

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

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Abstract : We use large samples of estate tax returns to 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 1857, 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 declined both in Paris and in the rest of France. Finally, the very high levels of wealth concentration observed on the eve of World War I seem to be associated with retired rentiers rather than active entrepreneurs. In particular, the age profile of wealth looks markedly different around 1900-1913 than in other periods. At that time top wealth holders were in their 70s and 80s, whereas they had been in their 50s at the beginning of the 19th century and would be so again at the end of the 20th century. These results shed new light on the ongoing debate about wealth inequality and growth in the presence of capital constraints.

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1. Introduction

This paper presents new series on wealth concentration in Paris and France from 1807 to 1994. These series were constructed using large samples of individual estate tax returns that we collected in the Paris archives for various years between 1807 and 1902, as well as tabulations by size of estate compiled by the French tax administration regularly since 1902.

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 20th 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 during the 1914-1945 period is that top capital incomes fell, whereas top wage shares remained approximately constant (see Figure 1). Top wealth holders were severely hurt by major shocks during the 1914-1945 period (wars, inflation, depression), and they never fully recovered, probably because of the dynamic effects of progressive estate and income taxation on capital accumulation and pre-tax income inequality. However one central limitation of these top income and wage shares series is that they do not cover the 19th century and early 20th century (the modern progressive income tax was created around 1913-1914 in most countries, and there is no systematic data source on incomes prior to this date).³ Although these series strongly suggest that the 1914-1945 shocks played the key role, one cannot fully exclude the possibility of a pre-existing, Kuznets-type downward trend in inequality prior to World War I. Constructing wealth concentration series covering both the 19th and the 20th century allows us to put the 1914-1945 period into a broader historical perspective.

Insert Figure 1

¹ See Piketty (2003). For similar series covering the U.S., see Piketty and Saez (2003).

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

³ The modern income tax was introduced in 1913 in the U.S., 1914 in France, and 1909 in the U.K..

A second and equally important goal is to understand the sources of the high levels of inequality we know prevailed on the eve of WWI. One can consider two extreme hypotheses. The first would suggest that these high levels were extremely ancient—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 in inequality. Luckily for us the 1850s form a convenient turning point since industrialization accelerated under the Second Empire and the stock market boomed.

Our series can also be used to address the on-going debate about the impact of inequality on growth. Economists now realize that cross-country regressions of inequality on growth are unlikely to deliver robust conclusions, due to poor data quality and serious identification problems. Existing cross-country data sets on inequality suffer from serious limitations: they typically do not distinguish between income and wealth distribution, they are not homogenous across countries, and they are generally available for a small number of isolated years for each country. We believe that one first needs to construct homogenous, long run series for individual countries before the general issue can be properly re-addressed. In the meantime, careful case studies with good data are probably more informative than cross country regressions with bad data. Our micro samples of estate tax returns also allow us to test for the efficiency implications of wealth concentration in a different way, by looking at how the age and gender profile of wealth varies with the level of concentration (see below).

Finally, a key motivation for looking at France is that French historical data sources on wealth distribution are richer than in other developed countries. The reason is that the French National Assembly introduced in 1791 a fairly universal estate tax, and that this tax (and the corresponding estate tax returns) has remained virtually unchanged since then. The estate tax introduced in 1791 was universal in the sense that all types of property (both real estate and personal estate) and all levels of wealth were covered. The successors of all decedents with positive wealth were required to file an estate tax 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 statistics based upon the tabulation by

estate size of all individual estate tax returns. No such tabulations were compiled prior to 1902. However the tax registers with full information on individual returns have been kept in French archives, which allowed us to collect large samples of individual returns over the 1807-1902 period and to construct homogenous estimates of wealth concentration in Paris and France over the 1807-1994 period (see below for more details on the data and methodology).

In contrast, one must wait until 1894 before a universal estate tax is introduced in the U.K. and 1916 in the U.S. This implies that homogenous wealth concentration series based upon estate tax returns can only cover the 20th century in those two countries.⁴ There did exist various alternative sources for wealth at death prior to 1894/1916 in the U.K. and in the U.S., in particular probate records. The information provided by probate records, however is neither as rich nor as systematic as that contained in estate tax returns (in particular, probate records were purely voluntary, and all types of property were not covered).⁵ Consequently, it is very difficult to compare in a precise manner the probate-based estimates of wealth concentration available for the 18th-19th centuries the modern estimates available for the 20th century. Nevertheless, all available estimates confirm that wealth concentration rose during the 19th century and dropped during the first half of the 20th century, but there is a lot of uncertainty as to whether inequality stabilized (or even started declining) by the end of the 19th century or kept increasing until World War I.⁶ Our French series are fully homogenous over the 1807-1994 period and allow us to cast new light on this central issue.

Our main conclusions are the following. First, wealth concentration in Paris and in France kept increased up to World War I, with an acceleration (rather than a stabilisation) 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

⁴ 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). See Lindert (2000) for a recent survey.

⁵ In particular, real estate was fully excluded from probate in the U.K. until 1898 (realty and personalty were also treated differently in U.S. probate records). For estimates of wealth concentration in the U.K. based upon 18th and 19th century probate records, see Lindert (1986). For corresponding estimates for Colonial America, see Jones (1977).

⁶ See e.g. the survey by Lindert (2000).

growth of large industrial and financial estates and coincided with the decline of aristocratic fortunes (during the first half of the 19th century, the share of aristocrats and real estate in top estates was actually rising). Next, the decline in wealth concentration that took place since World War I appears to have been prompted by the 1914-1945 shocks rather than by a two-sector, Kuznets-type process. The decline in inequality was not driven by the reduction of the Paris/Province gap since the decline 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 be associated to retired rentiers rather than to active entrepreneurs. In particular, the age profile of wealth looks markedly different around 1900-1913 than in other periods. Top wealth holders are very old around 1900-1913 (they are in their 70s and 80s), whereas they are usually in their 50s in other periods, both at the beginning of the 19th century and at the end of the 20th century. Although our data does not allow us to test directly for the growth impact of wealth concentration, these results shed new light on the ongoing debate about inequality and growth. I.e. to the extent that 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 economic sclerosis and lower growth.⁷

The rest of this paper is organized as follows. Section 2 describes our data sources and outlines our methodology. Section 3 presents our 1807-1994 estimates of wealth concentration and composition at death in Paris. Section 4 discusses how the 19th century Paris estimates can be extended to the rest of France and presents preliminary results for wealth concentration at death in France over the 1807-1994 period. 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 presents decomposition by age groups and discusses the efficiency implications of high wealth concentration.

2. Data Sources

⁷ 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 such as public debt, etc.). In the current version of this paper, we can only decompose wealth holdings in terms of real estate versus personal estate (we will further decompose personal estate and report results on stock versus bonds in future versions).

All of our estimates are based upon estate tax returns. As we mentioned above, the estate tax was created in 1791, and it became a progressive tax in 1902. Since 1902, the tax administration has periodically compiled tables indicating the number of decedents and amount of their estate for a large number of estate brackets. These are the same tables that were already used by Piketty (2001), and they are available over the 1902-1994 period.⁸ They were compiled and published at the level of each *département* (départments are middle level administrative jurisdictions; there are about 90 of them in France, including Paris). These tables can be used to study the evolution of wealth concentration both in France and in Paris during the 20th century.⁹

Prior to 1902, the tax administration produce information useful for studying inequality, but all we know is the aggregate amount of wealth reported on estate tax returns, with a decomposition by real estate vs personal (non-real) estate (furniture, businesses, stock, bonds, etc.). Therefore we had to go back to the tax registers and collect samples of individual tax returns. It was materially impossible to collect information on all individual returns from all départements (one would need to go to archives in each département to access the tax registers and we would be saddled 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 19th century. The problem is that the sample would need to be extremely large if it is to include sufficiently many top estates (given that wealth is extremely concentrated, it is critical to observe many top wealth holders).¹⁰

Therefore we decided to pursue a completely different strategy: we collected estate tax return information for all decedents in Paris for various years during the 19th century (1807, 1817, 1827, 1837, 1847, 1857, 1867, 1877, 1887, 1902). We chose Paris because a disproportionate share of top wealth holders lived there. As one can

⁸ 1902-1913, 1925-1960, 1962, 1964, 1984 and 1994.

⁹ The departemental tables were not published for all years.

¹⁰ This difficulty is illustrated by the so-called « TRA » survey, the objective of which was to follow over the 1800-1940 period the offspring of all couples marrying in France between 1800 and 1830 and whose family name started with the letters TRA. It turned out that this survey contains too few top observations and delivers unreliable estimates above the 90th percentile of the distribution (which is unfortunate, because this is where most of the wealth lies). 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 19th century France (see below).

see from Table 1, the annual number of decedents (aged 20-years-old and over) in Paris was about 12,000 around 1800-1810 (2,5% of the French total) and nearly tripled during the 19th century, up to about 35,000 around 1900-1910 (6,5% of the French total). However only 30% of decedents in Paris had a positive estate during the 19th century (about twice as small as for the rest of France),¹¹ so we only needed to collect detailed information on about 3,000-4,000 decedents per year at the beginning the 19th century and about 10,000 decedents per year in 1902. Although Paris had a larger fraction of decedents with zero wealth, the average estate was about 4-5 times larger in Paris than in the rest of France during the 19th century.¹² It is particularly striking to notice that this ratio actually increased over time, in spite of the large increase the size of Paris (which nearly tripled).¹³ At the eve of World War I, the total estates of Paris decedents made up over 26% of total French estates (see Table 1 and Figure 2).

