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Economic Inequality in Preindustrial Times: Europe and Beyond†

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Recent literature has reconstructed estimates of wealth and income inequality for a range of preindustrial, mostly European, societies covering medieval and early modern times, occasionally reaching back to antiquity and even prehistory. These estimates have radically improved our knowledge of distributive dynamics in the past. It now seems clear that in the period circa 1300–1800, inequality of both income and wealth grew almost monotonically almost everywhere in Europe, with the exception of the century-long phase of inequality decline triggered by the Black Death of 1347–52. Regarding the causes of inequality growth, recent literature ruled out economic growth as the main one. Other possible factors include population growth (also as mediated by inheritance systems) and especially regressive fiscal institutions (also as connected to the unequal distribution of political power). The recently proposed theoretical framework of the inequality possibility frontier (IPF) lends a better understanding of the implications of the reconstructed trends. This article concludes by showing how connecting preindustrial trends to modern ones changes our perception of long-term inequality altogether. (JEL D31, D63, N33*)*

1. *Introduction: Why Should We Care about Inequality in Preindustrial Times?*

Until the end of the twentieth century, inequality movements were seriously under-researched by economists and economic historians alike. Although many classical economists, from David Ricardo to Karl Marx, put distribution at the center of their analyses, modern economists have tended to view inequality as "an *inevitable* outcome of the market as a coordinating mechanism, and a *necessary* outcome for the market to function as an incentive mechanism" (Wade 2014, p. 118). However, the

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Great Recession, beginning in 2008, and subsequent events contributed to heightening the perception of inequality, and in many countries it became a prime topic in political debates. Inequality has also become a matter of debate among economists, largely as a consequence of Thomas Piketty's efforts to "[place] study of distribution and of the long-run back at the center of economic thinking" (Piketty 2015, p. 68). As clarified by Piketty himself, knowledge of long-run dynamics is a crucial feature of the current wave of new research on inequality.

Until recently, "long run," when referring to inequality, meant "from the onset of the Industrial Revolution." This is clearly the consequence of Kuznets's (1955) seminal article, in which he argued that income inequality followed an inverted-U path through the industrialization process (the so-called "Kuznets curve"), with a rising phase at the beginning of industrialization. This approach generated a sizable amount of research on inequality trends during the last two centuries, which usually found some evidence of rising inequality during the nineteenth century followed by decline in the early decades of the twentieth century (see Williamson 1985 for Britain; Piketty, Postel-Vinay, and Rosenthal 2006, 2014 for France; Rossi, Toniolo, and Vecchi 2001 for Italy; Prados de la Escosura 2008 for Spain; Williamson and Lindert 1980 for the United States). Until recently, though, no similar large-scale efforts had been made for the preindustrial period. Indeed, in his 1955 article Kuznets seemed to imply that before circa 1800 or 1750 at the earliest, income inequality was relatively low and stable over time. Interestingly, for a long time the only attempt made at reconstructing long-term inequality trends for a large area (the province of Holland in the Netherlands) found that inequality increase actually began much earlier, from the sixteenth century—but also provided an explanation for this process that was very much in line with Kuznets's arguments, as increases in income inequality were considered to be the outcome of long-term economic growth (van Zanden 1995, Soltow and van Zanden 1998). Van Zanden even postulated the existence of a "super-Kuznets curve" spanning many centuries, with a long phase of inequality growth followed by inequality decline only during the twentieth century (van Zanden 1995, p. 662).

Since circa 2010, however, many more studies have appeared providing new quantitative information, laboriously collected from the archives, about preindustrial inequality. These works covered many areas of Europe, particularly Italy (Alfani 2010, 2015, 2017; Alfani and Ammannati 2017; Alfani and Di Tullio 2019) but also Spain (Santiago-Caballero 2011; Fernández and Santiago-Caballero 2013; Nicolini and Ramos Palencia 2016a, b; García-Montero 2015), Portugal (Reis 2016), the Low Countries (Hanus 2013, Ryckbosch 2016, Alfani and Ryckbosch 2016), Germany (Wegge 2020; Alfani, Gierok, and Schaff 2020), Britain (Allen 2019), Sweden (Bengtsson et al. 2018), Finland (Bengtsson et al. 2019), and Poland (Malinowski and van Zanden 2016). Some non-European areas were also researched, from Anatolia under the Ottoman Empire (Coşgel 2008; Coşgel and Ergene 2012; Canbakal, Filiztekin, and Pamuk 2018) to the prerevolutionary Unites States (Lindert and Williamson 2016) and Japan in the Tokugawa period (Saito 2015, Drixler 2018, Kumon 2018). While these works focus on the late Middle Ages and the early modern period, some new research also involved the early Middle Ages (Milanovic 2006), the classical age (Scheidel and Friesen 2009, Scheidel 2017, Milanovic 2019,) and even prehistory (Borgerhoff Mulder et al. 2009; Bowles, Smith, and Borgerhoff Mulder 2010; Bogaard, Fochesato, and Bowles

2019; Fochesato, Bogaard, and Bowles 2019).

This recent wave of research on preindustrial inequality does much more than just fill a gap in our knowledge—indeed, it is changing very significantly how we look at long-term trends in economic inequality altogether. For these studies do not confirm the Kuznetsian paradigm—on the contrary, they raise many questions about the deep causes of inequality change, which can no longer be simply indicated in economic growth. In fact, the evidence for preindustrial times suggests that inequality growth occurred in phases of economic stagnation or decline as well, and that overall (and for both income and wealth)[1] the correlation between economic growth and inequality growth was quite weak—a finding that resonates well with debates on the drivers of inequality growth today. Led by this newly available empirical evidence, economic historians have explored other possible determinants of distributive dynamics. One is population growth, which a scholarly tradition dating back at least to Ricardo considered able to lead to an increase in both income and wealth inequality—in obvious contrast, as will be discussed, with a certain interpretation of Malthusian dynamics, widespread among modern economists, according to which preindustrial societies tended toward equality at subsistence.

Recently, a second strand of research appeared that focuses on the distributive effects of preindustrial taxation. In fact, contrary to what we take for granted today, growing taxation in preindustrial times, and especially during the early modern period, exacerbated (not reduced) income and wealth inequality across generations, due to the regressive nature of early fiscal systems. This research avenue is somewhat connected to a third, quite widespread position that identifies in the uneven distribution of political power the source of inequality growth in the very long run of history (indeed, even from prehistory). At the same time, the new studies on preindustrial taxation add to the literature on how distributional change is shaped by institutions, a literature that so far had focused mostly on how inheritance systems affected the intergenerational transmission of wealth. Quite clearly, all these different approaches speak to current debates about inequality and its possible causes and consequences. But even more importantly, as will be seen in the concluding section, if we connect preindustrial trends to modern ones we get an entirely different, and deeply revealing, perspective on tendencies and levels of inequality today.

2. *Long-Term Trends in Preindustrial Inequality: The Evidence So Far*

The recent literature on preindustrial inequality is heavily dependent upon the collection of new data, either archival or (for the most ancient epochs) archaeological/anthropological. Consequently, it has contributed in a decisive way to overcoming the more "indirect" attempts at estimating broad inequality trends in the long run (for example in terms of functional distribution of income), typical of earlier research, with a more "direct" approach based on actual observations of inequality levels in time and space. The aim of this section is to offer a synthetic overview of such literature, focusing on those works that provide new detailed information about income or wealth inequality, expressed, for example, by means of a Gini index.[2]

[1] About the close connection between the distribution of wealth and of (total) income in preindustrial societies see subsection 2.2.

[2] As is well known, the value of the Gini index varies between 0 (perfect equality: each household or individual has the same income or wealth) and 1 (perfect inequality: one household or individual earns or owns everything).

2.1 *Prehistory, the Classical Age and the Early Middle Ages*

Compared to what can be done for the late Middle Ages and the early modern period, inequality in earlier epochs is probably destined to remain much more a matter of speculation. This being said, some scholars have recently produced extremely interesting research into inequality dynamics in the remote past.

For prehistory, the available archaeological evidence has been integrated with information on historical and current "primitive" societies, like the few surviving tribes of hunter-gatherers, in order to produce tentative estimates of the overall levels of economic inequality. Generally speaking, human groups that relied upon foraging were characterized by low levels of economic differentiation. However, early farmer societies (the first ones appeared from 10,000–8,000 BCE, at the time of the so-called "Neolithic Revolution") were already suffering much higher economic inequality. Arguably, there is a continuum in inequality levels, from hunter-gatherers, to farmers and beyond: "substantial levels of economic inequality became characteristic of many (but far from all) populations only after the domestication of plants and animals, eventually culminating in the emergence of class societies and the hierarchical ancient states" (Bowles, Smith, and Borgerhoff Mulder 2010, p. 8). This is not to negate the fact that societies of hunter-gatherers were already unequal, as argued by pioneers like Testart (1982), who focused on the inequality-producing consequences of food stocking and practices related to its redistribution. But among hunter-gatherers, inequality was relatively low, with an exception made for groups exploiting exceptionally rich fishing and hunting sites, where it was possible that an elite of "rich" appeared, able to control the best fishing/hunting spots and to transmit this privilege across generations (as suggested by archaeological evidence of dietary differences) (Bowles, Smith, and Borgerhoff Mulder 2010). Apart from these exceptions, the differences in inequality levels between hunter-gatherers and early farmers were probably steep. In a sample of historical and contemporary "small-scale societies," it was found that inequality of material wealth, measured with the Gini index and including all physical components of wealth like land or cattle, was on average 0.57 in agricultural societies, 0.51–0.52 in horticultural and pastoral societies, and just 0.36 among hunter-gatherers (Borgerhoff Mulder et al. 2009, table S4). Wealth concentration, through the inheritance system, was key to reproducing and deepening inequality across generations (see discussion in section 2). Further evidence of an increase in wealth inequality after the introduction of agriculture has been provided by a recent study of distributions of house sizes through history (Kohler et al. 2017), while others underlined the fact that while some forms of early agriculture (labor limited) were still associated with fairly egalitarian societies, others (land limited) were much more unequal. At least in western Eurasia, the transition from the first to the second form of agriculture was probably caused by the diffusion of specialized ploughing animals, like oxen, from the mid-fourth millennium BCE (Bogaard, Fochesato, and Bowles 2019).

In time, economic inequality deepened in association with the development of early governmental institutions and the appearance of the first states:

> premodern states generated unprecedented opportunities for the accumulation and concentration of material resources in the hands of the few, both by providing a measure of protection for commercial activity and by opening up new sources of personal gain for those most closely associated with the exercise of political power. In the long run, political and material inequality evolved in tandem (Scheidel 2017, p. 43).

Also in the case of the early states, the evidence about inequality change is mostly archaeological (Allen 1997, Diamond 1997, Scheidel 2017). Again, distributions of house sizes corroborate the idea that state development favored inequality growth (Kohler et al. 2017). It is only when we move a step further, into the classical age, whose starting point is conventionally placed around the eighth or seventh century BCE, that it becomes possible to obtain some speculative measures of levels of economic inequality.

Research has been particularly intense on the case of the Roman Empire. There are currently available two estimates of interpersonal inequality in the whole of the Roman Empire built from social tables (that proxy the overall distribution by dividing the society into classes and by estimating the average income in each class). One refers to the early empire period (14 CE) and proposes a Gini of income inequality in the range of 0.364–0.394 (Milanovic, Lindert, and Williamson 2007, p. 77). The second relates to the apogee of the Roman Empire (150 CE) and indicates a higher Gini of 0.413 (Scheidel and Friesen 2009; Scheidel 2017, p. 78). However, as argued by Milanovic (2019, pp. 11–12), since the underlying assumptions are similar these estimates should probably not be taken as indicative of different periods in Roman history, and the more recent social table by Scheidel and Friesen should be preferred. Interestingly, these estimates of income inequality for the Roman apogee are in line with the Gini of 0.4–0.45 proposed by Ober for the Athenian society of the late fourth century BCE (Ober 2015, p. 91).

Milanovic also combined the social table information with new estimates of inequality in average income between Roman provinces during 14–700 CE to produce a tentative reconstruction of the trend in interpersonal income inequality during the entire period (Milanovic 2019). As can be seen in figure 1, according to this reconstruction a phase of inequality growth during 14–150 (which goes hand-in-hand with growing prosperity and imperial expansion) was followed by a long phase of inequality decline: from a Gini of about 0.4 around 150 CE to a bottom of 0.13–0.15 reached by 600 or 700 CE. Income inequality decline accompanied the decline of the Roman Empire and the dissolution of its Western component. At the same time, a very substantial drop in material welfare occurred, as income per capita reportedly fell from a level of about double subsistence to one barely above subsistence. According to Milanovic,

> Roman decline in both average income and inequality was, it seems, a unique phenomenon. Never before and never after had people of different generations been faced by a movement from a reasonably complex and prosperous but highly unequal society to a much poorer, primitive and more equal [one] (Milanovic 2019, p. 13).

Regarding wealth inequality in Roman times, we know much less, but the available evidence seems to roughly match the above trends in income inequality. The late Republican–early Imperial times seem to have been characterized by growing wealth concentration, from circa 200 BCE to 100 CE. This if we take as an indicator the size of the largest fortunes, which rose by a factor of 40 between circa 150 BCE to 50 BCE (from 4–5 million to 200 million sesterces), then doubled again by the first century CE reaching 300–400 million sesterces. In the following centuries the tendency seems to have stopped (Scheidel 2017, pp. 71–75), until the collapse of the state led to a very substantial reduction in wealth inequality. There is some additional evidence from archaeology of a reduction in wealth inequality after the fall of the western Roman Empire. In particular, the analysis of the distribution of house sizes suggests a reduction in the relative

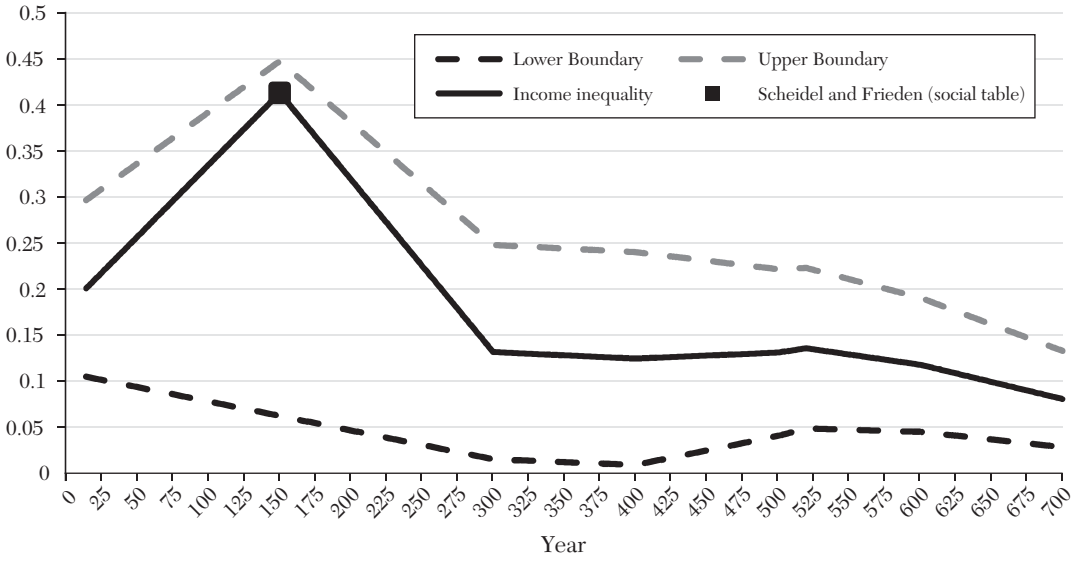

Figure 1. Income Inequality in the Roman Empire, 14–700 (Gini indexes)

Notes and sources: Lower and upper boundary estimates provided by Milanovic (2019). Central estimate for income inequality obtained by assuming valid the point estimate of the Gini index coming from Scheidel and Friesen's (2009) social table for the year 150, and by assuming the mid-point between upper and lower boundaries for the other dates.

advantage not only of the economic elite, but also of the middle and upper-middle strata of society. In Britain, for example, the Gini index of house sizes, after rising from a level of 0.32 in the Iron Age to 0.52 in Roman times, fell back to just 0.4 in the early Middle Ages (Stephan 2013, p. 90; Scheidel 2017, pp. 265–69). Italy followed a similar path, although with lesser swings (the Gini index of house sizes was 0.5 in pre-imperial times, 0.58 in imperial times, then fell to 0.49 in the early Middle Ages), as did North Africa (Stephan 2013, p. 127, 172). According to Scheidel, this is proof of the leveling power of state collapse, as is further discussed in section 3.

