OXFORD

TOP INCOMES A GLOBAL PERSPECTIVE

Edited by A. B. ATKINSON & T. PIKETTY

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The Evolution of Income Concentration in Japan, 1886–2005

Evidence from Income Tax Statistics

Chiaki Moriguchi and Emmanuel Saez

3.1 INTRODUCTION

Following the seminal work by Kuznets (1955), economists have devoted much effort to analysing the relationships between income inequality and economic growth.[1] Economics historians, in particular, have studied the evolution of income and wealth inequality during the process of industrialization in leading nations such as Britain or the United States (e.g. Soltow 1968, 1969; Williamson and Lindert 1985; Williamson 1985; Lindert 1986, 2000). Those studies, however, were often hampered by the absence of long-run homogeneous data to document inequality. To overcome this limitation, a number of recent studies have used income tax statistics to generate top income shares series for several European and Anglo-Saxon countries that provide the first consistent series of inequality measures that cover a large part of the twentieth century (Atkinson and Piketty 2007).

The primary objective of this chapter is to construct homogeneous and continuous top income shares series for Japan and study income concentration in Japan from long-run historical and comparative perspectives. The data for Japan are of particular interest, not only because Japan is the world's second largest economy after the United States today, but also because we can construct

We thank seminar participants at the NBER Japan Meeting, UC Berkeley, Columbia University, Harvard University US Japan Relations Program, University of Tokyo, Hitotsubashi University, Keio University, Osaka University, Kyoto University, and Ohio State University for helpful discussions. In particular, we are grateful to Esther Duflo, Joseph Ferrie, Andrew Gordon, Laura Hein, Charles Horioka, Yasushi Iwamoto, Ryo Kambayashi, Anil Kashyap, Lawrence Katz, Wojciech Kopczuk, Ryoshin Minami, Joel Mokyr, Fumio Ohtake, Tetsuji Okazaki, Makoto Saito, Osamu Saito, Toshiaki Tachibanaki, Gail Triner, David Weinstein, and Hiroshi Yoshikawa for their comments and sugges tions. A shorter version of this chapter was published as Chiaki Moriguchi and Emmanuel Saez, 'The Evolution of Income Concentration in Japan, 1886 2005: Evidence from Income Tax Statistics', *Review of Economics and Statistics*, 90(4) (November 2008): 713 34. Financial support from NSF Grant SES 0134946, the Alfred P. Sloan Foundation, and the Abe Fellowship Program is gratefully acknowledged.

[1] For recent work, see Forbes (2000), Barro (2000), and Banerjee and Duflo (2003).

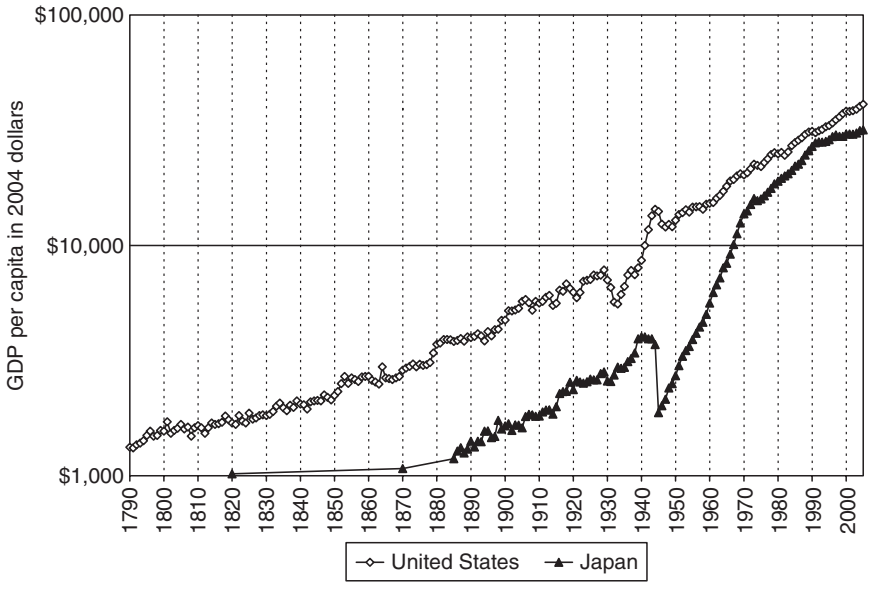

Figure 3.1. Real GDP per capita in Japan and the United States, 1790 2005

Sources: USA from Johnston and Williamson (2005) and National Accounts; Japan from Maddison (1995) and National Accounts.

top income shares series covering the full span of modern economic growth for Japan. Indeed, Japan's process of industrialization was compressed within a short time period. After the 1868 Meiji Restoration, the Japanese economy took off in the 1880s, and the nation underwent three phases of industrial revolution—from textiles, to heavy industries, to high technology industries—within less than 100 years. To illustrate this point, Figure 3.1 depicts the real GDP per capita in Japan, 1820–2005, against that in the United States, 1790–2005. Japan's GDP per capita in 1890 was at the level of US GDP per capita in 1790, or about $1,200 in 2004 dollars, which is roughly comparable to the GDP per capita of the less developed countries today. Japan had caught up quickly since then, and now has a GDP per capita only slightly lower than the United States. Real GDP per capita in Japan grew at the annual compound rate of 2.7 per cent in 1886–1940 and at 4.6 per cent in 1948–2005.

As the Japanese government introduced a comprehensive income tax system in 1887—a remarkably early date by international standards—we can trace the evolution of income concentration during the entire process of industrialization using the Japanese tax statistics.[2] Because the top income shares series compiled

[2] By contrast, the present comprehensive income tax was instituted in the United States in 1913, and in France in 1914, when the industrial revolution was already well under way in these countries.

so far for the Western countries span only part of their industrialization process, the Japanese data provide us with a unique opportunity to examine the relationship between income concentration and modern economic growth. To explore the causes of dynamic changes in income concentration and provide additional evidence, we also compile the series of top income composition, top estates and their composition, top wage income shares, and marginal tax rates for top wage income earners, all based on tax statistics.

We obtain three main findings. First, income concentration at the top 1 per cent income group in Japan was extremely high during the pre-Second World War period with some short-term fluctuations. Top income shares declined abruptly and precipitously during the Second World War and remained remarkably low for the rest of the twentieth century albeit with a sign of increase in the last decade. Our data thus indicate that the defining event for the evolution of income concentration in Japan was a historical accident, namely the Second World War, which was accompanied by large-scale government interventions, inflation, and war destruction.

Second, using income composition data, we show that the dramatic fall in income concentration at the top was primarily due to the collapse of capital income during the Second World War. Evidence from estate tax statistics confirms that top wealth holdings in fact declined drastically during the Second World War and continued to fall during the post-war occupation. We argue that the redistribution of assets and the transformation of institutional structure under the occupational reforms have prevented the re-concentration of income in the subsequent decades. Importantly, such redistributive policies, which certainly have affected the process of capital accumulation, were accompanied by one of the most impressive and sustained economic growths in modern history.

Third, according to our wage income data, wage income concentration also fell sharply during the Second World War. In contrast to the United States where wage income inequality has increased dramatically since 1970, top wage income shares in Japan have remained relatively low with only a modest increase since 1997. Comparing the Japanese and US data in more detail, we find that technological progress (i.e. skill-biased technological change) or tax incentives (i.e. the reduction in marginal income tax rates) alone cannot account for the divergent experience of the two countries. Instead we suggest institutional factors, most notably internal labour markets and collective bargaining structure, as important determinants of wage income concentration.

The rest of the chapter is organized as follows. Section 3.2 summarizes the preceding literature on income inequality in Japan. Section 3.3 describes the data and estimation methods. Section 3.4 presents our findings from the top income shares series, 1886–2005. Section 3.5 investigates the causes of the observed changes in income concentration, using top income composition and top estates series. Section 3.6 presents the top wage income shares series, 1929–2005, and offers comparative analysis of the USA and Japan. Section 3.7 provides comparative historical perspectives and concludes. The detailed description of our data and methods, as well as a complete set of results, are presented in Appendices 3A–3D.

3.2 INCOME INEQUALITY IN JAPAN PAST AND PRESENT

By international standards, Japan is widely perceived as a society with relatively low income inequality. Although comparing income statistics across nations has been difficult and should be interpreted with caution, recent OECD reports (Atkinson, Rainwater, and Smeeding 1995; Burniaux et al. 1998) and Japanese government studies (Nishizaki, Yamada, and Ando 1998; Kokumin Seikatsu-kyoku 1999) provide better comparative data. As Panel A of Table 3.1 shows, as of the late 1980s, Japan's Gini coefficient of the distribution of household income *before* tax and government transfers was one of the lowest among major industrial

Table 3.1 Income inequality in OECD countries

A. Income before tax and transfers

Country	Year	Gini coefficients
Ireland	1987	0.461
Sweden	1987	0.439
UK	1986	0.428
France	1984	0.417
USA	1986	0.411
Switzerland	1982	0.407
Germany	1984	0.395
Finland	1987	0.379
Canada	1987	0.374
Italy	1986	0.361
The Netherlands	1987	0.348
Japan	1989	0.317
Belgium	1988	0.273

Source: Nishizaki, Yamada, and Ando (1998).

B. Income after tax and transfers

Country	Year	Gini coefficients
USA	1986	0.347
Switzerland	1982	0.346
Ireland	1987	0.341
UK	1986	0.323
Italy	1986	0.321
France	1984	0.311
Canada	1987	0.305
Japan	1985	0.298
Sweden	1987	0.281
Germany	1984	0.277
The Netherlands	1987	0.266
Belgium	1987	0.260
Finland	1987	0.255

Sources: Kokumin Seikatsukyoku (1999: chapter 3);
Atkinson, Rainwater, and Smeeding (1995: table 4 10).

nations. When we consider the distribution of income *after* tax and government transfers, as one may expect, European welfare states ranked below Japan (see Panel B). In other words, one of the distinct characteristics of contemporary Japan is its low income inequality in the absence of government redistribution. Recently, however, there have been growing concerns among Japanese people that income inequality is on the rise. Most notably, in his widely read book, Tachibanaki (1998) declared Japan as an equal society a 'myth', generating much debate among scholars, government officials, and the general public.[3] When did Japan become the so-called equal society? And will Japan continue to be one as it enters the twenty-first century?

