Oligarchy and Growth

Lessons From Europe's Autonomous Cities

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Abstract

The history of European city development provides an important opportunity to examine the effect of political oligarchy on economic growth. Since at least the time of Max Weber, scholars have claimed that the presence of politically autonomous cities in medieval Europe, which tended to be controlled by merchant oligarchies, helped lead to its economic rise when compared with other regions. But there also exists an alternative, and equally long standing claim – autonomous cities were a hindrance to growth because the merchant oligarchies that governed them created barriers to entry that stifled innovation and trade. I present new evidence and a new interpretation that reconciles these two contrasting views. Using evidence from growth in city populations, I show that politically autonomous cities tended to initially have higher growth rates than non-autonomous cities, but over time this situation reversed itself as politically autonomous cities became stagnant. However, even with stagnant economies, autonomous cities were able to maintain their independence because their institutions and the oligarchies that controlled them provided for abundant access to credit in times of war. My evidence regarding the growth path of autonomous cities is consistent with several recent theoretical models of oligarchy and growth, and most directly Acemoglu (2008). It also suggests more generally that Europe's particular political institutions, which are so often said to have secured property rights and favored growth, sometimes had more ambiguous effects.

1 Introduction

The presence of politically autonomous cities was a distinctive feature of European political development in the medieval and early modern eras. It was a feature that many see as having been critical to Europe's economic rise, because it allowed for the provision of secure property rights free from the dynastic ambitions of princely rulers.[1] Ultimately, this interpretation can be traced back to Max Weber (1921 [1958]) and his vision of an autonomous city as the "fusion of fortress and market." In strong contrast with this interpretation of European development, scholars have suggested that the absence of autonomous cities in regions such as the Islamic world and China was a hindrance to economic growth.[2] But if there are reasons to believe that the presence of politically autonomous cities may have favored European economic development, there is also an equally long-standing view that makes precisely the opposite claim. According to this view, the merchant guilds (and in some cases craft guilds) that controlled the governing institutions of autonomous cities established firm property rights for themselves, but they also created barriers to entry into professions, something that stifled innovation and trade. The recent scholar most closely associated with this view is Stephan Epstein (2000). He went as far as to suggest that too much political autonomy was actually inimical to growth, and that elites in cities that lacked autonomy and were more subject to princely rulers had fewer opportunities to establish barriers to entry. Therefore, according to him a city lacking political autonomy might actually have a more dynamic economy.[3]

[1] See Blockmans (1994), Mokyr (1995, 1994, 1990), Hicks (1969), DeLong and Shleifer (1993), Bosker, Buringh, and van Zanden (2010), Weber ([1921] 1958) and Cantoni and Yuchtman (2010). Many of the ideas for why autonomous cities might enjoy faster economic growth are also consistent with the work of Avner Greif (2006). Finally, we should also mention the closely related idea that political autonomy for a city helped to foster social capital (Putnam, 1993; Jacob 2010; Guiso, Sapienza, and Zingales, 2009).

[2] See Kuran (2010) for this argument with regard to the Islamic world and Elvin (1978) with regard to the lack of autonomous cities in China. See also Weber (1921 [1958]). See Blockmans and 't Hart (2011) for a survey of urban development, and in particular the conditions for autonomous city development in Europe, China, and the Islamic World.

[3] The negative effects of autonomy on growth have also been emphasized by some of the same authors who also refer to the positive effects, including Mokyr (1995, 1994, 1990) and Hicks (1969). The idea that the oligarchic regimes of city-states were a hindrance to economic growth can also be supported by referring to the recent work of Sheilagh Ogilvie (2011) on guilds. We can also point to the important work

The debate about European city autonomy and economic growth is intimately linked to two much broader questions in political economy. The first involves the implications of political oligarchy for economic growth?[4] The second involves the more general question of whether Europe's rise can be attributed at least in part to the development of representative political institutions.[5] Europe's autonomous cities were not always but certainly most frequently ruled by narrow oligarchies. In their initial phase of development it was most common for members of a city's merchants guild, those engaged in trade and in particular long distance trade, to establish de jure control of the representative institutions of an autonomous city. This was generally a development that occurred in either the 12th or 13th centuries. Beginning in the 14th century, a number of Europe's autonomous cities experienced political turmoil in which members of craft guilds, those engaged in light industrial production such as textiles, demanded representation on city councils, sometimes with success and sometimes not in the case where merchant guilds maintained a lock on power.[6] In almost all instances, even when craft guilds were granted some representation, city politics remained inherently oligarchic, that is controlled by a narrow elite. Moreover, both merchant and craft guilds by their very nature had the simultaneous effect of creating property rights for members while also creating barriers to entry for newcomers.[7] It is true that cities that lacked political autonomy also had guilds, but the key difference of course was that in an autonomous city, guild control of the economy was much more complete, precisely because the guilds also controlled the institutions of political power. These institutions generally consisted of a city council and a narrow body of individuals,

by Mark Dincecco (2011) as well as Dincecco and Katz (2011) on the way in which political and fiscal fragmentation in early modern Europe (of which autonomous cities were a characteristic) was a hindrance to state development and economic activity.

[4] Acemoglu (2008), Acemoglu, Johnson, and Robinson (2005), Acemoglu, Cantoni, Johnson, and Robinson (2011), Aghion, Alesina, and Trebbi (2007), Bourguignon and Verdier (2000), Djankov, Laporta, Lopez-de-Silanes, and Shleifer (2002),

[5] North and Thomas (1973), North and Weingast (1989), Acemoglu, Johnson, and Robinson (2005), Dincecco (2011), Epstein (2000), Stasavage (2011, 2010). DeLong and Shleifer (1993).

[6] The best and most accessible summary of this process is provided by van Werveke (1963) in his article entitled "The Rise of the Towns."

[7] See Ogilvie (2011) for a view that guilds were inimical to economic growth. See Epstein and Prak (2008) for a view that guilds could actually play a more positive role.

a sort of collective executive, that met much more frequently.

One way to adjudicate between the two views of city autonomy would be to see whether autonomous cities grew more quickly on average than did cities subject to control by territorial princes. While I will confront that question in this paper, I will also investigate the growth trend for autonomous cities over time. In particular, I want to ask whether because they were ruled by narrow oligarchies, autonomous cities may have initially grown more quickly than non-autonomous cities, followed by a subsequent period of economic stagnation.

A first motivation for the above idea comes from observations by Joel Mokyr (1995). He suggests that politically autonomous cities may have been favorable environments for growth not only because of security of property rights for those engaged in trade, but also because they were favorable environments for innovation. Over time, however, it is clear that if autonomous cities were initially important sites for innovation with regard to textiles, glassblowing, or instrument making, over the longer run their economies tended to stagnate and innovation took place in new locations. This may reflect something about the political institutions of autonomous cities, a possibility that I will explore in this paper.

A second motivation for my approach comes from theoretical work by Daron Acemoglu (2008) on the subject of oligarchy and growth. He presents a model a core result of which is that an oligarchic regime may initially enjoy a higher rate of growth than a democracy because there is less redistributive taxation, but oligarchies also establish barriers to entry. As long as comparative advantage in entrepreneurship changes over time, so that members of a sitting oligarchy do not remain the most capable entrepreneurs, then the prediction is that oligarchies will begin to grow more slowly over time.

