Wealth Concentration in a Developing Economy: Paris and France, 1807-1994

Thomas Piketty, Gilles Postel-Vinay and Jean-Laurent Rosenthal *

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* Paris-Jourdan (EHESS-ENS), Paris-Jourdan (EHESS-ENS) and UCLA. All comments are welcome (piketty@ens.fr, gpv@ens.fr, rosenthal@econ.ucla.edu).

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Abstract : Using large samples of estate tax returns we construct new series on wealth concentration in Paris and France from 1807 to 1994. Wealth concentration in Paris and in France increased until World War I and then fell abruptly. The rise in inequality prior to WWI accelerated (rather than stabilized) during the 1860-1913 period. This was largely driven by the growth of large industrial and financial estates and coincided with the decline of aristocratic fortunes (until the 1840s, the share of aristocrats and real estate in top estates was actually rising). The decline in wealth concentration that followed World War I appears to have been prompted by the 1914-1945 shocks rather than by a two-sector, Kuznets-type process. Inequality fell both in Paris and in the rest of France. Finally, individuals who lived on capital income rather than active entrepreneurs were responsible for the very high levels of wealth concentration observed on the eve of World War I. In the late nineteenth and early twentieth century top wealth holders were in their 70s and 80s, whereas they had been in their 50s in the early the nineteenth century and would be so again after WWII. These results shed new light on the ongoing debate about wealth inequality and growth in the presence of capital constraints.

1. Introduction

This paper presents new series on wealth concentration in Paris and France from 1807 to 1994. They thus extent the series presented in Piketty (2001, 2003) by a full century and they represent the first homogeneous series of wealth inequality to cover a span of time sufficient to fully evaluate the Kuznets' hypothesis. While other scholars have put together long series of wealth inequality measures, they have either done so for much shorter periods of time or they have spliced together disparate sources. Our series were constructed by collecting the population of individual estate tax returns in the Paris archives for various years between 1807 and 1902, and linking them to previously published tabulations by size of estate for various years between 1902 and 1994.

Our general motivation for constructing such series is the study of the two-way interaction between development and distribution. More specifically, one of our primary goals is to better understand the decline in income and wealth inequality that occurred during the first half of the twentieth century in today's developed countries. Recent research on France suggests that this decline was for the most part an accidental phenomenon associated with the collapse of capital incomes,[1] rather than a spontaneous, two-sector, Kuznets-type process.[2] In particular, the only reason why top income shares dropped between 1914 and 1945 is that top capital incomes fell, whereas top wage shares remained approximately constant (see Figure 1). The wealth of the very rich was massively reduced by shocks in the first half of the twentieth century–these included war, inflation, and the Great Depression. The very rich have never fully rebuilt their estates, probably because of the dynamic effects of progressive estate and income taxation on capital accumulation and pre-tax income inequality. A central limitation of these top income and wage shares series is that they begin late--just before WWI. There is no systematic data source on incomes before then because the modern progressive income tax was not created until

[1] See Piketty (2003). For similar series covering the U.S., see Piketty and Saez (2003). Similar top income series covering most of the 20th century have now been construted for about 20 countries (see Atkinson and Piketty (2005)).

[2] According to Kuznets' influential hypothesis (Kuznets (1955)), income inequality should have declined spontaneously in advanced capitalist countries, as more and more workers join the high-paying sectors of the economy.

around 1913 in most countries.[3] Although these series strongly suggest that the 1914-1945 shocks played the key role, one cannot fully exclude the possibly of a pre-existing, Kuznets-type downward trend in inequality prior to World War I. Constructing wealth concentration series covering both the nineteenth and the twentieth century allows us to put the 1914-1945 period into a broader historical perspective.

Insert Figure 1

A second and equally important goal is to understand the origins of the high levels of inequality that we know prevailed on the eve of World War I. One can consider two extreme hypotheses. The first would suggest that these high levels were longstanding—the result of the political structures of societies where the primary form of wealth was land. The second is that capitalism, and in particular the interconnection between financial development and industrial growth, created new forms of wealth whose distribution was radically unequal. We thus aim to measure both the level of inequality that prevailed prior to the onset of industrialization and the changes that modernization brought forth. Luckily for us, the 1850s form a convenient turning point since industrialization accelerated under the Second Empire (1852-1870) and the stock market boomed (Lévi-Leboyer et Bourguignon 1985).

Finally, French historical sources on wealth distribution are perhaps the richest in the world and ideal to investigate long-term changes in inequality. As early as 1791 the French National Assembly introduced a universal estate tax, which has remained in force since then. This estate tax was universal because it applied at any level of wealth and for nearly all types of property (both real and estate),[4] Furthermore, the successors of all decedents with positive wealth were required to file a return. The estate tax was made progressive in 1902 (it was strictly proportional from 1791 to 1902), which prompted the French tax administration to start compiling summary tabulations of all individual estate tax returns.[5] These tabulations provide information

[3] The modern income tax was introduced in 1909 in the U.K in 1913 in the U.S., and 1914 in France.
[4] The one glaring exception was government bonds, which were exempted until 1850.
[5] Prior to 1902 the tax on estates that devolved to children was a flat 1%. In 1902 when the tax became progressive the top marginal rate was 5%; by mid 1930s it was 35%; it remains today at 40% (see Piketty (2001, Appendix J)).

about the number and value of estates in given wealth ranges. No such tabulations were compiled prior to 1902. However the tax authorities transcribed individual returns in register that have been preserved. We used these registers to collect large samples of individual returns between 1807 and 1902. We then constructed homogeneous estimates of wealth concentration in Paris and France from 1807 to 1994 (see below for more details on the data and methodology).

Other scholars have attempted to use these sources to examine the evolution of inequality in France and in Paris. In particular, Daumard led a research group that examined a few cross sections of estate returns (1821, 1847, and 1911) in a small number of cities in France. Although the data collected was extraordinarily detailed, the intervals between samples were too long to uncover the evolution of inequality prior to WWI. Another, on going, project follows the descendants of all couples marrying in France between 1800 and 1830 and whose family name started with the letters "TRA" up to 1940. While this approach yields critical information about the intergenerational transmission of wealth within the broad population, the sample size is too small to study the very wealthy. In fact, the TRA survey contains too few observations to deliver reliable estimates above the 95th percentile of the distribution (which is unfortunate, because this is where most of the wealth lies).[6]

In other countries direct and homogeneous evidence on the evolution of wealth inequality is scarce. For instance, the U.K. did not see a universal estate tax before 1894, and the U.S waited until 1916. As a result, homogeneous wealth concentration series based upon estate tax returns can only cover the twentieth century in those two countries.[7] Prior to establishment of estate taxes scholars have relied on other sources, in particular probate records. The information provided by probate records, however, is neither as rich nor as systematic as that contained in

[6] The TRA survey can be used for other purposes, however. For instance, Bourdieu, Postel-Vinay and Suwa-Eisenmann (2003) use the TRA survey to measure the evolution of the fraction of poor decedents (i.e. decedents with zero or near-zero wealth), and they find that this fraction has been increasing in nineteenth century France (see below).

[7] The standard references are Atkinson and Harrison (1978) for the U.K. and Lampman (1962) for the U.S.. Atkinson and Harrison use estate tax returns tabulations covering the 1923-1972 period to compute top wealth share series (the tabulations compiled by the U.K. tax administration over the 1894-1914 period are less rich and do not allow for the same computations as the post-1923 tables). Lampman uses estate tax returns tabulations covering the 1922-1956 period to compute top wealth share series (these series have been updated by various authors, including Kopczuk and Saez (2004)). See Lindert (2000) for a recent survey.

estate tax returns (in particular, probate records were purely voluntary, and all types of property were not covered).[8] Consequently, it is very difficult to compare the eighteenth and nineteenth century probate-based estimates to the fiscal-based twentieth century estimates. Nevertheless they all suggest that wealth concentration rose during the nineteenth century and dropped during the first half of the twentieth century. In contrast, there is little evidence as to the course of inequality in the late nineteenth century (see e. g. the survey by Lindert (2000)). Had it started to decline as Kutznets would have thought? Did it stabilize? Did it keep increasing until World War I? Our French series allow us to cast new light on this central issue because they are homogeneous over the 1807-1994 period.

Our main conclusions are the following. First, wealth concentration in Paris and in France increased up to World War I, with an acceleration (rather than a stabilization) of the trend at the end of the period. The bulk of the rise in inequality actually took place during the 1860-1913 period. This was largely driven by the growth of large industrial and financial estates and coincided with the decline of aristocratic fortunes. During the first half of the nineteenth century, the share of aristocrats in top estates actually rose. Next, the decline in wealth concentration observed after World War I appears to have been driven by the 1914-1945 shocks rather than by a two-sector, Kuznets-type process. The decline in inequality was not due to a reduction in the gap between Paris and the provinces since it occurred both in Paris and in the rest of France. Finally, and perhaps most importantly, the very high levels of wealth concentration observed at the eve of World War I seem to have been associated with retired individuals who had lived off capital income (henceforth *rentiers*) rather than with active entrepreneurs. In particular, the age wealth profile of decedents is markedly steeper around 1900-1913 than in other periods. Top wealth holders were very old at the turn of the last century (their 70s and 80s), whereas they are usually in their 50s in other periods, both at the beginning of the nineteenth century and at the end of the twentieth century. Although our data does not allow us to evaluate the inefficiency of wealth concentration directly, these results shed new light on the ongoing debate about inequality and growth. That is, to the extent that

[8] In particular, real estate was not probated in the U.K. before 1898 (realty and personalty were also treated differently in U.S. probate records). For estimates of wealth concentration in the U.K. based on eighteenth and nineteenth century probate records, see Lindert (1986). For corresponding estimates for Colonial America, see Jones (1977).

credit constraints were important in 1900 France (which we cannot prove directly with our data), our findings about the changing age profile of wealth suggest that high wealth concentration might have been associated with lower growth.[9]

The rest of the paper is organized as follows. Section 2 describes our data sources and outlines our methodology. Section 3 presents our estimates of wealth concentration and composition at death in Paris. Section 4 discusses how the nineteenth century Paris estimates can be extended to the rest of France and presents preliminary results for wealth concentration at death in France from 1807 to 1994. Section 5 shows how our data on wealth and age at death can be used to estimate series on wealth concentration among the living, using the estate multiplier method. Section 6 examines age-wealth profiles and discusses the efficiency implications of high wealth concentration. Section 7 concludes.

2. Data Sources

All of our estimates are based upon estate tax returns. As noted above, the estate tax was created in 1791, and it became a progressive tax in 1902. Since then the tax administration has periodically compiled tables indicating the number of decedents and the value of their estate for a large number of estate brackets. These tables were already used by Piketty (2001a, 2003), and they are available over the 1902-1994 period.[10] They were compiled and published by *département* (*départements* are middle level administrative jurisdictions; there are about 90 of them in France, including Paris).[11] These tables can be used to study the evolution of

[9] One way to test directly for the efficiency impact of high wealth concentration would be to look at investment patterns across wealth fractiles and age groups (i.e. to which extent older wealth holders invest their wealth in low-yield assets). The sources we use lend themselves to precisely this kind of investigation and we intend to do so in further research.

