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Economic inequality in northwestern Italy: a long-term view (fourteenth to eighteenth centuries)

(provisional version – please ask for author's consent to quote)

Abstract

This article provides a comprehensive picture of economic inequality in northwestern Italy (Piedmont), focusing on the long-term developments occurred during 1300-1800 ca. Regional studies of this kind are rare, and none of them has as long a timescale. The new data proposed illuminate many little-known aspects of wealth distribution and general economic inequality in preindustrial times, and support the idea that during the Early Modern period, inequality grew everywhere: both in cities and in rural areas, and independently from whether the economy was growing or stagnating. This finding challenges earlier views that explained inequality growth as the consequence of economic development. The importance of demographic processes affecting inequality is underlined, and the impact of severe mortality crises, like the Black Death, is analyzed.

Keywords

Economic inequality; wealth concentration; middle ages; early modern period; Piedmont; Sabaudian States; Italy; plague; Black Death

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The history of long-term trends in economic inequality is still largely to be written. After decades of research, mostly generated by Simon Kuznets' seminal 1955 article which introduced the notion that inequality would follow an inverted-U path through the industrialization process (the so-called 'Kuznets curve')[1], we now have a good knowledge of the developments in inequality through the last couple of centuries, although only for selected countries like Britain, France, Italy, Spain, and the U.S. (Williamson 1985; Piketty, Postel-Vinay, Rosenthal 2006; Rossi, Toniolo, Vecchi 2001; Prados de la Escosura 2008; Lindert, Williamson 1980). The picture is an entirely different one if we consider the earlier epochs. For the Middle Ages and Early Modern period, the only published work covering a large area in the long run is still Van Zanden's study of the provinces of Holland and Overijssel in the Low Countries (Van Zanden 1995; Soltow, Van Zanden 1998). However, in recent years a growing number of mostly European scholars have been busy collecting new archival data useful to reconstruct long-term trends in economic inequality. Also due to the very time-consuming nature of archival research in this specific field, these works have focused on single cities or small areas, like Ivrea and the Canavese in northern Italy (Alfani 2009; Alfani 2010a; 2010b), Nivelles, Aalst and Hertogenbosch in the Low Countries (Ryckbosch 2010; 2012; Hanus 2012), and some rural regions around Madrid in Spain (Santiago-Caballero 2011; Santiago-Caballero and Fernández, 2013). To these, a recent study of Bursa in Anatolia can be added (Canbakal 2013). Older works tended to depend on exceptional sources and consequently focused on one year or very short time periods only. The most celebrated examples are surely Herlihy's works on the Florentine *catasto* of 1427 (Herlihy 1977; Herlihy, Klapisch-Zuber 1985).

All the above-mentioned studies have one thing in common: they focused on hard data, dug from the archives, to produce direct measures of inequality. Recently, more theoretical/interpretative paths have also been followed, with works relying on a large number of hypotheses to supplement a serious lack of data - actually even proposing, like in the case of Williamson's recent study of Latin American inequality since 1491, to write a 'History without Evidence' (Williamson 2009). In other cases, the evidence used was simply scarce and scattered in time. It was enough, however, to allow Milanovic, Williamson and Lindert to introduce the exciting new idea of the 'inequality possibility frontier', to be considered as the reference level for estimating the actual degree of 'extraction' of inequality characterizing a given society (Milanovic, Williamson, Lindert 2011). The authors listed among their sources just eight observations or studies for all the centuries from the fourteenth to the eighteenth, of which six involved just the final century (admittedly, they used even less material

[1] According to Kuznets, inequality (of income) would increase at the beginning of industrialization, starting from relatively low pre-industrial levels. It would then decrease during the first stages of the industrialization process (Kuznets 1955).

than was available at the time of publication). This was enough, however, to deeply change the way in which we consider long-term changes in inequality; I will develop the matter in greater detail later. Finally, a recent paper by Alfani and Frigeni focused on the changes in how inequality was perceived, attempting to infer them from the (very slow and rather late) development in time of a discourse on economic equality/inequality, and suggesting that such changes interacted in complex ways with actual changes in inequality levels (Alfani and Frigeni 2013).

These theoretical works are essential to provide us with a proper conceptual and interpretative framework to capture the real meaning of long-term changes in inequality levels - but they are no substitute for actual data, unless in those cases (like Latin America) in which the necessary information cannot be produced. At least in the case of central and western Europe, and possibly also for other areas of the world, the information, while not being currently available, can be obtained from new archival research. Given the conditions of this scholarly field, in which the available data have never been abundant and exciting new ideas in need of empirical confirmation are flourishing, the call for new research and the publication of new data is a particularly strong one. This paper intends to answer to such a call, by proposing the second only study of a large area over a long period of time ever attempted after Van Zanden's seminal work on the Low Countries.

That area is northwestern Italy, and in particular the domains of the House of Savoy which today broadly correspond to the Piedmont region. This is a very important part of Italy, as starting from their Piedmontese domains, the Savoy played a fundamental role in the process of unification of the country. While this process was completed only during the nineteenth century (1861), in the earlier centuries the House of Savoy continually increased its domains, acquired the title of kings, and built what was probably, by the eighteenth century, the most powerful and ‘modern’ of the independent states present in the Peninsula. From the point of view of the information available, Piedmont is also a particularly interesting area due to the relatively abundant and fairly complete documentation about economic inequality, starting from quite ancient times. The earlier documentation used by this article dates to the first half of the fourteenth century (pre-Black Death) and the latest to the beginning of the nineteenth century. As a consequence, the time series of inequality measures presented here are the longest to have ever been published, spanning up to four-five centuries.

The first section of the article provides a general overview of Piedmont and the Savoy domains during the late Medieval and Early Modern period. The second details the sources used, the *estimi* (property tax registers), which are informative of different components of wealth. The third provides a descriptive analysis of inequality changes in the long run. The fourth develops a specific topic, that is the impact on inequality levels of severe mortality crises, particularly due to plague, from the Black Death up until the last plagues in the seventeenth century. The fifth section moves on from community-level time series to propose an estimation of trends in inequality in the whole of Piedmont. The sixth section provides a general discussion, also in the light of a comparison between northwestern Italy and Holland.

1. Piedmont under the House of Savoy: an overview

Today the Italian region of Piedmont, which occupies the northwestern corner of the Peninsula, is delimited by the Alps and the Apennines to the West, North and South, while to the East its boundaries closely match those of the maximum expansion reached by the Savoy domains in the Po Plain before the nineteenth century. Until recently, this area had been relatively neglected by international scholarship, partly due to the fact that it was not among the main protagonists, neither economically nor culturally, of the Italian Renaissance. However, a new wave of 'Sabaudian studies' seems currently in full development (see in particular Vester 2013). In their turn, Italian historians are well aware of the importance of Piedmont, as during the late Medieval and Early Modern period it saw the development of what was, by the eighteenth century, the most advanced and powerful regional state of Italy, one which had managed to preserve its independence and which later played a fundamental role in the process of national unification culminating with the proclamation of the Kingdom of Italy in 1861.

From the late Middle Ages and through the Early Modern period, the history of this area is very much the history of the expansion of the Italian domains of the House of Savoy, which at that time also ruled over parts of present-day France and Switzerland and controlled many key transalpine transit routes. Count Amedeus VI (1334-83) was the first ruler of the family to look at Piedmont as the area where expansion was most viable (as to the West, the development of the Kingdom of France made territorial acquisitions extremely difficult, if not altogether impossible) gaining control over a number of territories and cities, including Ivrea - one of the cases studied here. His grandchild, Amedeus VIII (1383-1451) further extended the Sabaudian domains in Italy, creating the so-called Principality of Piedmont which incorporated cities like Chieri, also comprised in this study (Amedeus VIII was the first Savoy to enjoy the title of Duke, since 1416). During the Italian Wars (1494-1559), Piedmont was a much-contested land, and subject to French occupation from 1536 until the Peace of Cateau-Cambrésis (1559) which ended the conflict; Ivrea is one of the few cities that the Savoys managed to preserve from occupation, thanks to their Spanish allies (for details about the Italian Wars in Piedmont, see Alfani 2013a, 17-8, 29-32). The third city considered by this article, Cherasco, was acquired in this period (1529).

In 1563, the Savoy moved their capital from Chambéry to Turin, a further step in defining the increasingly Italy-orientated politics of the family. In 1588, the Marquisate of Saluzzo was seized and incorporated into the Sabaudian domains. The last two cities considered by this article, Saluzzo (the marquisate's capital) and Carmagnola, were acquired on this occasion. Consequently, and also considering the rural communities comprised in the database (see next section), all the cases developed here relate to places which have been not only Piedmontese, but also 'Sabaudian' since fairly ancient times. It will suffice then, to mention the next main steps into the eastwards expansion of the House of Savoy, that, as already clarified, also was the process through which present-day Piedmont was created: the War of the Mantuan Succession (1628-31), when much of the Montferrat was acquired (as well as the castle of San Giorgio, another of the communities studied here); the War of the Spanish Succession (1701-13), when the rest of Montferrat and the Lomellina were acquired (as well as Sicily and the connected title of Kings, which the Savoys had long desired); the War of the Polish Succession (1733-38) when Langhe and the territory of Novara were acquired; and finally the War of the Austrian Succession (1741-48) when the territories of Vigevano and Voghera were acquired[2].

It would be impossible to detail here the characteristics of such a complex territory as Piedmont and of a state as complex as that ruled by the House of Savoy; for these, reference should be made to general literature (Merlin et al. 1994; Barbero 2008; Vester 2013). However, something more should be said about one specific aspect: the fiscal system in use in the region in the period covered by this article, as it is crucial to understand the nature of the sources used. In fact, 'systems', plural, would be more accurate, not only because for part of the period the communities considered did not belong to the Sabaudian domains, but also because well into the eighteenth century local rules continued to be fundamental in defining the distribution of the tax burden among taxpayers. In the agreements with which every newly acquired city accepted the rule of the House of Savoy, the right to distribute the tributes due to the central authority on the grounds of the local statutes was usually recognized to the community. The statutes included rules about what precisely had to be considered for calculating the share of local and supra-local taxes due by each household; in other words, the statutes defined the rules according to which was to be redacted the *estimo* (the property tax record).

[2] Vigevano and Voghera are the only areas which were 'given back' to Lombardy after the national unification and are not part of present-day Piedmont.

During the Early Modern period, the fiscal reform introduced by the duke Emanuel Filibert (1553-80) had at its core a new tribute, the *tasso*, imposed for the first time in 1562. It was a direct tax, levied on each community, which was originally presented as an extraordinary tribute but which in time became, *de facto*, an 'ordinary' tribute. The overall revenue was fixed, but the exact amount due by each community could change and was the object of negotiation (Vester 2001; Alfani 2013c). Each community decided by itself how to pay the Tasso, and most of them ended up distributing the burden proportionally to each household's share of the local *estimo*, that is proportionally to the value of the household's taxable possessions. The *tasso* was strengthened under Emanuel Filibert's son, Charles Emanuel I (1580-1630), becoming the main fiscal instrument of the Sabaudian domains. It has been argued that the presence of the *tasso*, which quickly came to be levied each year, required that the Piedmontese communities kept up-to-date property tax records, to ensure that the burden was distributed fairly among taxpayers. This would explain the relative abundance of *estimi* available for this area during the Early Modern period (Alfani 2010a, 519-20)[3]. As a final note, it should be noticed that the fiscal system which developed in Piedmont during the Early Modern period is widely considered one of the most advanced in the Italian peninsula, crucial in allowing the House of Savoy to build its considerable military power (Stumpo 1979; Pezzolo and Stumpo 2008; Pezzolo 2012). The fundamental role that the *estimi* played in this system, providing the matrix which transferred the burden from communities as a whole to single households, has largely been overlooked by the literature and will be the object of future publications.

2. The sources and the database

Even after the introduction of state-level ordinary tributes during the sixteenth century the communities of Piedmont continued to make use of detailed books recording taxable property (the *estimi* or *catasti*) in order to distribute the fiscal burden among households. These books were usually renewed every few decades; updates were often made directly on the original, or books of ‘corrections’ to the *estimi* were kept. Of the latter, very few survived and/or allow to reconstruct wealth distribution on a yearly basis[4]. In general, this situation is common throughout Italy, more clearly in the centre and North as well as in those areas of the South where feudal property was not

[3] Of course, apart from the *tasso* many other tributes were levied, but they are not very relevant for the aims of this article; about them, see Stumpo 1979; Vester 2001; Alfani 2013c.
[4] As a matter of fact, just one study of this kind exists, involving the city of Ivrea and covering yearly the period 1620-74: Alfani 2010a; 2010b.

dominant. The *estimi* are particularly convenient for conducting large-scale studies, as they show an impressive stability through space and time. Through time, they tend to preserve the original characteristics conferred by the Medieval city statutes up until the introduction of the ‘modern cadastre’ and the connected fiscal reforms. This happened no earlier than the eighteenth century and in fact, the Kingdom of Sardinia was the first to introduce a modern cadastre in Italy. Even after this innovation imposed by the central state, many communities continued to update their *estimi*, sometimes up until the early nineteenth century. Through space, not only are the *estimi* fairly homogeneous sources across Italy, but they also exist for a larger European area including southern France, Catalunia and other northeastern Spanish regions, much of Germany, and possibly others. This is a reason why large-scale comparative projects on European inequality should pay particular attention to these sources, as is the case with the project *EINITE - Economic Inequality across Italy and Europe, 1300-1800* which is also the research framework within which most of the data used by this article was produced.

