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Long-Run Changes in the Concentration of Wealth

An Overview of Recent Findings

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Abstract

The objective of this paper is to study the dynamics of the wealth distribution over the path of economic development. More specifically, we are interested in distinguishing between changes which seem to be country specific and characteristics shared by all countries. A historical account of the evolution of the wealth distribution in developed countries is interesting in itself, but it can also hold implications for countries that are currently in an early stage of development or in transition. The data used originates from the taxation of wealth and estates.

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1 Introduction

In this paper we review the latest findings on historical wealth concentration in a number of Western countries. We also present new series for Scandinavia, and, finally, we compare these developments over time. The aim of this comparison is to distinguish between common trends on the one hand, and changes which are more likely to be country specific, on the other. In particular we revisit the question of whether wealth inequality increased in the initial phase of industrialization as well as to what extent later stages of development saw a reversal of such a trend. Ultimately the goal is to get some new insights about the dynamics of wealth distribution over the path of development, which in turn may have implications for countries currently in an early stage of development.[1]

We also believe that there are a number of reasons for why it is especially interesting to study the evolution of wealth concentration in Scandinavia compared to other countries. First, compared to most of the countries for which data on wealth concentration exist, the Scandinavian countries were late to industrialize. This in combination with the fact that we have data stretching as far back as to around 1800 means that we can follow changes in wealth concentration over the whole transition from before industrialization up to present day.[2] A second reason for comparing the Scandinavian experience to other Western countries is that is the Scandinavian countries are well known to be extremes in the spectrum of welfare states and their achievements in terms of equalizing income and wealth are well known.[3] However, it is not equally established how much of the equalization took part before the expansion of the welfare state and, in particular, it is

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[1] There is a large theoretical literature on the interplay between wealth distribution and development which emphasizes wealth distribution as a determinant of individual possibilities to pursue different occupations, especially in the presence of credit constraints when assets are essential as collateral or as a means of directly financing entrepreneurial undertakings. This literature does not, however, give a uniform message about the dynamics of wealth distribution over development. Indeed many recent models can be classified according to their predictions about how markets affect the distribution of wealth in the long-run (see, e.g., Mookherjee and Ray 2006). Some promote an equalization view, in which the intergenerational transmission of wealth causes convergence (e.g., Becker and Tomes 1979, 1986; Loury 1981). Stiglitz (1969) also showed long-run equalization to be the predicted outcome under quite general assumptions in a standard neoclassical framework. Others take the complete opposite view that markets in the long-run increase wealth inequality (e.g., Ljungqvist 1993; Mookherjee and Ray 2003). In between these extremes we find models which permit both initial inequalities and initial equalities to persist. Typically, history determines where a society ends up in the long run view (Banerjee and Newman 1993; Galor and Zeira 1993; Aghion and Bolton 1997; Piketty 1997; Matsuyama 2000; and Ghatak and Jiang 2002). Data on wealth distribution over the transition from agrarian to industrial society is therefore also important to evaluate the various theoretical predictions.

[2] The first observation for Sweden is 1800, and for Denmark and Norway 1789. These early estimates are due the pioneering work by Soltow (1980, 1981, 1985). In terms of new data our earliest observations are 1868 for Norway, 1873 for Sweden, and 1908 for Denmark.

[3] See, for example Esping-Andersen's (1990) famous categorization of different types of welfare states.

not clear why it happened.[4] Finally, a common theme stressed in several of the recent studies is that a number of exogenous shocks to wealth holdings during the first half of the twentieth century are the main explanation to the dramatic declines in top wealth shares. As Sweden did not take part in the First and Second World Wars and was less affected by the Great Depression compared to many other countries, the development of wealth concentration over these periods is interesting. If Swedish wealth concentration falls at the same time as in other countries, different mechanisms must be at work than if Sweden (and other countries not involved in the wars) showed no decline in wealth inequality.

We will focus on the most recent studies for France (Piketty et al. 2006), Switzerland (Dell et al. 2005), and the US (Kopczuk and Saez 2004), but we also include data on the UK from Lindert (1986, 2000) for the nineteenth century and data from Atkinson and Harrison (1978), and Atkinson et al. (1989) for the twentieth century as well as data on nineteenth century USA wealth distribution from Lindert (2000). Our hope is that focusing on these recent studies we can update the parts of the picture given in the chapter by Davies and Shorrocks (2000).[5] For Scandinavia we rely on new data based on wealth tax statistics as well as some new estate tax data. For the case of Sweden using new data allows us to construct comparable series from 1908 until today, while we for the cases of Denmark and Norway compile data from a number of previous publications trying to link comparable estimates. These series are the result of our first analysis of the new Scandinavian data and our future work may contain adjusted estimates. A more detailed account for the sources is available in the Data appendix.

2   Recent country studies

2.1 Some measurement issues

The main conceptual and measurement issues relevant to the study of the historical development of wealth inequality relate to how wealth and wealth holders are defined in the sources in the different cases analyzed and to how this matters to the calculation of

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[4] Spånt (1978) studies Sweden during the period 1920-75 and establishes that wealth shares did fall substantially before the expansion of the welfare state. We provide new data for earlier periods as well as more details for the period 1920-75 allowing us to draw some new conclusions about when the major changes took place.

[5] In a way, these recent studies can be seen as a renewed interest in the long-run development wealth concentration, despite the obvious short-comings of early data. As noted by Davies and Shorrocks (2000), the emphasis in the past decades had been shifting away from general distributional characteristics to causes of individual differences in wealth holdings. Such questions require micro data, typically not found before the 1960s, and, therefore, much of the long-term perspective had, until recently, been considered, if not less important, then impossible to study due to the lack of data. New research, following Piketty (2001), Piketty and Saez (2003) and Atkinson (2004), focusing first on income but then also on wealth distribution (some of which we review here) has lately changed this.

wealth concentration. More elaborate discussions can be found in, e.g., Davies and Shorrocks (2000) and Atkinson (2006).

The definition of wealth in historical sources is most often *net wealth* (also called net worth, net marketable wealth), defined as the sum of real and financial assets less the sum of debt. This is the most common concept appearing in the historical tax-based sources (i.e., wealth and estate taxes) and the main concept used throughout in this chapter. For the postwar years, however, *augmented wealth*, which is defined as net wealth but also including pension wealth (contributions into pension schemes and future social security payments), has been proposed as an alternative.

The taxation of wealth and estates provides the most common sources of historical wealth data. These fiscal instruments have been levied for centuries and the authorities have often been interested not only in collecting the revenues but also to calculate the sizes of the respective tax bases. In the present study, the series from France, the UK, and the USA are based on the estate tax, specifically on samples of individual estate tax returns.[6] The wealth data from Denmark, Sweden, and Switzerland are instead based on the wealth tax, in most cases in the form of tabulated distributions published by each country's tax authorities. Of course, using tax-based statistics are associated with some obvious problems such as underreporting and the problems with changing definitions or data collection routines over time. On the good side, however, is that tax statistics have been available for a long time and often in a similar fashion for very long periods of time. Moreover, they are quite comprehensive in their coverage, especially of the top of the wealth distribution (unlike, e.g., survey data which are often top-coded). Another source of wealth data is surveys, but this is only available for most countries since the 1960s or later and we, therefore, only include in a few cases for comparative reasons distributions.