[10] These tabulations were published in the official statistical publications of the French Finance Ministry (for exact references and page numbers see Piketty (2001, Appendix J)). The basic national tabulation indicating the number of decedents and amount of their estate for a large number of estate brackets is available for the following years: 1902-1913 (except 1906 and 1908), 1925-1960 (except 1928 and 1934), 1962 and 1964. The French tax administration stopped compiling such tables in 1964, but micro-files including large national samples of estate tax returns are available for 1984 and 1994 (in the present paper, we only use the 1994 micro-file).

[11] Tables by estate brackets are availlable at the *département* level for the following years: 1902-1913 (except 1906 and 1908), and 1925-1958 (except 1928 and 1934); for other years tables by estate brackets are only available at the national level. In addition, national tables broken down by estate brackets and age of decedents are available for years 1943-1954. The 1994 micro-file also allows us to break down the data by *département* and age for year 1994.

wealth concentration both in France and in Paris during the twentieth century, using standard Pareto interpolation techniques.

Prior to 1902, the tax administration only published the aggregate amount of wealth reported on estate tax returns, broken down by real (structures and buildings) and personal (furniture, businesses, stocks, bonds, etc.) assets.[12] Studying concentration thus required collecting our own samples of individual returns. Collecting information on every individual return from every *département* for a given year was impossible. It would have required going to the archives of each département to access the tax registers and then dealing with hundreds of thousands of declarations a year. We therefore had to devise a sampling strategy. One option was to randomly select (e.g. on the basis of birth dates or family names) a nationally representative sample of decedents for various years during the nineteenth century. That sample would need to be extremely large, however, to include enough large estates (given that wealth is extremely concentrated, it is critical to observe many of the very wealthy).

Therefore we decided to pursue a completely different strategy, and collected data for all decedents in Paris for selected years (1807, 1817, 1827, 1837, 1847, 1857, 1867, 1877, 1887, and 1902). We chose Paris because a disproportionate share of the very rich lived there. As one can see from Table 1, the annual number of decedents (aged 20-years-old and over) in Paris was about 12,000 around 1810 (2.5% of the French total) and nearly tripled during the nineteenth century, up to about 35,000 around 1900 (6.5% of the French total). However only 30% of decedents in Paris had a positive estate during the nineteenth century (about half as many as in the rest of France) so we only needed to collect detailed information on 3,500 decedents or so per year at the beginning of the nineteenth century and 10,000 or so decedents per year at the end (see Table 1). Although Paris had more decedents with zero wealth than the rest of the country, the average estate was about 4.5 times larger in Paris than elsewhere in France during the nineteenth century.[13] It is particularly striking to notice that this ratio actually increased over time,

[12] These published aggregates were computed by the administration on the basis of tax receipts.
[13] Average estates, as well as top estate fractiles, are always defined in this paper over the set of all decedents aged 20-year-old and over, including those with zero wealth.

in spite of the fact that Paris nearly tripled in population.[14] On the eve of World War I, the estates of Paris decedents made up over 26% of the French total (see Table 1 and Figure 2).

Insert Table 1

Insert Figure 2

We designed our data collection to take advantage of the work of the estate tax administration. For every person who either died in Paris or might have taxable wealth in any of one of Paris nine bureaux, the administration opened an entry in a first set of volumes (the *tables des successions et absences*, henceforth TSA). Later, the entry was completed either when estates taxes had been paid or when the administration was satisfied that the individual had left no wealth behind. The entries include name, occupation, residence, marital status, age, and for individuals with wealth, information about heirs and the date at which the declaration was filed. Up to 1870 the TSA also include a summary of the individual's estate broken down into moveable wealth and real estate. Hence the cross sections up to 1867 rely heavily on the TSA. For 1877, 1887 and 1902, the wealth information was no longer recorded. We then started with the TSA, for each entry with positive wealth we collected the first three letters of the last name, gender, age, day and month of death and the date(s) at which returns had been filed. We then opened a second set or registers (the *registres de mutations par décès*, henceforth RMD) where a complete description of the estates is transcribed, and the information not gleaned in the TSA was appended to the first set of entries.

Yet these data gave information by tax return, not by individual. A decedent's heirs could file multiple returns either because they amended their original declaration, or before 1902 because they paid taxes in multiple bureaux. Indeed prior to 1902 estate taxes on real estate were paid in the bureau of the asset rather than that of the residence of the decedent. In an era of strictly proportional taxation such dispersed payment of taxes reduced administrative costs because information about

[14] Note that there is a discontinuity in the growth of Paris during the nineteenth century, as new districts ("*arrondissements*") previously registered in the suburb were integrated into the city of Paris in 1860. The results reported here do not make any correction for this discontinuity, which explains the discontinuity observed on some of the figures around 1860.

a real estate values did not have to be centralized. Naturally, when the estate tax became progressive in 1902, returns were unified. Because TSA entries provide links to the different declarations in the same bureau, reassembling these declarations was trivial. Reassembling returns from different bureaux was another matter because there are no links across bureaux. To fully reassemble all individual returns would have required us to collect detailed information on every decedent in Paris. But we did not need to do so because the very high levels of inequality in Paris came to our assistance. By collecting nominal information on the top 10% of returns we were able to successfully attribute 92% of movable assets and 97% of all real assets to specific individuals.[15] Given the high variety of first names and last names as well as detailed information on residence, the likelihood of falsely positive matches is very low. The remaining returns were treated as individuals—thus biasing downwards our inequality estimates.

Our 1902 Paris sample is fully consistent with the table compiled for the same year for Paris by the tax administration. Therefore we can link up our 1807-1902 Paris files with the 1902-1994 Paris tables to construct homogeneous 1807-1994 series for inequality in Paris. The more difficult part is the extension to wealth concentration for France from 1807 to 1902 from the Paris data. To do so we must estimate how the relative importance of Paris in each top estate class evolved over the nineteenth century. To achieve this goal, we used other estate surveys,[16] as well as non-estate fiscal sources (see section 4 below). The other difficult part is the construction of estimates for wealth concentration among the living from estate tax data, which we do using the estate multiplier method and mortality data by age group (see section 5 below).

When using tax data, it is also important to keep in mind that tax evasion and manipulation can potentially bias the results. There are however good reasons to believe that this is not too much of a problem here. First, estate tax rates were

[15] To check our procedure for 1817, 1827, 1877, and 1887, we also assembled all declarations that matched on the first three letters of last name, gender, day of death, and age; the estimates of inequality are slightly higher but trivially so.

[16] In addition to the TRA survey (which gives a reliable picture of the national distribution up to the 90th-95th percentile), we should mention the study by Daumard (1973), which relied on samples of estate tax returns collected in five French cities at the beginning and at the end of the nineteenth century (we shall come back to this important study below).

extremely modest until World War I (less than 2%), which implies that the incentives for tax evasion were small. In contrast penalties for evasion were stiff. Moreover the administration made every effort to keep up with changing composition of assets, and to track down individuals with some wealth. Among other things financial institutions and public utilities were require to notify the administration of when accounts changed owners. As a result it was not easy to dissimulate the wealth of a decedent (either real estate or financial assets in a publicly traded firm), and inheritors had a strong incentive to register their property in order to benefit from state protection. This suggests that the 19th century data collected in the Paris archives is probably of very high quality. Tax evasion is potentially a more serious issue for the the 20th century, when tax rates become substantial. Although top estate tax rates have rarely exceeded 20%-30% for direct transmissions in France (the top rate has been equal to 40% since 1984, its highest level ever), it is obvious that incentives for tax evasion have increased over time. However several independant data sources suggest that the trends observed during the 20th century are robust and are not due to the rise of tax evasion.[17]

3. Wealth Concentration at Death in Paris, 1807-1994

Figure 3 shows the evolution of wealth concentration at death in Paris from 1807 to 1994. Given that the bottom two thirds of the distribution own no wealth and the richest decile accounts for at least 95% of the value of all assets during the nineteenth century (see Table 2), we focus on the top 1%. The richest one percent of (adult decedents) Parisians appears to have held a stable and very high fraction of all assets during the first half of the nineteenth century (around 50%-55% of total wealth). The 1817 spike was short-lived and was due not to a large increase in the size of top estates, but rather to a large decline in modest estates (which apparently suffered the most from Napoleonic wars).[18] Inequality in Paris increased substantially

[17] See Bourdieu et al (2004). Furthermore the 20th-century decline in wealth concentration observed in estate tax returns is qualitatively and quantitatively consistent with the decline in capital income concentration observed in income tax returns (and the latter appears to be robust: in particular it holds after scaling up tax-return capital income using national accounts aggregates). This is also consistent with several other data source on wealth concentration and top fortunes (especially equity ownership data). See Piketty (2001, 2003) for a detailed discussion.

[18] Other spikes in the top 1% share are due for the most part to the volatility of the very top estates (the top 0,1% share, and mostly the top 0,01% share – note that with about 20 000 decedents per year in Paris, the top 0,1% fractile includes only 20 decedents, and the top 0,01% only 2 decedents,

after 1867 with the top one percent's share of wealth at death climbing from about 52% to over 72% in 1913. World War I and the ensuing shocks then prompted an abrupt decline. The top 1% share dropped by 34 percentage points between 1913 and 1947 and by about 10 percentage points between 1956 and 1994. Converting these wealth-at-death concentration estimates into wealth-of-the-living concentration estimates leaves this general picture unchanged (see section 5 below).

Insert Table 2

Insert Figure 3

Who were the individuals who enjoyed such a substantial increase in their relative wealth between 1867 and 1913? For the most part, their fortunes derived from large industrial and financial estates. As Figure 4 illustrates, the share of personal (non-real) estate has always been a U-shaped function of wealth. This reflects the well-known fact that real estate is a middle class asset. The poor are too poor to own land or buildings; what little they have is in furniture, cash, or other moveables. In contrast, the rich hold most of their wealth in stocks and bonds. What is more interesting is that during the nineteenth century the relative importance of personal wealth in Parisian estates also followed a U-shaped curve over time. This was especially true for the very wealthy (see Figures 4 and 5) where real assets became more and more important from 1807 to 1837. Real estate then entered a relative decline after 1837 that accelerated after 1867.

The ebb and flow of the relative importance of real estate was linked to Paris' recovery from the Revolution. Prior to the Revolution, the peripheral parts of the city had been a maze of convents, monasteries and educational institutions all belonging to the Church. When the wealth of the Church was nationalized these real estate assets were abruptly put on the private market, creating a glut of buildings and low prices. As the city's population expanded, building and land values recovered, the relative importance of real estate grew, before being overshadowed by the financial boom of the last part of the century (Lescure (1982).

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so that the estimates for these fractiles are unstable. They depend on the identity the very wealthy individuals who happened to die in a specific year). The figures reported on Table 2 are the raw figures, with no adjustment whatsoever for this top wealth volatily. Note however that the 1867-1913 upward trend is highly significant and does not rely on a small number of very top wealth holders.