In order to examine the effect of political autonomy on city population growth between 1000AD and 1800, I consider a sample of all cities in continental Western Europe that are recorded in the Bairoch, Batou and Chevre (1988) data set and which by the year 1500

reached a size of at least 10,000 inhabitants. This results in a total of 169 cities. The choice to focus on this sample was dictated in part by the fact that it allowed for compiling more detailed information on city autonomy, including both the date at which autonomy was achieved as well as the date at which it was lost. Sample choice was also dictated by the fact that this allows a comparison of similar cities. Within this sample, it is more likely that we are comparing autonomous cities with cities that were sufficiently large to have become politically autonomous but which did not succeed in becoming autonomous. Taking this sample, I then used a number of different sources to construct an indicator variable denoting whether a city was politically autonomous, with autonomous defined as there being clear evidence of institutions for self governance and evidence of the exercise of prerogatives with regard to taxation, judicial affairs, and defence. I also record the date at which a city is judged to have become politically autonomous, in addition to the date at which it lost autonomy.

To consider the potential effect of city autonomy I report results of estimates using pooled OLS regression with time period dummies as well as fixed effects estimates that consider only within variation for each city, supplemented by time period dummies. I consider three types of specifications to track the trend in city autonomy over time. In the first specification the effect of political autonomy is not allowed to vary over time, so I simply estimate whether autonomous cities on average grew more quickly than non-autonomous cities. In the second specification, I allow the estimated effect of autonomy to be different if a city has been autonomous for less than one hundred years. Finally, as a third procedure I adopt a more flexible specification consisting of three variables: (1) a constant taking the value of 1 in all years of autonomy (2) a linear trend counting the number of years that a city has been autonomous, and (3) a term representing the number of years that a city has been autonomous squared. Finally, for all specifications, I also consider how the results are affected by the inclusion of the population size at the

beginning of each period as an additional independent variable.[8]

The results from the above three specifications are quite clear. First of all, based on the specifications that do not allow the effect of city autonomy to vary over time, there is no evidence that autonomous cities on average grew more quickly than did non-autonomous cities. Based on fixed effects estimates, the average effect may actually have been negative. Second, once we distinguish between cities that have been autonomous for less than one hundred years and cities that have been autonomous for longer, we observe that in its first century of independence we would expect a city to have its population grow by substantially more than would be the case for a non-autonomous city. In strong contrast, autonomous cities after their first century of independence are estimated to either grow at a rate no different from non-autonomous cities or in some cases to grow more slowly. Finally, based on the most flexible specification that includes a constant effect of independence, a linear trend for the number of years that a city had been autonomous, and a quadratic term for the same, we observe another consistent result. Taking the fixed effects specification with initial population as a control, when compared with a non-autonomous city, we would expect an autonomous city to initially have a growth rate equivalent to a 33 percentage point increase in population if this rate was sustained over an entire century. However, based on the linear and quadratic trend terms, which are each statistically significant, we would expect this growth advantage to steadily decline over time. According to this estimation, after 110 years of independence, an autonomous city would begin to grow more slowly than would a non-autonomous city. Results of pooled OLS estimates that do not include city fixed effects suggest a similar conclusion, although a slightly slower decay in the growth rate, with the autonomy effect not turning negative until 155 years after the date at which a city first established its political autonomy. I also report the result of several instrumental variables estimates where current values for

[8] This is motivated by the fact established by Dittmar (2011, 2010) that for earlier centuries in particular, there were physical constraints on city size linked to the possibility for food provision. As a consequence, as cities increased in size they could have been expected to grow more slowly.

the autonomy variables were instrumented with lagged values.

The estimation results described above may reflect the fact that political autonomy initially caused a city to grow more quickly followed by a period of stagnation, consistent with the model of Acemoglu (2008). They also suggest more generally that while a great many authors have observed that representative political institutions helped lead to Europe's economic rise, their overall effect may actually have been more ambiguous. I have shown this with respect to one type of representative institution, the institutions of governance within city-states, but there is no reason that the same conclusions might not apply to oligarchies controlling representative institutions in larger states. The Dutch Republic may provide one such example of a larger state ruled by a mercantile oligarchy. If initially it was an inspiration to other states as it prospered, it eventually became stagnant and example of a pattern to be avoided.[9]

Given my empirical strategy, we can be confident that the results are robust to controls for unobserved time period effects as well as unobserved and constant effects at the city level. But there are certainly several further reasons why the estimation results may not reflect a causal effect of political autonomy on growth.

The first and most obvious problem could be that the results simply reflect the fact that a city grew quickly prior to becoming independent, that this was necessary for it to be able to become independent, and that growth during the first century of independence simply reflected this underlying trend. Failure to account for this fact would lead to a biased inference about the effect of political autonomy on growth. In order to assess this possibility I also report results of a placebo test. Instead of setting the city autonomy variable in my regressions equal to one in the year that a city first became independent, I recoded the variable to take a value of 1 beginning one hundred years prior to the establishment of political autonomy. I did the same with a variable measuring the number of years that a city had been autonomous. I then repeated my quadratic trend spec-

[9] See van Zanden and Riel (2004) as well as Israel (1995).

ifications using these recoded variables. To the extent that my core results are biased by the presence of an underlying growth trend, we should expect this change to result in either an increased estimated effect of political autonomy, or at a minimum there would be no attenuation of the estimated effect. However, in almost all cases substitution of the placebo for the actual political autonomy variable resulted in coefficients that were much smaller in magnitude and that were not statistically significant.

A second threat to inference that I consider is the possibility that the observed trend in growth rates for politically autonomous cities derives from the fact that they emerged at a particular point in time. It is often suggested that the international environment prior to 1500 was an era that was inherently favorable to the development of city-states.[10] For the period after 1500, however, authors have suggested that large territorial states became dominant, possibly because of changes in military technology that meant there were greater fixed costs in war fighting.[11] It might be the case then that politically autonomous cities initially grew quickly and then more slowly because of changing external conditions and that their growth path had nothing to do with their political institutions. Below I report the results of several tests where the effect of political autonomy on growth is allowed to vary by time period. There is no evidence from these estimates that the growth path of autonomous cities might primarily be attributable to a changing external environment.

The remainder of the paper is organized as follows. The next section considers the debate on city-states, oligarchy, and growth in greater detail. This is followed by a description of the data that I have compiled on city autonomy and its relevant characteristics involving when cities became independent, how long they tended to maintain this independence, and when they lost their independence. In the subsequent section I then present the empirical strategy that I will use to estimate the effect of political autonomy on population growth over time, followed by the core estimation results. The following section then considers the robustness of results involving several threats to inference, followed by

[10] See, for example, de Lagarde (1973) and Tilly (1992).

[11] The clearest and most concise version of this argument is presented by Bean (1973).

the conclusion to the paper.

2 City Autonomy, Oligarchy, and Growth

A common interpretation of how autonomous cities emerged in Europe is that they began as acts of usurpation of authority by groups located in a specific place engaging in a specific type of activity who sought to manage their own affairs rather than having them be managed by a feudal ruler.[12] One might expect that merchants who succeeded in such an endeavor would also be individuals possessing entrepreneurial talents with regard to trade as well as perhaps a talent for innovation. Once autonomy was established by a group of merchants, governance of a city council by merchants and consequent insulation from the whim of an outside monarch may have made for a more stable legal environment in which to conduct business. In addition, governance by a group of individuals meeting regularly face to face may have facilitated the sort of commitment mechanisms described by Avner Greif (2006). These political conditions may have provided an environment both for increased trade and increased innovation. Therefore, in the period after establishing its autonomy we might expect an autonomous city to grow more quickly than before and also to grow more quickly than did non-autonomous cities. This would fit in with a more general pattern suggested by DeLong and Shleifer (1993) and more recently by Acemoglu, Johnson, and Robinson (2005) whereby political institutions in medieval Europe that gave merchant oligarchs protection from sovereigns were favorable to economic growth.

