

Parisian Inequalities

Chapter 02

1852-1912 Belle Époque Capitalism

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Note: This text is the second chapter of our book on the evolution of wealth and its distribution in Paris from 1807 to 1972. The book is based collecting whole population of estate values for Parisians every fifth year since 1807. This draft is preliminary, please do cite without permission.

Introduction

The second half of the nineteenth century saw the blooming of large-scale financial institutions (exchanges and banks) with a global reach. At the same time the scale of some enterprises reached unprecedented levels in terms of capital and employment. These two phenomena give rise to two intertwined notions of capitalism. The first highlights the scale of industrial enterprises, the attendant financial resources they required, and the disassociation between the ownership of the enterprises and the individuals who provide the labor (and one should add management). The other focuses more strictly on the growing economic and political importance of the financial sector itself. Both of these have long lineages in social science, with the first going back at least to Marx. In a controversial and celebrated article (1951), Alexander Gerschenkron proposed a model that linked these aspects of capitalism to explain the accelerated economic growth of certain countries in the later nineteenth century. France was one of the cases that Gerschenkron put forward. In his view, the acceleration of economic activity depended on an acceleration of capital investment that raised labor productivity. In economies that were not too poor (e. g. France or Germany) a reorganized financial system with new large banks provided the resources for the industrial transition. Since then, scholars have continued to debate both whether France does or does not fit the model, and the extent to which specific financial organizations (banks versus stock exchanges) are more important in fostering economic growth. These debates carry forward to current policy and academic debates about what sorts of financial systems are most apt to produce economic growth (e.g Levine 1997, Laporta et al. 1997, 1998).

Going back to Alexander Gerschenkron's famous article (1951, 1962), the literature has often cast France's financial model as bank dominated. In Gerschenkron's case, this type casting was largely out of convenience to make France fit between England's financial market model and Germany's bank model. In an important but often ignored article, Roehl (1976) cast doubt on where France had been placed. For Roehl, all the evidence pointed to France looking much more like Britain than Germany. Later, economists seem to have extrapolated the financial structures that followed WWI (that were much more bank based) to the earlier periods. As we shall see, Parisians did have important positions in banks but most of their wealth was held directly in the form of stocks and bonds and real estate.

The sectoral transition models of economic change espoused by development economists and made prominent by Simon Kuznets (1955) draw in part from the same assumptions about capital deepening and labor productivity. In these views, there are a set of traditional assets (land and real estate, family enterprises, and public debt) that are replaced by modern assets that embody new technologies (e. g. railroads and factories). In Kuznets' view the new assets had high returns while the older assets were being depreciated by economic change and in these sectoral models individual investors have portfolios that are either in the old or the new economy. Those investors and entrepreneurs who are in the new economy (the capitalist part) see their wealth rise rapidly while the wealth of those in the old economy falls or stagnates. As we shall see our samples of portfolios of Parisians dramatically demonstrate the contrast between an Old Regime mode of investment that we still find in 1822, and more modern portfolios of the two decades that preceded World War I.

Another strand of the literature has focused on international capital. In the second half of the nineteenth century Western Europe emerged as the dominant source of external capital for

infrastructure and export-oriented activities globally. Because this period also saw a massive expansion of colonialism, the interconnections between politics, territorial expansion, and financial capitalism have been hotly debated. Davis and Huttenback (1986) explored these issues extensively in the case of Britain. France amassed the second largest colonial empire in the nineteenth century, covering vast parts of Africa and had toe holds in Asia and the Americas. After 1870, it has been argued that political motivations explain large scale investments in the Ottoman empire and Egypt, and most prominently the desire to secure an ally to the east of Germany led the French to provide much financial support to Russia. For a long time, the consensus was that the close regulation of financial markets in France enabled the government to achieve these goals with private funds (Lévy-Leboyer 1977). Recent work has cast doubt on these views, first because there was far less actual regulation than scholars had thought, and because capital exports were more broadly distributed than politics would suggest (Parent and Rault 2004).

In all these cases, the keys to the puzzle are who owned what? The first issue is who? It is a question that extend well beyond Gerschenkron and Kuznets. Indeed, every scholar of capitalism has been interested in who owned the enterprise of economic transformation, and the components of individual wealth holdings are fodder for research in fields as varied as business and social history and political economy. This matters both in the context of industrial and financial and. One can ask questions like was shareholding broadly distributed or was equity held by a small elite group. One can also ask about ownership of financial firms To some extent the high concentration of wealth in Paris already tells neither industrialization nor financial development lead to a democratization of wealth. Yet as we shall see, the details of wealth holdings rule many theories of change. In the case of the Gerschenkron hypothesis, the new banks are at least partly government funded. In the French case at least, there is little evidence of such support. In fact, private ownership of financial assets (whether invested in government supervised entities like the *Caisses d'Épargne* or *Crédit Foncier* or in private entities) was the rule.

The second issue is what? Evaluating the Kuznets hypothesis (and in particular its impact on inequality. The most important of these sectoral issues is decline of traditional assets (e.g. land) in favor on new assets (e.g. financial or industrial capital). But there are more subtle issues as well. For instance, in the bank versus market debate, one would like to know whether French individuals placed their funds with banks who then directed funds, or whether they owned stocks and bonds directly. Similarly, who benefited from capital exports by investing in foreign assets can help resolve different arguments about the political economy. This chapter begins to answer these questions for Paris. Paris is not France. However, as the political and economic center of the country, it is an excellent place to start asking questions about the interlinkages between markets and politics.

Because of these questions, collecting data directly from the estate filings turned out to be less of a chore and more of a voyage of discovery. Indeed, rather than try to simply match what the TSA reported (moveable wealth and real estate) we decided to collect a stratified sample of estates that aim to provide full asset details for the richest 2% of Parisians who died in sample years and a large proportion of other estates.¹ Using the stratified samples, we document that financial

¹ Technically below the top 2% we halve the sampling rate and double the range successively. Thus, we collect half of all estates in the P94-96 range, a quarter of the estate in the P88-96....

innovation has a complex relationship to wealth. On the one hand, the share of wealth invested in financial assets rose more for the bottom part of the distribution than for the top, on the other the very wealthy continued to have a heavier share of their investments in higher-risk higher-return assets than the middle class. Moreover, despite all this financial innovation there was very little movement in the share of Parisians who left an estate or in the wealth share of the top 1%.

This chapter proceeds in five steps. We start with the source that we will rely on, not just to 1912 but to 1972, the *Registres de Mutations par Décès*, and the key data collection decisions we made. The change of source requires us to consider in detail the extent to which the sharp recovery in wealth can be explained by the changes in the source whereby better coverage translated in higher taxable wealth with little real change in wealth. As we will argue, the growth in wealth is real and our measures of inequality are robust to different approaches. While we view this source-critique section as essential readers who are impatient for result may decide to skip ahead to section 2.2 where we detail the evolution of wealth at death, its impressive growth over the last half of the nineteenth century and its ever-strengthening relationship with the age of the deceased. The third section considers the distribution of that wealth. The fourth takes advantage of French marriage law to estimate the share of wealth that an individual bequeathed that could have been created from wealth he or she had inherited. Section five considers the evolution of the portfolios of wealthy Parisians.

2.1 From the TSA to the RMD

The TSA series is a large record set (more than 5,500 volumes). It is the result of the estate tax administration's efforts to compile lists of individuals who died from 1792 to 1969.² From the TSA, the best one can hope for is to recover first and last name, sex, address, occupation, marital status, age, location of death and, before 1870, some information about wealth and inheritors. The RMD series (*Registres de Mutation par Décès*) is an order of magnitude larger (some 52,000 volumes).³ The information in these registers is also massively richer (though age is most often missing). Because the French estate tax is assessed on heirs and differs by heir type, each filing begins with the full social description of the decedent and the beneficiaries of his or her estate. For individuals who died married there is additional information about the spouse and the term of marriage (France has a default partial community property regime but individuals have complete freedom of contract that ranges from complete separate property to universal community). That is followed by up to two list of assets, one for the community, when it exists, and one for personal property, when there is some. The lists detail each financial asset including bank accounts, stocks, and bonds as well as other forms of private investment; every piece of real estate comes with an address and an evaluation of its rental income; furnishings are not described individually although large collections of art or jewelry may be evaluated separately. In the 1820s, filings longer than two pages are quite rare, but by the 1910s filings can run to 20 pages or so—and occasionally much more. Collecting information from RMD presents several challenges: some are mundane, others forced us to make important decisions. On the mundane side, the TSA are chronological: individuals who are recorded in a bureau in a given year appear essentially in one volume per initial letter of last name. The RMD, however, are arranged by the

² In 1970 the TSA system changed from volumes with a line per person to a binder system with a page per person, that only listed individuals who died with some wealth.

