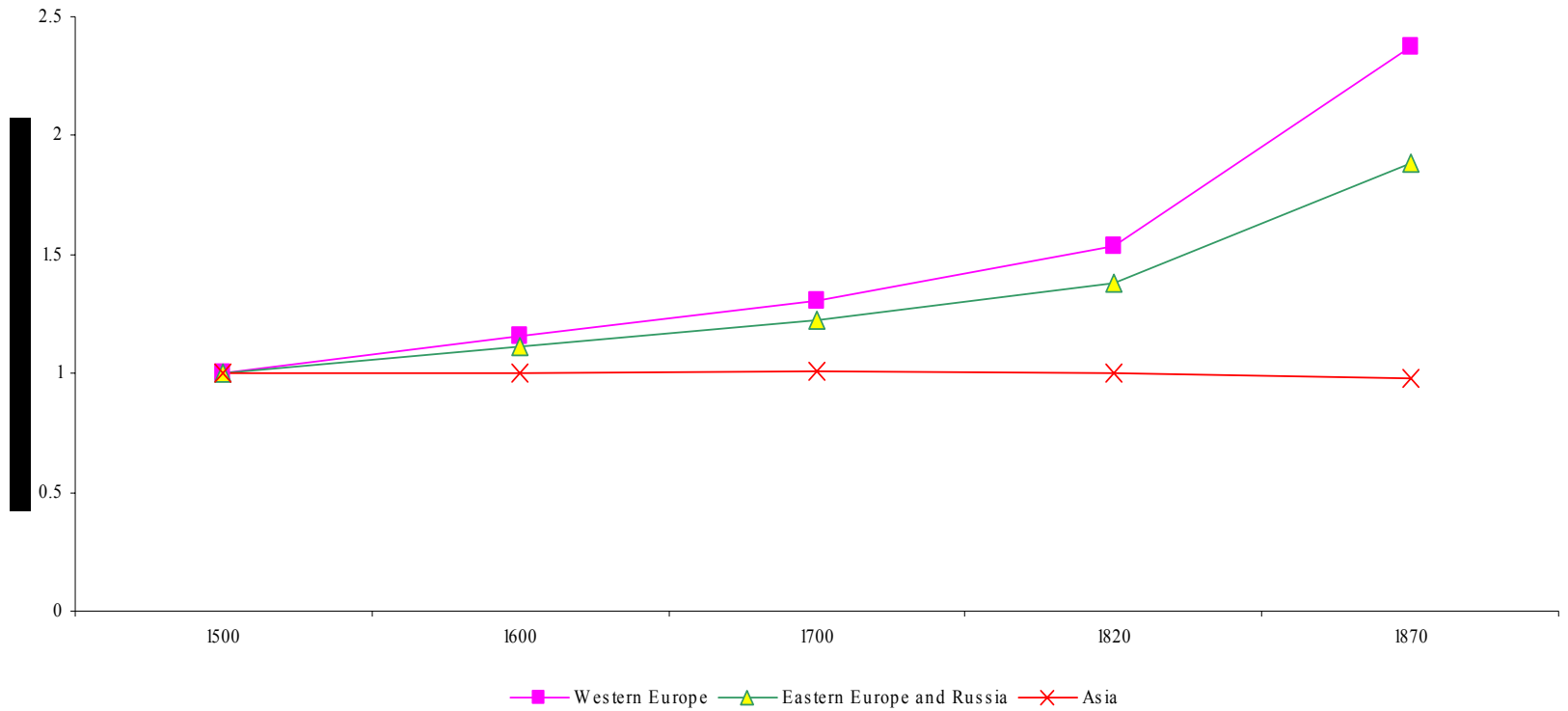
Figure 2, Panel B

GDP per capita from 1500
(from Maddison)

Legend: Weighted average for countries with Atlantic Ports — Western Europe without Atlantic