But precisely because the establishment of an autonomous city involved the usurpation of authority, it also involved the creation of barriers to entry as the merchant, and later, craft guilds that dominated a city's political institutions strictly regulated commerce and the right to enter certain professions. It is for this reason that Epstein (2000) suggests that the area around Milan, which from 1277 was ruled by a series of Dukes beginning with the Visconti family, had more integrated markets and eventually became more prosperous than

[12] Epstein (2000) gives this interpretation following Weber ([1921] 1958).

did Tuscany which for a longer period was characterized by a set of highly autonomous cities each of which strictly regulated entry into professions and commerce. It is interesting in this regard to note that while in their 2005 paper Acemoglu, Johnson, and Robinson refer to the advantages of political institutions that strengthened merchant oligarchies, in their more recent work on the consequences of the French Revolution, they refer to merchant oligarchies as a barrier to growth for much the same reasons as presented by Epstein (2000).[13]

The above discussion suggests reasons why autonomous cities might prosper or stagnate relative to non-autonomous cities, but it suggests nothing about the time path for growth within an autonomous city. In fact, there are reasons to believe that in an initial phase of development the first of the above two effects might dominate but then in later stages the second would dominate. One reason we might expect an autonomous city to first prosper and then stagnate is if we refer to the work of Mancur Olson (1982) and suggest that over time economic stagnation would have been produced by a progressive accretion of rent seeking vested interests. But it appears to be the case that vested interests and barriers to entry were an important feature of Europe's autonomous cities right from the start, so the Olsonian explanation fails to receive support.

There are two more convincing reasons why we might expect autonomous cities to initially prosper and subsequently stagnate, and these can be derived from the work of Daron Acemoglu (2008) and Michael Postan (1952). In his model of oligarchic versus democratic societies, Acemoglu suggests that oligarchies in which members of the oligarchy are themselves entrepreneurs may initially have higher rates of growth than democracies because of better protection of property rights and a lower risk of expropriation. However, if it is necessary to have "churning" in the identity of entrepreneurs to maintain a rate of economic growth, then oligarchies will eventually stagnate. He suggests that this could be the case if the entrepreneurial skill of an individual, or of a family dynasty, changes

[13] See Acemoglu, Cantoni, Johnson, and Robinson (2011).

over time, necessitating new entrants. It could also be if the entrepreneurial skill of an individual or dynasty is constant over time but comparative advantage in entrepreneurship changes over time as the type of economic activities in an economy evolves. Either of these two possibilities could clearly apply to the economies of medieval and early modern cities.

The fit between Acemoglu's model and the empirical context I consider is not perfect. In his case the counterfactual for oligarchy is democracy. In my case the counterfactual for oligarchy is not democracy but a city that is subject to a princely overlord. But if we substitute the threat of expropriation by a prince for the possibility of redistribution voted by a democratic majority, then we see that the two contexts may not be that different in the end. Therefore, it is still possible to see how the predictions of his model regarding the growth trajectory over time under oligarchy could be applied to the case of an autonomous city in medieval or early modern Europe.

In addition to the possibility raised by Acemolgu, a second possible mechanism would be for the policy preferences of an oligarchy to change over time as a result of diversification out of high risk commercial and industrial activities. The fortunes of many great merchants in autonomous European cities were made in the area of long distance trade, a high risk activity. Once a merchant had accumulated wealth in this sort of activity, there would be a logical incentive to diversify a portfolio by investing in lower risk activities, such as land rents and public debt. Michael Postan (1952 p.217) went further, suggesting that many great merchants completely divested themselves from trading activities and became rentiers, leading to what he called a "process of financial degeneration."[14] While this argument is certainly not based on a micro-founded model, it is one that would be worth exploring. Under any political regime this shifting of resources from high risk to low risk activities would have potential implications for growth. Under an oligarchic regime this might be magnified if members of an oligarchy had already divested out of

[14] See also Rotz (1977) for an illustration of this phenomenon from the city of Lubeck.

high risk activities, and they therefore sought to orient a city's policies away from those actions most favorable to trade and innovation.

There is one final important question regarding the theoretical mechanism being proposed here - if autonomous cities eventually became economically stagnant, then how did they continue to maintain their autonomy? As autonomous cities began to grow more slowly than the cities subject to princes who ruled over territorial states, we might expect them to be at a disadvantage in terms of raising war finance, and they might have been swallowed up by their larger neighbors. Were this the case, it would attenuate the growth path proposed above, because cities would quickly lose their autonomy. A first response to this question is empirical; we do observe autonomous cities growing more slowly than non-autonomous cities and yet surviving for long periods. A second response is to suggest why this may have been the case. In work elsewhere (Stasavage 2011) I have provided empirical evidence to demonstrate that city-states had better access to credit for war finance than did rulers of territorial states, and moreover they continued to enjoy this preferential credit long after the point at which they had ceased having vibrant economies. This difference in access to credit cannot be explained by the simple fact that autonomous cities were wealthy, since territorial states also often had large and wealthy cities located within them. In this work I argue first that the explanation for preferential access to credit by city-states was attributable to their representative assemblies that met frequently and which enjoyed strong prerogatives over the exercise of public finance. But the presence of these institutions was not the ultimate cause here - it was instead the small geographic scale of autonomous cities when compared with territorial states. In Stasavage (2010) I demonstrate that in an era of costly transport, an intensive form of representation such as this could only be sustained in a geographically compact polity.[15] The second part of the explanation involves the fact that in most cases the representative assembly of an autonomous city was controlled by a merchant oligarchy, the same individ-

[15] This follows the argument originally made by Blockmans (1998).

uals who themselves lent to the city. This made it much more likely that the governing institutions of an autonomous city would be used to ensure prompt servicing of debts, making it more likely that individuals would lend to the city in the first place. In sum, merchant oligarchy may have had ambiguous implications for economic growth but more unambiguously positive implications for access to credit, and therefore the ability for a city to maintain its autonomy over time.

3 What Was an Autonomous City?

For purposes of simplicity I refer to city autonomy in this paper and in my empirical tests as if autonomy was a binary indicator. In practice, it is important to realize that the situation was considerably more complex. Autonomy was certainly a question of degree with some cities, such as Venice, having essentially complete autonomy over their affairs while with others, such as the city of Ghent, enjoying a substantial degree of autonomy for certain periods despite still being subject to a degree of princely intervention. In addition, autonomy in many cases certainly also varied according to policy domain. If one can think of the right to raise taxes, the right to regulate its own judicial and economic affairs, and the right to organize its own defence as key characteristics of an autonomous city, then some cities might have strong prerogatives in all three of these areas, some might have them in none, and some in a mix of the three. In addition to having prerogatives in at least some of the above areas, the final crucial characteristic of an autonomous city was that it had institutions for self governance, and the members of these institutions were chosen by inhabitants of the city itself and not by outside rulers. For the purposes of this paper I have defined an "autonomous city" as being one in which there is clear evidence that such institutions of self governance existed, and in addition there is also clear evidence of exercise of prerogatives in at least one of the policy areas referred to above. Below I will describe the sources used to code the dates at which city autonomy

was established as well as the dates at which it ended, but it will first be useful to briefly review the history of Europe's autonomous cities.