The definition of wealth holders in the tax statistics, i.e., the tax units, differs across the wealth and estate taxes and, therefore, also across the countries studied here. The wealth tax (in Sweden, Denmark, and Switzerland) uses variants of the *household* as tax unit, which in principle refers to families (i.e., married couples and their under-aged children living under the same roof) and single adults who then make up the relevant tax population.[7] The estate tax data (in France, the UK, and the US) is based on (deceased)

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[6] These are generally adjusted to reflect the distribution of the living population by use of inverse mortality rates for age, sex and social status classes; see Atkinson and Harrison (1978: chapter 3) for a thorough description of the estate multiplier method.

[7] It should be noted that households and families are not fully equivalent, e.g., in the, often historical, cases when households also include servants and other non-related persons. We disregard these distinctions for practical reasons and treat family- and household- based tax systems as essentially identical.

individuals and hence the tax population consists of all adults.[8] The tax unit definition actually matters to the distributional estimates as shown by Atkinson and Leigh (2005). Unless husbands and wives have equal wealth, individual-based data tend to (but must not) give rise to a more unequal wealth distribution than does the household-based data. The wealth holder concept also matters when studying wealth inequality trends over very long time periods, for example from periods when a significant share of the population was represented by slaves, unfree women or improperly registered immigrants. Shammas (1993) shows that the US historical wealth concentration is different depending on how one chooses to include these different subgroups into the reference tax population. Our aim has been to use whichever historical estimate that generates the highest degree of consistency over time for all countries.

2.2 France

The long-run evolution of French wealth inequality is a particularly interesting case to study given the important role of the country to Europe's economic and political development. In a recent study, Piketty et al. (2006) presented new data on wealth concentration for Paris and France over an almost two hundred year-long period, from the Napoleonic era up to today. No previous study on any country has produced such a long homogenous time series offering a complete coverage of the effects of industrialization on wealth inequality. The French wealth data comes from estate sizes collected in relation to an estate tax which was established in 1791 and maintained for more than two centuries. For every tenth year during 1807-1902, the authors manually collected all estate tax returns recorded in the city of Paris—Paris was chosen both for practical reasons but also because it hosted a disproportionally large share of the wealthy in France. Using summary statistics on the national level for the estate tax returns, the top Paris wealth shares were 'extrapolated' to the national level. For the post-1902 period, tabulated estate size distributions published by French tax authorities were used.

Figure 1 shows the evolution of the wealth shares for some fractiles within the top wealth decile in Paris (1807-1902) and France (1947-94). The estimates are from the population of the dead, i.e., the one received from analyzing the estate tax returns directly, but comparisons with the equivalent wealth shares for the distribution of the living population (computed using estate multipliers) reveals practically identical trends and levels.[9] The figure shows that wealth concentration increased significantly for the top 1 and 0.1 percentiles over the nineteenth century, first slowly up to the 1870s when

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[8] An additional problem is that the age cut-off may vary across countries and even within countries over time, which could introduce measurement errors and problems of comparability.

[9] Using data in Piketty et al. (2004: tables A2 and A4) over top wealth shares for both the dead and living populations in Paris and France, it is evident that the trends in wealth shares over time is practically the same for all fractiles and even the levels do not differ much, on average 0.4 per cent for the top decile and 5.1 per cent for the top percentile.

it increased at a faster pace until its peak at the eve of the First World War. By contrast, the two lower groups in the top decile are much less volatile during the period. The bottom 5 per cent (P90-95) held about 9 per cent of total wealth until the First World War when its share started to increase slowly up to the double of that size by the 1980s. The next 4 per cent (P95-99) stayed put on a level around 27 per cent of total wealth throughout the entire period of analysis. These patterns suggest that the French industrialization, which took off around mid-century, greatly affected personal wealth and that it did so already after a couple of decades, but only in the absolute top. This conclusion is further supported by two other observations. First, the composition of top wealth went from being dominated by real estate assets (mainly land and palaces) in the first half of the century to being dominated by financial assets (cash, stocks and bonds), which were supposedly held by successful industrialists and their financiers. Second, over the same period the share of aristocrats among top wealth holders decreased from about 40 per cent to about 10 per cent.[10] From the First World War to the end of the Second World War, top wealth shares declined sharply, which according to Piketty (2003) is directly linked to the shocks to top capital holdings that inflation, bankruptcies and destructions meant. The postwar era was quieter with regard to changes in the wealth concentration, although its decline continued most likely in relation to the increase of progressive taxation (Piketty et al. 2006).
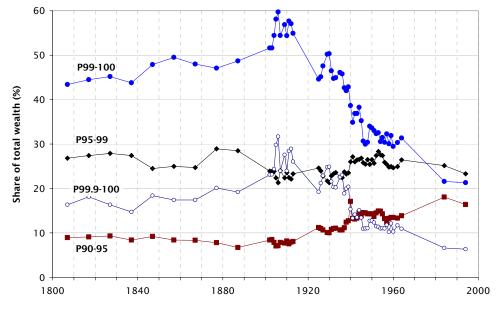
Figure 1: Top wealth shares among the deceased in France

Source: Piketty et al. (2004: tables A3 and A7).

2.3 Switzerland

Switzerland is an interesting point of reference to any cross-country analysis of industrialized countries because of its specific institutional setting with little central government interference and low overall levels of taxation. Also Switzerland did not

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10 These two facts are shown in Piketty et al. (2006: figures 4-6).

take part in either of the world wars. Data on the Swiss concentration of wealth are based on wealth tax returns compiled by tax authorities for disparate years between 1913 and 1997 (Dell et al. 2005). The Swiss wealth tax was levied on a highly irregular basis and the authors have spliced several different point estimates from local as well as federal estimates in order to get a fairly continuous series for the whole country.
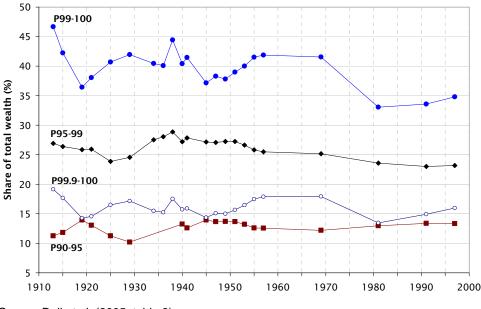
Figure 2: Top wealth shares in Switzerland, 1913-97

Source: Dell et al. (2005: table 3).

Figure 2 depicts top wealth shares within the Swiss top wealth decile over the twentieth century. In stark contrast to all the other countries surveyed in this study, wealth concentration in Switzerland appears to have been basically constant throughout the entire period. The wealth shares at the top of the distribution have decreased but the movements are definitely small compared to all other countries studied.[11] This does not only refer to the top decile vis-à-vis the rest of the population, but perhaps most strikingly also to the concentration of wealth within the top. The highest percentile and the top 0.1 percentile have not gained or lost considerably compared the bottom nine per cent of the top decile, except for some short-run fluctuations. It is not obvious how to account for this long-term stability in terms of the country's relatively low level of wealth taxation, nor can the fact that Switzerland stayed out of both of the world wars alone account for this, as Sweden which also escaped both world wars does not share the Swiss pattern of development of the wealth distribution. In any case, taken at face value the Swiss top wealth share series seriously question the hypothesis that significant economic development always lead to a lower level of wealth inequality over time for reasons of either redistribution or simply relatively quicker accumulation of household wealth among the middle class.

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[11] A simple trend regression yields small but significant negative coefficients.