The Italian *estimi* can be distinguished in two broad categories: estimi ‘per property’ (*per capitale*), and *estimi* ‘per yield’ (*per reddito*). The registers falling into the first category record only real estate (lands and building), while those in the second category also include capitals, credits and other movables (Pini 1981; Alfani and Caracausi 2009). The famous Florentine *catasto* of 1427 falls into the second category, however the first one is much more common. All of the sources used in this article are *estimi* per property. Consequently, they track only one of the many components of wealth - although it is by far the main one. For preindustrial societies, in which most of the product was agrarian, wealth inequality is a good proxy of income inequality, not only because the property of land (or more precisely, the right to the use of land) was of great importance in defining how the total product was distributed, but also because it is very unlikely that, in such a society, income and wealth inequality could move in different directions - a particularly important circumstance as the way in which inequality changes is more relevant, in the long run, than its level; see discussion in section 3. What is more, even for the period of the Industrial Revolution it has been argued that concentration of wealth followed the same path as that of income (Lindert 1991, 215). Finally, in most circumstances wealth inequality is the *only* possible proxy for preindustrial income inequality.

As a rule, the Italian *estimi* include only taxable property, consequently they omit feudal property and the property owned by the Church (more specifically, by religious institutions such as monasteries or cathedral chapters) *ab antiquo* ('since ancient times'). However they include the property acquired by the Church after the *estimi* were introduced, as this was not, or not fully, exempt (see for example the case study of Ivrea, Alfani 2010a). Sometimes, however, exempt property was included in the registers but it was not considered when calculating the tax distribution. Among the cases analysed here, the city of Saluzzo recorded exempt Church property in 1685, and in 1772 recorded exempt feudal and Church property, while in 1577, 1729 and 1739 the records only involve taxable property. As usual in these cases, in 1685 and 1772 exempt property was listed and described, but not given a value[5]. For this reason, and also for building a series of inequality measurements as homogeneous as possible, exempt property has simply been ignored.

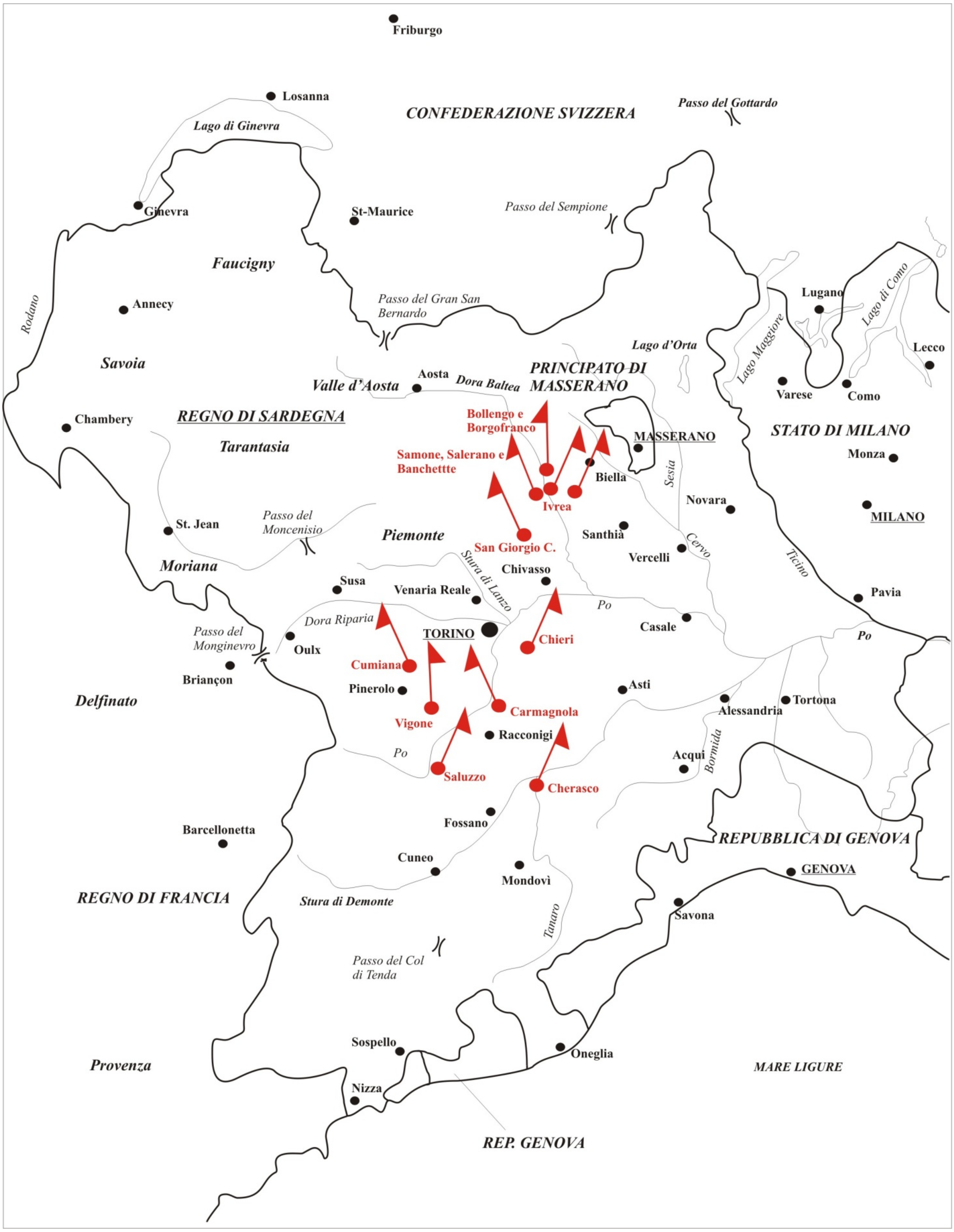
A clarification is also needed about what an *estimo* value is: the value given to taxable property was not a market value, but a measure of the fiscal capacity generated by each piece of property (which is also why in some instances the house where the family lived was not subject to taxation[6]). While we can reasonably assume that the *estimo* value was proportional to the market value, it is difficult to convert it into market values (and consequently, to compare directly values found in the *estimi* of different communities) as it was expressed in *lire d'estimo*, which were local in nature (each community had its own *lira d'estimo*) and were pure units of measurement, not corresponding to any coined money nor used in any kind of transaction. This did not create any problem in their use[7] at the time, nor is it a problem when comparing local measures like the Gini index, which is a pure number. It has, however, consequences when attempting to combine the local series into aggregate series; see section five.

The *estimi* available for Piedmont are exceptionally ancient. In fact, like Tuscany this is one of the Italian regions where the most ancient documentation of this kind has survived - although for no other area of Italy (or Europe) have time series as long as those presented here ever been published. After a thorough check of the Piedmontese archives, the case studies to include in the database have been selected according to these requirements: 1) antiquity of the earlier usable sources; 2) completeness of the time series; 3) territorial coverage; 4) representation of both cities and rural communities. While most of the data are new, the database integrates some pre-existing information, particularly for the city of Ivrea and the surrounding rural area (the Canavese) (Alfani 2009; 2010a). Overall, the database includes 16 communities - but just 12 time series, as 7 rural communities of the Canavese are grouped by the sources in three aggregates. The database includes

[5] About the *estimi* of Saluzzo, also see Ammannati, De Franco and Di Tullio 2013.
[6] Among the communities considered here, this is the case only for Cherasco, and only from 1548.
[7] The *estimi* values allowed easy definition of the tax that every owner had to pay: given that the total value, as expressed in *lire d'estimo*, of the taxable estate of each community was known, the value of the taxable estate of each owner could be used to define his share of the overall estimo, and consequently to determine his tax burden.

five cities of varying size: Chieri (from 1311), Cherasco (from 1347), Carmagnola (from 1461), Ivrea (from 1466) and Saluzzo (from 1577). On average, the time series related to rural communities begin later, and include Vigone (from 1454), Cumiana (from 1496), San Giorgio (from 1523). The time series for the Canavese villages all start in 1629, and involve three aggregates: Bollengo and Borgofranco; Palazzo and Piverone; Samone, Salerano and Banchette. Figure 1 shows the position of each community within Piedmont and the domains of the House of Savoy.

Figure 1. Communities comprised in the database (political boundaries of the Kingdom of Sardinia, ca. 1750)



For each community, all or almost all the available documentation has been used. When over-abundant information was available, the general rule has been to take, for each community, the observation closer to 50-years breakpoints (1300, 1350, 1400, etc.), when available. In some instances, like that of Ivrea for which much data for the sixteenth and especially the seventeenth century has been published (Alfani 2010a), only breakpoints have been considered. In some other instances, and especially for those cities that elaborated the *estimo* on a quarter-per-quarter basis, we had to recompose a single observation from sources having slightly different dates. For example, the observation for Cherasco 1395-1415 is the merger of the four *estimi* redacted for each of the quarters of St. Iffredo (1395); St. Martino (1395); St. Margherita (1402); St. Pietro (1415). Table 1 summarizes the observations available for each community and also provides additional information, in particular about their estimated demographic size in time.

Table 1. Composition of the database

Community	**Urban / Rural**	**Estimi used (year)**	**Population (year of reference between parentheses)**
Bollengo and Borgofranco	R	1629; 1649	Bollengo: 1,573 (1612); Borgofranco: 587 (1612)
Carmagnola	U	1461; 1491; 1579; 1734	7,205 (1612); 8,856 (1734)
Cherasco	U	1347-54; 1395-1415; 1447-50; 1530-48; 1585; 1648; 1711	3570 (1377); 3,997 (1612)
Chieri	U	1311; 1437; 1514; 1582; 1707	6,700 (1377); 9,511 (1571); 10,710 (1612); 8,387 (1734); 10,374 (1774)
Cumiana	R	1496; 1558; 1614; 1664; 1694; 1749	730 (1377); 1,175 (1560); 1,647 (1571); 1,959 (1612); 3,578 (1734); (1774)
Fiorano	R	1649	326 (1612)
Ivrea	U	1466; 1518; 1544; 1593-94; 1649	5,300 (1377); 3,031 (1571); 4,467 (1612); 2,500 (1665); 5,380 (1734); 7,221 (1774)
Palazzo and	R	1629; 1649	Palazzo: 473 (1612);

Piverone			Piverone: 1,958 (1612)
Saluzzo	U	1577; 1685; 1729; 1739; 1772	5,581 (1612); 7,326 (1734); 10,956 (1774)
Samone, Salerano and Banchette	R	1649	Overall 680 (1612)
San Giorgio	R	1523; 1657; 1809	
Vigone	R	1454; 1483; 1570; 1612; 1637; 1717; 1764	1,000 (1377); 3,460 (1571); 3,500 (1612); 3,087 (1700); 4,274 (1734); 5,169 (1774)

3. Long term-trends in inequality: an overview

The information about household wealth collected from the property tax records can easily be converted into measures indicative of overall economic inequality. In particular, it can be used to calculate the most popular inequality index, the Gini, as well as a whole set of percentiles[8]. Taken together, these measures allow both to reconstruct long-term trends in inequality, and to explore in greater depth the changes in the distribution. The Ginis for all communities and covering the whole period are presented in table 2. To ease comparisons between communities, measures have been clustered around reference years (50-year breakpoints, from 1300 to 1800). The indexes have been standardized to vary within the value 0 (perfect equality: all households are equal) and 1 (perfect inequality: one household owns everything) .

A striking result that can be easily inferred from the table, is that in each community, both urban and rural, overall inequality tends to grow over time. In each and every community, the highest Gini value is the one placed at the end of the series. For all communities, inequality at around 1700 is higher than at around 1600 or 1500 - save for the village of Cumiana, where the measure for 1700 (0.579) is higher than that for 1500 (0.537) but slightly lower than that for 1600 (0.6). However, also in this case during the first half of the eighteenth century inequality jumps to its multi-secular maximum (0.675 at around 1750). These tendencies clearly stand out in a graphical representation (graph 1; also see the geo-referenced maps in the Appendix).

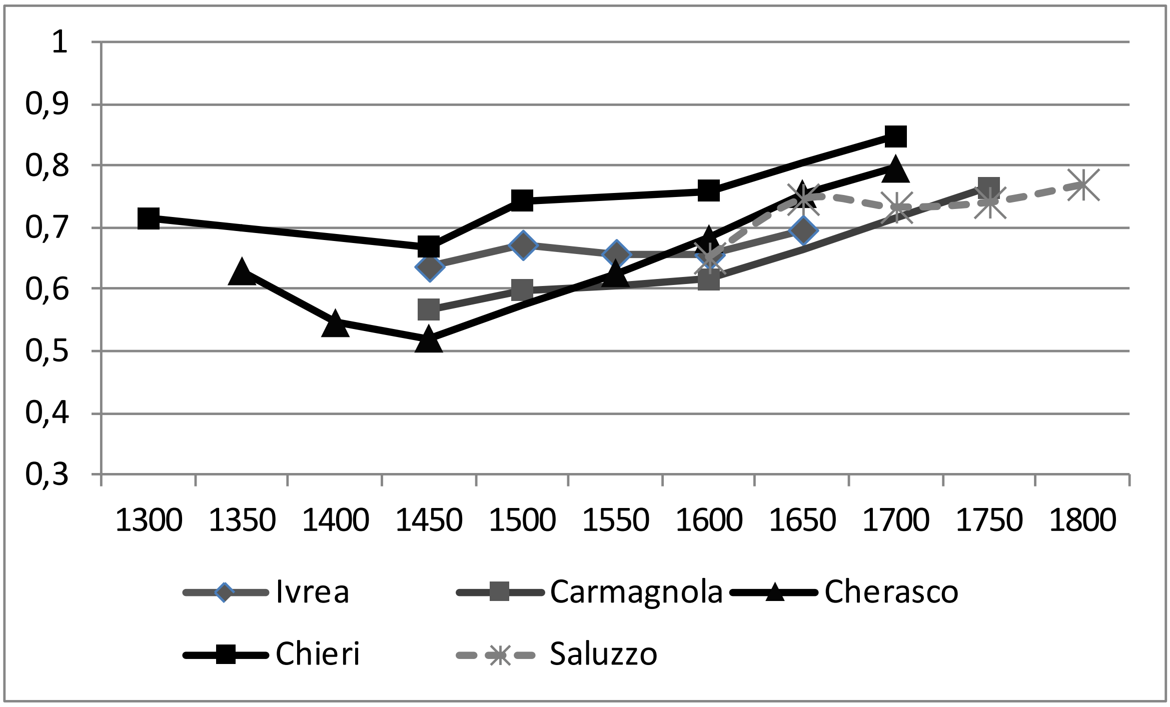
[8] The Gini index is calculated by using the following formula: $G=(2/(n-1))*\Sigma_i(F_i-Q_i)$, where (in our case) n is the number of declarants/households; i is the position of each individual in the ranking sorted by increasing wealth; the sum goes from 1 to n-1; F_i is equal to i/n; Q_i is the sum of wealth of all individuals comprised between position 1 and i divided by the total wealth of all individuals.