ports — Eastern Europe and Russia — Asia
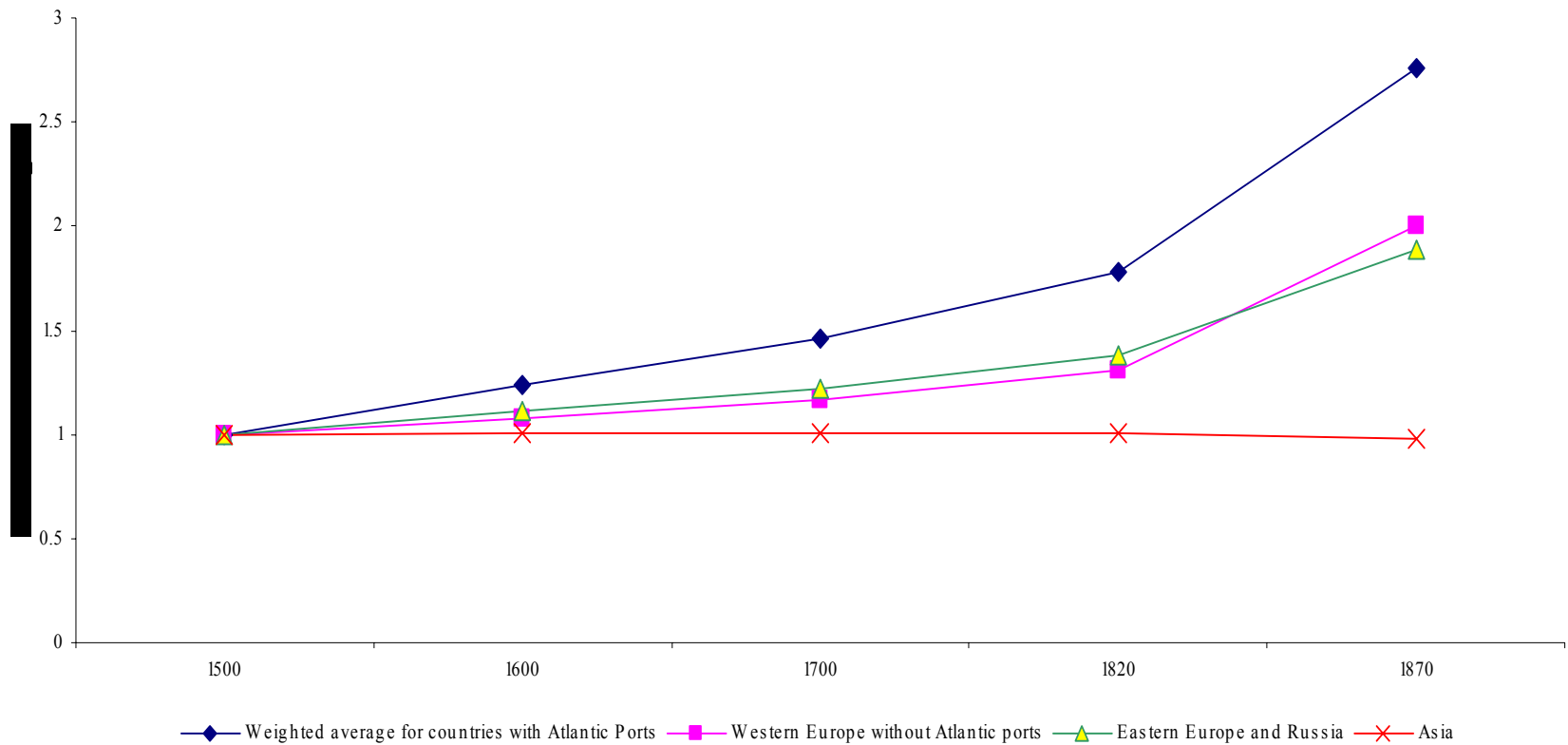
Figure 3

Slave trade and Total Atlantic trade
(Total voyages-equivalent per year)