2.4 United Kingdom

The historical data on UK wealth concentration are available from before the country's industrialization. Prior to the twentieth century, however, data are collected from scattered samples of probate records and occasional tax assessments (see Lindert 1986, 2000) and it was not until the Inland Revenue Statistics started publishing compilations of estate tax returns after the First World War the time series are fully reliable (see Atkinson and Harrison 1978; Atkinson et al. 1989).[12] It should be noted that the geographical unit of analysis changes over time, with pre-Second World War numbers almost always being England and Wales while the postwar ones reflect all of the UK Data in Atkinson et al. (1989: table 1) show, however, that the differences between these entities are fairly small which is why we do not emphasize these differences in the discussion below.
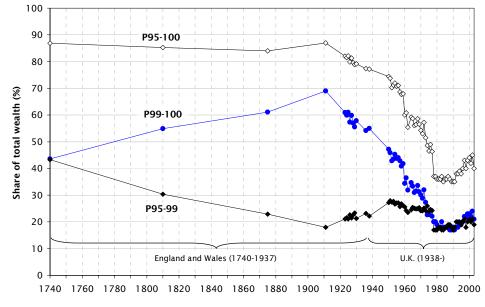
Figure 3: Top wealth shares in the UK (and England and Wales), 1740-2003

Sources: See data appendix.

When England industrialized in the second half of the eighteenth century, the build-up of personal wealth also changed. Looking at the overall wealth concentration in Figure 3 it is evident that there is great heterogeneity within the top 5 per cent of the distribution.[13] Apparently, wealth concentration at the very top increased while, by contrast, the wealth share of the next 4 per cent saw its wealth share decline during the same period. Using supplementary evidence on personal wealth, Lindert (1986, 2000) shows that wealth gaps were indeed increasing in the absolute top during the nineteenth century, with large landlords and merchants on the winning side. At the same time,

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[12] Some sources of variation remain, however, such as the fact that for 1911/13 estate multipliers were only based on age whereas they from 1923 onwards were based on both age and sex.

[13] The reader should keep in mind that this figure, and several others in this study, contains spliced series coming from different sources which naturally may impede the degree of homogeneity over time.

Lindert points out that the middle-class (i.e., those between the 60th and 95th wealth percentiles) were also building up a stock of personal wealth, and this is probably what is causing the drop in the share of the next 4 per cent in Figure 3.

After the First World War, the pattern was the reversed. While the top percentile wealth share dropped dramatically from almost 70 per cent of total wealth in 1913 to less than 20 per cent in 1980, the share of the next 4 remained stable and even gained relative the rest of the population. Atkinson et al. (1989) argue that this development was driven by several factors, but that the evolution of share prices, the ratio of consumer durables and owner-occupied housing (i.e., popular wealth) to the value of other wealth were the most important ones. According to the most recent statistics from the Inland Revenue, the top 1 per cent wealth share has increased by about one third between 1990 and 2003, but this increase has not yet been explained by researchers. Possibly, it reflects the surge in share prices following the financial market deregulation of the 1980s (the 'Big Bang') as the financial wealth are most concentrated to the absolute top of the wealth distribution.[14]

2.5 United States

The historical development of wealth concentration in the US has been extensively studied by economists and historians and inequality estimates are available back to the time of the American Revolution. In this study, we combine pieces of evidence to create long (fairly) homogenous series of wealth inequality for the US There are, of course, several problems with the final series concerning consistency and comparability over time (for reasons discussed in section 3.1) and for the twentieth century we compare complementary series based on different sources and definitions of wealth to get an idea of how large these problems may be.

In Figure 4, the evolution of the US top wealth decile is shown over the period 1774-2000 with the top percentile drawn from two different distributions: adults and households. Specifically, the top wealth shares for adults in 1774 come from Shammas (1993), who in turn adjusted earlier estimates of Alice Hanson Jones by adding unfree men and women to the reference total population, and for the years 1916-2000 from Kopczuk and Saez (2004) who use federal estate tax returns. For the household distribution, data come from Shammas (1993), Lindert (2000) and various twentieth century estimates by Wolff (1987, forthcoming).[15] The two top percentile series seem inversely U-shaped over the period, with wealth shares increasing slowly between the late eighteenth and the mid-nineteenth century but then much faster between 1860 and 1929, when they more than doubled. The long-run pattern of the lower 9 per cent of the

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[14] This is a stylized fact which is true for many developed countries (see, e.g., the overview of 'stylized facts' in Davies and Shorrocks 2000).

[15] While the pre-Second World War data are mainly drawn from censuses, the post-1962 observations from Wolff (1987, forthcoming) are based on survey material.

top wealth decile, however, exhibit stable or even decreasing shares of total wealth (although based on rather few observations). This observed inequality increase in the absolute top coincides with the industrialization era in the US around the mid-nineteenth century. Although the few pre-First World War estimates are uncertain, their basic message are supported by other researchers using other sources. For example, Rosenbloom and Stutes (2005) also find in their cross-sectional individual analysis of the 1870 census that regions with a relatively high share of its workforce in manufacturing were relatively more unequal as regards the distribution of wealth (see also Moehling and Steckel 2001). Another anecdotal piece of evidence in support for a linkage between industrialization and increased inequality is that the fifteen richest Americans in 1915 were industrialists from the oil, steel and railroad industries and their financiers from the financial sector.[16]
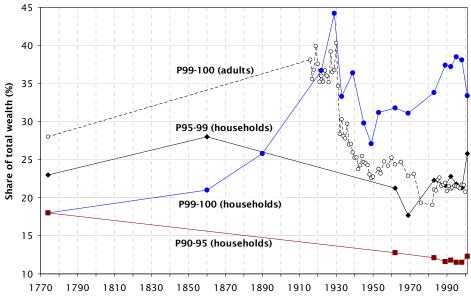
Figure 4: Top wealth shares in the US, adult and household populations, 1774-2001

Sources: See Data appendix.

The twentieth century development in Figure 4 suggests that wealth concentration peaked just before the Great Depression in 1929-30, when the financial holdings of the rich were highly valued on the markets. In the depression years, however, top wealth shares plummeted as stocks lost almost two-thirds of their real values. Kopczuk and Saez (2004) show that among corporate equity represented more than half of the net wealth of the top 0.1 percentile wealth holders in 1929. Another contributing factor to the wealth compression was surely the redistributive policies in the New Deal. After the Second World War, the top percentile wealth shares remained low until the 1980s when the top household percentile's share increased significantly, peaking around mid-late 1990s and then to decline somewhat in 2001 (Wolff forthcoming). By contrast, the top adult percentile wealth share from the estate series in Kopczuk and Saez (2004) exhibits

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[16] See the listing of the top 20 fortunes in 1915 by De Long (1996).

no such increase, which is surprising given that this period also saw a well-documented surge in US top incomes (Piketty and Saez 2003). Whether the difference in trends between the household and adult distributions reflects inconsistencies in the data or some deeper dissimilarity in the relation between income and wealth accumulation remains to be examined by future research.
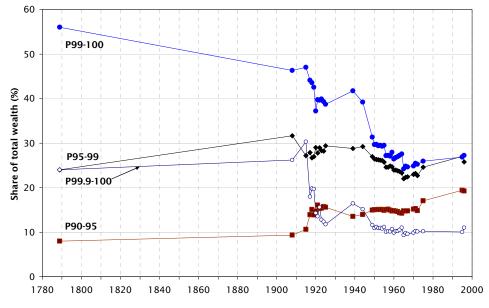
2.6 Denmark