For the first centuries of the Middle Ages, we have even less information than for the classical age. Interesting exceptions are the social tables available for early tenth-century Iraq (van Bavel 2016, p. 73) and for Byzantium circa 1000 (Milanovic 2006, p. 465), from which a Gini index of income inequality of 0.59 and 0.41–0.43 respectively can be calculated. A Gini of 0.59 would make medieval Iraq "one of the most unequal societies recorded in history, with a level of income inequality comparable to the most notoriously unequal countries in world history" (van Bavel 2016, p. 72), although of course, given the relatively poor quality of the information available for this period and area, this estimate and others of its kind ought to be considered highly hypothetical. It is only from the late Middle Ages that the availability of useful documentation improves dramatically, at least for some areas of Europe.

2.2 *Medieval and Early Modern Times*

From the late Middle Ages, the surviving archival documentation allows us to produce much more reliable estimates of economic inequality, of both income and—more frequently—wealth. Indeed, some of these estimates are very similar in nature (and not necessarily poorer in quality) compared to what is commonly used for contemporary societies. However, our knowledge of levels and trends in preindustrial inequality was extremely limited until recently, and basically consisted of the pioneering works of Herlihy (1967, 1968, 1978) on fourteenth- and early fifteenth-century Tuscany; Soltow and van Zanden on the Dutch Republic from the sixteenth century (Soltow 1989, van Zanden 1995, Soltow and van Zanden 1998); Lindert, Williamson, and, again, Soltow on seventeenth- and eighteenth-century Britain (Soltow 1968; Lindert and Williamson 1983; Lindert 1986, 2000); and beyond Europe, of Hanson Jones (1980) on eighteenth-century America.

The situation has changed entirely during the last decade, thanks to the efforts of economic historians who, by means of extensive campaigns of archival research, have increased manifold the overall amount of information available. Usually these studies relied upon fiscal sources to reconstruct wealth distributions. So far, the sources most widely used have been the property tax records, particularly widespread in southern Europe. Usually called *estimi* in Italy, *estimes* in Catalonia, cadastres in France and similarly elsewhere, they provide information about the taxable wealth owned by each household. Real estate (lands and buildings), which was by far the main component of wealth in preindustrial rural societies, is always included. Sometimes these sources provide a more exhaustive picture of overall wealth, for example, capital invested in trade is often recorded. The main shortcoming of the property tax records is that they usually omit the propertyless, that is, households with no taxable wealth. When present, such households have to be removed from the distributions in order to produce measures as homogeneous as possible, however they are usually very few (3–7 percent of the total), as even tiny properties were recorded (like a small orchard or a fraction of vineyard). Consequently, although the exclusion of the propertyless from inequality measurement leads to systematic underestimation of inequality levels, the distortion is very limited.[3] More importantly, empirically we find that including the propertyless does not change the direction of the trend. Exception made for the propertyless, the *estimi* provide an excellent coverage of the entire society, without significant changes in time (see Alfani 2015, 2017 and Alfani and Di Tullio 2019 for further discussion).

For the Low Countries, a consolidated literature has made use of rental value of houses to estimate income inequality (see van Zanden 1995, Soltow and van Zanden 1998 for further discussion). The situation is more scattered in other European areas. In Germany, sources fairly similar to the Southern European property tax records exist, which allow one to study wealth inequality (Alfani, Gierok, and Schaff 2020; Wegge 2020). In Britain, the available fiscal sources are more scattered in time, and present specific challenges due to high levels of exemption leading to a large part of the population not being recorded. This is why

[3] For example in the city of Padua in Northeastern Italy, during the sixteenth and seventeenth centuries, the distortion to the level of the Gini index varied from a minimum of 0.006 Gini points in 1575 (from 0.788 including the propertyless to 0.794 excluding them) to a maximum of 0.019 in 1627 (from 0.819 to 0.838). The situation was similar in the rural areas surrounding the city (the *contado*). There, the propertyless were recorded in 1627 and 1694 only and adding them to the distribution increases the Gini by 0.008 and 0.019 points respectively (Alfani and Di Tullio 2019, pp.103–05).

scholars working on Britain tended to resort to social tables (Lindert and Williamson 1983, Lindert 2000, Allen 2019) or probates (Clark 2010, Clark and Cummins 2015). Wills and probates, however, have the undesirable characteristic of referring mostly, and sometimes almost exclusively, to the richest part of the population. Which is not to negate their usefulness when other historical sources are not available—probates, for example, are being used in a very promising way to study inequality in Sweden (Bengtsson et al. 2018) and in Ottoman lands (Coşgel and Ergene 2012; Canbakal, Filiztekin, and Pamuk 2018) by applying appropriate resampling techniques.

Overall, this recent research has provided enough evidence to establish two previously unknown "stylized facts" about preindustrial inequality in Europe in the period 1300–1800:

(i) From circa 1450 or 1500 until 1800, economic inequality (of both wealth and income) has tended to increase almost monotonically across almost all of Europe.

(ii) Before 1450, we find a phase of sustained inequality decline triggered by the Black Death epidemic of 1347–51.

The first stylized fact is clearly visible in figures 2a and 2b, where two of the most popular inequality measures (the Gini index and the share of the top 10 percent) are presented for some Italian states, the southern Low Countries (present-day Belgium), and the northern Low Countries (present-day Netherlands). These are the only European areas for which reconstructions of inequality dynamics across large areas built with homogeneous methods are currently available (all the reconstructions have been obtained by applying the method introduced by Alfani 2015, with the exception of the northern Low Countries for which the data come from van Zanden 1995). The measures refer to wealth inequality for Italy and to income inequality for the Low Countries. As wealth always tends to be more concentrated than income, it is more proper to compare the trends, not the levels. However, as land was usually the main source of income for the vast majority of the population, for most preindustrial societies wealth inequality can be considered a decent proxy for income inequality (see Lindert 1991, p. 215, 2014, p. 8; Alfani 2015, pp. 1062–63; Alfani and Ammannati 2017). Also note that the tendencies at the top of the distribution (here shown by the share of the top 10 percent) tend to determine the overall trend in inequality as measured by Gini indexes. This additional "stylized fact" about preindustrial inequality is perfectly reproduced in contemporary societies (Atkinson, Piketty, and Saez 2011; Alvaredo et al. 2013).

Of the available time series referring to an entire state or region, the longest one is that of the Sabaudian State (Piedmont) in northwestern Italy (cities only). There, before the Black Death a relatively quite high wealth inequality was found, with a Gini index of 0.715. By 1350, immediately after the terrible pandemic, it had fallen to 0.669. Decline continued in the following years, reaching the absolute minimum value of 0.609 around 1450. But moving from the late Middle Ages to the early modern period, inequality decline was replaced by inequality growth, which continued for about two and a half centuries. Pre-plague inequality levels were exceeded only by the mid-seventeenth century. In the cities of Piedmont, after having temporarily stalled during the first half of the eighteenth century, inequality growth became intense again from around 1750, reaching a peak level of 0.777 by 1800. But if we look at the series for the entire region, we get a picture of steep and monotonic inequality growth throughout the eighteenth century, with a final level reported for 1800

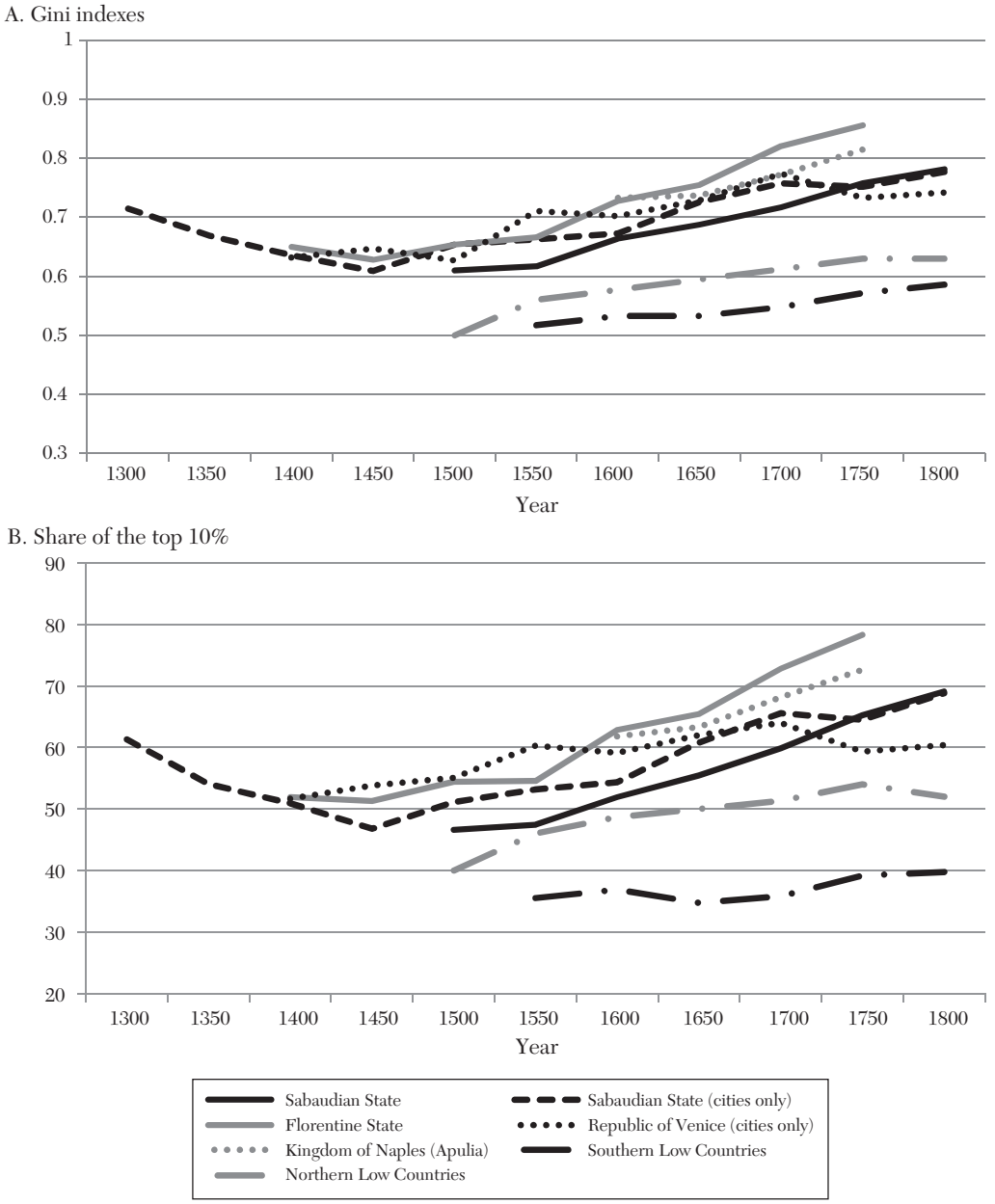

Figure 2. Long-Term Trends in Economic Inequality in Italy and the Low Countries, 1300–1800

Notes: The series refer to wealth inequality (excluding those with no property) for the Italian states and to income inequality for the southern and northern Low Countries.

Sources: Alfani (2015) for the Sabaudian state, Alfani and Sardone (2015) for the Kingdom of Naples, Alfani and Di Tullio (2019) for the Republic of Venice, Alfani and Ryckbosch (2016) for the Florentine state and the southern Low Countries, and van Zanden (1995) for the northern Low Countries.

that was even slightly higher than that found in the cities (0.782). The share of the richest 10 percent followed the same path as the Gini index (the richest owned 61.3 percent of all wealth in 1300, 46.8 percent in 1450, and 68.9 percent in 1800). These tendencies are analogous to those observed for other Italian states (Alfani 2015, 2017). Regarding income, a tendency for inequality growth throughout the early modern period is found across the Low Countries. In the northern Low Countries, the Gini index grew monotonically from 0.5 around 1500 to 0.63 in 1750–1800 (van Zanden 1995). In the southern Low Countries (Belgium), the Gini grew monotonically from 0.517 around 1550 to 0.586 around 1800 (Alfani and Ryckbosch 2016).[4]

Only for six other European states/regions—Britain (England and Wales), Finland, Poland (Voivodeship of Cracow), Portugal, Spain (Palencia province), and Sweden—do we have measures of inequality levels across broad territorial aggregates. Portugal is an exceptional case in many respects and will be discussed later. England and Wales stand out for having a set of estimates of income inequality covering (albeit quite unevenly) a very long period. Milanovic, Lindert, and Williamson (2011) estimated an income Gini of 0.367 for 1290, based on a social table introduced by Campbell (2008). A subsequent revision of that social table, by Campbell and his coauthors, led to estimating a somewhat lower Gini of 0.33 for 1290, as well as to producing a declaredly "provisional" social table for 1381 that would imply about the same level of income inequality as in 1290 (Broadberry et al. 2015). In the absence of intermediate observations, we do not know whether the Black Death had a less intense redistributive impact in England and Wales compared to continental Europe, or whether inequality had fallen significantly in 1348 and the subsequent years but had already recovered its pre-plague levels by 1381. A long gap in the estimates follows, until 1688, for which, based on Gregory King's social table, Lindert estimated an income Gini of 0.556, slightly declining to 0.522 in 1759 but then rising considerably, to 0.593, by 1801–03 (Lindert 2000, p. 175). A recent revision by Allen (2019, pp. 109–11) based on the same original material argues for stable inequality in the first phase, with a Gini of 0.54 in 1688 and 0.53 in 1759, and confirms the sharp rise in the last four decades of the eighteenth century, up to 0.60 in 1798. It should be noted that the social tables currently available for England and Wales, and especially those for 1290 and 1381, are much aggregated and depend on assumptions about a number of parameters (for example, average household size or class structure) that can have a significant impact on inequality measures. Consequently, they should be interpreted with extra care. This being said, the available estimates for income inequality in England and Wales do suggest quite large overall inequality growth from the late fourteenth to the late seventeenth century (from a Gini of 0.33–0.37 to one of 0.54–0.56), growth that after a temporary stop resumed from the second half of the eighteenth century. We know less about wealth inequality, however, an estimate of the share of wealth of the richest 10 percent of households shows a similar trend (82.7 percent in 1670, 80.8 percent in 1700, 86.0 percent in 1740, and 83.4 percent in 1810: Lindert 1986, p. 1145).

