Income Inequality in France, 1901–1998

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This paper uses data from income tax returns (1915–98), wage tax returns (1919–98), and inheritance tax returns (1902–94) in order to compute homogeneous, yearly estimates of income, wage, and wealth inequality for twentieth-century France. The main conclusion is that the decline in income inequality that took place during the first half of the century was mostly accidental. In France, and possibly in a number of other countries as well, wage inequality has been extremely stable in the long run, and the secular decline in income inequality is for the most part a capital income phenomenon. Holders of large fortunes were badly hurt by major shocks during the 1914–45 period, and they were never able to fully recover from these shocks, probably because of the dynamic effects of progressive taxation on capital accumulation and pretax income inequality.

I. Introduction

The primary objective of this research is to document trends in income inequality in France during the twentieth century. Did income distribution become more unequal or more equal in France over the course of the 1901–98 period? What are the specific periods in which income inequality increased or declined, and what income deciles were most affected by these trends?

I am grateful to seminar participants at Columbia, Harvard, Massachusetts Institute of Technology, Chicago, London School of Economics, and Paris for lively discussions. I also thank an editor and two anonymous referees of this *Journal* for their helpful comments. I gratefully acknowledge financial support from the MacArthur Foundation. This paper presents some of the results that are exposed in a more detailed manner in a book in French (Piketty 2001*a*). All series used in this book and in this paper can be downloaded at http://www.cepremap.ens.fr/piketty.

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The second objective of this work is obviously to understand these facts. What are the economic mechanisms and processes that allow us to understand the way income inequality evolved in France over the course of the twentieth century? According to Kuznets's (1955) influential hypothesis, 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. Can this model account for what happened in France during the 1901–98 period, or at least during the first half of the twentieth century?

One advantage of looking at France is that French data sources allow for a detailed analysis of inequality trends. In particular, I was able to construct fully homogeneous yearly series running from World War I until the late 1990s for both income inequality and wage inequality; to my knowledge, this has not been done for any other country. I can therefore distinguish precisely between the trends that are due to changes in the wage structure and those that are due to changes in the concentration of capital income. This allows me not only to better understand the French experience but also to reinterpret the experience of other countries. The main conclusion is that the decline in income inequality that took place during the first half of the twentieth century was mostly accidental. In France, and possibly in a number of other countries as well, wage inequality has actually been extremely stable in the long run, and the secular decline in income inequality is for the most part a capital income phenomenon. Holders of large fortunes were badly hurt by major shocks during the 1914–45 period, and they were never able to fully recover from these shocks, probably because of the dynamic effects of progressive taxation on capital accumulation and pretax income inequality.

The rest of this paper is organized as follows. Section II describes my data sources and outlines my methodology. Section III presents the basic facts that characterize my income inequality series and that need to be explained. Section IV attempts to account for these facts. In Section V, I briefly discuss whether my French conclusions can be applied to other developed countries. Section VI presents concluding comments.

II. Data Sources

This work relies on three major types of data sources: data from income tax returns (1915–98), data from wage tax returns (1919–98), and data from inheritance tax returns (1902–94).

A. *Income Tax Returns (1915–98)*

The most important data source is the income tax. A general income tax was enacted in France in 1914. It took effect for the first time in 1915 (i.e., taxpayers reported their 1915 incomes at the beginning of 1916), and it has applied every year ever since. Most important, the French tax administration has been compiling every year since 1915 (including the World War II era) summary statistics based on the tabulation of all individual income tax returns. The raw materials produced by the tax administration have had the same general form since 1915: the tabulations indicate the number of taxpayers and the amount of their taxable income as a function of a number of income brackets (the number of brackets is usually very large, especially at the top of the distribution). This basic table is available for each single year of the 1915–98 period.[1]

One important limitation of these annual tables is that they include only those households whose income is high enough to be taxable under the general income tax system.[2] In France, less than 5 percent of the total number of households had to pay the income tax during the first few years of the income tax system, and the percentage of taxable households fluctuated around 10–15 percent during the interwar period. This percentage then rose steadily from 10–15 percent in 1945 up to 50–60 percent in 1975 and finally stabilized around 50–60 percent since the 1970s. It is therefore impossible to use these data in order to produce estimates of the entire income distribution, and one needs to concentrate on top fractiles.

The methodology that I applied to the raw data can be described as follows.[3]

[1] The complete technical characteristics of these raw statistical materials, as well as the exact references of the official statistical bulletins and administrative archives in which these data were originally published by the French Ministry of Finance, are given in the book from which this paper is extracted (see Piketty 2001*a*, app. A, pp. 555–91).

[2] For simplicity, I shall always refer to tax units as "households" in the context of this paper. In actual fact, these are two different concepts (just as in the United States): one nonmarried couple makes two tax units but one household, etc. All estimates reported here were computed in terms of tax units (i.e., the "top decile income share" denotes the income share going to the top decile of the tax unit distribution of income per tax unit, etc., with no adjustment for the varying size of these tax units). The key point, however, is that the average number of tax units per household has been fairly stable since 1915 (around 1.3) and that the income profile of this ratio has been fairly stable since 1915 (as a first approximation). Tax data on the number of dependents and married couples per tax bracket also show that the income profile of average household size appears to have been relatively stable in the long run (in spite of a sharp fall in average household size).

[3] The methodology is fully described in Piketty (2001*a*, app. B, pp. 592–646). In particular, the book provides a detailed account of the many technical adjustments that were made to the tax data in order to take into account changes in tax law and to ensure homogeneity of the series. It includes all necessary information and intermediate computations to reproduce my estimates, from the raw data to my final series.

i) I used the basic tables produced by the tax administration in order to compute the Pareto coefficients associated with the top of the French income distribution for each year of the 1915–98 period. These structural parameters then allowed me to estimate for each single year of the 1915–98 period the average incomes of the top 10 percent of the income distribution (i.e., the top decile, which I denote P90–100), the top 5 percent of the income distribution (P95–100), the top 1 percent (P99–100), the top 0.5 percent (P99.5–100), the top 0.1 percent (P99.9–100), and the top 0.01 percent (P99.99–100), as well as the average incomes of the intermediate fractiles (P90–95, i.e., the bottom half of the top decile; P95–99, i.e. the next 4 percent; etc.) and the income thresholds corresponding to the ninetieth percentile, the ninety-fifth percentile, and so forth (P90, P95, etc.). For the years 1915–18, because of the small number of taxable households, I estimated the incomes of only fractiles P99–100 and above. The Pareto interpolation technique has been used by other researchers working with historical tax data,[4] and the estimates that I obtain for the French case appear to be as precise as those obtained in other countries (thanks to the large number of income brackets used by the tax administration).[5]

ii) I then used French national income accounts in order to estimate total and average household income for the entire population (taxable and nontaxable), and I used these estimates to compute series for the share of fractile P90–100 in total income, the share of fractile P95–100 in total income, and so forth and the share of fractile P99.99–100 in total income. This methodology (i.e., using tax returns to compute the level of top incomes and using national accounts to compute the average income denominator) is also standard in historical studies on income inequality (see, e.g., Kuznets 1953). The income concept that I have used for both the numerator and the denominator is pretax, predeductions taxable income.[6] Finally, note that I obtained average estimates of top income shares for the 1900–1910 period by using the rough estimates of the income distribution that were made by the French tax

[4] See, e.g., Kuznets (1953) and Feenberg and Poterba (1993), who applied Pareto interpolation techniques to U.S. income tax returns data over the 1913–48 and 1950–89 periods.

[5] I used large micro files of individual tax returns (including all taxpayers above a certain income threshold) available for the 1980s–90s in order to make sure that my interpolation technique was indeed very reliable (see Piketty 2001*a*, app. B, pp. 599–601).

[6] The adjustments that I made to national accounts series to ensure that I use the same income concept both at the numerator and at the denominator are described in Piketty (2001*a*, app. G, pp. 693–720), where I also offer a detailed comparison of existing national accounts series. Official accounts series from the French national statistical institute (INSEE) start in 1949, and for earlier periods I have relied for the most part on the retrospective national accounts published by Villa (1994) and on the very well documented income accounts published by Dugé de Bernonville (1933–39).

administration prior to World War I for revenue projection purposes (these estimates probably understate inequality a little bit).[7]

B. Wage Tax Returns (1919–98)

One important feature of the income tax system that was enacted in France in 1914–17 is that, in addition to the general income tax set up in 1914, it also included a number of taxes levied separately on each income source. In particular, there was a "wage tax," that is, a progressive tax levied on individual wages, which was first applied in 1917. Individual wages were declared by employers, who had to file wage tax returns indicating the annual amount of wages paid to each individual employee. In 1919, the French tax administration started compiling summary statistics based on these wage returns. The basic statistical information is similar to that contained in the income tax tables: the wage tables indicate for a large number of earnings brackets the number of workers and the total amount of their wages (all sectors and occupations, including government employees, are included). The French tax administration stopped compiling these wage tables in 1939, so that these series cover only the 1919–38 period. In 1947, INSEE decided to use these wage tax returns to compile new series of annual statistical tables.[8] The INSEE tables look like the tax administration tables of the interwar period (they indicate for each wage bracket the number of wage earners and the total amount of wages), with the important difference that they cover the entire wage distribution, not only top wages.[9]

I have used these raw data in the same way as the income tax data. Pareto interpolation techniques allowed me to compute the average wage of the top 10 percent of the wage distribution, the top 5 percent, the top 1 percent, and so forth (fractiles were defined according to the total number of wage earners, taxable and nontaxable), and I have used independent estimates of the total wage bill (coming mostly from the national accounts) in order to compute series of the top wage shares.[10]

[7] The adjustments that I made to these 1900–1910 estimates on the basis of the data generated by the first few years of the income tax are described in Piketty (2001*a*, app. I, pp. 738–41).

[8] The tax on wages was actually repealed in 1948, but the tax administration has kept using these returns to make sure that income tax payers report the right wage.

[9] The 1919–38 tables cover only those wage earners whose wage is high enough to be taxable under the wage tax system (about 15–20 percent of all workers during the interwar period).

[10] All technical details are given in Piketty (2001*a*, app. D, pp. 657–76). Unlike the annual income tables published by the tax administration (which had never been used to compute long-run inequality series until the present study), wage tables had already been used to produce series on interdecile ratios for the post-1950 period (see Baudelot and Lebeaupin 1979; Bayet and Julhès 1996). These authors did not compute top wage share series, however. Most important, pre–World War II wage tables had never been used

C. Inheritance Tax Returns (1902–94)

A progressive inheritance tax was enacted in France in 1901, and it has been in force every year ever since. Before 1901, the inheritance tax was purely proportional, so that the tax administration did not need information on total estates and did not bother ranking individual estates and compiling statistical tables. In 1901, the tax administration started using inheritance tax returns to compile tables indicating the number of estates and the amount of these estates as a function of a number of estate brackets. These tables were compiled almost every year between 1902 and 1964 (with an interruption during World War I and the early 1920s). Since 1964, similar tables have been compiled only in 1984 and in 1994. I have used these raw data in order to compute series for the average estate of the top 10 percent of the estate distribution, the top 5 percent, the top 1 percent, and so forth (fractiles were defined according to the total number of adult decedents, taxable and nontaxable).[11]

III. The Basic Facts

Consider first the evolution of the top decile income share (see fig. 1). The basic fact is that income inequality in France declined significantly over the course of the twentieth century. According to my estimates, the share of total household income received by the top decile dropped from about 45 percent at the beginning of the twentieth century to about 32–33 percent in the 1990s. That is, the average income of the top 10 percent was about 4.5 times larger than the average income of the entire population at the beginning of the twentieth century, and it was about 3.2–3.3 times larger than the average income of the entire population in the 1990s.