The share of aristocratic decedents among the very rich follows an inverted U over the nineteenth century (see Figure 6). [19] That is, nobles became more and more numerous in top wealth fractiles from 1807 until 1847, then the trend reversed and their importance declined steadily. To be sure aristocrats remain over represented throughout the period, including in 1902 (about 13% of nobles in the top 1% estates, over 25% in the top 0.1%, vs. less than 1% in the population as a whole). The inverted-U pattern is yet another of the Revolution's legacies. In 1807, when we first observe it, aristocratic wealth was at a temporary nadir. On the one hand, the nobility was impoverished by the Revolution's inflation and by the sharp decline of the value of Parisian real estate. On the other hand, part of the Old Regime nobility was in exile and thus, if they died, we do not observe their movable wealth. Aristocrats were able to recoup part of their losses during the first half of the nineteenth century. Napoleon provided some assistance by ennobling his chief military officers and endowing them with wealth. Later, the Restoration government (1815-1830) compensated individuals who fled abroad during the Revolution for the losses they suffered when their property was confiscated. The government distributed nearly one billion francs in the famous "milliard des Emigrés" (Gain (1928)). The beneficiaries of Napoleon's and the Restoration's largess appear among the very rich until mid-century. Presumably such redistribution did not contribute to accelerate French industrialization.

Insert Figure 4
Insert Figure 5
Insert Figure 6

4. From Paris to France

We can use the Paris data to construct wealth concentration at death estimates for all of France from 1807 to 1902. To do so we need to know the evolution of the share of Paris estates in top estates. Between 1902 and 1994,

[19] We take a very broad view of aristocrats: they include the Old-Regime nobility, the members of the elite who were given titles by Napoleon and anyone who had the fortune to create an aristocratic entail under the Bourbons (1815-1830).

available data (broken down by *département*) shows that the evolution of top estate shares in France has been parallel to that of top estate shares in Paris. Wealth inequality is always lower for the country as a whole, but the trends are similar (see Figure 7). It is also striking to note that Paris's share of top 1% French estates has remained fairly stable over the twentieth century (it fluctuates between 20% and 25%, with no trend), even though Paris' share of all decedents has been dwindling over time, reflecting the population decline of the capital (see Table 3). In 1902, Paris decedents were 4 times more likely to belong to the national top 1% estates than average decedents (26.6/6.5=4.1); in 1994, Paris decedents were 7 times more likely to belong to the national top 1% estates than average decedents (25.2/3.6=7.0). If anything, the geographic concentration of fortunes was larger at the end of the twentieth century than at its beginning. The decline of wealth concentration that took followed WWI was not due to redistribution between Paris and the provinces.

How did the fraction of Paris estates in top estates evolve over the course of the nineteenth century? Our benchmark estimates rely on a simple and very conservative assumption: from 1807 to 1902 Paris' share of estates in the top percentile increased at the same rate as Paris' share of French adult deaths. More precisely, let us denote $F_{Pt}(w)$ the cumulative distribution function for wealth-at-death in Paris in year t, $F_t(w)$ the corresponding distribution for France, n_{Pt} the total number of adult deaths in Paris in year t, and n_t the corresponding number of the all of France. The 90th percentile threshold $P90_{Pt}$ is defined by $F_{Pt}(P90_{Pt})=0,9$, the 99th percentile threshold $P99_{Pt}$ is defined by $F_{Pt}(P99_{Pt})=0,99$, etc., and similarly for the French thresholds $P90_t$, $P99_t$, etc. We observe $F_{Pt}(w)$, n_{Pt}, and n_t throughout the 1807-1994 period, but we do not observe $F_t(w)$ until 1902 (before this date we only observe national aggregate average wealth $w_t=W_t/n_t$). To construct our benchmark estimates we assume that the shares s_{99t}, $s_{99,5t}$, $s_{99,9t}$ and $s_{99,99t}$ of Paris estates in the national top 1%, 0,5%, 0,1% and 0,01% of the national wealth-at-death distribution increased at the same rate as n_{Pt}/n_t during the 1807-1902 period (see Table 3). Using this approximation and our Paris samples of individual tax returns we compute the threshold wealth levels for the top percentiles of the national wealth distribution (e.g. P99, P99.5, P99.9 and P99.99).[20] We also calculate the average wealth levels for

[20] For instance, the number of decedents (aged 20 years old and over) in France was 583,976 in 1887 (see Piketty et al. (2004, Appendix Table A1), so that the top 1% of the estate distribution at deatlh

the relevant wealth classes (e.g. P99-99.5, P99.5-99.9, P99.9-99.99 and P99.99-100) using Pareto interpolation techniques. These are then weighted by the number of individuals in France in that wealth class in order to compute the average wealth levels for top fractiles (P99-100, P99.5-100, P99.9-100 and P99.99-100). Lower thresholds of the national wealth distribution (P90 and P95) were computed using the national TRA survey,[21] and the P90-95 and P95-99 intermediate wealth levels were also computed using Pareto interpolation techniques.

The national top estate shares estimates reported on Table 4 were computed using this methodology. They suggest that wealth concentration (as measured by the top 1% estate share) rose throughout the nineteenth century in France, both during the 1807-1867 and 1867-1902 periods, although less sharply than in Paris during the latter period (see Figure 7). These estimates are conservative in the sense that it is almost certain that they underestimate the rise of wealth concentration that took place in France during the nineteenth century. First, we know that the bulk of population growth in Paris during the nineteenth century was due to the annexation of suburbs in 1860 and to population growth in these peripheral *arrondissements*. Because the outskirts of the city were poor, the annexation added few top estates. Thus, there is little doubt that Paris' share of top estates in France actually increased less than its share of the total population. This hypothesis is confirmed by nineteenth century housing tax tabulations showing that the fraction of Paris taxpayers in national top 1% taxpayers was substantially larger than 10% at the beginning of the nineteenth century.[22] Giving Paris a larger (and more realistic) share of top estates in 1807 would both reduce the share of wealth of the top 1% in France at that date and lead to more rapid rise in inequality over time.

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consists of the top 5,840 estates. If the share of Paris among French top 1% estates was 24.1% in 1887 (see Table 3), then the national P99 threshold for 1887 corresponds to the top 1,410 Parisian estates (0.241 x 5,840 = 1,410) (the national P99 thereshold reported on Piketty et al. (2004, Appendix Table A3) for 1887 was computed using this formula).

[21] See Bourdieu et al. (2003) for full details about the TRA survey. The P90 and P95 thresholds reported on Piketty et al. (2004, Appendix Table A3) were computed using 10-year moving averages around the target years in order to make sure that the TRA sample includes sufficientely many observations.

[22] These tabulations were published in the same Finance Ministry official publications as the estate tabulations. We chose not to use them in our formal computations because the tax base of the housing tax (namely, the rental value of the real estate property where the household lives) is only loosely connected to the estate tax base (in particular, one cannot rule out the possibility that the housing tax base over-represents Paris-based taxpayers).

Next, and most importantly, other estate surveys are consistent with the view that wealth inequality was on the rise. The important study by Daumard (1973), which relied on samples of estate tax returns collected in Paris, Lyon, Toulouse, Lille, and Bordeaux found that wealth concentration rose in each of these five cities during the nineteenth century.[23] The TRA survey, although it is ill-suited for the study of top estates, is also consistent with our view. Wealth dispersion was on the rise in nineteenth century France according to the TRA survey, both in the sense that the fraction of decedents with positive estates declined over time (in spite of the sharp increase in the value of the average estate) and that ratios such as the P90/P50 ratio increased.[24] We also compared our benchmark national P99 series, extrapolated from our Paris samples, and the national P99 series computed using the TRA survey. We found that both series display the same overall upward trend in concentration (which is reassuring regarding the general validity of our Paris-France extrapolation technique), except that the growth of inequality from 1807 to 1902 period in the TRA series is more severe than in our series (see Figure 8). This again suggests that the latter provide a conservative lower bound for the upward trend in wealth concentration. In any case, the finding of a large increase in wealth inequality in 19th century France (and up until World War I) appears to be robust.[25]

Insert Table 3

Insert Table 4

Insert Figure 7

Insert Figure 8

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[23] Unfortunately, Daumard's samples are not available in machine-readable format, she has only two or three years of data for each city, and she did not try to compute homogenous inequality indicators (top fractiles shares, etc.) with her data. Thus, although her results and our work are consistent, they cannot be directly compared with our result.

[24] See Bourdieu et al (2004).

[25] Note that this continuous rise in wealth inequality does not necessarily imply that a parallel rise occured regarding income inequality. Given that there exists no micro source on incomes prior to the creation of the income tax in 1914, it is very difficult (if not impossible) to properly address this issue. Morrisson and Snyder (2000) have attempted to link up income inequality estimated based upon Old-Regime fiscal sources (pre-1789) with modern, income-tax-based 20th century estimates, and they have argued that income inequality might have started to decline during the later part of the 19th century and at the eve of World War I (see also Morrisson 2000). Although our data does not allow us to rule out such a possibility, we note that their 19th century personal distribution estimates are based on fragile macro-economic data on functional distribution and are not homogenous to their 18th and 20th centuries estimates. Given the evidence that we provide on wealth inequality, any significant decline in aggregate income inequality would have to be associated with severe compression of the wage distribution. There is little research on this issue however.

As was mentioned earlier, there exists no comparable continuous data source covering the 19th and 20th centuries in other countries, which makes it difficult to put our French long-run series in international perspective. We note however that existing series for the U.S. and the U.K. are consistent with our findings on France.[26] Regarding levels, existing evidence suggests that during the nineteenth and most of the twentieth centuries, France was in an intermediate position in terms of wealth concentration, in between the U.S. (more equal) and the U.K. (the most unequal).[27] These differences in inequality largely hark back to differential concentration of landownership. England's land was extremely narrowly held, while the US was most egalitarian. The impact of access to real estate assets can also be seen when we contrast Paris (where it was extremely concentrated) with the provinces.

Trends in inequality over time may be easier to compare because biases in sources material may have a significant effect on levels rather than trends. The historical pattern is similar in each of the three economies. In particular, there is evidence that wealth concentration increased during the 19th century in both Anglo-Saxon countries, and declined during the 20th century, with a turnpoint around World War I.[28] None exhibit patterns consistent with a Kuznet process.

5. From the Wealth of the Decedents to the Wealth of the Living

The estimates reported so far refer to inequality among decedents, as described in the tax returns filled by their heirs. However, the evolution of the distribution of wealth among the living might have followed a different pattern. In order to convert wealth-at-death concentration estimates into wealth-of-the-living

[26] Soltow and Van Zanden (1998) also find a decline in inequality in the twentieth century and their data are consistent with a rise in inequality in the nineteenth century but they have no direct evidence about its extent.

[27] According to our series, the top 1% wealth share in France rose from around 45% in 1800 to about 55% around World War, and then fell to about 20% by the end of the 20th century (see Figure 7; wealth concentration among the living appears to be somewhat larger, see section 5 below). According to the series pieced together by Lindert (2000, pp.181-182 and 186), the U.K. top 1% wealth share rose from about 55% in 1800 to 70% around World War I, down to about 20% in the 1990s, while the U.S. top 1% wealth share rose from about 15-20% in 1800 to about 40% around World War I, down to about 30% in the 1990s (as low as 20-25% according to the more recent estimates due to Kopczuk and Saez (2004)). Wealth concentration is now larger in the U.S. than in European countries, but the reverse was true during the 19th century and until World War II (it is only since the 1950s-1970s that U.S. wealth concentration has been somewhat larger).