³ Before 1901, the clerks transcribed the estate filings onto bound registers, after 1901 the registers are in effect binders that contain the filings, individuals brought to the estate tax authorities.

date and time when the declarations are filed. By law, individuals had to file within six months of death, and in the 1822 some 90% of all estates had filed by the end of 1823, but some would come in 1824 and a few into the 1830s (largely because it took time to find the heirs).

Our initial foray in the RMD was a limited effort intended to bridge the gap between the TSA records and the published distributions of estates that cover a number of years between 1901 and 1964 (Piketty 2001). We thus collected the TSA data set for 1877 and 1887 (that gave us dates of filing for individuals) and then opened the RMD registers to recover moveable and real estate wealth. We also collected 1902 but because individuals only appear in one bureau after the estate tax became progressive, we did not collect the data in the TSA data set before opening the RMD register.⁴ These three years have the same limited information that the TSA data set includes. Based in the results from the limited data collected for 1807 to 1902, we decided a deeper investigation was required that would provide much more detail about wealth and the individuals who held it.

With a limited budget, we had to make a series of decisions that trade-off accuracy for breadth. Accuracy would be maximized by a complete transcription of each estate recovered and the recovery of every available estates in a year. This, it seems, was the strategy followed by Daumard (1973) in the three cross sections she compiled a half century ago.⁵ Our desire for breadth (many more years) meant that we had to forego some accuracy to deal with challenges inherent to the source.

The first challenge was the dispersal of the records that pertain to the individuals who died in a given year. Calling volumes takes time, so our goal was to recover 90% of the estates for each year. By 1912, the first year that we collected in detail, to recover 90% of all the estates required us to open the registers from January 1912 through June 1914. From then on, we opened the volumes of the RMD for the 30 month that follow January of the sample year. Following this rule implies that we do not quite have the entire population estates. For the cross sections from 1872 to 1912 we have recovered 91% of the Parisians who filed an estate tax and were recorded by the TSA volumes as having paid the tax. In other words, we missed 9% of these individuals either because they paid the tax with delay, or because we failed to find them due to some transcription error on our part or on the part of the clerks of the estate tax. That rule did lead us to open half of all the volumes of estate tax declarations between 1872 and 1964.

A second set of decisions involved how much information we wanted for each individual. Initially we decided to follow the model of the data collection for the TSA data sets (age, gender, marital status and aggregate wealth) for everyone and much more detail for a stratified sample (100% of the top 2%, 50% of P94-98, 25% of P86-94, 12.5% for all individuals with positive wealth). Overtime we realized that name, address, and heir type should be collected for all. The data set thus reflects the evolution of our thinking on these matters.

A third set of decisions involved what to record in terms of information about assets. In part because we knew that the number of assets was large, we decided to compromise, and we aimed to record enough information to understand what entity issued each financial claim (specific firm, individual, or agency) and if it was equity, debt, or some deposit of some kind. We decided

⁴ We did open the TSA volumes much later to recover ages and addresses.

⁵ Daumard's papers were deposited at the National archives but the individual files she compiled were not preserved.

not to worry about the specificity of bonds (e. g. issued in 1876 or 1875, 5% coupon or 3% coupon and so forth) or the type of equity (e. g. nominative or bearer shares). As we shall see, even the somewhat coarse nature of our recording is amply sufficient to demonstrate both the astounding diversity of Parisian wealth holding in the aggregate and the utter lack of diversification of most portfolios.

Finally, there was an issue of whether the RMD data set was consistent with that of the TSA. We built RMD data sets for 1822, 1842, 1852, and 1862 that can be confronted directly with the TSA data.⁶ For those years we collected the full asset details for the stratified sample. In general, the TSA provide sufficient information to compile reliable wealth inequality statistics.⁷

More details on how the RMD data set is constructed can be found in the data appendix, but the foregoing decisions are important to the discussions that follow. Although we aim to measure wealth at death for all Parisians in a given year, we do not quite get there. Nevertheless, the sampling approach entailed by our second and third decisions should be neutral to the key issue of this book. Given the dramatic concentration of wealth, our stratified sample includes details on 70% of all the wealth transmitted. To the extent that our decision to only open the volumes for 30 months creates a bias, it is likely that it is towards understating wealth a bit because delay in filing is correlated with wealth (see Chapter 3). We, however, assume that the sample is unbiased and thus likely understate both wealth and wealth inequality. Since we want to show that Parisians were very rich and that their wealth was very unequally distributed it is the appropriate assumption to make.

Overall, the data set has three virtues, first it allows us to construct a measure of wealth (gross assets net of non-Parisian real estate) that is consistent from 1807 to 1912 (and can easily be extended to 1962).⁸ Second, because for each sample year we cover the entire population and fully sample the top 1%, we have a very accurate measure of the share of wealth of the richest Parisians. Third the data set provides a representative picture of wealth portfolios throughout the distribution. We start the analysis with the evolution of average wealth.

2.2: Wealth

The 1912 cross section, which is the last one we consider in this chapter, is more than a century distant from the 1807 cross section that opens our study. Unlike atoms, social scientists measure units that change over time. For us this involves both the definition of wealth, how it is valued and the definition of taxable wealth. This section, thus, begins by explaining how we construct a consistent series of wealth as defined by gross assets net of real estate outside Paris and then analyses the evolution of wealth. Doing so involves dealing with three complications. The most obvious is the change in source from TSA registers to estates fillings themselves in the RMD. Comparing the TSA and RMD total moveable wealth for individuals in 1822, 1842, 1852 and 1862, reveals that for many estates of individuals who die married, it is the community property that is reported rather than the individual's share. There are also two important innovations: first,

⁶ 1852 and 1862 were assembled on the same principles as other RMD sample, 1822 and 1842 were completed as we were writing the book and are not as extensive. For details see the data Appendix

⁷ The TSA bias wealth upwards because some clerks seem to have recorded total community assets rather than the value of the estate

⁸ The 1972 we collected comes from declaration compiled after a major change in the source. The reforms mean that the problems with 1972 are entirely different from those that we conform for the previous 165 years.

in 1850, the state decided to include the public debt in taxable wealth; second, in 1901 the estate tax was made progressive and the estate tax filings at the bureau of an individual legal domicile had to include the entirety of his taxable estate. Thus from 1902 onwards we observe the real estate Parisian held outside the city.

We start with the raw data (line “Raw” in Figure 2.1) which is the average wealth per Parisian decedent in 1912 Francs (the nominal values are in the “nominal” line). Then, to tackle the consistency of the TSA and RMD series, we can compare the TSA cross sections of 1822, 1842, 1852, and 1862 with those of the RMD because we collected both. First, the 1822 RMD series has 160 more rich individual than we recovered from the TSA while 1852 is short 226 and 1862 is also short 373. The 1822 difference may come from individuals who the RMD report as dying in one year, but the TSA inscribe in a proximate one.⁹ The 1852 and 1862 short fall likely comes from poor transcription of the RMD numbers. On the basis of four to six thousand estates per year the differences are tiny.¹⁰ Second, when we come to average wealth, the differences are about 7% both for average wealth and for average wealth among those who leave a bequest. This problem is limited because by definition it cannot arise for single individuals (never married or widowed who account for about 48% of wealthy decedents and half the wealth left behind). In fact, it primarily affects pure community marriages (where the estate is half the community) because in other cases the estate is composed of a mix of community assets and personal assets. While it is clear that the TSA source is sometimes inexact, it is important to keep in mind that these registers were finding aids. Once the heirs of the individual at hand had paid the tax, the fisc’s interest declined and whether the clerk noted an estate of 320 francs as 320 or 640 was of little significance. Tax official may well have wanted to compare the filing of a spouse to that of her predeceased partner. But then again, what exactly the clerk noted down would not matter much because the official doing the comparison could go to the filing itself. For real estate, one might even make the case that the value of a building is more informative than the value of the heir’s share. In any case, our procedure deflates average wealth in the TSA to 91.8% of their values (the average reduction necessary to bring the TSA of 1822, 1852 and 1862 back in line with the RMD). This correction produces the line “Reduce Community Assets in TSA” in Figure 2.1.