Next, one can see immediately from figure 1 that this secular decline has been far from steady. The top decile income share dropped during World War I and subsequently recovered during the 1920s and the first half of the 1930s. In 1935, that is, at the height of the Great Depression in France, the top decile income share was slightly below 47 percent.[12] The income share received by the top decile then started to fall sharply in 1936, and even more so during World War II. The top decile income

until the present study (the very existence of these tables had probably been forgotten, just as the income tables).

[11] All technical details are given in Piketty (2001*a*, app. J, pp. 744–71). These inheritance tables had never been used to construct long-run wealth inequality series until the present study.

[12] According to my estimates, the top decile income share during the entire century has never been as high as in 1935. Note, however, that my average estimates for the 1900–1910 decade probably understate inequality a little bit.

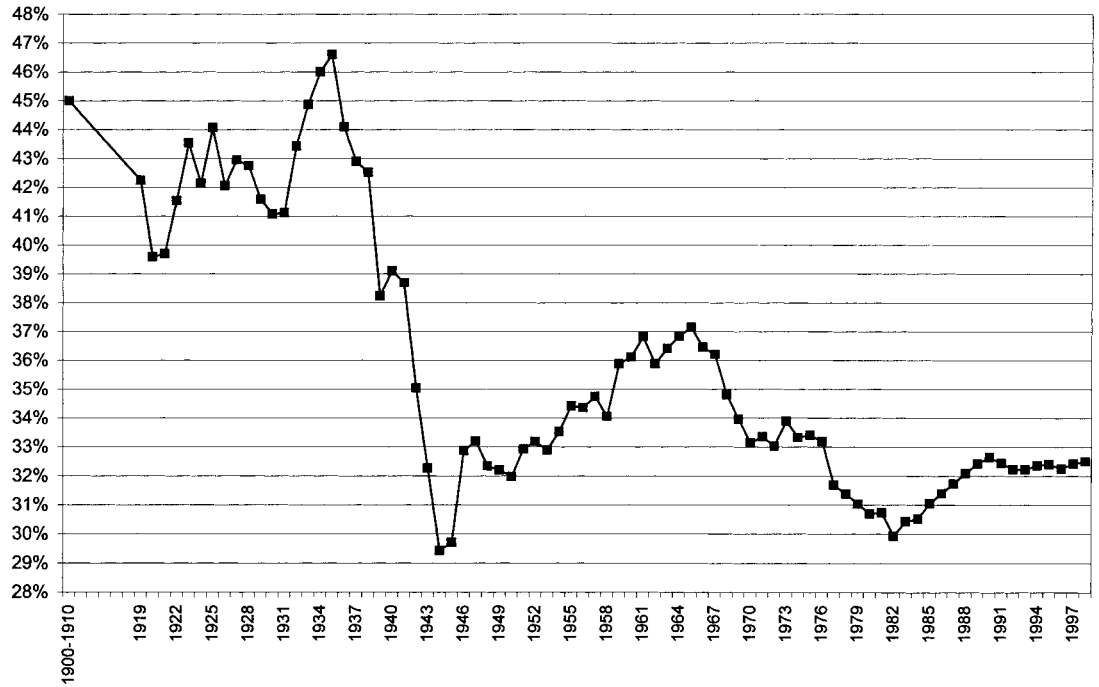

FIG. 1.—The top decile income share in France, 1900–1998. Source: Author's computations based on income tax returns (see App. table A1, col. P90–100, and Piketty [2001*a*, app. B, table B14, pp. 620–21]).

share fell to a nadir in 1944–45 (about 29–30 percent). As far as the postwar period is concerned, three subperiods need to be distinguished. The top decile income share increased from 1945 (29–30 percent) to 1967–68 (36–37 percent). Then it declined until 1982–83, when it reached 30–31 percent. It has then increased somewhat since the early 1980s (32–33 percent in the 1990s). Note, however, that most of the action took place before 1945. Since World War II, income inequality in France (as measured by the top decile income share) appears to have been fluctuating around a constant mean value of about 32–33 percent, with no trend. In other words, most of the secular decline occurred during a specific time period (1914–45). These were times of crisis for the French economy, with two world wars and the Great Depression of the 1930s. This definitely does not look like a gradual, Kuznets-type process.

Moreover, and most important, my series show that the secular decline of the top decile income share is almost entirely due to very high incomes. The income share of fractile P90–95 has been extremely stable in the long run: between 1900 and 1998, that share has always been fluctuating around a mean value of about 11–11.5 percent of total household income (which means that these households always get about 2.2–2.3 times the average income) (see fig. 2). The income share of fractile P95–99 has experienced a modest secular decline, from about 15 percent of total household income at the beginning of the twentieth century to about 13–13.5 percent during the 1990s, that is, a drop of about 10 percent (see fig. 2).

In contrast, the top percentile income share has dropped by more than 50 percent. The share of total income received by the top 1 percent was about 20 percent at the beginning of the twentieth century, and it was only about 7–8 percent during the 1990s (see fig. 2). That is, the average income of the top 1 percent was about 20 times larger than the average income of the entire population at the beginning of the century, and it was about seven to eight times larger at the end of the century. Moreover, my series clearly show that the higher one goes within the top percentile of the income distribution, the larger the secular decline (see table 1). The most extreme case is that of the top 0.01 percent: this income share has dropped from about 3 percent at the beginning of the century to about 0.5–0.6 percent since 1945. In fact, the average real income of the top 0.01 percent has not increased at all during the entire twentieth century: expressed in 1998 French francs, it is about 15 percent lower in 1990–98 than it was in 1900–1910. During the same time period, the average real income of the entire population, as well as the average real income of fractile P90–95, has been multiplied by about 4.5 (see table 1). According to my series, almost 90 percent of the secular decline of the top decile income share is due to the top

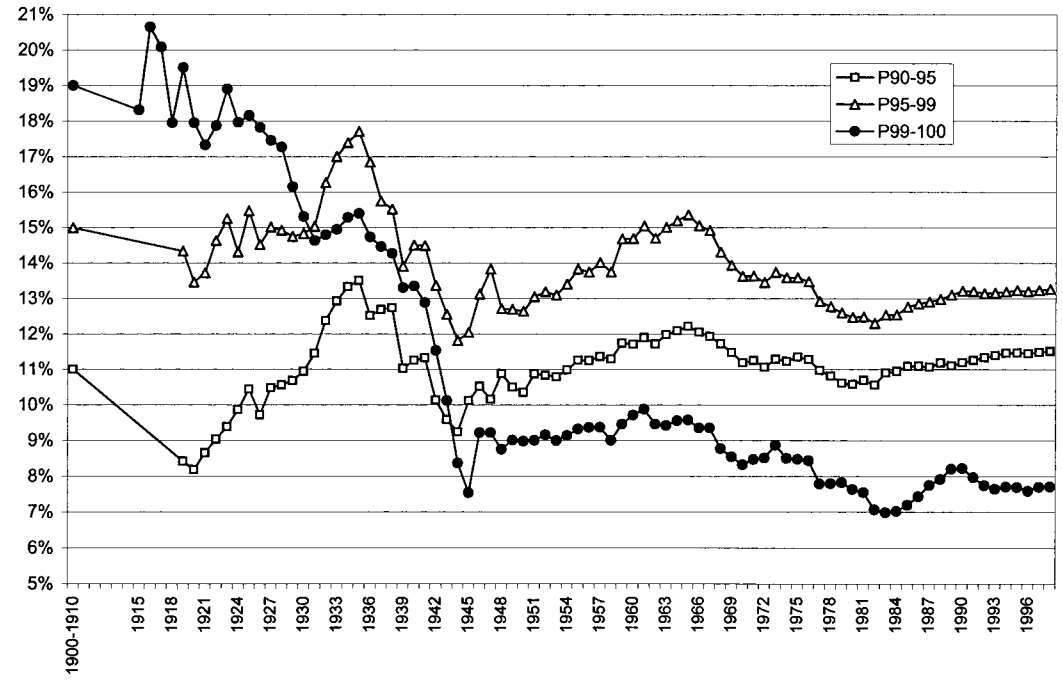

FIG. 2.—The income share of fractiles P90–95, P95–99, and P99–100 in France, 1900–1998. Source: Author's computations based on income tax returns (see App. tables A1, A2; Piketty [2001*a*, app. B, tables B14, B15, pp. 620–22]).

TABLE 1
INCOME GROWTH AND INCOME SHARES IN FRANCE, 1900–1910 AND 1990–98

FRACTILES	INCOME GROWTH	INCOME SHARE (%)		DIFFERENCE		SHARE OF TOTAL DECLINE OF TOP DECILE SHARE CORRESPONDING TO EACH FRACTILE (%)
		1900–1910	1990–98	Points	Percent	
			A. Top Fractiles			
P0–100	4.48	100.0	100.0	.0	.0	
P90–100	3.23	45.0	32.4	−12.6	−28.0	100.0
P95–100	2.77	34.0	21.0	−13.0	−38.3	103.2
P99–100	1.84	19.0	7.8	−11.2	−59.1	88.9
P99.5–100	1.54	15.0	5.2	−9.8	−65.6	78.1
P99.9–100	1.12	8.0	2.0	−6.0	−75.0	47.6
P99.99–100	.83	3.0	.6	−2.4	−81.6	19.4
			B. Intermediate Fractiles			
P0–90	5.51	55.0	67.6	12.6	22.9	
P90–95	4.65	11.0	11.4	.4	3.6	−3.2
P95–99	3.95	15.0	13.2	−1.8	−12.0	14.2
P99–99.5	2.94	4.0	2.6	−1.4	−34.4	10.9
P99.5–99.9	2.02	7.0	3.2	−3.8	−54.9	30.5
P99.9–99.99	1.30	5.0	1.4	−3.6	−71.1	28.2
P99.99–100	.83	3.0	.6	−2.4	−81.6	19.4

SOURCE.—Author's computations based on income tax returns (see Piketty 2001*a*, tables 2-1, 2-2, pp.128–29).
NOTE.—"Income growth" refers to the ratio between the average household incomes of 1990–98 and 1900–1910 (both expressed in 1998 French francs).

percentile, and more than half of the top percentile drop is due to the top 0.1 percent (see table 1).

The timing of the fall of very top incomes is also striking. Between 1945 and 1998, the income share of the top 1 percent has been fairly stable (see fig. 2). The secular fall took place exclusively during the 1914–45 period, and especially during the 1930s and World War II. It is interesting to note that the deflationary years of the Great Depression had a very different impact on moderately high incomes and on very top incomes. While the income shares of fractiles P90–95 and P95–99 (the "upper middle class") increased sharply during the early 1930s, the income shares of fractiles P99–100 and above (the "rich") fell (see fig. 2 and App. tables A1 and A2). I shall come back to this below.

IV. Accounting for the Facts

The key facts that need to be explained are the following: the secular decline in the top decile income share took place during a specific time period (i.e., between 1914 and 1945, and mostly during the 1930s and World War II), and it is due for the most part to the sharp drop in the top percentile income share (and, to a significant extent, to the sharp

drop in the top 0.1 percent income share). How can one account for these facts?