There is an extensive body of empirical work that examines the evolution of income inequality in Japan.[4] For the pre-Second World War period, the lack of household survey data has been a major obstacle in measuring income inequality. Shiomi et al. (1933) and Hayakawa (1951) instead used national and local income tax records to estimate the income distributions of all households in selected cities. Improving their methods and compiling comprehensive local income tax data, Minami (1995, 1998) estimated the income distributions of all households in Japan for selected years. Alternatively, Ono and Watanabe (1976) studied the long-run changes in income inequality, using several indirect measures such as urban–rural and intra-industry wage differentials. Otsuki and Takamatsu (1978) estimated the Pareto coefficients from 1887 to 1940 using the average and minimum household incomes based on the *Long-Term Economic Statistics* (Ohkawa, Shinohara, and Umemura 1974).

For the post-Second World War period, several types of household survey data became available. Wada (1975) estimated the income distributions during the 1950s combining the *Employment Status Survey* and the *Farm Household Economics Survey*. Mizoguchi and Takayama (1984) and Mizoguchi and Terasaki (1995) used the *People's Living Conditions Survey* to examine the changes in income inequality after 1962. For recent years, the income distribution of Japanese households can be estimated also from the *Family Income and Expenditure Survey* (e.g. Ohtake 2005) and the *Income Redistribution Survey* (e.g. Tachibanaki 2000). Because different surveys employ disparate sampling methods and income definitions, the resulting estimates of income inequality can differ considerably.

Figure 3.2 summarizes the long-run changes in income inequality, measured by the Gini coefficient, based on the above studies. Although the estimates in a given year differ across studies, they display fairly coherent time trends. Namely, (1) income inequality in Japan rose sharply from 1890 to 1940; (2) after the Second World War, it peaked around 1960, declined subsequently, and stabilized in the 1970s; and (3) there has been an increase in income inequality since the

[3] Tachibanaki (2005) is an English version of Tachibanaki (1998). See Ohtake (2005) for further analysis.

[4] For a comprehensive survey of income distributions in pre Second World War Japan, see Terasaki (1986) and Minami (1995: chapter 1). For the post Second World War period, see Mizoguchi and Takayama (1984: chapter 1), Mizoguchi and Terasaki (1995), and Yazawa (2004).

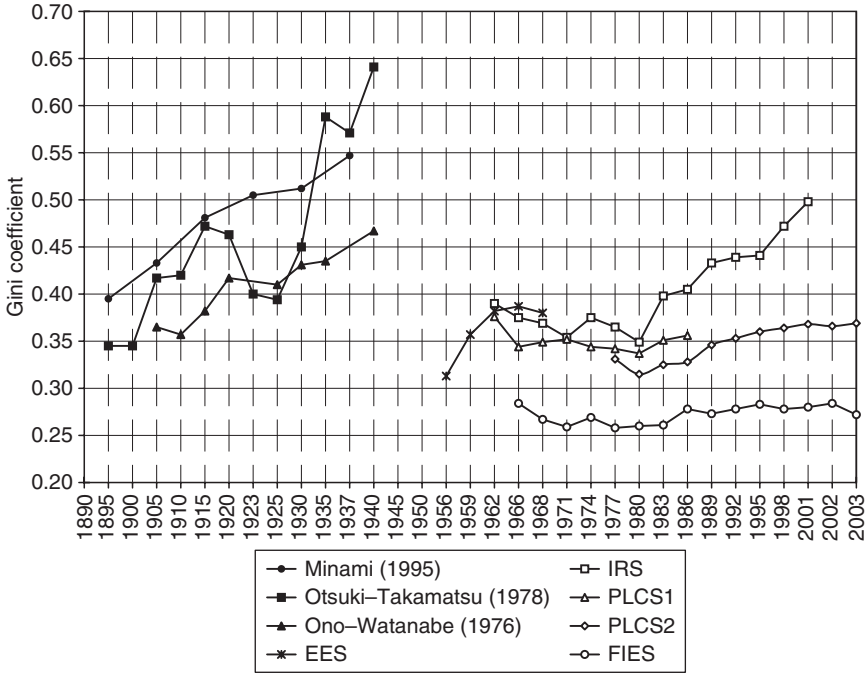

Figure 3.2 Change in income inequality in Japan, 1890 2003

Sources: Ono and Watanabe (1976: table 6); Otsuki and Takamatsu (1978: table 4); Minami (1995: table 6–4, series I & II); Wada (1975: 21); Tachibanaki (1998: table 3–1); Ohtake (2005: table 1–1).

Notes: Gini coefficient for income distribution (before tax and government transfers) of all Japanese households are reported; EES refers to Employment Status Survey; PLCS refers to People's Living Conditions Survey; FIES refers to Family Income and Expenditure Survey; and IRS refers to Income Redistribution Survey.

1980s, although scholars have disagreed over the extent of the increase and its causes.

It is important to note that not only there is no estimate between 1940 and 1955, but also Gini coefficients before 1940 and after 1955 in Figure 3.2 cannot be compared due to major data discontinuity. These limitations notwithstanding, the general consensus among historians based on mostly qualitative evidence is that income inequality dropped substantially between 1940 and 1955, presumably due to the Second World War or post-war occupational reforms, if not both (Mizoguchi and Terasaki 1995: 61). One of the objectives of this study, therefore, is to compile new data that enable us for the first time to compare the level of inequality between the pre- and post-Second World War periods and shed better light on the process of the alleged fall in income inequality. In addition, most of the pre-Second World War studies provide the estimates only for selected years that may or may not be representative. Furthermore, since most studies are concerned with the income distribution of all households, we know relatively

little about high-income groups.[5] In particular, due to the problem of small sample and top coding, household surveys cannot be used for a study of high-income earners.

To fill these gaps in the literature, we construct continuous and homogeneous series of the top income shares, i.e. the shares of total income accruing to the upper groups of the income distribution, from 1886 to 2005. Although top income shares may not be an ideal measure of income inequality—as they do not reflect the shape of the bottom 95 per cent of the income distribution—they provide valuable information about the degree of income concentration that affects entrepreneurial incentives and capital accumulation process in a capitalist economy. Finally, because we employ the same methodology used in the recent high-income studies presented in Atkinson and Piketty (2007), we can compare our data with those of other industrial nations and offer a comparative historical analysis of income concentration.

3.3 DATA AND METHODOLOGY

In this section, we describe briefly the nature of data and the methods of estimation. A complete description can be found in the appendices to the chapter. Our estimates of top income shares are based on income tax return statistics published annually by the Japanese tax administration since the introduction of national income tax in 1887.[6] Typically, the statistics present the number of taxpayers, the amount of income reported by taxpayers, the amount of income tax paid, and the composition of the reported income, all by income brackets.

Income is defined as *gross income* before deductions of income and payroll taxes paid by individuals, but after employers' payroll taxes and corporate income taxes. It includes all income components reported in tax returns, namely, salaries and wages, bonuses, unincorporated business income, farm income, self-employment income, dividends, interest, rents, royalties, and other small items. Realized capital gains, however, are excluded from our definition of income for two reasons. First, capital gains were not taxed before 1947 in Japan and are thus missing entirely from the income tax statistics, and even after 1947, capital gains from land and stocks were only partially included in the statistics due to special treatments and exemptions. Second, in general, realized capital gains form a volatile component of income with large fluctuations as opposed to a steady source of annual income. Thus, in this study, we focus on the series that exclude capital gains.[7]

[5] For important exceptions, see Takahashi (1959), Yazawa (1992, 2004), and Miyamoto and Abe (1995: chapter 6).

[6] Japan Ministry of Finance, Tax Bureau, Shuzeikyoku Tokei Nenposho, 1887 1945, and Japan National Tax Administration, Kokuzeikyoku Tokei Nenposho, 1946 2002. For an overview of the Japanese income tax system, see Ishi (2001).

[7] We present results including reported realized capital gains in Appendix 3A.

Before 1950, the tax unit was 'family' defined as a married couple (or a single household head) with cohabiting dependants. Incomes of family dependants in a single household were aggregated for tax purposes. Starting in 1950, the tax unit became 'individual', whereby spouses were taxed separately on their incomes. To produce homogeneous series over the entire period, we estimate top income shares using the individual tax unit for the pre-1950 period. For most years before 1950, the statistics by income brackets provide a breakdown of income into the income of household head and the income of dependants. According to these data, the latter is very small relative to the former (less than 5 per cent of the former in general). Hence, we substitute household income for household head's income, which leads to a slight but minor upward bias in our estimates.

Thus, our top income groups are defined relative to the total number of adults (age 20 and above), in Japan in each year based on official population statistics. Because of high exemption points, only a small fraction of individuals filed income tax returns before 1947. For this reason, our analysis is necessarily restricted to the high end of income distribution. That is, we can estimate the income share for the entire period of 1886–2005 only *within* the top 1 per cent income group, while we also provide estimate of the top 5 per cent income share for sub-periods.[8]

As the top tail of the income distribution is well approximated by a Pareto distribution, we estimate the Pareto coefficient for each year using the tabulations of taxpayers by income brackets. We then use simple parametric interpolation methods to estimate the thresholds and average income levels of top income groups. As Table 3.2 presents, in 2005, the threshold income levels for the top 1 per cent and 0.1 per cent income groups in Japan were 13.8 million yen (or $125,000) and 34.2 million yen (or $311,000), respectively. The top 0.01 per cent income group in the same year consisted of roughly 10,000 individuals who earned more than 88 million yen (or $0.8 million), and their average income was almost 200 million (or $1.8 million).

We estimate a top income share by dividing the amount of income accruing to a top income group by total personal income computed from National Accounts for 1930–2005 and from *Long-Term Economic Statistics* (Ohkawa, Shinohara, and Umemura 1974) for 1886–1929.[9] The total and average real incomes per adult from 1886 to 2005 are reported in Table 3A.1 in Appendix 3A. We convert current income to real income in 2002 yen, using the CPI deflator from *Long-Term Economic Statistics* (Ohkawa, Shinohara, and Umemura 1967). Our top income shares estimates are reported in Table 3A.2 in Appendix 3A.

We estimate the composition of income accrued to the top 1 per cent group, using income composition statistics. For years in which composition data are

[8] We cannot extrapolate our top 5% income share estimates to the full period due to data limitations. See Table 3A.1 for the relevant information.