Insert Table 1

Insert Figure 2

A second problem that we had to overcome is that the registers provide information on declarations rather than estates. Hence to reconstruct estates we had to aggregate declarations. The very high levels of inequality in Paris again came to our assistance. By collecting nominal information on the top 10% of declarations we were able to successfully attribute 92% of the movable wealth and 97% of the real wealth to specific individuals. The remaining declarations were treated as individuals—thus biasing downwards our inequality estimates.

Our 1902 Paris sample turned out to be fully consistent with the table compiled for the same year for Paris by tax administration. Therefore we can link up our 1807-

¹¹ In 1902 (when the first administrative tabulations start), the fraction of decedents with positive wealth was about 30% in Paris and 60% for the all of France. Estimates from the TRA survey suggest that the fraction of decedents with positive wealth in France declined from about 70% at the beginning of the 19th century to about 60% at the beginning of the 20th century (see Bourdieu et al (2003)).

¹² 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.

¹³ Note that there is a discontinuity in the growth of Paris during the 19th century, as new districts (“arrondissements”) previously registered in the suburb were integrated into the city of Paris in 1860. The results reported in the current version of this paper do not make any correction for this discontinuity, which explains the temporary blips observed on some of the figures around 1860.

1902 Paris files with the 1902-1994 Paris tables to construct homogenous 1807-1994 series for wealth concentration in Paris. The more difficult part is the construction of estimates for wealth concentration for the all of France in 1807-1902 from the Paris estimates. For this we need to estimate the evolution of the share of Paris estates in top estates during the 19th century. To achieve this goal, we used other estate surveys,¹⁴ as well as number of non-estate fiscal sources (see section 4 below).

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

The evolution of wealth concentration at death in Paris over the 1807-1994 period is depicted on Figure 3. Given that the top decile estate share is close to 100% during the 19th century (see Table 2), we choose to focus on the top 1% estate share. The top 1% share in Paris appears to have been stable at a very high level (around 50-55%) during the first half of the 19th century. 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). Wealth concentration in Paris started to increase substantially during the last third of the 19th century, with the top 1% share climbing from less than 52% in 1867 to over 72% in 1913. World War I and the ensuing shocks then prompted an abrupt decline. The top 1% share dropped by almost 40 percentage points between 1913 and 1947, and by nearly 10 percentage points between 1947 and 1994. Computations aimed at converting these wealth-at-death concentration estimates into wealth-of-the-living concentration estimates (using the estate multiplier method) do not seem to entail any substantial change to this general picture (see Section 5 below).

Insert Table 2

Insert Figure 3

¹⁴ In addition to the TRA survey (which gives a reliable picture of the national distribution up to the 90th centile), we should mention the study by Daumard (1973), which relied on samples of estate tax returns collected in five French cities (Paris, Lyon, Toulouse, Lille, Bordeaux) at the beginning and at the end of the 19th century. Daumard's findings (increased wealth concentration in all cities) is consistent and complementary with our findings. Unfortunately, Daumard's samples are not available in machine-readable format, she has only two or three years of data, and she did not try to compute homogenous inequality indicators (top fractiles shares, ec.) with her data.

Who are the top wealth holders who led to such a substantial increase in wealth concentration between 1867 and 1913? For the most part, their fortunes derive 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 the estate level. This reflects the well-known fact that real estate is a middle class asset: the poor are too poor to own real estate and the little they own takes the form of furniture, cash, etc., while the rich have most of their wealth in the form of stock and bonds. What is more interesting is that the overall share of personal estate has also been following a U-shaped curve along the 19th century in Paris, especially so for top estates (see Figures 4 and 5). That is, real estate became more and more important in top estates from 1807 to 1837, and then its role declined from 1837 to 1902, and particularly so between 1867 and 1902. One interpretation of the ebb and flow of the importance of real estate, is that the rise in the real estate share was linked to Paris's 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. Price took decades to recover. The share of aristocratic decedents in top estates follows exactly the same inverted-U-shaped evolution as the share of real estate (see Figure 6). That is, aristocrats become more and more numerous in top estate fractiles from 1807 to 1837-1847, and then the trend reversed during the second half of the 19th century. Note that the number of aristocrats remains pretty high throughout the period, including in 1902 (about 13% of aristocrats in the top 1% estates, over 25% in the top 0,1%, vs. about 0,5-1% in the population as a whole). Again the interpretation for the inverted-U pattern has to do with the Revolution's consequence. In 1807 when we first observe aristocratic wealth it was at a temporary nadir (on the one hand, some aristocrats either owned less – many of them were impoverished by the Revolution – or less valuable assets – due to the sharp decline of the value of parisian real estates – ; on the other hand, a part of the Old Regime nobility was still in exile and thus, if they died, we did not observe them). But then aristocrats were able to recoup part of their losses during the first half of the 19th century. Napoleon provided some assistance by endowing his chief military officers with aristocratic title and wealth. The Restoration then offered compensation to aristocrats returning from exile for the losses they suffered from during the Revolution. The government

distributed nearly one billion francs in the famous “milliard des Emigrés”. What is more surprising is that the recovery lasted for several decades, leading to a pre-capitalist phase of capital accumulation in Paris based upon real estate. Presumably this did not contribute to accelerate industrial take-off in France.

Insert Figure 4

Insert Figure 5

Insert Figure 6

4. From Paris to France

In order to construct wealth concentration at death estimates for the all of France in 1807-1902 from the Paris estimates, we need to know the evolution of the share of Paris estates in top estates. During the 1902-1994 period, the evolution of top estate shares in France has been parallel to that of top estate shares in Paris: the levels of concentration have always been lower, but the trends are similar (see Figure 7). It is also striking to note that the fraction of Paris estates in the top 1% estates has remained virtually unchanged over the 20th century (around 25%), in spite of the fact that the aggregate fraction of Paris decedents in all decedents has dropped significantly, reflecting the population decline in Paris (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 is larger at the end of the 20th century than at the beginning of the 20th century. The decline of wealth concentration that took place during the 20th century was not due to Paris/Province redistribution.

How did the fraction of Paris estates in top estates evolve over the course of the 19th century? Our current benchmark estimates rely on a very conservative assumption: the fraction of Paris estates in top estates has increased during the 1807-1902 period in the same proportion as the fraction of Paris decedents in all decedents (see Table 3). Using this approximation we can compute the threshold wealth for various percentiles of the wealth distribution (e.g. P90, P95, P99, P99,5, P99,9 et P99,99). We can also calculate the average wealth levels for the relevant wealth classes (e.g. P90-95, P95-99...). These are then weighted by the number of individuals in the nation in that class.

The national top estate shares estimates reported on Table 4 were computed using this method, and they suggest that wealth concentration has been rising all along the 19th century in France, both during the 1807-1867 and 1867-1902 periods (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 during the 19th century. First, we know that the bulk of the population growth of Paris during the 19th century was due to the addition of new territories at the outskirts of Paris into the city of Paris (most notably in 1860) and to population growth in these peripheral “arrondissements”. The latter being much poorer than central Paris, there is little doubt that the fraction of Paris estates in top estates increased less than total population. Next, and most importantly, this is confirmed by 19th 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 19th century. (...). Giving Paris a larger share at the beginning would both raise the share of wealth of the top 1% in France in 1807 and lead to more rapid rise in inequality over time.

Insert Table 3

Insert Table 4

Insert Figure 7

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

All estimates reported so far refer to the distribution of wealth among decedents, as described in the estate tax returns filled by the successors. However the evolution of wealth distribution among the living might possibly have followed a different pattern. In order to convert wealth-at-death concentration estimates into wealth-of-the-living concentration estimates, the standard technique is the so-called “estate multiplier” method.¹⁵ 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 of living individuals aged 20 to 24 year-old is 0,68% in Paris in 1902, then this means that each decedent aged 20-24 represents about 147 living individuals aged 20-24

¹⁵ This method was widely used in Britain and France in the late 19th century and early 20th century in order to compute the stock of total national wealth on the basis of estate tax data regarding the flow of wealth transmitted by death. Standard references using this technique in order to estimate the wealth distribution of the living on the basis of 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, see Kopczuk and Saez (2003).

($1/0,0068=147$). Conversely, if the mortality rate of living individuals aged 80 year-old over is 21,43% in Paris in 1902, this means that each decedent aged 80+ represents about 4,7 living individuals aged 80+ ($1/0,2143=4,7$). In order to apply this method one needs mortality tables (these are in general easily available) and estate tabulations broken down by estate size and age at death. We did collect age-at-death data in our 1817-1902 micro samples of Paris tax returns, which allowed us to apply the estate multiplier method using mortality tables available for Paris during the 1817-1902 period, and to compute the estimates of wealth concentration among the living over this period (see Figure 8). The base population for the living is the set of all individuals aged 20 and over.

Insert Figure 8

It is clear from Figure 8 that the upward trend in wealth concentration among decedents also corresponds to an upward trend in wealth concentration among the living. Levels of wealth concentration are slightly higher among the living than among decedents (this reflects the fact that the survivors are younger than the dead, and that the young are on average poorer), but the trends are similar. Increased life expectancy over the course of the 19th century has only a small effect on the trends. In order to make the estate multiplier method more reliable, one could think of applying wealth-dependant profiles of mortality rates—which are not available. We have nonetheless attempted to re-do the computations using various assumptions about differential mortality, and this does not seem to affect in any significant way the upward trend reported on figure 8 for the uniform mortality case. Finally, we still need to extend and apply this method to 20th century data.¹⁶

6. The Age Profile of Wealth and the Efficiency Costs of Wealth Concentration

¹⁶ One complication comes from the fact that the tax administration did not compile tabulations broken down by estate size and age at death for all years. Such tabulations are available only for 1931, 1943-1962 and 1994 (no estate-age cross tabulation was compiled during the 1902-1913 period). For the 1990s we can compare the results obtained under the estate multiplier method to wealth-of-the-living tabulations coming from the wealth tax (“impôt sur la fortune”).