A. Income Composition Patterns

One first needs to be aware of the large differences in income composition that have always characterized the various subfractiles of the top decile. Every single year of the 1915–98 period, tax return tabulations show that the share of wage income declines continuously from fractile P90–95 to fractile P99.99–100, whereas the share of capital income (dividends, interest, and rents) rises continuously from fractile P90–95 to fractile P99.99–100. The shape of the self-employment income share is intermediate between the wage share and the capital share: it rises until fractile P99.5–99.9 (approximately) and declines afterward. These variations in income composition within the top decile are truly enormous. Whereas the households of fractile P90–95 have very little capital or self-employment income (about 80–90 percent of their income consists of wages), the households of fractile P99.99–100 rely for the most part on their capital and self-employment income (typically, more than 60 percent of their income consists of capital income, and an extra 20 percent consists of self-employment income). Tax return tabulations also distinguish between rents, dividend, and interest income, and my detailed series show that top capital incomes consist mostly of dividends (the share of interest and rents in total income is basically flat within the top decile, and the share of interest and rents in total capital income is steeply downward sloping).[13] Large capital owners are predominantly shareholders, not bondholders or landlords.[14]

These composition patterns suggest that the secular decline in income inequality is primarily a capital income phenomenon. That is, the fractiles relying mostly on wage income did not experience any significant decline in the long run (or experienced a limited decline), whereas the fractiles relying mostly on their capital income experienced major shocks between 1914 and 1945 (wars, inflation, and depression), from which they never fully recovered. This interpretation is consistent with the fact that the capital share at the level of fractile P99.99–100 was as small as 15 percent in 1945–46 and that the incomes of the top 0.01 percent were mostly made of self-employment income (more than 70 percent of total income) during those years. This is the only instance during the entire century in which capital income is not the dominant source of income for very top incomes (capital income returned to its

[13] For the detailed composition series, see Piketty (2001*a*, tables B16–B18, pp. 625–34).

[14] It is interesting to note that large capital owners were already predominantly shareholders (and to some extent bondholders, but very rarely landlords) at the beginning of the twentieth century.

dominant position during the late 1940s and early 1950s, albeit at a somewhat lower level than during the interwar period). This clearly shows that the large drop in top income shares observed between 1914 and 1945 was due, to a large extent, to the fall of top capital incomes.

The fact that the capital share is particularly low at the end of World War II is also consistent with macroeconomic data. Available series on factor shares do indeed show that the capital share in French corporate value-added has never been as low as in 1944–45 (see fig. 4 below). French gross domestic product has never been as low during the twentieth century as in 1944–45 (fights between the Germans and the Allies took place over significant portions of the French territory after D-Day, and firms were completely disorganized), and the big wage increase implemented by the provisional government implied that there was almost nothing left for profits.

The composition patterns derived from tax returns also allow me to account for the sharp divergence between moderately high incomes and very top incomes observed during the deflationary Great Depression of the early 1930s. Given that fractiles P90–95 and P95–99 mostly rely on wages, one should indeed expect these fractiles to benefit from the fall in prices: real wages did increase during the 1929–35 period (thanks to the nominal rigidity of wages and the fall in prices), at a time when real output was falling. Moreover, the high-wage employees (and especially the government employees) of fractiles P90–95 and P95–99 were shielded from unemployment, which hurt mostly low-wage workers (such as low-skill manufacturing or rural workers). Conversely, given that fractiles P99–100 and above mostly relied on capital income and business profits, one should indeed expect these fractiles to lose out in the recession (the capital share fell sharply during the early 1930s). This process reversed in 1936, when the Front Populaire decided to devalue the French franc and to put an end to the deflationary strategy. The high-wage employees of fractiles P90–95 and P95–99 started to lose ground (inflation pushed their real wages down), and the fall of the profit holders of fractiles P99–100 and above was temporarily halted. This again shows that one needs to distinguish between the different subfractiles of the top decile in order to account properly for the inequality facts (this is true both for long-run trends and for short-run fluctuations).

B. The Long-Run Stability of Wage Inequality

Before I further explore the nature of the shocks suffered by capital owners during the 1914–45 period and the reasons why they never managed to fully recover from these shocks, it is important to make sure that the capital income view of the inequality facts is the right one.

That is, I need to show that wage inequality did not play any significant role in the secular decline of the top decile income share.

My wage series demonstrate that wage inequality in twentieth-century France has been extremely stable in the long run. The share of the total wage bill received by the top decile of the wage distribution has always fluctuated around a mean value of about 25–26 percent, and the share of the total wage bill received by the top 1 percent of the wage distribution has hovered near 6–7 percent (see fig. 3).

Note that the wage shares of the top decile and top percentile were substantially below their secular mean in 1919 (when my annual series start) and during the early 1920s. But there is ample occupational and sector-specific evidence showing that this was not a "normal" situation. The wage structure did narrow substantially during World War I in France (low-wage workers enjoyed nominal pay increases that were significantly higher than those obtained by high-wage workers), and one can show that the top decile and top percentile wage shares at the eve of World War I were very close to their secular mean.[15]

More generally, the fact that wage inequality has been extremely stable in the long run does not mean that the French history of wage inequality was smooth and steady during each single decade of the twentieth century. Both world wars led to significant compressions of the wage structure. But the point is that, after each world war, the wage share received by high-wage workers quickly recovered its prewar level. My wage series also confirm that the deflationary depression of the early 1930s led to a widening of wage inequality: high-wage workers benefit from the nominal rigidity of their wages and from the fact that they are less exposed to unemployment than low-wage workers. In the same way as with the income series, this process ends in 1936, when the Front Populaire decided to put an end to the deflationary strategy. The 1967–68 and 1982–83 turning points are also visible in my wage series. Wage dispersion significantly widened between 1950 and 1967–68, and the sharp increases in the minimum wage implemented in the summer of 1968 and during the 1970s led to a significant decline in wage inequality until 1982–83, when the newly elected socialist government decided to freeze the minimum wage (wage dispersion has increased somewhat since then). In other words, wage inequality in France during the twentieth century has been going up and down for all sorts of reasons in the short and medium run, but it has always reverted to its secular mean. No long-run trend can be detected in the series.

The contrast between the long-run evolution of the share of total

[15] See Piketty (2001*a*, pp. 188–91, 199–200). The estimates for 1913 reported in fig. 6 below (26 percent for the top decile share and 6.5 percent for the top percentile share) were computed on the basis of these occupational and sector-specific data (and in particular on the basis of public-sector data).

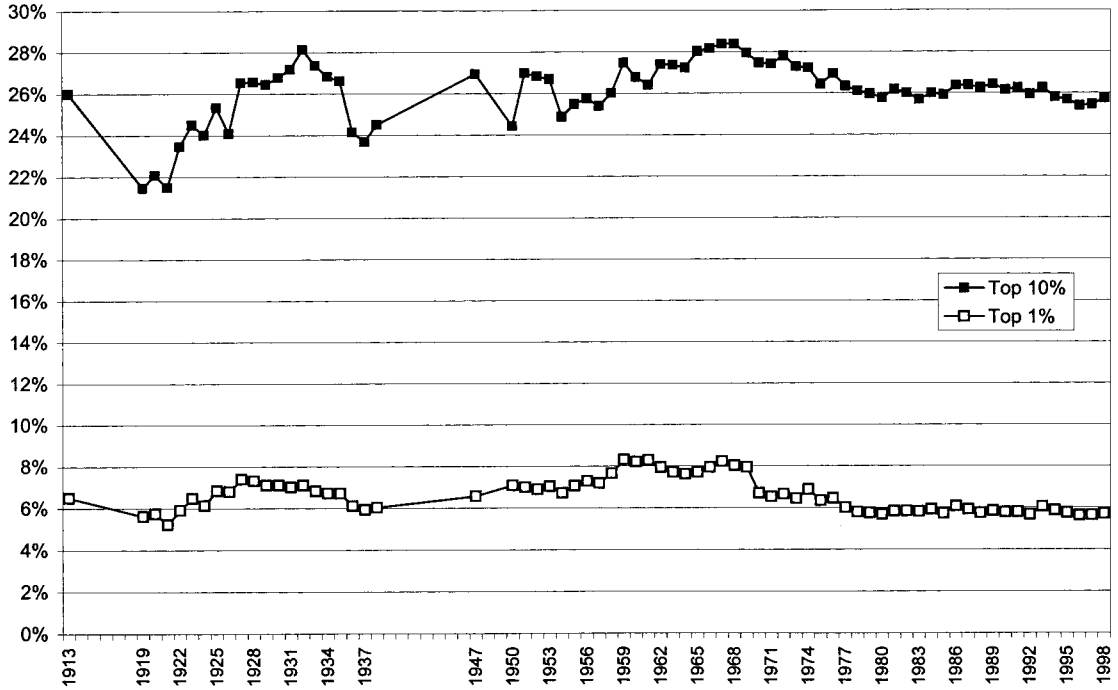

FIG. 3.—The top decile and top percentile wage shares in France, 1913–98. Source: Author's computations based on wage tax returns (see Piketty 2001*a*, app. D, tables D7, D16, cols. P90–100, P99–100, pp. 664, 675).

income received by the top percentile of the income distribution (fig. 2) and the long-run evolution of the share of the total wage bill received by the top percentile of the wage distribution (fig. 3) is particularly striking. While the top percentile income share has declined sharply from about 20 percent at the beginning of the century to about 7–8 percent in the 1990s, the top percentile wage share has always been near 6–7 percent.

My wage inequality series therefore confirm that the capital income interpretation of the inequality facts is the right one. The secular decline in the top percentile income share is due for the most part to the sharp drop in the level of the top capital incomes received by the affluent. Had this level remained constant (relative to the average income), there would have been no secular decline in the top percentile income share.[16]

Another advantage of looking at wages is that data are available on the entire distribution, and not only on the average and on the top decile. For the 1950–98 period, one can compute annual series for all percentile ranks of the wage distribution. By looking at the evolution of ratios such as P10 to the average wage, P50 to the average wage, and P90 to the average wage during this period, one can see that the entire distribution of wages has been extremely stable in the long run, and not only the top decile and top percentile shares.[17] Again, one does observe important fluctuations in the short run and medium run: the P90/P10 ratio rose sharply between 1950 and 1968, then declined sharply between 1968 and 1982–83, and finally rose somewhat since 1982–83.[18] But these short- and medium-run fluctuations cancel out in the longer run, in the same way as for top decile and percentile wage shares.

The same phenomena seem to have occurred during the 1900–1950 period. Available wage returns data do not allow me to estimate annual series for lower deciles prior to 1950, but occupational and sector-specific wage data can to some extent serve as a proxy. During the first half of the twentieth century, agricultural workers were very numerous

[16] Strictly speaking, this is more than the data can actually say: depending on the trends in family structure and correlations between the various types of incomes, a given trend in wage inequality can translate into various trends in income inequality. But the gap between fig. 2 and fig. 3 is simply too big to be undone by that kind of bias. Moreover, note that the correlation of wages between spouses has probably been trending upward during the twentieth century (as a consequence of the upward trend in female participation), so that a stable level of wage concentration should actually give rise to an increasing level of income concentration (everything else equal).

[17] During the 1950–98 period, P10 has always been fluctuating around 45–50 percent of average wage, P50 around 80–85 percent of average wage, and P90 around 160–70 percent of average wage (see Piketty 2001*a*, app. D, table D12, p. 671).