For Sweden and Finland the available estimates cover only wealth, and only for the second part of the eighteenth century,

[4] It is entirely possible that the monotonic character of the series is also the result of the few data points in the aggregate reconstructions (one every 50 years). Denser data points would probably show some ups and downs (compare with the community-level series shown in figures 3 and 4), but these short-run dynamics would not change the clear tendency toward inequality growth in the long run visible from figure 2.

with a reported Gini of 0.79 in Sweden in 1750, growing to 0.84 by 1800 (Bengtsson et al. 2018, p. 773), while in Finland the Gini would be 0.89 in 1750, growing to the very high level of 0.94 by 1800 (Bengtsson et al. 2019). Estimates for Spain and Poland refer to specific regions only and cover just one year. For Poland (Voivodeship of Cracow), we have a reliable estimate of income inequality built from a social table for the year 1578 only, when the reported Gini is 0.53 (Malinowski and van Zanden 2017). For Spain, we have an estimate of income inequality for the Province of Palencia, based on the famous Ensenada Cadastre, a very advanced fiscal census conducted during 1749–59 with the aim of facilitating the introduction of a "single tax" (*única contribución*) proportional to the household income. This bold attempt at fiscal reform was ultimately doomed (due to the excessive complexity of the assessment procedures and the resistance of the privileged strata of society), but it has produced a vast amount of valuable archival documentation. So around 1750, in the Province of Palencia the Gini index of total income inequality was 0.485. If we look at the single components, the Gini of land income inequality has been estimated at 0.782 and labor income inequality at 0.485 (Nicolini and Ramos Palencia 2016a). Unfortunately, the Ensenada Cadastre was discontinued and could not be used to study inequality trends. For central Spain and in particular for a group of rural communities in the area surrounding Madrid, a still-provisional reconstruction of trends in wealth inequality based on a tax with Arabic origins, the alcalabas, provided evidence of a sharp inequality increase between 1500 and 1840, although it was temporarily interrupted by a phase of decline in the first part of the seventeenth century (Fernández and Santiago-Caballero 2013).

For other European areas, the currently available information about inequality trends in preindustrial times regards almost exclusively wealth, and specific cities/towns only (although attempts at producing aggregate measures for these areas, too, are currently underway, for example for Germany: Alfani, Gierok, and Schaff 2020). Figure 3 provides a selection of the longest-available series of wealth Ginis for cities in France, Germany, and Spain. The tendency for continuous inequality growth is clear everywhere for the fifteenth, sixteenth, and eighteenth centuries, less so for the seventeenth when some series show a temporary drop in inequality, possibly due to the redistributive consequences of the terrible plagues affecting southern Europe in that period (Alfani and Murphy 2018) or, in the case of Germany, to the ravages of the Thirty Years' War in 1618–48 (Alfani, Gierok, and Schaff 2020).

Beyond Europe, the only available regional reconstruction predating 1800 regards the United States on the eve of the Revolution. The Gini index of income inequality would have been 0.441 in 1774 (for the thirteen colonies), rising to 0.511 in 1860 (Lindert and Williamson 2016). For wealth, we only have an estimate for 1774, when the Gini equaled 0.694 (free households only) (Lindert 2000, p. 188, based on data from Hanson Jones 1980). As per income, the tendency in the following decades was probably for an increase in wealth inequality, which seems confirmed by estimates of the wealth share of the richest 10 percent, growing from 59 percent in 1774 to 65.14 percent by 1870 (the 1870 estimate is by Sutch 2016, who unfortunately does not provide a Gini index). As recently underlined by Lindert and Williamson (2016), overall these new estimates characterize the early United States as one of the most egalitarian areas of the Western world, as in the mid-eighteenth century the income Gini index was about 0.44, well below the 0.52–0.53 reported for England and Wales, the 0.63 of Holland, and the 0.57 of the southern Low Countries, and even the 0.485 of the rural Spanish Province of Palencia.

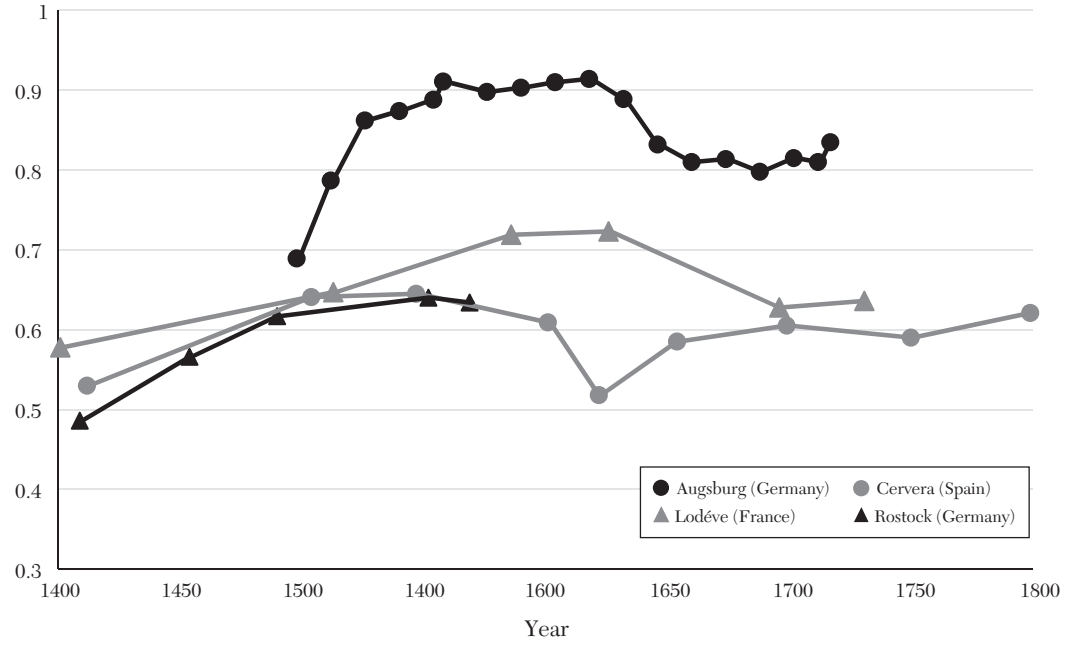

Figure 3. Long-Term Trends in Wealth Inequality in France, Germany, and Spain, 1400–1800

Sources: Economic Inequality across Italy and Europe, 1300–1800 (EINITE) database and the publications mentioned in the main text.

Overall, the evidence available for all European areas supports the "stylized fact" that inequality, of both income and wealth, tended to grow from the late Middle Ages to the end of the early modern period. So far, the only exception seems to be Portugal, for which Jaime Reis has provided some evidence of declining income inequality from 1565 onward. Unfortunately, his reconstruction covers only three dates and uses a Theil index (in its decomposed version), making it difficult to compare with inequality levels usually expressed by means of Gini indexes and the related percentiles. Nonetheless, the trend is clear, as a Theil of 1.336 in 1565 would decline to 0.775 by 1700, but then rise again to 0.978 by 1770. According to Reis, who refers to this as Portugal's "deviant behaviour," inequality decline during the early modern period was presumably the consequence of "a long wave of agriculture-based economic expansion during which the demand for labor mostly ran ahead of that for land" (Reis 2017, p. 21). However, given the long distance between observations, there is some residual doubt about Portugal's exceptionality—as the declining phase might in fact be shorter, analogous to the above-reported instances of a temporary slump in inequality during the seventeenth century.

We could also wonder whether the changes in wealth and income inequality observed across time for preindustrial communities and societies are statistically significant. Of course, this question makes sense only if we allow for some imprecision in the point estimates. Possible sources of imprecision include mistakes or omissions by those who kept the original records, or

by the researchers who laboriously collected the information from handwritten sources preserved in archives. Indeed, we could also wonder whether the notaries and the ad hoc commissions drafting the fiscal records might have voluntarily altered the estimates—but the high level of social control over the estimation procedures typical of medieval and early modern times, which might lead to open rebellion due to suspicion of malfeasance and to immediate revision of the estimates (like in the Italian city of Chieri in 1579: Alfani 2015, p. 1064), suggests that voluntary alteration of estimates is at most a minor issue. One possible (but imperfect) way of answering this kind of concern, as well as the more general concern of whether changes in the Gini indexes are statistically significant, is using bootstrap methods to construct confidence intervals (for applications of this procedure to data on historical inequality see Steckel and Moehling 2001 and Santiago-Caballero 2011).[5] An example of this is provided in figure 4, which covers one of the communities for which the longest and most detailed time series of inequality measures is available: Poggibonsi. This was a medium-sized rural village in the Florentine countryside, with a population of more than 3,500 before the Black Death. Its population fell to about 2,700 in the aftermath of the plague and then continued to slowly decline, reaching a low of about 700 in the mid-seventeenth century and then recovering to about 1,500 by the end of the eighteenth century. As figure 4 clearly shows, the overall multi-secular trend followed by Poggibonsi is robust to this kind of statistical test. Indeed, low population is compatible with pretty tight 95 percent confidence intervals (in 1621, when the population was close to the recorded minimum, the estimated wealth Gini was 0.659, with a standard error of 0.023 and a 95 percent confidence interval set at 0.613–0.705). This conclusion stands a fortiori for cities and territorial aggregates whose distributions consist of a larger number of observations and whose inequality measures are consequently less dependent upon specific observations. For example, in the Tuscan city of Arezzo in 1558 (7,000–7,500 inhabitants), to an estimated wealth Gini of 0.659 corresponded a standard error of 0.012 and a 95 percent confidence interval set at 0.626–0.675.

Discussion of the second stylized fact is perfectly introduced by the case of Poggibonsi, which shows a deep and indeed statistically significant inequality decline after 1348 (note that in this Tuscan village, inequality growth resumed from the 1380s, hence earlier than in the previously discussed cases). This being said, evidence of the distributive impact of the Black Death is admittedly much scarcer (since fewer

[5] Bootstrap methods are based on repeated resampling by random draws with replacement from the original observed distribution. Consequently, they do quite effectively allow to keep in check problems related to imprecise estimation, occasional mistakes in data transcription from handwritten sources, and so on. They do also provide meaningful insights in the statistical significance of changes in inequality levels across time. But as resampling is performed on the original *observed* distribution, these methods could not solve problems related to the unobservability of specific portions of the *real* distribution (usually the lower part), as well as to changes in time in the portion of society that can be observed, so generally speaking it is advisable that confidence intervals produced by bootstrap methods be interpreted conservatively. Note that all problems related to the actual social coverage of the observed distributions can be solved, or at least kept under control, only by careful analysis of the data and the related historical documentation and, when necessary, by standardization of the data to make the distributions directly comparable. Recent research on preindustrial inequality has paid considerable attention to this issue: as an example, see the case of fourteenth-century Tuscany discussed later (see Alfani 2017, Alfani and Ammannati 2017, and Alfani and Di Tullio 2019 for further discussion of standardization techniques). Also note that all the time series of inequality measures reported in this article can be safely assumed to cover homogeneous portions of society across time (in the case of the Southern European *estimi* or cadastres, this is in fact the entire society bar for a small percentage of the propertyless: see discussion earlier in this section).

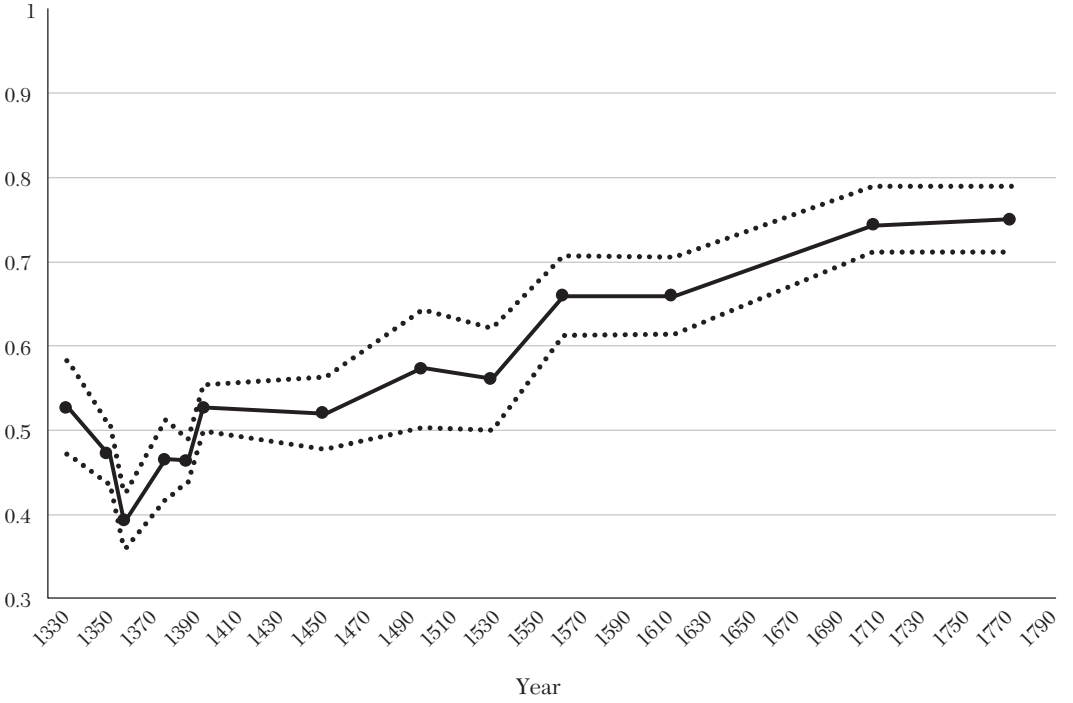

Figure 4. Wealth Distribution with 95 percent Confidence Intervals in Poggibonsi, 1338–1779