Can our data tell us something about the efficiency consequences of wealth concentration? One way to test for such a relationship is to look directly at the correlation between inequality and growth rates. This is the approach taken in the cross-country regression literature. In the case of our French series (as well as with similar series for other developed countries, to the extent they exist), we get the following long-run pattern. That is, annual per capita growth rates were relatively low (1,1%) during the 1800-1914 period, when wealth concentration was enormous (around 50% of total wealth for the top 1%), and they have been much higher (3,1%) during the 1945-2000 period, when wealth concentration has been more moderate (around 25% of total wealth for the top 1%). Needless to say, this is not sufficient to prove that high wealth concentration had a negative causal impact on growth. After all, post-1945 growth might have been higher had wealth concentration remained the same as in 1914. At most, one can conclude from this simple comparison that the very high levels of wealth concentration that were in place until World War I were not necessary for long-run growth and development. But there is no way one can identify a causal relationship from such aggregate comparisons (although this is what the cross-country literature routinely does, using inequality data sets that are of much lower quality and comparability than the series used for the present case study).

Another way to test for the efficiency implications of wealth concentration is to look directly at who owns the wealth when wealth concentration is high. With perfect credit markets, wealth concentration can be bad from a social justice viewpoint, but entails no efficiency cost, irrespective of who owns the wealth. With first-best credit, the money will flow towards the most able entrepreneurs and the most profitable investment projects, whatever the initial wealth distribution might be. In the presence of credit constraints, however, initial wealth matters, and high wealth concentration can have a negative growth impact. Whether this impact is large or small depends on who owns the wealth. If the people who own the wealth are those who know what to do with it (which projects to invest, etc.), then wealth concentration is fine. For instance, if wealth concentration is high because a small group of talented and active entrepreneurs has accumulated a lot of wealth and keeps re-investing it in profitable activities, then credit constraints entail little efficiency loss. However if the people who own the wealth do not know what to do with it, then we have a problem. So the key questions are: who owns the wealth when wealth concentration is high? Are these active entrepreneurs or retired rentiers? If they are retired where are they invested?

At this time we can only answer the first two of these questions. The data for Paris reveal striking changes in the age profile of wealth over the 1807-1994 period (see Table 5 and Figures 9 and 10). During the 19th century, at a time of high and rising wealth concentration, wealth was getting older and older. At the beginning of the 19th century, in the aftermath of the French Revolution, the richest individuals were those in their 50s: they were 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. Little by little, this inverted-U shaped age-wealth pattern is going to become a strongly monotonic pattern over the course of the 19th century. In the middle of the 19th century, people in their 60s, 70s and 80s are as rich (or a bit richer) as those in their 50s. By the end of the 19th century, the richest individuals are by far the oldest individuals. In 1902, people in their 60s own 70% more than those in their 50s, and those in their 70s and 80s own 140% more. At the eve of World War I, top wealth holders were retired rentiers, not active entrepreneurs. Unsurprisingly, the former were strongly hit by the shocks of the 1914-1945 period. In 1947 as well as in 1994, we are back to a pattern where the richest individuals are those in their 50s.

Insert Table 5

Insert Figure 9

Insert Figure 10

Another way to analyze the changing age-wealth relationship is to look at the profile of average age by top estate fractile (see Table 6). In 1807 and 1817, average age was virtually the same within the top 10% and the top 1% estates (or even slightly declining). The average-age-per-fractile relationship turns upward sloping over the course of the 19th century, and by 1902 average age within the top 1% is almost 6 years larger than with the top 10%. The relationship becomes flat again in 1947 and downward-sloping in 1994. Preliminary also findings indicate that it is at the eve of World War I that the share of women in top estates takes its highest value, which also suggests that the share of wealth held by active agents (as opposed to rentiers and successors) was fairly low at that time.¹⁷

¹⁷ This woman effect accentuates the age effect noted above, but the age effect is still there when one only looks at men.

Insert Table 6

Finally, it is interesting to apply the estate multiplier method (see Section 5 above) in order to analyze how wealth concentration by age group among the living has changed over the course of the 19th century. The general population in Paris did not become older during the 19th century: the share of total population aged 60-year-old and over was almost 15% in 1817, and it stabilized around 10-11% from 1847 onwards (see Table 7 and Figure 11). However the share of total wealth owned by the elderly did rise significantly as wealth distribution became more and more unequal. The wealth belonging to those 60-years and over rose from about 25-30% of the total at the beginning of the 19th century to about 40-45% by the end of the century (see Figure 11). The wealth share of those 70-years old or more better than doubled, from less than 10% to about 20% (see Figure 12).

Insert Table 7

Insert Figure 11

Insert Figure 12

6. Concluding Comments

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 1% share (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 decline comes largely from adverse shocks, rather than economic convergence. These changes are of such magnitudes that they are not sensitive to whether one examines wealth at death in Paris or in France, whether one examines it directly or after 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 19th 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 19th 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. The very rich held on to more of their wealth later in the century. That would have had negative consequences for growth if financial markets were imperfect. This issue requires further investigation because an alternative hypothesis 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.

Technical appendix: a simple model of the age profile of wealth with credit constraints

Appendix tables to be added

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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/Fra nce)	Average Estate (Ratio Paris/rest of France)
1807	11,622	3,691	31.8	2.5	8.3	3.60
1817	11,925	3,104	26.0	2.5	8.5	3.60
1827	14,151	3,817	27.0	2.8	9.5	3.60
1837	16,902	4,926	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	7,971	29.7	4.9	17.5	4.15
1877	28,777	8,242	28.6	5.1	18.6	4.22
1887	34,411	9,815	28.5	5.9	20.1	4.01
1902	34,366	9,830	28.6	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	22.8	4.77
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	14.9	3.14
1984						
1994	18,553	12,528	67.5	3.6	9.7	2.86

Source : Authors' computations using estate tax returns

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

	Top 10% Estate Share	Top 1% Estate Share	Top 0,1% Estate Share
1807	95.9	49.1	16.1
1817	97.9	56.7	18.3
1827	97.5	52.3	16.9
1837	97.7	50.0	14.8
1847	98.3	51.8	17.3
1857	96.9	51.0	15.4
1867	96.8	52.4	16.0
1877	96,9	54.0	19.6
1887	97,1	55.5	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	73.7	33.1	12.8
1956	69.4	30.6	10.0
1984			
1994	66.9	23.7	4.9

Source : Authors' computations using estate tax returns

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

	Fraction of Paris decedents in all decedents 20-yr +	Fraction of Paris estates in top 10% estates	Fraction of Paris estates in top 1% estates	Fraction of Paris estates in top 0,1% 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	3.3		13.3	27.1
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
1984				
1994	3.6	8.9	25.2	35.2

Source : Authors' computations using estate tax returns

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

	Top 10% Estate Share	Top 1% Estate Share	Top 0,1% Estate Share
1807		41.2	15.5
1817		44.5	17.1
1827		45.2	16.3
1837		43.8	16.7
1847		47.9	18.4
1857		48.6	18.0
1867		51.1	19.8
1877		51,6	23,2
1887		52,8	22,2
1902	86.1	54.4	24.4
1913	87.6	57.7	28.4
1929	82.0	50.2	24.7
1938	77.6	42.0	19.9
1947	69.9	29.9	11.0
1956	69.4	28.4	11.0
1984	64.8	21.6	6.6
1994	63.0	21.3	6.3

Source : Authors' computations using estate tax returns

**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	48	49	49	100	80	70	70	
1827	49	46	73	100	94	99	63	
1837	67	79	107	100	112	123	102	
1847	78	73	102	100	117	154	135	
1857	78	77	101	100	104	102	111	
1867	65	54	82	100	132	141	142	
1877	56	62	63	100	205	262	340	
1887	36	27	66	100	130	214	288	
1902	30	40	80	100	169	239	251	
1947	31	51	73	100	113	105	105	109
1994		11	45	100	87	93	95	68

Source : Authors' computations using estate tax returns

Table 6: The Age Profile of Wealth at Death in Paris, 1817-1994
(average age within top fractiles)

	Top 10% Estates	Top 5% Estates	Top 1% Estates
1817	57.5	57.6	57.6
1827	61.7	61.9	60.6
1837	60.2	60.6	62.3
1847	61.2	61.4	62.9
1857	62.4	63.6	66.4
1867	62.4	62.3	66.1
1877	61.3	63.8	66.2
1887	62.1	64.6	68.0
1902	61.8	63.9	67.6
1947	67.0	67.4	68.4
1994	81.7	81.3	80.3