The second issue that makes the series not quite comparable over time involves public debt. Until 1850, the capital of the public debt annuities was exempt from the estate tax. Yet, as Daumard observed, the accrued interest on these annuities was not. Individuals rarely managed to die at the instant they received the last payment on their annuities and the heir had to report the interest the state owed the deceased. That report nearly always includes enough information to evaluate the capital value of the annuities. For instance, consider the estate Marie Anne Sophie Aujollet (she died March 11, 1822 and her heirs filed August 8, 1822). The heirs reported that in her 17,639 francs estate, 838.35 francs were arrears of interest payments on 1784 francs of a government annuities.¹¹ The nominal capital value of a 1784 francs annuity at 5% is 35,680

⁹ The absence of civil registration records for those years makes it impossible to allocate the errors between TSA and RMD.

¹⁰ We add individuals in the RMD from the TSA either because they were entered in the wrong year in the TSA register or because that register was unavailable when we collected the TSA. We remove individuals because we cannot find them in the RMD (the year and number of the filing refer to a different individual), because they turn out to not be Parisians, or because that filing turns out to belong with another one from another bureau.

¹¹ APD DQ7 3931 page 46 (declaration 709 August 7 1822).

francs and at market prices in 1822 that annuity was worth 31,398 francs or more than the value of her taxable estate. Aujollet is an extreme case but we can apply this procedure to everyone because, the coupon value of the annuities is almost always reported. Thus, there is enough information in the estate declarations to accurately estimate the size of Parisian's debt holdings. We collected this data for a stratified sample of estates in 1822. A quarter of individuals with an estate held public debt and, Madame Aujollet notwithstanding, public debt amounted to 20% of total wealth or 23 million francs. We collect the same information for 1842 and get two additional observations from Daumard for 1820 and 1847. It seems public debt declined from 17-20% of all wealth to about 15% by 1850.¹² Putting the public debt back into aggregate Parisian estates produces the "add public debt" line in Figure 2.1. That is the core series of gross assets net of real estate outside Paris.

Finally, we can add provincial real estate outside Paris from 1807 to 1897 cross sections. Indeed, such wealth was not reported in Paris until the centralized filings of the twentieth century. Fortunately, Daumard painstakingly matched probates and estate tax record to get an estimate of non-Parisian real estate for 1820 and 1847 (Daumard 1973 230-4). In 1820, non-Parisian real estate was 19.9% of total gross assets and 17.3% in 1847. By 1907, that share had fallen to about 10%, half what it was in period of Napoleon's demise. In fact, from trough (1817) to peak (1892) the series that includes provincial real estate grows at about the same rate as the one that does not include (2.6% per annum versus 2.8 without it). So, introduction of provincial real estate in 1901 does not explain the prolonged growth of wealth over the nineteenth century. This final adjustment produces the estimate "add Provincial Real Estate in Figure 2.1. The raw, constant 1912 francs, series of average wealth per adult decedent has a low of 5,400 francs in 1817 a peak at 47,500 in 1902 and then a steep drop to 38,000 francs in 1912. The final series has its minimum also in 1817 at 7,217 francs, a peak in 1892 at 50,200 francs and ends at 38,317 francs in 1912.

In retrospect, the measurements of wealth and distribution seem remarkably robust. The range across the different measurement of average wealth per deceased for a cross section is at most 17%. Over the whole period, leaving aside the exceptionally high prices of 1817, the price level varies from a low of 61 (in 1822) to a high of 100 in (1912), or by 75%. In contrast our constant 1912 francs series shows average wealth growing by more than 7 times from 1817 to 1912. Most of the change overtime comes from growth in wealth itself.

The growth rate of nominal per capita wealth is about 2.4% a year from 1807 to 1892 followed by two decades of 1% decline. In real terms, however, growth of wealth occurs in two key phases: recovery from 1817 to 1852 when real wealth per capita grows at 3.7% rate per year and then expansion from 1852 to 1892 when it grows at 1.7% per year. For Parisians at least, the growth rates of wealth are not consistent with a 'take off' of the economy after 1852 (Cf. Gerschenkron and proponents of finance led growth). One might believe that the use of estate tax data smooths the data to the extent that it would be impossible to detect a sharp break in wealth accumulation because of variation in the length of savings interval. However, even converting the data into wealth of the living through different estate multiplier methods fails to produce any take-off for wealth. As we shall see later, even if the aggregate data is not consistent with take-off theories, the portfolios of Parisians do reveal profound changes in the structure of wealth over the century. Those changes brought about a remarkable growth in the annual

¹² These values are consistent with those Daumard reported for 1821 and for 1847.

inheritance flow. It jumped from under 66 million real francs in 1817 to a peak in 1907 of 1.3 billion because the growth in individual wealth was compounded by a tripling of the Paris population. Wealth was very much larger in the second half of the century than it had been under Napoleon.

Wealth has numerous purposes, but in the end an investor buys a stock or bond to transfer resources into the future when they will be consumed. Using wealth as deflated by the CPI suggests that, at its peak in 1892, average wealth in Paris produced seven times the consumption opportunities than it did in 1817. Let us consider, however, other ways of evaluating the value of that wealth. The ideal point of comparison would be average labor earning in Paris. Such data do not exist. In fact, the wage history of Paris remains to be written. Thus, we rely on data for France as a whole. The first one is average adult labor income computed by Piketty and Zucman 2014 as the labor share of GDP divided by the adult population. Average wealth was about 16 times average adult labor income before 1825 and transitioned quickly to 24 times average wealth by the 1830s and stayed at that level through the Second Empire. Another jump after 1870 brought the wealth to adult labor income ratio to about 34 for the rest of the period. We can also deflate by an annual wage income that we recomputed from Bayet.¹³ The pattern is very similar: average wealth grows from 14 times the Bayet wage to more than 25 and ends at nearly 32. Our reader might object to comparing wealth to annual labor incomes. Indeed, wealth is a capital measure, and the wage analog would be life-time labor income. Consider that the average age at death of the poor in Paris remained below 55 before 1870. Supposing that such individuals had started working at 15 and thus had forty year working life earning the Bayet wage, then average wealth is equal to a third of their *undiscounted* life-time earnings before 1820 and three quarters in the last four decades before World War I.

Since the purpose of wealth is to transfer consumption into the future, one can ask what incomes would be associated with such wealth? Over the whole nineteenth century, the only asset returns we have are the returns on government bonds. If we take them as a proxy for returns to financial assets as a whole, average wealth at death produces an interest flow equivalent to adult labor income with little change over time. There is little change here because the massive growth in wealth was offset both by a rise in wage and a decline in yields from about 6% before 1820 to about 3% around 1900). In any case the consumption perspective on wealth is stark: an individual with an average job and average wealth could consume twice as much as a counterpart with the same job and no wealth. It is also clear that starting from no wealth and an average job would require a very high savings rate (30% or more) to reach the average of wealth at death in one's cohort for a person investing solely in government bonds.

2.3 Distribution

The discussion of average wealth nominal or real, while informative has very serious limits. Indeed, in Paris during this period median wealth at death was zero. Thus, variations in average wealth must be taken in along with the wealth distribution. Our sampling procedure allows us to measure the distribution of wealth directly because we do sample the wealthy within a year but try to collect data on everyone. Figure 2.2 show the unmistakable growth of the wealth share of the top 1% (the sum of the bottom two groups in the figure). In the first half of the 19th century,

¹³We deflate this capital income by the cost of hiring a worker for 2,750 hours a year, a figure that we take from Bayet (1997). 2,750 hours is the average number of hours worked per year over the full range of time (1840-1986) our study covers.

the top 1% wealth share is about 54% and varies between 49 and 58% but without much trend. From 1852 to 1882, the top 1% wealth share is never less than 51% and averages 56%. The real jump occurs in the last three decades before World War I when the top 1% wealth share has a low of 61% and averages nearly 62.3%. Much of the growth in the wealth of the top 1% accrues to the top 0.1% whose wealth share prior to 1850 was about 19%, but after 1892 it averages more than 25%. The very top of the distribution does garner 77% of the gains from increased inequality.

Since these are cohorts that accumulated during the first golden age of financial capitalism it is hard to argue that financial development necessarily reduces inequality. By financial capitalism most scholars refer to the period of rapid expansion of international capital flows (see Davis and Huttenback, 1987, for Great Britain and Lévy-Leboyer for France, 1977) and the equally rapid expansion of the number of financial assets traded on centralized exchanges such as the Paris Bourse. We also include the development of local financial intermediaries such as banks (e. g. Crédit Lyonnais, Société Générale, savings banks (Caisses d'épargne), and mortgage banks (Crédit Foncier de France) and insurance companies that offered both life and tontine insurance. Despite (or perhaps because of) all these innovations the share of individuals who die poor changed little, it averaged 72% in the first half of the nineteenth century and 73% between 1892 and 1912. As we saw the wealth share of the middle class P71-99 actually declined from 45% to 37%.