The historical development of Europe's autonomous cities can be thought of in three phases.[16] The first phase was with the reemergence of urban settlements after the Dark Ages, a phenomenon that Henri Pirenne thought to be associated with the reemergence of long distance trade but that other authors have contested, as they suggest that cities actually formed because they were sites for proto-industry before engaging in long distance trade.[17]

Irrespective of the sequence of events, both Pirenne and his critics are in agreement on the second phase of development which was that cities initially contained informal associations of merchants for self-protection, that these associations subsequently became formalized, and that the associations then demanded recognition of special privileges for the city from princely rulers. This was often referred to as the establishment of a commune. The communal movement occurred at a specific time in Western Europe with the first communes emerging at the very end of the eleventh century and the vast majority of communes emerging during the twelfth and thirteenth centuries, a period that is known to have been one of strong economic growth under the medieval commercial revolution. Though the institutions of governance within autonomous cities varied considerably, without doing too much violence to the evidence, it is possible to describe a relatively common pattern of governance that emerged in which there would be a broad city council that met with varying frequency as well as a smaller body composed of a group of magistrates chosen by lot, by election, or by cooptation. In addition, membership on the city council, and especially the governing body of magistrates was limited by law to certain social groups, a feature that almost invariably reinforced the political dominance of the city's merchant guild.

[16] For further information see van Werveke (1963), the two collected volumes produced by the Societe Jean Bodin (1954, 1955), as well as Stasavage (2011).

[17] See Pirenne (1925) and then Verhulst (1999, 1989) for the critique.

In the third phase of autonomous city development during the fourteenth century a number of cities experienced revolts in which members of craft guilds demanded greater representation on key city bodies. In a number of cases these revolts were successful in weakening at least the de jure, if not necessarily the de facto, power of a city's merchant guild. The most important point with respect to this paper, however, is that even when these revolts did succeed, autonomous cities continued to have oligarchic regimes in which guilds held political control and established substantial barriers to entry.

The process through which autonomous cities lost their autonomy was a varied one. In some cases, most notably in Italy, autonomous cities were conquered by neighboring autonomous cities. The most common pattern though was for an autonomous city to be conquered by the prince of a territorial state who sought to use the city's riches in order to engage in warfare. This is the pattern suggested by Charles Tilly (1992) in his work as well as by Wim Blockmans in his well known article entitled "Voracious States and Obstructing Cities."[18] However, while some authors have spoken of the period after 1500 as the age of the territorial state, it is important to recognize that while autonomous cities emerged during a particular historical period, they lost their autonomy over a course of numerous centuries. Some autonomous cities did not lose their autonomy until the period of Napoleonic conquest, or even later, as was the case with several German cities.

I have used a number of sources to record the dates at which city autonomy began and ended for each of the 169 cities in the data set. Autonomy (if it ever existed) is coded as having begun at the first date for which there is evidence that the above definition of an autonomous city is satisfied; that is there were institutions of self rule and evidence of exercise of prerogatives in at least one area of policy. Autonomy is coded as having ended when there is a clear evidence that an outside intervention put a durable end to

[18] More specifically, on page 243 of this article he sums up the pattern by suggesting "My central argument is that the requirements and pressures of monarchical states suffocated the metropoles of the European economy. The competition within the state system pushed all political unities toward increasing military expenditure and more extensive bureaucratic control – developments that violated the conditions favorable to early commercial capitalism."

self-rule. The ideal way to code the above dates would be to refer to extensive individual histories for each city in the data set, something that was not feasible for this project. As a second best strategy, I have used several high quality reference sources that record detailed information for cities in the data set. The first of the three principal sources used was the *Dictionary of the Middle Ages* edited by Joseph Strayer, a thirteen volume work published between 1982 and 1989. The second main source was the *Lexikon des Mittelalters* a nine volume German language work that provides very detailed information on city histories. The third principal source was the Eleventh Edition of the *Encyclopedia Britannica*, a version of this popular encyclopedia that contains vastly more detailed information on medieval cities than does the contemporary edition of the work. In addition to the above three sources, I also used the work on French communes by Charles Petit-Dutaillis (1947), the information provided on Italian communes in Guiso, Sapienza, and Zingales (2009), and several further sources on individual cities. The data set produced from these sources inevitably contains a very substantial degree of measurement error, but it innovates on previous data sets in providing information on both when city autonomy began, as well as when it ended. The data set produced by Stasavage (2011) recorded whether a city ever became independent, but not the date at which autonomy was acquired, nor the date at which it ended. The data set produced by Bosker, Buringh, and van Zanden (2010) is more comprehensive than the current in that it covers a much broader set of cities. They adopt a somewhat different definition of city autonomy, and it is not clear whether they record the date at which autonomous status for a city ended.[19]

Table 1 provides a tabulation of the number of cities that became autonomous and which lost their autonomy by historical period. This reaffirms the claim made above. The overwhelming majority of cities that succeeded in establishing their autonomy did so during the twelfth and thirteenth centuries, the height of the medieval Commercial Revo-

[19] They create a variable "commune" that takes a value of 1 if there is indication of the presence of a local urban participative organization that decided on local urban affairs. This is a less restrictive definition of autonomy than the one that I adopt.

Period	Began	Ended
Before 1100	6	0
1100-1199	44	1
1200-1299	30	16
1300-1399	2	13
1400-1499	0	15
1500-1599	0	12
1600-1699	0	2
1700-1799	0	10
After 1799	0	13

Table 1: Tracking City Autonomy Over Time. Each entry represents a count of the number of cities that gained or lost autonomy during the period in question.

lution. So, at least in terms of gaining autonomy, it does make sense to say that this was the era of the city state in European history. However, what is less commonly recognized is that if the period after 1500AD may have been associated with increasing dominance of large territorial states, a number of cities succeeded in retaining their autonomy for a considerable amount of time. Based on the evidence in Table 1, the hazard rate for a city losing its autonomy was essentially flat and was for the most part not higher in some periods than in others.

As a further step, we can also consider characteristics of cities that became autonomous as opposed to those that did not. Table 2 lists mean values, as well as results of difference in means tests, for five different city characteristics distinguishing between the 81 cities in the sample that became autonomous at least for some time, as opposed to the 88 cities that never became autonomous. The variables included are whether the city was an oceanic port, whether it was located on a navigable river, whether it was the seat of a bishop in the year 1100, whether it had been a significant Roman settlement, and finally how distant the city was from the Meersen line, which was the longitudinal line agreed to at Meersen in 870AD that split the former Carolingian Empire into two parts.[20] In work elsewhere I have argued, with supporting statistical evidence, that cities located near to this line in the

[20] Full definitions and sources for these variables are offered in the estimation results section.

center of Europe subsequently found themselves in a zone of political fragmentation where it was easier to establish independence from territorial princes.[21] As can be seen in Table 2, the only two variables for which we can see a significant difference between autonomous and non-autonomous cities are the presence of a bishop (a fact previously emphasized by Guiso, Sapienza, and Zingales, 2009) and distance from the Meersen partition line.

	Never	**Ever**	**T-test**
Oceanic Port	0.18	0.23	p=0.40
Riverine Port	0.28	0.32	p=0.60
Bishop's Seat	0.49	0.68	p=0.01
Roman Settlement	0.45	0.56	p=0.19
Meersen Distance (km)	580	290	p<0.001

Table 2: Characteristics of Cities That Became Autonomous At Least For Some Time and Those That Did Not. The variable "Meersen Distance" refers to the distance from the partition line of the Treaty of Meersen signed in 870AD. T-test refers to p-value from a difference in means test.