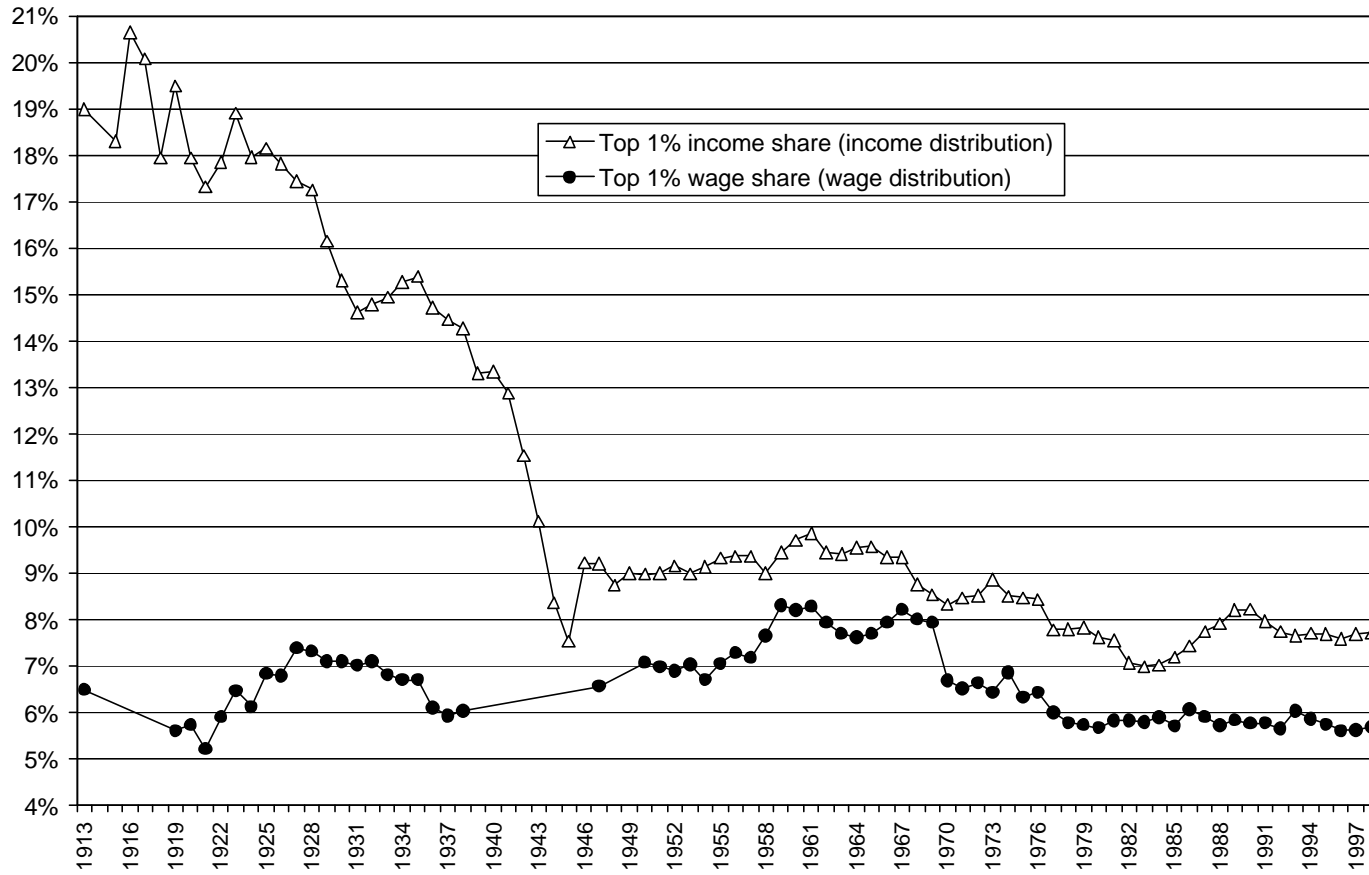
Source : Authors' computations using estate tax returns

Table 7: Population and Wealth Shares by Age Groups among the Living in Paris, 1817-1902
(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+ yr-old
Share in total living population (20 yr+) (%)							
1817	28.8	23.5	18.2	14.7	10.0	3.9	0.9
1827	29.7	26.6	18.2	12.7	8.4	3.6	0.8
1837	30.3	29.1	18.1	11.1	7.1	3.4	0.8
1847	31.0	26.6	19.4	13.1	6.6	2.7	0.6
1857	31.1	27.7	19.1	12.6	6.4	2.6	0.6
1867	29.5	27.7	20.3	12.2	7.1	2.8	0.6
1877	29.9	26.2	20.7	13.3	6.8	2.6	0.6
1887	28.8	26.3	20.1	13.7	7.5	2.9	0.6
1902	29.3	26.8	20.1	12.9	7.4	3.0	0.6
Share in total living wealth (20 yr+) (%)							
1817	10.5	12.0	15.1	34.7	19.4	6.6	1.8
1827	7.9	15.4	19.2	32.2	17.3	7.1	1.0
1837	8.0	19.1	26.8	18.7	16.8	8.4	2.2
1847	8.8	15.0	20.4	24.2	19.1	9.8	2.7
1857	9.7	13.5	18.5	27.0	20.3	7.8	3.1
1867	9.7	10.1	18.9	20.8	26.2	11.1	3.2
1877	8.4	15.1	15.8	20.0	22.8	12.6	5.4
1887	6.8	6.2	19.0	26.1	20.1	15.5	6.3
1902	9.3	13.1	16.3	21.8	22.1	14.2	5.2

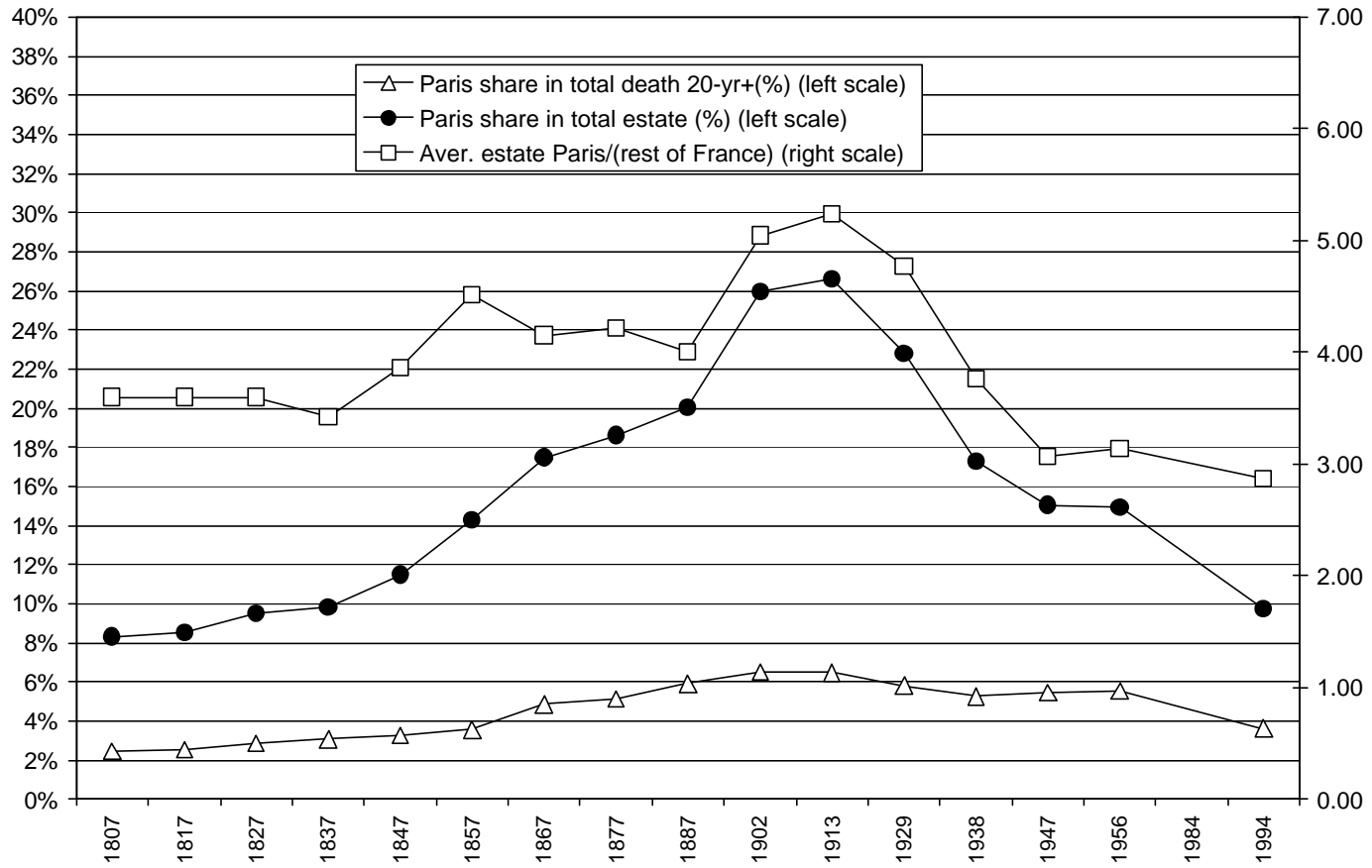
Source : Authors' computations using estate tax returns