For Denmark, there exist historical estimates of the country's concentration of wealth from as early as 1789 and then more frequently from the beginning of the twentieth century onwards. The comparability of these observations is not perfect and the composite series must thus be interpreted cautiously. Nevertheless, this paper is the first to present a full range of wealth inequality estimates from the periods before, during and after the industrialization of Denmark that took place in the late nineteenth century. The earliest data for Danish wealth concentration come from a comprehensive national wealth tax assessment in 1789, from which Soltow (1981) has collected a large individual sample of the gross wealth of households. After this year, however, there is a gap in the data until the early twentieth century when the modern wealth tax had been introduced. For 1908-25, Zeuthen (1928) lists tabulated wealth distributions (number of households and their wealth sums in different wealth size classes) for Danish households, adjusted so as to include also those households with no taxable wealth. Similar tabulated wealth tax-based data are published in Bjerke (1956) for 1939, 1944, and 1949 and in various official statistical publications of Statistics Denmark for a few years thereafter until the wealth tax was abolished in 1997.[17]
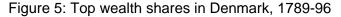
Figure 5 shows the wealth shares of groups within the top decile between 1789 and 1996. The lowest 5 per cent (P90-95) exhibits a flat trend up to 1908 and thereafter doubles its share from 10 to 20 per cent over the twentieth century. The next 4 per cent (P95-99) lies constant between 25 and 30 per cent of total wealth over the entire period whereas the top percentile (P99-100) decreases significantly over the period, with particularly marked decreases after the two world wars. When looking at the very top of the distribution, the top 0.1 percentile (P99.9-100), there is no decrease at all up to 1915, but instead there is a dramatic drop by almost two-thirds of the wealth share between 1915 and 1925. Overall, the Danish wealth concentration decreased over the course of industrialization and this continued throughout the twentieth century, although the development was not uniform at all times and across all groups.

Explaining the wealth compression of the Danish industrialization can be done by comparing the identities of the Danish top wealth holders before and after the late

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[17] The estimates in 1995 and 1996 were constructed from only the tabulated number of wealth holders (families) and the total net wealth in the whole country. Supplementary Danish top wealth shares exist for the 1980s in Bentzen and Schmidt-Sørensen (1994), but unfortunately wealth size has been top-coded in their data and the resulting estimates are not fully comparable with the other tax-based data.

nineteenth century. In 1789, the dominant groups in the top of the wealth distribution were owners of large agricultural estates. Soltow (1981: 126) cites an historical source saying that 'some 300 Danish landlords owned about 90 per cent of the Danish soil'. By contrast, in 1925 the group with the largest private fortunes was the stock brokers (*Veksellerere*) although landlords (*Godsejere, Proprietærer og Storforpagterere*) were still wealthy, both groups having more than fifty times larger average wealth than the country average.[18]

Figure 5: Top wealth shares in Denmark, 1789-96

Source: See Data appendix.

The drops in top wealth shares after the two world wars were partly associated the sharply progressive wartime wealth taxes.[19] According to Bjerke (1956: 140), however, the fall after the Second World War was also largely due to new routines in the collection and valuation of wealth information of the tax authorities, which in particular made middle-class wealth more visible. Towards the end of the century, the wealth concentration continued declining up to the 1980s, largely due to increased share of the relatively equally distributed house-ownership in the total portfolio (Lavindkomstkommissionen 1979: chapter 5), but thereafter started to increase up to the mid 1990s.

2.7 Norway

As for the case of Denmark, the data on Norwegian wealth concentration also come mostly from various kinds of wealth taxation. The first observation is from 1789, when the wealth tax assessment that also was launched in Denmark came into place (the two

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[18] The average net personal wealth in 1925 was Danish kronor (DKR) 6,826 for all of Denmark, DKR 366,000 for brokers and DKR 359,000 for large landlords (Zeuthen 1928: 447).

[19] On the historical development of Danish wealth taxation, see Christensen (2003: 8, 14).

countries were in a political union at this time). As in the Danish case, both real and personal assets were taxed, including land, houses or farms, factories, livestock, mills, shops inventories and financial instruments. Debt was not taxed, and hence the wealth concept is gross wealth.[20] Our second observation is from 1868, when the Norwegian government launched a national wealth tax assessment. Mohn (1873) presents totals for wealth and households and a tabulation of the wealth held by the top 0.27 per cent (P99.73-100) of all households, including a detailed listing of the fifteen overall largest fortunes.[21] For 1912, we use wealth tax returns from the taxation of 1913-14 (exempting financial wealth) which are presented in tabulated form in Statistics Norway (1915b).[22] Similarly, for 1930 we use tabulated wealth distributions (number of wealth holders in wealth classes along with totals for wealth and tax units) presented in Statistics Norway (1934). From 1948 onwards, we use the tabulation of wealth holders and wealth sums in wealth classes published in the Statistical Yearbook various years. In the early 1980s the wealth statistics started being reporting for individual taxpayers instead of, as before, for households. In order to keep our series as consistent as possible, we attempted to convert the post-1982 observations from reflecting the individual distribution to reflect the household distribution using a listing of both types by Statistics Norway for the year of 1979.[23]

Figure 6 presents the trends in Norwegian wealth concentration between 1789 and 2002. The figure shows the top wealth decile broken up into the bottom 5 per cent (P90-95) of wealth holders, the next 4 per cent (P95-99), the top percentile, as well as the top 0.1 percentile. According to these fractiles, Norway's top wealth holders experienced quite different trends in their relative positions over the period. As for the bottom 5 per cent of the top decile, its share decreases between 1789 and 1912 and then jumps up sharply between 1912 and 1930 to land on a fairly stable (though slowly declining) level thereafter. The wealth share of the next 4 per cent, exhibits an inverse-U shaped pattern, increasing sometime in the nineteenth century (we do not know exactly when due to a lack of data), peaking in 1930 and then declining almost monotonically over the

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[20] We use Soltow's (1980) distributional estimates based on 'males or families aged 26 and older', which is not identical to what is used for latter years and probably implies that the 1789 inequality should be adjusted upwards to be fully comparable.

[21] There is no information about whether it was the gross or net wealth which was taxed.

[22] We use tables of wealth holders in wealth classes in Statistics Norway (1915b: 20-21), corroborated by information about reference wealth and tax unit totals in Statistics Norway (1915a: 13f) and Kiær (1917: 22). The fact that financial assets were exempt in the Norwegian wealth taxation before 1922 is discussed in Statistics Norway (1934: 1).