Nineteenth century Paris was thus very unequal and composed of three groups, a tiny one (the top 1% who controlled more than half the wealth) a sizeable group of about a quarter of the population that shared the rest, the largest group died with nothing. The differences in average wealth are stark. The first group had on average 25 times the wealth of the second, and by the end of the nineteenth century more than 30 times.

The pattern of steeply increasing wealth at death by age at death we described in Chapter 1 continues in the period of 1870 and if anything strengthens (see Table 2.1). Removing the top 0.1% from the data set does reduce the steepness of the age wealth profile but does not eliminate it. For instance, if we take individuals born between 1820 and 1839 and compare those who died age 80-89 to those who died 50-59 the full data set tells us the octogenarians were three and a half times wealthier than the quinquagenarians (106,000 1912 francs relative to 30,500 francs). If we remove the top 1% the ratio does fall to 2.65 (70,000 to 26,500 francs), but the pattern remains: age wealth profiles are steep. There is no evidence economic change redistributed wealth from the old (with traditional assets) to the young (with modern assets).

If we consider directly the age at death of the Parisian population, then the second half of the nineteenth century does reveal a marked change. As Figure 2.3 shows the age at death among those who died poor (P0-69) reaches a nadir about 1857 at 47. It then fitfully begins to rise and converge on the age at death of those who died with a little something (P70-89). Those two groups still have an average age at death of less than 55 in 1912. Over the whole of the nineteenth century the poor gain nearly four years in adult life expectancy. It is important to note that as we will discuss later, this is not the result of a general aging of the city due to a decline in migration. In fact, as Rosenthal and Kesztenbaum have shown, the increase in life expectancy was closely connected with the diffusion of better water infrastructure and in particular general sewerage. For the top 1% the nineteenth century is a history of nearly continuous improvement in age at death reaching nearly 70. Although the poor did show some improvement, on the eve

of World War I differential mortality was such that the rich could expect to live 15 extra years relative to the poor. Given that to enter the data one had to reach age 20, an age at death of 53 involves an average adult life span for the poor of 33 years.

By contrast, the top 1% enjoyed nearly another half adult lifespan. In 1807 they died about 60 or a full decade later than the bottom 70% of the population, in the decade before WWI they died at almost 70 or 14 years later than the bottom 90% of the population. By that measure, inequality rose and then fell over the century. Indeed, the top 1% life span advantage had been less than 40% before 1840, but it jumped to 60% or more over the next decades before falling back to about half after 1892.

The late nineteenth century shows a second major break. It involves the wealth of women relative to men. Let us first consider the average wealth of women to men among rich decedents (the evolution of average wealth among all decedents is very similar). That series is volatile but had two parts that break roughly in 1860. Prior to 1860 the wealth of women was significantly less than that of men. A woman's estate averaged about 65% of a man's wealth at death, and whether we compute these number over the whole population or only those with some wealth at death does not matter. The series is volatile and ranges from about 85% in 1827 and 1832 to lows near 50% in 1817, 1842 and 1852. Then women's estates begin to grow and except for 1892 never drop below 83% of men's estates. In fact, women's wealth is higher than men's in 1887, 1897 and 1912. If we remove the top 01% of estates, we observe the same pattern with less volatility: women's wealth at death was growing faster than men's from the mid-19th century and reached rough parity by the 1880s. This evolution raises a number of questions. In particular to what extent did the egalitarian inheritance regime and the community property marriage regime contribute to this relative equality? A full treatment of these question would require a data set that is more detailed than ours. The information about how a deceased's estate was divided among his or her children is available in the estate tax records precisely because the tax was an inheritance tax. Similarly, because spouses' names are part of the estate tax documents it is possible to link the filings of husbands and wives. To save resources and because our initial focus was on measuring inequality, we did not record this data. In a PhD thesis that utilized a part of our data set Clement Dherbécourt investigated the intergenerational transmission of wealth for the top 1.5% of decedents in the last third of the 19th century. He proceeded in two steps, first he investigated what each heir got, and, second, he sought out the heirs' own estate tax fillings. For Paris, at least, the evidence is strong that estates were split equally among all the children (Dherbécourt 2013, Chapter 3).¹⁴

Even if parents' estates were relatively equally distributed among children, there are other dimensions where such equality did not hold. The most obvious was labor markets where women were discriminated whole cloth. This likely had important consequences on differences in wealth mobility across men and women. Yet again the peculiarities of French marriage law with its heavy focus on community property meant that married women had claims on the wealth accumulated from their and their husband's earnings. Again, our focus on cross sectional inequality means that our data set at best hint at the tempering effect of community property on wealth differences between gender. Another issue we will return to is the extent to which the

¹⁴ Dherbécourt's finding is that the assessed value of each child's inheritance is almost always the same. It remains that sons were more likely to inherit control in family enterprises. Although such control has value it is never priced. Thus, equal sharing is a first approximation

portfolio composition of women's assets was different from men. Such differences could obtain either because of men's overestimating their ability to manage risk and this having more aggressive portfolios (Waldman 1994). It could also obtain out of the political economy of the household where the woman's wealth plays the role of a buffer (e.g. real estate or public debt) while the man's wealth was invested directly in higher return assets. We will return to these issues when we consider portfolios in Chapter XX7?.

Beyond family law's likely tempering effects on the very real discrimination against women in labor markets (e. g. entire professions were closed to them), we also need to consider wealth management. While there were many women entrepreneurs in France, the ranks of managers of the largest public and private firms were exclusively male. So, the only place women could hope to even the playing field was with investments and in particular the portfolios of inherited wealth. To get at these issues we proceed in two steps. In the next section we consider inherited wealth, leaving portfolios for the last substantive section.

2.4: Inherited wealth a first look

In most societies measuring social mobility requires matching two individuals at different times (parent and child at the same age) or the same individual in two different documents (first when the individual inherits, second when he or she dies). That is a tack we could have taken with our data, indeed the names, addresses and relation to the deceased of all the recipients of an estate are included in the declarations, precisely because French estate taxation was from its inception an inheritance tax. Clément Dherbécourt attempted such an approach for the very wealthy, but the match rate, even then, is low.

Instead, we rely on the details of French marriage law that lead individuals to distinguish between inherited and accumulated assets. Even before the Revolution, Paris was quite different from the Anglo-Saxon regime bequest and coverture laws where, by default, married women had no property. By 1804, the Civil code gave French couple wide latitude in how to arrange the management of their wealth. At one extreme couple could opt for universal community. In this case all assets of both partners were shared. At another extreme, they could opt for full separation (his is his and hers is hers). Individuals who were happy enough to do with a marriage license and civil registration fell under the default regime. The default regime created a community account on which both husband and wife had equal claims and two personal property accounts. The community account was funded initially by the moveable assets the couple brought to the household. Following marriage all income flows went into the community account (labor income, income from community or personal assets). The personal property account of a spouse held the real assets that spouse owned at marriage or inherited subsequently and a claim on the community. The claim on the community was repaid upon dissolution of the marriage. Finally, should the community engage in expenses for the maintenance of a spouse assets, that expense was booked as an interest free loan from the community to the personal account of that spouse. Thus, a household had up to seven accounts (community, wife and husband's personal property accounts, wife and husband's interest free loans to community, and wife and husband's liabilities to the community. At dissolution, husband and wife each received half the community net of the interest free loans.

Couples, or more likely their parents, could modify this arrangement in a wide variety of ways by going to a notary and signing a marriage contract. The most common modifications involved including a widow's portion (*préciput*), specifying a life interest in some or all of the community assets (*douaire or usufruit*), or changing the share each spouse received. Another common contractual modification was to leave all non-cash personal property in the personal property account (the so-called community limited to acquisitions regime).¹⁵ Modifications were common. Over the cross sections of 1822, 1852, 1862, 1872, 1882, 1892, 1897, 1907 and 1912, we collected the type of marriage of 28,373 individuals. Of those only 14 were in the Universal Community regime, 53% however used the default regime and another 39% modified by contract, finally only 7% opted for separation. The estate of a person that was in a separation regime would only report personal assets, which may well have been mostly inherited. But we will leave these aside. Similarly, the universal community regime would report only community assets.