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

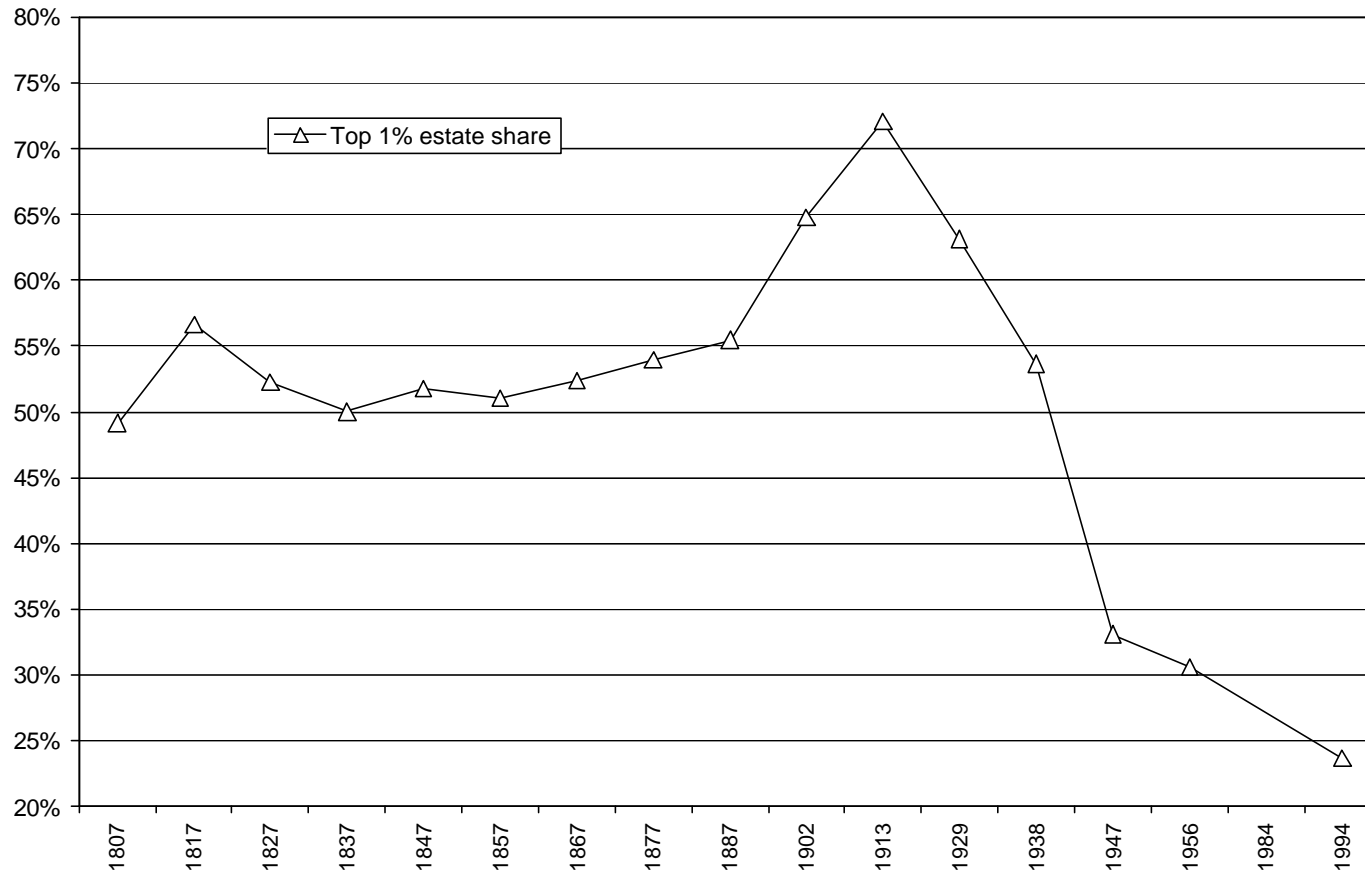


Source: Piketty (2003) (computations based on income tax returns)

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

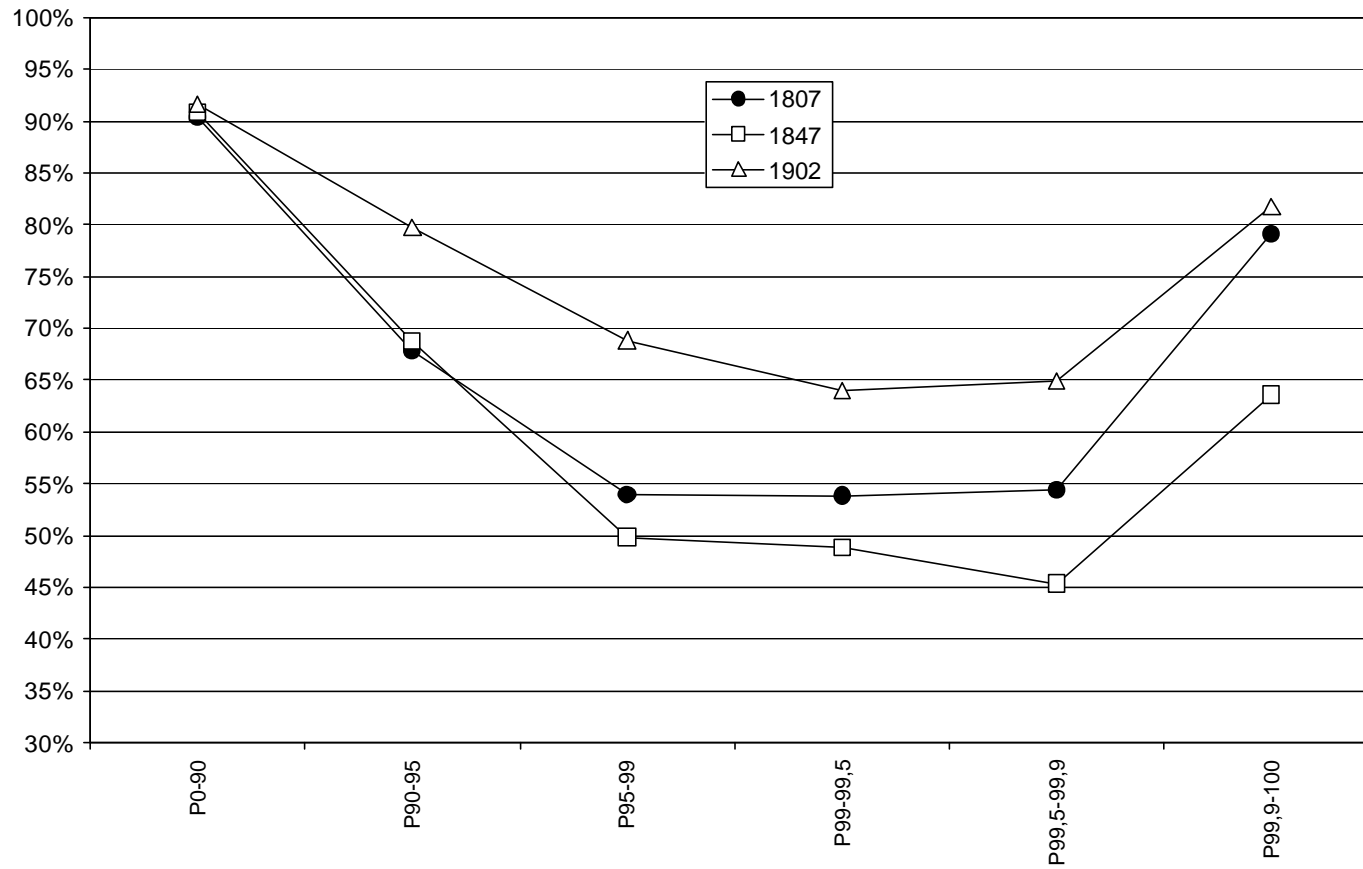


Source: Authors' computations based on estate tax returns

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

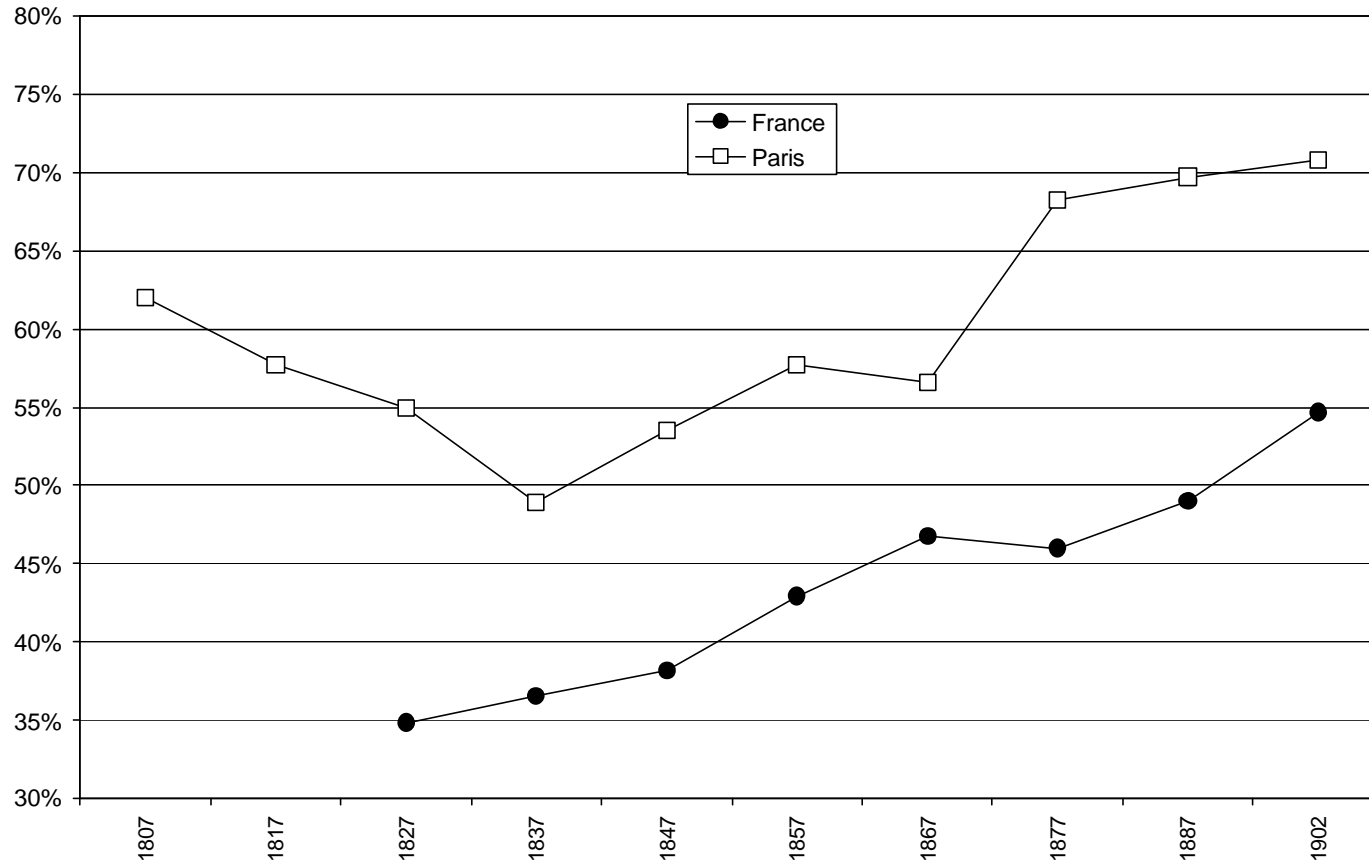
Source: Authors' computations based on estate tax returns