[9] Note that estimates for total personal income before 1930 are less reliable than after 1930, introducing potential biases in our estimates. See Appendix 3A for a discussion and a sensitivity analysis.

Table 3.2 Thresholds and average incomes for top income groups in Japan

Percentile threshold (1)	Income threshold (in 2005 yen) (2)	Income groups (3)	Number of tax units (adults age 20 and above) (4)	Average income in each income group (in 2005 yen) (5)
		Full Population	103,830,000	2,488,000
Top 10%	6,174,000	Top 10 5%	5,191,500	7,089,000
Top 5%	8,081,000	Top 5 1%	4,153,200	10,033,000
Top 1%	13,791,000	Top 1 0.5%	519,150	15,600,000
Top 0.5%	17,166,000	Top 0.5 0.1%	415,320	22,825,000
Top 0.1%	34,185,000	Top 0.1 0.01%	93,447	44,232,000
Top 0.01%	88,331,000	Top 0.01%	10,383	198,386,000

Notes: Computations are based on income tax return statistics and wage income tax statistics (see Appendix 3A). Income is defined as annual gross income before individual income taxes and employees' payroll taxes but excluding capital gains.
Top income groups are defined relative to adult population (age 20 and above) in Japan. 'Top 10–5%' refers to the bottom half of the top 10% income group, and 'Top 5–1%' refers to the Top 5% income group excluding the top 1%, etc.
Total income demonimator is defined as total personal income in Japan based on National Accounts.
Amounts are expressed in 2005 yen. The average exchange rate in 2005 was \$1 = 110 yen.

reported by income brackets, we use a Pareto interpolation method to obtain the top 1 per cent estimates. For years in which only aggregate composition data are published, we use these data. Our top income composition series are reported in Table 3A.3 in Appendix 3A.

Next, we construct top estates series using estate tax return statistics published annually by the tax administration since 1905. Estates are defined as the sum of all properties (including real estates, household properties, business assets, stocks, bonds, deposits, cash, and other claims) net of debts and liabilities.[10] Top estate groups are defined relative to the total number of adult deaths in Japan in each year obtained from official population statistics. Due to the difficulty in estimating total assets in Japan, the top estate series are expressed in the level (as opposed to the share) in 2002 yen using the CPI deflator. Our top estates estimates are reported in Table 3B.1 in Appendix 3B.[11] We also provide estate composition series, 1926–2005, using aggregate estate composition data, which are presented in Table 3B.2 in Appendix 3B. Because estate compositions are not available by estate brackets, we cannot produce homogeneous series for top estate composition.

Finally, we compute top wage income shares using a similar methodology. For the post-war period, wage income data are compiled from the *Survey on Private Wages and Salaries* published by the tax administration annually since 1951.[12]

[10] Because estate value reported in the statistics is before standard deductions but after special tax reductions, our data underestimate the true estate value. See Appendix 3B for a discussion.

[11] Our top estates for 1905 57 are imprecisely estimated due to the difficulty in reconstructing estate statistics by actual (as opposed to fiscal processing) year, See Appendix 3B for a detailed discussion.

[12] Japan National Tax Administration, *Minkan Kyuyo no Jittai*, 1951 2002.

The survey covers virtually all regular employees in the private sector but excludes government employees. Wage income in our definition includes wages, salaries, bonuses, allowances, and taxable part of non-cash compensation, but excludes retirement benefits. Top groups are defined relative to the total number of regular employees in the private sector in Japan. Our estimates of the total wage income denominator are based on total salaries from National Accounts. For the pre-Second World War period, we use salary and bonus data reported in the income tax return statistics for the fiscal years 1930–45. Top groups are defined relative to the total number of regular employees in Japan. The total wage income denominators are based on total salaries and wages from National Accounts.[13] Table 3C.1 in Appendix 3C presents the number of wage income earners and total wage income from 1929 to 2005. Our estimates for top wage income shares for 1929–2005 are reported in Table 3C.2 in Appendix 3C. We also estimate marginal tax rates for the top wage income groups from 1951 to 2005. The estimates are made for an individual with a non-working spouse and two dependent children, assuming that all income is employment income. Our estimates include standard deductions but exclude local taxes and social insurance contributions. The marginal tax rates series are reported in Table 3C.3.[14]

Over the 120 years of our sample period, there are at least three major tax reforms, in addition to numerous revisions in income and estate tax laws. These changes potentially affect the comparability of our data across years. Therefore, to construct homogeneous series, we make a number of careful adjustments to the original data (see the appendices for a complete description). There are two major challenges in constructing the top income shares series that call for special attention.

First, after the introduction of an extensive withholding system (*gensen choshu seido*) in 1949, most individuals with only employment or pension income were no longer required to file self-assessed income tax returns. As a result, even though most income earners pay income taxes in Japan, only a minority of taxpayers file tax returns. Fortunately, as mentioned above, the Japanese tax administration publishes wage income tax statistics from the withholding system that include virtually all wage earners in the private sector. We thus use these data to complement the self-assessed income tax statistics to produce top income shares series.[15]

The second and perhaps more serious issue is tax erosion and evasion, that is, lawful and unlawful under-reporting of income by taxpayers. Because the self-assessed income tax statistics are by definition based on reported income, there is a concern that our data might reflect trends in tax avoidance and evasion rather than true changes in income inequality. For example, compared to wage income

[13] Due to data limitations, our estimates for 1929 44 are based on restrictive assumptions. See Appendix 3C for a detailed discussion.

[14] See Moriguchi (2008) for a more detailed study of the top wage incomes in Japan from 1951 to 2005.

[15] See Appendix 3A for a description of our method.

that is captured at source, farm income and business income in general are said to be subject to a higher degree of tax evasion. Furthermore, in an effort to avoid tax, employers often shift their compensation from cash to perquisites. Finally, in the post-war period, large parts of interest and dividend incomes are subject to special tax treatments and not included in the self-assessed income tax statistics. We discuss below these problems associated with tax avoidance and evasion, and provide a sensitivity analysis.

3.4 TOP INCOME SHARES IN JAPAN, 1886–2005

Historical Background

During the early Meiji period, Japan was predominantly a rural society based on agriculture and handicraft industry. After the fiscal reform that resulted in the Matsukata deflation in 1881–4, the Japanese economy began to modernize and grow in earnest (see Figure 3.1). Large-scale corporations in modern industries, such as railroads and textiles, were formed for the first time in the late 1880s. As a result, most historians regard 1886 as the starting year of the industrial revolution in Japan (Minami 1994; Miyamoto and Abe 1995: chapter 6). The proportion of employment in agriculture declined from 78 per cent in 1876 to 65 per cent in 1900; and fell further to 51 per cent in 1920, and 42 per cent in 1940 (NRUS 1959). After the Second World War, it declined even faster from 44 per cent in 1950, to 16 per cent in 1973, and 7.3 per cent in 1995.

To provide an overview of our sample period, Figure 3.3 depicts the average real income per adult and the CPI in Japan from 1886 to 2005. The average real income more than quadrupled from 1886 to 1938, the peak year in the pre-Second World War period. It grew particularly fast from 1887 to the end of the Sino-Japanese War (1894–95), during the First World War (1914–18), and during the period of military expansion (1932–8). Then the average income declined sharply towards the end of the Second World War (1939–45) that destroyed much of the nation's physical and human capital. The two world wars were accompanied by high inflation. In particular, Japan experienced hyperinflation in 1944–8 where consumer prices rose by 5,300 per cent during the period of four years. After the post-war US occupation (1945–52), the average real income recovered quickly, surpassing the 1938 level by 1959. During the period of high economic growth in 1955–73, real average incomes increased by a factor of six; this was one of the fastest sustained periods of economic growth in modern history. After the 1973 oil crisis, income grew at a slower pace in 1975–90. Since the collapse of the asset bubble in 1991, the average real income has declined for a decade. Except for the brief period during the oil crises, the inflation rate has been low throughout the post-1950 period in Japan.

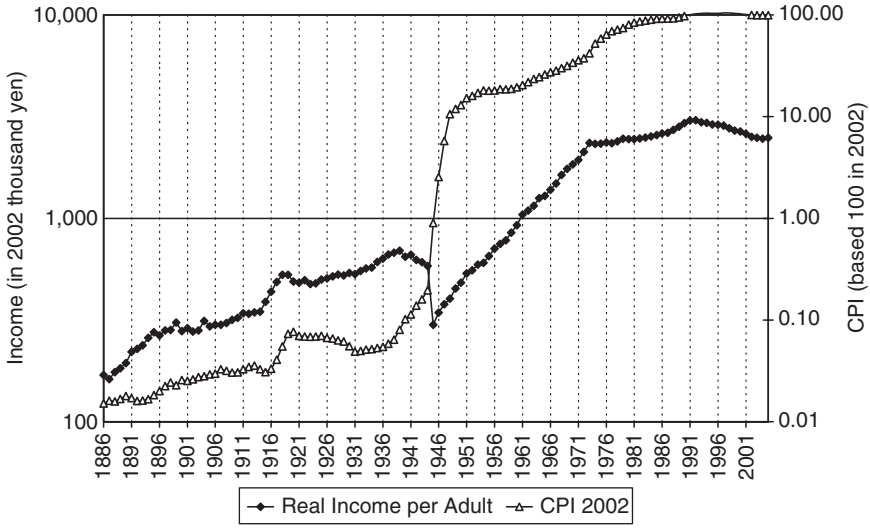

Figure 3.3 Average real income and consumer price index in Japan, 1886 2005
Source: Appendix Table 3A.1.

Trends in Top Income Shares

Figure 3.4 reports our estimates of the top 1 per cent income share from 1886 to 2005 and the next 4 per cent (denoted as 'top 5–1 per cent') income share for 1907–24, 1937–8, and 1947–2005. We first focus on the top 1 per cent income share series. Between 1886 and 1938, the top 1 per cent adult population in Japan received as much as 14 to 20 per cent of total personal income. The share, however, fell abruptly and precipitously from 1938 to 1945 from 20 per cent to 6.4 per cent, and remained relatively stable at around 8 per cent throughout the rest of the twentieth century. There are fairly large fluctuations in the top 1 per cent income share before the Second World War: after a steep fall in 1886–91,[16] it declined temporarily during the Sino-Japanese War (1894–5), the Russo-Japanese War (1904–5), the First World War (1914–18), and the Great Depression (1929–31), each time followed by an immediate recovery. As Figure 3.1 shows, the 1929 depression in Japan, in particular, was shorter and far milder than in the USA and other industrial countries (Moriguchi 2003). In terms of the long-run trend, the top 1 per cent income share was high throughout the initial stage of industrialization in 1900–38. Similarly, the extraordinary economic growth from 1950 to 1973 was accompanied by little change in the top 1 per cent income share. Finally,

[16] The estimates for early years are less reliable compared to later years due to larger measurement errors in assessing income by the tax administration. See Appendix 3A.