[23] The Statistical Yearbook of Norway of 1981 tabulates the net wealth of both households (table 380: 316) and personal taxpayers (table 368: 306). In the latter case, however, we have no data on the sum of personal wealth of all wealth holders in each wealth class. We therefore insert the sums of wealth observed in household case into the individual case for the exact corresponding wealth classes. The comparison of wealth shares across these two distributions shows that the individual distribution produces shares that are 25%, 21%, 30%, 44% and 60% higher than the household distribution for the top 10%, 5%, 1%, 0.1%, 0.01% fractiles, respectively.
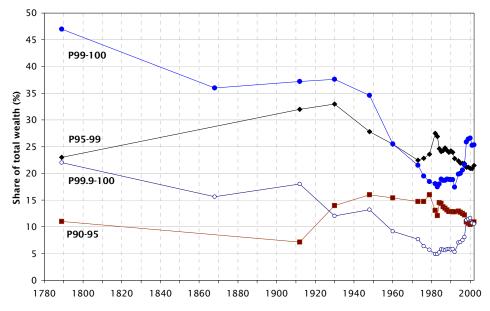
Figure 6: Top wealth shares in Norway, 1789-2002

Source: See the Data appendix.

rest of the twentieth century. Finally, the share of the top wealth percentile decreases significantly between 1789 and 1868, both dates being before Norway's industrialization period. The share then goes up to slightly 1912 only to start decreasing again. In fact, the most dramatic falls occur in the postwar period, with the top percentile dropping from 34.6 per cent to 18.5 per cent during 1948-1979 and the top 0.1 percentile going from 13.2 per cent to 5.7 per cent over the same period. In the 1990s, there is a rapid recovery which may be related to the oil fortunes being built up in recent times, as well as to the rise in prices on world stock markets that produces a rise in the top shares in other countries over this period. The sizeable increase between 1997 and 1998 can also be explained by a change in the Norwegian tax laws specifying an increase in the assessed values of corporate stock on people's personal tax returns.[24]

Despite the seeming disparate trends among Norway's top wealth holders, the evidence presented in Figure 6 corresponds well with the official economic and political history of Norway over this period. The Norwegian economy was badly hit by the economic crisis after the Napoleonic and there was a shift in the political power from the great landlords and landed nobility to a class of civil servants.[25] When merchant shipping expanded in the world after 1850 Norwegian ship owners and manufacturers experienced a tremendous economic boost. When looking at the average wealth of various occupations in 1868 listed in Mohn (1873: 24), the four richest groups were

[24] The tax-assessed values of stocks were raised in 1998, for stocks listed at the Oslo Stock Exchange from 75% to 100% of the market value and for non-listed stocks from 30% to 65% of an assumed market value.

[25] Historical account taken from the section on Norway's history during 'The Napoleonic Wars and the 19th Century' in *Encylopædia Britannica Online*.

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manufacturers (having 160 times the country average household wealth), merchants (124 times), ship owners (96 times) and civil servants (87 times). Half a century later, in 1930, a similar comparison between the wealth of top occupations groups and the country average was made (Statistics Norway 1934: 6), and only ship owners had kept the distance to the rest of the population (having 119 times the country average wealth), while merchants (22 times) and manufacturers (19 times) had lost wealth relative to the average.

2.8 Sweden

Recent studies of wealth distribution in Sweden have mainly used data from household surveys collected in the last three decades (see, e.g., Bager-Sjögren and Klevmarken 1998; Klevmarken 2004).[26] The only previous comprehensive studies on the Swedish historical wealth concentration are those by Spånt (1978, 1979), which are based on wealth tax statistics and published in the Censuses and some special public investigations of the wealth distribution, covering the period 1920-75.[27] Wealth is defined as share of net-worth (taxation values). We extend these available data both in scope and detail, first by complementing the years covered by Spånt with a number of years for which we have found satisfactory reference totals for 'total wealth' and data on distribution (sometimes only for the very top of the distribution as in 1937) in the tax statistics. Moreover, we present new series using the same type of tax data for as long as it remains available, which is the period 1978-93. Hence, we are able to construct fully homogenous series of wealth concentration over the period 1920-93, which is the longest available series for Sweden so far. We also add to these series observations based on similar data for the years 2000-02.[28]

We complement the wealth tax returns based series with new data coming from estate tax material for 1873-77, 1906-08, 1954/55, 1967, and 2002-03[29] as well as with a number of alternative series for wealth concentration over the past decades.[30] We also

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[26] The main data source in these studies the panel survey database HUS (for more information see web page http://www.nek.uu.se/faculty/klevmark/hus.htm)

[27] The material used was the censuses for 1920, 1930, 1935, 1945, 1951 and surveys done in 1966, 1970, 1975. The surveys oversampled rich households so coverage for studying wealth concentration is likely to be good in these studies. For previous periods Soltow (1985) also reports data for the year 1800.

[28] The data for 2000-02 is taken from the LINDA database, which in turn relies on wealth tax returns (Longitudinal INdividual DAta for Sweden, LINDA is a register-based longitudinal data set intended to complement survey databases used in much of the previous work on wealth distribution in Sweden, see web-page http://linda.nek.uu.se/ for more on LINDA).

[29] The sources of the estate data are Finansdepartementet (1879, 1910) and SOU (1957, 1969, 2004). The 1908 wealth data are based on applying the estate multiplier method to the estate data, see Finansdepartementet (1910: 14-34).

[30] The main complements for the past decades are series from Statistics Sweden based on their HINK-database. This is a population sample where data on wealth is taken from the taxation material and other administrative records using the same household definition as we do in our main series (counting individuals over the age of 18 as individual units even if they still live with their parents). This household

add the observation for the year 1800 made by Soltow (1985).[31] Overall, we believe our series give a good sense of the evolution of wealth concentration in Sweden at least from the beginning of the twentieth century until present day. We also note that wealth tax data and estate tax data indicate similar patterns of development over the twentieth century.

Looking first at the pattern over the nineteenth century, our observations indicate a relatively stable wealth distribution which by today's standards was very unequal. As there are no observations between 1800-73 there is little that can be said about the development over this period but given the fact that industrialization is typically considered to have started around 1850 and to have accelerated around 1870, we do not, a priori, think that we miss any major changes in the wealth distribution relating to the industrialization.

Over the twentieth century the picture is much clearer. We can draw on multiple sources which overlap in time and, even though there is still uncertainty about the levels over time, the trends seem relatively certain. The long run trend in wealth concentration in Sweden over the twentieth century is that the top decile has seen its wealth share drop substantially, from around 90 per cent in the early decades of the century, to around 53 per cent around 1980, and then recovering slightly to a level around 60 per cent in recent years. Looking just at this general trend is, however, incomplete if one is to really comprehend the evolution of wealth concentration. Decomposing the top decile and looking separately at the top per cent (P99-100) and the 9 per cent below that (P90-99), we see that the majority of the top decile actually experiences substantial gains in wealth shares over the first half of the century. The overall drop in the top decile share is explained by such dramatic decreases in the top percentile share that this outweighs the increase for the P90-99 group. In the period 1950-80 both groups experiences declines in wealth shares but the decrease is larger for the top percentile and after 1980 the trend is again the same for both groups but now the gains in wealth shares are somewhat larger for the top percentile.

Looking at decompositions of wealth shares in Figure 7, the Swedish wealth distribution exhibits a 'Kuznets-type pattern' over the first eighty years of the twentieth century, with a gradual spread of increasing shares to lower fractiles beginning with the biggest

definition is the main difference between HINK and HUS, a much used detailed household survey but with a relatively small sample, where instead 'kosthushåll' is used, meaning roughly that everyone living together counts as one household. This difference is the major source of discrepancies between estimates from the two sources. The fact that individuals over the age of 18 who live with their parents form separate households in HINK (and in our historical data) means that we get a substantial number of observations of with very low wealth but who still may enjoy access to the wealth of their parents. This is potentially problematic if we are concerned with issues of living standards but not if we want to estimate the distribution of wealth (in terms of ownership and control).

[31] This observation is based a wealth census carried out in the year 1800 and describes the wealth distribution for the population of males aged 20 and older.