We can also consider several statistics on how long cities tended to remain autonomous once they gained this privilege. The sample median for duration of autonomy is 317 years (mean of 336 years). Within the group of 81 cities that became autonomous, a quarter of the cities lost their autonomy by the end of the second century of autonomy, but a quarter were also able to maintain their autonomy for more than 500 years. In other words, their experience was quite varied.

As a final step, before proceeding with the empirics it is useful to consider how the strategy I adopted for coding city autonomy might lead to any bias in my estimates of the effect of city autonomy on population growth. There are a number of cases in which information on a city was not sufficient to code it as being autonomous, and so I coded it as not being autonomous, but this may simply reflect a lack of information about a city

[21] See Stasavage (2011, ch.5)

that was truly autonomous. If this is the case, if there is a true effect of city autonomy on growth, then this form of measurement error would bias me in favor of finding a null result, a result that I do indeed find for the average difference between autonomous and non-autonomous cities. However, this form of measurement error would presumably also bias me towards not finding that autonomous cities at any point in their history were any different from non-autonomous cities. In other words, it would make me less likely to find any evidence of a growth pattern whereby autonomous cities first grew quickly and subsequently more slowly than non-autonomous cities. In contrast, there is no particular reason to think that this form of measurement error would lead me to find evidence in favor of such a growth pattern. The principal reason why I might find such a growth pattern, even if one did not exist, is if there is in fact a positive average effect of city autonomy on growth, but I have inaccurately coded a number of cities as remaining autonomous long after they had in fact lost their autonomy.

4 Empirical Strategy

The primary objective of this paper is to investigate whether and when autonomous cities grew more quickly than non-autonomous cities. One empirical approach to address this would be to proceed as follows. If there are some reasons to believe that political autonomy for a city would be good for growth and other reasons to believe that it would be bad for growth, then we could attempt to investigate which one of these effects dominates by examining whether autonomous cities grew more quickly on average. In a number of political economy papers authors have used rates of urbanization or city size as proxies for economic growth during the medieval and early modern eras, even if it is recognized that growth of the urban population does not necessarily equate with economic growth more generally or growth in per capita income more specifically. This choice is dictated by the absence of better proxies for economic growth, at least if one is going to conduct a

broad study across multiple regions. This approach is also facilitated by the existence of the data set compiled by Bairoch, Batou, and Chevre (1988). In a recent paper, Bosker, Buringh, and van Zanden (2010) build on the Bairoch data set to provide the first broad empirical assessment of this question. Using a definition of city autonomy less restrictive than that in this paper, they find that autonomous cities were on average 12% larger than cities that lacked political autonomy. There remain many questions whether this reflects a causal effect of city autonomy on economic growth; it may simply have been the case that an underlying growth trend allowed cities to become autonomous. Nonetheless, their study is certainly an important step towards answering this question.

For my own investigation I ask not only whether autonomous cities grew more quickly on average, but also whether their pattern of growth followed a particular trend over time. I have proposed that we can expect autonomous cities to have initially grown more quickly than non-autonomous cities but that eventually this situation reversed itself. To investigate this possibility I will estimate an equation in which the effect of city autonomy on population growth is allowed to vary over time in several different ways. The general equation I seek to estimate is as follows

$$growth = \alpha + \beta(Autonomy)_{it} + \boldsymbol{\gamma}(Autonomy \cdot F(Years\ Autonomous)_{it} + \zeta pop_{it} + \mu_i + \eta_t + \varepsilon_{it} \tag{1}$$

In this equation the rate of population growth in percentage terms between time t and time $t+1$, $growth = \frac{pop_{it+1} - pop_{it}}{pop_{it}}$ is estimated as a function of the following variables all taken at time t.[22] Each period of time represents a century with the year 1000AD as the beginning point in the sample and the year 1800 as the end point.[23] Missing values in the

[22] I also repeated all estimations in the paper using log growth=$\ln(\text{pop}_{t+1}/\text{pop}_t)$ as the depending variable. The substantive results of the estimates reported in Tables 3, 4, and 5 were the same when using this alternative dependent variable.

[23] In fact, the Bairoch data reports populations at century frequencies from 1000AD to 1700 after which populations are reported at half century frequencies up until 1850. In order to have each time period in my estimation be of the same length, I have omitted the Bairoch data for the years 1750 and 1850. I also considered the alternative of conducting an estimation based on century long periods to 1700 and then half century periods after that point, while adjusting the population growth rates for the half centuries by

data set were linearly interpolated but no values were extrapolated. Population growth is modelled first as a function of political autonomy. The variable *Autonomy* takes a value between zero and one representing the fraction of the period for which a city was politically autonomous. I consider three alternatives for estimating equation (1).

1. In the first the effect of *Autonomy* is not allowed to vary over time, and so the difference between autonomous and non-autonomous cities is captured only by the β coefficient.

2. In the second alternative the effect of political autonomy is modeled as a function of β as well as γ in which the function $F()$ takes a value of one if *Years Autonomous*$<$ 100 and zero otherwise.[24]

3. In the third alternative the effect of city autonomy is modeled as a function of β, in addition to $\gamma 1$ in which $F()$ simply represents *Years Autonomous* and $\gamma 2$ in which $F()$ represents *Years Autonomous* squared.

In addition to estimating the rate of population growth as a function *Autonomy* and *Years Autonomous*, in some specifications I also include the level of a city's population at time t in order to capture the effect identified by Dittmar (2011, 2010) whereby if there were constraints on the ability of obtaining foodstuffs for the population, then as a city grew in size we might expect it to grow more slowly. All specifications also include a full set of time period dummies, and in some specifications I control for city-specific fixed effects, or as an alternative, I include several control variables designed to capture fixed features of a city as described below. Finally, in all specifications I cluster standard errors

a factor of 2. The results were not substantively different from those that I report here.

[24]The variable *Years Autonomous* was constructed by first taking the data set with each time period representing a century and artificially expanding it into an annual data set. Based on the dates at which autonomy was established and when it was lost, I then constructed the variable *Years Autonomous* that had an annual frequency. The final step in the procedure was then to collapse the data set back into century time periods. What *Years Autonomous* therefore represents is the average value for this underlying variable across the century. So, for example, if a city became autonomous in the first year of a century, and it remained autonomous for the entire century, then the corresponding value for *Years Autonomous* would be 50.

at the city level to take account of any within city correlation in the error term that might bias the estimates.

The specifications above that include city fixed effects are identified under the standard assumptions of a difference in differences design. The estimates of β and γ are robust to the presence of unobserved heterogeneity that is constant within a time period. They are also robust to the presence of unobserved heterogeneity that is constant for each city. Yet there still remain a number of reasons why the estimates of β and γ might be biased, and following the presentation of the main estimation results, I will consider in particular the possibility that the estimates are biased by the presence of an underlying growth trend and by the fact that the effect of city autonomy may have varied according to historical time period.

5 Estimation Results

In this section I present the core estimation results of the paper. It is first useful though to consider some descriptive statistics regarding rates of population growth in autonomous and non-autonomous cities. The mean for the growth rate across the entire sample is 28 percentage points with a median of 12.5 percentage points, and a standard deviation of 82. The mean growth rate for periods in which a city was autonomous for at least part of the century is 27.1 percentage points, as opposed to 28.4 percentage points for cities that were not autonomous at all during the century. So, at first glance there is very little evidence of a difference in growth rates between autonomous and non-autonomous cities.