Sources: Alfani and Ammannati (2017), with new elaborations to produce confidence intervals.

archival documents for such an early period are available) compared to that supporting the fist stylized fact, and involves mostly the Sabaudian State and the Florentine State (Alfani 2015; Alfani and Ammannati 2017), and partly the southern Low Countries (Ryckbosch 2016). To these, still-provisional results about the Marches and Romagna in Italy, as well as the city of Toulouse in France, can be added. Although only for the Sabaudian State we have an aggregate series covering the pre– and post–Black Death, for each of these areas we can observe some specific communities (both urban and rural) before and after the terrible mortality crisis. In all such communities we find immediate inequality decline, triggering a phase of historically very low inequality levels (indeed, we find after the Black Death the lowest levels of wealth inequality reported in European history). In the Tuscan city of Prato, the Gini index of wealth inequality contracted from 0.703 in 1325 to a very low level of 0.591 by 1372. Again in Tuscany, in Poggibonsi the Gini index was 0.550 in 1338, but only 0.474 in 1357 and further declining to 0.395 by 1365 (Alfani and Ammannati 2017; also see figure 4). In the city of Chieri in Piedmont, the Gini was 0.715 in 1311, declining to 0.669 by 1437 (Alfani 2015, p. 1078), while in the city of Toulouse in southern France, the decline was from 0.752 in 1335 to 0.606 in 1398. Indeed, if we compare the pre– and post–Black Death distributions of wealth, we find Lorenz dominance, as can be seen in figure 5 for the cases of Prato and Toulouse. This

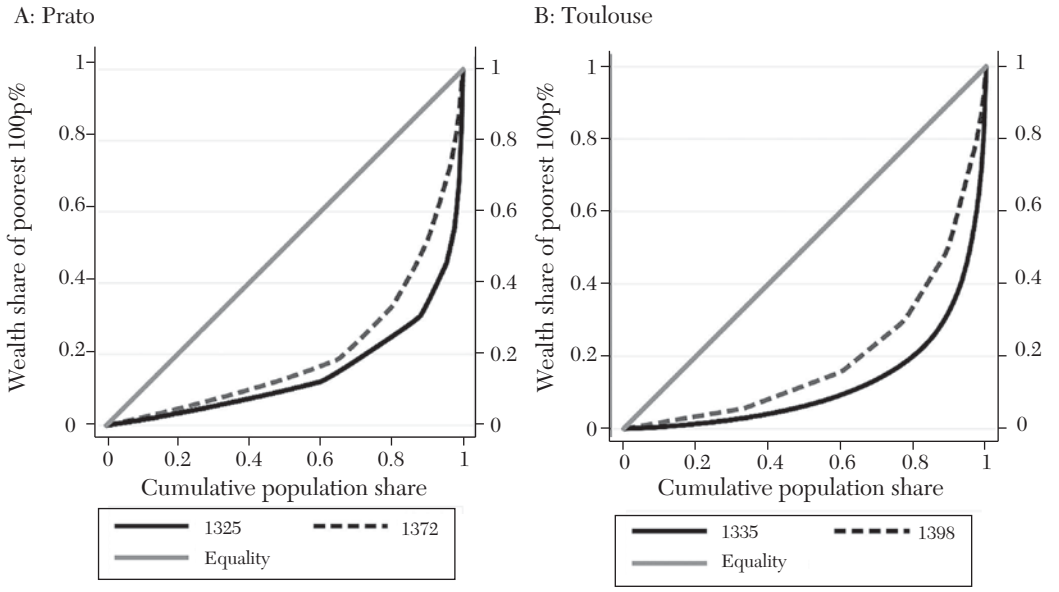

Figure 5. Wealth Distribution in the Pre– and Post–Black Death Years (Lorenz Curves)

Sources: Alfani and Ammannati (2017) for Prato (and other Tuscan cases); EINITE database for Toulouse.

means that the richest part of the population was losing wealth shares to the advantage of all other strata. For example in Prato, the share of the richest 10 percent declined from 65.7 percent to 48.1 percent, while in Toulouse the decline was from 67.2 percent to 48.6 percent. Inequality decline after this, which was the most terrible mortality crisis affecting Europe in the period considered here (having killed up to 50 percent of the population of the continent; Alfani and Murphy 2017, pp. 316–18), is in many respects the outcome that we would expect, as it goes hand in hand with increasing real wages (documented by Pamuk 2007) following the sharp reduction in the offer of labor and lowering income inequality. A decline in wealth inequality (and consequently, in capital income inequality) is also to be expected: in a context of relatively low prices of real estate, due to the unusual abundance of property being offered on the market in the aftermath of the Black Death, the increasing real wages provided a larger part of the population with the means to acquire property.

Although a decline in economic inequality after the Black Death seems in line with what we should expect based on standard economic reasoning, it is a nontrivial result and for two reasons. First, because it contradicts what had been argued by a pioneer in studies of medieval inequality, David Herlihy. Based on medieval *estimi* for two Tuscan villages as well as the famous Florentine *"catasto"* of 1427—another bold and soon-discontinued attempt at fiscal reform—Herlihy (1967, 1968) claimed that the Black Death had triggered a growth in inequality as a consequence of a weakening in numbers and collective assets of the "middle class."

The tendency was further strengthened by inheritance systems and managerial factors (Herlihy 1967).[6] However, after the first evidence of inequality decline was found for Piedmont/Sabaudian State, economic historians focused on inequality in Tuscany during the fourteenth century specifically to discover why there was an apparent contradiction with the influential thesis put forward by Herlihy. The conclusion of this research (some results are reported above) was that Herlihy had failed to standardize his sources to take into account the fact that the *catasto* includes the propertyless, while the *estimi* do not. If standardized correctly, the available information confirms that the Black Death triggered a decline in inequality in Tuscany, too (Alfani and Ammannati 2017).[7] The second reason why inequality decline after the Black Death is not a trivial result is that no similar large-scale reduction in inequality seems to have been triggered by subsequent plagues. This raises some questions about the causal factors of inequality growth and decline in the long run of history, as is discussed in the next section.

For all the recent research on preindustrial inequality trends, we are still in the condition of badly needing more data—as the current coverage of Europe is patchy, and the situation is even worse for other areas of the world. For Europe, ongoing projects seem to guarantee that new data will continue to flow in. This is expected to consolidate the evidence about the stylized facts mentioned above, as well as possibly leading us to detect other regularities. In a different direction, availability of more data across the European continent will allow us to explore regional differences in long-term developments—an objective that until now has been very difficult to achieve, with an exception made for some attempts at comparing levels and trends in "inequality extraction," as discussed in section 4. Close to Europe, particularly intense research is underway for the areas ruled by the Ottoman Empire. This is especially the case for Anatolia, where trends in wealth inequality have been reconstructed for Bursa and Manisa from the sixteenth to the nineteenth century (Canbakal, Filiztekin, and Pamuk 2018) and for Kastamonu during the eighteenth century (Coşgel and Ergene 2012). Both of these studies report an overall tendency for inequality to grow during the early modern period, similar to what has been found in Europe.

For East Asia, an estimate of income inequality based on a social table has been produced for late-Tokugawa Japan (Saito 2015), and research is underway on wealth inequality trends from the seventeenth century (Drixler 2018, Kumon 2018). Progress has also been made in mapping inequality trends in eighteenth and early nineteenth-century China (Hu 2015, Chen 2017). For Africa, an attempt has been made at estimating income inequality in the Dutch Cape Colony at various points during the eighteenth century (Fourie and von Fintel 2010, 2011). Finally, the Americas; recent research on the United States has been discussed above. For central and southern America, although most research has focused on the nineteenth and twentieth centuries,[8] some studies provided insights into earlier epochs (for example, Dobado González and García Montero 2010, Williamson 2010) and there are signs of a growing interest in using

[6] Herlihy generalized from these results: "the highly skewed distribution of wealth in the fifteenth-century was a comparatively new development, and (...) wealth had been somewhat more evenly distributed across the population in the thirteenth century, before the onslaught of the great epidemics" (Herlihy 1978, p. 139).

[7] Note that this does not contradict what has been stated earlier (that including the propertyless for *all* observations in a series does not alter the reconstructed trends in inequality), as Herlihy was including *in the same series* observations with and without the propertyless.

[8] For a synthesis, see Prados de la Escosura (2007).

available historical sources to produce better measures of preindustrial income and wealth inequality. Quite clearly, for other continents we are still far from having the detailed information now available for Europe, however there is reason to hope that the situation will improve significantly over the next few years.

3. *Explaining Preindustrial Inequality Change*

3.1 *Economic Growth: The Usual Suspect (but Probably Innocent)*

In his article on Holland from 1500, which played a crucial role in fostering the systematic study of preindustrial inequality trends, van Zanden (1995) argued that the continuous inequality growth he detected was the direct consequence of economic growth:

> The case study of Holland … showed that economic growth during the golden age led to a more unequal distribution of income… In a sense the increase in inequality…is over-explained: urbanization, an increase in the skill premium, and changes in the functional distribution of income all seem to have played a role (van Zanden 1995, p. 661).

He also argued that a kind of "super-Kuznets curve" connected preindustrial and industrial economic growth. For a while, and in the absence of other studies, this led to the credo that in preindustrial times, inequality of both wealth and income moved in parallel with economic growth. This is in line with a view of inequality increase as a "benign" phenomenon (i.e., as a side-effect of increasing prosperity) which is shared by many economists, from Kuznets to Deaton (2013). Recently, van Bavel—again, based on data from the Dutch Republic—argued for an empirical connection between economic growth and inequality, but cast it in a much less positive light. For him, inequality growth during the early modern period was the outcome of the development of market economies, but an initial phase of growing prosperity was invariably followed by one of "increasing social polarization, institutional sclerosis, markets that become increasingly skewed toward the interest of market elites, and economic growth stagnating" (van Bavel 2016, p. 251).[9]

If we look at the theoretical foundations of why economic growth acts as the "usual suspect" in attempts at explaining preindustrial inequality growth, of both income and wealth, it is quite clear that Kuznets (1955) himself is one of the main sources of this idea. Kuznets, however, also forecast inequality decline after certain levels of development had been reached—and indeed, looking at economic theory, it is not obvious why we should expect that long-run economic growth would lead to inequality growth. Shortly after Kuznets had made his point, Solow (1956) introduced his famous two-factor growth model, arguing that in the long term, economic growth would produce convergence in the income of rich and poor countries. Two decades later, Tinbergen (1975), having explained the existence of income inequality as a race between skill-biased technological progress and education, also argued that development, by spreading education, would ultimately lead to a decline in the skill premium and consequently, to a decline in inequality. These are just examples of a more general, and quite too optimistic,[10] attitude

[9] Although van Bavel hints at the possibility that after the onset of economic stagnation inequality could continue growing, the fact remains that for him, in market economies "inequality grows most in the phases in which economic growth is more conspicuous" (van Bavel 2016, p. 261).

[10] Optimistic, at least if we look at the debate about inequality within countries. Regarding inequality *between* countries instead, the apparent lack of convergence had already led to key theoretical developments, and in particular the emergence of endogenous growth theory (for a synthesis, Romer 1994) and later of unified growth theory, discussed in the following.

widespread among economists until well into the 1990s (for a synthesis, Wade 2007, 2014; Milanovic 2016). It should also be pointed out that these models were aimed at explaining modern industrial societies, maybe including the phase of transition toward it (the "Industrial Revolution"), and do not necessarily reflect accurately the conditions of a preindustrial economy. For example, in Solow's simple two-factor model (and in many others), a uniform rate of depreciation is assumed for all kinds of physical capital—but this does not seem to accurately reflect the reality of preindustrial, mostly agrarian societies where land constituted by far the main component of capital (and wealth), and where land depreciation could be effectively avoided, a fact that makes wealth concentration over time easier to achieve.

Somewhat stronger support for the view that there is a positive correlation between economic growth and inequality growth in the long run of history comes from unified growth theory, developed by Oded Galor and his coauthors from the 1990s (for a synthesis, Galor 2011). According to this theory, during the long preindustrial phase—which spans most of human history, as well as prehistory—living standards would be kept close to subsistence level by population growth. This is why, in the context of unified growth theory, the preindustrial phase is usually labeled the "Malthusian epoch." A long transition period would be initiated by a slow increase in the pace of technological innovation, resulting from increases in population size. In Europe, this transition would cover roughly the period 1500–1700 (compare Galor and Weil 2000, p. 808). In distributive terms, although this literature does not specifically describe the early modern period as one of inequality increase, focusing instead on the distributive impact of early industrialization, it is however compatible with such an increase. Indeed, it would result from the same mechanism at work during early industrialization, as early modern technological innovation would lead to human capital becoming relatively more important in the growth process, resulting in an increasing skill premium and leading to slowly growing inequality. In a feedback process, rising inequality would prove beneficial to economic growth, providing incentives toward the spread of education, although this was not a general process yet but was restricted to some sectors of society. This positive feedback would wane and then turn negative at later stages of development (from the second phase of the Industrial Revolution): "Inequality is beneficial for economic growth in economies in which the return to human capital relative to the return to physical capital is low, whereas equality is beneficial for economic growth in economies in which the relative return to human capital is high" (Galor and Moav 2004, p. 1004). Note that growing skill premium was also mentioned by van Zanden (1995, pp. 658–61) as a possible cause of preindustrial inequality growth, although based on relatively limited historical data and pointing at the development of administrations and bureaucracies, not at technological development per se, as the cause of a growing demand for scarce skills.

Whatever its theoretical foundation, the idea that preindustrial inequality growth was just a side effect of economic growth, and maybe even supported such growth, does not fit well the cumulative evidence of the tendency for preindustrial inequality to grow *even* in phases of stagnation or decline. As will be remembered from figure 2, in all European areas for which we have available regional reconstructions of the distribution of income or wealth, we basically find monotonic inequality growth from circa 1450 until the eve of the Industrial Revolution. But in these areas and during this period, economic growth was far from monotonic—indeed, quite often we find centuries-long phases of stagnation. The most obvious cases are the

Florentine State, which followed a path of decline from the early seventeenth century; the Kingdom of Naples, which was an overall stagnant economy from the same period or from even earlier; and the southern Low Countries, which after the Dutch Revolt of 1566–85 remained under Spanish rule and faced almost two centuries of economic decline. Somewhat shorter but significant phases of decline were found also in the Sabaudian State during the seventeenth century and in the Republic of Venice from the middle of that century (for all these areas, see the synthesis and additional historical information in Alfani and Di Tullio 2019, pp. 134–37). Indeed, of all the states in figure 2, only the Dutch Republic was characterized by continuous economic growth during the early modern period. This seems to explain why scholars like van Zanden and van Bavel focused on economic development as the cause of inequality growth, and quite possibly they were right in the specific case of the Dutch Republic—but overall, there is no universal and fairly stable relationship between economic growth and inequality change. This can also be easily detected by looking at the available estimates of per capita GDP presented in figure 6 (which covers those states and areas included in figure 2, as well those from which the cases included in figure 3 were drawn) as indeed, the northern Low Countries/Dutch Republic are the only area where the long-term trend is not mostly flat.[11] Some empirical tests conducted on the Florentine State (Alfani and Ammannati 2017) and on the southern Low Countries (Ryckbosch 2016), as well as a recent study by Milanovic (2018) based on measures of income inequality obtained from social tables, confirm the general conclusion that the correlation between economic growth and inequality growth was (at most) quite weak.