Legend: Total Non-Slave Atlantic Trade (○), Slave Trade (△), Total Atlantic Trade (□)
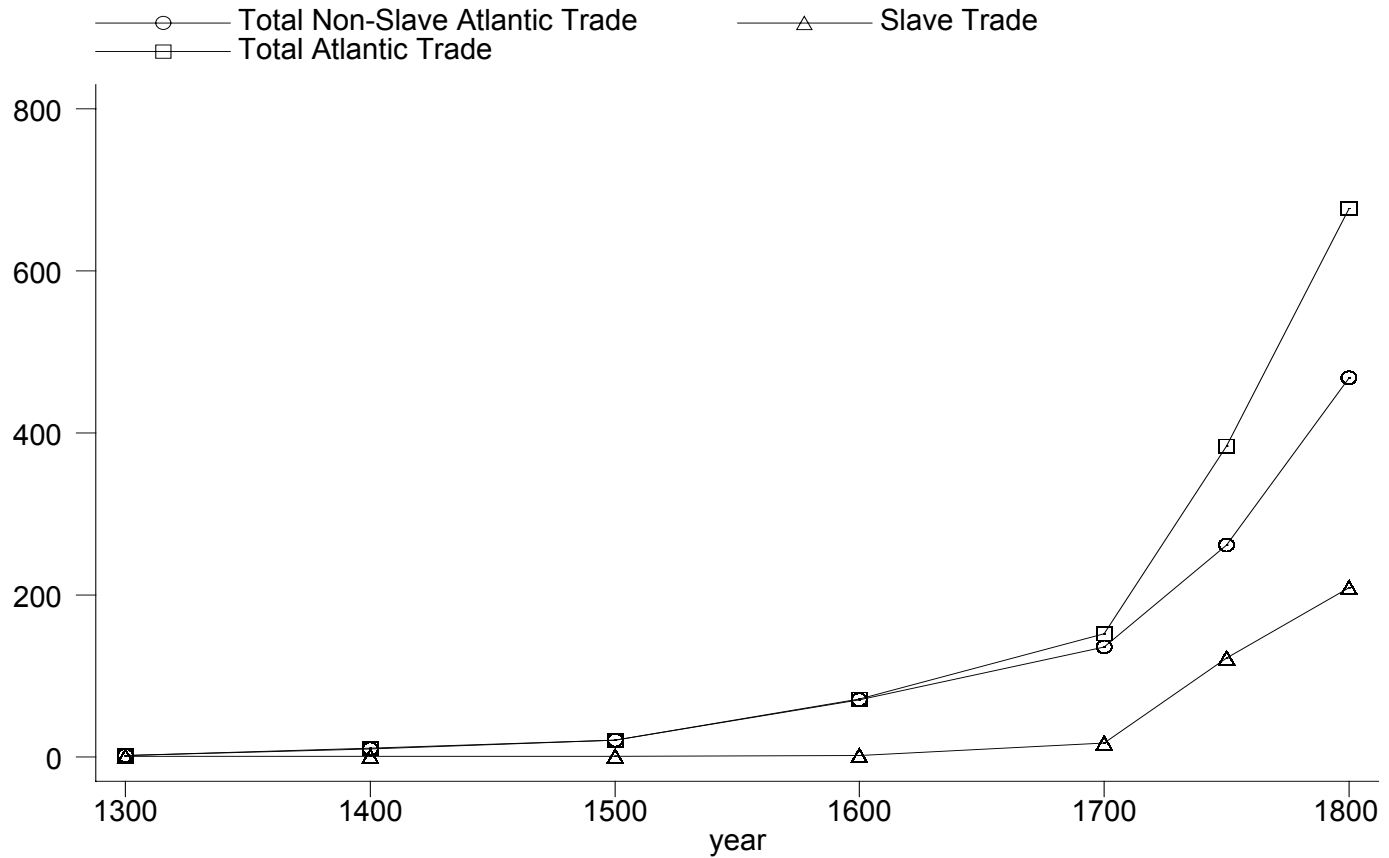
Figure 4

Average urban population: Atlantic ports, West European cities that are not