When we consider the sample of autonomous cities and break it down by considering how long a city has been autonomous, we see a somewhat different story. The evidence in Table 3 suggests that as long as the value for *Years Autonomous* is less then 200, then city-states enjoyed higher growth rates than did non-autonomous cities, but after this point they experienced lower growth rates than the non-autonomous cities. It should

	Obs	**Mean**	**Median**	**Std. Dev.**
Not autonomous	742	28.4	12.8	85.0
Autonomous for at least part of century	278	27.1	9.1	75.6
Years Autonomous<100	65	28	20	74.9
Years Autonomous between 100 and 200	68	42.0	11.2	100.5
Years Autonomous between 200 and 300	54	15.3	-0.89	63.8
Years Autonomous between 300 and 400 years	33	17.5	0	62.9
Years Autonomous between 400 and 500 years	24	7.4	0	38.7

Table 3: Population Growth Rates for Autonomous and Non-Autonomous Cities. This is based on the sample of 169 cities with time periods running from 1000 to 1800. Growth is measured in percentage growth.

remembered here that the value for *Years Autonomous* represents the average value for this variable across a century. So, for example, for a city that became autonomous at the beginning of a century long time period and which remained autonomous throughout, then the value for *Years Autonomous* would actually be 50 (the average of the sum of all integers between 1 and 100). The descriptive statistics in Table 3 do not of course control for unobserved period-specific effects, and this is an important consideration given that we know that most autonomous cities gained their autonomy during a specific historical period as shown in Table 1. They also of course do not control for city fixed effects. Finally, these statistics take no account of the fact that the vast majority of city-states became independent during a particular historical period, and it may have been the case that the broader European environment was favorable to autonomous city growth in this earlier period, but in later centuries external conditions changed. All of these possibilities will be considered below.

Table 4 reports OLS estimates of city population growth with twelve different specifications considered. In the first six specifications the effect of city autonomy is modelled as being constant over time. In the remaining six specifications a variable is added that allows for distinguishing between the effect of autonomy when *Years Autonomous*<100 and the effect of autonomy subsequent to this date. Some specifications include a variable for the city's initial population at the beginning of the period.[25] Finally, I control for time-constant confounders at the city level using two alternative strategies: (1) a fixed effects specification, (2) a specification that adds four variables for time invariant features of a city that might have been expected to have an effect on both population growth and the likelihood of becoming autonomous. The first two of these are dummy variables for cities that were oceanic ports or cities located on navigable rivers (with navigability

[25] An alternative specification whereby *Initial Population* was interacted with a dummy for periods prior to 1500 did not result in different substantive conclusions regarding city autonomy. One might prefer this alternative specification because Dittmar (2011, 2010) finds that initial population is correlated with the growth rate for periods prior to 1500 but not afterwards, presumably because of improvements in transportation.

proxied for by including all cities on a river the width of which exceeded fifty meters).[26] I then also included a dummy variable for whether a city was the seat of a bishop at the outset of the period considered here. Guiso, Sapienza, and Zingales (2009) have suggested that Italian cities that had bishops were more likely to become independent communes. However, in Germany it was often the case that to gain its autonomy, a city had to establish independence from a bishop. The fourth and final control variable is a dummy variable for all cities that were significant Roman settlements.[27] During the Roman Empire, it was common for towns to be given the status of *civitas* which implied a substantial degree of self-government. It is plausible that such cities may have found it easier to re-establish their autonomy during the Middle Ages, and Roman heritage may also have had implications for economic growth.

Considering the first six specifications in Table 4, in the OLS estimates there is no evidence that on average, autonomous cities had a different rate of population growth than did cities that lacked autonomy. Moreover, in the fixed effects estimates the coefficient on *Autonomous* is actually negative, of sizeable magnitude, and statistically significant. On the face of it then, there is no evidence in columns (1) through (6) that autonomous cities on average grew more quickly than non-autonomous cities.

Consider next the results of the estimates in columns (6) through (12). In the case of a city that became autonomous in the first year of a period, the estimated "effect" of autonomy is given by the sum of the coefficients on the *Autonomous* and *Autonomous·(Years Autonomous<100)* variables. In the case of a city that had been autonomous for at least 100 years at the beginning of the period, the estimated effect of autonomy is given only by the coefficient on *Autonomous*. Across the six specifications we see that the coefficient on *Autonomous·(Years Autonomous<100)* is positive, large in magnitude, and statistically significant. In the OLS specifications the coefficient on *Autonomous* is negative but im-

[26] River width was measured using Google Earth.

[27] This is a dummy variable taking a value of 1 if the city is listed (under its Roman name) in the *Princeton Encyclopedia of Classical Sites*.

	(1) OLS	(2) OLS	(3) FE	(4) OLS	(5) OLS	(6) FE	(7) OLS	(8) OLS	(9) FE	(10) OLS	(11) OLS	(12) FE
Autonomous	-1.10	-2.69	-22.9	-1.07	-3.25	-17.7	-6.56	-8.21	-30.1	-5.92	-8.16	-24.4
	(7.13)	(6.30)	(9.7)	(7.39)	(6.51)	(10.8)	(6.71)	(6.10)	(10.3)	(7.10)	(6.49)	(11.7)
Autonomous·(Years Autonomous<100)							39.5	39.4	42.2	35.0	35.1	39.4
							(15.5)	(15.2)	(16.2)	(15.2)	(15.1)	(17.2)
Initial Population				-.269	-.310	-.657				-.261	-.304	-.641
				(.099)	(.116)	(.177)				(.097)	(.114)	(.171)
Oceanic Port		29.3			34.3			29.5			34.4	
		(9.0)			(9.7)			(9.0)			(9.6)	
Riverine Port		6.49			9.31			7.00			9.70	
		(4.40)			(4.52)			(4.41)			(4.56)	
Bishop's Seat		-15.9			-12.1			-15.8			-12.1	
		(5.28)			(5.5)			(5.3)			(5.5)	
Roman settlement		5.05			5.88			5.27			6.07	
		(4.58)			(4.61)			(4.59)			(4.63)	
R-squared (within for FE)	0.04	0.06	0.05	0.05	0.08	0.10	0.04	0.07	0.06	0.05	0.08	0.11

Table 4: OLS and Fixed Effects Estimates for City Population Growth. Dependent Variable in all specifications is the percentage change in city population. All specifications include time period dummies and all standard errors are clustered by city.

precisely estimated. In the fixed effects specifications the coefficient on *Autonomous* is negative and statistically significant. Based on the estimate in columns (11) and (12), a city that became independent in the first year of the period and which remained autonomous for the entire period would be expected to experience a rate of population growth of either 27 or 15 percentage points higher than would other cities. In contrast, a city that had been autonomous for at least one hundred years at the beginning of the century and which remained autonomous for the entire period would be expected to grow at a rate of either 8 or 24 percentage points lower than would other cities. In addition to the twelve specifications reported in Table 4, I also considered a specification in which an additional variable was added to capture a separate effect for cities for which *100< Years Autonomous<200*. However, inclusion of this variable resulted in all autonomy coefficients being very imprecisely estimated.