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increases in the wealth share of the P95-99 group before 1930 (even P99-99.5 increases until 1930), followed by increases for P90-95 up until the end of the Second World War, and then continued and large increases for the rest of the population (P0-90) after that.
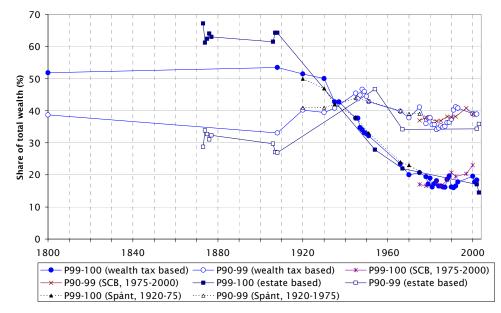
Figure 7: Top 10% wealth shares in Sweden, split up into a bottom 9% (P90-99) and a top 1% (P99-100) share, 1800-2003.

Source: Authors' calculations.

How can we account for these developments? Focusing first at the decreases in the very top of the distribution over the first half of the century we note that most of the decrease takes place between 1930 and 1950, with the sharpest falls in the early 1930s—a time of financial turbulence and in particular the Kreuger-crash—and just after the Second World War.[32] The period just after 1945 was a time when many of the reforms discussed in the 1930s, but put on hold by the war were expected to happen and politically the Communist Party gained ground forcing the Social Democratic Party to move to the left.[33] In particular, the progressive taxes that had been pushed up during the war remained high and also affected wealth holdings as Sweden had a joint income and wealth tax until 1948. However, the main reason for the decreasing share in the very top is likely to be the increasing share for the lower nine per cent of the top decile and this in turn is likely to be increased wealth accumulation among relatively well paid individuals. After 1945 the trend of increased accumulation of continues down the distribution. Over the next thirty years the most important change is the increased share of owner occupied housing in total wealth which increases from being 17 per cent of all

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[32] While Sweden was not as affected by the Great Depression as many other countries, the so called Kreuger-crash in 1932, the bankruptcy of Ivar Kruger's industrial empire, led to major loses of wealth in Sweden. Just as an indication of the importance of this event 18 per cent of all bank lending in Sweden at the time was to companies controlled by Kreuger.

[33] See, for example, Steinmo (1993).

wealth to 45 per cent in 1975 and remains around that in 1997 when adding owner occupied apartments and houses, and vacations homes (consumer durables also increased a lot but stay a relatively small share of the total).[34] Even if this type of wealth was far from evenly accumulated across the distribution it accrued to relatively large groups in the distribution causing wealth concentration to keep falling. Today about half of all households in Sweden own their own home. Over the past decades fluctuations in wealth shares depend largely on movements in real estate prices and share prices. Increases in the former has a tendency to push up the share of the upper half of the distribution at the expense of the very top causing inequality to go down, while increases in share prices makes the very top share larger due to share ownership still being very concentrated causing inequality to increase. In the year 1997 the top percentile in the wealth distribution owns 62 per cent of all privately held shares and the top 5 per cent holds 90 per cent.[35]

2.9 Comparing the long-run wealth concentration across countries

Above we have presented a compilation of recent as well as some new evidence on the long-run evolution of wealth inequality in seven Western countries: France, Switzerland, the United Kingdom, the United States, Denmark, Norway, and Sweden. Figure 8 shows the top wealth percentile in each of these countries for various periods during 1740-2003. Even though, as we have stressed repeatedly, great caution should be taken when comparing these series we still believe that some conclusions can be drawn about the developments of wealth inequality in these countries over the past two hundred years.

Two broad results can be drawn from the series. First, we do not think that the evidence unambiguously supports the idea that wealth inequality increases in the early stages of industrialization. Looking at the development of the wealth share of the top percentile among the countries analyzed here, the Scandinavian observations exhibit slightly falling (Denmark and Norway) or fairly stable (Sweden) inequality levels over the initial stages of industrialization (in the late nineteenth century). The UK series (England and Wales) show increasing wealth shares for the top percentile in the period of the two industrial revolutions (1740-1911), as do the US and French series over the nineteenth century. Looking instead at the next 4 per cent (P95-99) these series increased slightly in Norway and Denmark as well as in France and the US, stayed relatively stable in Sweden but decreased markedly in the UK, see Table 2 and Figure 9. The overall pattern, hence, is mixed and also depends on which part of the top one looks at. Overall this suggests that going from a rural to an industrial society, with entirely new stocks and types of wealth being created, may, but does not necessarily, give rise to a large increase in wealth concentration. It also suggests that carefully studying smaller

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[34] See Spånt (1979: 78-80) and Statistics Sweden (2000: 19-21).

[35] Statistics Sweden (2000: 38-40).

fractiles of the distribution is necessary to get a more complete picture of the development.
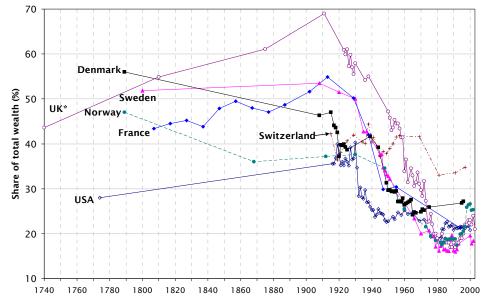
Figure 8: Top 1% (P99-100) wealth shares in seven Western countries, 1740-2003.

Sources: See Table 1 and the Data appendix.

Table 1: Top 1% (P99-100) wealth shares in Denmark, France, Norway, Sweden, Switzerland, the United Kingdom and United States, 1740-2003

Year	Denmark	France	Norway	Sweden	Switzerland	UK	USA (adults)	USA (households)
1740						43.6		
1774							28.0	18.0
1789	56.0		47.0					
1800				51.9				
1807		43.4						
1810						54.9		
1817		44.5						
1827		45.2						
1837		43.8						
1847		47.9						
1857		49.5						
1860								21.0
1867		48.0						
1868			36.0					
1875						61.1		
1877		47.1						
1887		48.7						
1890								25.8
1902		51.6						
1903		51.6						
1904		54.4						
1905		58.1						

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Year	Denmark	France	Norway	Sweden	Switzerland	UK	USA (adults)	USA (households)
1906		59.8						
1907		54.5						
1908	46.3			53.5				
1909		56.8						
1910		54.4						
1911		57.7				69.0		
1912		57.1	37.2					
1913		54.9						
1915	47.0				42.3			
1916							38.1	
1917	44.1						35.6	
1918	43.6						36.8	
1919	42.6				36.4		39.9	
1920	37.2			51.5			37.6	
1921	39.7				38.1		35.2	
1922	39.6						36.0	36.7
1923	39.9					60.9	35.2	
1924	39.3					59.9	36.7	
1925	38.7	44.6			40.7	61.0	36.0	
1926		45.1				57.3	35.1	
1927		47.6				59.8	39.2	
1928						57.0	36.5	
1929		50.2			42.0	55.5	36.8	44.2
1930		50.3	37.6	50.0		57.9	40.3	
1931		46.5					34.7	
1932		44.8					28.4	
1933		44.9					30.3	33.3
1934					40.4		28.1	
1935		46.1		42.8			27.8	
1936		45.8			40.1	54.2	29.7	
1937		42.6		42.7			27.0	
1938		42.0			44.4	55.0	27.1	
1939	41.7	42.9					26.0	36.4
1940		38.7			40.4		25.3	
1941		34.9			41.5		25.3	
1942		36.9					23.7	
1943		36.8					24.3	
1944	39.2	38.3					25.5	
1945		35.3		37.7	37.1		24.7	29.8
1946		30.7		37.7			24.5	
1947		29.9		34.7	38.3		24.3	
1948		30.4	34.6	34.1			23.0	
1949	31.3	34.0		33.2	37.8		22.6	27.1
1950	29.6	33.6		32.8		47.2	22.8	
1951	29.7	33.0		32.2	39.0	45.8		
1952	29.4	32.3				43.0		
1953	29.5	32.6			40.0	43.6	23.8	31.2