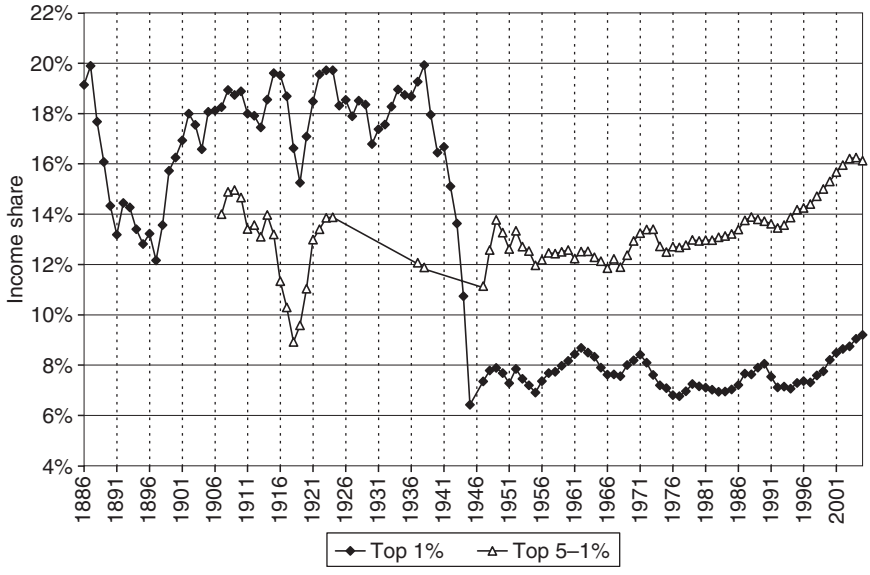

Figure 3.4 Top 1% and next 4% income shares in Japan, 1886 2005

Source: Appendix Table 3A.2.

Notes: Computations are based on income tax return statistics and wage income tax statistics (see Appendix 3A for details on the data and methods).
Groups are defined relative to the total adult population.
'Top 5–1%' denotes the top 5% excluding the top 1%.
For the top 5–1% group, estimates are not available for some years due to too few people filing income tax returns in these years.

consistent with the recent concerns over rising income inequality, we observe a steady increase in the top 1 per cent income share in Japan over the last ten years from 7.3 per cent in 1995 to 9.2 per cent in 2005. Although the 2005 number is still low by the pre-war standard, it is the highest level since the end of the Second World War.

The next 4 per cent income share series displays a substantially different pattern. During the pre-war period, although estimates are not available for some years, the share was consistently smaller than the top 1 per cent income share, where the next 4 per cent population received on average about 12 per cent of total income. By contrast, after 1947 it has been consistently and substantially larger than that of the top 1 per cent with a sharp increase in recent years from 13.5 per cent in 1992 to 16.1 per cent in 2005. The most striking difference is that the Second World War did not have much impact on the next 4 per cent income share. Figure 3.4 thus suggests that the income de-concentration phenomenon that took place during the Second World War was limited to *within* the top 1 per cent income groups.

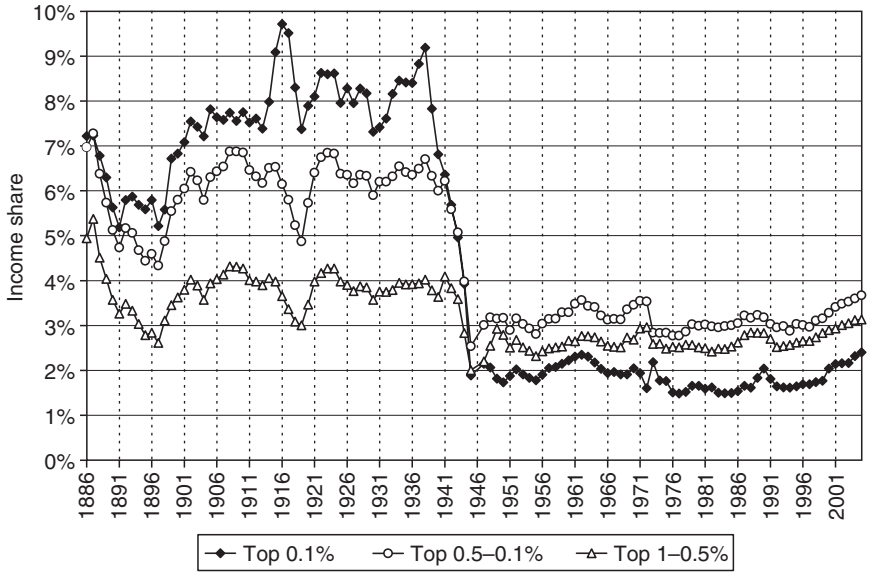

Figure 3.5 Decomposition of top 1% income share in Japan, 1886 2005

Source: Appendix Table 3A.2.

Notes: 'Top 0.5–0.1%' income group refers to the bottom 0.4% of the top 0.5% income group. 'Top 1–0.5%' income group refers to the bottom 0.5% of the top 1% income group.

Figure 3.5 demonstrates this point further by decomposing the top percentile into three subgroups: the top 0.1 per cent, the next 0.4 per cent ('top 0.5–0.1 per cent'), and the bottom half of the top 1 per cent ('top 1–0.5 per cent'). Although the three series exhibit similar overall patterns, the *higher* income group experienced the *earlier* and *larger* fall in their shares during the Second World War. While the share of the top 1–0.5 per cent group declined by 50 per cent (from 4.0 per cent to 2.0 per cent) in 1941–5, for the next 0.4 per cent group it fell by more than 60 per cent (from 6.7 per cent to 2.5 per cent) in 1938–45, and for the top 0.1 per cent group it fell by 80 per cent (from 9.2 per cent to 1.9 per cent) in 1938–45. The fall for the top 0.01 per cent income share is even more dramatic: it collapsed from 3.8 per cent to 0.6 per cent in 1938–45 and remained around the same level for the rest of the twentieth century with only a modest increase in the last several years (see Table 3A.2 in Appendix 3A and Figure 3.9). It offers a sharp contrast to the pre-Second World War period during which the top 0.01 per cent income share shows a positive trend, claiming an increasing share of total personal income.

Finally, to provide a comparative perspective, Figure 3.6 plots the top 0.1 per cent income share series in Japan with those in the United States and France, estimated respectively by Piketty and Saez (2003) and Piketty (2003), using the same methodology. The data indicate that the top 0.1 per cent income share in

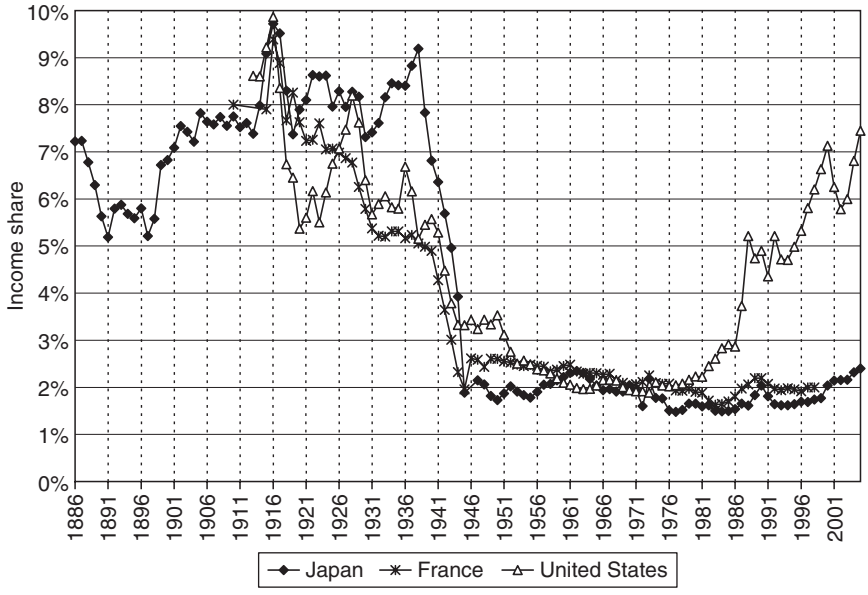

Figure 3.6 Top 0.1% income shares in Japan, the United States, and France
Sources: Japan, Appendix Table 3A.2; USA, Piketty and Saez (2003) updated to 2005; France, Piketty (2003).

Japan was roughly comparable to, if not higher than in, the United States or France during the inter-war period. Recall that the United States, in particular, was the world's uncontested technological leader by the 1920s where giant corporations in capital-intensive industries generated enormous fortunes (Chandler 1962). The top 0.1 per cent income shares in the United States and France declined roughly in three stages, first during the First World War, then during the Great Depression, and finally during the Second World War. Interestingly, by the 1960s, the shares in all three countries had converged to 2 per cent. The figure illustrates a sharp contrast in the evolution of income concentration between the United States, on one hand, and Japan and France, on the other hand, since the 1970s. While the top income shares in Japan and France have remained relatively low, the share in the United States has tripled in the last two decades, returning to the pre-Second World War level. In section 3.6, we explore the divergent experience of Japan and the United States using wage income tax statistics.