A further feature of all specifications in Table 4, and in fact all specifications in this paper, is the relatively low values for the r-squared statistics. As the Bairoch data is composed of population estimates from heterogeneous sources that are known to vary in quality, the low values for this goodness of fit statistic may primarily reflect measurement error in the dependent variable. In any case, the low values for the r-squared statistics are not a result of the choice to use percentage growth rather than log growth $\ln(\frac{pop_{t+1}}{pop_t})$ as dependent variable. When log growth was used as an alternative dependent variable overall goodness of fit of the estimates did not improve.

As a next step, Table 5 reports the results of a more flexible specification in which the effect of city autonomy is modelled as a function of both an intercept shift represented by the coefficient on Autonomous, a linear trend represented by the coefficient on *Years Autonomous*, and a quadratic trend represented by the coefficient on *Years Autonomous* squared. In Table 5 if a city became autonomous at the beginning of a century and remained autonomous for the entire century, then the estimated "effect" of autonomy would be given by $\beta + \gamma_1 50 + \gamma_2 50^2$, since 50 would be the average value for years independent

	(1) OLS	(2) OLS	(3) FE	(4) IV-FE	(5) OLS	(6) OLS	(7) FE	(8) IV-FE
Autonomous	42.7	42.5	30.3	50.3	38.8	38.2	32.6	58.3
	(18.9)	(17.6)	(16.7)	(35.4)	(18.1)	(16.8)	(16.6)	(34.0)
Years Autonomous	-.304	-.303	-.364	-.521	-.286	-.283	-.344	-.512
	(.106)	(.103)	(.106)	(.182)	(.103)	(.101)	(.111)	(.174)
$(Years\ Autonomous)^2$	.0004	.0004	.0004	.0005	.0003	.0004	.0004	.0006
	(.0001)	(.0002)	(.0002)	(.0002)	.0001	(.0002)	(.0002)	(.0003)
Initial Population					-.262	-.303	-.505	-.757
					(.097)	(.113)	(1.43)	(.093)
Oceanic Port		29.8				34.6		
		(9.1)				(9.7)		
Riverine Port		7.24				9.89		
		(4.43)				(4.58)		
Bishop's Seat		-16.0				-12.4		
		(5.4)				(5.6)		
Roman settlement		5.47				6.24		
		(4.62)				(4.66)		
F-test, autonomy terms	p=<.001	p<0.01	p<0.01	p<0.01	p=0.02	p<0.01	p<0.01	p<0.01
R-squared (within for FE)	0.07	0.07	0.06	0.06	0.06	0.09	0.11	0.13

Table 5: OLS, Fixed Effects, and Instrumental Variables Fixed Effects Estimates for City Population Growth: Quadratic Trend Specification. Dependent Variable in all specifications is the percentage change in city population. All specifications include time period dummies and all standard errors are clustered by city. In the instrumental variables estimates each of the three autonomy variables is instrumented for, and the excluded instruments are the lagged values of the three autonomy variables.

across the century. The estimation results from the OLS and Fixed Effects specifications are clear. In all but one case, all three autonomy terms are statistically significant, and in most cases highly so.

Now take the OLS estimate in column (6) and consider what inference we would draw if we applied these estimates to an annual data set in which we took the sum of growth rates over one hundred years. During its first century of autonomy, an autonomous city would be expected to have its population increase by 23.9 percentage points more than would a non-autonomous city. But according to these same estimates, in its second century of independence, an autonomous city would be expected to have its population increase by only 0.9 percentage points more than a non-autonomous city. The fixed effects estimate in column (7) suggests a similar initial growth rate for an autonomous city as compared to a non-autonomous city. However, it also suggests a more rapid decline in this rate of growth. Based on column (7), during its first century of independence, an autonomous city could expect to have its population increase by 16.5 percentage points more than a non-autonomous city. In its second century of independence, however, an autonomous city would grow by 9 percentage points less than a non-autonomous city. If we considered the estimates as if they were being applied to annual data, then based on the OLS estimate in column (6) an autonomous city would begin to grow more slowly than a non-autonomous city after 155 years of autonomy. The fixed effects estimate in column (7) suggests that the autonomy "effect" would become negative after 110 years.

In addition to the OLS and Fixed Effects estimates, I also considered an instrumental variables estimator in which each of the three autonomy variables was instrumented for by using its value lagged by one period. This would be one way to deal with the possibility that the observed contemporaneous correlation between autonomy and growth is biased by the fact that growth might also have an effect on autonomy. Since the exclusion restriction for using these lagged values as instruments is most likely to be satisfied when the estimate also controls for unobserved heterogeneity at the city level, I have restricted

myself in Table 5 to reporting the results of instrumental variables regressions for the fixed effects models.[28] As can be seen, although the coefficient on *Autonomous* is not statistically significant in either column (4) or column (8), it is similar in magnitude, although slightly larger than in the estimates in columns (3) and (7). In addition, both trend terms are statistically significant in columns (4) and (8), and they too are of similar but slightly larger magnitude than in the column (3) and column (7) estimates. Finally, in both instrumental variables regressions the F-test on the three autonomy terms leads to a clear rejection of the null.

To summarize, in this section I have presented three types of evidence to suggest that autonomous cities initially grew more quickly than did cities subject to princely rule, but this situation eventually reversed itself. First, simple descriptive statistics suggest that autonomous cities in the early phase of their independence grew more quickly than non-autonomous cities, but that subsequently this pattern reversed itself. Next, in Pooled OLS regressions and Fixed Effects regressions, both of which control for common time period effects, we see no indication that autonomous cities on average grew either more or less quickly than did other cities. Finally, I have explored several different ways of estimating an effect of city autonomy that is allowed to vary over time. The results strongly suggest that autonomous cities had an initial burst of growth followed by much slower growth in subsequent centuries. One final caveat to the above conclusions is that we should of course remember that the above conclusions apply to population growth and that, as is common in the literature for this period, population growth is being used as a proxy for growth in the size of an economy. I have not directly demonstrated that autonomous cities initially saw an expansion of trade or innovation relative to non-autonomous cities.

[28] As one would expect, the lagged autonomy variables turned out to be extremely good predictors of the current autonomy variables. The partial r-squared from the three instruments was high in each of the two regressions run. So there is little concern about a weak instruments problem here.

6 Robustness

Though the estimation results reported in the previous section control for unobserved time period effects as well as unobserved heterogeneity at the city level, there remain several important reasons why we might still be cautious about interpreting them as reflecting a causal effect of city autonomy on growth. Here I will consider two such possibilities. The first is that rapid population growth actually preceded political autonomy, and it was this factor that permitted a city to become independent. Continuing growth in the initial phase of a city's autonomy then may have simply reflected this underlying trend, and not a causal effect of autonomy. The second is the possibility that the declining growth rate of autonomous cities reflects the fact that they emerged at a particular point in time and that their declining growth rates are attributable to changes in the external environment they faced, and not to their institutional structure.

6.1 Placebo Test for Pre-Autonomy Growth

I consider the possibility that rapid growth for autonomous cities reflected an underlying trend by conducting a variant of a placebo test. Taking the specifications in Table 5, I re-coded each of the three autonomy variables by setting a placebo date for the establishment of autonomy equivalent to 100 years prior to the actual date. I then re-estimated each of the six specifications using these recoded variables. As can be seen in Table 6, the results are fairly unambiguous. In only two of the six specifications are any of the autonomy terms statistically significant and the magnitude of the *Autonomy* constant term is much smaller than in the Table 5 results. The exceptions here are the linear trend terms in the fixed effects specifications, but though these are statistically significant, they are actually considerably smaller in magnitude when compared with the Table 5 results. This is strong evidence that the fact autonomous cities grew more quickly than non-autonomous cities does not reflect an underlying trend that commenced prior to the establishment

of autonomy. The possible implication then is that cities were able to establish their political autonomy not because of a strong period of prior growth, but for idiosyncratic reasons such as geographic isolation from the capitals of princely rulers. As I have noted above, Stasavage (2011) provides robust evidence for this latter inference, suggesting that the manner in which the Carolingian Empire fragmented made it easier for some cities to subsequently establish their autonomy. This interpretation is also supported by the difference in means test in Table 2.