[18] The fact that the turning points of postwar trends in wage inequality coincide with the breaks in French minimum-wage policy was already apparent in the series compiled by Baudelot and Lebeaupin (1979) and Bayet and Julhès (1996).

(around 30 percent of all wage earners in 1900, down to 20 percent in 1930, 10 percent in 1950, and 1 percent in 1998), and very low wages were concentrated in this sector. By using the lowest wages observed in the agricultural sector as a proxy for P10, one finds that the P10/average wage ratio was already around 45–50 percent in 1900 and 1930, that is, around the same mean level as during the 1950–98 period.[19] That is, migration from the low-wage rural sector to the high-wage urban sector did not lead to a structural compression of wage inequality. Low-wage rural workers disappeared, but they were replaced by low-wage urban workers, so that the hierarchy did not change very much in the long run. This evidence stands in contrast to the theoretical predictions of Kuznets's two-sector development model, according to which one should expect inequality to decline as more and more workers join the high-paying urban sector of the economy.

C. The Robustness of Wealth Leveling

As was already noted above, the fact that capital owners experienced major shocks during the 1914–45 period (and especially during the 1930s and World War II) is fully consistent with the general economic history of France during that period. In a sense, what happened between 1914 and 1945 is just the normal consequence of an extraordinary recession. Capital income generally tends to be procyclical, and it is natural to expect capital owners to suffer a lot from the Great Depression and the war and to be at their secular low in 1944–45, at a time when the French gross national product was also at a century low.

In fact, what really needs to be explained is why capital owners never managed to fully recover from the shocks of the 1914–45 period.

One explanation would simply be that capital owners were confronted during the 1914–45 period with major shocks to their capital holdings (and not only to their capital income) and that it takes a long time to reconstitute the level of fortunes and capital income that capitalists enjoyed before these shocks. The shocks to capital holdings took three main forms: inflation, bankruptcies, and destructions.

First, one must bear in mind that inflation did act as a powerful capital tax. The French consumer price index was multiplied by a factor of more than 100 between 1914 and 1950, which means that bondholders

[19] See Piketty (2001*a*, pp. 214–15; app. H, tables H2–H4, pp. 726–28). These P10 estimates for 1900 and 1930 were computed by using as proxies wages for low-skill agricultural workers and rural female domestic workers. I used only money wage estimates and did not try to take into account in-kind payments (which were quite important for agricultural and domestic workers). The resulting estimates should therefore be considered as a lower bound for the true P10 in 1900 and 1930: the true P10/average wage ratio might have declined somewhat between 1900 and 1950, but it certainly did not rise.

were fully expropriated by inflation. The same process applied, in a less extreme way, to real estate owners and landlords. Rent control was severe during both world wars, and the real value of rents was divided by 10 between 1913 and 1950.[20] Further, the 1914–50 inflationary process was something entirely new for the economic agents of the time. There had been virtually no inflation since the Revolutionary and Napoleonic wars (the average annual inflation rate between 1815 and 1914 was 0.3 percent), and the government suddenly started to print vast quantities of money after 1914 to pay for the huge budget deficits brought on by World War I.

Next, the "recession" induced by the Great Depression of the 1930s and by World War II was not a "normal" recession. Real GDP declined by 20 percent between 1929 and 1935 and by 50 percent between 1929 and 1944–45 (see Piketty 2001*a*, app. G, table G1, p. 695). Many firms faded and disappeared during that time (much more than during a "normal" recession). Bankruptcies were particularly numerous in manufacturing and in finance. Large fortunes have always comprised far more equity shares than bonds or real estate during the twentieth century. The impact of the bankruptcies of the 1930s and of World War II on top fortunes was therefore probably even larger than the impact of inflation.[21]

Finally, and most importantly, the physical destructions induced by both world wars were truly enormous in France. According to the best available estimates, about one-third of the capital stock was destroyed during World War I and about two-thirds during World War II. This reflects the fact that the bombing technology was far more destructive during World War II than during World War I. According to these estimates, the capital stock/national income ratio was around 5 at the eve of World War I, and it then fell to 3.5 in 1934 and 1.2 in 1949.[22]

It is also important to recall that the French government enacted a broad nationalization program in 1945. The nationalization process often was straight expropriation: prices for shares were often set at an arbitrary, low level so as to punish the "capitalists," who were often accused of "collaboration" with the Vichy government. A leading ex-

[20] See Piketty (2001*a*, app. F, table F1, pp. 690–91). On the history of rent control legislation in France since 1914, see Hirsch (1972) and Taffin (1993).

[21] It is unfortunately very difficult to quantify the impact of bankruptcies on the distribution of wealth. It is known that the annual number of bankruptcies more than doubled between 1929 and 1935 (see INSEE 1966, pp. 170–71), but there is no systematic information about the individuals who own these firms and their rank in the wealth distribution.

[22] See Piketty (2001*a*, p. 137). These estimates are due to Sauvy (1965–75, 2:442; 1984, 2:323), who uses estimates of the capital stock computed by Cornut (1963, p. 399). These estimates are not fully homogeneous (the 1949 capital stock is probably underestimated somewhat; see INSEE [1958, pp. 34–35]), but they are broadly consistent with the independent computations by Divisia, Dupin, and Roy (1956, 3:62), who also find that World War II destruction was about twice as large as World War I destruction.

ample of this kind of punitive nationalization-expropriation process was the car company Renault.[23] At the same time, in 1945, the provisional government decided to implement a one-shot tax on capital holdings, with rates up to 20 percent on top fortunes (and 100 percent on those fortunes that experienced substantial nominal increases during the war!) (see Piketty 2001*a*, p. 138).

In other words, there are good reasons to believe that the accumulation process for large capital holdings was to a large extent set back to zero (or close to zero) in 1945. This interpretation is consistent with the composition patterns described in subsection *A* above: in 1945, very top incomes were mostly made up of new entrepreneurs, simply because the old capitalists had disappeared.

But such an explanation cannot be the full story. More than 50 years have elapsed since 1945, and it would seem that this is a sufficiently long time period for capitalists to recover from the 1914–45 shocks (at least partially). The point is that the top percentile income share did not rise at all during the 1945–98 period (see fig. 2). Apparently, something important has changed over the course of the twentieth century: it just seems impossible to accumulate individual fortunes as large as those that were accumulated in the past.

It is also important to emphasize that the decline in top capital incomes is the consequence of a decreased concentration of capital income and not of a decline in the share of capital income in the economy as a whole. According to national accounts, the share of capital income (dividends, interest, and rent) in aggregate household income is approximately the same at the end of the twentieth century as at the beginning of the twentieth century, that is, about 20 percent (see fig. 4). This is not too surprising given the well-known long-run stability of the capital share in corporate value-added. Note, however, that while it took only a few years for the capital share in corporate value-added to recover from the 1944–45 secular low, it was only in the 1980s–90s that the capital share in aggregate household income reached the levels observed in the interwar period and at the eve of World War I (see fig. 4). This important time lag is due to a mixture of two factors. First of all, retained earnings were unusually high during the reconstruction

[23] Unfortunately, there does not seem to exist any systematic, quantitative study of the 1945 nationalization process. Divisia et al. (1956, 3:73–76) describe a number of interesting examples of nationalization/expropriation, but they do not attempt to quantify the process at the national level. Similarly, Andrieu, Le Van, and Prost (1987) offer a detailed analysis of the political context of the nationalization policies, but they do not try to quantify their importance. I shall come back below to the complicated issue of the long-run impact of the 1945 nationalizations.

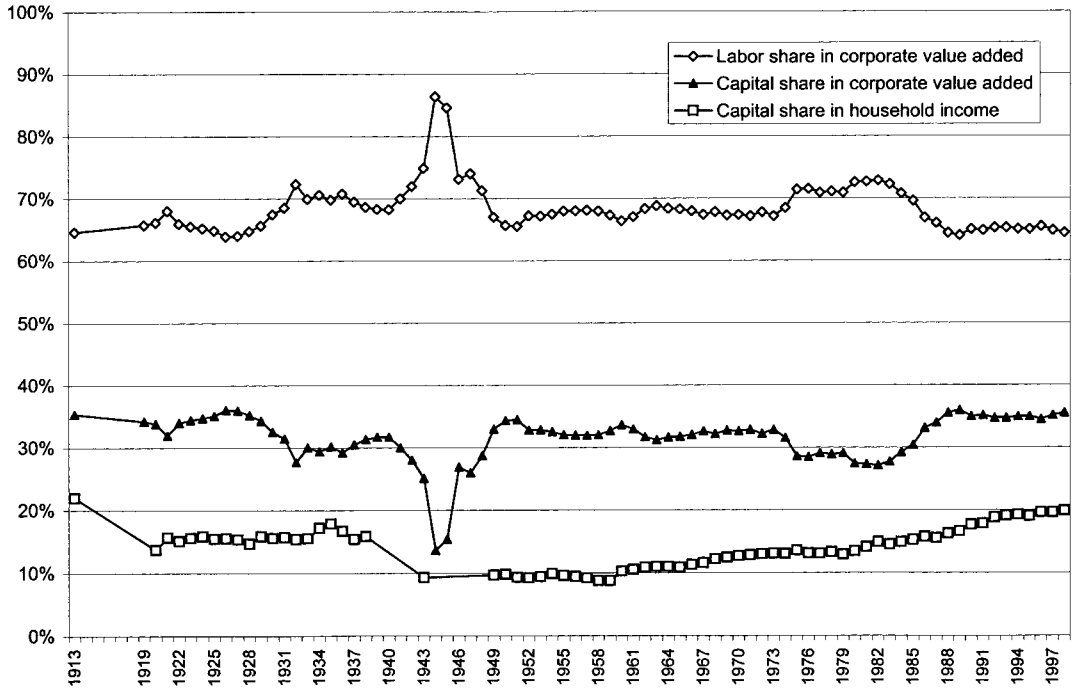

FIG. 4.—Factor shares in France, 1913–98. Source: Author's computations based on national accounts (see Piketty 2001*a*, app. G, tables G3–G6, G9, pp. 703–5, 710–13).

period in France (1950s–60s),[24] and the profit share was unusually low during the 1970s.[25] This explains why distributed dividends and interest income did not return to their pre–World War I and interwar levels (as a percentage of household income) until the 1980s–90s. Next, several decades were needed for the real value of rents to recover from the 1914–50 inflation. Here again, one needs to wait until the 1980s–90s to see the rent index/CPI ratio and the share of rents in household income returning to their pre–World War I levels.[26] These time lags demonstrate the importance of the 1914–45 shocks. But the key point is that aggregate capital income has now fully recovered from these shocks, whereas top capital incomes did not recover.

One could also wonder whether the decline of top capital incomes could simply be the consequence of fiscal manipulation and tax evasion. I have performed two kinds of checks in order to make sure that fiscal manipulation and tax evasion can be only a small part of the story (at most) and that the observed trends do indeed describe a real economic phenomenon.

First, I adjusted the capital income figures reported in tax returns so as to match the capital income totals coming from national accounts. The general conclusion is that the observed trends are simply too large to be explained by this kind of factor. Whatever way one makes the adjustment, the trends are still very large (for detailed computations, see Piketty [2001*a*, pp. 408–48]). In fact, all available information suggests that tax evasion in France has never been as high as in the interwar period, that is, at the time in which reported incomes at the very top of the distribution were much higher than they were in the 1990s. If one looks at the (tax return capital income + legally tax-exempt capital income)/national accounts capital income ratios, which can be viewed as a measure of tax evasion, then one finds ratios over 90 percent for the 1980–90s versus 60–70 percent for the interwar period. This is consistent with the fact that the tax administration had much less investi-

[24] High retained earnings during the 1950s–60s were due primarily to the high investment needs of companies. This situation was exacerbated by the fact that retained earnings were close to zero during the 1930s (i.e., companies did not cut dividends as much as they should have during the Great Depression) (see Malissen 1953; Piketty 2001*a*, pp. 62–63).