[28] See Lindert (2000, pp.181-182 and 188).

concentration estimates, it is standard to use the "estate multiplier" method.[29] It consists of weighting each observation of an estate at death by the inverse of the mortality rate for this age group. That is, if the mortality rate for ages 20 to 24 was 0.68% in Paris in 1902, then each decedent aged 20-24 represented about 147 living individuals of the same age (1/0.0068=147). Similarly, if the mortality rate for ages above 80 was 21.43% in Paris in 1902, then each decedent in that group represented about 4.7 living individuals in the same age group (1/0.2143=4.7). Applying this method requires mortality tables (these are easily available) and estate tabulations broken down by estate size and age at death (these are scarcer). Fortunately, the city's statistical bureau published annual death by age totals, the French censuses report the age distribution for the capital every five years, and we collected age at death from the estate declarations. These data allowed us to compute estimates of wealth concentration among the living over the period 1807-1902, using various assumptions about the wealth-profiles of mortality rates.

The base population for the living is the set of all individuals aged 20 and over living in Paris in year t, which we note p_t. The number of living individuals in age bracket a is denoted p_{ta} (a=20-24, 25-29, 30-34,...,75-79, 80 and over), and the number of decedents in age bracket a is denoted n_{ta}. The mortality rate for age bracket a is given by $m_{ta} = n_{ta}/p_{ta}$. We begin with a uniform-mortality benchmark. These estimates are based on the simplifying assumption that these mortality rates depend solely on age and are the same for all wealth groups (and, in particular, are the same for zero-wealth and positive-wealth individuals). We can then weigh each decedent with positive estate and age a collected in the Paris archives in year t by p_{ta}/n_{ta}. This allows us to compute the number of living Parisians with positive wealth at yeat t, and also (by differentiating with p_t) the number of living Parisians with zero wealth at year t, which is used to weight zero-estate observations. We then use our weighted data sets to compute top estate fractiles among the living in Paris.

[29] This method was widely used in Britain and France in the late nineteenth and early twentieth centuries to compute the stock of national wealth on the basis of the flow of wealth transmitted at death. Standard references that use this technique to estimate the wealth distribution of the living from estate tax data tabulated by estate size and age at death include Atkinson and Harrison (1978) and Lampman (1962). For a more recent application of this technique to the U.S., see Kopczuk and Saez (2004).

The main conclusion is that the living experienced the same upward trend in wealth concentration as the decedents (see Figure 9). We find that inequality was significantly higher among the living than among decedents, because survivors were on average younger than those who died, and the young were on average poorer. In particular, the estate multiplier method leads to lower average weights for positive-wealth decedents than for zero-wealth decedents (the former are on average older and therefore "represent" a smaller number of living individuals). As a result, the fraction of positive-wealth individuals is even smaller among the living than among decedents. Hence our benchmark uniform-mortality estimates of wealth concentration among the living are significantly larger than corresponding estimates among decedents (e.g. top 1% wealth shares are about 15% larger among the living). Changes over time, however, are similar. Increased life expectancy and declining mortality rates over the course of the nineteenth century have only a small effect on the trends.

Insert Figure 9

In order to make the estate multiplier method more reliable, one would prefer to take into account differential mortality by wealth. Doing so would require having access to mortality schedules based both on wealth and age at different points in time; unfortunately these are not available. We have nonetheless re-estimated wealth of the living based upon the same assumption as Kopczuk and Saez (2004). That is, we assumed uniform mortality among the poor (here defined as zero-wealth individuals) and among the rich (here defined as positive-wealth individuals), and we assumed that the ratio m_{taR}/m_{taP} between the mortality rate of the rich and the mortality rate of the poor followed a U-shaped age profile, from about 85% for the young (i.e. the rich die 15% less often than the poor when they are 20-24 or 25-29 year-old) down to about 70% for middle-age individuals in their 40s-50s and up to 100% for very old individuals in their 80s-90s.[30] This profile corresponds to the best available estimates in the literature, and it appears to be relatively stable over time and accross developed countries. In the absence of better data, it is the best one can

[30] See Kopczuk and Saez (2004, Table A4).

do.[31] The benchmark differential-mortality estimates reported on Figure 9 show that although adding differential mortality produces different levels of inequality, it does not have much impact on the upward trend in concentration.

The resulting differential-mortality inequality estimates lie between those based on decedents only and those using uniform mortality for the-living (see Figure 9). Note that moving from uniform-mortality to differential-mortality estate multiplier methodology can either increase or decrease inequality. Here the reason why such a move leads to lower wealth concentration seems to be due to the fact that differential mortality tends to put higher weights on positive-wealth decedents (for a given age), thereby increasing the estimated fraction of living individuals with positive wealth. However the important point is that the resulting level effects are relatively small in magnitude, constant in time, and dwarfed by the upward time trend. Even if we were to assume an enormous increase in differential mortality during the 19th century, in the sense that differential mortality between the rich and poor was equal to 0% of the benchmark differential in 1807 and 100% of the benchmark differential in 1902, the resulting wealth concentration estimates would still be significantly higher in 1902 than in 1807 (see Figure 9). Yet we have no reason to believe that differential mortality increased to such an extent. During the nineteenth century real wage for unskilled workers rose which would have reduced mortality more for the poor than for the rich. After 1850, public health measures (sanitation, water, vaccination…) were put in place. Again these would have had a large effect on the poor and the middle class who could not privately purchase such health improving services. To be sure the rich could avail themselves of more medical services than the poor or the middle class but their impact was probably small (bear in mind that neither antibiotics nor cardio-vascular interventions were available).

Finally, we have applied the estate multiplier method to available data for 1947 and 1994. Overall the sharp decline in wealth concentration observed during the twentieth century (and especially between 1914 and 1945) is very robust. If anything,

[31] See Kopczuk and Saez (2004, Appendix B) for references to the U.S. and international literature devoted to the age/wealth profile of mortality rates.

the decline appears to be even larger when one looks at wealth concentration among the living rather than among decedents.[32]

6. The Changing Age Profile of Wealth

In the previous sections we focused almost exclusively on aggregate top wealth shares. Our data, however, also detail the characteristics of each decedent, in particular their gender and age. The evolution of wealth by gender is of relevance for over the past two centuries there have been massive changes in women's labor force participation, capacity to manage their own affairs and life expectancy relative to men. The evolution of wealth by age is of relevance because there was significant increase in adult life expectancy over the twentieth century and because the progressive diffusion of pension may have changed savings motivations. Moreover, age wealth profiles also inform us about the motives of wealth accumulation and the economic impact of high wealth concentration.

A first pass at the data considers the gender breakdown of wealth at death. Remarkably, in our micro data the share of women in top estates takes its highest value on the eve of World War I. For instance the women share in the top 0,5% rose from 35% prior to 1850 to 45% in 1902 only to fall to 40% after WWII. Strikingly, women's share of wealth follows almost exactly the pattern of aggregate inequality. Women were relatively richer when inequality reached its apex in France than at any other time. Moreover institutional variables seem to have played almost no role in changing the relative wealth of women-- Unlike in common law countries, French law, starting with the code civil of 1804, gave nearly equal treatment of all children in bequests Further research will help us determine to what extent women of great wealth were heirs or part of economically very successful couples.

[32] See Piketty et al. (2004, Table A4). It is unfortunately not possible to construct complete series for wealth concentration among the living for the twentieth century, due to data limitations: tables broken down by estate brackets and age of decedents are available solely for years 1943-1954 and at the national level (no table broken down by estate brackets and age of decedents has ever been compiled at the *département* level, except in 1931 for Seine *département*: see Danysz (1934)), and the 1994 micro sample is not large enough to allow for a reliable application of the estate multiplier method at the Paris level. Thus the only wealth-of-the-living concentration estimates we provide for the twentieth century are national estimates for 1947 and 1994.

The data also reveal striking changes in the age profile of wealth between 1807 and 1994 (see Table 5). During the nineteenth century, as wealth concentration was increasing, the very rich were getting older and older. At the beginning of the nineteenth century, in the aftermath of the French Revolution, the richest individuals were those in their 50s: they were typically 100% richer on average than people in their 40s, 25% richer than those in their 60s, and 40% richer than those in their 70s and 80s. By the 1870s, however, the age-wealth pattern had become strongly monotonic: the richest individuals were the oldest individuals. In 1902, people in their 60s and 70s bequeathed 150% more than those in their 50s, and those in their 80s 300% more! On the eve of World War I, top wealth holders were old and likely to be retired. This pattern breaks sometime during the 1914-1945 period.[33] In 1947 as well as in 1994, we are back to a pattern where the richest individuals are those in their 50s. Overall, the period of maximal wealth inequality (1860-1913) also appears to be a period characterized by a very specific age profile of wealth and large concentration of assets among the elderly.

Insert Table 5

Another way to analyze the changing age-wealth relationship is to look at average age by top estate fractile.[34] In 1817, average age was virtually the same for the top 10% and the top 1% of estates (or even slightly declining). The average-age-per-fractile relationship becomes upward sloping during the nineteenth century, and by 1902 those in the top 1% were almost 6 years older than those in the top 10%. The relationship is flat in 1947 and downward-sloping in 1994. Finally, one can apply the estate multiplier method (see Section 5 above) and analyze how wealth concentration by age group among the living changed over the course of the nineteenth century. The general population in Paris did not become older during the nineteenth century: those aged 60 or more were about 15% of the population in 1817, and after 1847 they were about 10-11%..[35] However the share of total wealth

[33] Existing evidence on the age-wealth profile for 1931 (see Danysz (1934)) suggests that the Great Depression and World War II (rather than World War I) played the leading role in breaking this pattern. This is an issue that we plan to investigate in future research.
[34] See Piketty et al. (2004, Table 6).
[35] Although life expectancy was increasing, which should have lead to large shares of population for older groups), the city was also growing quickly. The large numbers of immigrants (who were typically

owned by the elderly rose significantly as wealth distribution worsened. The wealth belonging to those aged 60 or more rose from about 25-30% of the total at the beginning of the nineteenth century to about 40-45% by the end of the century. The wealth share of those aged 70 or more doubled, from less than 10% to about 20%.[36]

That inequality became strongly correlated with age in the 1860s is perhaps not surprising. Those that died old in the 1820s and 1830s had lived through the difficult years of the French Revolution and the dislocation of the end of the Napoleonic period. Their accumulation was severely disturbed. Furthermore they were rather less likely to inherit much wealth since the Revolution wiped out the bond portfolios of their parents through a prolonged period of high inflation. Those who died from the 1860s to the early 1910s had three advantages over their forebears. They enjoyed long periods of accumulation uninterrupted by major crises, they did inherit from their parents, and finally they enjoyed the fruits of the financial sector expansion that began in the 1850s. After 1947 we seem to have returned to a situation quite like that of 1817. Presumably the capital damages associated to both World Wars and to the Great Depression had a strong negative effect on the wealth holdings of older generations. The persistence of a flat age wealth profile to 1994 is likely to be associated with two factors. First, in societies where income growth is rapid, absolute wealth accumulation is faster by younger cohorts than by older ones because their incomes are higher at every age. This is an important distinction between the nineteenth century and the twentieth century. Further, highly progressive rates of income and estate taxation have probably made it more difficult to accumulate large fortunes, thereby flattening the observed age wealth profile.

The more interesting (and more difficult) question relates to the possible efficiency impact of high wealth concentration and changing age wealth profiles. Although our data do not allow us to address efficiency issues in a rigorous way, our results allow us to formulate a number of hypothesis and to shed new light on the ongoing debate on inequality and growth.[37] From a theoretical viewpoint, whether

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in their twenties) increased the relative size of the younger cohorts See Piketty et al. (2004, Table 7 and Figure 11).