Table 2. Gini indexes of wealth concentration in northeastern Italy, fourteenth-early nineteenth century (Ginis clustered around reference years; actual year between parentheses)

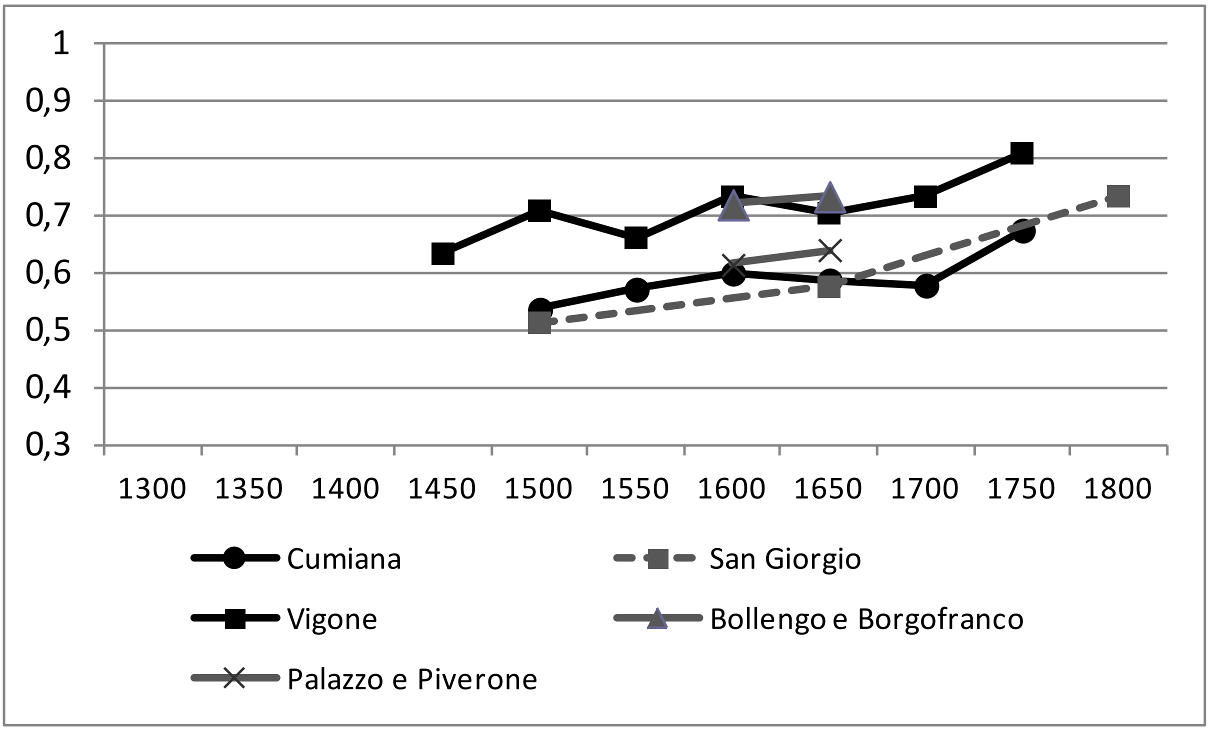
Year	**Cities**					**Rural communities**						
	Carmagnola	**Cherasco**	**Chieri**	**Ivrea**	**Saluzzo**	**Bollengo and Borgofranco**	**Cumiana**	**Fiorano**	**Palazzo and Piverone**	**Samone, Salerano and Banchette**	**San Giorgio**	**Vigone**
1300			0.715 (1311)									
1350		0.63 (1347-54)										
1400		0.546 (1395-1415)										
1450	0.567 (1461)	0.521 (1447-50)	0.669 (1437)	0.638 (1466)								0.633 (1454)
1500	0.599 (1491)		0.744 (1514)	0.673 (1518)			0.537 (1496)				0.513 (1523)	0.708 (1483)
1550		0.627 (1530-48)		0.658 (1544)			0.572 (1558)					0.661 (1570)
1600	0.616 (1579)	0.682 (1585)	0.76 (1582)	0.657 (1593-94)	0.652 (1577)	0.72 (1629)	0.6 (1614)		0.615 (1629)			0.733 (1612)
1650		0.755 (1648)		0.697 1649)	0.747 (1685)	0.734 (1649)	0.588 (1664)	0.699 (1649)	0.641 (1649)	0.599 (1649)	0.576 (1657)	0.704 (1637)
1700		0.796 (1711)	0.847 (1707)		0.734 (1729)		0.579 (1694)					0.733 (1717)
1750	0.764 (1734)				0.742 (1739)		0.675 (1749)					0.809 (1764)
1800					0.771 (1772)						0.734 (1809)	

Graph 1. Long-term trends in economic inequality (Gini indexes of wealth concentration)

a. Cities



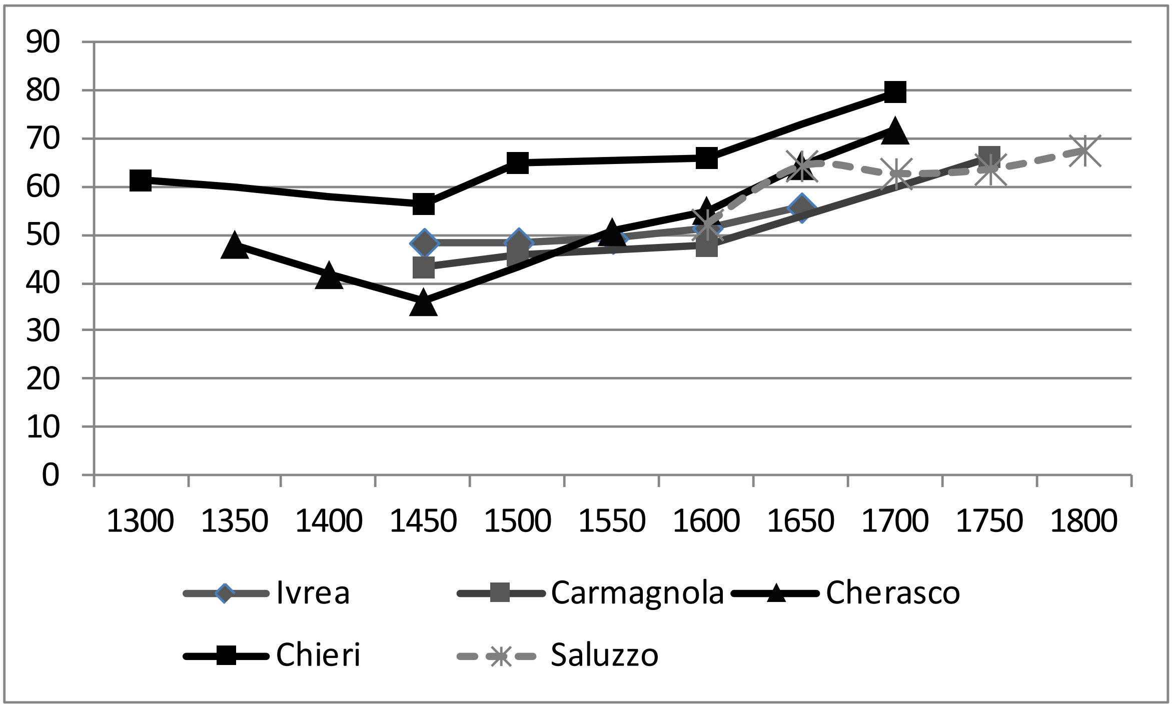
b. Rural communities



Graph 1 shows that from about 1450, and save for short-term and local phenomena, across Piedmont inequality tended to grow; the pace was quicker in the initial phase (about 1450-1500) and in the final one (from about 1600 in cities and possibly with some delay in rural communities). The timing is significant, as 1450 was a turning point for the Italian population, which started to grow quickly after a long phase of decline followed by stagnation, triggered by the Black Death in 1348 and reinforced by the subsequent plague waves (Alfani 2010c, 29-30; Pinto 1996, 60-61). Only for two cities, Chieri and Cherasco, is pre-1450 information available, which seems to show a phase of decline in inequality from a high point reached in the early fourteenth century - that is, before the Black Death. These two cases are particularly valuable, as the consequences of the Black Death and other severe plagues on inequality are a debated issue; the next section will be specifically devoted to this.

As is well known, the same value of the Gini index can correspond to very different distributions. Also changes in the Gini over time can be due to very different phenomena, affecting specific parts of the distribution; what is more, an almost unchanging Gini can hide significant alterations to the distribution structure. To solve this problem, and to get a better understanding of the general long-term dynamics described above, an analysis of deciles has been conducted. A first result is clearly visible from comparing graph 2, in which the share of wealth of the top rich has been chartered, with graph 1: the trend of inequality follows very closely the changes in the share of wealth (or income) owned by the richest part of the population. This is not a statistical necessity, but an empirical regularity - one even more striking, considering that the same phenomenon characterizes contemporary societies, with many studies showing how the changes occurring at the top practically determine what happens to overall inequality (see for example Atkinson et al. 2011; Alvaredo et al. 2013). It is also worth underlining the extreme polarization of wealth ownership, with the share of taxable wealth owned by the top 10% rich touching an empirical maximum in Chieri at around 1700 (79.64%), and overall staying almost invariably above 50% from about 1600. The ability of the top rich to determine the inequality trend remains true not only in times of rising inequality, but also when it declines: as in Cherasco, where the share of the top rich declines from 48.01% at around 1350 to the all-time minimum of 36.1% about one century later and the Gini index shrinks, in the same period, from 0.63 to 0.521. For all communities, the same conclusions can be reached considering even more restricted economic élites (top 5% and top 1%), and no structural difference is to be noted between cities and rural communities.

Graph 2. Share of wealth owned by 10% top rich



A very relevant question, is to whose detriment were the rich increasing their quota of the overall wealth (and income). Was the decline spread among all other parts of the distribution, were the intermediate ranks declining, or were the poorest being left even further behind? To answer such questions, table 3 provides an analysis of inter-decile ratios. These are well-known measures, widely used to explore changes in a wealth or income distribution. Particularly popular ratios are the P90/P10, P90/P50 and P50/P10, which compare the wealth or incomes of single households placed in significant positions: P90/P10 is the ratio of the upper bound value of the ninth decile to the upper bound value of the first decile, P90/P50 is the ratio of the upper bound value of the ninth decile to the median household; and P50/P10 is the ratio of median household to the upper bound value of the first decile. For the sake of simplicity, however, instead of comparing the wealth of significant households I have compared the share of wealth of entire deciles, which equals to building a ratio between the average household of each decile; in fact:

$Dx/Dy = (H_{Dx}*n)/(H_{Dy}*n) = H_{Dx}/H_{Dy}$

With Dx, Dy being different deciles; H_{Dx}, H_{Dy} being the share of wealth owned by the average household of each decile; n being the number of households per each decile (which is constant through deciles per definition, as each of them includes 10% of all households). I then introduced the measures D10/D1, D10/D5 and D5/D1, which are chartered in table 3. These ratios tell us how many times richer is the average household of a given decile compared to another, lower decile.

Table 3. Inter-decile ratios

a. Cities

	Carmagnola			Cherasco			Chieri			Ivrea			Saluzzo		
	D10/ D1	D10/ D5	D5/ D1	D10/ D1	D10/ D5	D5/ D1	D10/ D1	D10/ D5	D5/ D1	D10/ D1	D10/ D5	D5/ D1	D10/ D1	D10/ D5	D5/ D1
1300							79.6	24.8	3.2						
1350				137.2	12.2	11.3									
1400				49.1	8.2	6.0									
1450	48.0	8.7	5.5	47.5	6.1	7.8	106.4	16.3	6.5	124.1	12.2	10.2			
1500	68.1	10.5	6.5				249.6	26.5	9.4	231.0	15.7	14.7			
1550				63.3	13.6	4.6				120.3	16.6	7.2			
1600	110.7	11.1	10.0	148.8	17.8	8.4	659.7	28.8	22.9	132.0	15.4	8.6	87.1	15.3	5.7
1650				238.4	32.7	7.3				206.6	19.6	10.5	137.1	36.4	3.8
1700				448.4	45.1	9.9	1327.3	73.7	18.0				98.2	32.9	3.0
1750	348.1	32.7	10.6										118.1	35.2	3.4
1800													356.2	34.4	10.4

b. Rural communities

	Bollengo e Borgofranco			Cumiana			Palazzo e Piverone			San Giorgio			Vigone		
	D10/ D1	D10/ D5	D5/ D1	D10/ D1	D10/ D5	D5/ D1	D10/ D1	D10/ D5	D5/ D1	D10/ D1	D10/ D5	D5/ D1	D10/ D1	D10/ D5	D5/ D1
1450													103.8	13.7	7.6
1500				47.5	7.6	6.3				59.1	6.1	9.6	147.7	22.5	6.6
1550				80.6	8.6	9.4							111.4	16.4	6.8
1600	197.3	22.7	8.7	171.1	9.6	17.8	67.5	14.2	4.8				235.4	27.7	8.5
1650	194.1	26.6	7.3	89.8	9.8	9.2	148.1	16.1	9.2	67.7	9.2	7.4	154.9	23.0	6.7
1700				79.5	9.2	8.6							205.9	30.2	6.8
1750				173.0	15.5	11.2							588.1	70.6	8.3
1800										182.8	27.0	6.8			

An analysis of all inter-decile ratios (comprising those not chartered in table 3) shows clearly that the share of wealth of the top 10% rises to the detriment of the share owned by all other groups, including the next-richest (D9 and D8). However, the relative decline is sharper as one moves to the lower social-economic strata. In cities, if we compare the share of wealth owned by the tenth decile to that owned by the fifth (D10/D5) we discover that, while at around 1450 the top rich were 6 to 16 times richer than the middle ranks of society, by 1700 or 1750 they were at least 33 times richer - even 74 times richer in Chieri (in the rural communities the situation is more varied). Increases within this range could seem enormous, if not for the fact that they look modest compared to what happens to the D10/D1 ratio: in the same period, in cities it moves from a range of 48-124, to one of 118-1,327 (the record value again being, predictably, that of Chieri).