[25] The fall in the profit share was due primarily to the big wage push of the 1970s (the minimum wage was increased by 130 percent in real terms between 1968 and 1982–83, whereas GNP increased by only 40 percent!). The profit share started recovering when wages were frozen in 1982–83.

[26] One key reason why it took so long is that French landlords can (partially) adjust their rent to market conditions only when they have a new tenant. Note that high inflation (wage-driven) during the 1970s temporarily halted this recovery process (the same as for dividends).

gative power before World War II than it has today. Tax evasion therefore seems to amplify the trends rather than to reduce them.[27]

Next, I have used inheritance tax return data in order to test whether the leveling of fortunes is a real economic phenomenon. The results are spectacular (see fig. 5). Whereas the average estate left by the fractile P90–95 of the estate distribution has been multiplied by about 3.2 in real terms between 1900–1910 and the 1990s, the average estate left by the fractile P99.99–100 of the estate distribution during the 1990s is only one-fourth of what it was in 1900–1910. The decline in capital concentration seems truly astonishing. Inheritance tax returns are obviously subject to fiscal manipulation and tax evasion, but the trends are so enormous that these explanations can be only a small part of the story. One would need to assume that the reporting rate was 100 percent at the beginning of the twentieth century and less than 10 percent at the end of the twentieth century! This does not seem plausible. Moreover, in the same way as for income tax returns, it is likely that tax evasion was actually larger at the beginning of the twentieth century and during the interwar period than later in the century. It is also important to note that the inheritance tax and the gift tax were unified in France in 1942. One important consequence is that my pre-1942 top estates estimates exclude inter vivos gifts, whereas my post-1942 estimates do include inter vivos gifts. This again tends to amplify the trend rather than to reduce it (inter vivos gifts were already quite important at the beginning of the twentieth century).

Inheritance series show that the decline in top fortunes is the consequence of a decreased concentration of wealth and not of a decline in aggregate wealth in the economy as a whole. Top estates never recovered from the shocks, but lower estates did recover perfectly well and were able to compensate the fall in top estates. This is consistent with macroeconomic estimates showing that the capital stock/national income ratio was about five in the late 1990s, that is, at about the same level as at the eve of World War I.[28] In other words, both capital income and the capital stock have returned to their pre–World War I levels. The distribution has changed, not the aggregates.

Although the French tax administration did not compile inheritance

[27] I have also checked that legally tax-exempt capital income (which has become more and more important over time) and capital gains (which were excluded from my basic series altogether) can be only a small part of the story. For instance, tax return data show that capital gains represent an average income supplement of about 25 percent for fractile P99.99–100 (see Piketty 2001*a*, pp. 420–31; app. A, pp. 586–88). This is a nonnegligible amount in absolute terms, but this is not going to explain why the income share of fractile P99.99–100 has been divided by five during the twentieth century.

[28] For the 1999 figures, see INSEE (2001, pp. 34, 38): 36,583/6,951 = 5.2. The capital stock estimate for 1999 is not fully homogeneous with the estimates given above for 1913, 1934, and 1949, but the orders of magnitude seem right.

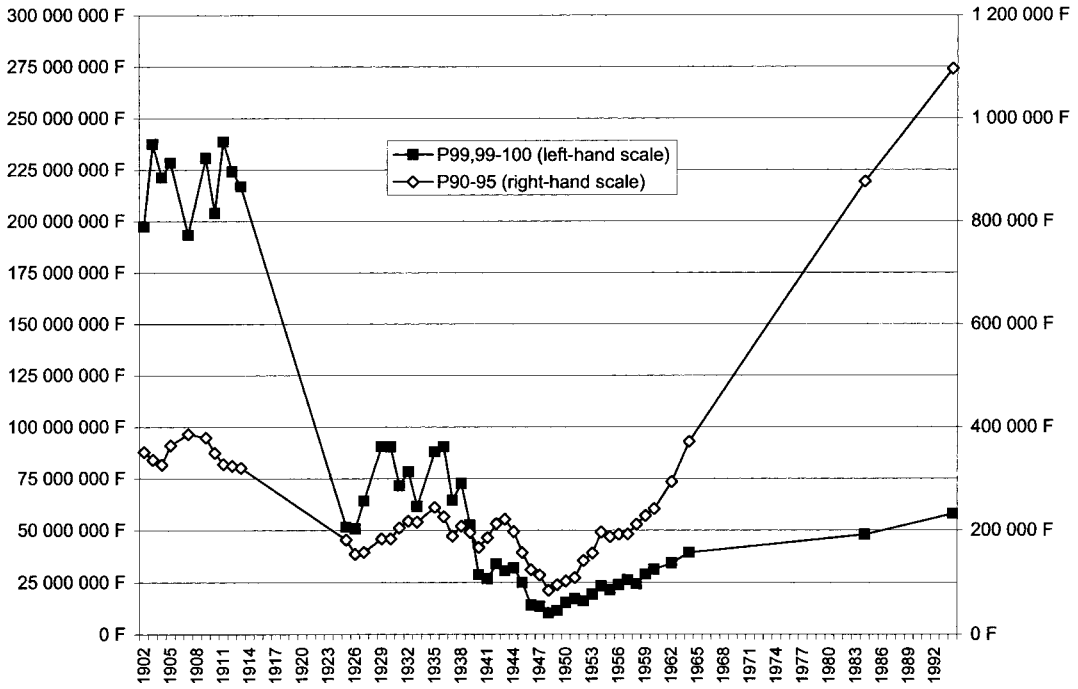

FIG. 5.—The average estate left by the fractiles P90–95 and P99.99–100 in France, 1902–94 (1998 French francs). Source: Author's computations based on inheritance tax returns (see Piketty 2001*a*, app. J, table J-9, p. 763).

tax tables until 1901, a number of inheritance series (based on samples of tax returns collected by historians) are available for the nineteenth century. Those series show that wealth concentration increased sharply in France between 1815 and 1914 (top estates rose more than lower estates) and that wealth inequality did not start declining until World War I. This seems to confirm my "accidental" interpretation of the inequality decline: no "spontaneous" downward trend was taking place before the shocks.[29]

Finally, there is plenty of anecdotal evidence suggesting that the decline of top capital incomes is indeed a real economic and social phenomenon. Individuals living off large capital incomes were plentiful in the literature of the nineteenth century and the early twentieth century (see, e.g., the novels by Stendhal, Balzac, and Proust), whereas they have virtually disappeared from the literary scene since World War II. It is also interesting to note that "rentiers" disappeared from French census questionnaires in 1946: since the 1946 census, one can no longer describe oneself as a rentier (this category was used in all censuses through 1936). Another interesting piece of evidence is the evolution of the number of household workers and domestic servants. At the eve of World War I, household workers and domestic servants were very numerous in France: about 900,000 to 1 million according to the censuses, that is, around 5 percent of the labor force. This number fell suddenly in the aftermath of World War I and during the 1930s (down to about 700,000, 3.5 percent of the labor force), and even more so in the aftermath of World War II. The number of household workers and domestic servants has stabilized around 200,000 since the 1950s–60s, that is, about 1 percent of the labor force, one-fifth the number at the eve of World War I.[30] The parallelism between this evolution and the evolution of top income shares is striking. It is particularly important to note that the number of household workers and domestic servants was relatively stable at the eve of World War I. The obvious interpretation is that this number suddenly started falling together with the number of wealthy households that could afford having domestic servants.[31]

[29] Inheritance series for the nineteenth century can be found in Daumard (1973) and Bourdieu, Postel-Vinay, and Suwa-Eisenmann (2001). Morrisson (2000) reports top income share estimates according to which income inequality declined somewhat in France between 1860 and 1900. But these estimates are based on macroeconomic data alone and do not take into account the rise in wealth concentration that took place during this period. On these issues, see Piketty (2001*a*, pp. 535–42).

[30] For detailed series on the number of household workers and domestic servants since the 1901 census, see Piketty (2001*a*, app. H, pp. 726–28).

[31] The labor cost of domestic servants has increased at a slightly higher rate than per capita income in the long run (see Piketty 2001*a*, pp. 86–87), but the gap seems far too small to explain why the number of domestic servants was divided by five across the century. In any case, labor costs cannot explain why the number of servants dropped so suddenly after World War I (there was no sudden variation in labor costs).

D. The Role of Progressive Taxation

How can one account for the fact that large fortunes never recovered from the 1914–45 shocks, whereas smaller fortunes did recover perfectly well? The most natural and plausible candidate for an explanation seems to be the creation and the development of the progressive income tax (and the progressive inheritance tax). The large fortunes that generate the top capital incomes observed at the beginning of the twentieth century were accumulated during the nineteenth century, at a time in which progressive taxation did not exist and capitalists could use almost 100 percent of their pretax income to consume and to accumulate.[32] The conditions faced by twentieth-century capitalists to recover from the shocks incurred during the 1914–45 period were quite different. The top marginal rate of the income tax in France was set to only 2 percent in 1915, but it quickly reached very high levels (over 60 percent) during the interwar period, and it stabilized around 60–70 percent after 1945. These high marginal rates applied to only a small fraction of incomes, but the point is that they were to a large extent designed to hit the incomes of the top 1 percent (and even more so the top 0.1 percent and 0.01 percent) of the income distribution, that is, the incomes that depend primarily on capital income and capital accumulation. Effective average tax rates have always been fairly moderate at the level of fractile P90–95: less than 1 percent during the interwar period and between 5 percent and 10 percent since World War II. In contrast, effective average tax rates borne by fractile P99.99–100 reached 30 percent during the interwar period and stabilized around 40–50 percent since World War II (see fig. 6).[33] It is therefore not surprising that progressive taxation had a substantial impact on capital accumulation at the very top and a negligible impact for smaller fortunes.

Needless to say, these numbers are not sufficient to prove in a rigorous way that the dynamic effects of progressive taxation on capital accumulation and pretax income inequality have the "right" quantitative magnitude to account for the observed facts. One would need to know more about the savings rates of capitalists, how their accumulation strat-

[32] Before the creation of a progressive income tax in 1914, personal taxation relied on individual characteristics such as housing rents, the number of doors and windows, etc. Effective tax rates were roughly proportional and never exceeded 3–4 percent of income (see Caillaux 1910, pp. 208–9; Piketty 2001*a*, pp. 236–39). Note also that there did exist an inheritance tax during the nineteenth century, but it was purely proportional and the rate was only 1 percent (see below).

[33] The large year-to-year variations in fig. 6 (especially for top incomes) show how chaotic the history of the income tax has been in France. For instance, the 1968 and 1981 spikes correspond to the large tax increases on the rich that were voted in the aftermath of the 1968 general strike and of the 1981 socialist electoral victory. I offer a detailed historical account of these politico-economic developments over the 1914–98 period in Piketty (2001*a*, chap. 4, pp. 233–334).