In addition to an underlying growth trend, a related threat to inference could involve the possibility of mean reversion in growth rates in a context where political autonomy had no effect on growth. We might expect that after a period of fast growth, any city's rate of population growth rate would naturally revert to a lower level. Perhaps it was the case that political autonomy had no effect on population growth, but cities experiencing a period of fast growth sometimes chose to become politically independent because this brought other benefits. If this was the case, then it would provide an alternative explanation for the population growth trend observed in politically autonomous cities. However, the results in Table 6 seem to argue against this possibility, because autonomy tended to precede fast growth rather than the reverse.

6.2 External Conditions as Explanation for the Growth Trend

A second threat to inference that I consider involves the possibility that the observed growth trend for autonomous cities is attributable to changing external conditions, and not their political institutions. This possibility exists because, as was shown above, most cities that established their autonomy did so at a specific moment in time. A number of authors have suggested that the external environment in Europe prior to 1500 was favorable to city-states developing and prospering whereas after 1500, Europe shifted into a new age of the "territorial" state. This is an empirical observation rather than a theoretical explanation. One theory for this shift refers to the way in which changes in

	(1) OLS	(2) OLS	(3) FE	(4) OLS	(5) OLS	(6) FE
Autonomous (placebo)	12.9	9.6	-4.58	7.2	2.7	-6.3
	(28.3)	(28.9)	(32.7)	(28.1)	(29.2)	(32.5)
Years Autonomous (placebo)	.009	.011	-.110	-.001	.0002	-0.08
	(.058)	(.053)	(.044)	(.058)	(.0535)	(0.05)
$(Years\ Autonomous)^2$ *(placebo)*	-.00004	-.00005	.00005	.00002	-.00003	.00002
	(.00010)	(.00009)	(.00007)	(.00009)	(.00009)	(.00007)
Initial Population				-.265	-.308	-.641
				(.099)	(.117)	(.174)
Oceanic Port		29.8			34.7	
		(9.3)			(10.0)	
Riverine Port		7.1			9.81	
		(4.4)			(4.53)	
Bishop's Seat		-15.8			-12.1	
		(5.3)			(5.6)	
Roman settlement		5.10			5.88	
		(4.56)			(4.60)	
F-test, autonomy terms	p=0.43	p=0.10	p<0.01	p=0.78	p=0.25	p=0.01
R-squared (within for FE)	0.04	0.06	0.06	0.05	0.08	0.11

Table 6: Placebo Test using OLS and Fixed Effects Estimates for City Population Growth. Dependent Variable in all specifications is the percentage change in city population. All autonomy variables are recoded as if city autonomy began 100 years prior to the actual date. All specifications include time period dummies and all standard errors are clustered by city.

military technology after 1500 led to their being greater fixed costs in defense provision, and therefore an increase in the optimal size of states.[29] As suggested above, an alternative theory for which there is empirical support suggests that while no new city-states emerged after 1500, those that did already exist were often able to maintain their independence because political domination by merchant oligarchies ensured that they had access to credit at low interest rates to finance their defense.[30]

I considered several possible tests to determine whether the results from Table 5 are attributable to a changing external environment for city-states, as opposed to the fact that oligarchy provided for fast initial growth followed by subsequent stagnation. These consisted of allowing the β coefficient in equation (1) to vary over time. As a first test, I estimated the following equation with *Autonomy* interacted with a dummy variable 1500 for periods beginning in 1500.

$$\begin{aligned} growth &= \alpha + \beta_1(Autonomy)_{it} + \beta_2(Autonomy \cdot 1500)_{it} \\ &\quad + \boldsymbol{\gamma}_1(Years\ Autonomous)_{it} + \boldsymbol{\gamma}_2(Years\ Autonomous)_{it}^2 + \zeta pop_{it} + \mu_i + \eta_t + \varepsilon_{it} \end{aligned} \tag{2}$$

If the growth trend observed in the Table 4 results is attributable to the fact that autonomous cities after 1500AD experienced slower population growth, then we should expect to see that the β_2 coefficient is negative and that the γ_1 coefficient on the linear time trend term should no longer be negative. In fact, the β_2 coefficient was positive across the six specifications, and it was sometimes statistically significant. In addition, the coefficient on the linear time trend for *Years Autonomous* remained negative, statistically significant, and of a comparable magnitude to that observed in the Table 5 specifications. This is strong evidence that my results regarding the growth trend for autonomous cities are not driven principally by the fact that cities became autonomous at a particular point

[29] See Bean (1973).
[30] See Stasavage (2011).

in time during European history. As a further test, I also considered a more flexible specification than that used in equation (2) by interacting the *Autonomy* term with a set of period dummies. There was no evidence in this specification that later periods were associated with lower rates of growth for autonomous cities, although it was also the case that most of the coefficients in this specification were not statistically significant.

7 Conclusion

The history of Europe's autonomous cities provides us with an important opportunity to examine the implications of political oligarchy for economic growth, a question that is every bit as relevant in part's of today's world as it was in medieval and early modern Europe. Europe's autonomous cities have long been seen as one of a set of political institutions, along with national representative assemblies, that were distinct from the institutions found in other world regions and which may have helped lead to Europe's economic rise. At the same time, it has also long been recognized that the policies adopted by the merchant oligarchs controlling autonomous cities involved the applications of barriers to entry into markets and professions, something that may have stifled trade, innovation, and therefore growth. Following recent theoretical work, and in particular that of Acemoglu (2008), I have examined whether the establishment of political autonomy for a city may have initially led to a high rate of growth followed by a subsequent period of stagnation as barriers to entry prevented the entry of entrepreneurs. Based on a sample of 169 cities, I have presented several forms of evidence to support this proposition, using growth in population as a proxy for economic growth. The first type of evidence came in the form of simple descriptive statistics. The second comes from both pooled OLS regressions with time period dummies as well as fixed effects regressions with time period dummies. These suggest that once we control for several observable city characteristics as well as common time period effects and unobserved city effects, we continue to observe

that autonomous cities initially grew more quickly than did non-autonomous cities, but sometime during their second century of autonomy this pattern reversed itself. There is still much to do to demonstrate that I have identified a causal effect of city autonomy, as well as much to do to demonstrate that this effect reflects the theoretical mechanism that I have proposed. Nonetheless, we can be confident that the observed results do not simply reflect the presence of an underlying growth trend in which growth led to autonomy, or that the growth trend I observe is due above all to changing external conditions.

The principal implication of my results is to provide support for the notion that oligarchy is a double edged sword when it comes to economic growth. In addition, my results may also serve as a corrective to a common view of European history. Europe's representative institutions, of which city state assemblies were a prime example, may have had a more ambiguous effect on Europe's economic rise than is commonly believed. A representative assembly could help secure property rights, but it could also entrench the power of an oligarchy that would ultimately pursue policies unfavorable to growth.

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