The enormous increase in the share of wealth owned by the top rich compared to all other groups is only part of the story. Not only were the top rich leaving all others behind, also the poorest strata were distancing themselves from all others, as shown by the D5/D1 ratio. While in cities around 1450 the middle ranks were 6 to 10 times richer than the poorest strata, by 1700 or 1750 they were between 10 and 18 times richer, with the only exception of Saluzzo which however fell into line by around 1800. Presumably, these overall changes in the distribution reflect a continuous increase in the mass of poor with little or no property residing in cities whose population was growing. As most of this demographic growth was made possible by steady fluxes of rural dwellers migrating to the cities, we can expect that the process was absent or less acute in rural areas. The ratios chartered in the second part of table 3 confirm our expectations, as for rural communities D5/D1 is no higher is the eighteenth century than in the sixteenth or seventeenth. However in the countryside, too, the ratio of the top rich was outstripping all other sections of the distribution.

Something more should be said about variance in Gini levels across the communities considered. All currently available evidence for preindustrial Europe suggests that inequality, of both income and wealth: 1) was higher in cities than in rural areas; 2) was higher in large cities compared with smaller ones. What is more, on a city-per-city basis, as a urban centre grew it also became more unequal. This final observation was first made by Van Zanden (1995) and was later confirmed by Alfani (2009, 148-50; 2010a, 528-9) on the grounds of more evidence from across the continent. Overall, our data confirm all the above points, although more clearly regarding the cities. There is no reason to develop the matter in detail here, as the mentioned surveys are acceptably updated. It will suffice to mention some Italian cases, first of all that of Tuscany in 1427, where the capital city of Florence was considerably more unequal (Gini value of 0.785) than the middling cities under its rule like Pisa, Arezzo, Cortona, Prato and Volterra (Gini values about 0,75) (Herlihy 1977; Herlihy, Klapisch-Zuber 1985). In the rural areas (countryside of Pistoia) the Ginis varied between about 0.634 in the plain, and just 0.515 in the mountain (note that the city of Pistoia itself was relatively egalitarian, with a Gini of 0.713. Herlihy 1967). About urban dynamics, we know that in northwestern Italy inequality grew hand-in-hand with demographic size in important cities like Padua (Alfani and Caracausi 2009), Imola (Rotelli 1966) and Bergamo (unpublished EINITE data). As mentioned above, the same tendencies are to be found in northwestern Italy. On the one hand, if we compare the larger city of our database, Chieri, which in the early seventeenth century was close to 11,000 inhabitants, throughout the period it had a Gini significantly higher than all other cities, whose population was about half its own. For example around 1600, the only reference date for which we have information for all cities, the Gini was 0.76 in Chieri against just 0.616 in Carmagnola, 0.682 in Cherasco, 0.657 in Ivrea and 0.652 in Saluzzo. On the other hand, in each of these cities demographic growth is associated to inequality growth, as results from a comparison of tables 1 and 2. However the opposite is not true, at least not during the Early Modern period. This interesting finding will be discussed in detail in section 6, while in section 5 something more will be said about city-country differentials in Gini levels. Now, the analysis of long-term trends needs to be completed by factoring in the impact of severe mortality crises, starting with the worst of all: the Black Death.

4. Plague and inequality from the Black Death to the seventeenth-century epidemics

In the last few years, the impact of plague on economic structures has been the object of a considerable amount of research. Most scholars focused on the first and most severe epidemic of the Middle Ages, the Black Death affecting Europe in 1347-50 (for example, Clark 2007, pp. 99-102; Cohn 2007; Pamuk 2007; Malanima 2012; Voigtländer and Voth 2012). Recently, however, it has been argued that also the last great plagues, during the seventeenth century, had deep consequences for European economies (albeit of a very different kind compared to the Black Death), favouring the North and contributing to the ‘little divergence’ within the continent (Alfani 2013b). A few works specifically explored the impact plague had on economic inequality, and particularly Alfani's study of Ivrea (Alfani 2010b). These works extended into the early modern period a reflection on the way in which mass mortality influenced distribution of wealth and income, which was started by Herlihy some decades ago (Herlihy 1967).

According to Herlihy, who developed his ideas on the grounds of data for Medieval Tuscany, at the time of the Black Death an unprecedented mass fragmentation of patrimonies occurred, because the prevailing system of inheritance was that of partible inheritance among sons, with daughters penalised but still entitled to a share of the inheritance. Such fragmentation made patrimonies fragile and allowed those who had the willingness and the means to buy, to hoard property during the years following the epidemic. As a result, the Black Death would have had short-term egalitarian consequences (distribution of property due to mass mortality and inheritance rules), to be followed soon after by medium- to long-term anti-egalitarian effects, due to the conditions of the house and land market and also to the psychological situation of a population taken by surprise by a new disease. This last point is particularly relevant, as it is one of the premises leading Alfani (2010b) to argue that by the time of the last great epidemics in the seventeenth century, plague could have had a very different impact on patrimonies and wealth distribution. For while the Black Death affected a virgin soil population and, since plague afterwards became endemic in Europe, changed in a lasting way the human environment, in the following centuries adaptation to the new environment occurred - and for the human species, adaptation also means institutional adaptation. Indeed, recent research has shown how, after the Black Death, Italian families started making fairly systematic use of social and juridical institutions aimed at preventing fragmentation of patrimonies; *fideicommissum*[9] is probably the most common (Leverotti 2005; 2007). If one considers the post-Black Death decades, these institutions made the newly-constituted large patrimonies more resilient, thus helping to make the increase in inequality triggered by the plague non-reversible. However, if one considers the last great plagues, the frequent recourse to *fideicommissa* and other means of preventing patrimonial fragmentation, like the *in solido* inheritance common in Ivrea, seemingly prevented the unwanted consequences of the Black Death from constantly re-occurring: as a result of institutional adaptation patrimonies were more able to weather severe mortality crises, although the ability to improve the survival of individual human beings was somewhat more limited. When, during the seventeenth century, Italy was struck by plague epidemics which were probably the worst since the Black Death (Alfani 2013b), their potential impact on property structures was kept in check by pre-existing institutions. As shown by Alfani's detailed study of Ivrea (in which it was possible to follow each single patrimony year per year, before, during and after the crisis), the 1630 plague had mostly short-term consequences on overall inequality levels (Alfani 2010b). In the long run, steady immigration from the surrounding rural areas to fill the gaps

[9] Goods, usually real estate, that were the subject of a *fideicommissum* could not be sold, donated, or diminished in any way, save in very exceptional circumstances, and could therefore be transmitted unaltered from one generation to the next.

opened by the plague determined a certain increase in the inequality levels as relatively poor people not only settled within the city walls, but also entered the property tax registers; however the plague did not change a trend already orientated towards an increasingly unequal distribution of wealth (see further discussion below).

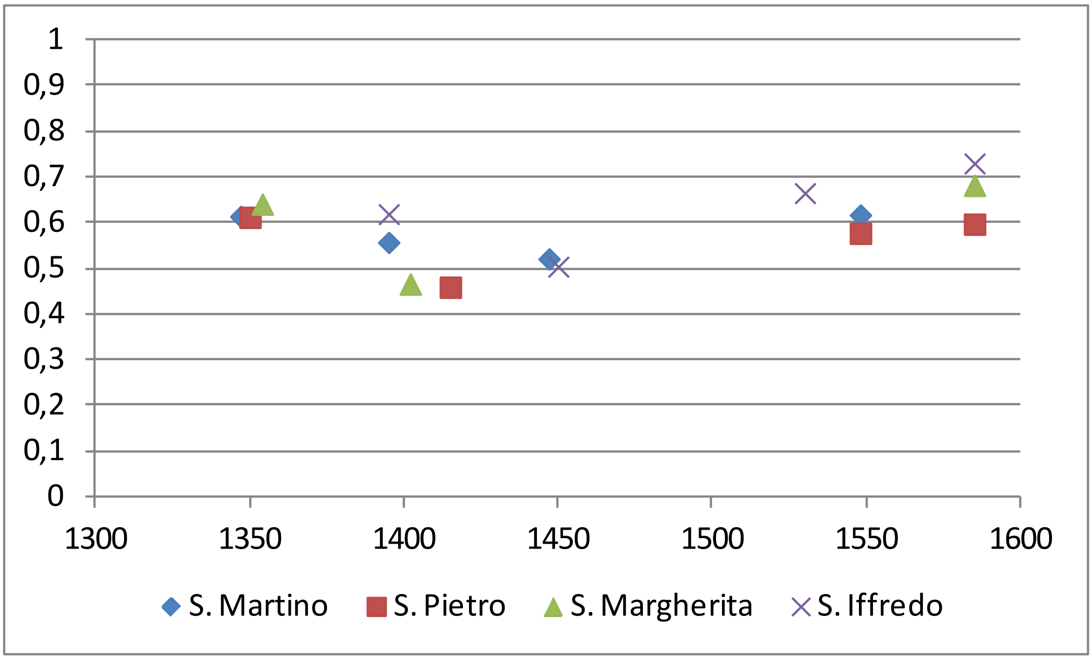
In Herlihy's view, the Black Death altered for good the relatively egalitarian economic structures of fourteenth century Europe. According to him, the high levels of wealth inequality characterizing the late Middle Ages had no equivalent before 1348. However, he based this far-reaching hypothesis on a very limited amount of evidence: basically, his own work on the Tuscan city of Pistoia, and little else (Herlihy 1967). To my knowledge, since his original study no other has been published providing measures of inequality before and after the Black Death, or any other appropriate information to test Herlihy's fascinating hypothesis. The reason lies partly in the rarity of pre-Black Death *estimi*, and in the complex and time-consuming nature of such a study. This paper, however, provides exactly what we need to test whether Herlihy was right, as the time series reconstructed for Chieri begins in 1311, and for Cherasco it begins in the immediate aftermath of the epidemic. In fact, for one of the four quarters of the city, St. Martino, the series actually begins on the eve of the epidemic, in 1347. What is more, inheritance systems in Piedmont were also partible, as in Tuscany, so that there is no obvious reason to think that different institutions predating the plague could determine different results[10].

It is sufficient to give a quick look at graph 1, to realize that the Piedmontese data *do not* support Herlihy's conclusions. For Chieri, the Gini value for 1311 (0.715) is considerably greater than that calculated for the first post-plague observation, in 1437: 0.669. The two *estimi* used are complete and excellently preserved, so this is high quality information; unfortunately no complete *estimo* survived for the in-between years. For Cherasco, the Gini value for around 1350 is 0.63, declining to 0.546 in 1395-1415 and to 0.521 in 1447-50. Only after 1450 would inequality start to rise after a century-long decline and in fact, as already noticed, 1450 seems a real turning point for wealth distribution in Piedmont (see further discussion in section 6). As the Cherasco time series has been built from quarter-level *estimi* with slightly different dates, and as the 1347-54 and 1447-50, as well as both observations available for the sixteenth century are incomplete missing one of the four quarters, a quarter-per-quarter analysis is required: the more so, considering that in this way at least one time series (St. Martino) begins immediately before the Black Death. Graph 3 charters the

[10] About inheritance systems in late Medieval and Early Modern Piedmont, Levi 1985a; Alfani 2010b.

quarter-level Ginis for all the *estimi* used (exact dates, not reference dates, are used for placing values in the graph).