In the case of either default regime or its contractual modifications, which represent 92% of all marriages, distinction between community and personal property were made in great detail. Leaving aside problems of valuation, a first definition of inherited wealth is clearly the deceased's personal assets plus his or her net cash claims on the community. In other words, for nearly all individuals who die married and wealthy we get an account of inherited wealth. To the extent our sources have a bias it is to underestimate inherited wealth for individuals in the default regime.

The example of Francois Nicolas Pérignon helps make things concrete. A retired notary, he died aged 59 on May 30, 1822 and his estate tax was filed July 13 1822 in the 8th bureau by a law clerk acting as the agent of his three children and his widow. On April, 1 1792, he had married Julie Besnard in Versailles. A notarized contract was drawn up that stipulated that his wife would receive a 4,000 francs annuity following his death and a cash sum of 20,000 francs would go to the surviving spouse. The contract also stipulated that he brought his notarial office that he had bought for 300,000 livres assignat and on which he owned 100,000. That debt was paid during the marriage, so he was owed 200,000. At the time of marriage, his clients owed him 100,000 livres and he had 20,000 livres in furnishings for his business so his contributions in 1792 amounted to 320,000 livres, he put in 30,000 livres in the community (for which no accounting would be done). He had also inherited a house in Paris that was sold for 20,000 francs. Julie Besnard had brought 376,475 livres as her dowry, she also put 30,000 livres of that in the community. All these resources were valued in the revolutionary currency, the livre assignat, In silver francs Julie Besnard's 346,475 livres were worth 186,643 francs while Pérignon's 290,000 assignats amounted to 176,098 francs. Further the deceased had also entered in real estate speculations on his own account and paid off the loans with community income and owed 82,016 francs to the community (his net claim was thus 94,082 silver francs). The moveable assets of the community begin with household goods for 24,498 and comes to a total of 396,445 (not counting 288,680 francs in public debt). They also included a house in Paris worth 160,000 francs acquired during marriage. From the fisc's point of view net community assets were 556,455 francs (from our perspective we would add the tax-exempt public debt for a total of 845,135).

¹⁵ Communauté réduite aux acquets

To calculate the estate, we start with the community property 556,455 francs. We must then deduct Pérignon's net cash account (94,082) and Besnard cash account (186,643), and the widows' portion of 20,000 for a total of 300,725 francs. The net community comes to 255,730 francs. Pérignon's heirs thus split half of that 127,865 plus what the community owed him 94,082 plus the value of another house he had inherited (92,000). The estate is thus 313,947 francs. On that the heirs paid a total tax of 4,815 francs. The value of the estate should be augmented of half the public debt for a total of 440,966 francs.¹⁶ At a minimum the three children were going to each receive more than 146,000 francs. A first computation of Pérignon's inherited wealth share is simply the ratio of his net personal assets 94,082 francs to the value of his estate 440,966 francs. The uncapitalized value of inherited wealth is 21% of his total wealth. This measure of inherited wealth leaves out the income flow that accrued between 1792 and 1822. Including these flows would have led us to measure capitalized inherited wealth. Because capitalizing inherited wealth involves complex issues, we will consider it in Chapter 5 over the whole range of our samples.

We chose Pérignon as an example because his estate highlights some of the problems that we will have to confront. First, Pérignon and Besnard were married in 1792. Their dowries were measured at that time while the personal and community assets that existed when they died are valued at the time of their death. Second, the value of the cash accounts would surely have been larger had the community been required to pay interest on those loans (even a low rate of return of 3% more than doubles the value of inherited assets over 30 years of their marriage). We will return to these issues in chapter XX8. But we can continue our investigation of inherited wealth with some simple observation about marriage.

As we noted, until 1914 a bit more than half of the individuals who died married had set up their household as the default regime, the other half chose to draw up a contract. If inherited wealth was unimportant in both cases, then the estate of the first person to die in the couple would be close to half the community property. If inherited wealth is important for either party then, the estate is likely to be less or more than half the community property. Returning to 1822, the average estate for such individuals was 3500 francs, the average estate for those who, like Besnard and Pérignon, chose a modified community regime was almost 29,000 or more than a factor of eight (and would be more than 10 times in the late 19th century). Individuals who chose the separate regime were even wealthier, at least in the first half of the nineteenth century. In 1822, 84% of individuals married in the default regime had an estate that was within 3% of half the value of the community. While this would also occur with individuals who had inherited nearly exactly the same amount of assets, that is very unlikely even in assortative marriage societies. By contrast only 13% of individuals married by contract have an estate within 3% of half the community and a full 60% have an estate that is larger than that. We can repeat this procedure for all the years in our sample [[table b21]]. Overall, the same pattern recurs: the share of individuals who chose to contract is about 40% over the whole period. The share of individuals whose estate is near half the community property being very low for those who contract (16% on average) and high for those who did not contract (65% on average). The share of individuals whose estate is close to half the community property is stable about 80% for the

¹⁶ ADP DQ 3411p 65,66. Pérignon and Besnard were owed rents on property outside Paris of 37,650. If those were full year rents that would correspond to 750,000 francs. It is amusing that the agents of the fisc could not quite calculate the value of the estate, the first time, they failed to charge Pérignon estate for his liabilities to the community, the second time they failed to deduct his net cash account from the community.

nineteenth century but lower in 1907 and 1912 likely due to the inclusion of non-Parisian real estate. For those who married with contract, a full 63% have estates larger than 53% of the community.

These coarse measures speak to the existence of two distinct populations within the wealthy, some individuals started their working and saving trajectories with little wealth and expected to inherit little. Marrying under the default rules made sense, since there was nothing to protect. To the extent members of this group ended up wealthy it was by effort or luck. Those that married with a contract often received dowries and anticipated benefiting from additional intergenerational transfers. Given the uncertainties of couples producing offsprings and those children surviving to adulthood, it is not surprising that parents wanted to ensure that wealth would be returned to their family in the absence of heirs. Moreover, the fact that management of the household wealth was entirely in the hands of the husband, meant that families also wanted to protect their daughters' dowries from the possible follies of their husbands. More important these contracts were set up when bride and groom were very likely to receive dowries and bequests. To the extent that they ended up wealthy, their favored start must have helped.

While both inheritors and non-inheritors are represented in every fractile, both contract type and deviation from half the community property are strongly correlated with wealth at death. In the nineteenth century 82% of individuals who died wealthy but not in the top two deciles did not draw up a contract, in the eight decile the proportion is 61%, for the top decile the proportion is less than a quarter, and for those whole in the top 1% it is only 7%. The group of individuals whose estates are close to half the community property is most prevalent for fractiles below the top two deciles. Nearly three quarters of the individuals below the ninth decile had an estate within 3% of the half the community, in the next decile the proportion is always less than 60%, it continues to fall as one goes up in wealth dropping to less than 20% in the top 1%.

Given these two populations and their relative representation in the fractiles it seems fair to ask what is the ratio of inherited assets to gross wealth? Here we take inherited assets to be 'personal' assets (*propres*), gross of reimbursements to or from the community. Because nearly all individuals with inherited assets had claims on the community (*reprises*) that vastly exceeded the claims of the community on their assets (*récompenses*), this measure of inherited wealth is an undercount. We focus on it because it avoids thorny complications of valuations that come up when we consider reprises or recompenses. For the weighted sample of Parisian who die married in the nineteenth century inherited assets represented on average 46% of their gross estate. The share of inherited assets is 19% for those who married without contract and just shy of 50% for those married with a contract. Give the large difference in the size of estates for those married with and without contract, it will come as no surprise that 93% of inherited assets were left behind by individuals who had a marriage contract. Moreover the 1% held about 10% more of the personal assets of Parisians than it did of total assets. Clearly inherited wealth was important and unequally distributed.

We close this section with some considerations about social mobility. It would be wrong to consider societies as unequal as Paris as frozen with two or three groups that as Marx envisioned are self-reproducing classes. This is wrong because Paris through the nineteenth century could not sustain its growth without large scale infusions of individuals. In fact, in the latter decades of the nineteenth century more than half the individuals who die rich were not born in Paris and the proportion is only slightly larger than the share of the overall population of adult decedents.