Trends in Top Income Composition

To better understand the mechanisms that led to the drastic decline in the top 1 per cent income share during the Second World War in Japan, we use composition data from the income tax statistics. In Figure 3.7, we decompose the top 1 per cent income share into five categories: (a) employment income (wages,

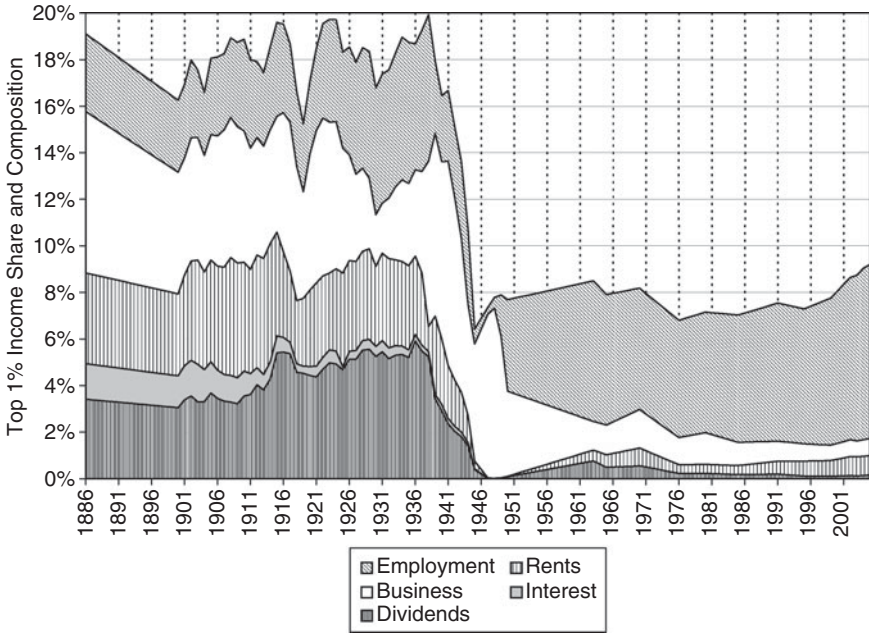

Figure 3.7 Top 1% income share and composition in Japan, 1886 2005

Source: Appendix Table 3A.3.

Notes: Computations based on income tax return statistics; see Appendix 3A.
Business income includes unincorporated business profits, farm income, and self-employment income.
Employment income includes wages, salaries, bonuses, and pensions.
Rental income includes rents from farm land, residential land, housing, and buildings, but excludes imputed rents.
For 1886 and 1900–45, estimates are based on aggregate income composition and thus imprecise.
For 1951–62, no estimates are available.
Most interest income in 1947–2005 and large part of dividends in 1965–2005 are missing from the statistics (see Appendix 3A for details).

salaries, bonuses, allowances, and pensions), (b) business income (profits from unincorporated businesses, farm income, and self-employment income), (c) rental income (from land and buildings, excluding imputed rents), (d) interest income (from bonds, deposits, and savings accounts, excluding returns on insurance policies), and (e) dividends (from privately held and publicly traded stocks). Immediate caveats are in order.

First, for 1886–1945, our estimates are based on the composition of total income reported in the income tax statistics. During this period, the series are not homogeneous as the fractions of adults filing tax returns fluctuated between 1 per cent and 4 per cent (see Table 3A.3 in Appendix 3A). Second, because almost all interest income has been either tax exempted or taxed separately and withheld at source since 1947, and so were a large part of dividends since 1965, these components were missing from the self-assessed income tax statistics (Iwamoto, Fujishima, and Akiyama 1995). Third, the introduction of the

withholding system in 1949 probably reduced tax evasion of wage earners relative to others. We address these important issues below.

With these caveats in mind, we make the following observations from the top income composition data. First, throughout the 1886–1937 period, approximately 50 per cent of the top 1 per cent income consisted of capital income (i.e. rents, interest, and dividends). Within capital income, dividends steadily increased their share, while the share of interest income declined. Although not shown in Figure 3.7, within rental income, farm rents were a major component in the earlier years, but their share declined after 1915. Initially, the share of business income in the top 1 per cent income was higher than the share of employment income, but by 1930 the order was reversed. The decline of farm rents and the rise of employment income probably reflect the gradual shift from an agrarian economy with concentrated land ownership to an industrial economy with professional managers. Second, from 1937 to 1947, both the capital income and employment income components fell dramatically: right after the Second World War, the top 1 per cent income was almost entirely composed of business income. Third, since 1950, the share of employment income in the top 1 per cent income has increased steadily at the expense of business income. This trend is probably due to the further shift towards a highly industrialized economy with large corporations. Finally, as we discuss in more detail below, since the Second World War, capital income has become a less important component in the top 1 per cent income.

Evidence from Top Estates

Our income composition series suggest that capital income accrued to the top 1 per cent income group fell dramatically during the Second World War, never returned to the pre-war level, and was replaced by employment income. National Accounts show that total capital income in the economy, however, did recover, albeit gradually (see Figure 3A.3 in Appendix 3A). Then the fall in the top capital income must have been caused by a permanent decline in *wealth* concentration. In order to test this hypothesis, we turn to estate tax return statistics published annually since the introduction of estate tax in 1905.

Figure 3.8 plots the average sizes (in real 2002 yen) of the top 0.01 per cent estates and the bottom half of top 1 per cent estates ('top 1–0.5 per cent') from 1905 to 2005 in logarithmic scale. Recall that top estate groups are defined relative to the total number of adult deaths in each year. The top 0.01 per cent estates, namely, the 'very top' wealth holdings, correspond to the roughly top 100 decedents in 2005, whose average was about 5.3 billion yen or $48 million. By contrast, the average of the bottom half of top 1 per cent estates, namely, the 'moderately high' wealth holdings, was about 300 million yen or $2.7 million in the same year. According to the figure, both the top 0.01 per cent and 1–0.5 per cent estates increased substantially from 1905 to 1936. The top 0.01 per cent estates then declined precipitously by a factor of 140 from 1936 to 1949, and the

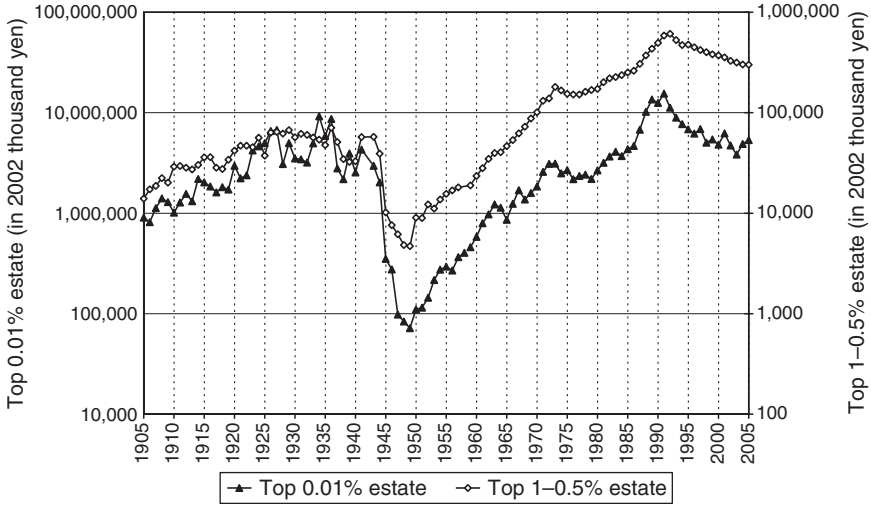

Figure 3.8 Top 0.01% estate and top 1 0.5% estate in Japan, 1905 2005

Source: Appendix Table 3B.1.

Notes: Computations based on estate tax return statistics.
The average estate levels (in 2002 yen) of the top 0.01% group and the bottom half of the top 1% are reported.
The 1905–57 estate levels are less precisely estimated than the 1958–2005 estate levels.
Due to special tax treatments, land values in estates are subject to considerable underestimates.
See Appendix 3B for details.

top 1–0.5 per cent estates declined by a factor of 18 during the same period. In contrast to top incomes, top estates not only fell dramatically in 1941–5 but also *continued* to fall during the initial four years of the post-war occupational reforms. Both estate levels grew rapidly during the high economic growth period of 1955–73, but they have been in decline since the burst of the asset bubble in 1991. While the level of the top 1–0.5 per cent estates surpassed the pre-Second World War peak by 1970, the level of top 0.01 per cent estates in 2005 is still smaller (in real terms) than in 1936 in spite of a tenfold increase in GDP per capita.[17]

When we compare the two series, the top 0.01 per cent estates were initially about 50 times larger than the bottom half of top 1 per cent estates, and by the 1930s, about 100 times larger. Because of the differential impacts of the Second World War and the post-war reforms on the two estate levels, however, by 1949 the former were only about 20 times larger than the latter. Moreover, this ratio has remained fairly constant from 1950 to 2005 despite the major changes in

[17] For the reason stated in an earlier footnote, our series probably underestimate true estate value. This problem is particularly serious concerning land due to low official valuation prices and special tax treatments. Because the share of land in total estate is higher in recent decades as shown below in estate composition data, our estimates probably suffer from greater downward bias in the more recent period. See Appendix 3B for a discussion.

Table 3.3 Top estates composition in Japan, 1935, 1950, and 1987

Year	Estate composition						
	Agricultural Land (1)	Residential Land (2)	Houses and Structures (3)	Business Assets (4)	Stocks (5)	Fixed Claim Assets (6)	Other Assets (7)
1935	22.5%	13.8%	8.4%	3.9%	25.9%	22.6%	2.9%
1950	11.8%	15.1%	37.3%	13.5%	4.8%	12.1%	19.7%
1987	20.6%	43.6%	3.7%	0.8%	10.2%	11.7%	9.5%

Notes: Computations based on estate tax return statistics (see Appendix 3B and Table 3B.2).
In 1935, 1950, and 1987, approximately top 9% of adult decedents filed estate tax returns.
Business assets include assets of unincorporated business and farm assets.
Fixed claim assets include bonds, cash, deposits, savings accounts, and other claims.
Other assets include household assets, pensions, life insurance, and other items.
Sum of all components in each year is 100%.

macroeconomic conditions during these years. In other words, there was a permanent decline in the level of the top wealth *relative to* the moderately high wealth after 1950.[18]

Table 3.3 presents estate compositions for selected years, 1935, 1950, and 1987, for which the fraction of adult decedents filing estate tax returns are constant at about 9 per cent.[19] Estates are decomposed into: (1) land (farm and residential land), (2) houses and structures, (3) business assets (unincorporated business assets and farm assets), (4) stocks, (5) fixed claim assets (bonds, cash, deposits, and savings accounts), and (6) other assets (including household properties, pension rights, and life insurances). The figure shows that the largest component of the top 9 per cent estates shifted from financial assets (stocks and fixed claim assets) in 1935 to movable properties (business assets, houses and structures, and household properties) in 1950, to real estate (predominantly residential land) in 1987. The share of stocks and fixed claims assets in the top estates declined sharply from 49 per cent in 1935 to 15 per cent in 1950, and then rose to 22 per cent in 1987. Namely, the share of financial assets in large estates in the midst of the bubble period was still less than half of that in 1935. Thus the top estate composition data provide additional evidence for our claim that the shares of dividends and interest in the top income collapsed during the Second World War and have not returned to the pre-war level to date.