Year	Denmark	France	Norway	Sweden	Switzerland	UK	USA (adults)	USA (households)
1954	29.3	30.5				45.3	23.2	
1955	29.5	31.5			41.5	44.5		
1956	27.1	30.4				44.5	24.7	
1957	27.2	32.3			41.9	43.4		
1958	27.1	30.1				41.4	24.2	
1959	27.9	31.9				41.4		
1960	26.4	29.5	25.5			33.9	25.2	
1961	26.7					36.5		
1962	26.9	30.3				31.4	24.4	31.8
1963	27.2							
1964	27.6	31.3				34.5		
1965	24.2					33.0	24.7	34.4
1966	24.8			23.4		30.6		
1967	24.6					31.4		
1968						33.6		
1969					41.6	31.1	22.9	31.1
1970	24.8			20.1		29.7		
1971	25.5					28.4		
1972	25.3					31.7	23.1	29.1
1973			21.5			27.3		
1974						22.6		
1975	25.9			20.7		22.7		
1976			19.5			24.4	19.3	19.9
1977						22.1		
1978				19.4		20.0		
1979			18.5	17.1		20.0		20.5
1980				19.0		19.0		
1981				16.2	33.0	18.0		
1982			18.0	17.3		18.0	19.1	
1983			17.5	18.1		20.0	21.1	33.8
1984		21.6	18.0	16.5		18.0	21.0	
1985			18.9	16.5		18.0	22.4	
1986			18.7	16.2		18.0	22.7	
1987			18.7	16.2		18.0	21.6	
1988			18.9	18.6		17.0	21.7	
1989			18.9	19.7		17.0	22.0	37.4
1990			18.8	16.2		18.0	20.9	
1991			18.8	16.0	33.6	17.0	21.5	
1992			17.5	16.5		18.0	21.2	37.2
1993				17.8		18.0	21.3	
1994		21.3	19.9			19.0	21.6	
1995	26.9		20.0			19.0	21.5	38.5
1996	27.2		20.6			20.0	21.4	
1997			21.6		34.8	22.0	21.2	
1998			25.9			22.0	21.7	38.1
1999			26.4			23.0	21.7	
2000			26.6	19.5		23.0	20.8	

Year	Denmark	France	Norway	Sweden	Switzerland	UK	USA (adults)	USA (households)
2001			25.2	17.8		22.0		33.4
2002			25.4	18.4		24.0		
2003						21.0		

Sources: See the Data appendix.

Table 2: Next 4% (P95-99) wealth shares in Denmark, France, Norway, Sweden, Switzerland, the United Kingdom and United States, 1740-2003

Year	Denmark	France	Norway	Sweden	Switzerland	UK	USA (households)
1740						43.3	
1774							23.0
1789	24.0		23.0				
1800				38.7			
1807		26.8					
1810						30.4	
1817		27.4					
1827		27.9					
1837		27.4					
1847		24.5					
1857		25.0					
1860							28.0
1867		24.7					
1875						22.9	
1877		28.9					
1887		28.5					
1902		23.9					
1903		23.8					
1904		23.8					
1905		22.4					
1906		21.3					
1907		24.0					
1908	31.7			21.7			
1909		22.4					
1910		23.6					
1911		22.5	32.0			18.0	
1912		22.1					
1913		23.3					
1915	27.2				26.4		
1916							
1917	27.9						
1918	26.7						
1919	26.9				25.9		
1920	29.0			27.7			
1921	27.8				25.9		

Year	Denmark	France	Norway	Sweden	Switzerland	UK	USA (households)
1922	29.0						
1923	28.3					21.1	
1924	28.2					21.6	
1925	29.4	24.6			23.9	21.1	
1926		23.9				22.6	
1927		22.8				21.5	
1928						22.6	
1929		21.7			24.6	23.4	
1930		21.3	33.0	27.3		21.3	
1931		22.8					
1932		23.3					
1933		23.6					
1934					27.5		
1935		22.6		28.0			
1936		22.4			28.0	23.2	
1937		23.7					
1938		23.2			28.9	22.2	
1939	28.8	23.5					
1940		26.0			27.2		
1941		27.2			27.9		
1942		26.0					
1943		26.4					
1944	29.2	26.5					
1945		26.8		28.3	27.2		
1946		25.8		28.1			
1947		25.5		28.7	27.1		
1948		26.5	27.8	29.0			
1949	26.9	25.4		28.7	27.2		
1950	26.4	26.5		27.8		27.2	
1951	26.3	25.7		26.8	27.3	27.9	
1952	26.3	27.4				27.4	
1953	26.2	28.3			26.6	27.7	
1954	26.1	27.6				26.7	
1955	25.7	27.4			25.8	27.0	
1956	24.6	25.9				27.1	
1957	24.6	25.4			25.5	25.7	
1958	24.8	24.8				26.8	
1959	24.7	24.9				26.1	
1960	23.9	24.7	25.5			25.6	
1961	23.9					24.3	
1962	23.8	24.9				23.5	21.3
1963	23.6						
1964	23.3	26.5				24.5	
1965	22.0					25.4	
1966	22.3			23.5		25.1	
1967	22.4					24.9	

Year	Denmark	France	Norway	Sweden	Switzerland	UK	USA (households)
1968						25.0	
1969					25.2	25.3	17.7
1970	22.9			22.0		24.2	
1971	23.2					24.2	
1972	22.7					25.2	
1973			22.5			24.2	
1974						26.0	
1975	24.6			23.6		23.8	
1976			22.8			24.6	
1977						24.3	
1978				20.4		17.0	
1979			23.6	21.5		17.0	
1980				21.8		17.0	
1981				19.7	23.6	18.0	
1982			27.5	19.7		18.0	
1983			26.9	18.9		17.0	22.3
1984		25.1	24.6	19.5		17.0	
1985			24.1	19.5		18.0	
1986			24.3	19.1		18.0	
1987			24.7	18.8		19.0	
1988			24.3	20.5		19.0	
1989			24.0	20.6		18.0	21.6
1990			24.2	20.7		17.0	
1991			23.9	22.2	23.0	18.0	
1992			22.8	22.8		20.0	22.8
1993				22.9		20.0	
1994		23.3	22.3			20.0	
1995	27.0		21.9			19.0	21.8
1996	25.8		21.9			20.0	
1997			21.8		23.2	21.0	
1998			21.1			18.0	21.3
1999			21.2			20.0	
2000			20.9	22.7		21.0	
2001			20.9	22.4		20.0	25.8
2002			21.5	22.3		21.0	
2003						19.0	

Sources: See the Data appendix.

Second, while the series do not indicate a clear common pattern over the nineteenth century when industrialization took place (first in the UK, later in the US and France and towards the end of the century in Scandinavia) the development over the twentieth century seems unambiguous. Top wealth shares have decreased sharply in all countries studied in this paper with the exception of Switzerland where the fall has been small. The order of magnitude seems to be that the top percentile has decreased their share of total wealth by about a factor of 2 on average (from around 40-50 per cent in the

beginning of the century to around 20-25 per cent today). It also seems that the lowest point in most countries was around 1980 and that the top percentile wealth share has increased in most countries after that. Even though the main decreases have taken place at the very top of the distribution, the next 4 per cent (P95-99) also experience decreasing wealth shares in all countries.