3.2 *The Inner Working of the Economic System and the Functional Distribution of Income*

Overall, the evidence now available seems strong enough to uphold the view that economic growth *was not* a necessary condition for preindustrial inequality growth—hence we have reason to doubt that inequality growth was "benign" in any meaningful sense. However, even leaving aside economic growth strictly meant (i.e., an increase in total or per capita product) it is still possible to conceptualize preindustrial inequality growth as the "natural" outcome of the inner working of the economic system. Indeed, this idea finds fairly strong support among the classical economists, chiefly (and obviously) with Marx (1867), whose "principle of infinite accumulation" is nothing but an explicit forecast of ever-growing inequality. As a matter of fact, Marx was possibly the first to provide an analysis of distributive dynamics in the very long run of history, from preindustrial to industrial times, arguing for increasing inequality (of both income and wealth) as the result of class struggle, progressive concentration of the means of production, and exploitation of the laborers. In preindustrial European history, a crucial transition would be that from feudalism to capitalism, which occurred at the close of the Middle Ages and provided the conditions to start "primitive accumulation," an idea that seems compatible with recent findings about inequality growth from the fifteenth century. For Marx, as for all the classical economists, the fundamental questions regarding distribution

[11] Note that unfortunately, no time series of GDP estimates is available for the single Italian pre-unification states. As detailed above, these states followed partly different growth trajectories during the early modern period. But the overall picture of a flat (or even slightly declining in the long run) trend in per capita GDP coming from the series available for the whole of central-northern Italy does support the view that economic growth could not be presumed to be the main cause of inequality growth in any single Italian state for which we have information about preindustrial distributive dynamics.

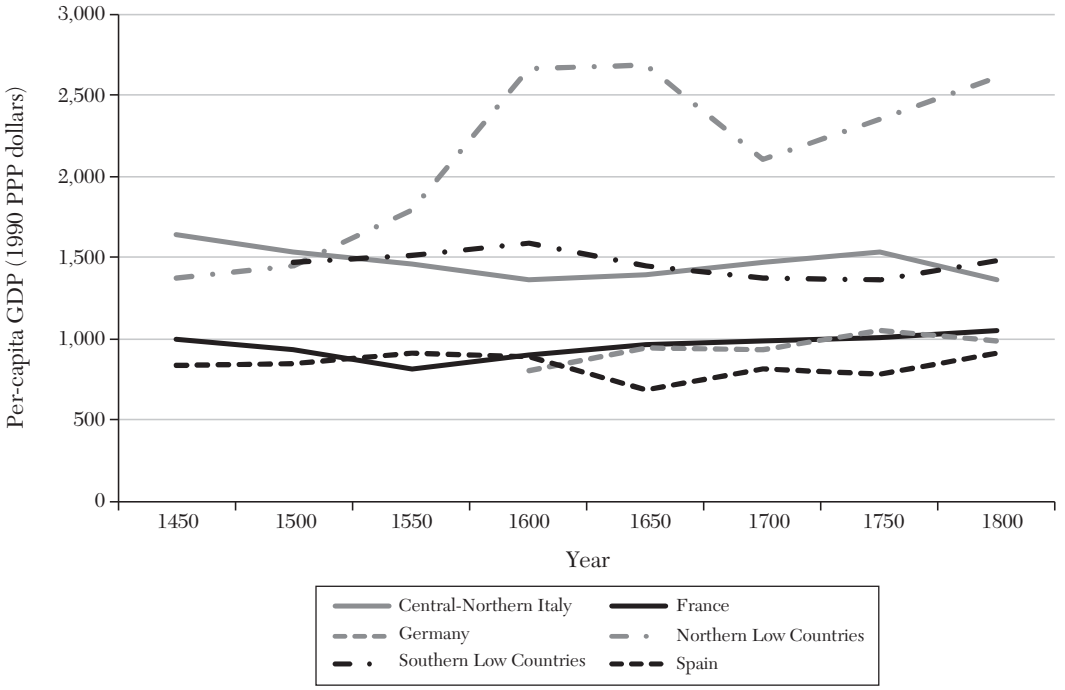

Figure 6. Estimates of per Capita GDP in Selected European Countries, 1450–1800

Sources: Clio Infra Project (2013; see Bolt and van Zanden 2014 for details about the project) with some integrations from the Maddison Project Database (2013), except for France, for which data are from Ridolfi 2016.

had to do with the functional distribution of income between the three basic factors of production: labor, land, and capital (note that the classical economists did not merge land into "capital," as would later become common in neoclassical economics).[12]

The functional distribution of income is also key to another encompassing attempt to explain overall inequality trends in the long run. Piketty, in his recent book *Capital in the Twenty-First Century* (2014) and elsewhere (Piketty and Zucman 2014), focused on wealth/income ratios as predictors of income inequality. Additionally, he argued that as long as the rate of return on capital (r) is higher than the growth rate of national income (g) and as long as wealth stays highly inheritable, inequality (of *both* income and wealth) will continue to increase. Although Piketty had very limited information for the pre-1800 period, in a quite speculative section of his book he did argue for r being constantly greater than g across the world and throughout the period from year 1 to the eve of World War I (Piketty 2014, pp. 445–51). In Piketty's theoretical framework, this amounts to assuming a constantly growing preindustrial economic inequality. Note that as this conclusion depends solely on the

[12] Among social and economic historians, especially in Europe, Marxist ideas were fairly popular until the early 1980s. The better-known example is the debate triggered by Robert Brenner's work (Brenner 1976, Aston and Philpin 1987). For a critical discussion of Marx's views about the transition from feudalism to capitalism and of the related historical literature, see Katz (1993).

relative position of r and g, it is compatible with the empirical finding that during the early modern period, inequality also grew during phases of economic stagnation.

Piketty has been criticized for having failed to define, in a satisfying way, his concepts and the nature of the variables he uses (for example, Lindert 2014), as well as for possible faults in his theory. A particularly controversial point is that he seems to employ a steady-state definition to discuss dynamics (Blum and Durlauf 2015, Ray 2015). For the purposes of this article, it will suffice to mention some problems with Piketty's views specifically on preindustrial inequality. They have to do with insufficient information about certain key variables (r and g included), which often are little more than guesstimates if one covers—as Piketty does—the entire period from year 1 to 1800, but also, and more crucially, with the fact that the view of a constantly growing inequality does not fit some important empirical findings. In particular, the Black Death caused a century-long phase of significant inequality decline. But this historical process does not seem to be compatible with what Piketty argues are the predictions of his model. Indeed, the Black Death is expected to have led to a marked increase in the wealth/income ratio, as it destroyed human capital and only marginally physical and financial capital. Hence, following Piketty, we would expect a further strengthening in the tendency for inequality to grow. Instead, we observe the opposite. One could counter that it is theoretically possible that wealth declined as much as income as a result of steep depreciation of assets, but this seems to be an unlikely scenario, especially considering the crucial role played by land in medieval economies and societies.[13] Moreover, we would still have to explain the inequality *decline* caused by the catastrophe.

While Piketty's model could not explain the sudden, large inequality drop caused by the catastrophe *in the short run* (i.e., in the crisis year and in those immediately following), it is instead compatible—at least on principle—with the further inequality decline observed *in the medium run* (i.e., in the 30–100 years following the catastrophe: see subsection 2.2 about regional differences), as abundance of capital (land included) might have led to lower r and consequently to a condition of $g > r$. However, currently we have no reason whatsoever to believe that after the Black Death the growth rate of national income increased enough to overcome the rate of return on capital. Indeed, in the case of England it has been estimated that during the entire period from the 1340s to the 1470s the mean annual growth rate of GDP was negative: −0.34 percent.[14] This annual average would remain negative as well if the years immediately following the Black Death were excluded from the calculations (Broadberry et al. 2015, pp. 403–04, in particular figure 11.01). For Italy we have less-precise estimates, but for this European area, too, based on the available literature GDP was overall declining, or at most stagnating, more than a century following the Black Death.[15] If we assume g to have been close to zero on the negative side

[13] Indeed, there is fairly abundant evidence of the fact that land remained an extremely valuable and profitable asset throughout most of western Europe, also thanks to labor-saving changes in land use as the reduction in cropland often matched an increase in land use for pastoral husbandry. Moreover, larger wages allowed the consumption of more meat and dairy, to the advantage of landowners (Britnell 2008, pp. 17–18).

[14] It was positive in per capita terms, +0.2 percent, but g is not a per capita variable.

[15] See the estimates provided by Malanima (2011), and particularly the data under the heading "GDP Index" on pp. 205–08. The index (value 1 corresponds to the average for 1420–40) was in the range 1.09–1.51 in the ten years preceding the Black Death, in the 1350s it ranged from 0.93 to 1.21, and continued to slowly decline for the rest of the century. In the 1390s it ranged from 0.82 to 1.01: 20–30 percent lower than that typical of the pre–Black Death period.

in the post–Black Death decades, we would need a markedly negative mean annual rate of return on capital throughout the period in order to achieve $g > r$: and this is highly unrealistic. For example, based on the available estimates of interest rates on long-term government debt, in the Italian republics like Florence or Venice the rates did decline considerably after the Black Death, from about 14 percent to about 5 percent immediately after the plague, and continued to decline for a century or so, bottoming out in the 3–5 percent range, but they never got even close to zero. In European monarchies, rates were much higher before the Black Death (about 20 percent on average) and did not show any tendency to decline before 1400 or 1450 (Epstein 2000, pp. 18–19).

These observations about the inability of Piketty's model to account for inequality reduction after the Black Death are even more relevant considering that another long phase of inequality decline has recently been found at the end of the Roman Empire, as discussed in subsection 2.1. Indeed, the evidence of secular phases of inequality decline seems to run against the prediction of monotonically increasing inequality coming from both Piketty and Galor's unified growth theory.[16] Instead, waves in long-run inequality trends are detectable, as also recently argued by Milanovic (2016). In other words, based on the recent findings discussed in section 2, the actual European historical experience is much more complex than the current models, and requires a different approach.

3.3 *Catastrophes, Political Systems, and Institutions (Taxation and Inheritance)*

Instead of looking for mono-causal explanations or for universal laws, most recent research on preindustrial inequality has proposed a range of factors that, in different moments and areas, could push inequality to grow or decline. The second situation seems to have been historically much less frequent—hence it will be our starting point. As figure 2 suggests, in the entire period from circa 1300 to 1800 the only phase of sustained inequality decline was that following the Black Death, as evidenced by all the studies related to areas for which useful fourteenth-century information was available (Alfani 2015, Ryckbosch 2016, Alfani and Ammannati 2017). A reduction in income inequality is indeed what we should expect given that for a long period, labor became scarce, leading real wages to increase and to a rebalancing of labor and capital income. As well, there is also evidence that severe labor shortages led to a reduction in the skill premium (Pamuk 2007, p. 303). Consequently, labor income itself came to be more evenly distributed. Instead, the interpretation of the impact of the Black Death on wealth inequality requires us to take into account not only the conditions of the land and housing market (with more property being offered and with a larger part of the population becoming able to acquire it, thanks to growing real wages), but also the dynamics of inheritance. The Black Death caught the European population (and presumably also other world populations) unprepared. Given the prevalence of partible inheritance in many European areas, the mortality crisis caused by itself the spread of patrimonies among many inheritors, as well as a patrimonial fragmentation that might have induced the inheritors to sell their recently acquired property (feeding the above-described phenomenon through which relatively poor strata of the population were able to gain access to property). This is important because we do not find a similar trend toward inequality decline in later plagues, including the terrible ones that affected southern and Central Europe in the seventeenth century,

[16] Scheidel (2017, p. 52) has also criticized Piketty for similar reasons.

killing 30–50 percent of the population in the worst-affected areas. It has been argued that this empirical finding can be explained by the institutional adaptation to a mutated environment, which occurred when it became clear that plague would continue to cause recurrent epidemics in Europe. This institutional adaptation moderated the system of partible inheritance, protecting large patrimonies from fragmentation—and at the same time, entrenched wealth inequality (Alfani 2010, Alfani and Murphy 2017). This also points our attention toward inheritance systems as key institutions to consider when analyzing long-term inequality trends (see below).

Recently, Walter Scheidel (2017) has argued that the Black Death is but one of a sequence of catastrophes leading to inequality decline—from the collapse of the Tang Empire in China and of the Western Roman Empire in Europe and the Mediterranean, to the two world wars of the twentieth century. Indeed, state collapse as an inequality-reducing mechanism in preindustrial times requires some further discussion. In the case of the Roman Empire, this happened mostly during the fifth century, when the state lost control over its provinces in Europe and the Mediterranean area. According to Scheidel (2017, p. 265),

> This dramatic breakdown of Mediterranean unity dismantled the extensive networks of estates owned by a Rome-based top elite that was no longer capable of holding on to possessions outside Italy and eventually in large parts of Italy itself. Intensifying political decentralization effectively wiped out the uppermost tier of western Roman high society.[…] Aristocracies became much more localized in scope and far less wealthy than they had once been.

The abandonment of many country villas and the disappearance of the Roman senatorial families are evidence of this process. Importantly, "postimperial wealth deconcentration was a fairly comprehensive process that was not narrowly confined to those at the very top" (Scheidel 2017, p. 269), but also involved the upper-middle and middle strata of society, as proved by archaeology through the analysis of the distribution of house sizes (see subsection 2.1). Also in the case of the Tang Empire during the ninth and early tenth century, what Scheidel refers to as the "leveling power" of state collapse was mostly the result of the destruction of the wealth of the elite, residing in the capital cities of Chang'an and Luoyang and closely connected to the imperial court (Scheidel 2017, pp. 260–64).

Although there are noteworthy differences in how different kinds of catastrophe led to inequality decline—compare the increase in entitlements of the laborers after the Black Death with system collapse and the downfall of the central elite at the end of the Roman empire—there seems to be general agreement about the ability of large-scale catastrophes to generate inequality decline. In contrast, the factors identified by recent literature as possible drivers of inequality growth after the post–Black Death lull (then, from ca. 1450 or 1500) are much more varied. Beyond economic growth, which has already been discussed, they include institutional and political factors as well as demographic factors.