To summarize, our top estates series suggest that a permanent reduction in the level of the top wealth relative to the moderately high wealth took place during

[18] It is important to note that top estates do not necessarily correspond to top capital incomes because the former are based on individuals who died in a given year, while the latter are based on all living individuals. The link between those two distributions can shift over time if the age distribution of decedents changes over time. That is why we examine the relative sizes between very high and moderately high estates in the same year to assess changes in wealth concentration.

[19] Table 3B.2 and Figure 3B.1 present aggregate estate compositions from 1925 to 2002. See Appendix 3B for details.

and immediately after the Second World War. This dramatic fall in wealth concentration at the top is not only consistent with our findings from the top income shares series, but also provides better insights as to why the precipitous decline in top income shares was concentrated *within* the top 1 per cent income group. The Second World War and the occupational reforms had a very large impact on the high end of wealth distribution, destroying much of the source of capital income. Because in general the share of capital income in total income increases with the size of income, top income earners probably suffered a disproportionately large loss of their income. In other words, our data suggest that the Second World War and the subsequent reforms probably had a lasting effect in wiping out high-income rentiers.

The Effects of Tax Evasion and Avoidance

In this section, we discuss what is known about the extent of tax evasion and avoidance in Japan, and provide sensitivity analysis to see whether our findings can be explained away by these phenomena.

The dramatic and seemingly permanent drop in income concentration after the Second World War could be explained by tax evasion only if the evasion among top income groups relative to the rest of the population increased dramatically during the Second World War and remained high ever since. One may assume that tax evasion must have been rampant during the war when labour and material shortages disrupted normal functioning of any administration. Yet, seeking additional sources for war finance, the government imposed various temporary taxes and intensified an effort to collect tax during the war. Not only the numbers of local tax offices and their personnel increased during the Second World War, but tax evasion was deemed highly unpatriotic (Japan National Tax Administration 1988). Second, it is unlikely that evasion was lower in the pre-war period when the tax administration was smaller and when most businesses did not compile systematic accounting records that the tax administration could examine. By contrast, after the Second World War, both the enforcement power and technology available for the tax administration were considerably expanded, and much economic transaction took place within large corporations or financial institutions with established accounting methods. For instance, it is widely believed that there is little tax evasion in Japan today concerning employment, dividend, and interest incomes, precisely because the sophisticated withholding system captures these incomes at source with the cooperation of corporate employers and financial institutions.

By contrast, tax evasion is considered to be substantially higher for business and farm incomes for which the withholding system does not apply.[20] According

[20] Not only Japan but most advanced countries face similar problems. For example, in the USA, the Internal Revenue Service also estimates that most income tax evasion takes place among small business owners.

to the estimate by Hayashi (1987), while nearly 100 per cent of employment incomes were captured, only 50 per cent of business income and 10 per cent of farm income were reported to the tax administration. However, both business and farm income components in the top income have been so small in recent years that it would require rates of evasion an order of magnitude higher than these estimated rates to generate the top income shares as high as in the pre-Second World War period. For example, if we assume that only 10 per cent of farm income and 50 per cent of business income are reported in 1999, then our estimate of the top 1 per cent income share would increase modestly from 7.8 per cent to 8.5 per cent.[21] In short, it is difficult to argue that the apparent permanent decline in income concentration was due to tax evasion or unlawful under-reporting of income.

In addition to tax evasion, individuals may shift their income using legal means and instruments to reduce tax payments. One such example is the usage of tax-exempted non-cash compensation in place of wages, which will be discussed in section 3.6. Another way is to take advantage of special treatments and tax favours. During the post-Second World War period, various tax privileges had been given to different components of capital income, most notably, interest and dividends. These measures effectively allowed taxpayers to pay tax separately at source at flat rates without filing tax returns. As a result, the self-assessed income tax statistics do not include these capital income components. Therefore, it is critical to evaluate the impact of the missing capital income components on our estimates of the top income shares.

The best available source for estimating the distribution of capital income by income group is the comprehensive household survey National Survey of Family Income and Expenditure (NSFIE).[22] In particular, the NSFIE in 1999 reports the holdings of various financial assets per household tabulated by the size of household head's income. We combine these asset distribution data and National Accounts data to estimate the shares of three capital income components missing from the tax statistics—interest, dividends, and the returns on life and other insurance policies—in total income for various top income groups. In Table 3.4, we compare our estimates from the income tax statistics in 1999 (in Panel B) with the estimates from the NSFIE in the same year (in Panel C). Three observations follow.

First, the estimated average incomes from the NSFIE coincide well with those from the tax statistics up to the top 1 per cent income group. For the top 0.5 per cent income group, the two estimates differ significantly, however. Because the NSFIE uses a representative sample (about 50,000 households) that contains few observations at the high end of income distribution, it is difficult to provide precise estimates for the top 0.5 per cent income group and above using NSFIE

[21] In 1999, business income and farm income represent 8.3% and 0.1% of reported incomes in the top 1% income group. With no evasion, they would represent 16.6% and 1%, respectively, and the top 1% income share would be approximately 9%, or 0.7 percentage point larger than our estimate.

[22] Statistics Bureau of Japan, *National Survey of Family Income and Expenditure* (Zenkoku Shohi Jittai Chosa). See Appendix 3D for a detailed discussion.

Table 3.4 Sensitivity analysis using the Japanese NSFIE data in 1999

Income groups (1)	Average income (in thousand yen) (2)	Fraction of capital income component to total individual income: Net interest income (%) (3)	Dividend income (%) (4)	Returns on insurance policies (%) (5)	All returns on liquid assets (%) (6) (3) + (4) + (5)
A. National average from National Accounts					
All	2,805	1.9%	0.9%	4.3%	7.1%
B. Income tax statistics estimates					
Top 10 5%	7,530	0.0%	0.0%	0.0%	0.0%
Top 5 1%	10,601	0.0%	0.1%	0.0%	0.1%
Top 1 0.5%	16,276	0.0%	0.3%	0.0%	0.3%
Top 0.5%	32,754	0.0%	2.1%	0.0%	2.1%
Top 0.1%	67,662	0.0%	4.2%	0.0%	4.2%
C. NSFIE estimates (105,139 households)					
Top 10 5% (5,257 hlds.)	7,781	0.4%	0.9%	5.2%	5.7%
Top 5 1% (4,206 hlds.)	10,381	0.5%	1.3%	4.6%	6.3%
Top 1 0.5% (526 hlds.)	14,391	1.9%	2.2%	4.5%	8.6%
Top 0.5% (526 hlds.)	22,958	1.3%	2.3%	3.8%	7.3%
Top 0.1%	n.a.	n.a.	n.a.	n.a.	n.a.

Notes: Computations based on the following three independent sources (see Appendix 3A).
National average in Panel A is based on total personal income in 1999 from National Accounts.
Estimates in Panel B are based on the self-assessed income tax return statistics in 1999. Income is defined as annual gross income reported in the tax returns, excluding capital gains. All returns on insurance policies, almost all interest income, and large part of dividends are not subject to comprehensive income tax and not reported in the self-assessed income tax returns.
Estimates in Panel C are based on the *National Survey of Family Income and Expenditure* in 1999. Net interest income is estimated based on the holdings of bonds, deposits, and loan trusts, net of liabilities. Dividend income is estimated based on stock holdings. Returns on insurance policies are estimated based on life and other insurance holdings.
The number of households in the NSFIE in each group is reported in column (1) of Panel C. Estimates for the top 0.5% group are based on 526 households and thus imprecise, and estimates for the top 0.1% group are not available due to too few households.

data. It is important to note that we find no systematic downward bias in estimating the average incomes using tax statistics compared to the NSFIE. The claim that the tax statistics are useless due to systematic under-reporting is thus not valid.

Second, according to Iwamoto, Fujishima, and Akiyama (1995), in recent decades, due to exemptions and separate taxation withheld at source, approximately 80 per cent of dividend income, over 99 per cent of interest income, and 100 per cent of the returns on insurance savings are not subject to progressive income tax and not included in the self-assessed income tax statistics. The NSFIE estimates indicate that, compared to the national average, the higher income group receives larger portions of their income as dividends but smaller portions of their income as interest or the returns on insurance policies. Furthermore, even in the NSFIE data, the three capital income components make up a very small portion of total income for the top income groups. For example, they respectively constitute 1.9 per cent, 2.2 per cent, and 4.5 per cent of total income for the bottom half of the top 1 per cent income group (the column 'top 1–0.5 per cent' in Panel C). Taken together, the table suggests that these components are not particularly concentrated at the top of the income distribution in today's Japan.

Third, Panel A shows that interest and dividends constitute only a small share (2.8 per cent) of total personal income in Japan. Even if we make the extreme assumption that all dividends and interest income go to the top 1 per cent income group, it would increase the top 1 per cent income share by 2.8 percentage points from 7.8 per cent to 10.6 per cent. Observe that this upper bound estimate is still substantially smaller than the pre-Second World War share of 16 per cent.

We provide similar sensitivity analysis for 1979–99, using the NSFIE data. Our results are reported in Table 3D.1 in Appendix 3D. Consistent with the estimates from the income tax statistics, the table shows that there is only a very modest increase in the top 5 per cent income shares during this period. The share of the three capital income components in total income for the top 5 per cent group was only moderately higher than the national average in 1979 and 1984, and was actually lower than the national average in 1989, 1994, and 1999. Therefore, fully incorporating the missing components would have only small effects (a slight increase in the 1980s and a slight decrease in the 1990s) on our estimates for the top income shares. In summary, adding back the missing capital income components would not change our main conclusion that the degree of income concentration fell drastically in Japan from the pre-war to post-war period.

3.5 UNDERSTANDING THE EVOLUTION OF INCOME CONCENTRATION

Using the income and estate tax statistics, we have documented that (1) income concentration in Japan was extremely high during 1886–1938 by both historical and

international standards; (2) the drastic de-concentration of income at the top took place in 1938–45; (3) income concentration remained low for the next five decades with a sign of increase in the last ten years; (4) the size of top wealth relative to moderately high wealth declined sharply from 1936 to 1949 and stayed low, and (5) top income composition has shifted dramatically from capital and business incomes toward employment income over the course of the twentieth century. In this section, we explore the causes of the evolution of income concentration.