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



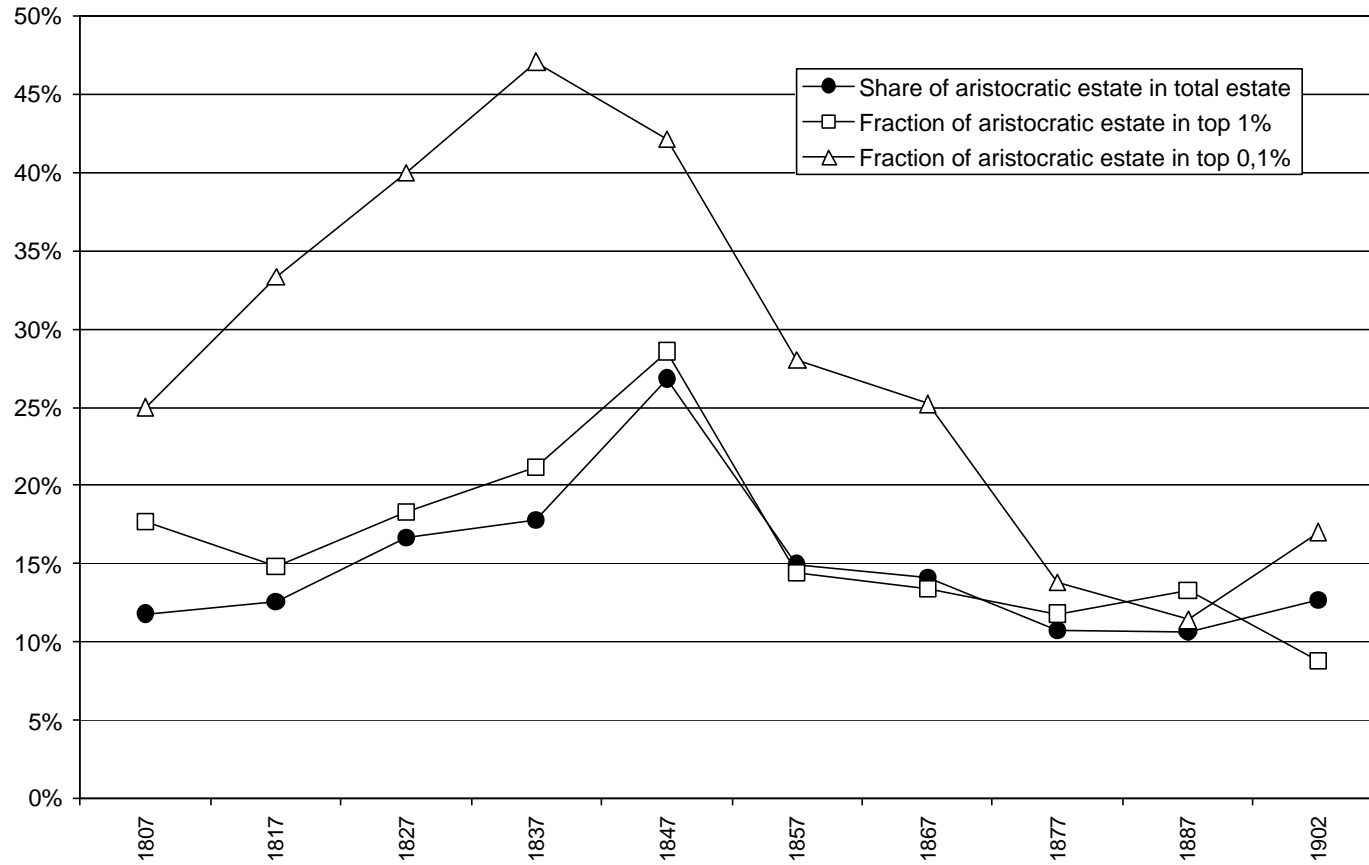
Source: Authors' computations based on estate tax returns

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



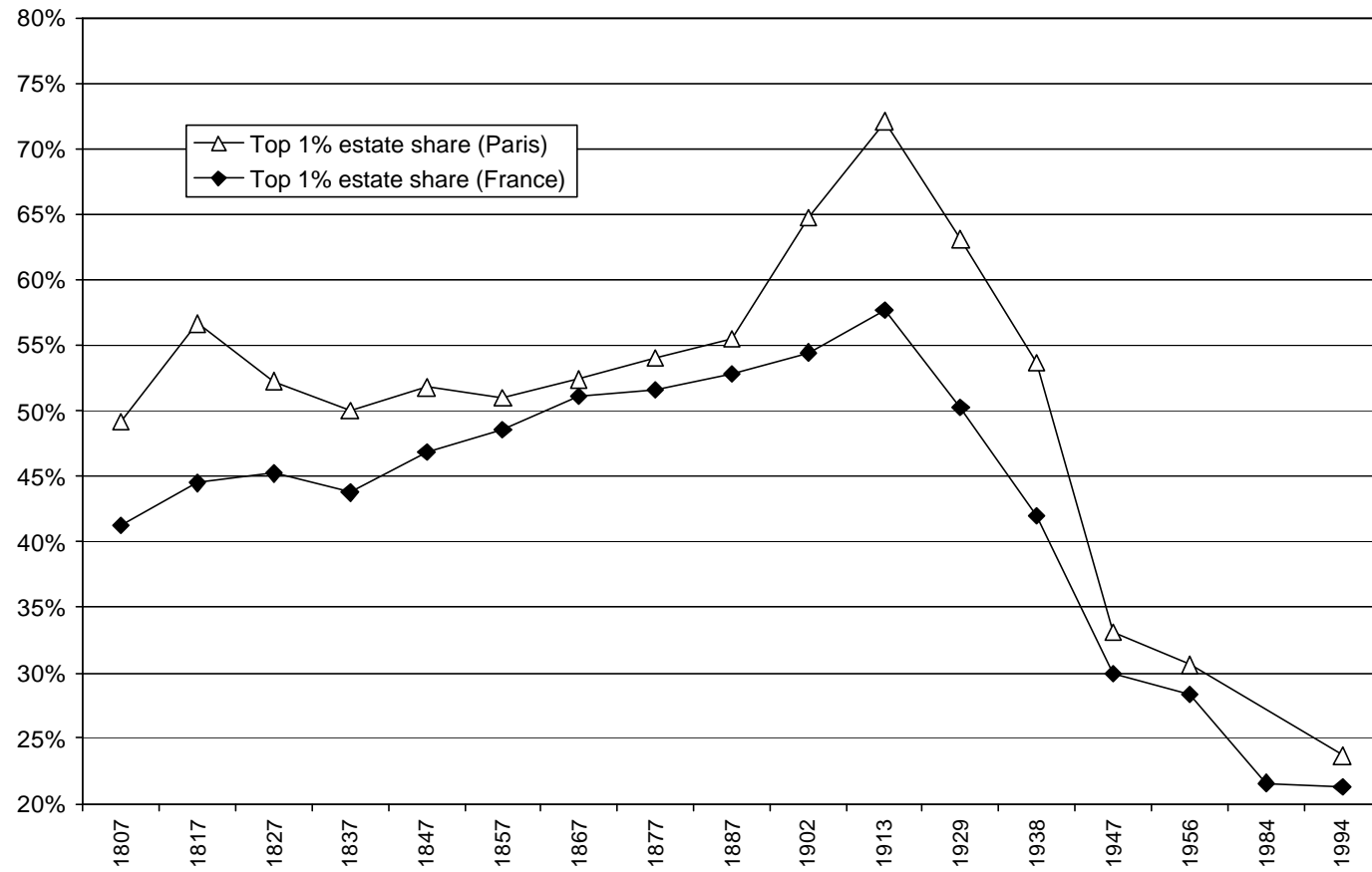
Source: Authors' computations based on estate tax returns