[36] See Piketty et al. (2004, Figure 12).

[37] So far, this literature has concentrated upon cross-country regressions of inequality on growth, a methodology that raises serious identification problems, especially given the low quality of available

high wealth concentration can have a negative growth impact depends critically on the existence of credit constraints. With first-best credit markets, money flows towards the best entrepreneurs and investment projects, irrespective of the initial distribution. High levels of wealth concentration can be bad from a social justice viewpoint, but they entail no efficiency loss. When credit constraints bind, however, initial wealth matters, and high levels of inequality can hurt growth. Whether the loss is large or small depends on who owns the assets. If the rich are efficient investors (they know which projects to fund, etc.), then wealth concentration may even be useful. However if the rich are retired rentiers investing their wealth in low-yield assets (or low-ability inheritors), then high wealth concentration and credit constraints might prevent talented but penniless investors from undertaking efficient projects, thereby entailing negative growth consequences. The data used in this paper is not ideal to address whether credit constraints were important in a country like France at the end of the 19th century. However our results suggest that to the extent credit constraints were indeed severe, high wealth concentration did have a negative growth impact. In order to further investigate this hypothesis, one would need to gather more systematic data on investment strategies and asset returns. Preliminary evidence suggests that the rich elderly of the 1860-1913 did indeed hold a disproportionate fraction of their wealth in low-yield assets (such as government bonds). An alternative hypothesis however is that steeper age-wealth profiles were the consequence of the growth of financial markets: as their children faced fewer credit constraints, parents decided to hold on to more of their wealth.

7. Conclusion

Evidence from wealth at death in Paris and in France over the last two centuries reveals three key patterns. First wealth concentration has changed dramatically overtime. In 1807 the top one percent's share of wealth (40% in France, 50% in Paris) was twice as high as it would be in 1994 but substantially less than in 1913 when it peaked above 55% in France and 70% in Paris. Some of these changes were due to economic phenomena that have long been emphasized as creating inequality, namely industrialization and financial centralization. Yet the

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international data sets on inequality, which are neither long-run nor homogeneous (see e.g. Atkinson-Brandolini 2001).

decline comes largely from adverse shocks, rather than economic convergence. These changes are of such magnitude that they are not sensitive to whether one examines wealth at death in Paris or in France, or whether one examines it directly rather than converting it to wealth of the living by an estate multiplier method.

Our second key result is that there was a significant transition during the nineteenth century from an important role for real estate as a form of wealth to moveable assets as the key form of wealth for the very rich. Similarly, the share of wealth held by aristocrats first rose and then was eclipsed by that of financiers and industrialists in the second half of the nineteenth century. Hence mobility within this highly unequal society might have been quite high. Yet this conjecture is tempered by our third finding, the wealthy were getting older over time, and older relative to less wealthy decedents. Such aging among the very wealthy would have had negative consequences for growth if financial markets were imperfect. This issue requires further investigation and we hope it will attract future research.

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Table 1: Estate Tax Returns in Paris, 1807-1994 - Summary Statistics

	N. decedents 20-yr +	N. estate>0	N. estate>0 (% N.deced. 20+)	N.deced. 20-yr + (% Paris/France)	Total Estate (% Paris/France)	Average Estate (Ratio Paris/rest of France)
1807	11 622	3 647	31.4	2.5	8.2	3.56
1817	11 925	3 287	27.6	2.5	8.4	3.56
1827	14 151	3 877	27.4	2.8	9.4	3.56
1837	16 902	4 922	29.1	3.1	9.8	3.42
1847	18 169	4 814	26.5	3.3	11.5	3.86
1857	19 248	6 048	31.4	3.6	14.3	4.51
1867	26 844	7 370	27.5	4.6	16.8	4.16
1877	28 777	8 245	28.7	5.1	18.6	4.22
1887	34 411	9 815	28.5	5.9	20.1	4.01
1902	36 366	9 830	27.0	6.5	26.0	5.05
1913	35 677	11 927	33.4	6.5	26.6	5.23
1929	35 842	14 495	40.4	5.8	25.0	5.42
1938	30 274	16 013	52.9	5.3	17.3	3.76
1947	24 955	14 090	56.5	5.5	15.0	3.07
1956	27 940	16 053	57.5	5.5	15.9	3.24
1994	18 553	12 528	67.5	3.6	9.7	2.86

Source : Authors' computations using estate tax returns (see Piketty et al. (2004,Table A1) for detailled series and sources)

Table 2: Wealth Concentration at Death in Paris, 1807-1994

	Top 10% Estate Share	Top 1% Estate Share	Top 0,1% Estate Share
1807	**96.0**	**51.2**	**17.9**
1817	**97.6**	**57.3**	**22.8**
1827	**97.3**	**49.5**	**14.8**
1837	**97.7**	**50.1**	**14.8**
1847	**98.3**	**55.8**	**21.3**
1857	**96.9**	**51.0**	**13.4**
1867	**97.1**	**53.0**	**16.3**
1877	**96.9**	**58.9**	**24.6**
1887	**97.1**	**55.4**	**20.1**
1902	**99.1**	**64.8**	**26.1**
1913	**99.6**	**72.1**	**32.8**
1929	**94.9**	**63.1**	**26.4**
1938	**90.4**	**53.6**	**24.1**
1947	**76.7**	**38.1**	**14.8**
1956	**75.0**	**34.6**	**11.7**
1994	**66.9**	**23.7**	**6.5**

Source : Authors' computations using estate tax returns (see Piketty et al. (2004, Table A2) for detailed series and sources)

Table 3: The Fraction of Paris Estates in Top Estates at Death in France, 1807-1994

	(1) Fraction of Paris decedents in all decedents 20-yr +	(2) Fraction of Paris estates in top 10% estates	(3) Fraction of Paris estates in top 10% estates	(4) Fraction of Paris estates in top 10% estates
1807	**2.5**		***10.1***	***20.5***
1817	**2.5**		***10.3***	***21.0***
1827	**2.8**		***11.6***	***23.7***
1837	**3.1**		***12.6***	***25.6***
1847	**3.6**		***14.6***	***29.7***
1857	**3.6**		***14.6***	***29.7***
1867	**4.9**		***19.9***	***40.4***
1877	**5.1**		***21.1***	***42.8***
1887	**5.9**		***24.1***	***49.1***
1902	**6.5**	**7.5**	**26.6**	**54.1**
1913	**6.5**	**7.5**	**25.5**	**52.3**
1929	**5.8**	**8.3**	**23.9**	**53.0**
1938	**5.3**	**7.4**	**21.6**	**42.1**
1947	**5.5**	**11.0**	**19.8**	**35.2**
1956	**5.5**	**12.8**	**22.3**	**35.0**
1994	**3.6**	**8.9**	**25.2**	**35.2**

<u>Source</u> : Authors' computations using estate tax returns (see Piketty at al. (2004, Table A1) for detailed sources). No data source exists to compute col. (3)-(4) prior to 1902, and the numbers reported on this table for years 1807-1887 were computed assuming that the col. (3)-(4) followed the same trend as col.(1) over the 1807-1902 period (see text, section 4).

Table 4: Wealth Concentration at Death in France, 1807-1994

	Top 10% Estate Share	Top 1% Estate Share	Top 0,1% Estate Share
1807	**79.1**	**43.4**	**16.3**
1817	**81.0**	**44.5**	**18.1**
1827	**82.4**	**45.2**	**16.3**
1837	**79.6**	**43.8**	**14.7**
1847	**81.6**	**47.9**	**18.4**
1857	**82.9**	**49.5**	**17.4**
1867	**81.0**	**48.0**	**17.4**
1877	**83.8**	**47.1**	**20.1**
1887	**83.9**	**48.7**	**19.2**
1902	**83.9**	**51.6**	**23.1**
1913	**86.3**	**54.9**	**26.0**
1929	**82.0**	**50.2**	**24.7**
1938	**77.6**	**42.0**	**19.9**
1947	**69.9**	**29.9**	**11.0**
1956	**69.4**	**30.4**	**11.0**
1994	**61.0**	**21.3**	**6.3**

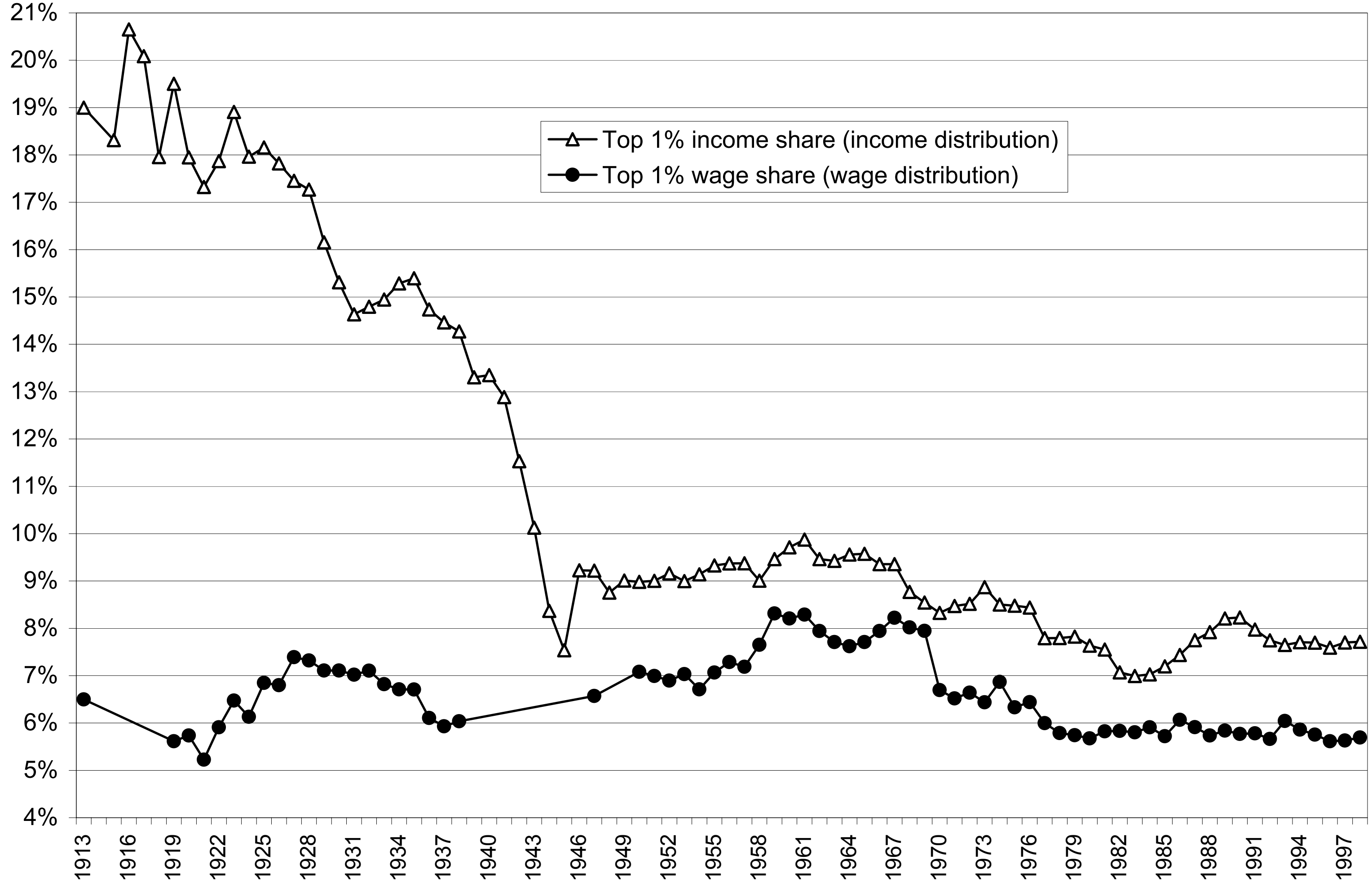
Source : Authors' computations using estate tax returns (see Piketty et al. (2004, Table A3) for detailed series)