A first aspect to mention is surely the connection between state building and the development of an elite controlling political power, and the progressive concentration of state resources. This is, in fact, the other side of the coin of state collapse. In subsection 2.1, the connection between the emergence of the first states and the spread of economic inequalities has already been underlined. In the Middle Ages and in the early modern period, political power and preferential access to state institutions continued to be an important path toward personal enrichment. A textbook case is that of the Medici family in

Florence, whose wealth and political power grew together, until (when under Cosimo the Elder, and even more clearly under his son, Lorenzo the Magnificent) their control of the state "public" institutions was so strong that they had become the de facto rulers of Florence. This dominant position became formally recognized in later generations, as the descendants of Lorenzo the Magnificent became Dukes of Florence. Association with the new rulers, which often involved acquiring some public post, became a fundamental path toward entering the Florentine economic elite (Padgett and Ansell 1993, Padgett 2010). The connection between political power and the building of great fortunes in early modern times, especially in the context of large empires, like those built by the Ottomans or the Spanish, or of highly centralized states like the Kingdom of France, has recently been strongly underlined by Scheidel (2017, pp. 80–83).

There is no doubt that in a preindustrial context, political power could be a crucial tool in building a fortune. However, in medieval and early modern Europe, while this might explain a significant part of the tendencies affecting the top rich, we find a much more encompassing process of wealth concentration, which affected the entire society—leading, in fact, to growing polarization: throughout the early modern period, the poorest strata of society became increasingly distant both from the high and the middle strata (Alfani 2015, Alfani and Di Tullio 2019). To understand this process, it is important to look closer at institutional factors, which indeed currently seem to be the most promising path for future inquiries. Of course, this research avenue is connected to that focusing on political power, as processes of state building are crucial institutional developments defining how political power comes to be distributed, while in their turn, those wielding such power will be in the condition of shaping, at least to some degree, public institutions. But it remains important to look at institutions per se, and at how their inner workings might have produced distributive consequences in the long run.

First of all, the importance of the rise of the fiscal-military state has been singled out as a direct cause of inequality growth throughout Europe (and possibly also in the most advanced Asian countries). From circa 1500, the growing cost of warfare increased states' financial needs. In turn, a larger and more efficient military allowed for concentration of coercive power, providing the means to impose a growing fiscal extraction. This led to the deepening of states' fiscal capacity and to increases in the per capita fiscal burden (Bonney 1999, Yun-Casalilla and O'Brien 2012). For example, in the period circa 1550 to 1780, per capita fiscal pressure more than trebled in the Sabaudian State, increased six-fold in France, and almost seven-fold in England and the Dutch Republic. Such increases were able to produce, by themselves, greater inequality as the structure of the preindustrial fiscal systems was overall *regressive*: the effective tax rates paid by those placed at the top were lower, and considerably so, than those suffered by the bottom of society, hence posttax inequality was higher than pretax inequality (exactly the opposite of what we expect today, given that we have become used to progressive fiscal systems).[17] As it has been noted, "[t]his was the consequence of a regime of systematic privilege, enrooted in law and institutions as well as in a culture that favored nobles over commoners, citizens over rural dwellers, and so on" (Alfani 2019, p. 1198).

[17] From being overall regressive and inequality-enhancing, fiscal systems turned to being progressive and inequality reducing only at some point between the second half of the nineteenth century and the first decades of the twentieth. Unfortunately, we lack specific studies of this transition, hence the exact timing is unclear.

The process of the rise of the fiscal-military state and of the parallel increase in the per capita fiscal burden involved all European states independently from their economic conditions, as all had to play the same game if they were to protect themselves or be able to project military power outside their boundaries (Alfani 2015, Alfani and Ryckbosch 2016, Alfani and Di Tullio 2019). This implies that the increase in per capita taxation in the presence of a regressive fiscal system can be taken as a general explanation for the tendency toward inequality growth that characterized the early modern period—indeed,

> the increase in the per capita fiscal burden is a feature of early modern Europe way more homogeneous and continuous in time than any other factor which has been proposed by earlier research as the possible cause of the widespread tendency for inequality to grow. Consequently, we have identified a common factor that surely favoured the increase in economic disparities across the continent (Alfani and Di Tullio 2019, pp. 178–79).

This view is further strengthened by the consideration that the main reasons for collecting more and more resources—war and the service of public debt, itself mostly cumulated for reasons related to war and defense—did not lead to inequality reduction as the consequence of state expenditure, differently from what we are used to today when welfare and social spending represent the largest component of the public budget. On the contrary: as argued by a recent in-depth study of the Republic of Venice, in preindustrial settings, state expenditures further favored inequality growth (Alfani and Di Tullio 2019), although this specific aspect requires further research.

The second reason why institutions deserve particular attention is that inheritance systems seem to be key to determining the outcome of shocks like exceptionally severe plagues. As already mentioned, the Black Death of the fourteenth century did reduce inequality, but this depended upon its broader consequences on the land and labor market, mediated through a specific institutional framework in which the presence of unmitigated partible inheritance systems played a key role. In the period following the Black Death, when it became clear that plagues had become a recurrent problem, institutional adaptation affecting inheritance systems had occurred, aimed at protecting the largest patrimonies from becoming unwittingly dispersed. This explains why the last great plagues affecting Europe, especially in the seventeenth century, did not lead to large-scale and lasting inequality decline (Alfani 2010, Alfani and Murphy 2017, Alfani and Di Tullio 2019). Indeed, this also leads to the conclusion that the impact of epidemics was much less straightforward than imagined by authors like Scheidel.

Moreover, inheritance systems are presumably crucial to determining long-term trends in both income and wealth inequality because they determine the degree of inheritability of wealth. This point has been underlined by Piketty (2014) for contemporary societies, but also by Bowles, Borgerhoff Mulder, and their research group for premodern (or "primitive") societies. Indeed, changes in the degree of inheritability of wealth seem to explain much of the variation in inequality levels detected both through prehistory and when analyzing the conditions experienced by different kinds of small-scale societies today (Borgerhoff Mulder et al. 2009; Bowles, Smith, and Borgerhoff Mulder 2010).

3.4 *Population Growth, Proletarianization, and Urbanization*

Another group of tentative explanations for long-term inequality growth in preindustrial times has to do with demographic factors. The first to provide hints that population growth might lead to inequality growth were

the classical economists. The point of origin can be placed on the well-known argument put forward by Malthus (1798), that the spontaneous tendency for population to grow exponentially, while resources can grow at a maximum at an arithmetic rate, would keep most of the population close to subsistence level (barring short periods of relief, themselves the result of overpopulation-induced mortality crises: the "positive checks" of war, famine, and disease). However, this would lead to inequality growth *only* if a part of the population was somehow sheltered by this process. Otherwise, as is often understood in much of current macroeconomics (including, generally speaking, unified growth theory), in a Malthusian world the steady state would be one of perfect equality—at mere subsistence. This point will be further discussed in section 4, however, from the perspective of the classical economists, class dynamics and ownership of the factors of production can be used to solve this apparent paradox. It was, in fact, Ricardo (1817), not Malthus, who developed in full the analysis of the distributional effects of population growth. For him, as population grew, land would become scarcer compared to the other factors of production. This would lead to continuous increases in the value of the land and in the rent it generated, favoring at the same time an increase in wealth and income inequality. Ricardo formulated his theory during the Industrial Revolution, and championed liberalization of the international grain trade (by repealing the Corn Laws), and to some degree taxing land rents,[18] to prevent landlords from appropriating all the benefits of economic progress at the expense of *both* workers and capitalists. He was notoriously proven wrong by subsequent historical developments, chiefly because (like Malthus) he underestimated the scale of future technological progress. But this does not mean that his views are not useful when applied to the preindustrial period, when technological change was generally slow.[19]

Indeed, if we look at recent empirical research, many studies have explored whether a general connection existed between inequality growth and population growth, especially in cities (van Zanden 1995, Alfani 2015, Ryckbosch 2016):

> The point here is not that cities were more unequal than villages, and larger cities than smaller cities—a finding which seems to be fairly well established in the literature […]. It is instead the ability of population growth in a specific setting (a community urban or rural, or a broader aggregate such as a region or state) to promote inequality growth within that setting that we should evaluate (Alfani and Di Tullio 2019, pp. 137–38).

However, if we focus on the larger possible aggregates—entire states—it has been shown that there is no automatic connection between population growth and inequality growth (Alfani and Ryckbosch 2016, Alfani and Di Tullio 2019). In early modern Italy, secular phases of demographic stagnation have been reported for the Sabaudian State, the Republic of Venice, and the Florentine State, but this did not stop the monotonic

[18] Although for Ricardo taxation in all forms "presents but at a choice of evils," he also argued that landlords would have been unable to shift the burden of a tax on land rents on other classes, hence "A tax on rent could be said to be the least harmful to capital accumulation, because it would fall only on the extravagant, namely landlords" (Dome 2015, pp. 545 and 543).

[19] The ability of population growth to lead to inequality growth is less clear if we look at neoclassical economics, as indeed a whole family of models was generated by that introduced by Meade (1964). In these models, individual wealth grows with savings (s) and returns to capital (r). Across generations, individual wealth (and wealth concentration) will increase if $s \times r$ is greater or equal to n, the rate of population growth, but it will diminish if $s \times r < n$. This forecast, however, is valid only under the condition of partible inheritance. If inheritance is impartible, then long-run inequality growth can occur even when $s \times r < n$. See Roine and Waldenström (2015), pp. 552–53, for further discussion.

growth of wealth inequality. The same can be said for income inequality in the southern Low Countries during the seventeenth century (Alfani and Di Tullio 2019, pp. 138–39). Moreover, as discussed above, when large-scale mortality crises affected early modern populations, they failed to cause significant inequality decline. The Black Death is the obvious exception in having had clear "Malthusian" consequences for distribution, but this was also the result of a specific institutional framework that would quickly change in the aftermath of the pandemic.

Another way of looking at demographic growth as a contributing factor of long-run inequality growth is that it is one of the causes of the waves of "proletarianization" that affected early modern Europe. This refers to the historical process through which an increasing proportion of the European population lost ownership of the means of production and had to resort to selling its labor for wages (Tilly 1984). One of the fundamental causes of this was population pressure on resources (but political and institutional dynamics were also important). The connection with the views of the classical economists, from Malthus to Marx, is obvious. Many specific historical processes have been presented as a component of the tendency toward proletarianization (for example the rural enclosures movement, or the spread of the putting-out system), however its main component was the crisis of small land ownership. Focusing on the areas for which we have reconstructions of long-term inequality, these processes have been detected in the southern and northern Low Countries (Ryckbosch 2016, Alfani and Ryckbosch 2016) as well as in different parts of Italy, like the Sabaudian State or the Republic of Venice (Alfani 2015, Alfani and Di Tullio 2019). As a possible explanatory factor of inequality growth, proletarianization has the particularly desirable characteristic of having been a general, pan-European phenomenon (Tilly 1984, pp. 26–36; van Zanden 1995, pp. 656–58; Alfani and Ryckbosch 2016). As a consequence, and differently from other more country-specific factors like economic growth or urbanization, proletarianization seems particularly well suited to contribute to explaining the largely similar inequality trends found across the continent. However,

> as proletarianization was connected to population pressure and was triggered by acute phases of scarcity (especially continental-level famines), it tended to come in waves. This is why, although it was surely an important inequality-promoting factor, proletarianization seems to fail to fully account for a process that is found to be overall monotonic in practically all areas from 1500 to 1800 (Alfani 2019, p. 1199).

Of all the demographic factors that have been explored as possible determinants of preindustrial inequality change, urbanization is probably the most important. There are two reasons for this: (i) urbanization rates are often considered good indicators of economic development (and are much easier to measure for preindustrial societies, and consequently much less speculative, than per capita GDP), and (ii) they can be used to assess the potential impact of "Kuznetsian" dynamics. In fact, the distinction between an "industrial" and an "agrarian" sector in Kuznetsian models can also be understood as one between an "urban" and a "rural" sector, as clearly indicated by Kuznets himself (1955, pp. 7–8). As "[i]n early modern Europe urban incomes were without doubt higher than those in the countryside," it follows that "The gradual urbanization that typified … [the early modern] period probably contributed to a rise in income inequality through the mechanism described by Kuznets" (van Zanden 1995, p. 656): that is, through the transfer of workforce from low-income rural areas to (relatively) high-income cities, which is evidenced by increases in urbanization rates. However,

as for population at the state level, recent studies did not detect any clear correlation between inequality trends and changes in urbanization (Alfani and Ryckbosch 2016, Alfani and Di Tullio 2019).[20]

The different, and sometimes partly contrasting, explanatory factors for long-term inequality change discussed above lead to a clear conclusion, which can be summarized as follows:

(i) In preindustrial times, there was no *necessary* cause of inequality growth (like for example, economic growth).
(ii) There were instead a number of *sufficient* causes of inequality growth, among which we could name economic growth, demographic factors (including urbanization growth), institutional change and politics, "proletarianization" (i.e., the crisis of small ownership), and so on. When one or more of these potential causes became active, inequality grew.
(iii) The bottom line being, in the long preindustrial period it was seemingly much easier for inequality to grow than to decline—and indeed, we have very few examples of long-lasting inequality decline, and almost all of them can be connected to large-scale catastrophes.

4. *Escaping the "Inequality Trap"?*

The empirical finding that inequality growth continued even in phases of economic stagnation or decline has important consequences for our understanding of the nature of long-term inequality change. A first aspect to consider is that trends in inequality measures like the Gini indexes can no longer be considered sufficient to fully describe the actual developments in the distributive context of any given preindustrial society—as can easily be understood by way of a simple example. Societies A and B experience exactly the same trend in inequality as measured by Gini, but while society A experiences, at the same time, a growing per capita income, society B instead has to make do with stagnant per capita income. Over time, this situation would lead society B to become much more "extractive" than society A—in the sense that the access to resources of large strata of its population would decline in absolute terms, and not just in relative terms.

A second aspect to consider is that the very existence of relatively high, and usually growing, levels of inequality in many preindustrial societies represents a challenge to any attempt at framing such societies as "Malthusian," at least in the strict sense of being placed at a steady state where everybody is at, or close to, subsistence. In the canonical Malthusian framework, at least as it seems to be understood by much current economic theory (see for example Galor 2011), inequality exists only as a transitory feature—as population growth will tend to push everybody back to subsistence. Quite clearly, this view (which, as argued in section 3, seems to be a fairly extreme view of Malthusian dynamics, at least if compared to the positions of the classical economists) is not in line with a growing body of new evidence.[21] A partial answer to this problem could be that the Malthusian "positive checks" can be triggered when a society gets close to subsistence, but before reaching it

[20] Recently, Milanovic (2018, pp. 11–12) reported evidence of a positive correlation between urbanization rates and inequality levels based on a database of 41 social tables from a variety of premodern societies, but due to the nature of the information he used, he could not explore whether changes in urbanization rates could explain long-run distributive dynamics within each given society.