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

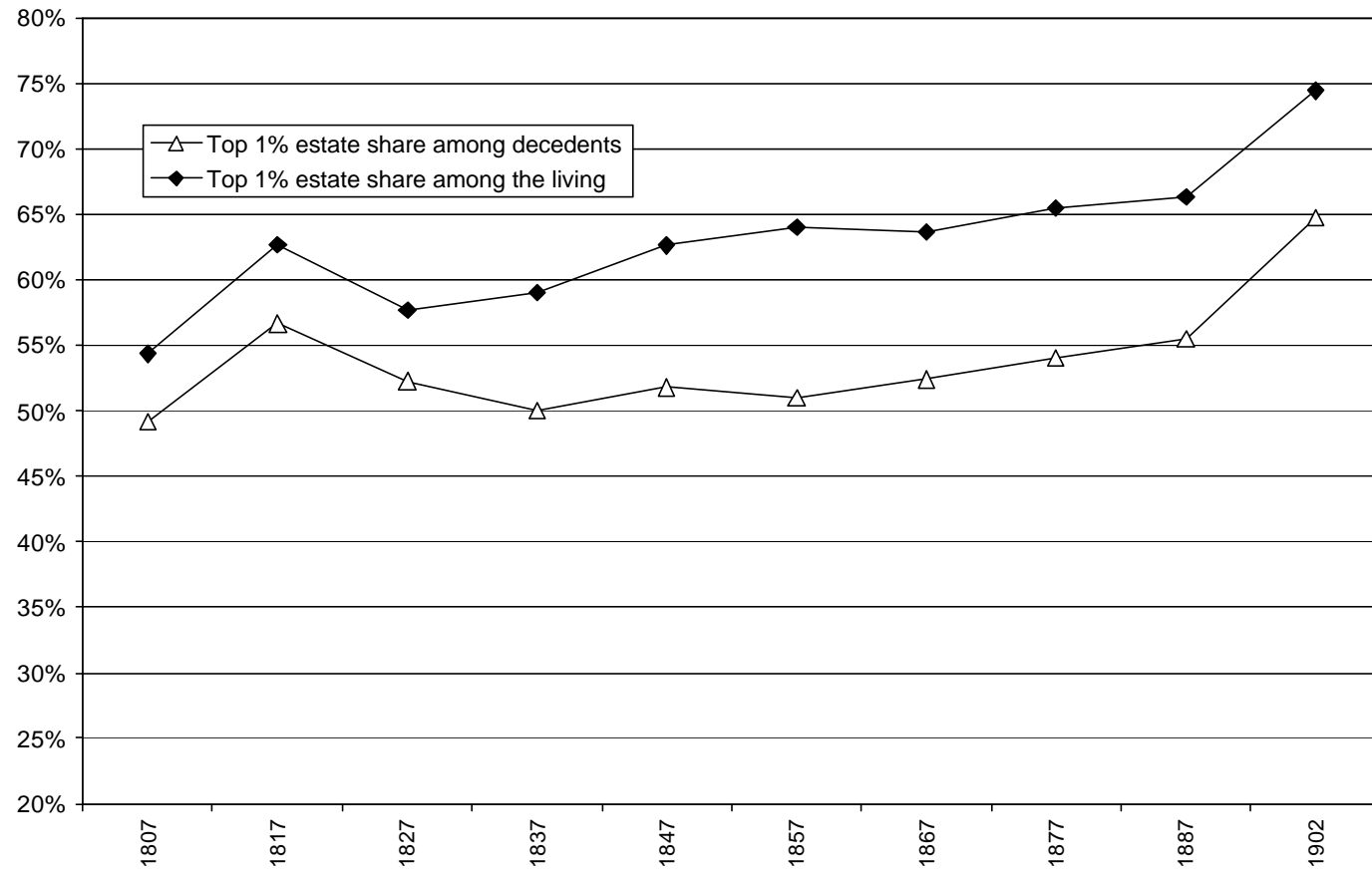


Source: Authors' computations based on estae tax returns

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

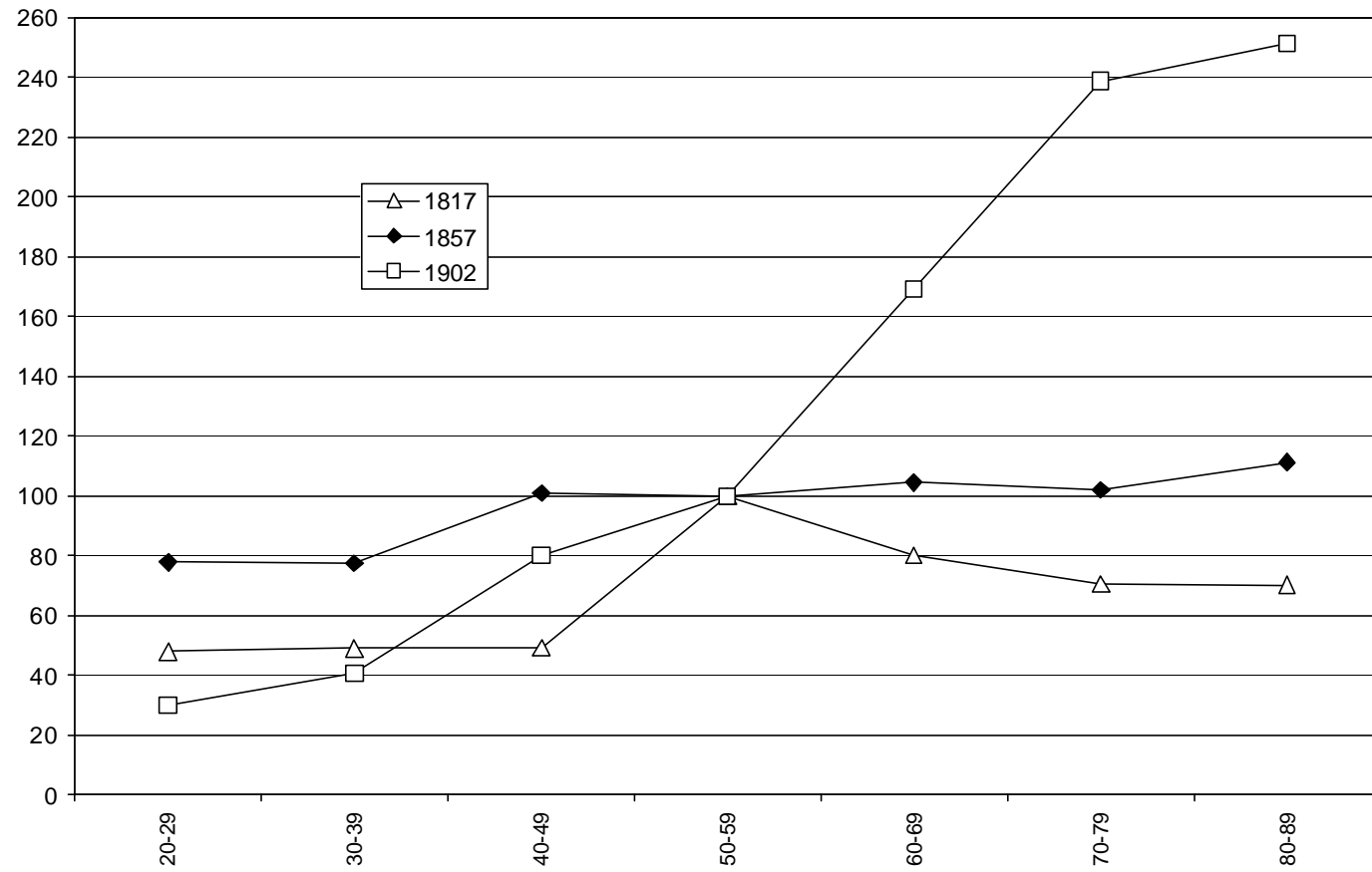


Source: Authors' computations based on estate tax returns

Figure 8: Wealth concentration among decedents and among the living in Paris, 1807-1902

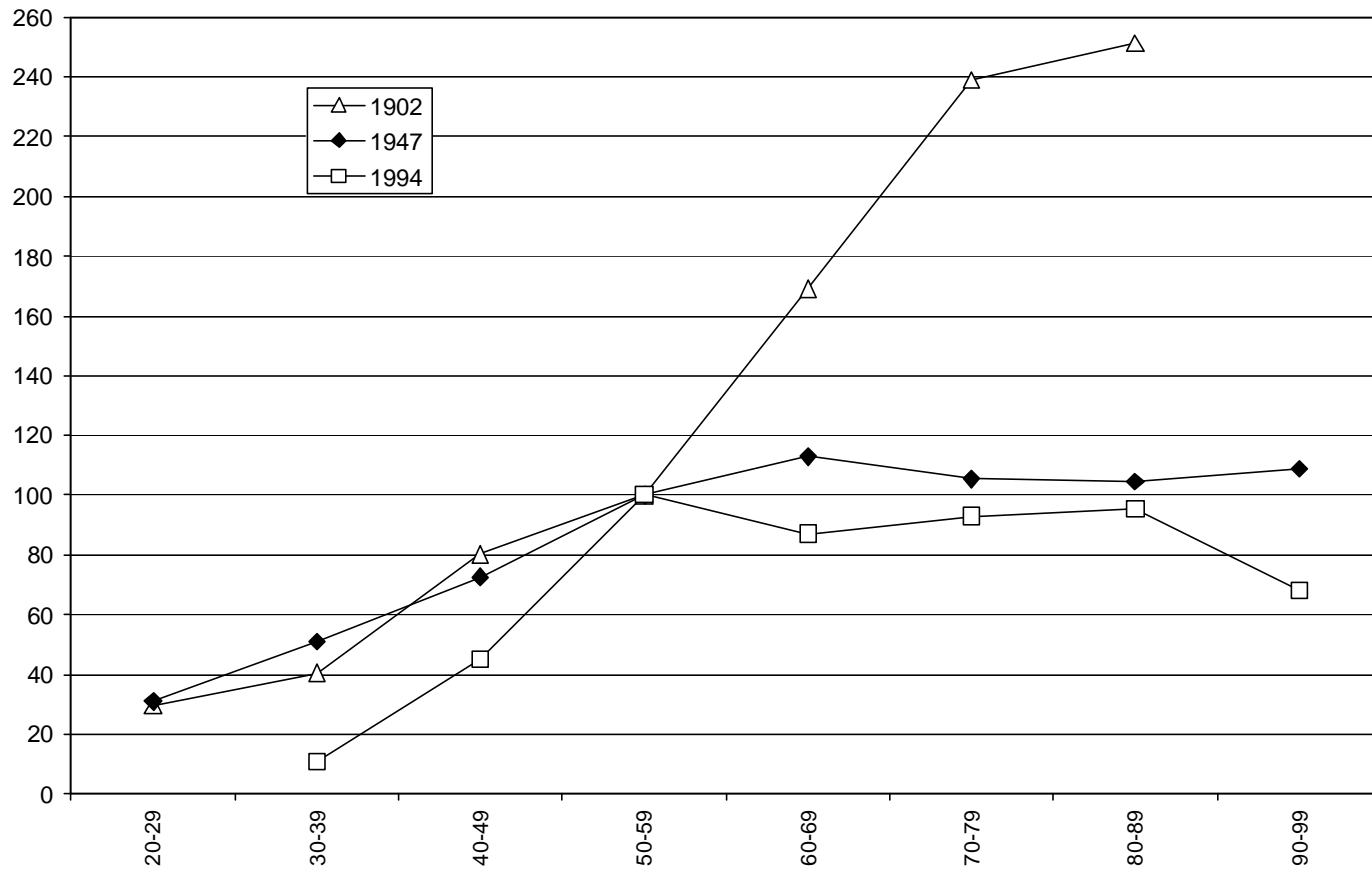
Source: Authors' computations based on estate tax returns