Graph 3. Wealth Inequality per quarter in Cherasco, 1347-1585 (Gini indexes)



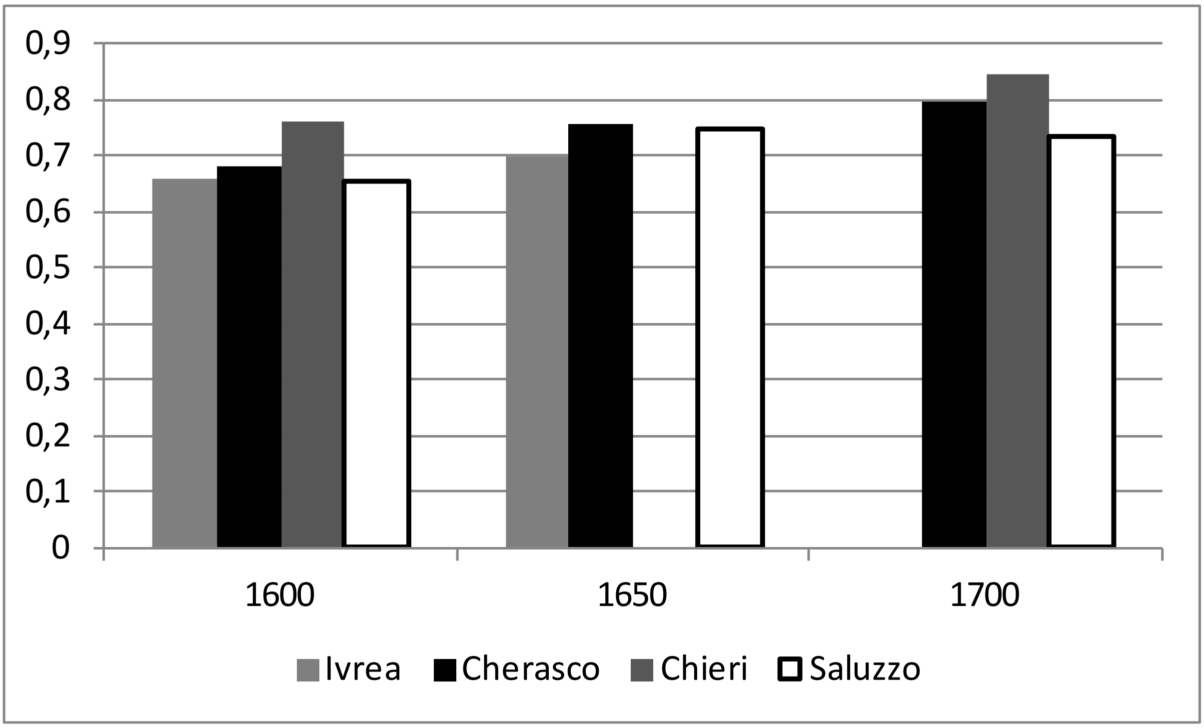
Overall, quarter-level Ginis closely follow the reconstruction for the whole city discussed in section 3: in each quarter, inequality declined from the middle of the fourteenth century up until about 1450. No observation is available for around 1500, however by the middle of the sixteenth century in all quarters inequality was well above the 1400-1450 levels. The differences between quarter-level measures reflect differences in the social and economic composition of the population of each quarter. For example, the quarter of St. Iffredo was the area of the city where the poor were more abundant, but also where some very rich families had seized the opportunity of building sumptuous houses; such polarization tends to increase the Gini value over the city average. The case of the quarter of St. Martino, which was the political and manufacturing centre of Cherasco including the palace of the *comune* (the town hall), the market, artisan shops and the homes of many of the local merchants, is particularly interesting also due to the density of information available around the plague years. In 1347, the Gini index for St. Martino was 0.614. About fifty years later, in 1395, it had declined to 0.557. The decline continued well into the fifteenth century, as in 1447 the Gini had shrunk to 0.521. The share of the top wealthy (10%) declined accordingly: from 45.83 per cent in 1347, to 41.47 per cent and 34.38 per cent respectively in the other two dates.

It seems probable that the decline in inequality levels which occurred in the century 1350-1450 is connected to the impact of the Black Death. Seemingly, in Piedmont (or at least, in Chieri and Cherasco) the short-term consequences of the epidemic, which were bound to be egalitarian (due both to the intrinsic re-distributive consequences of mass mortality, and to the presence on an unmitigated partible inheritance system), were not upturned in the medium and long run by the kind of speculation and hoarding postulated by Herlihy for Tuscany and Western Europe in general. This is an extremely interesting finding, which cries out for further research and new case studies to be developed (and in this field, any new case study would dramatically increase the amount of information available). In fact, Herlihy's fascinating theory could have to be rejected entirely, or regional differences could appear which would require us to look for convincing explanations about which currently no speculation is possible - especially considering that relevant institutions, and particularly inheritance systems, were similar in Tuscany and Piedmont.

In 1630, Piedmont was affected by what was probably the worst plague to strike Italy since the Black Death. The epidemic covered the whole of the North, minus Liguria, plus Tuscany (the latter, however, was only mildly affected). Only in the North, the most recent estimate places the victims caused by the disease at about 2 million, that is 30-35 per cent of the overall population (Alfani 2013b, pp. 3-4). Piedmont was badly affected by the plague, which had entered the peninsula through the Susa valley in 1629, following the French armies involved in the War of the Mantuan Succession. Only few communities were spared the epidemic, all of them placed in well-protected Alpine valleys or in the Piedmontese side of the Ligurian Apennines. Of all the cities included in the database[11], only Cherasco was spared, and in fact during the epidemic it hosted the Savoy court which had fled the infected capital city of Turin; this is the reason why the treaty ending the war was signed in this city, in 1631. As far as we know, also all the rural communities in the database were infected, however some incertitude remains so that the analysis will be focused on cities. Graph 4 compares pre-plague Gini values (around 1600) with post-plague ones (around 1650 and 1750).

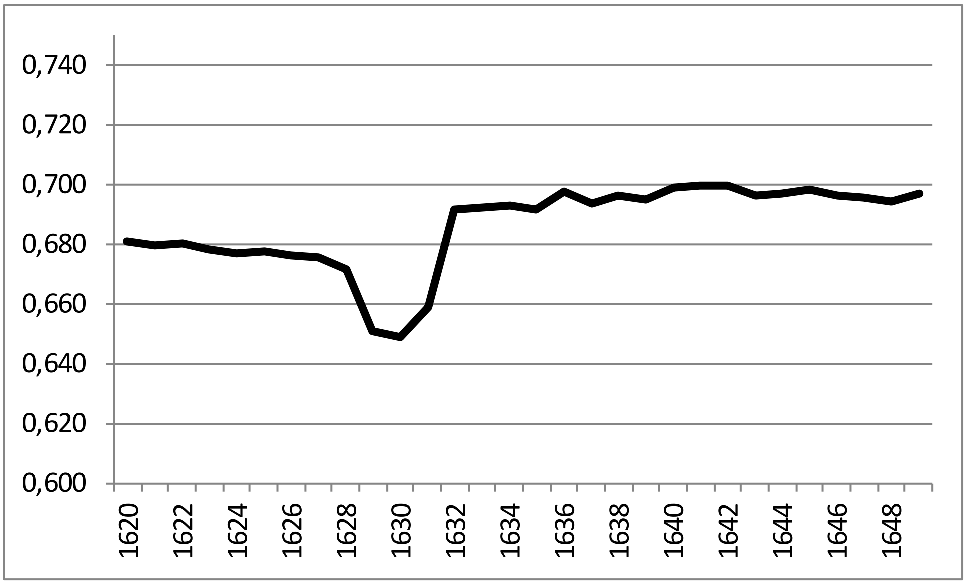
[11] Of all cities considered here, detailed studies of the 1630 plague exist for Carmagnola (Abrate 1972) and Ivrea (Alfani 2010b).

Graph 4. The impact of the 1630 plague on inequality (Gini indexes)



In all four cities considered (Carmagnola was dropped as there was no post-plague information), inequality in pre-plague years was inferior to that found after the plague. The steady decline in inequality found after the Black Death did not occur after the 1630 epidemic. Did the contrary happen, that is, did plague ‘cause’ or at least contribute to the seventeenth-century rise in inequality after the equilibrium characterizing the sixteenth century? The case of Cherasco, which was not affected by the plague but where inequality increased continuously from about 1600 to 1700, suggests that the trend was already orientated towards a growth in inequality. However, the fact that the plague did not invert the direction of the trend does not mean that it did not affect it. As already mentioned, the case of Ivrea is exceptional as it permits a year per year study of the period around the plague. The case is discussed in detail elsewhere (Alfani 2010a; 2010b); here it will suffice to present graphically the Ginis for the period 1620-49.

Graph 5. Inequality in Ivrea, 1620-49 (Gini indexes of wealth concentration)



In Ivrea, in the decade preceding the 1630 plague inequality was stable around the Gini value of 0.68. As shown by the graph, the plague contributed to a short-term decline which also had other causes (see Alfani 2010a; 2010b; 2013c). After the plague inequality recovered quickly, exceeding the pre-plague level and stabilizing just below the Gini level of 0.7. In the short term, the quick recovery in inequality was connected to the re-start of notarial activities and consequently to the re-organization of patrimonies after the death of many owners. In the medium and long term, plague caused a structural change in ownership of local property: many new owners appear in the tax records who did not belong to local families but were outsiders, usually immigrants from the rural areas of the district of Ivrea, who profited from the opportunities created by the plague both in terms of property being offered on the market, and of physical space available within the city walls making migration a considerably easier and more attractive option (Alfani 2010b).

If, as seems plausible, the case of Ivrea is representative of what happened in other Piedmontese cities affected by the 1630 plague, then we should conclude that the epidemic had, indeed, an impact on general inequality - but a somewhat limited one, and what is more, one that seemingly only reinforced a pre-existing trend. The difference with the aftermath of the Black Death is striking. As has been demonstrated by Alfani for Ivrea, the quick recovery of pre-plague inequality levels after the epidemic is closely tied to institutions preventing patrimonial fragmentation. In other words, it seems that indeed adaptation occurred, with new institutions spreading after the Black Death when it had become clear that plague had come to Italy to stay, which deeply changed, in practice, the inner workings of a system that was theoretically still one of partible inheritance. Fourteenth century Piedmont, like Tuscany, was virgin soil population for the plague: and in the case of human beings, this means also the absence of institutions to keep a specific environmental hazard in check. From this point of view, *fideicommissa* and others were no different from quarantines, permanent health boards (which spread in Italy between the late fourteenth and the early fifteenth century) and plague wards (the first was built by the Venetians in 1423) in slowly contributing to re-establish human control over an environment which had gone awry.

While this study provides much evidence to support the idea that in time successful institutional adaptation changed the way in which plague and mass mortality in general affected property structures and overall economic inequality, more research is needed about the specific impact of the Black Death. Both Herlihy and this study argue in favor of short-term egalitarian effects of that epidemic - but Herlihy suggests that they were the prelude of an unprecedented and irreversible rise in inequality, while this study provides evidence that the decline continued for at least one century after the epidemic. As Herlihy based his hypotheses on a very limited amount of data, some new Tuscan case study would be particularly helpful, which would either prove him wrong also at the regional level (the counter-examples presented here suffice to claim that there is no reason to accept a generalization of his conclusions to the 'West' anymore), or, were his finding for Tuscany confirmed, would raise many interesting questions about which factors could have caused the same event to affect economic inequality in contrasting ways, and more generally about the (possible) differential impact of the Black Death.

5. Estimating inequality at the regional level: Piedmont and the Sabaudian State

Up until now, community-level data have been considered. In general, this kind of information is adequate to discover broad tendencies over the long run, while also preventing local/subregional variations to be overlooked. However, there is a distinct interest in transforming local-level measures into regional measures, for example in order to ease comparisons at a broader scale like will be attempted in the next section. For this reason, a simple method for data aggregation has been developed, which with limited adaptation might also be applied to other areas and databases. The method will be briefly discussed here, and the outcome will be presented in the light of what already resulted from the analysis of community-level data. The ‘regional’ time series produced can be interpreted in two ways: either as representative of northwestern Italy or Piedmont (in the boundaries of the current administrative region), or as representative of a specific political-institutional entity, the Sabaudian State, or at least its Italian part.

The first point to underline, is that it is not proper simply to average Ginis for different communities around the same year, because doing this we would lose all information about between-communities inequality, as well as limiting our ability to explore the distribution in meaningful ways. In general, the proper way to aggregate information about wealth or income distributions, is either to build directly an overall distribution by listing together the details of each household, or to build what I will call a ‘fictitious distribution’ which approximates the best way we can the actual distribution. The first option is usually impossible to pursue due to lack of information about each and every household. What is more, in our case information about households residing in different communities is not directly comparable, as their taxable wealth is expressed in *lire d'estimo* which cannot be easily converted into market values expressed in a common currency.

To get round these problems, a fictitious distribution has been built starting with the information about deciles, thus modeling for each community a distribution of 100 elements, or ‘fictitious households’: 10 fictitious households per decile, each having the same share of wealth (1/10 of the decile each). The tenth decile (the rich) was modeled in greater detail, using information about the top 5% and top 1% wealthy, as it has been found empirically that what happened to the top rich determined the overall trend (see section 3). This procedure presents two additional advantages: 1) it automatically provides an equal weight for communities having different size (useful to maximize territorial representation of the sample: each community can be considered an ‘observation point’ on par with all others); 2) it allows to make full use of the data being produced by projects like EINITE, or which have been produced by recent studies that usually published them in the form of percentiles.

Reasoning in terms of fictitious distributions also considerably eases the task of resolving some critical issues of weighting and comparison of community-level data. Regarding comparisons, and considering that in general it is not possible to directly compare wealth measured in different *lire d'estimo*, the key issue was to clearly distinguish between cities and rural communities, as in the structural differences in wealth (or income) levels between city and country lies a fundamental component of region- or state-level inequality. However it has been assumed that between the sample cities, the average wealth of owners was about the same[12]. A similar assumption has been made for rural communities. Under this hypothesis, it can be easily demonstrated that percentiles can be used to build the fictitious distribution instead of actual property values (as percentiles relate to shares of individuals, not to a specific number of individuals; and the average wealth of all individuals of different communities is assumed to be the same). The times series for cities and rural areas presented in graph 6 has simply been calculated on the base of such fictitious distributions.