[21] Note that Galor (2011, pp. 90–91) argues that after 1500, some "mitigating factors" hindered convergence toward Malthusian steady state. This, however, does not solve the problem posed by the new evidence about high inequality before 1500, including during prehistory (see section 2).

(think about how worsening nutrition could lead to a generalized reduction in health and an increased probability of an epidemic of some sort to start and spread effectively). This would be compatible with average inequality levels, of both income and wealth, significantly above zero but not with the high inequality and the clear underlying tendency toward inequality growth reported by most recent research on the preindustrial period. Consequently, we need to take into account factors able to structurally affect distribution, keeping inequality high and even growing—in other words, factors of the kind that would make it so that during a famine most, *but not all*, will become hungry and risk dying.

To assess these two aspects, as well as to reach a better understanding of the dynamics of inequality in preindustrial times more generally, it is useful to refer to the recently introduced theoretical framework of the "inequality possibility frontier" or IPF (Milanovic, Lindert, and Williamson 2011; Milanovic 2013). Note that this framework is still fairly new and that many of its implications are worthy of additional future research—indeed, some of the hypotheses presented in the following go beyond those originally discussed by Milanovic, Lindert, and Williamson and constitute a contribution toward further exploration of the implications of the IPF.

The basic intuition on which the IPF framework is built is that instead of simply considering the level of inequality measured for a given society, we should be interested in how much inequality is "extracted" by such a society relative to the maximum feasible inequality, which can be derived by taking into account that everybody needs to receive subsistence. The maximum feasible inequality increases as per capita GDP grows (i.e., as a society becomes able to generate greater surplus). Formally,

$$G^* = 1 - \frac{s}{m}$$

where G^* is the maximum attainable Gini, m is the mean income in the economy, and s is the subsistence minimum. The inequality extraction ratio (IER) can then be expressed as the ratio between the actual measured Gini (G) and G^*:

$$IER = \frac{G}{G^*}.$$

Quite clearly, although in most instances the Gini indexes will change in unison with inequality extraction ratios (albeit very possibly at different paces), this in fact depends on the relative movements of per capita GDP (which can be used as an estimate of m) and inequality.

Technically, a society placed at the boundary would be "a dystopian hypothetical society in which an infinitesimally small elite receives all the income, while the rest of the population lives at subsistence level" (Alfani and Ryckbosch 2016, p. 146). On the other hand, a society could be placed *above* the boundary only as a transitory situation, given that $G > G^*$ implies that at least a part of the population is below subsistence and hence destined to die (which would push G back below G^*). In practice, however, the exact derivation of the IER in preindustrial societies is prone to measurement error, as it requires an estimate of (i) income inequality (G) and (ii) per capita GDP (the last is needed to derive the IPF).[22] Given the intrinsic difficulty of

[22] When the size of the elite tends toward zero (meaning that it converges toward the extreme situation of one individual or household concentrating all the surplus above subsistence), the maximum attainable inequality or G^* can be expressed as:

$$G^* = \frac{\alpha - 1}{\alpha}$$

where α (whose value is greater than or equal to 1) is the per capita income expressed as a multiple of the subsistence income. So for example when the per capita income is double subsistence ($\alpha = 2$), the maximum attainable Gini is 0.5. For the derivation of the formula, see Milanovic, Lindert, and Williamson (2011), pp. 257–58.

estimating with precision such variables for preindustrial societies, and even recognizing that the estimates of *G* and per capita GDP have improved for many historical societies in the last few years, it remains clear that current measures of the IER for preindustrial societies should not be taken at face value but ought to be considered indicative. Also note that another assumption needed for the derivation of the IPF is the subsistence minimum. In the original 2011 article, Milanovic, Lindert, and Williamson used an annual subsistence minimum of 300 purchasing power parity (PPP) dollars, and the few subsequent attempts at measuring inequality extraction ratios (including this article) did the same. According to the authors, this is a conservative measure. However, it is conceptually possible to use a "social minimum" income instead of subsistence. The rationale for this is that before leading to extermination of the poorest of its members, a society would tend to grow unstable, revolt, and achieve some sort of redistribution. Indeed, this view is supported by some evidence of a positive correlation between the IER and civil conflict from 1960 (Milanovic 2013), and is also in line with some empirical literature suggesting a positive correlation between inequality and political instability/social unrest in modern societies (for example, Alesina and Perotti 1996).

Even taking into account measurement error, current estimates of the IER can be meaningfully compared. Milanovic, Lindert, and Williamson (2011) underlined the considerable variety in inequality extraction levels across the world. For example, Old Castile (Spain) in 1752 had an estimated income Gini of 0.52, not very different from that of France in 1788 (0.56) and indeed slightly lower—but given the very significant differences in per capita GDP, this implies that Old Castile, with an IER of 88 percent, was much more extractive than France, where the ratio was just 76 percent. Around the same date, many non-European areas experienced even higher inequality extraction. In Nueva España in 1790 it was 106 percent, and in Moghul India in 1750, 113 percent. Interestingly, in Milanovic, Lindert, and Williamson's sample the highest extraction ratios (at or above 100 percent) characterize colonies (Moghul India, which was independent in 1750, is the only exception), even when they do not stand out for particularly high Gini levels. Subsequent research has focused on Europe, providing evidence of a kind of divergence in inequality extraction between northern and southern Europe during the early modern period. The south progressively became much more extractive than the north, even though the trends in Gini indexes were not dissimilar (Alfani and Ryckbosch 2016). This is also exemplified in figure 7, where the measured Ginis at various points in time are charted against the IPF.

Indeed, in the case of the Florentine State we find a steady upward trend: from relatively moderate levels of extractiveness in the late Middle Ages (70 percent around 1450), by circa 1650 the Florentine State was already more extractive than any other western European state we currently know about (88 percent), reaching the boundary of the IPF by 1750 (98 percent). The Sabaudian State followed a similar trend, although at a less steep pace. This contrasts with northern European countries, like the Dutch Republic (Holland) which from an extraction ratio of 71 percent around 1500 experienced just a 9 percentage point increase in the following two and a half centuries (80 percent in 1750); or England and Wales, which moved from an estimated extraction ratio of 69 percent in the period immediately preceding the fourteenth-century Black Death to 67 percent around 1700—the lowest level, and by far, in all European countries for which we have information at that date—rising only marginally during the eighteenth century

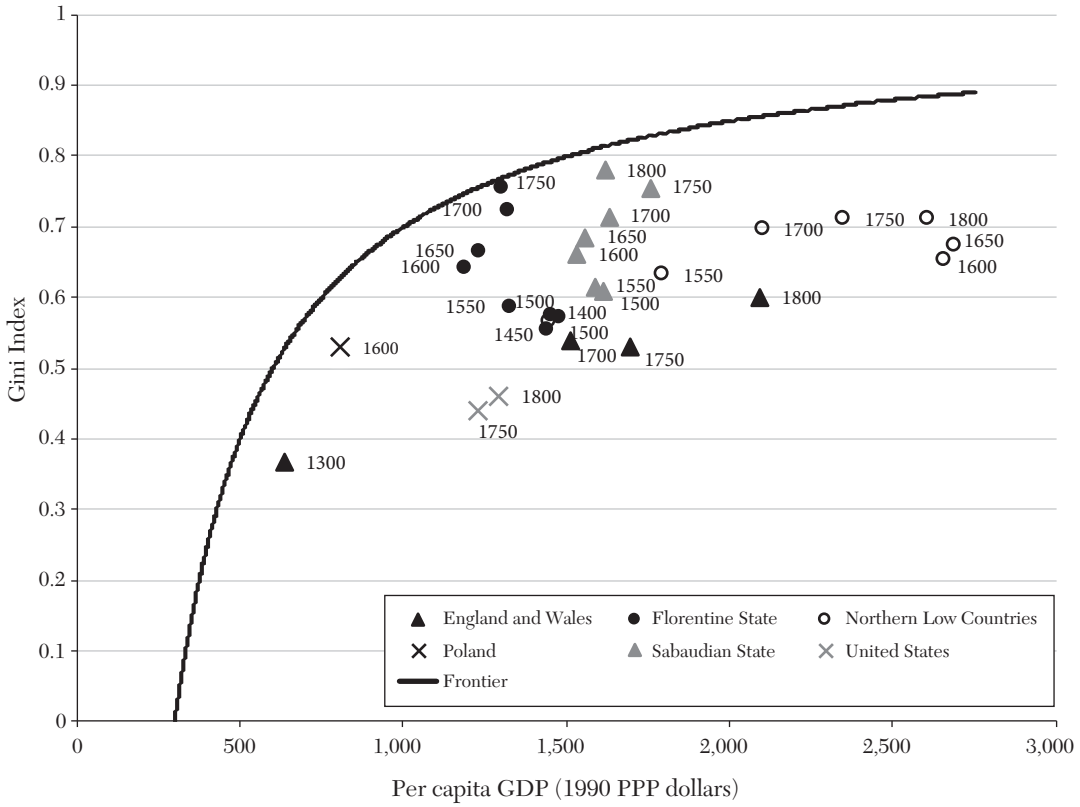

Figure 7. Inequality Extraction in Europe, 1300–1800

Notes: Observations clustered around 50-year breakpoints for clarity.

Sources: Alfani and Ryckbosch (2016) for Sabaudian State, Florentine State, and Northern Low Countries (with additional information for the Florentine State); Allen (2019) for England and Wales, with an exception made for the estimate for 1300 which comes from Milanovic, Lindert, and Williamson (2011); Malinowski and van Zanden (2017) for Poland; Lindert and Williamson (2016) for the United States (the estimate for 1800 has been produced by interpolation and refers to the original thirteen colonies). Estimates of GDP per capita from Clio Infra Project (2013).

(70 percent in 1800). As in the South, steadily growing extractiveness might have also characterized eastern Europe (notice the high extraction level in Poland 1600: 84 percent), but the information we have about preindustrial inequality in this area is currently very limited. As a final element of comparison, figure 7 includes the United States in 1800 and immediately before its independence (the estimate for "circa 1750" actually dates to 1774). In that period the United States, with an extraction ratio of 58 percent circa 1750 and 60 percent in 1800,[23] seems to have been less extractive than any European

[23] A tentative estimate of income inequality in the United States in 1800 has been obtained by interpolation between 1774 and 1850 (see discussion in subsection 2.2

country. This is not surprising, as we know that the United States remained relatively egalitarian (at least in terms of Gini indexes of income inequality), if compared to western Europe, until at least the eve of the Civil War (Lindert and Williamson 2016, p. 119).

There are also other ways in which the framework of the IPF can be useful for studying preindustrial inequality. Williamson (2010), for example, has used it to support his view that the relatively high levels of income inequality characterizing much of Latin America today do not have a "colonial origin." As those areas of the world were very poor, the maximum attainable Gini was relatively low. Indeed, Williamson argued that inequality was no higher in Latin America than in Europe in the decades following 1492—the difference would instead lie in much higher inequality extraction ratios. More recently, Milanovic (2019) used the IPF to estimate the upper boundary of his reconstruction of income inequality trends in Roman times (obtained by setting inequality extraction across the Roman Empire at 100 percent. Results reported in figure 1). Apart from this, if we focus on the early modern period (and beyond) and accept the view that the "normal" tendency was for inequality to grow, and if we consider that inequality could not exceed (at least not for any length of time) the maximum level G^*, then the ability of inequality to grow will be a function of the distance of G from G^*, with G showing a tendency to converge toward G^*. In other words, it might be helpful to consider a different interpretation of the IPF: not just a theoretical upper boundary to inequality, but a de facto attractor of inequality. This means that during the preindustrial period (and possibly even later, until at least the early twentieth century), if a society *could* become more unequal, then it did so—and the only way it could avoid becoming more extractive as well (that is, to redistribute more efficiently income and wealth from the lower to the upper echelons of society), was to develop economically quickly enough to escape falling into a kind of "inequality trap." Historically, increasing differences in the pace of growth of inequality extraction seem to have characterized the "Little Divergence" between southern and northern Europe, as seen above in the comparison between the Italian states and the Dutch Republic. But the best example of a country that succeeded in escaping the inequality trap is England from the late Middle Ages (see figure 7). In fact, we might wonder whether a relatively low degree of extractiveness should not be counted among the factors leading England to spearhead the transition toward industrialization.

Given the same level of per capita GDP, a more even distribution of income would probably (but not automatically) go hand in hand with higher real wages, which are often used as proof and measure of both the Little Divergence and the Great Divergence between Europe and Asia (for example, Allen 2001, Pamuk 2007, Allen et al. 2011). Consequently, it might well be that when more systematic and encompassing measures of inequality extraction become available, it will be found that certain characteristics of societies are more important for long-term development than we currently believe.

This would also be in line with the literature arguing that in modern societies, high inequality is harmful to economic growth (for example, Alesina and Perotti 1994, Persson and Tabellini 1994), however we should bear in mind that such literature explicitly factors political systems in the analysis, hence it does not necessarily reflect well the conditions of preindustrial societies. (For some indications about how political systems might affect differently the relationship between inequality

and additional information about US inequality estimates in Lindert and Williamson 2016).

and development in preindustrial and modern societies, see Boix 2010, pp. 512–13.)

Indeed, we should probably focus on preindustrial political systems and general institutional frameworks (and the related distribution of power) to understand why exactly the IPF could be treated as an attractor of inequality. Section 3 has underlined the capacity of regressive preindustrial fiscal systems to produce growing inequality over time independently from economic growth. Higher levels of fiscal extraction of resources (then redistributed unevenly through a state expenditure focused on the needs of the military and of the service of the public debt, and only marginally involving welfare) tended to go hand in hand with rising inequality extraction ratios. The rise of the fiscal-military state in the early modern period was also obtained through a growing coercive power of state institutions, themselves largely the expression of a social and economic elite that also concentrated political power. In this context, it is easy to see how *any* space for further increases in inequality could become an opportunity for directing the overall system, not necessarily in a fully intentional way, toward a less even distribution. It is quite obvious how in this context, characterized by very uneven initial distributions of material resources, political power, and access to institutions, the steady state would not be "Malthusian equality," but a condition of dramatic economic disparities very close to the boundary of the maximum attainable inequality, with a super-rich but very small elite and a vast mass of the populace locked into a state of mere subsistence. We could call this a steady state of "Malthusian inequality" without doing any injustice to what Malthus himself thought.[24] The need to build social and political consensus, which also presented itself in preindustrial societies, might have slowed down the process, offering some space for economic growth to counterbalance and even, in some cases, reverse the otherwise "natural" tendency of the system to converge toward higher levels of extractiveness (what I have referred to as "escaping the inequality trap"). These, however, ought to be considered little more than working hypotheses and the actual mechanisms at work are badly in need of further research—even more so when moving closer to modern times, with the progressive development of parliamentary democracies and the related changes in fiscal systems and in the structure of state expenditures. It is also worth noting that this interpretation of the inequality extraction ratio as being shaped by political/institutional factors only strengthens the analogies between this concept and the concept of "extractive institutions" that has been frequently employed to explain poor economic performance in the long run, even in areas well endowed with natural resources, usually ex-colonies (for example, Engerman and Sokoloff 2012, Acemoglu and Robinson 2012). Interestingly, a recent article by Milanovic (2018) found evidence of a strong positive effect of colonial status on inequality extraction (while at the same time finding no significant correlation between per capita GDP and inequality extraction).