Table 5: The Age Profile of Wealth at Death in Paris, 1817-1994
(average estate left by 50-59 yr-old = 100)

	20-29 yr-old	30-39 yr-old	40-49 yr-old	50-59 yr-old	60-69 yr-old	70-79 yr-old	80-89 yr-old	90-99 yr-old
1817	26	22	28	100	54	59	59	
1827	44	50	53	100	88	87	60	
1837	133	90	107	100	116	123	110	
1847	87	73	102	100	117	204	132	
1857	84	77	101	100	104	109	145	
1867	67	58	136	100	141	125	154	
1877	66	73	63	100	197	260	430	
1887	45	33	63	100	152	233	295	
1902	29	40	80	100	253	272	401	
1947	31	51	73	100	113	105	105	109
1994		11	45	100	87	93	95	68

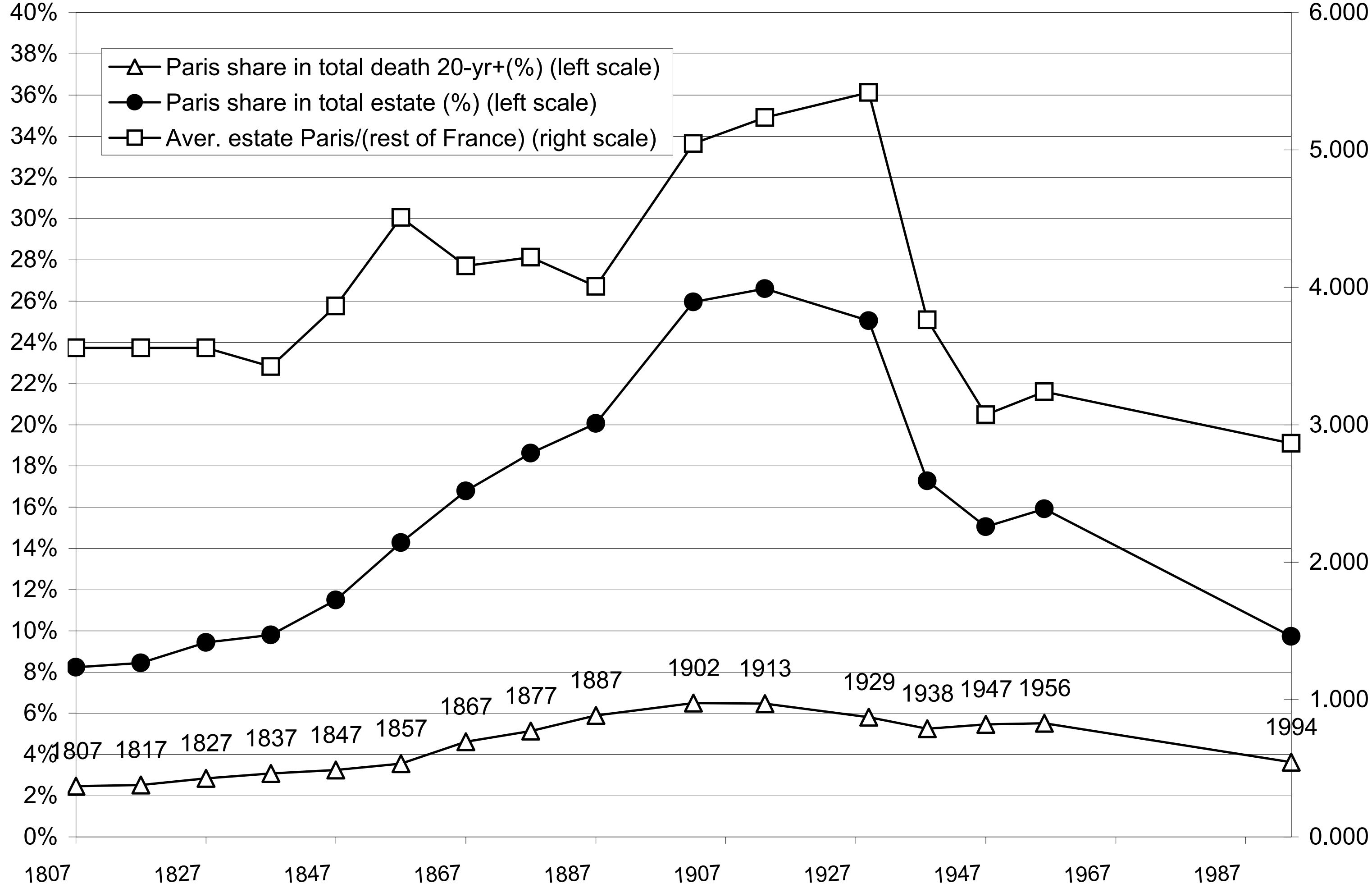
Source : Authors' computations using estate tax returns (see Piketty at al. (2004, Table A1) for detailed sources)

Figure 1: The fall of top capital incomes in France, 1913-1998



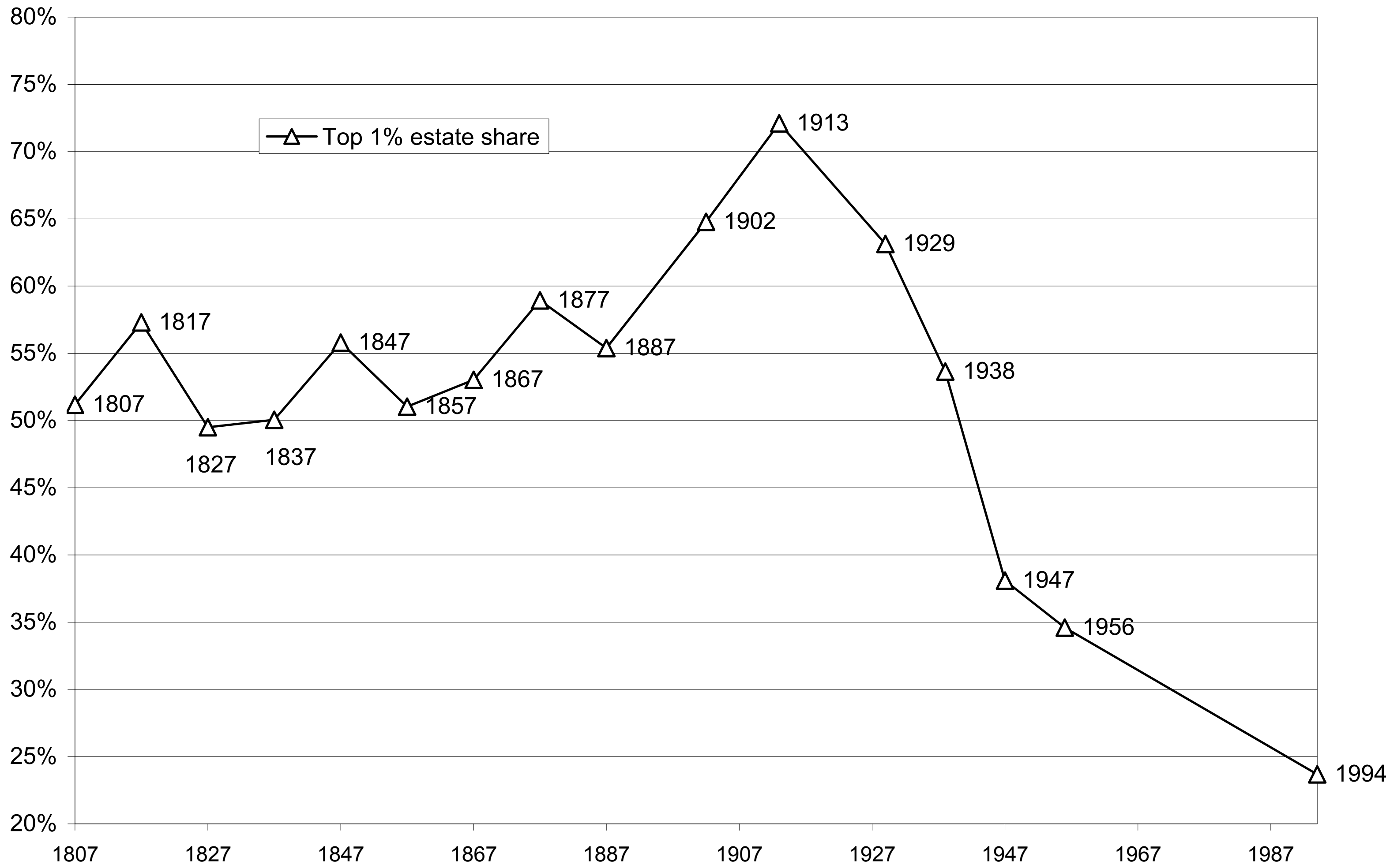
Source: Piketty (2003) (computations based on income tax returns)