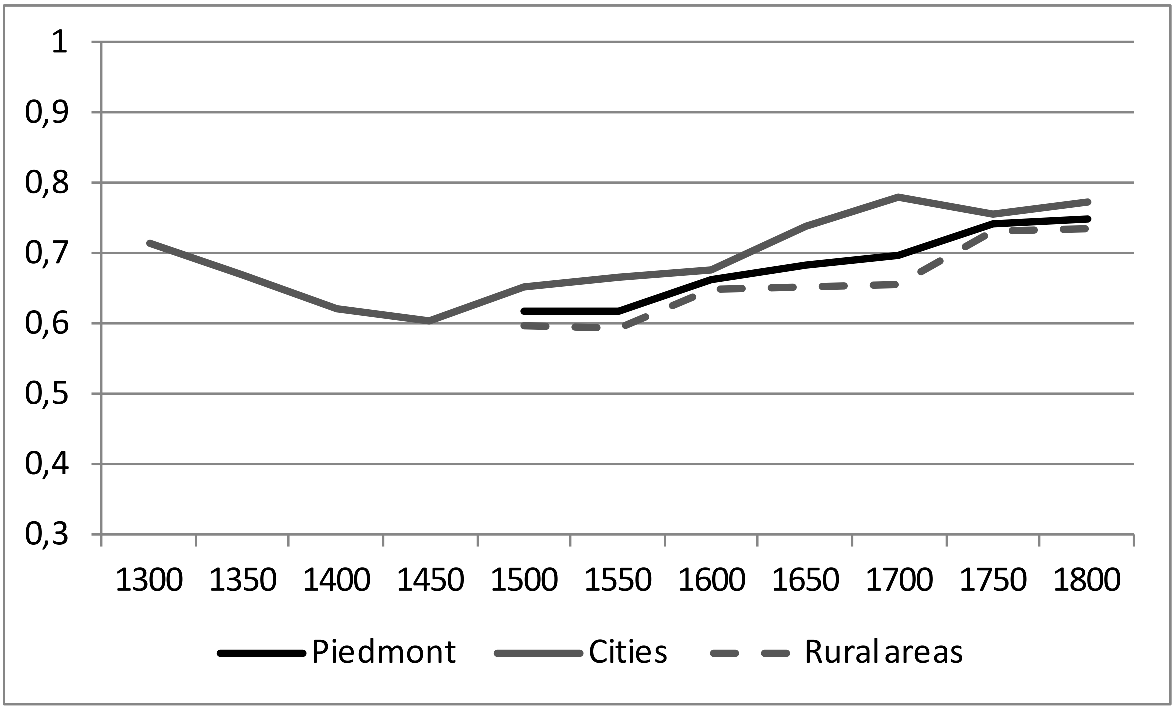
A more complex task is to build a regional distribution which includes both cities and rural areas. The first problem to solve, is to compare average wealth levels, which it would definitely be unrealistic to assume were the same in the two environments. Luckily enough, for at least one area - the Canavese - the fact that rural and urban data come from the same sources and consequently are expressed in the same *lira d'estimo*, allowed to calculate differences in average wealth of rural and urban owners. It has been found that on average, in year 1628 village owners were 31% less wealthy than the urban owners. This ratio has been used to weight the urban-rural differences for all the period considered here (future refinements will improve on this, based on the availability of data). The second weighting issue to be solved, involves giving the correct 'demographic' representation to data about cities and rural areas. The most recent estimate of urbanization rates for central-northern Italy, places it at 14.5% around 1600 (Malanima 2005, 106). However, this estimate relates only to cities with more than 10,000 inhabitants: a threshold that it has been argued to be too high to correctly represent the urban population of late Medieval and Early Modern Italy (Alfani 2007, 571-2; 2013a, 145-8), the more so for a region like Piedmont which while comprising many cities, did have very few over the 10,000 threshold: according to a *consegna delle bocche* (a census) dated 1612[13], only five, one of which was Chieri[14]. For Piedmont, and arguably also for the rest of northern Italy up until the early eighteenth century at least, a lower threshold of 4,000 people is better apt at capturing the share of population living in places which were cities from all points of view: functional, juridical, and social-economic (Alfani 2013a, 146). The aforementioned *consegna delle bocche* allowed to measure exactly the urbanization rate in Savoy Piedmont in year 1612: 25% (the urbanization rate calculate for cities with more than 10,000 inhabitants would be just 9.9%).

[12] This assumption makes sense in the light of the characteristics of the Piedmontese cities included in the database. Were the method propose here be applied to other areas, cities with different specialization or much different size would need to be distinguished. See for example the discussion of the case of Holland by Van Zanden (1995, 651-3).
[13] Turin State Archive, Camerale Piemonte, Art. 532 Mazzo ½, 'Consegna delle boche dai doi anni in sù, et delle vittuaglie', Ordine del 28 febbraio 1612.
[14] Four of the five were just above 10,000: Chieri (10,710); Cuneo (10,566), Vercelli (10,257) and Mondovì (10,903). The only larger city to be found in Piedmont was the capital, Turin, which counted 24,420 inhabitants.

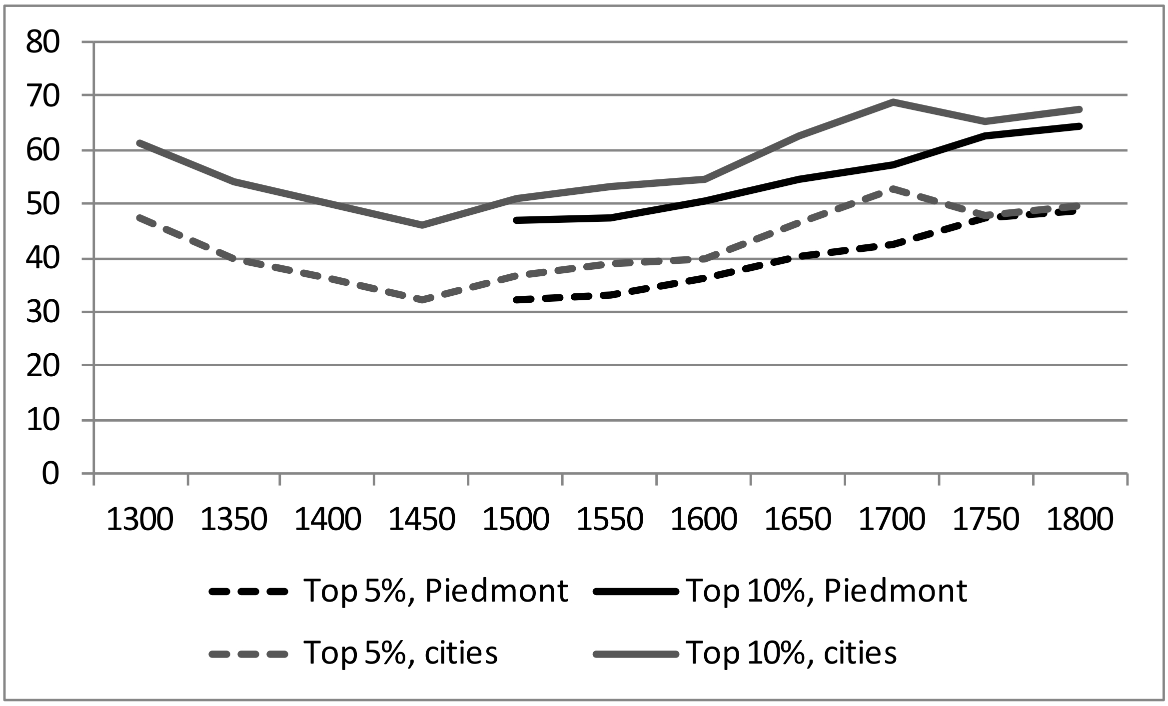
This ratio has been used to build ‘weighted’ fictitious distributions, which practically required cloning elements related to rural areas the number of times needed to keep the 1:3 urban-to-rural ratio about constant over time, taking into account the different number of urban and rural communities available at different points in time (a procedure similar in many aspects to that described by Milanovic for calculating 'weighted international inequality'. Milanovic 2005).

Many aspects of this reconstruction could be refined, in particular by improving the weighting criteria if more information will be discovered in the Piedmontese archives. However, as it is the method seems perfectly capable of representing in a synthetic way the phenomena discussed, community per community, in the earlier sections. Graphs 6 shows the different behaviour of urban and rural environments, also confirming the general idea that on average, inequality was greater in the city than in the country (but in Piedmont, this difference seems not to have been as sharp as elsewhere, possibly due to the prevalence of relatively small cities). The graph also clearly shows that, due to purely demographic reasons, the overall inequality level follows more closely the trend of the rural areas, than that of the cities. Graph 7 confirms the ability of the synthetic representation to capture another key finding described with reference to the community-level data: the overall trend (either of the whole region, or of the urban and rural environments) is determined by the trend of the share of the top rich. Further discussion is provided in the next section, where the Piedmontese data are also placed in the context of a broader international comparison.

Graph 6. Inequality in Piedmont, 1300-1800 (Gini indexes of wealth concentration)



Graph 7. Share of wealth owned by 10% and 5% top rich in Piedmont, 1300-1800



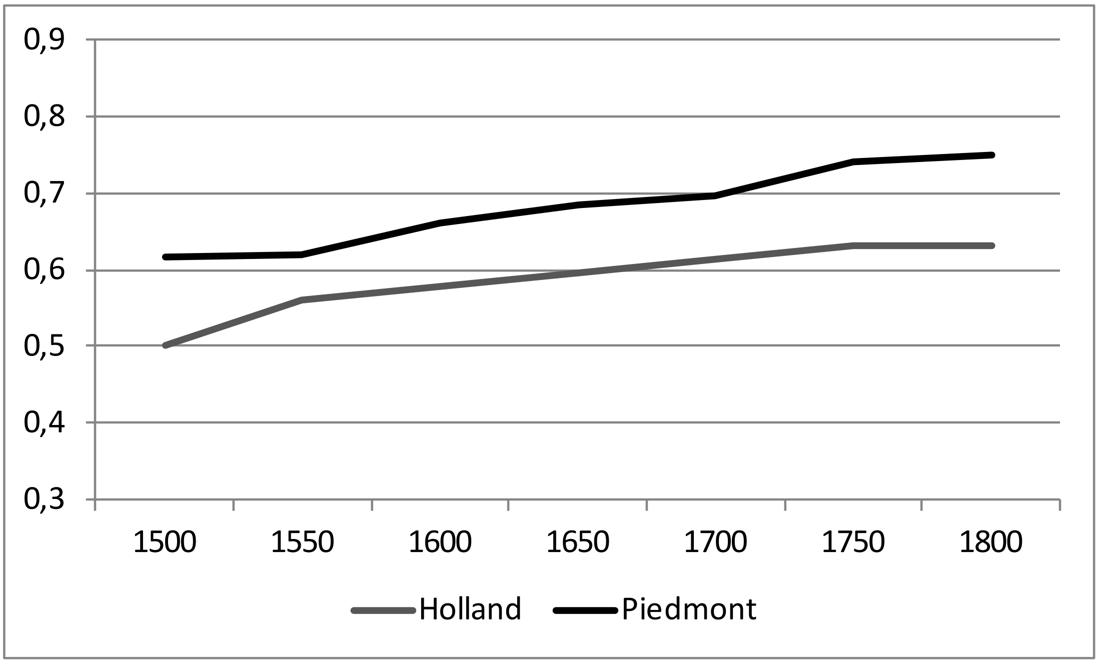
6. The broader picture: searching for the sources of inequality change

Both at the local level, and at the regional level, during the Early Modern period long-term trends in inequality in Piedmont were orientated towards growth. This does not stand true for the late Medieval period, as in this area the Black Death seems to have triggered a long phase of inequality decline. The turning point can be placed around 1450, when all the data we have, down to each local time series and even to within-cities, quarter-level time series, suggest that a phase of quick inequality growth started, which lasted up until the beginning of the next century. This is a particularly interesting finding, as 1450 is also a turning point in all reconstructions of the Italian long-run demographic trend: after a long period of stagnation, closely connected to high and recurrent epidemic mortality mostly caused by plague, all areas of the Peninsula started to recover their pre-1348 demographic size (Alfani 2010c, 29-30; Pinto 1996, 60-61). Such recovery would be completed only by the end of the sixteenth century. Interestingly, the most recent evaluation of the northern Italian demographic trend in the Early Modern period suggests that overall, the period of the Italian Wars (1494-1559) was, again, one of demographic stagnation, characterized by flat population change. The considerable demographic growth of the sixteenth century was almost entirely comprised in about thirty years (1560-89) (Alfani 2013a, 149-65; see in particular the time series for Piedmont 1550-1628 at p. 161). Looking at the local times series, and particularly at those which include data for all the three references dates 1500-1550-1600 like Ivrea and Cumiana (graph 1), there is some reason to hypothesize that inequality might have been stable or slightly declining in the first half of the century, showing greater dynamism (and a tendency to resume growing) in the second half; the Piedmontese time series captures such trend (graph 6). However, overall the sixteenth century was one of stability in inequality levels, whose tendencies still seem to be connected to demographic trends, although not as much as in the earlier century (as will be discussed below, this inequality-demography connection would entirely disappear in the seventeenth century).

The demographic growth of the second half of the fifteenth century went hand in hand with economic growth, just as the stagnation during the Italian Wars had both an economic and demographic character, as well as the growth of the second half of the sixteenth century - a period which Cipolla once labeled the ‘Indian Summer’ of the Italian economy (Cipolla 1993, 243), but which recent research has re-established as one of ‘solid recovery’ (Alfani 2013a, 165-8). The only other published regional study of long-term trends in preindustrial economic inequality based on hard data suggested that in Holland, economic and demographic growth went hand in hand with inequality growth: ‘On the whole inequality increased in proportion to the prosperity and size of towns and villages. The results suggest that there was a highly uneven distribution of the benefits of economic development. The case study of Holland also showed that economic growth during the golden age led to a more unequal distribution of income'. Van Zanden also proposed different explanations of why economic growth could foster inequality growth (urbanization; increasing skill premium; changes in functional distribution of income) and concluded that the increase in inequality experienced by Holland during the Early Modern period was even 'over-explained' (Van Zanden 1995, 661).