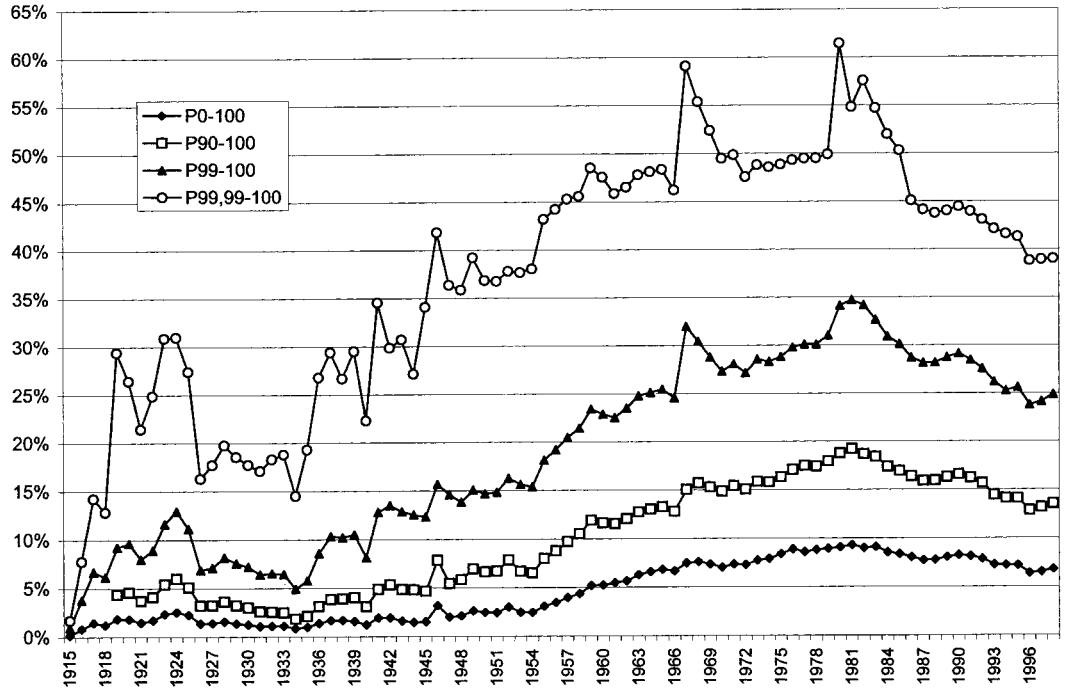

FIG. 6.—Effective average income tax rates in France, 1915–98. Source: Author's computations based on income tax returns and income tax laws (see Piketty 2001*a*, app. B, table B-20, pp. 636–37).

egies have changed since 1945, and so forth. Note, however, that the orders of magnitude do not seem unrealistic, especially if one assumes that the owners of large fortunes, whose pretax incomes and lifestyles were already severely hit by the 1914–45 shocks, were not willing to reduce their consumption down to very low levels and to increase their savings so as to counteract the rise in tax rates.[34]

In fact, in the most standard economic models of capital accumulation, the behavioral response tends to amplify (and not to counteract) the rise in tax rates. That is, a rise in tax rates imposed on very top incomes leads wealthy taxpayers to increase their consumption and to reduce their savings. In the Barro-Becker dynastic model of capital accumulation, this behavioral effect is so large that large fortunes completely disappear in the long run. Progressive taxation leads to a truncated wealth distribution in the long run, in the sense that there is nobody above the top marginal rate threshold (for a formal proof of this result, see Piketty [2001*b*, pp. 30–32]). In less extreme and more realistic models of capital accumulation, the impact of progressive taxation is smaller (large fortunes do not completely disappear). But the impact is still substantial. For instance, simple computations show that a capitalist will deplete his wealth at a very high rate if he keeps the same consumption after progressive taxation is introduced. In the absence of taxation (say, before World War I), the capital stock of a capitalist consuming each year the full return (say, 5 percent) to his capital stock is stationary. But if an effective tax rate of 30 percent is suddenly introduced (say, in the interwar period) and if this capitalist keeps consuming the full before-tax return to his capital stock, then he will need to consume some of his capital stock each year: 18 percent of the initial capital stock is destroyed after 10 years, 42 percent after 20 years, and so forth, and there is no capital left after 35 years.[35]

Consider now the more interesting case of a capitalist (or a would-be capitalist) in 1945, and assume that this capitalist is ready to devote a large fraction of his income to capital accumulation. How much can he accumulate in 50 years? The point is that progressive taxation drastically reduces the assets that one can accumulate, including for capitalists adopting relatively low living standards (see table 2). For instance,

[34] Existing evidence shows that the negative shocks incurred between 1914 and 1945 and the rise in progressive taxation induced wealthy French families to reduce drastically their savings rate between 1873–1913 and 1946–53 (see Perrot 1961). Note, however, that this research by Perrot relies on a few hundred private account books from wealthy French families, and it would need to be supplemented by extensive new research based on larger samples.

[35] This cumulative process would take place at an even faster pace in case of higher returns or higher tax rates (see Piketty 2001*b*, table 3). This mechanism is trivial, but I believe that it did contribute to amplifying the shocks incurred by capital owners during the 1914–45 period.

TABLE 2
IMPACT OF PROGRESSIVE TAXATION ON CAPITAL ACCUMULATION

	$r=5\%$, $t=0\%$	$r=5\%$, $t=30\%$	$r=5\%$, $t=50\%$	$r=10\%$, $t=0\%$	$r=10\%$, $t=30\%$	$r=10\%$, $t=50\%$
$c=100\%$	1.0	.0	.0	1.0	.0	.0
$c=80\%$	3.1	.3	.0	24.3	.0	.0
$c=60\%$	5.2	1.7	.5	47.6	5.1	.0
$c=40\%$	7.3	3.0	1.5	70.8	13.2	3.1
$c=20\%$	9.4	4.3	2.5	94.1	21.3	7.3
$c=0\%$	11.5	5.6	3.4	117.4	29.5	11.5

NOTE.—This table reads as follows: Assume that a capitalist's consumption level is equal to a fixed fraction c (say, $c=20$ percent) of the full return r (say, $r=5$ percent) to his capital stock. In the absence of taxation ($t=0$ percent), his capital stock will be multiplied by 9.4 after 50 years; with an effective tax rate of $t=50$ percent, his capital stock will be multiplied by 2.5 after 50 years (I assume that the capitalist keeps the same absolute consumption level during 50 years). The corresponding formula is given by

$$x_n = \frac{c}{1-t} + [1 + (1-t)r]^n \times \left(1 - \frac{c}{1-t}\right).$$

with a 5 percent before-tax return and a consumption level equal to 40 percent of the before-tax return to the initial capital stock, one can accumulate in 50 years a fortune that is about five times as large with a 0 percent tax rate as with a 50 percent tax rate. That is, the initial capital stock is multiplied by 7.3 after 50 years in the absence of taxation, and the initial capital stock is multiplied by only 1.5 with a tax rate of 50 percent. This tax rate of 50 percent corresponds approximately to the average effective tax rates faced by fractile P99.99–100 in France since World War II, and the factor of five corresponds approximately to the secular decline in the income share of fractile P99.99–100.

Note also that these simple simulations do not take into account the impact of the progressive inheritance tax. During the nineteenth century, the French inheritance tax was strictly proportional, with a fixed 1 percent tax rate. A progressive inheritance tax was introduced in 1901, but tax rates remained low until World War I: at the eve of the war, top tax rates did not exceed 5 percent. In the same way as with the progressive income tax, the top rates of the progressive inheritance tax suddenly reached nontrivial levels in the aftermath of World War I. One can compute that the effective tax rate faced by fractile P99.99–100 of the estate distribution was about 20–25 percent during the interwar period (or even 30–35 percent during the early 1920s), 30–35 percent during the 1950s, 15–20 percent during the 1960s–70s, and again 30–35 percent during the 1980s–90s (see Piketty 2001*a*, app. J, pp. 767–71). Note, however, that the long-run impact of the progressive inheritance tax on capital accumulation, though important, has probably been less drastic than the impact of the progressive income tax. Because the income tax applies every year and has cumulative effects, an effective income tax rate of 50 percent can reduce by a factor of five the size of

fortunes that one can accumulate in 50 years. In contrast, under the assumption that the inheritance tax is paid once every 50 years (on average), an effective inheritance tax rate of 50 percent reduces by a factor of two the size of fortunes that one can accumulate in 50 years.

Finally, it is worth emphasizing that it is not that easy to find convincing explanations (other than the introduction of progressive taxation) that can account for the nonrecovery of large fortunes. For instance, explanations based on hypothetical changes in before-tax returns to capital do not seem to work. All capital holders should have been hit by a reduction in before-tax asset returns. The point is that large fortunes were unable to recover from the 1914–45 shocks, whereas fortunes that were slightly smaller did recover perfectly well. One needs an explanation that applies only to the top of the distribution and nowhere else, and progressive taxation looks like an obvious candidate.

Another possible explanation would be the existence of a large public sector in France after the nationalizations of 1945. But the negative impact on private capital accumulation would seem to apply to all capital holders, or at least to broader segments of the wealth distribution than simply the very top. Moreover, one should not exaggerate the importance of the public sector in postwar France. For instance, the output share of nationalized firms was around 15–20 percent in the manufacturing sector during the postwar period.[36] This is a substantial share in absolute terms, but this does not seem sufficient to explain the magnitude of the observed trends. Although there was a public sector in postwar France, the point is that private capital accumulation could freely take place in at least 80–85 percent of the manufacturing sector. It is also interesting to note that Carré, Dubois, and Malinvaud (1972, pp. 614–15), in their standard account of postwar growth in France, have pointed out that the bulk of the growth performance came from manufacturing subsectors in which there was almost no nationalized firm. This suggests that there were plenty of economic opportunities to accumulate large fortunes with little interference with the public sector.

If it is assumed that the rise of progressive taxation is indeed the right explanation for the observed facts (or at least for a significant fraction of the observed facts), what was the economic impact of the nonrecovery of large fortunes? More generally, what were the consequences for the performance of the French economy of the shocks incurred by capital owners during the 1914–45 period and the structural decline in the concentration of wealth? It is obviously very difficult to give a satisfactory

[36] According to estimates given by Delion and Durupty (1982, p. 191), this output share was around 15–20 percent between 1945 and 1982, and it shortly reached 30 percent between 1982 and 1986 (following the nationalizations of 1982), before being drastically reduced following the privatizations of 1986–87. Nationalized firms have been privatized one by one since 1986–87, and the public-sector share is now converging toward 0 percent.

answer to such a complex question. One could try to construct a historical micro data base on French firms so as to compare the growth performance of firms with different levels of capital dispersion and different levels of exposure to shocks during the 1914–45 period. In the meantime, one can make a number of simple remarks on the basis of available macroeconomic data.