Figure 2: The Paris share in French estates at death, 1807-1994



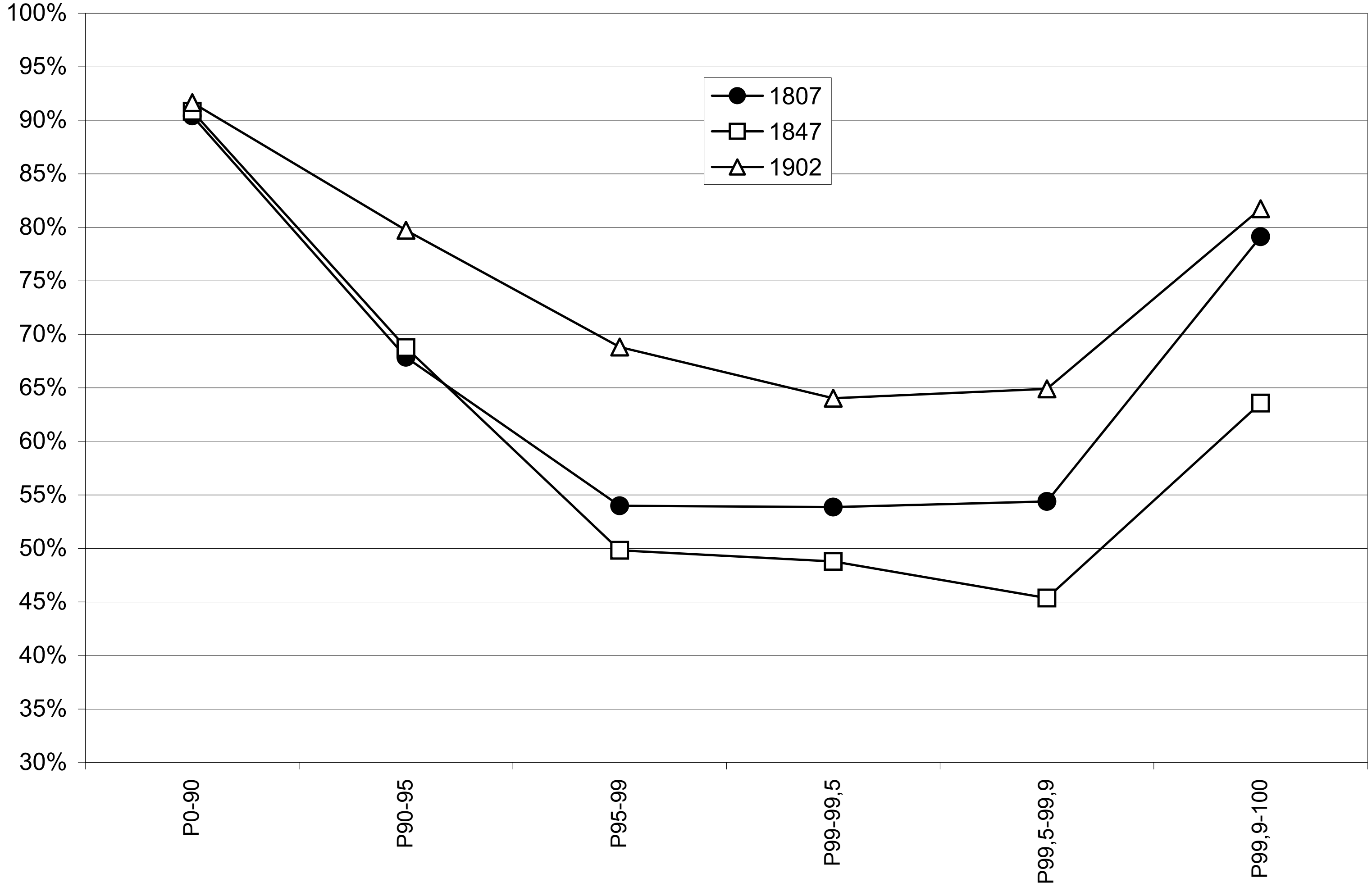
Source: Authors' computations based on estate tax returns (see Table 1)

Figure 3: Wealth concentration at death in Paris, 1807-1994



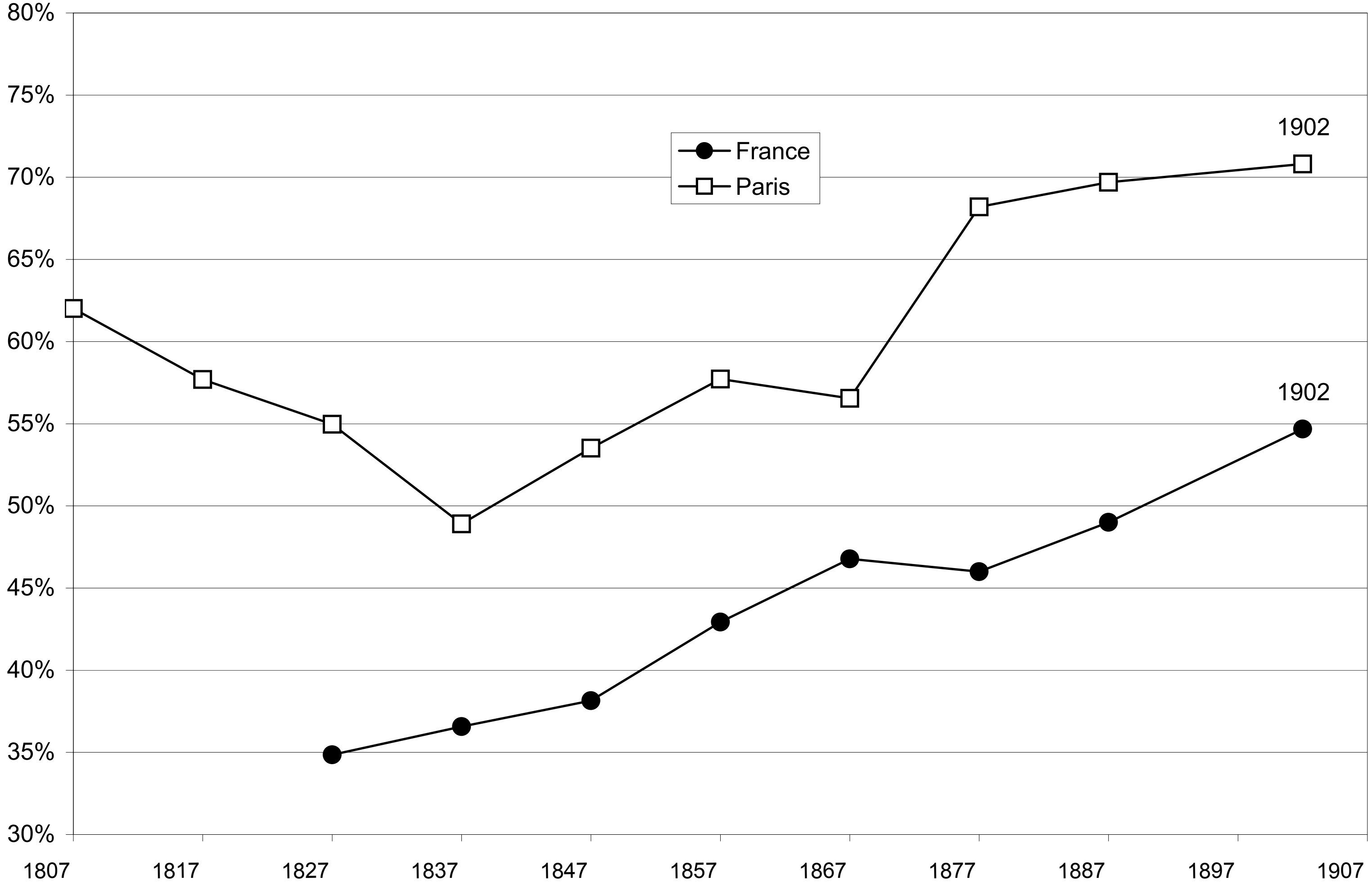
Source: Authors' computations based on estate tax returns (see Table 2)

Figure 4: Wealth composition at death in Paris, 1807-1902
(share of personal (non-real) estate in total estate)



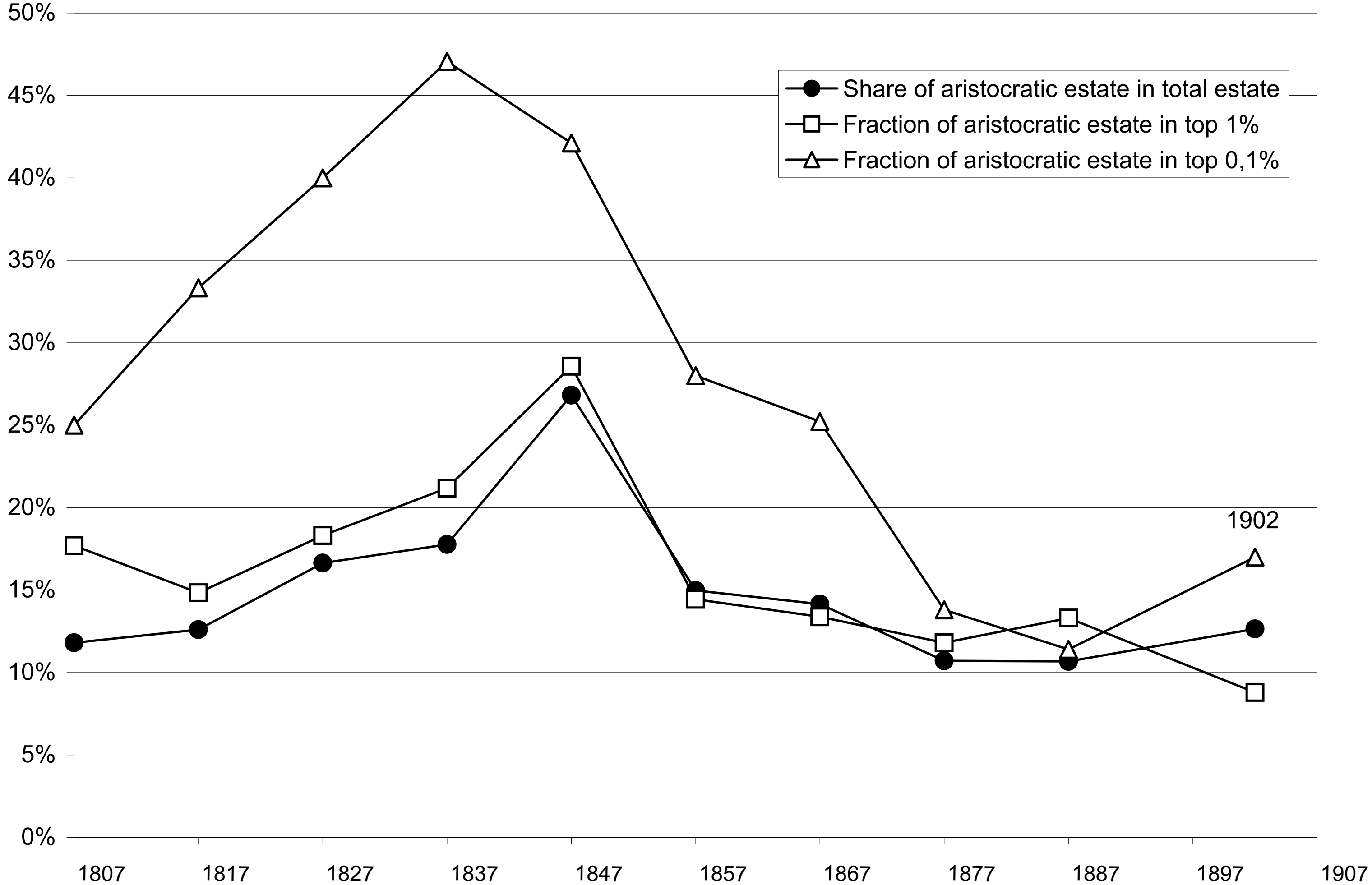
Source: Authors' computations using samples of estate tax returns collected in the Paris archives

Figure 5: Wealth composition at death in Paris and France, 1807-1902
(share of personal (non-real) estate in total estate)