[24] In other words, while the notion of "Malthusian equality" corresponds to a situation in which per capita GDP matches the maintenance cost of an individual, "Malthusian inequality" describes a situation in which the average income of large masses of laborers matches such cost, but per capita GDP is higher—with all the surplus above subsistence being syphoned toward a small elite. Quite clearly, the new evidence about high inequality in preindustrial settings invites reflection on how economists should properly model long-run developments in human societies.

5. *Conclusion: Connecting the Past to the Present*

Integrating the preindustrial period into an analysis of long-term trends in inequality can change our perception of the situation today, and can also change the kinds of questions about general tendencies of inequality that we would wish to answer. The new evidence recently produced about preindustrial inequality, and particularly that on wealth inequality produced by the EINITE project, can in fact be connected directly with that produced by Piketty and others for the nineteenth and twentieth centuries. This is accomplished in figure 8, where the share of the top 10 percent wealthy in Western Europe is charted for the entire period 1300–2010.

Even though the areas of Europe included in figure 8 differ before and after 1800, there is nevertheless an impressive continuity in the series. According to Piketty (2014), around 1810 the top 10 percent of the wealthy owned 82 percent of the overall wealth, while at the endpoint of my estimates for the preindustrial period, in 1800, the top 10 percent owned 79 percent of the overall wealth. More importantly, the rate of growth of the share of the top 10 percent in the period 1810–1910 seems to have been almost exactly the same as that found for the period 1550–1800.[25] This continuity does not seem to be accidental, hence, although it is surely desirable that future research will provide the means to compare coherent areas in the very long run, it is still useful to reason about the possible implications of what we can observe at the moment. After all, recent attempts at providing general interpretations of very long-run dynamics, and particularly those by Milanovic (2016) and Scheidel (2017), had to rely on exactly the kind of incomplete and somewhat patchy information that has been discussed in the earlier sections. This includes, in fact, some of the information used to produce figure 8, hence it is proper to use it as a basis for discussing such interpretations.

In a sense, the figure supports the view that the left side of the Kuznets curve can be extended to the left by many centuries, as van Zanden (1995) had suggested. Indeed, Milanovic (2016) has recently argued that across history, we can detect a sequence of "Kuznets waves": that is, alternating phases of rising and then declining inequality, drawing a series of "inverted U" curves. Of these waves, three would be visible, fully or partially, in figure 8 if we include the current phase of increasing inequality which, in Milanovic's view, will one day reverse generating its own inverted U. Although similar in shape, these curves would have been created by at least partially different factors: mostly "idiosyncratic events" like "epidemics, new discoveries (of the Americas or of new trade routes between Europe and Asia), invasions, and wars" in the preindustrial period, and more classical Kuznetsian factors (structural change, urbanization) from the Industrial Revolution (Milanovic 2016, pp. 50–53). Indeed, this is one reason to wonder whether we should label these movements, which are truly wave-like, "Kuznetsian,"as (i) the factors leading to the swings in inequality during the preindustrial period are generally very different from those imagined by Kuznets, and (ii) Kuznets's "promise" of automatic inequality decline as countries progressed through the industrialization process has been disproved by the trends of the recent decade. Consequently the day may have come to

[25] Another interesting finding that is able to change our perception of contemporary inequality is that today in Europe the share of the richest 10 percent (64 percent in 2010) is about the same as before the Black Death (66 percent in 1340). So the received wisdom that our societies are less unequal than those of the past ought to be reconsidered.

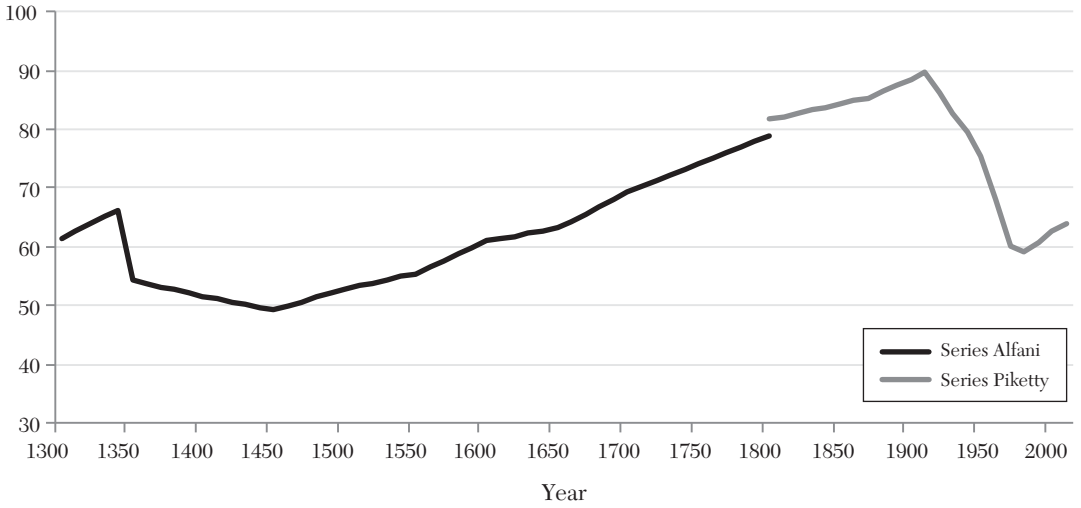

Figure 8. The Share of Wealth of the Top 10 Percent Rich in Europe, 1300–2010

Notes: The Alfani series is an average of the Sabaudian State, the Florentine State, the Kingdom of Naples (Apulia), and the Republic of Venice (the estimates for the Sabaudian State, the Florentine State, and the Kingdom of Naples have been adjusted to include those with no property). Before 1500, only information about the Florentine State and the Sabaudian State is available. The Piketty series is an average of France, the United Kingdom, and Sweden.

Sources: Alfani (2017), Alfani and Di Tullio (2019), Piketty (2014).

conclude, as Lindert (2000) did, that the Kuznets curve is now obsolete.[26]

If we look at the history of the last seven centuries or so, there is reason to doubt that we should be as optimistic as Milanovic (after Kuznets) seems to be—although admittedly, Milanovic's "optimism" only goes as far as hypothesizing that the current bout of inequality growth will one day peak, at a level lower than that reached in the early twentieth century due to the presence of "inequality stabilizers" like state pensions and unemployment benefits, and will subsequently go down. That day, though, may be a long way off. The point here, is that history does not support the view of a "spontaneous" tendency for inequality to decline.[27] In the twentieth century, as so effectively clarified by Piketty (2014, pp. 368–70), it was the shocks of the period 1914–45, related to the World Wars I and II, that determined the most significant decline in the wealth share of the top 10 percent ever to be found in history (from almost 90 percent in 1910 to 75 percent in 1950).[28]

[26] Regarding criticism of Kuznets, also see the recent contribution by Wisman (2017).

[27] "Spontaneous" here simply means "independent from any form of intentionally anti-inequality action." So for example, Milanovic (2016, pp. 112–17) argued that inequality decline might occur in the future as a consequence of factors like the spread of education and reduced skill premium, the dissipation of rents that had come into being in the early phases of the technological revolution, or income convergence at the global level. These processes would still be influenced by human agency.

[28] A recent article by Alvaredo, Atkinson, and Morelli (2018) provides some evidence of a reduction in the share of the richest in Britain from a few decades before World War I, leading the authors to argue that inequality reduction in the first half of the twentieth century was not the

In the earlier period, only the demographic catastrophe caused by the Black Death of 1347–52 brought inequality down, causing the top 10 percent of the rich to lose their grip on 15–20 percent of the overall wealth. Between catastrophes, the tendency was almost invariably for inequality to grow, as per inertia. Hence, waves notwithstanding, the underlying inequality trend was oriented upwards: which is something that Milanovic did not detect, but which is possibly the most important historical development we have to explain. Indeed, this process could also be understood as one of attraction toward the frontier of the maximum achievable inequality, a process of growing extractiveness only partially moderated by economic growth (see discussion in section 4).

These conclusions, based on wealth inequality data, are further strengthened by considering the available estimates of income inequality trends in the very long run. Currently there are only three world areas for which we have more or less detailed information about trends in preindustrial income inequality: England and Wales, the northern Low Countries (nowadays the Netherlands) and the southern Low Countries (nowadays Belgium). Figure 9 shows the trends in the share of the top 10 percent during 1380–2010. In all three cases we find a clear tendency for income inequality to grow during the late Middle Ages and the early modern period. Overall, income inequality seems to have stagnated during the nineteenth century (which is the main difference with wealth inequality: compare with figure 8), but a clear phase of declining inequality seems to have started only from World War I. As with wealth, the share of the top 10 percent continued to decline in the three areas until the 1970s, but resumed growing at the turn of the 1980s. Also for income, a wave-like movement of the kind described by Milanovic is visible, although lack of good estimates for the period preceding 1380 blocks our view of the consequences of the Black Death.[29]

While Milanovic seems too optimistic, recent research suggests that Scheidel (2017) is maybe too pessimistic when he identifies in large-scale violence (wars, revolutions, collapse of states or civilizations) and other catastrophes, like exceptionally severe epidemics, the only factors disruptive enough to lead to significant inequality decline, factors of which the world wars would only be the most recent example. For Scheidel, in preindustrial times growing inequality was mostly the consequence of state formation and of the establishment of resilient hierarchies of power and coercive force.[30] But even when moving into industrial and postindustrial times, with all the changes this entailed for economic structures, social norms, and political systems, "income and wealth inequality remained high or found new ways to grow," because "[e]ven in the most progressive advanced economies, redistribution and education are already unable fully to absorb the pressure of widening income inequality before taxes and transfers. […] There does not seem to be an easy way to vote, regulate,

sole consequence of the world wars. This, however, might be the result of intentional early redistributive policies (see later).

[29] For England and Wales, based on a social table for 1290, it would be possible to estimate that the top 10 percent income share was 29.3 percent, slightly lower than the 32.8 percent estimated for 1380 (my estimates from data in Lindert 2000, p. 175). However, it seems probable that the Black Death reaching England in 1348 led to a decline in income inequality, at least for a few decades (as is also suggested by ongoing research) and overall, given the limited information available about fourteenth-century distributive dynamics, it seems improper to presume monotonic income inequality growth between the two dates.

[30] "Political inequality reinforced and amplified economic inequality. For most of the agrarian period, the state enriched the few at the expense of the many: gains from pay and benefactions for public service often paled next to those from corruption, extortion and plunder" (Scheidel 2017, p. 5).

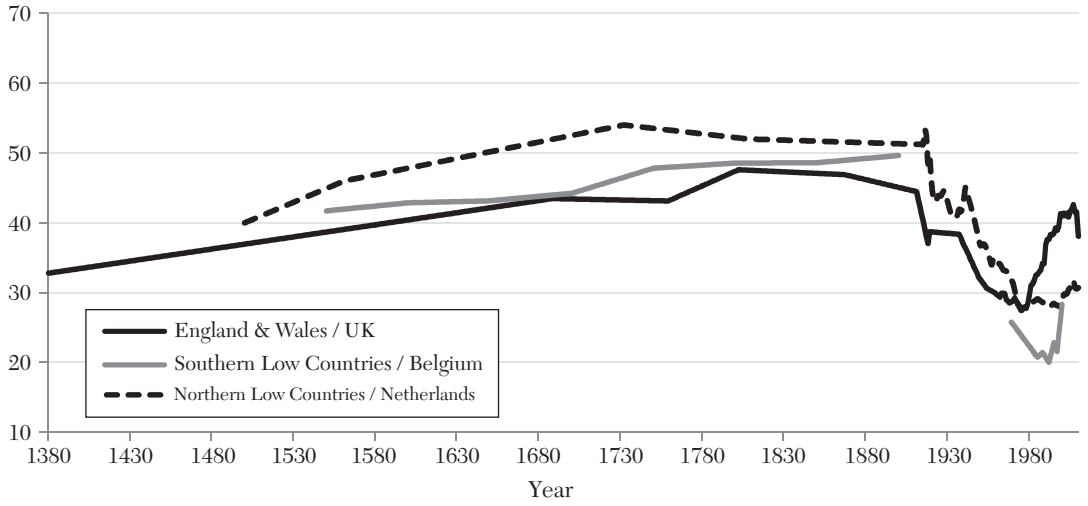

Figure 9. The Share of Income of the Top 10 Percent in the United Kingdom and the Low Countries, 1380–2010

Notes: The series "England & Wales/UK" refers to England and Wales until 1802, and to the United Kingdom from 1867 (the years between have been interpolated).

Sources: Elaborations based on data from Lindert (2000) for the United Kingdom and van Zanden (1995) for the Northern Low Countries/Netherlands, plus data from *World Inequality Database* for the period 1915–2010. For the southern Low Countries / Belgium, new estimates based on data from Alfani and Ryckbosch (2016) plus data from the *World Income Inequality Database* for the period 1969–2000.

or teach our way to significantly greater equality" (Scheidel 2017, pp. 6 and 9).

There are two lessons to be learned from recent studies of early modern inequality that add nuance to Scheidel's stark conclusions. The first is that major post–Black Death plagues were unable to produce inequality reduction, contrary to what Scheidel's arguments would lead us to expect. This was due to institutional adaptation to a changed environment (see section 3)—and ultimately, to human agency. Here lies the second, and related, lesson: human agency, mediated by institutional change, is even more important in shaping inequality trends (*both* upwards and downwards) in the very long run of history than Scheidel presumes, and institutions do not necessarily reflect the interests of rapacious economic elites, but can also be designed in a way that protects the general population from excessive greed. Historically, fiscal systems seem to have played a particularly important role. The deepening of regressive taxation during the rise of the fiscal-military state is believed to have been one of the main drivers of inequality increase in the same period (Alfani and Di Tullio 2019). But also the lull and even further decline in inequality after the end of World War II was the effect of human agency and institutions, and particularly of the redistributive policies and the development of the welfare states from the 1950s to the early 1970s (Atkinson et al. 2011; Alvaredo et al. 2013). These examples suggest that human agency—the explicit, intentional attempts of

human beings to change things—could have an impact on inequality trends, either reinforcing inequality growth or even, at least in relatively recent times, inverting what seems to be a somewhat spontaneous tendency for income and wealth to become ever more concentrated. The long-run, historical perspective attempted here, then, also offers us a clear policy implication (which, luckily for the egalitarians, does not involve spreading the plague): *if* we want a less unequal society, then we have to act to create it, as it seems unlikely that inequality will begin to decline on its own. And history shows that when willing, contemporary societies are able to become less unequal.

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