Second, as we saw earlier, a bit more than half of all Parisians who died married had been married under the default regime and for nearly all of those their only bequest was their half of the community property. It was possible to go from very little to the nearly the very top of the wealth distribution. Aristide and Marguerite Boucicaut are good example of such trajectories. Aristide was the son of a small shop keeper in the Orne, Marguerite came from even poorer origins. Boucicaut created the first modern department store, and he was the tenth wealthiest person to die in 1877. A decade later Marguerite was the second richest. Both of them were in the top 200 wealthiest individuals to die in Paris before WWI. Example like this can be found for most cross sections (recall Napoleon's marshals of Chapter 1). Over all the samples of the nineteenth century 80% of the top 1% wealth holders had inherited assets and 87% of the top 0.1%. Unsurprisingly we can document that 95% of them had marriage contracts. The Boucicaut are a rare example of individuals who vaulted to the top without help from family and without marriage a marriage contract.

2.5: Portfolios

Recall from Chapter 1 that the aristocracy was over-represented in top 1%, and while this overrepresentation persisted through into the twentieth century, it was declining over time. That the aristocracy was wealthy is hardly a surprise, its progressive eclipse brings up a number of issues. Given the Old Regime aristocracy's putative bias to real assets and given the important role of public debt and real assets in the endowments of the Napoleonic aristocracy, one might wonder whether these groups missed the boat on enrichment possibilities created by financial and industrial capitalism. One way to answer this question is simply to parse the assets of nobles between modern and traditional and compare them to those of individuals who are not aristocrats.

The relative decline of noble wealth, however, is just one example of a number of issues that can be illuminated by understanding the composition of Parisian wealth. Let us start with some definitions of assets. In Piketty et al. we classified assets as real or financial and withing financial assets distinguished between bonds, equity, and deposits. We also distinguished between assets where the income produced was domestic (the Paris Lyon Mediterranée railroad) versus international (the Suez Canal) without concern for whether the issuing entity was legally French or not, and whether the assets were publicly traded or not and if listed in Paris or elsewhere. For this section, we returned to the asset files that contained the specific information for 245,000 assets held by Parisians and another 27,000 items needed to deal with the deceased's claims on their communities. We develop portfolios for individuals that include personal assets and half the value of every community asset. As described in the Appendix to this chapter this procedure produces total wealth by fractile that is within 3% of the value measured in the individual files that measure the deceased's share of the community exactly. Using the asset file allows us to make much finer breakdown of assets than is possible with core individuals' data set we have used up to this point.

Our samples of detailed estates are large covering almost 19,150 individuals from 1842 to 1912, and the sample grows over time (1,407 individuals in 1842 and 2,775 individuals in 1912), thus we are in position of considerable abundance relative to most historical studies of wealth based on probates or other summaries of wealth at death. At the same time, before Word War 1, the portfolios of Parisians are sparse. They include a dozen assets on average around 1882 (7 in 1842 and 17 in 1912). Below the top 1% the number of assets is much smaller (see Figure 2.4).

Creating very fine categories would mean that nearly all categories would be empty for most people. In fact, aggregating by fractiles produces ‘representative’ highly diversified portfolios that are held by no-one. Instead, we opted for a sequential approach where the categories are defined with respect to the question we are asking. In general, we consider the investment portfolios of three groups: the top 1% (who own at least half the wealth), the next 9% wealthiest, and the rest (who never own more than 10% of the wealth). In almost all cases, the pattern we describe are monotone (for instance the share of assets that produce capital income, or are international is increasing with wealth), so the difference across these three big categories recur at finer aggregates.

This pattern is not surprising given that there were no mutual funds and that the price of most bonds and stocks was in the hundreds of francs. It does have a number of important consequences. First, for everyone in the top decile wealth was large enough that individuals could be diversified enough to avoid a tradeoff between risk and return. That fact was even more true for individuals in the top 1%. For the many not in the top decile, investments were so few in number that return and risk had to be highly correlated. They faced the choice of a low risk-low return asset (public debt) or high-risk high-return assets (e.g. a single stock). Overtime the top decile becomes quite a bit more diversified while the rest of the population has a much more growth in the number of its assets. Recall that the fraction of individuals that die wealthy is essentially constant during this time. These two facts imply that the advantages of greater access to financial markets did not trickle down much.

A second pattern, not shown, is worthy of note: richer individuals have a larger fraction of their wealth in assets that produce capital income rather than assets that do not (cash and furnishings, claims on other family members, banks account). The effect appears both in terms of the share of assets and in terms of the value of assets. Individuals below the top decile have about 40% of their assets representing 60% of their wealth in assets that produce capital income. At the other extreme individuals in the top 1% have two-thirds of their assets representing 73% of their wealth in assets that produce capital income. In this context, even if capital returns and savings rates were equal across groups, the rich would have more capital income and a higher rate of wealth accumulation.

From both Kuznet’s and Gerschenkron’s perspective as well as that of most economic historians who work on the nineteenth century, it was the key period of rapid urbanization and industrialization on the European continent. The two processes coupled with legal and financial innovation created a whole new range of ‘modern’ assets including foreign investments, stocks and bonds of French companies, deposits at banks and so forth. These can be contrasted with traditional assets that had been the principal components of wealth before the French Revolution and before industrialization. The traditional assets include real estate, public debt, private peer-to-peer loans, cash and bullion, and home furnishings

This first classification allows to establish that there was a radical transformation in the wealth held by Parisians. As Figure 2.5 show, in 1822, 88% of the wealth of Parisians was composed of traditional assets. That share drops steadily to about 55% by 1900. In the aggregate, Kuznets’ model of sectoral transition is very important for understanding the nineteenth century. By 1912 French equities and foreign assets constituted 34% of all Parisian wealth. Kuznets model also had implications for the distribution of wealth. To stay close to his formulation, one would want to classify individuals by occupation into ‘traditional’ or ‘modern.’ Yet we must recognize that

wealth unlike labor is fluid and divisible. Instead we look at the prevalence of modern of traditional assets across the three key fractiles of the wealth distribution's share of Parisian wealth that was in traditional and modern assets (Figure 2.5b). In 1822 all groups look pretty much the same with more than 90% of all assets being traditional. Then all groups move an ever-larger share of their wealth into modern assets. The move starts earliest for the top 1% and is more pronounced for that group. The other two groups show substantial decline, but traditional assets continue to represent more than 65% of all wealth towards the end of the period. Again, these patterns reveal an advantage for the rich: to the extent that the new economy has higher returns than the traditional economy, not only will the rich have higher wealth accumulation because more of their wealth is in productive assets, but their wealth is also more invested in high return assets.

One can also break down the investments of men and women. It is often assumed that women are either directly more conservative in their investments or that because of the legal structure of French marriage parked their wealth in low return assets. As Figure 2.5c show, while women have lightly more traditional assets than men in 1842, they decline pretty much as the same rate. Another way to parse the data is to isolate individuals from noble families from commoners. It is clear that being an aristocrat was no hindrance to being forward looking in one's investment. Nobles always have a smaller share of their wealth invested in traditional assets. One might worry that is simply the mechanical effect of nobles being wealthier than commoners, but in fact this difference is roughly the same within fractiles. It is possible that nobles were perhaps more likely to hold provincial real estate and thus seem more forward looking because both they were richer than we measure and because their rural real estate provided an additional buffer.¹⁷ Still their wealth at death does not detect an investment path to oblivion.

Theories of economic transformation put a heavy emphasis on investment in specific sectors like industry or railroads. Another cut through the data looks at activity with a special focus on finance, industry and infrastructure with a special attention to railroads. Some caveats, however, apply. To start, we try to classify the equity and debt of firms into ten sectors of activity. It is very easy to identify railroads because even if the name of the security in the estate does not include railroad as in "2 actions Danube Save Adriatique," the geographic definitions almost always do even for small ones e. g. "Lerouville à Sedan." It is also easy to do so for firms quoted on the bourse. Other enterprises can be identified because the sector is included in the title as in "Mines de" or "Banque de." In other cases, the name itself is sufficient to allow identification Alais Froges or Cail. In many cases however, firms are only identified by the names of their owners and these firms drop into the unknown category—these are most often smaller non-corporate firms.

In 1842, we can attribute sector to less than half the equity and bonds in portfolios. This is largely because at that time, there were essentially no railroads (though the Paris to Versailles had opened long enough that French explorer Dumont d'Urville and his family could die in an accident and appear in our data), and the huge investments in urban infrastructure that would characterize the second half of the nineteenth century had barely begun. A lot of equity was still in sole proprietorships and partnerships of various kinds whose sectors are difficult to identify.

¹⁷ Nobles do own more rural real estate. It represents 13% of their gross wealth in 1902, 9.6% in 1912 and 23% in 1912 while commoners have 6.7, 8.5 and 9.7% of their wealth in rural real estate in the same years.