A High Level of Income Concentration in Pre-Second World War Japan

One of the merits of our data is that they allow a quantitative comparison of income concentration before and after the Second World War. Our findings strongly confirm the received view based largely on qualitative evidence that there was high concentration of income and wealth among the elite class in pre-war Japan.[23] Preceding studies suggest three major constituencies of the very rich: landlords, shareholders, and corporate executives.

First, there was a concentration of land ownership to a small number of 'absentee landlords' (*fuzai jinushi*) mostly in rural areas whose lands were cultivated by tenant farmers. Especially in the earlier years, landowners enjoyed social and economic privileges over their tenants. After the First World War, however, both the commercialization of agriculture and the rise of tenant unions led to lower rents and stronger tenant rights (Waswo and Nishida 2003: 14–17). As a result, large landowners began to diversify their assets and invest in financial and industrial assets. These observations are consistent with the substantive farmland rents component in the top 1 per cent income during 1886–1915 and its gradual decline thereafter in our income composition data.

Second, before the Second World War, large firms raised capital primarily from stock markets, and business ownership was heavily concentrated on a small number of individuals (as opposed to institutional) shareholders.[24] In addition, pre-war firms paid out high dividends to their shareholders. According to the study by Miyamoto and Abe (1995) based on corporate charters of fifty companies in the 1880s, on average 70 per cent of profit was distributed to shareholders as dividends (p. 276). Okazaki (1993) also finds that in the 1930s the average dividend to profit ratio at leading manufacturing firms was close to 70 per cent, while it was less than 50 per cent in the 1950s (p. 184).

Third, during the inter-war period, top management at large corporations received very high compensation. In addition to high monthly salary, they were

[23] Our data show that the top 1% income share increased only modestly from 1890 to 1940. By contrast, the preceding studies find a sharp increase in Gini coefficients during the same period (see Figure 3.2). Our findings are not necessarily contradictory, if the rise in inequality was driven by changes in the lower end of income distribution without changing the mean. For example, Mizoguchi and Terasaki (1995) attribute the rise primarily to a widening rural urban income gap.

[24] For example, Okazaki (1999) finds that, in 1935, at the ten largest *zaibatsu* firms, the top ten shareholders held as much as 66% of total stocks (pp. 103 5).

rewarded with large year-end bonuses. According to Miyamoto and Abe (1995), the same fifty corporate charters stipulated that 10 per cent of profits be distributed as executive bonuses (p. 276).[25] At leading manufacturing firms, directors on average received 6 per cent of profit in the form of bonus in the 1930s, compared to just 2 per cent in the 1960s (Okazaki 1993: 184). At five leading electric power companies, executive bonus was 28 times larger than the average income in Japan in 1936, while in 1955 it was only 1.5 times larger (Minami 1995: 123). Moreover, before the Second World War, it was common practice for major shareholders to assume a position as corporate directors, which exacerbated income concentration.[26]

In a unique study using individual-level data, Yazawa (1992) examines the 5,000 highest income taxpayers in 1936 based on *Who's Who* that published their names, income tax paid, addresses, and occupational titles. He finds that, out of the top 5,000 income earners in 1936—which corresponds roughly to the top 0.01 per cent income group in our study—31 per cent were in retail business, 22 per cent were in manufacturing, 22 per cent were in finance, and 7 per cent had no occupation (pp. 155–9). He also shows that they were concentrated in metropolitan areas, such as Tokyo (45 per cent) and Osaka (25 per cent).[27] Only 2.2 per cent of them, however, were members of the aristocracy and merely 3.0 per cent were affiliated with *zaibatsu* holding companies, which indicates that the importance of aristocrats and *zaibatsu* families among the elite class should not be overstated (pp. 160–6).

Last but not least, the legal system in pre-war Japan proved favourable to the affluent class. Initially, both the 1886 income tax law and the 1905 estate tax law set extremely low marginal tax rates in which the highest statutory rates were 3 per cent and 1.8 per cent, respectively. Although the rates were increased subsequently, until the 1937 temporary tax increase law, top marginal tax rates for individual and corporate income taxes had remained low. In addition, the pre-war estate tax law endorsed primogeniture and allowed the first-born son (or a designated legal heir) to inherit entire family estates as a family head under preferential tax rates and high exemption points. In other words, with the minimum government intervention, rich families could accumulate their wealth over several generations before the Second World War.

Mechanisms of Income De-concentration in 1938–1945

Our data indicate that the top income shares fell precipitously during the Second World War, but not at all during the occupational reforms. We explore the two

[25] By contrast, paying bonus for rank and file employees was an exception rather than a norm in pre war firms.

[26] For example, Okazaki (1999) finds that, at twenty leading manufacturing firms, the top ten shareholders held 23% of the director positions in 1935, while they held none after 1947 (pp. 103 5).

[27] Note that Yazawa's (1992) sample covers 26 major prefectures out of total 47 prefectures in Japan, under representing rural prefectures (p. 149).

key questions in turn: how did the Second World War reduce the income concentration in such a short period of time, and why did the occupational reforms have such little impact?

The Second World War probably caused the drastic income de-concentration through three main channels: government regulations, inflation, and war destruction. Most importantly, with the promulgation of the 1938 National General Mobilization Act, the military government implemented a set of regulations that had profound impacts on shareholders, executives, and landlords (Hoshi 1998; Hoshi and Kashyap 2001: chapter 3; Okazaki 1993).

Dividends were regulated starting in 1939 where a dividend-to-equity ratio was capped at 8 per cent in 1940 and at 5 per cent by 1945, compared to the typical pre-war ratio of over 10 per cent. In addition, government pressure led to the decline in the number of shareholders holding director positions at major corporations after 1940 (Okazaki 1999: 108). The government also intervened in stock and bond markets to encourage the absorption of war bonds, reducing the returns on corporate shares and bonds. It regulated wages and salaries after 1939, standardizing wages across firms and industries. The government also mandated the establishment of works councils to empower blue-collar employees in 1938 and placed a ceiling on executive bonuses in 1940, compressing within-firm pay inequality. Finally, the government redistributed farmland from landlords to tenants starting in 1938, regulated rents and land prices after 1939, set up a two-tier price system for rice production in 1941 that rewarded tenants and penalized landlords, and revised land and house lease laws in 1941 to augment tenant rights (Waswo and Nishida 2003: 22–3). Although their goal was to stimulate food production, these measures reduced both land value and rental income of landlords. As Figure 3.7 shows, changes in different components of the top 1 per cent incomes coincide well with the timing of the corresponding wartime regulations, underscoring their importance in explaining the process of de-concentration.

Furthermore, to finance massive war effort, the government imposed increasingly heavy individual and corporate income taxes in 1937, 1938, 1940, 1942, 1944, and 1945 (Japan National Tax Administration 1988). The sharp increase in corporate income tax reduced after-tax profits, which in turn reduced dividends and bonuses paid out to shareholders and executives.[28] Moreover, despite the stringent controls, the price level began to surge after 1938 and rose dramatically towards the end of the Second World War (see Figure 3.3). The inflation probably played a major role in reducing the top estates, as it diminished the real value of fixed claim assets (e.g. bonds and deposits). It also contributed to the collapse of the top capital income by reducing interest income as well as rental income.[29]

[28] One may suspect that higher marginal income tax rates might have invited a higher degree of tax avoidance and evasion. Although we cannot deny this possibility, as discussed below, the government also intensified their effort to collect taxes during the Second World War.

[29] The 1941 land and house lease laws made it difficult for landlords to raise rents.

Finally, the Second World War brought about large-scale destruction of the nation's wealth, claiming 25 per cent of physical assets and 668,000 civilian casualties (Keizai Antei Honbu 1948). In particular, air raids on major Japanese cities by the Allied force between February and August 1945 probably had a devastating effect on the high-income earners who were concentrated in the metropolitan areas (Yazawa and Minami 1993: 366).[30] Note, however, that the late timing of the bombing implies that it could not have been a major reason for the income de-concentration that had started in 1938. In summary, the Second World War can be seen as a one-time shock that reduced income and wealth inequality in Japan through the combination of government regulations, inflation, and war destruction.

Impact of US Occupational Reforms in 1945–1952

Upon Japan's surrender in August 1945, the nation was placed under the indirect governance of the Supreme Commander for the Allied Powers until 1952. As preceding studies have emphasized, the post-war occupational reforms could potentially have a large effect in equalizing the income distribution (Yazawa and Minami 1993; Minami 1995). Three particularly powerful redistributive measures were implemented during this period.

First, the land reform in 1947–50 mandated landlords to sell their farmland to tenants, eliminating virtually all large- and medium-sized landowners. As a result, the percentage of land cultivated by tenants declined sharply from 46 per cent in 1941 to 9 per cent in 1955. Due to hyperinflation, compensation paid to landowners in real terms was a mere fraction of the land value. Second, to finance large deficits, the government imposed extremely heavy and highly progressive property tax (*zaisan zei*) from 1946 to 1951. The property tax affected approximately 13 per cent of all households in Japan in the initial year, and taxed away on average 33 per cent of their properties. For the top 5,000 households, more than 70 per cent of their properties were transferred to the government.

Third, under the dissolution of *zaibatsu* in 1946–8, not only ex- and current directors of *zaibatsu* firms were expelled, but also their stocks were confiscated and redistributed to a large number of employees and other investors at a market price. Consequently, these three measures transferred a significant amount of assets (i.e. land, stocks, and other household properties) from the higher to lower end of distribution. In addition, the hyperinflation in 1944–8 hit hard high-income rentiers. By contrast, farmers and small business owners who sold their products in underground markets were said to have earned substantive income in the immediate post-war years, explaining the surge of business income component in the top 1 per cent income in Figure 3.7.

[30] The bombing destroyed 51% of built up area in Tokyo and 26% of that in Osaka (USSBS 1947: table 30).