Graph 8 places the inequality trends in Piedmont and Holland side by side. As was the case when comparing the community-level time series, it should be remembered that inequality trends, not inequality levels, are what we should primarily compare; in this case, a key difference in the kind of data used (records of taxable wealth for Piedmont; rents of houses for Holland) could easily explain structural differences in Gini values. Both series, however, can be reasonably assumed to reflect overall changes in income distribution (Van Zanden himself interpreted house rent values as a proxy for income; regarding Piedmont see discussion in section 2). It is easy to notice that the series show a very similar tendency throughout the Early Modern period, and in particular that both are clearly orientated towards a long-term growth.

Graph 8. Long-term trend in inequality in Holland and Piedmont, 1300-1800 (Gini indexes)



Sources: for Holland, own elaboration from data published by Van Zanden (1995, 652-3).

In northwestern Italy and in the main province of the Dutch Republic, then, inequality seems to have behaved in much the same way. As mentioned above, Piedmontese tendencies during the late Medieval period and the sixteenth century well correspond to demographic and economic tendencies. The picture becomes much more complex if we consider the seventeenth and eighteenth centuries. On the one hand, it is well known that the seventeenth century was the 'Golden Age' of the Dutch Republic, which for a period became the centre of the European economy - basically replacing Northern Italy in that role. On the other hand, the seventeenth century has traditionally been considered one of crisis for the Italian states. Although in the last decades this view has been much softened, and the notion of 'relative decline' has been introduced (Sella 1997; Lanaro 2006), it is clear that the situation of the Peninsula had changed. Recently, Alfani (2013b) suggested that the last great plagues of the seventeenth century, which affected much more severely Italy than its main northern European competitors, caused a shock to the Italian economies that might have been the real starting point of their relative decline: 'Italy was forced on a path which led it to become, by the eighteenth century, an economic backwater' (Alfani 2013b, 19). Whatever one might think about the Italian economies during the seventeenth century, few would deny that during the eighteenth they became increasingly backward and sluggish; Malanima in particular made a strong case that this was really the Italian 'Age of Decline' (Malanima 2006). However, if we look at northwestern Italy, we discover that inequality continued to grow during the 'Age of Relative Decline' (the seventeenth century) which, demographically, was beyond doubt a full-fledged age of decline, essentially due to the 1629-30 plague which caused a drop in population that took the rest of the century to be recovered (Alfani 2013b). Inequality also grew during the eighteenth century, the 'Age of [Real] Decline' which on the contrary was characterized by vigorous demographic growth, with Italy exceeding for the first time population limits that had constrained it since the times of the Roman Empire (Alfani 2013d).

And still, one could make the case that the Sabaudian State, which grew to become the Kingdom of Sicily in 1713 (of Sardinia since 1720) but whose heart always was Piedmont, is the exception in the Italian landscape. Having participated in a relatively limited way to the Renaissance, Piedmont flourished during the Age of Baroque, not only culturally but also institutionally and as a military power. Its territorial expansion continued throughout the seventeenth and the eighteenth century, and its capital (Turin) grew to become one of the most admired cities of continental Europe. However, economically the picture was quite bleaker, at least if we consider the seventeenth century. Especially in 1630-1660, plague and war heavily damaged trades and productive activities (Barbero 2008, 203-4). The situation improved in the last part of the century, and during the eighteenth the region would show an impressive agrarian, commercial and proto-industrial dynamicity, but overall it would be difficult to argue that the seventeenth century was one of significant economic development. If we look closer at the cities analyzed in this article, they all seem to be suffering, partly from the demographic attraction and the competition exerted by Turin (Levi 1985b), and partly due to the crisis of commerce and of the textile sector, like in Chieri (Barbero 2008, 293). For the city of Ivrea, a detailed case study of the connection between inequality change and economic dynamics strongly made the point that in this city, inequality growth cannot be simply explained with economic growth, as it occurred also in times of acute and long-lasting crisis (Alfani 2010a, 546-7). What is more, recent research on other areas of Europe which experienced difficult economic conditions during the seventeenth century, like central Spain (Santiago-Caballero and Fernandez 2013), is also providing evidence for inequality increases occurring even in times of economic stagnation or decline. Some older works provide further support to this view, like Le Roy Ladurie's study of Languedoc (France) in 1680-1750, a period of crisis during which increasing concentration of wealth (lands) resulted from a kind of '*sélection naturelle*' (natural selection) favouring the main owners (Le Roy Ladurie 1966, 567-581).

Recently, Milanovic, Williamson and Lindert (2011) introduced the concept of the inequality possibility frontier, which basically postulates that the maximum inequality that a society can achieve corresponds to a perfectly unequal distribution not of the whole product, but only of the surplus above subsistence[15] (redistributing the share of product necessary for subsistence is not compatible with a stable society). Consequently, we should be interested not only in overall inequality levels, but also in how much 'extractive' a society is, that is, how close to the inequality possibility frontier it places itself. This concept is perfectly compatible with the long-term trends described above for Piedmont and Holland. For Holland, Van Zanden could well be right in assuming that economic growth fully 'explains' inequality growth: the regional maximum possible inequality increases due to economic development, thus inequality can increase with no need to postulate that the Dutch society was becoming more extractive (in fact, by using Van Zanden's data, Milanovic, Williamson and Lindert estimate that Holland grew *less* extractive in time). For

[15] 'Suppose that each society has to distribute income in such a way as to guarantee subsistence minimum for its poorer classes. The remainder of the total income is the surplus that is shared among the richer classes. When average income is very low, and barely above the subsistence minimum, the surplus is small. Under those primitive conditions, the level of inequality will be quite modest. But as average income increases with economic progress, this constraint on inequality is lifted; the surplus increases, and the maximum possible inequality compatible with that higher average income is greater. In other words, the maximum attainable inequality is an increasing function of mean overall income.' (Milanovic, Williamson and Lindert 2011, 256).

Piedmont instead, while it might be that extraction rates were not changing in the period 1450-1600 (and one could wonder if they were, in fact, decreasing in the century following the Black Death) and inequality growth was due solely to economic growth, since 1600 it seems probable that most of the inequality growth was due to the Piedmontese/Sabaudian society becoming more extractive, particularly during the seventeenth century. Growing extraction rates would make a stagnating economy compatible with the steady increase in inequality suggested by our empirical evidence.

If we consider the history of the Sabaudian state during the Early Modern period, it is quite easy to accept the idea that it was becoming more extractive. Since they recovered full control of their domains, in 1559, the Savoys fostered intense institutional development, strengthening their authority over the disparate territories they ruled and progressively building a 'unified' state. Surely, their fiscal policy, especially after the introduction, in 1562, of the *tasso* (the new tribute described in section 1), became more extractive in the sense of allowing the central authority to syphon in more resources from the local communities (Stumpo 1979): a crucial development, which is key in understanding how the Sabaudian state could grow to become a respectable military power, in an age in which waging war was becoming a much costlier affair. In fact, the Sabaudian state was simply participating in a particularly intense way (to counter-balance its somewhat limited size) to a process involving all of Western Europe: the so-called 'rise of the fiscal state' (Bonney 1999; O'Brian and Yun-Casalilla 2012). If we look at this process from the point of view of households (the units of measurement of our wealth/income distributions), we can easily accept the hypothesis that, in the Early Modern period, lucky few profited (and considerably) from more extractive 'public' institutions.

While institutional change probably played an important role in making the Piedmontese society more economically unequal, that is only part of the story. Another fundamental factor is demography. As has been shown on the grounds of micro-level data for the case of Ivrea, in urban environments immigration from rural areas could act as a kind of perpetual generator of inequality, a process which became markedly more intense in the years immediately following demographic shocks of the kind of the seventeenth-century plagues (Alfani 2010a; 2010b; also see discussion in section 4). In rural areas, the impact of out-migration on inequality levels is less clear, and more generally urban-rural interaction as a factor influencing inequality is worthy of being researched deeper and will be the object of future publications[16]. Overall it seems that, to understand properly preindustrial long-term inequality trends, demography matters more than is usually acknowledged

[16] For an early analysis of the Canavese area, see Alfani 2009.

by the (few) scholars who assessed this topic. The only demographic process which has been often pointed out as a driver of inequality is the growth of urban populations (see discussion above and in section 3). Other demographic processes very probably also played a role: for example the population pressure that, between the late sixteenth and the seventeenth century, in many parts of continental Europe determined the crisis of small holdings, with a large share of the peasants having to resort to sell their land to great landowners (for example, Alfani 2013a, 76-7; Kamen 1976; Le Roy Ladurie 1966). In Piedmont, too, this process was presumably responsible for at least part of the increase in inequality to be found in rural areas. Also in this case, though, more comparative research is needed.

All in all, the newly acquired evidence, including that provided by this article, suggests that any explanation of long-term inequality change solely focused on economic development is, at best, seriously incomplete. The increasing evidence supporting the idea that inequality grew also in stagnating or declining areas, especially during the Early Modern period, suggests that we should look hard for different explanations. The new concept of the inequality possibility frontier provides a useful intellectual framework to understand how inequality could increase also in the absence of economic development (and consequently, of generation of a greater surplus): a stagnating society could simply become more efficient at extracting inequality, getting closer to the boundary. This is not, however, a true explanation of the causes of inequality growth. A promising path of enquiry seems that of looking into inertial processes, primarily of a demographic nature, as continuous generators of inequality. However this, too, could be insufficient to explain what possibly was a multi-secular process spanning the whole of the European continent; also in this respect, then, more research is needed. As a final reflection, it could be useful to provide a different interpretation of what the inequality possibility frontier was: not just a theoretical upper boundary to inequality, but a *de facto* attractor of inequality. In other words, during the Early Modern period if a society *could* become more unequal, then it did – and the only way it had to avoid becoming more extractive, too (that is, to redistribute more efficiently income and wealth from the lower to the upper echelons of society), was to develop economically quick enough to escape falling into a kind of ‘inequality trap’.

Conclusion

This article presented a comprehensive picture of economic inequality in northwestern Italy (Piedmont), focusing on the long-term developments occurred during the five centuries from about 1300 up until 1800. This is a significant contribution to our knowledge of the tendencies of economic inequality in preindustrial times, as Piedmont is just the second region of the European continent, after Holland, to have ever been researched systematically from this perspective, and over a much longer time period.

The new data proposed for Piedmont provide considerable support to some 'stylized facts' that stand out from research carried out worldwide on the topic, such as the connection between urban demographic growth and inequality, the greater inequality levels experienced by cities in comparison to rural areas, or the fact that inequality changes were determined by the tendencies of the share of income or wealth of the top rich. Even more interestingly, the Piedmontese case strongly supports the idea that during the Early Modern period, inequality was growing everywhere in Europe: both in cities and in rural areas, and independently from whether the economy was growing or stagnating. This is a new finding, which directly challenges earlier views that tended to explain inequality growth as the consequence of economic development. Such finding, if confirmed by further, much-needed new research about other areas, would also require some theoretical re-elaboration to be fully accounted for. This article pointed out at a number of paths worthy of being followed, in particular the importance of demographic processes which could have acted as continuous generators of inequality. The recently-introduced concept of the inequality possibility frontier was used to explain how a society could become more extractive, and consequently also more unequal, also in times of economic stagnation (Piedmont was one such case). The article also suggested that we might have to think differently at the inequality possibility frontier: not as much as an upper boundary to inequality, but as an attractor of inequality to higher levels, exerting its pressure even in times of economic crisis or stagnation.

The article also made a strong case for the need of more empirical research on inequality trends in preindustrial times. In fact, while broad tendencies stand out at the continental scale, much interesting local or regional variation has also emerged. Here, particular attention was given to the impact of the most severe mortality crises, like the fourteenth-century Black Death. Also in this respect, this case study of Piedmont is the second-ever to have covered the topic and, very interestingly, it did not confirm earlier hypotheses based on Tuscan data – as in this area, the century following the Black Death was one of declining, not growing inequality. Variation was found also in time, as seemingly by the seventeenth century even very severe mortality crises had consequences deeply different from the Black Death, probably due to the institutional adaptation occurred in-between. More generally, in the Early Modern period the way in which demographic and economic growth interacted with inequality trends seems to be significantly different from the Middle Ages. This is another empirical finding which would be worthy of being researched further.

As a final comment, many of the findings of this article present interesting similarities with those produced by research on the contemporary world. For example, the fact that the general inequality trend is driven by the top wealthy is an empirical regularity which seems to be constant from the Middle Ages until today. More generally, this article suggests that in the very long term, inequality has almost always been orientated towards growth, with declining phases being the exception. Were this picture confirmed by further research, which for Italy as well as for some other areas of Europe is already under way, it would probably affect the way in which we consider current tendencies. In relation to this, we could wonder if the time has come to re-think the significance of the 'Kuznets curve': no longer a general tool for interpreting the link between economic development and inequality, with its implicit promises, but (at most) a description of what happened during a relatively short phase, the Industrial Revolution. However, like Kuznets himself had to point out in his 1955 article, for now this is mostly speculation in search for some solid empirical support.

Bibliography

ABRATE, M. (1972), *Popolazione e peste del 1630 a Carmagnola*, (Torino: Biblioteca di Studi Piemontesi)

ALFANI, G. (2007), 'Population and Environment in Northern Italy during the XVIth Century', *Population*, 4/2007, 1-37

ALFANI, G. (2009) 'Prima della curva di Kuznets: stabilità e mutamento nella concetrazione di ricchezza e proprietà in età moderna', in G. Afani and M. Barbot (eds), *Ricchezza, valore, proprietà in Età Preindustriale. 1400–1850* (Venice: Marsilio), 143–68.

ALFANI, G. (2010a), 'Wealth Inequalities and Population Dynamics in Northern Italy during the Early Modern Period', *Journal of Interdisciplinary History*, XL, 4, 2010, 513-549.

ALFANI, G. (2010b), 'The effects of plague on the distribution of property: Ivrea, Northern Italy 1630', *Population Studies*, 64, 1, 61-75.

ALFANI, G. (2010c) 'Climate, population and famine in Northern Italy: general tendencies and Malthusian crisis, ca. 1450-1800', *Annales de Démographie Historique*, 2, 23-53.