Figure 9: The Changing Age Profile of Wealth at Death in Paris, 1817-1902
 (average estate left by 50-59 year-old = 100)



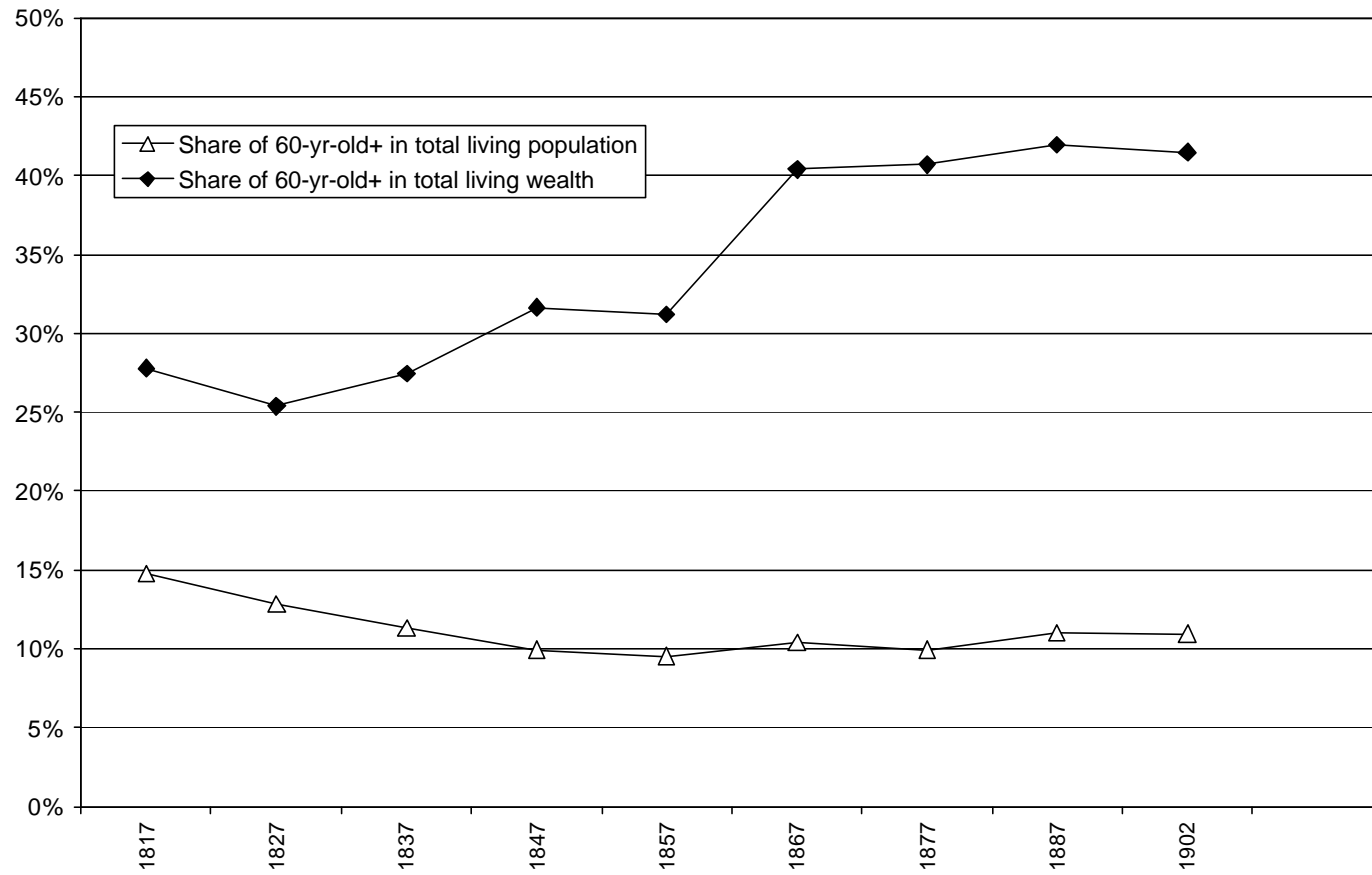
Source: Authors' computations based on estate tax returns

Figure 10: The Changing Age Profile of Wealth at Death in Paris, 1902-1994
 (average estate left by 50-59 year-old = 100)

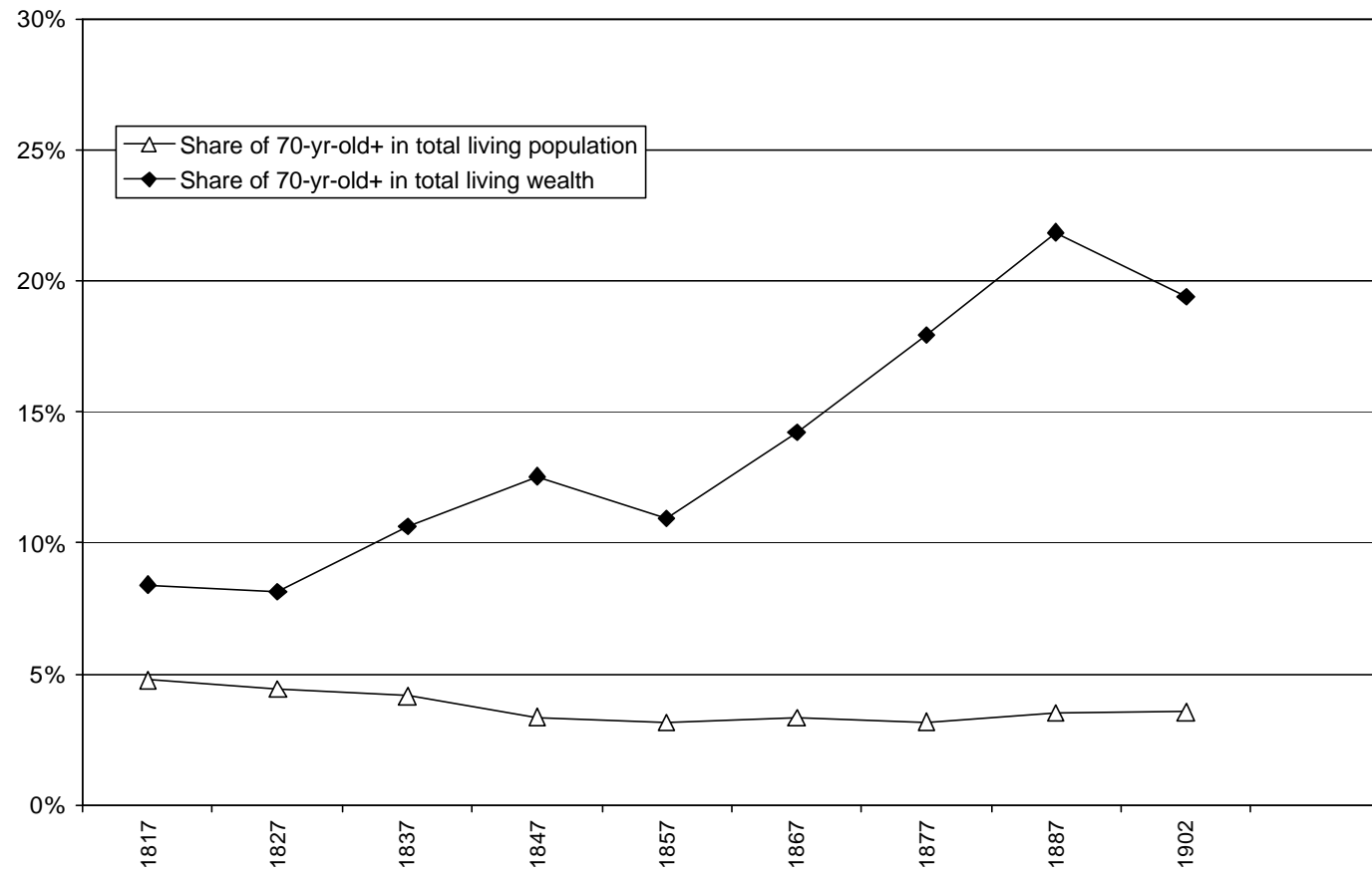


Source: Authors' computations based on estate tax returns

Figure 11: The age profile of wealth among the living in Paris, 1807-1902 (I)



Source: Authors' computations based on estate tax returns

Figure 12: The age profile of wealth among the living in Paris, 1807-1902 (II)

Source: Authors' computations based on estate tax returns