First of all, the decline in wealth concentration does not seem to have been an obstacle to growth. Growth rates were extremely high from the late 1940s to the 1970s, and this period is now referred to as the *Trente Glorieuses* (the "30 Glorious Years") in France.[37] Needless to say, these very high growth rates are to a large extent the consequence of the abysmal economic performance of the 1914–45 period (which was itself the consequence of the two world wars and the Great Depression). During the *Trente Glorieuses,* France was simply catching up with the most advanced capitalist countries, and in particular with the United States. According to Maddison's (1995, pp. 194–97) estimates, the ratio between U.S. GDP per capita and French GDP per capita (both expressed in purchasing power parity terms) was about 1.4–1.5 at the eve of World War I, up to 1.8 in 1950, and down to 1.2–1.3 in the late 1970s (this ratio stabilized around 1.2–1.3 during the 1980s–90s). Of course, one cannot rule out the possibility that French growth rates would have been even higher during the *Trente Glorieuses* if capital concentration had remained at the same level as in 1914. Note, however, that several macroeconomic historians have suggested that the decline in wealth concentration might have had a positive growth impact. For instance, Carré et al. (1972, pp. 457–59, 620) have pointed out that wealth redistribution during the 1914–45 period (in particular the inflation-induced redistribution from creditors to debtors) might have favored the development of new firms and new generations of entrepreneurs. In the presence of credit constraints, high capital concentration can indeed entail negative consequences for productive efficiency, and wealth redistribution under certain conditions can have positive efficiency effects. This is all very hypothetical, however, and extensive research based on new micro data sets would be necessary to test these hypotheses.

It is also important to emphasize that the rise of progressive taxation had apparently no negative impact on aggregate capital accumulation. As was already noted above, the capital stock/national income ratio seems to have fully recovered from the 1914–45 shocks, with a ratio around five both at the eve of World War I and in the late 1990s (see subsection *C* above). That is, the fall of large fortunes was compensated

[37] The term *Trente Glorieuses* was coined by Fourastié (1979). Average real household income in France grew at about 5 percent per year between 1948 and 1978 (see Piketty 2001*a*, p. 72).

by rapid accumulation at intermediate and moderately high wealth levels, so that the structural decline in capital concentration seems to have had little impact on the average capital stock. It is interesting to note that this is exactly what the Barro-Becker dynastic model of capital accumulation would predict. In the presence of progressive taxation, dynastic preferences with a fixed rate of time preference imply that capital deaccumulation by the wealthy will be fully compensated by increased accumulation from individuals with lower wealth (for a formal proof, see Piketty [2001*a*, pp. 30–32]). This does mean, however, that there is no efficiency cost: aggregate capital stock will recover in the long run, but it might well be inefficiently low during the transition. The analysis of the efficiency properties of progressive taxation in less extreme and more realistic models of capital accumulation is an issue that would deserve further research.

Finally, it is important to note that although progressive taxation seems to have had a substantial dynamic impact on capital concentration, its static impact on income inequality has been more moderate. During the 1990s, the after-tax top decile income share was quite close to the before-tax top decile share (30 percent vs. 33 percent). This reflects the fact that effective income tax rates have always been fairly moderate for the vast majority of top decile taxpayers (e.g., effective tax rates have never exceeded 5–10 percent at the level of fractile P90–95). It is not surprising that the impact is larger for higher incomes: during the 1990s, the after-tax top percentile income share is about 25 percent smaller than the before-tax top percentile income share (6 percent vs. 8 percent). At the level of fractile P99.99–100, after-tax income shares are more than 40 percent smaller than before-tax income shares during the 1990s (0.35 percent vs. 0.6 percent).[38] It looks as though progressive taxation was designed to hit top capital incomes rather than to reduce drastically the top decile income share as a whole.[39]

V. How Specific Is the French Experience?

Available historical series on income inequality in other European countries and in the United States are too scarce and incomplete to draw definite conclusions about the differences and similarities between the French experience and other developed countries' experiences.

Existing European series are particularly fragile. For most European countries (and in particular for Germany and for the United Kingdom),

[38] Series on after-tax income shares were computed by applying effective tax rate series to pretax income share series (see Piketty 2001*a*, table B22, pp. 640–41).

[39] This conclusion would not be dramatically altered by the inclusion of nontaxable income transfers (most income transfers [pensions, unemployment benefits, etc.] are taxable and are therefore already taken into account in the before-tax series).

there are only a couple of heterogeneous estimates of income inequality covering only a small number of years over the course of the twentieth century.[40] Note, however, that there are two key points on which all existing estimates seem to be consistent with my French findings. First, the secular decline in the top decile income share seems to have occurred in all European countries during a specific time period, that is, between 1914 and 1945 (and especially during the 1930s and World War II). Next, the substantial 1914–45 decline in the top decile share seems to be due for the most part to the top percentile share.[41] Existing estimates also suggest that countries with greater war destruction experienced a larger decline of their top centile income share (e.g., total decline was apparently larger in Germany than in the United Kingdom), which again is consistent with my explanation. This would seem to imply that the 1914–45 decline in inequality in all European countries was an accidental, capital income phenomenon (for the most part).

The U.S. case is particularly interesting, especially since available series are less scarce than for European countries. Kuznets's series appear to be very much in line with my French findings. Kuznets (1953) used U.S. tax return statistics to construct annual 1913–48 series on top income shares, and these series constitute the most valuable source of information on U.S. inequality dynamics during the first half of the twentieth century. Kuznets's series show that the significant decline in the top decile income share that took place between 1913 and 1948 is almost entirely due to the sharp decline in the top percentile income share. The total decline of the top percentile income share, though very significant, seems smaller than what I found in France. This is consistent with the capital income explanation: world wars induced a much more severe shock on capital holders in France than in the United States (unlike the Great Depression of the 1930s, which was more severe in the United States). Kuznets's series also confirm that the decline in

[40] For a recent survey on historical research on inequality in European countries, see Morrisson (2000). The only European countries for which annual, long-term income inequality series are available seem to be Denmark and the Netherlands (unfortunately, these series do not offer a complete decomposition of the top decile; nor do they offer composition estimates or separate estimates for wage inequality). In particular, Morrisson offers only three (very heterogeneous) estimates of income inequality for twentieth-century France: one for 1900 (this is the 1900–1910 estimate referred to above); one for 1929 (this estimate comes from Sauvy [1965–75], who gives no details about his sources and methodology; this estimate is vastly inconsistent with the income tax return data for 1929: for instance, Sauvy underestimates the number of incomes above 600,000 francs by a factor of four; see Piketty [2001*a*, app. I, pp. 741–42]); and one for 1975 (this estimate comes from a 1975 income survey). The estimates reported for Germany and the United Kingdom suffer from the same limitations.

[41] Existing series do not usually offer a complete decomposition of the top decile income share (see the estimates reported by Morrisson [2000]). But whenever such decompositions are available, top fractile income shares account for a disproportionate share of the total decline in the top decile share.

inequality was not a linear, continuous process: the top percentile income share dropped during World War I, recovered during the 1920s, and dropped again during the Great Depression and World War II.

Unfortunately, Kuznets did not attempt to go beyond the top percentile (nor did he give systematic estimates of income composition for the various fractiles). Most important, Kuznets did not construct separate series for wage inequality (there was no separate wage tax in the United States, so the data are less rich than in France). It is therefore impossible to undertake the same kind of test that I did for France. In particular, it is impossible to know whether U.S. wage inequality declined significantly during the 1900–1950 period (which would mean that what happened was not just an accidental capital income phenomenon). Since the time of Kuznets, several economists have collected long-term, occupational wage data in order to shed light on this issue.[42] These data do show that there was significant wage compression during both World War I and World War II (as in France). However, these data do not allow any strong conclusion regarding the existence of a more general equalizing trend during the 1900–1950 period.[43] At this stage, the only well-established part of the story appears to be the capital income side.

It is interesting to note that Kuznets himself, in his 1955 article, started by proposing an interpretation of his 1953 series that was very much in line with the capital-income interpretation that I have advocated in this paper. Kuznets emphasized the shocks incurred by capital owners during the 1914–45 period, and he mentioned explicitly the dynamic impact of progressive taxation on capital accumulation and income inequality. But, by the end of his article (which was also his presidential address to the American Economic Association), Kuznets formulated a completely different theory. He argued that there could well exist an endogenous mechanism forcing inequality to decline in advanced capitalist countries: in a two-sector model of economic development, one should indeed observe inequality to rise when only a small fraction of the population benefits from the incomes generated by the high-productivity sector and to decline when most workers join the high-productivity

[42] See, e.g., Williamson and Lindert (1980), Goldin and Margo (1992), and Goldin and Katz (1999). For a recent survey, see Lindert (2000).

[43] Given the large changes in workforce composition, it is problematic to use occupational wage ratios to analyze long-run trends in wage inequality. In France, the ratio between the average wage of managers and the average wage of production workers has declined enormously in the long run (during both the 1900–1950 and the 1950–98 periods), although the top decile and top percentile wage shares have been roughly constant (the explanation for this paradox is simply that the number of managerial jobs has increased a lot; see Piketty [2001*a*, pp. 203–10]). To my knowledge, there does not exist any U.S. wage inequality series expressed in terms of fractiles prior to 1940 (starting in 1940, censuses asked a question on wages).

sector.[44] Kuznets had basically no empirical evidence to support this theory: this "is perhaps 5 per cent empirical information and 95 per cent speculation, some of it possibly tainted by wishful thinking" (1955, p. 26). Although this optimistic theory quickly became popular, it is important to recall that the theory of the Kuznets curve is not supported by Kuznets's series. Kuznets himself believed more strongly in the effect of shocks and progressive taxation than in the Kuznets curve, and the first part of his theory seems to have been overly neglected by economists.

Regarding the more recent period, there exists one important divergence between U.S. and French inequality dynamics. Top income shares have been increasing sharply in the United States since the 1970s (see Feenberg and Poterba 1993, 2000), whereas my series show that they have been flat in France. The very steep rise in top incomes observed in the United States since the 1970s seems to be due to large increases in high-skill wages and executive compensation. The large decline in top tax rates observed in the United States since the 1970s also provides a test for the theory of progressive taxation and capital accumulation. One should expect the decline in top tax rates to facilitate the accumulation of large fortunes and the resurgence of top capital incomes during the next few decades. This issue deserves more attention in future research.[45]

VI. Concluding Comments

In this paper, I have presented new inequality series on France during the twentieth century. The main conclusion is that the decline in income inequality that took place during the first half of the twentieth century was mostly accidental. In France, and possibly in a number of other developed countries as well, wage inequality has actually been extremely stable in the long run, and the secular decline in income inequality is for the most part a capital income phenomenon: holders of large fortunes were badly hurt by major shocks during the 1914–45 period, and they were never able to fully recover from these shocks, probably because of the dynamic effects of progressive taxation on capital accumulation and pretax income inequality.

More research is needed in order to better understand the determinants of long-run inequality dynamics. First, it would be useful to

[44] Kuznets also mentioned that with a higher variance of earnings in the urban sector, it might take a long time before inequality starts declining (and it might not decline at all).

[45] After the present study on France was completed, Emmanuel Saez and I constructed similar long-run series for the United States (see Piketty and Saez, in press). These series broadly confirm the interpretation advocated in the present paper.

construct similar inequality series for other countries. The raw statistical materials that I have used to construct my French series are to some extent available in other countries, and these materials have been underused by economists so far. Next, the dynamic interplay between progressive taxation, capital accumulation, and income inequality would need to be analyzed more carefully, from both an empirical and a theoretical standpoint. I hope that the empirical findings presented in this paper will contribute to the stimulation of future research in this area.