ALFANI, G. (2013a). *Calamities and the Economy in Renaissance Italy. The Grand Tour of the Horsemen of the Apocalypse* (Basingstoke: Palgrave).

ALFANI, G. (2013b), 'Plague in seventeenth century Europe and the decline of Italy: an epidemiological hypothesis', in *European Review of Economic History* (online-first version), doi: 10.1093/ereh/het013

ALFANI, G. (2013c), 'Fiscality and territory. Ivrea and Piedmont between the Fifteenth and Seventeenth Centuries', in M. Vester (ed.), *Sabaudian Studies. Political Culture, Dynasty, & Territory 1400-1700* (Kirksville: Truman State University Press), 213-239.

ALFANI, G. (2013d), 'Population dynamics, Malthusian crises and Boserupian innovation in pre-industrial societies: the case study of Northern Italy (ca. 1450-1800) in the light of Lee's «dynamic synthesis»', in P. Malanima, B. Chiarini (eds.), *From Malthus's Stagnation to Sustained Growth* (Basingstoke: Palgrave), 18-51.

ALFANI, G. and BARBOT, M. (eds.) (2009), *Ricchezza, valore, proprietà in Età preindustriale. 1400-1850* (Venice, Marsilio).

ALFANI, G. and CARACAUSI, A. (2009), ‘Struttura della proprietà e concentrazione della ricchezza in ambiente urbano: Ivrea e Padova, secoli XV-XVII’, in G. Alfani, M. Barbot (eds.), *Ricchezza, valore, proprietà in Età preindustriale. 1400-1850* (Venice: Marsilio), 185-209

ALFANI, G. and FRIGENI, R. (2013), 'Inequality (un)perceived: The emergence of a discourse on economic inequality from the Middle Ages to the Age of Revolutions', Dondena Working Paper n. 58, http://www.dondena.unibocconi.it/wps/wcm/connect/cdr/centro_dondena/home/working+papers/working+paper+58

ALVAREDO, F., ATKINSON, A.B., PICKETTY, T. and SAEZ, E. (2013), ‘The Top 1 Percent in International and Historical Perspective.’ *Journal of Economic Perspectives*, 27(3), 3-20.

AMMANNATI, F., DE FRANCO, D. and DI TULLIO, M. (2013), *Misurare la diseguaglianza economica nell'età preindustriale: un confronto fra realtà urbane dell'Italia centro-settentrionale*, forthcoming

ATKINSON, A.B., PICKETTY, T. and SAEZ, E. (2011), ‘Top Incomes in the Long Run of History’, *Journal of Economic Literature*, 49 (1), 3–71

BARBERO, A. (2008), *Storia del Piemonte. Dalla preistoria alla globalizzazione* (Torino: Einaudi)

BONNEY, R. (ed.) (1999). *The Rise of the Fiscal State in Europe, c.1200–1815* (Oxford: Oxford University Press)

CANBAKAL, J., *Wealth and Inequality in Ottoman Bursa, 1500-1840*, paper given at the Economic History Society Annual Conference (York, U.K., 5-7 April).

CIPOLLA, C.M. (1993) *Before the Industrial Revolution: European society and economy, 1000-1700* (London: Routledge).

CLARK, G. (2007). *A Farewell to Alms* (Princeton: Princeton University Press).

COHN, S.K. (2007), ‘After the Black Death: labour legislation and attitudes towards labour in late-medieval western Europe’, *Economic History Review*, 60 (3), 486-512.

HANUS, J. (2012), ‘Real inequality in the early modern Low Countries: the city of ‘s-Hertogenbosch, 1500–1660’, *The Economic History Review* (online-first version), DOI: 10.1111/j.1468-0289.2012.00674.x

HERLIHY, D. (1967). *Medieval and Renaissance Pistoia* (New Haven/London: Yale University Press).

HERLIHY, D. (1977), 'Family and property in renaissance Florence', in H.A. Miskimin-D.Herlihy-A.L. Udovitch (eds.), *The medieval City* (New Haven: Yale University Press), New Haven, 3-24

HERLIHY, D. and KLAPISCH-ZUBER, C. (1985), *Tuscans and their families,* (New Haven: Yale University Press)

KAMEN, H. (1976) *The Iron Century: Social Change in Europe, 1550–1660* (London: Cardinal).

KUZNETS, S. (1955), 'Economic Growth and Income Inequality', *American Economic Review*, 45 (1), 1-28

LANARO, P. (ed.) (2006), *At the Centre of the Old World. Trade and Manufacturing in Venice and the Venetian Mainland, 1400-1800* (Toronto: Centre for Reformation and Renaissance Studies).

LE ROY LADURIE, E. (1966) *Les Paysans de Languedoc* (Paris: SEVPEN).

LEVI, G. (1985a). *L'eredità Immateriale* (Turin: Einaudi)

LEVI, G. (1985b) 'Come Torino soffocò il Piemonte', in Id., *Centro e periferia di uno stato assoluto* (Turin: Rosemberg & Sellier), 11–70.

LINDERT, P.H. (1991), 'Toward a comparative history of income and wealth inequality', in Y.S. Brenner, H. Kaelble, M. Thomas (eds.), *Income distribution in historical perspective* (Cambridge: Cambridge University Press), 212-231

LINDERT, P.H and WILLIAMSON, J.G. (1980), *American inequality: a macro economic history*, (New York: Academic Press).

MALANIMA, P. (2005). 'Urbanisation and the Italian economy during the last millennium', *European Review of Economic History* 9, 97–122

MALANIMA, P. (2006), 'An Age of Decline. Product and Income in Eighteenth Century Italy', *Rivista di Storia Economica*, 22, 91-133

MALANIMA, P. (2012), 'The economic consequences of the Black Death', in E. Lo Cascio (ed.), *L'impatto della 'Peste Antonina'* (Bari: Edipuglia), 311-328

MILANOVIC, B. (2005), *Worlds apart. Measuring International and Global Inequality*, (Princeton: Princeton University Press).

MERLIN, P., ROSSO, C., SYMCOX, G. and RICUPERATI, G. (1994), *Il Piemonte sabaudo. Stato e territori in età moderna* (Turin: UTET).

MILANOVIC, B., LINDERT, PH and WILLIAMSON, JG (2011), ‘Pre-Industrial Inequality’, *The Economic Journal*, 121, 255–272.

P. O’BRIEN and B. YUN-CASALILLA (eds) (2012), *The Rise of Fiscal States: A Global History, 1500–1914* (Cambridge: Cambridge University Press).

PAMUK, S. (2007), 'The Black Death and the origins of the 'Great Divergence' across Europe, 1300-1600', *European Review of Economic History*, 11 (3), 289-317.

PEZZOLO, L. (2012), ‘Republics and Principalities in Italy’, in P. O’Brien e B. Yun Casalilla (eds.), *The Rise of Fiscal States. A Global History, 1500-1914* (Cambridge: Cambridge University Press), 267-284.

PEZZOLO, L. and STUMPO, E. (2008), ‘L’imposta diretta in Italia dal medioevo alla fine dell’ancien régime’, in S. Cavaciocchi (ed.), *La fiscalità nell'economia europea (secoli XIII-XIX)* (Florence: Florence University Press), 75-98.

PICKETTY, T., POSTEL-VINAY, G., and ROSENTHAL, J-L. (2006), ‘Wealth Concentration in a Developing Economy: Paris and France, 1807-1994’, *American Economic Review*, 96 (1), 236-256.

PINI, A.I. (1981), ‘Dal comune città-stato al comune ente amministrativo’, in O. Capitani, R. Manselli, G. Cherubini, A.I. Pini, G. Chittolini (eds.), *Comuni e signorie: istituzioni, società e lotte per l’egemonia* (Turin: UTET), 451-590.

PRADOS DE LA ESCOSURA, L. (2008), ‘Inequality, poverty and the Kuznets curve in Spain, 1850-2000’, *European review of Economic History*, 12, 287-324.

ROSSI, N., TONIOLO, G., VECCHI, G. (2001), ‘Is the Kuznets Curve Still Alive? Evidence from Italian Household Budgets, 1881-1961’, *Journal of Economic History*, 4/2001, 904-925

ROTELLI, C. (1966), *La distribuzione della proprietà terriera e delle colture ad Imola nel XVIIe XVIII secolo* (Milan: Giuffrè)

RYCKBOSCH, W. (2012), *A Consumer Revolution under Strain. Consumption, Wealth and Status in Eighteenth-Century Aalst (Southern Netherlands)*, unpublished PhD dissertation, University of Antwerp & Ghent University.

RYCKBOSCH, W. (2010), 'Vroegmoderne economische ontwikkeling en sociale repercussies in de Zuidelijke Nederlanden. Nijvel in de achttiende eeuw', *Tijdschrift voor Sociale en Economische Geschiedenis*, 7 (3), 26-55.

SANTIAGO-CABALLERO, C. and FERNÁNDEZ, E. (2013), *Income inequality in Madrid, 1500-1850*, paper given at the Economic History Society Annual Conference (York, U.K., 5-7 April).

SELLA, D. (1997). *Italy in the Seventeenth Century* (London: Longman).

STUMPO, E. (1979), *Finanza e stato moderno nel Piemonte del Seicento* (Rome: Istituto storico italiano per l'età moderna e contemporanea).

VAN ZANDEN, J.L. (1995), 'Tracing the beginning of the Kuznets curve: western Europe during the early modern period', *The Economic History Review*, 48 (4), 643-664.

VESTER, M. (2001), 'Territorial politics and Early Modern 'fiscal policy': taxation in Savoy, 1559-1580', *Viator. Medieval and Renaissance Studies*, 32, 279-302

Vester, M. (ed.) (2013), *Sabaudian Studies. Political Culture, Dynasty, & Territory 1400-1700*, (Kirksville: Truman State University Press).

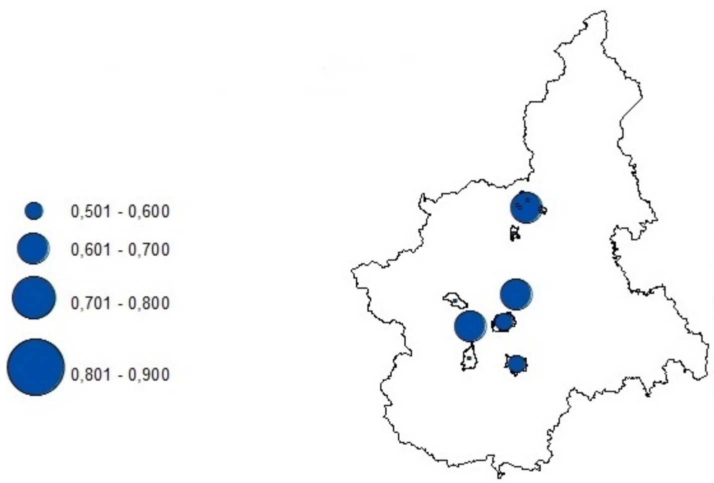
VOIGTLANDER, N. and VOTH, H.J. (2012) The Three Horsemen of Growth: Plague, War and Urbanization in Early Modern Europe. *Review of Economic Studies* (online-first version).

WILLIAMSON, J.G. (1985), *Did British capitalism breed inequality?* (Boston: Allen & Unwin).

WILLIAMSON (2009), *History without Evidence: Latin American Inequality since 1491*, NBER Working Paper n. 14766.

APPENDIX: Economic Inequality in Piedmont (Gini indexes of wealth concentration; geo-referenced GIS maps)

1450



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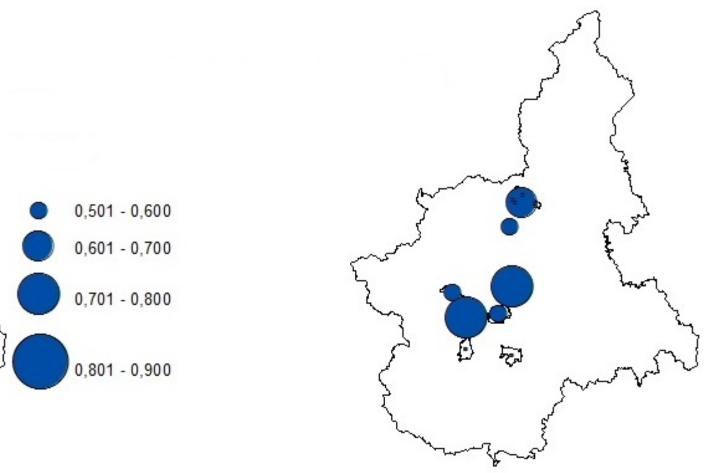

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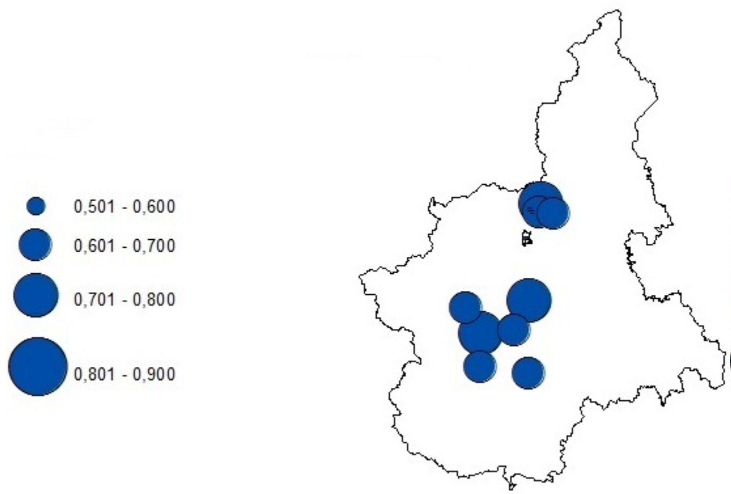

1700