Atlantic ports and East European cities (balanced panel, with 1300=1 for each group of cities)
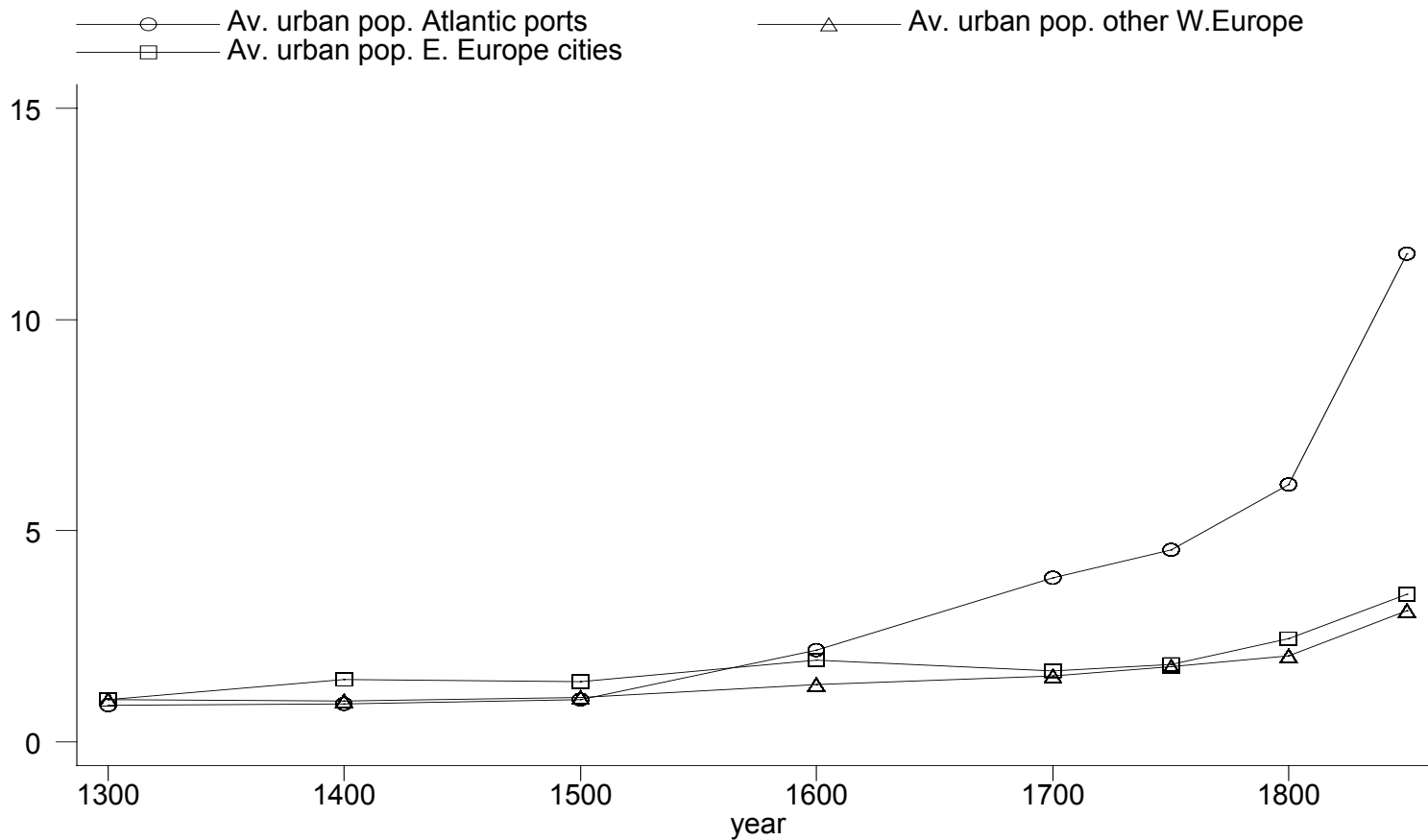
Figure 5

Average urban population: Atlantic ports, North