By 1852 we can attribute a sector to better than 70% of the value of stocks and bonds in the estates of Parisians and from 1882 on our success hovers at 90%.

A first observation from this exercise is that there are two key sectors over the whole period, railroads and public debt. Public debt is never less than 22% of the equity and bonds of Parisians and most of the time about a third. Railroads start out small (less than 2% in 1842) but by mid-century they account for about a quarter of the wealth, and for half the equity and bonds of Parisians. Finance runs a distant third at about 10%, mines and utilities each account for 8% of wealth. Returning to Gerschenkron and theories of bank led development, there is little evidence that the Parisians particularly channeled their investments into deposits at bank or savings institutions. Such deposits never account for more than 5% of total wealth. Instead, Parisians held assets in the forms of stocks and bonds directly. To be sure, the various forms of bonds and debts was an important though declining type of financial asset (more than 80% through 1852 then dropping to 60% on the eve of World War I, but those bonds were held directly. Firms with large scale capital needs used financial intermediaries to place bonds. In the nineteenth century financial transformation was limited.

A second observation is that the growth of French wealth as seen through the portfolios of Parisian was, except for railroads, a relatively smooth process. There is no moment of take-off for utilities, industry, mines, or finance. The wealth of Parisians became more diversified over time. For railroad, things are different: they accounted for about 4% of the bonds and equities of Parisians in 1852, by 1862 that number had jumped to 16%. From then to World War I, railroads account for a quarter of all the equities and bonds held by Parisian. As we shall see soon below when we break out foreign assets, the difference between Railroads and every other sector becomes apparent.

The rise of large volumes of financial assets (stocks and bonds) antedates the nineteenth century but as the financial literature has shown, those older developments were massively amplified by the rise of investment banks whose job was to find individual holders for all these financial claims and of stock exchanges that allowed individuals to alter their portfolios much more easily than had been the case with traditional assets. After timid beginnings in the first half of the nineteenth century the Bourse, listings on the Paris' stock exchange, expanded rapidly up to World War I. As many have noted, listing on the Bourse was more onerous than on the London Stock Exchange and many securities were trade in an over-the-counter market known as the *Coulisse*. As a start, we have added to the other characteristic of each asset whether it was coded on the bourse. As figure 2.8 show, most of Parisians' wealth. was not traded on the market (these assets include things like real estate, peer to peer loans, bank accounts, insurance policies and, of course, cash and furnishings). Among financial assets (equity and bonds), however the share of wealth that was listed rises from less than 60% to about 80% by 1872 and stays near that level to World War I. Breaking the data down by fractiles shows that the poorer groups had fewer traded assets than the richer ones. This is largely due to the important role of public bonds in the portfolios of the 8th and 9th deciles. Conversely the top 1% has a smaller share of financial assets that are traded because many of them have large position in privately held businesses (e. g. the Rothschilds in their own bank). If we make the denominator gross assets, the reverse pattern holds because of the very important role of cash and furnishings in the wealth of the 8th and 9th deciles. Because of the extraordinary concentration of wealth in the hands of the top 1% most of the benefits from the rise of the Bourse accrued to the very wealthy.

The last important dimension involves the geographic origins of the capital. Following Davis and Huttenback 1986, we try to attribute a location to the productive activity that provides the return on capital. Case in point, the Suez Canal was legally a French corporation (also registered in Egypt) with its headquarters Rue de Cléry. The canal, whose shares and bonds were traded in Paris and Cairo, derived its income from providing transport services so we coded it as in Egypt and Africa. For the Nineteenth century, where businesses tended to operate in a small number of location and usually one country, the task of assigning a location is relatively straightforward and give a place to than 95% of all financial assets. The share of Parisian financial assets held in French assets was more than 90% through 1862 and, though it fell over time, it was never less than 70%. If we focus solely on the international part of the Parisian portfolio (see Figure 2.9) Western Europe (including Germany Switzerland and the Austro-Hungarian empire) was the dominant place of investment. After 1892 Western Europe falls to about 40% of all foreign assets as Eastern Europe and Russia grow to about 20% and Africa does as well. The early twentieth century sees a clear rise of investments in the Americas. A line in the graph reports the share of foreign assets that were trade on the Bourse and here it is clear that financial development drove the internationalization of Parisian portfolios. Foreign assets are more likely to be traded than French financial assets.

Figure 2.9b breaks down the portfolios for each fractile. Here again we find that the wealthiest individuals were much more geographically diversified than either the rest of the top decile or the rest of individuals who died with wealth. After 1892 it is striking that almost half of all the assets of the top 1% wealth holders are international, the 8 and 9th decile never breach 20%.

Taking international issues and breaking them down by sector (Figure 9c), we can see that in every cross section nearly 75% of all these assets were either public debt or railroads. Railroads are negligible until 1862 when they jump to 40% of all international holding before entering a slow decline to a fifth of international holdings. Mines grow rapidly after 1897, as Parisians showed an affinity for South African gold and diamond endeavors.

Overall the portfolios of Parisians show two important patterns. First, they are increasingly financially sophisticate and thus very responsive to legal and financial change. There is no doubt that from the perspective of the wealth holdings of Parisians, the second half of the nineteenth century was a first golden age of financial capitalism. Signs of the transformation of wealth can be found in the number of assets, the sectors where wealth was held, the rise of secondary markets, and the destination of capital. At the same time, for everyone of these indicators it is clear that the richest Parisians (the 1%) who left at least 50% of the wealth behind were the most rapid adopters of new technologies and the greatest beneficiaries. The extent of these differences is such that they could not but contribute to the growing differential in wealth across the fractiles.

Finally, it is important to note that the massive and dramatic financial development we document had no effect on the willingness or ability of individuals below the eight decile to accumulate bequests. For the poor population at least, financial and industrial development was of no direct consequence. To the extent that financial innovation facilitated the development of life improving infrastructure (e.g. clean water and sewers) then there were broad indirect benefits that we saw in the data on age at death. In the case of Paris, these kinds of investments were handled by a mix of private and public organization. Haussmann's rebuilding effort required municipal investment (to buy out landowners, rebuild and pave new streets) but the buildings that line his new boulevards were privately owned (either by individuals or by corporations like

insurance companies). With respect to water, the city financed the sewers and the water infrastructure but private companies dealt with retail customers, and for gas, tramways, and electricity, private companies ruled the day. All these organizations issued financial assets. Our data show that rich Parisians owed these. There is no doubt that many of these investments improved the lives of most Parisians, but as Kesztenbaum and Rosenthal (2016 2017) have shown who enjoyed these improvements was closely related to incomes. Moreover, the diffusion of sewer itself was hampered by the need for budget balance. Because they could not pay, poor neighborhoods waited a generation to get high rates of sewer connections. These indirect consequences are indeed very important but in highly unequal society they are also likely to be delayed.

Conclusion

Paris in the nineteenth century was in many ways a precursor to the wealth dynamics that most of the population of the Western world has experienced since World War II, and more so since 1980. Paris was wealthy, inherited wealth was important and a large fraction of that wealth was held in financial assets. The main difference between our world and that of the nineteenth century is that rates of taxation were very low. Nothing we see then reflects tax avoidance or tax optimization. During this period, as the last section showed, there was massive innovation in finance and in the economy more broadly. In 1807 people and news' travel over land was mostly constrained by the speed of a horse. By 1912 travel from Paris to most of France was counted in hours instead of days, and news traveled at the speed of light. Much of the technical change was embodied in physical capital thus finance demanding. Nowhere was this more evident than in the immense importance of railroads in fixed capital formation as documented by economic historians working on the macro-economic aspects of growth as well as those working on the evolution of financial markets. While industrialization and the transport revolution were not geographically confined, they both accelerated a trend underway long before in Europe: urbanization. Urbanization required investments in infrastructure within cities (e.g. housing, water, lighting, gas). The growth of cities like Paris (from 650000 in 1817 to 2.8 million in 1911) was also dependent on investments in infrastructure to reduce the cost of providing food, fuel and other inputs. Whether these were publicly (water, lighting) or privately (housing, gas) provided, these investments produced financial activity in the form of municipal bonds and the equity and debt of private companies.