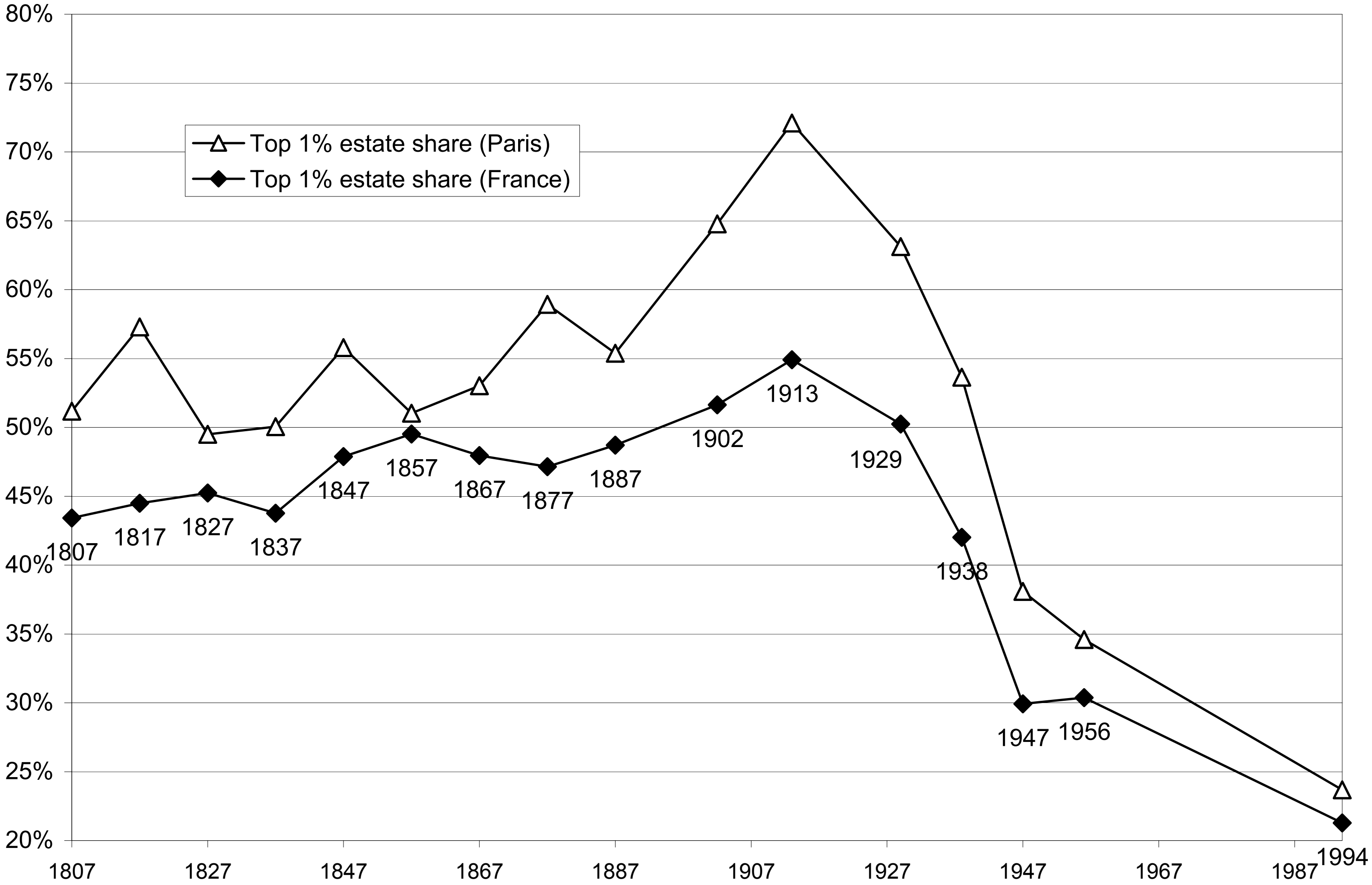
Source: Authors' computations using samples of estate tax returns collected in the Paris archives and national aggregate esate statistiics comppiled by the French tax administration

Figure 6: Aristocratic estates at death in Paris, 1807-1902



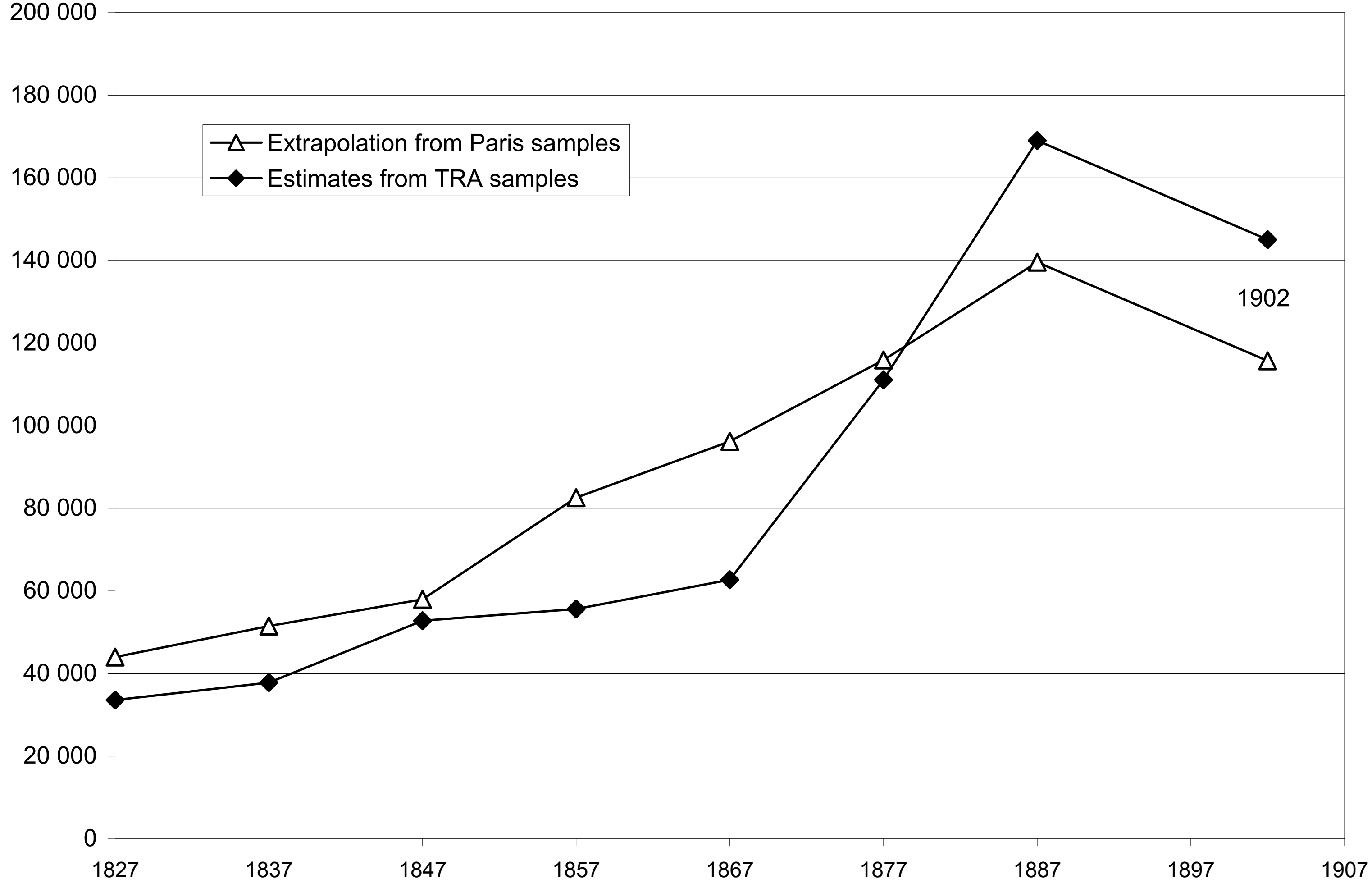
Source: Authors' computations using samples of estate tax returns collected in the Paris archives

Figure 7: Wealth concentration at death in Paris and France, 1807-1994



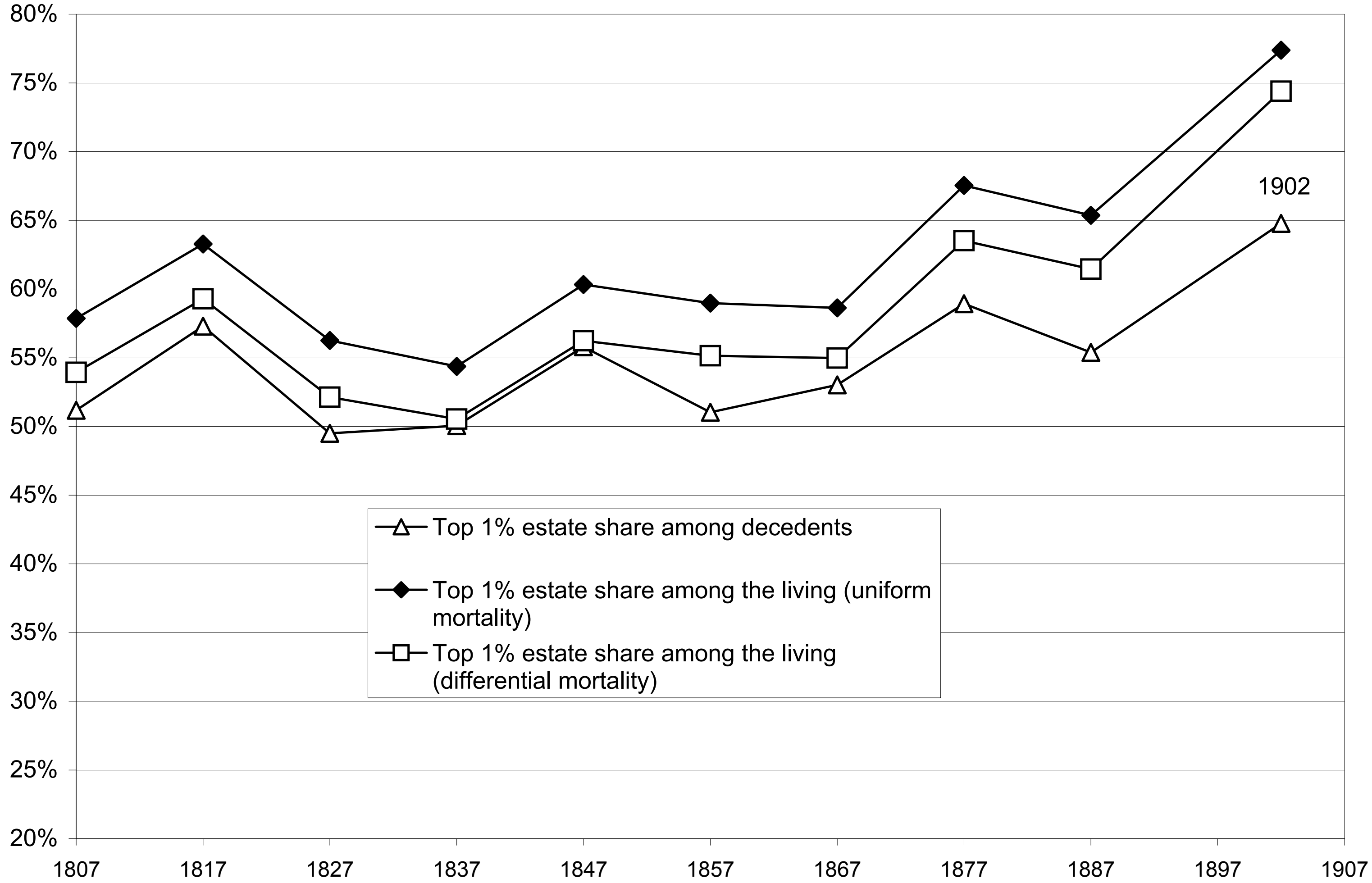
Source: Authors' computations based on estate tax returns (see Tables 2 and 4)

Figure 8: Estimates of the P99 threshold for the French distribution of estates at death: Extrapolation from Paris samples versus estimates from TRA samples (current French francs)



Source: Authors' computations based on estate tax returns (Paris samples and TRA samples)

Figure 9: Wealth concentration among decedents and among the living in Paris, 1807-1902



Source: Authors' computations using samples of estate tax returns collected in the Paris archives (see Piketty et al. (2004, Table A4) for detailed series)