Appendix

TABLE A1
TOP INCOME SHARES IN FRANCE, 1900–1998: TOP FRACTILES

	P90–100	P95–100	P99–100	P99.5–100	P99.9–100	P99.99–100
1900–1910	45.00	34.00	19.00	15.00	8.00	3.00
1915			18.31	14.49	7.90	3.03
1916			20.65	16.52	9.39	3.79
1917			20.09	16.05	8.89	3.44
1918			17.95	14.28	7.67	2.87
1919	42.25	33.84	19.50	15.36	8.26	2.81
1920	39.59	31.41	17.95	14.12	7.63	2.86
1921	39.70	31.04	17.32	13.49	7.23	2.65
1922	41.54	32.50	17.87	13.84	7.26	2.51
1923	43.54	34.15	18.91	14.68	7.61	2.61
1924	42.14	32.27	17.96	13.91	7.05	2.39
1925	44.07	33.63	18.16	14.00	7.07	2.38
1926	42.06	32.34	17.82	13.73	6.98	2.41
1927	42.95	32.47	17.45	13.43	6.87	2.35
1928	42.75	32.19	17.27	13.24	6.77	2.33
1929	41.59	30.90	16.15	12.39	6.25	2.16
1930	41.08	30.14	15.31	11.59	5.79	1.93
1931	41.12	29.67	14.63	10.95	5.37	1.77
1932	43.44	31.06	14.80	10.89	5.22	1.67
1933	44.87	31.95	14.95	10.92	5.20	1.69
1934	46.01	32.68	15.28	11.17	5.31	1.71
1935	46.61	33.10	15.40	11.21	5.31	1.74
1936	44.10	31.58	14.74	10.77	5.17	1.74
1937	42.90	30.21	14.46	10.67	5.24	1.83
1938	42.52	29.79	14.27	10.49	5.05	1.75
1939	38.24	27.21	13.30	9.98	4.99	1.73
1940	39.11	27.85	13.35	9.89	4.90	1.65
1941	38.70	27.37	12.88	9.33	4.27	1.30
1942	35.04	24.90	11.53	8.26	3.64	1.06
1943	32.26	22.68	10.13	7.13	3.01	.84
1944	29.42	20.18	8.37	5.75	2.32	.61
1945	29.70	19.58	7.54	5.04	1.96	.51
1946	32.87	22.34	9.22	6.35	2.61	.72
1947	33.20	23.05	9.22	6.31	2.59	.68
1948	32.35	21.46	8.75	6.00	2.43	.63
1949	32.20	21.70	9.01	6.25	2.61	.70
1950	31.97	21.62	8.98	6.23	2.60	.70
1951	32.93	22.06	9.00	6.19	2.55	.68

TABLE A1
(*Continued*)

	P90–100	P95–100	P99–100	P99.5–100	P99.9–100	P99.99–100
1952	33.19	22.35	9.16	6.27	2.53	.65
1953	32.89	22.10	9.00	6.13	2.48	.65
1954	33.53	22.55	9.14	6.20	2.45	.64
1955	34.42	23.16	9.33	6.30	2.48	.65
1956	34.36	23.11	9.37	6.29	2.46	.65
1957	34.74	23.38	9.37	6.28	2.44	.64
1958	34.05	22.76	9.01	6.02	2.34	.60
1959	35.88	24.14	9.46	6.27	2.37	.60
1960	36.11	24.40	9.71	6.48	2.45	.62
1961	36.82	24.92	9.88	6.57	2.48	.64
1962	35.88	24.16	9.46	6.25	2.34	.58
1963	36.41	24.43	9.43	6.19	2.29	.56
1964	36.84	24.75	9.56	6.28	2.30	.56
1965	37.15	24.94	9.58	6.27	2.30	.56
1966	36.46	24.41	9.36	6.14	2.26	.57
1967	36.21	24.27	9.36	6.16	2.29	.59
1968	34.80	23.08	8.77	5.76	2.15	.56
1969	33.96	22.48	8.55	5.61	2.09	.55
1970	33.14	21.95	8.33	5.45	2.02	.53
1971	33.35	22.10	8.47	5.57	2.07	.53
1972	33.03	21.97	8.52	5.63	2.11	.55
1973	33.90	22.61	8.87	5.90	2.26	.62
1974	33.33	22.09	8.50	5.60	2.09	.53
1975	33.41	22.06	8.48	5.56	2.08	.54
1976	33.19	21.91	8.44	5.53	2.08	.54
1977	31.68	20.71	7.79	5.11	1.94	.51
1978	31.38	20.56	7.80	5.11	1.93	.50
1979	31.03	20.42	7.82	5.15	1.97	.52
1980	30.69	20.11	7.63	5.01	1.91	.50
1981	30.73	20.04	7.55	4.95	1.89	.50
1982	29.93	19.37	7.07	4.61	1.72	.44
1983	30.43	19.53	6.99	4.51	1.63	.40
1984	30.52	19.57	7.03	4.51	1.65	.41
1985	31.05	19.96	7.20	4.66	1.70	.43
1986	31.39	20.30	7.44	4.85	1.81	.46
1987	31.73	20.66	7.75	5.13	1.98	.53
1988	32.09	20.90	7.92	5.28	2.06	.57
1989	32.42	21.31	8.21	5.51	2.20	.62
1990	32.64	21.45	8.23	5.52	2.20	.62
1991	32.44	21.18	7.97	5.30	2.07	.57
1992	32.23	20.90	7.75	5.12	1.97	.54
1993	32.22	20.81	7.65	5.05	1.94	.53
1994	32.37	20.90	7.71	5.10	1.98	.55
1995	32.41	20.93	7.70	5.08	1.96	.54
1996	32.25	20.79	7.59	5.01	1.92	.53
1997	32.42	20.93	7.70	5.10	1.98	.55
1998	32.50	20.98	7.72	5.10	1.97	.55

SOURCE.—Author's computations based on income tax returns (see Piketty 2001*a*, app. B, table B14, pp. 620–21).

TABLE A2
TOP INCOME SHARES IN FRANCE, 1900–1998: INTERMEDIATE FRACTILES

	P90–95	P95–99	P99–99.5	P99.5–99.9	P99.9–99	P99.99–100
1900–1910	11.00	15.00	4.00	7.00	5.00	3.00
1915			3.82	6.59	4.87	3.03
1916			4.14	7.13	5.60	3.79
1917			4.04	7.16	5.45	3.44
1918			3.68	6.60	4.80	2.87
1919	8.41	14.33	4.15	7.10	5.45	2.81
1920	8.18	13.46	3.83	6.49	4.77	2.86
1921	8.66	13.72	3.83	6.26	4.58	2.65
1922	9.04	14.63	4.03	6.58	4.74	2.51
1923	9.38	15.25	4.22	7.08	4.99	2.61
1924	9.86	14.31	4.05	6.86	4.66	2.39
1925	10.44	15.47	4.16	6.93	4.69	2.38
1926	9.72	14.52	4.09	6.75	4.58	2.41
1927	10.48	15.02	4.02	6.56	4.52	2.35
1928	10.56	14.92	4.03	6.47	4.44	2.33
1929	10.69	14.75	3.77	6.13	4.09	2.16
1930	10.94	14.83	3.72	5.80	3.86	1.93
1931	11.45	15.04	3.69	5.57	3.61	1.77
1932	12.38	16.26	3.90	5.68	3.54	1.67
1933	12.92	17.00	4.02	5.72	3.51	1.69
1934	13.33	17.39	4.12	5.86	3.60	1.71
1935	13.50	17.71	4.19	5.90	3.57	1.74
1936	12.51	16.85	3.97	5.60	3.43	1.74
1937	12.69	15.75	3.79	5.44	3.41	1.83
1938	12.73	15.52	3.78	5.44	3.30	1.75
1939	11.03	13.91	3.32	4.99	3.26	1.73
1940	11.25	14.51	3.45	5.00	3.25	1.65
1941	11.32	14.49	3.55	5.06	2.97	1.30
1942	10.14	13.37	3.27	4.62	2.58	1.06
1943	9.58	12.55	3.00	4.12	2.18	.84
1944	9.24	11.81	2.62	3.43	1.71	.61
1945	10.12	12.04	2.50	3.08	1.45	.51
1946	10.52	13.12	2.88	3.73	1.90	.72
1947	10.16	13.83	2.91	3.72	1.91	.68
1948	10.88	12.71	2.76	3.57	1.80	.63
1949	10.50	12.69	2.76	3.64	1.91	.70
1950	10.35	12.64	2.76	3.62	1.90	.70
1951	10.87	13.05	2.82	3.63	1.88	.68
1952	10.84	13.19	2.89	3.74	1.88	.65
1953	10.80	13.10	2.86	3.65	1.83	.65
1954	10.99	13.41	2.94	3.75	1.81	.64
1955	11.26	13.83	3.02	3.82	1.83	.65
1956	11.25	13.74	3.08	3.83	1.81	.65
1957	11.36	14.01	3.09	3.84	1.80	.64
1958	11.29	13.75	2.99	3.68	1.74	.60
1959	11.74	14.68	3.19	3.90	1.77	.60
1960	11.71	14.69	3.23	4.03	1.83	.62
1961	11.90	15.05	3.31	4.09	1.84	.64
1962	11.71	14.70	3.21	3.92	1.76	.58
1963	11.98	15.00	3.24	3.90	1.73	.56
1964	12.09	15.19	3.28	3.97	1.74	.56
1965	12.21	15.36	3.31	3.97	1.74	.56

TABLE A2
(*Continued*)

	P90–95	P95–99	P99–99.5	P99.5–99.9	P99.9–99	P99.99–100
1966	12.04	15.05	3.22	3.88	1.70	.57
1967	11.93	14.92	3.20	3.86	1.70	.59
1968	11.72	14.31	3.02	3.60	1.60	.56
1969	11.48	13.94	2.94	3.52	1.54	.55
1970	11.19	13.63	2.87	3.44	1.49	.53
1971	11.25	13.63	2.90	3.50	1.54	.53
1972	11.06	13.45	2.89	3.51	1.56	.55
1973	11.29	13.74	2.98	3.64	1.63	.62
1974	11.23	13.59	2.90	3.51	1.55	.53
1975	11.35	13.59	2.92	3.48	1.54	.54
1976	11.28	13.47	2.91	3.45	1.54	.54
1977	10.97	12.92	2.68	3.17	1.43	.51
1978	10.82	12.77	2.69	3.18	1.43	.50
1979	10.62	12.59	2.67	3.18	1.45	.52
1980	10.59	12.47	2.62	3.11	1.41	.50
1981	10.69	12.49	2.61	3.06	1.39	.50
1982	10.56	12.30	2.46	2.89	1.28	.44
1983	10.91	12.53	2.49	2.88	1.23	.40
1984	10.95	12.54	2.51	2.87	1.24	.41
1985	11.09	12.76	2.54	2.95	1.28	.43
1986	11.10	12.86	2.59	3.04	1.34	.46
1987	11.07	12.91	2.62	3.15	1.44	.53
1988	11.19	12.98	2.64	3.21	1.49	.57
1989	11.11	13.10	2.70	3.31	1.57	.62
1990	11.19	13.22	2.71	3.32	1.57	.62
1991	11.26	13.20	2.67	3.23	1.50	.57
1992	11.33	13.15	2.63	3.15	1.43	.54
1993	11.40	13.16	2.60	3.11	1.41	.53
1994	11.47	13.19	2.60	3.13	1.43	.55
1995	11.48	13.23	2.61	3.13	1.42	.54
1996	11.45	13.20	2.58	3.08	1.40	.53
1997	11.49	13.23	2.60	3.12	1.43	.55
1998	11.52	13.27	2.62	3.13	1.42	.55

SOURCE.—Author's computations based on income tax returns (see Piketty 2001*a*, app. B, table B15, pp. 621–22).

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