All these developments are consistent with increases in wealth and they have much to do with the seven-fold increase in the real value of estates we observe from 1807 to 1912. When we consider inequality, it is tempting to return to a two-sector model, a traditional one where both labor and capital incomes are low and a modern one where labor and capital incomes are high. The persistent influx of population into Paris (about 2/3 of all the Parisians who died in Paris were not born there) is consistent with the two-sector model for labor. The rapid rise of Paris (and other large cities) likely contributed to increased French wage inequality in the nineteenth century consistent with the Kuznets framework. **Despite considerable work on migration and on the sectoral transformation of the work force (Magnac and Postel Vinay 1997, Marchand and Thelot, 1991, Postel-Vinay 2002, Sicsic 1992), the evolution of the wage distribution in France has been understudied for lack of systematic sources.**

We know that capital income plays a very large role in income inequality. That was one of the reasons we were led to work on wealth inequality (Piketty et al 2004). However, when we come to wealth, we have to recognize its fluid properties that breakdown the analogy.

Consider first a model economy that is initially egalitarian and without capital markets (the yeoman economy). Then someone who wants to start a modern enterprise must sell all his or her traditional wealth and invest it in the new sector. The Kuznets' framework works well in this setting because capital incomes will be higher in the new sector than in the old one. For nineteenth century Paris, however, there are two problems: there were very active capital markets and it was not egalitarian economy.

When there are capital markets, someone who works in the traditional sector can invest in the modern one, while someone who toils in a modern factory may be investing in rural real estate. Even in an egalitarian yeoman economy, capital markets make the impact of new sectors on wealth inequality much more difficult to parse than for wages. Indeed, individuals are likely to want to diversify investments across sectors even absent return differential, just to mitigate risk. If individuals were sufficiently diversified then new sectors would have no impact on wealth distribution.

Of course, even in 1807, Paris was not an egalitarian yeoman economy: the top 1% wealth holders owned half the wealth and most of them had inherited substantial wealth. Further, the financial markets of the nineteenth century made it difficult for individuals to be well diversified. Thus innovation likely produced two effects. For the bulk of the wealthy population fractiles p70-95, innovation increased inequality between those who remained in the traditional sector (say public debt) and those who invested in the new sector, but for most of these individual's diversification was limited. Individuals who saved in peer to peer loans to farmers were hurt by the agricultural depression of the 1880s while those who invested in modern endeavors like the Suez Canal or department stores did well. But being in the modern sector was not without risk as the sad tales of the Panama Canal or the Union Générale remind us. Nevertheless financial markets permitted many to invest in sectors uncorrelated with where they worked. It also permitted individuals without an activity (rentiers) to invest in a variety of activities as the example of nobles shows.

At the top, most individuals were well diversified and increased their investment in high return assets over time. Within the top 5% Kuznets sectoral effect has little bearing because individuals held assets that spanned both sectors, if the distribution of wealth began as unequal then it should end up more or less in the same place. More importantly

Kuznets' sectoral model made predictions about two phases of economic change. The first that we have just reviewed, argued that inequality increased because of economic innovation. Kuznets also hoped that inequality would fall as the traditional sectors would decline in importance. Paris in the nineteenth century shows no sign of such dampening effects. On the contrary, the succession of innovations seems without end. One could start early on with insurance and canal companies, follow those with French railroads and coal mines, continue with international sovereign bonds and railroads, move to gas works and tramways, then to electricity and gold and diamond mines. From Parisian wealth portfolios, one does not get an impression of radical burst of change (the first and second industrial revolution). Instead, the data suggest that one wave of new ventures without much geographical boundaries was replaced by another. There was no end of innovation to reduce wealth inequality in Paris before World War I

Wealth inequality far from declining was increasing. It is easiest to split the data between the top 1% (representing some 250 adults on average among the dead (or 13,000 among the living)). These individuals owned about 53% of the wealth on average in our cross sections. In the first two decades of the nineteenth century their share was about 47% while in the two decades before WWI that share was 61%. The top 1% had increased their wealth share by 30% over a century. One element that allowed the top 1% to increase their wealth at a faster rate than the rest of the wealthy involves differential returns. The primary driver of these differentials involves the share of assets that produces capital income. Despite massive financial innovation, in the first two decades of the nineteenth century about 70% of adults who died had so small an estate that it failed to attract the attention of the fisc. That number had risen to 72% in the two decades before WWI. While it is clear that individuals move to Paris in great numbers, likely attracted by higher wages, these individuals consumed these earnings rather than saved. They came to Paris to be renters not homeowners, to be workers rather than entrepreneurs and died without real estate or business wealth. Those that died in 1902 had failed to save just as those that died in 1822, despite the fact that the range of saving destinations was massively larger in 1902 than in 1822.

Given this constancy in the share who die negligibly wealthy, the path of inequality is entirely driven by the distribution of wealth among the seventh and eighth decile where in general about one third of the wealth was in furnishing and cash equivalent compared to 15% in the top decile. Added to this difference is a break between the top 1% and the rest whereby the richest group invested abroad much more than anyone else. Given differences in yield the rich could enjoy high rates of consumption and maintain their wealth with modest saving rates.

The lesson from the low tax low regulation environment of nineteenth century Paris is that inequality tends to persist or increase in part because it is easy to transfer wealth through the generation (the tax on estates transmitted to children was at most 1.5%), and to accumulate wealth by saving from capital income if one inherits wealth. After the Revolution, political transition, wars, epidemics, and financial crises while severe were erased with a decade in wealth profiles. The twentieth with its trio of calamities and its complex tax history offers an entirely different vantage. To start we turn to taxes, which turned out to be as uncertain as death.

	Table 2.1: Average estate (all decedents) by age group (50-59=100)						
	20-29	30-39	40-49	50-59	60-69	70-79	80+
1807	12%	47%	93%	100%	70%	100%	131%
1812	12%	69%	93%	100%	106%	121%	275%
1817	10%	18%	25%	100%	54%	60%	68%
1822	34%	55%	93%	100%	201%	118%	184%
1827	14%	42%	47%	100%	87%	96%	85%
1832	28%	63%	72%	100%	110%	112%	165%
1837	22%	49%	88%	100%	132%	144%	190%
1842	14%	33%	52%	100%	108%	242%	213%
1847	17%	42%	60%	100%	162%	241%	243%
1852	16%	18%	48%	100%	183%	216%	425%
1857	9%	22%	43%	100%	124%	130%	258%
1862	14%	20%	48%	100%	133%	216%	191%
1867	21%	27%	63%	100%	214%	276%	328%
1872	19%	29%	108%	100%	212%	226%	213%
1877	21%	50%	56%	100%	198%	302%	399%
1882	12%	22%	50%	100%	157%	242%	395%
1887	16%	21%	52%	100%	156%	276%	445%
1892	18%	27%	35%	100%	225%	187%	531%
1897	9%	18%	44%	100%	165%	214%	277%
1902	20%	31%	76%	100%	278%	331%	525%
1907	26%	19%	44%	100%	195%	318%	494%
1912	12%	25%	55%	100%	213%	307%	424%

Appendix to Chapter 2

Creating the RMD population

We start with a total number of adult death N and a total number of adult rich Parisians $N^R = N_0^R + N_A^R + N_{NT}^R$ where N_0^R is the number of rich for whom we do not have age, N_A^R is the number of rich whose age at death we know, and N_{NT}^R is the number of individuals who are in the TSA but for whom we did not find a declaration. Denote $N_B^R = N_0^R + N_A^R$ these are the rich for which we have a wealth observation

By construction the total number of poor $N^P = N - N^R$ and $N^P = N_0^P + N_A^P + N_{NT}^P$

Now we assume $N_B^P = N_0^P + N_A^P = (N - N^R) \frac{N_{NT}^R}{N^R}$ and we further assume that $\frac{N_0^P}{N_B^P} = \frac{N_0^R}{N_B^R}$

Thus $N_0^P = (N - N^R) \frac{N_{NT}^R}{N^R} \frac{N_0^R}{N_B^R}$ and $N_A^P = (N - N^R) \frac{N_{NT}^R}{N^R} \frac{N_A^R}{N_B^R}$

Generally, we find about 90% of the individuals so we include about 90% of the adult individuals and 85% the records of those we find provide an age and we split the poor in the same proportion (15% without an age).

Adjusting for public debt

For the public debt, our task was relatively simple because estate reported both interest areas that were taxable (the 838.35 in Madame Aujolet's estate) and the coupon value of the annuity (1784 francs in her case) and going from the coupon value to the nominal value of the asset just requires multiplying in by 20. One could then deflate it by the market price since that is always expressed as percent of par. For real estate things are no so easy. The rental arrears reported do not list the length of time covered so it is not clear what the proper capitalization factor should be. For 1822 we compared the total value of reported real estate (25.2 million) to the total value of reported rents (188,000 francs) which gives an implicit capitalization