Sea ports, Med. Ports and inland West European cities (in balanced panel)
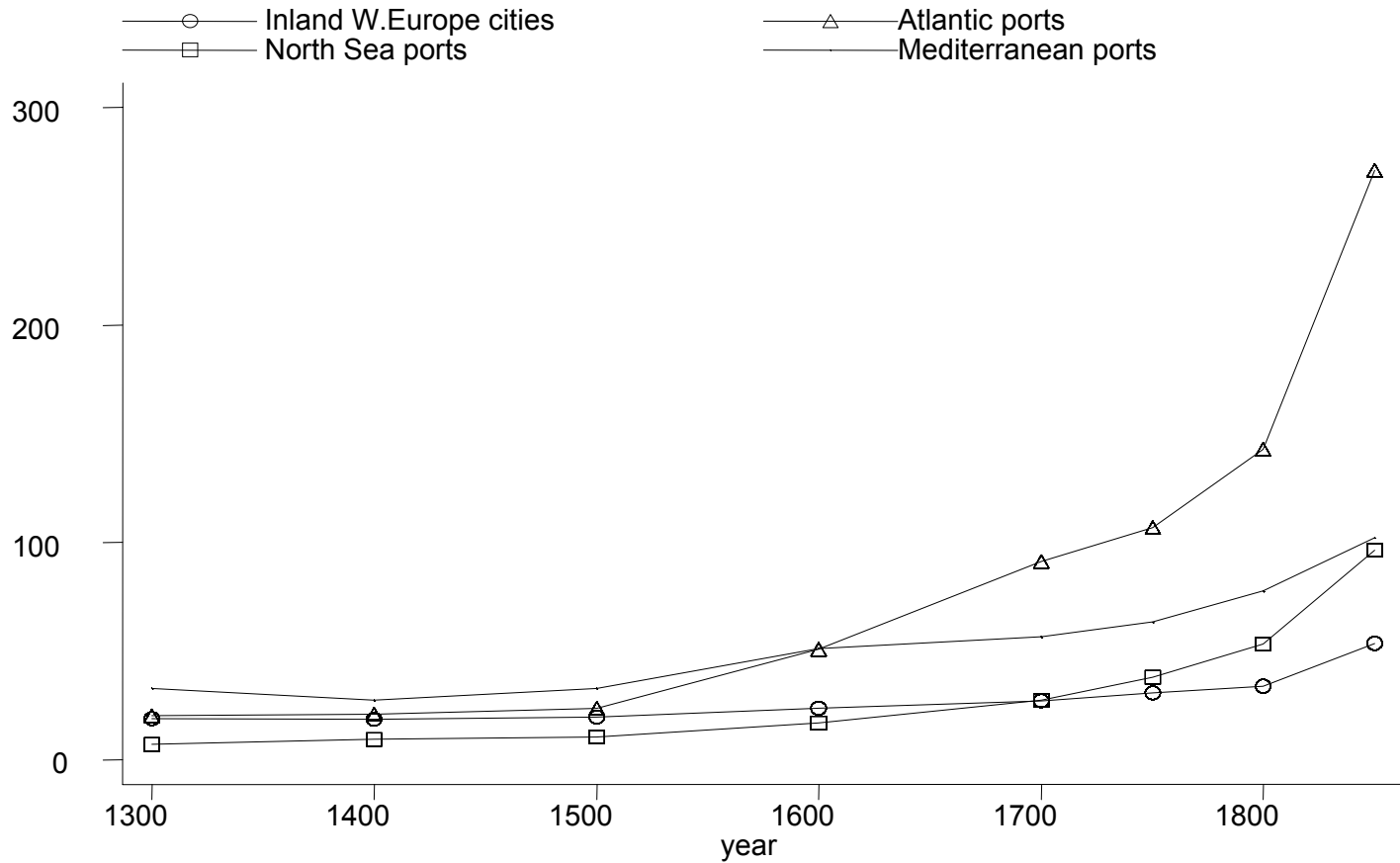
Figure 6

average urban pop in Atlantic ports: Netherlands, France and Iberia