Figure 9: Next 4% (P95-99) wealth shares in seven Western countries, 1740-2003

Sources: See Table 2 and the Data appendix.

3   Concluding discussion

So what can be said about the relationship between wealth concentration and economic development based on the data provided in this paper? Is there a common pattern across countries over the path of development? Have initial wealth inequalities been amplified or reduced? Our reading of the data suggests that industrialization was not unambiguously accompanied by increasing wealth inequality. While inequality did increase in the UK, the US and in France, it probably did not change much in Sweden and even decreased slightly in Norway and in Denmark. Noting that the countries in the first group all were large, central economies which were early to industrialize, while the Scandinavian countries all were small peripheral economies which industrialized much later, may hold clues to the different experiences but it does not change the fact that industrialization did not increase wealth concentration everywhere.

The twentieth century experience seems much more homogenous. As the countries continued to develop top wealth concentration also dropped substantially. Looking at the details of the pattern by which different fractiles gain wealth shares seem to indicate this drop was due to a gradual process of wealth spreading in the population—confirming the increase of 'popular wealth' identified in, e.g., Atkinson and Harrison

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(1978). In a sense this pattern is consistent with a Kuznets-type process where inequality eventually decreases as the whole economy becomes developed. However, it has recently been suggested that this development was probably not driven by such a process, but mainly by exogenous events. Piketty et al. (2006) argue in the case of France that it was mainly adverse shocks to top wealth during the period 1914-45, mainly in the form of the world wars, which decreased French wealth inequality, and that the subsequent introduction of redistributive policies that prevented them from recovering. A similar explanation is given by Kopczuk and Saez (2004) for the US. This line of reasoning has been supported by the fact that Switzerland, which did not take part in either of the wars exhibits rather stable top wealth shares. Our data on Sweden, which also did not participate in any of the world wars, shows an example of equalization taking place without decreases in top wealth shares driven by exogenous shocks. Even though events such as the Kreuger-crash in 1932 hit top wealth holders in Sweden as well, this does not explain the entire drop. This suggests that policy, at least in the case of Sweden, has played a more active role in equalizing wealth than merely holding back the creation of new fortunes after the Second World War. Suggesting that rising taxation and increased redistribution has been important for the decline of wealth inequality is also consistent with the largest drops taking place in the Scandinavian countries as well as with the smaller decline in Switzerland, with its smaller government.

Overall the data, hence, seems to suggest that (1) there was a mixed impact of industrialization and (2) in later stages, after countries became industrial, significant wealth-holding spread to wider and wider groups, bringing wealth inequality down. In terms of the often discussed inverse U-shape over the path of development the first upward part does not seem to be present everywhere, while the later stage decrease in inequality does fit all countries we have studied. An important addition to this characterization is that this analogy misses an important point which is present in the series. While the inverse U-shape suggests that the distribution of wealth starts at some level in a non-industrialized society, then rises, and later returns to the same level of inequality, all our series indicate that development has unambiguously lowered wealth concentration. The proper characterization of wealth inequality over the path of development hence seems to be that it follows an inverse J-shape with wealth being more equally distributed today than before industrialization started.

Data appendix

Table A1: List of sources and data definitions of wealth distribution data

Country	Year(s)	Wealth holder unit	Source
Denmark	1789	males > 19 years	Soltow (1985: table 4)
	1908-25	households	Zeuthen (1928: table IV 4: 521)
	1939, 1944, 1949	households	Bjerke (1956: table 32)
	1950-75	households	Statistics Denmark, *Statistisk Årbog*
	1995-96	households	Statistics Denmark (1995, 1996: table 2)
France	1807-1994	adults	Piketty et al. (2004: table A3, A7)
Norway	1789	households	Soltow (1980: table 3)
	1868	households (?)	Mohn (1873: 10, 30)
	1912	households	Statistics Norway (1915a: 6*, 20*-21*)
	1930	households	Statistics Norway (1934: 63*f)
	1948-2002	households (1983-2002 are adjusted individuals as described in text)	Statistics Norway, *Statistisk Årbok*
Sweden*	1800	males > 19 years	Soltow (1985: tables 4, 5,)
	1908	households	Finansdepartementet (1910: 31)
	1920	households	Statistics Sweden (1927), Census 1920
	1930	households	Statistics Sweden (1937, 1938), Census 1930
	1935	households	Statistics Sweden (1940), Partial Census
	1937	households	SOU (1942: 52)
	1945	households	Statistics Sweden (1951), Census 1945
	1946-50	households	SOS Skattetaxeringarna
	1951	households	Statistics Sweden (1956), Census 1950
	1966	households	SOU (1969: 54)
	1970	households	SOS Inkomst och Förmögenhet 1970, Budgetundersökningen
	1975	households	SOU (1979: 9)
	1978-93	households	SOS, Skattetaxeringarna, Statisktisk Årsbok, and Statistiska Meddelanden
	2002-03	households	Own calculations based on the LINDA database (see footnote 28 for details)
Switzerland	1913-97	households	Dell et al. (2005: table 3)
UK (1938: England and Wales)	1740, 1810, 1875	adults	Lindert (2000: table 2)
	1911-13	adults	Atkinson and Harrison (1978: table 6.1)
	1923-77	adults	Atkinson et al. (1989: table 1)
	1978-2003	adults	Inland Revenue Statistics (2006: table 13.5)
USA (P99-100)	1774	adults > 19 years	Shammas (1993: table 4)
	1916-2000	adults > 19 years	Kopczuk and Saez (2004: table 3 2)
USA (P95-100, P99-100)	1774	households (free adult men and unmarried women)	Shammas (1993: table 2)
	1860	households (free adult	Shammas (1993: table 2)

		male heads of households)	
	1890	families	Lindert (2000: table 3)
	1922-79	households	Wolff (1987: table 3, 1995)
	1983-2001	households	Wolff (forthcoming: table 2)

Note: List of sources and data definitions of the wealth distribution data used in Figures 8 and 9 and in Tables 1 and 2. See text for further descriptions of the data. *The definition of 'household' used here is one where individuals (aged 18 or above) and married couples count as one household (see the section on Sweden for details). Some of the data sources (such as the censuses 1920, 1930, 1940, 1950) report individual data. Which has been adjusted to fit this definition. As also noted by Spånt (1979: 86) such corrections make little difference for the estimated shares.

Table A2: Data for Sweden

Data series	Year(s)	Wealth holder unit	Source
Estate data[1]	1873-77	individual	Finansdepartementet (1879)
	1906-08	individual	Finansdepartementet (1910). For 1908 there is also wealth data based on applying the estate multiplier method (Finansdepartementet 1910: 14-34)
	1954	individual	SOU (1957)
	1967	individual	SOU (1969)
	2002-03	individual	SOU (2004)
Spånt	1920-75	household	SOU (1979: 9) (based on census material and special surveys on wealth distribution 1966, 1970 and 1975)
SCB	1975-97	household	Statistics Sweden (2000: 1)
	2000	household	Statistics Sweden

Note: The data for Sweden displayed in Figure 7 consists of overlapping series based on different source material (estate and wealth tax material as well as censuses and previous studies). The sources for the main series are listed in Table 1. [1]Reference population is all deceased >17 years 1873-1954, and all estates for the years after.

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