Despite the emphasis placed on the importance of the occupational reforms in reducing income inequality in the literature, our data indicate that, although they affected the top estate levels, they had practically no impact on the top income shares. Namely, we find the Second World War, rather than the occupational reforms, to be the single most important event in reducing income concentration. Our finding may seem surprising at first, but the following observations indicate otherwise. First, our finding is consistent with the view that the occupational reforms were in many ways a *continuation* of the wartime policies (Okazaki and Okuno 1993; Noguchi 1995; Teranishi 2005). That is, the restrictions on landlord and shareholder rights, the adoption of progressive taxation, and the check on executive compensation had already begun during the Second World War, which probably had set off the process of income de-concentration well before the post-war democratization and demilitarization. As such, there was little room left for the occupational reforms in further reducing top incomes.[31] By contrast, our top estates series indicate that the reforms did have a large effect in reducing *wealth* concentration, whose implications will be discussed in next section.

Second, our finding is also consistent with the comparative evidence that indicates a universal role of the Second World War in reducing income concentration in such diverse countries as the United Kingdom, France, the United States, and Canada (Atkinson and Piketty 2007). Note that none of these countries was occupied after the Second World War and some did not even experience major war destruction in their homelands. But, without exception, the war was accompanied by large-scale government intervention in these countries.[32] In short, in the absence of quantitative evidence, the preceding studies have probably overstated the effect of the occupational reforms in equalizing income in Japan.

A Low Level of Income Concentration in Post-Second World War Japan

Perhaps the more challenging question is why the top income shares did not recover from the profound yet temporary shock of the Second World War in the decades that followed. Why did the degree of income concentration in Japan remain at the historic low reached in the late 1940s for the next fifty years? We argue that it was in this context that the occupational reforms played a critical role. By redistributing assets and reducing wealth (as opposed to income) concentration, they directly equalized the distribution of capital income in subsequent years. More importantly, deriving their origins from the wartime policies,

[31] It is also likely that some measures equalized income at the lower end of the distribution without changing the mean. For example, the land reform redistributed land primarily from middle sized landowners to tenants, creating a large number of small sized farmers. In such cases, we may not observe much change in the top 1% income share.

[32] By contrast, in Switzerland and Sweden which remained neutral during the Second World War, the data indicate a much smaller effect of the war on top income shares (Dell, Piketty, and Saez 2007; Roine and Waldenström 2006).

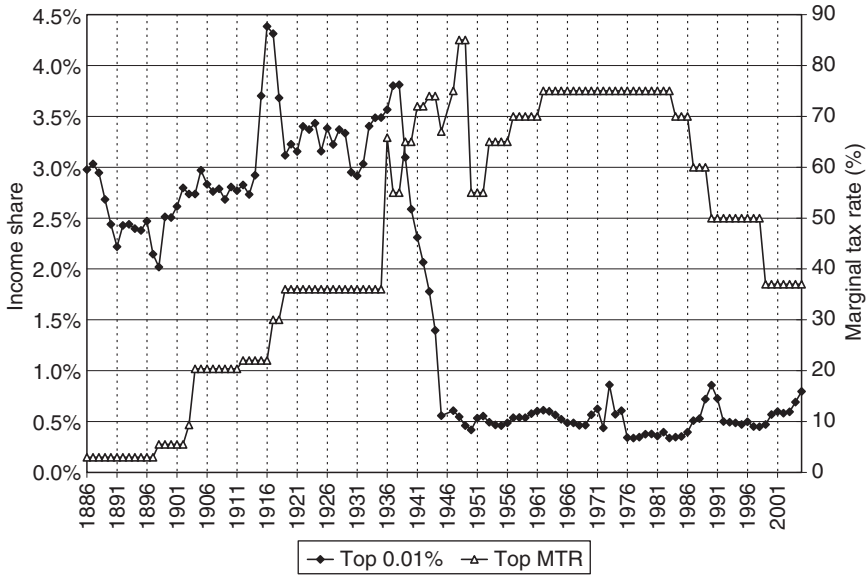

Figure 3.9 Top 0.01% income share and marginal tax rate, 1886 2005

Source: Appendix Tables 3A.1 and 3A.2.

Notes: 'Top 0.01%' refers to the top 0.01% income share.

'Top MTR' refers to the highest statutory marginal tax rates for individual income tax without taking deductions and exemptions into account.

the post-war reforms transformed many one-time measures into lasting ones, facilitating a structural change in the Japanese economy that probably prevented re-concentration of income during the ensuing period of high economic growth.[33]

First, the fiscal reforms in 1950 made progressive taxation a permanent feature of the Japanese tax system. Recall that the enormous fortunes that generated the high top 1 per cent income share in the pre-Second World War period had been accumulated at the time when progressive income tax hardly existed and capitalists could reinvest almost all of their incomes for further capital accumulation. As pointed out by Piketty (2003) in the context of France, the fiscal environment faced by Japanese capitalists after the Second World War, too, was vastly different. As Figure 3.9 shows, after a spike in 1938–49 caused by the combined effect of temporary tax increases and hyperinflation, the highest statutory marginal tax rate for individual income tax stayed at 60–75 per cent from 1950 until the 1988 tax reform. Tax rates on corporate income show similar trends. With respect to estate tax, the 1947 law abolished primogeniture and mandated the division of an

[33] Our findings thus lend support to the view that emphasizes the uniqueness of the post Second World War Japanese economic system in contrast to the pre Second World War system that was more market oriented (Okazaki and Okuno Fujiwara 1993; Noguchi 1995; Teranishi 2005).

estate among the surviving spouse and children, and the 1950 law instituted highly progressive estate and gift taxes with top marginal tax rates in excess of 70 per cent. As a result, inter-generational transfers of large amounts of wealth became much more difficult after the Second World War. Progressive taxation probably hindered the re-accumulation of large wealth, resulting in more equal distribution of capital income.

Second, the seemingly permanent decline in the top capital income can be further attributed to measures specific to each capital income component. Since the introduction of the land and house lease laws in 1941 until their repeal in 1992, the government had heavily protected tenant rights, which depressed the supply of rental housing. As a result of both high home ownership rate and more equal land distribution, rental income became a less significant source of income for top income earners in the post-war period. As for interest income, the government expanded tax-exempted saving instruments for small asset holders from the 1960s until they were abolished in 1988. These measures had probably promoted wealth accumulation among the middle class, equalizing the distribution of interest income. With respect to dividend income, the emergence of the new corporate governance system, characterized by bank-centred debt finance and cross-shareholdings among affiliated companies, in the 1960s resulted in stable institutional shareholders and low dividend rates (Fukao 1995; Teranishi 1999). As a result, dividends too became less concentrated among top income groups after the Second World War.

Third, the changes in human resource management and collective bargaining structure in Japan probably compressed wage distributions within firms. As the so-called 'lifetime employment' became a hallmark of human resource management at large firms in the 1960s, most if not all management positions were filled by long-term employees promoted from within (Okazaki 1999). Moreover, after violent confrontations in 1945–55, most large firms in Japan were organized by single enterprise unions that represented both white- and blue-collar employees of the firms. By the 1970s, management regularly consulted with unions over personnel matters including wages and promotions (Morishima 1991; Moriguchi 2000; Kato and Morishima 2002). These changes probably resulted in smaller wage differentials between white- and blue-collar employees as well as more equitable executive compensation. We will turn to wage income tax statistics in the next section to examine these hypotheses more closely.

Finally, what is driving the recent increase in top income shares? It is too early to tell whether it is a temporary blip as in 1985–90, or a break from historical trends that signals the start of the 'post' post-Second World War era. Nonetheless it is worth noting that its timing coincides with another structural change that Japan has been undergoing since the 1990s which includes the decline of main bank system and cross-shareholding, an increasing pressure on lifetime employment practices, and major policy reforms concerning income tax and commercial laws.

3.6 TOP WAGE INCOME SHARES IN JAPAN, 1929–2005

Trends in Wage Income Concentration

In this section, we present our estimates of top *wage income* shares in Japan to investigate the role of employment income in the evolution of income concentration. Wage income in our definition includes wages, salaries, bonuses, and part of non-cash compensation, but excludes retirement benefits. For the pre-Second World War period, we use salary and bonus data reported in annual income tax statistics for fiscal years 1930–45 (corresponding to actual years 1929–44). For the post-war period, we use the results of statistical survey in the *Survey on Private Wages and Salaries* published annually by the tax administration since 1951. The survey covers all employees in the private sector who worked for the same employer throughout a year. Our estimates of the top 5 per cent and 1 per cent wage income shares series in Japan are shown in Figures 3.10 and 3.11.

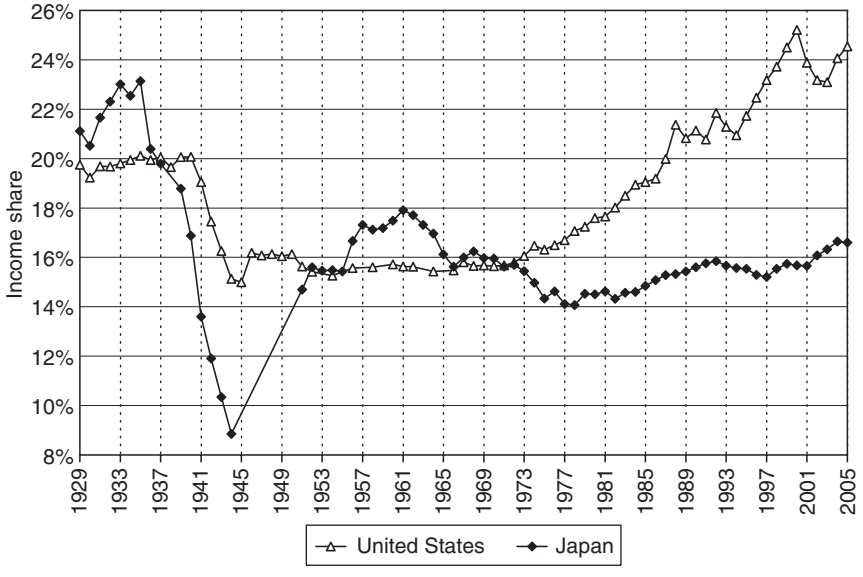

Figure 3.10 Top 5% wage income share in Japan and the United States, 1929 2005

Sources: Japan, Appendix Table 3C.2; USA, Piketty and Saez (2003: table IV, updated to 2005).

Notes: Computation based on income tax return statistics for 1929–44 and wage income tax statistics for 1951–2005; see Appendix 3C for details.
The 1929–44 estimates are less precise and not fully comparable to the 1951–2005 estimates.
Estimates for 1938 and 1945–50 are not available.
Wage income includes wages, salaries, allowances, and bonuses, but excludes retirement benefits and non-taxable part of noncash benefits.
Top wage income groups are defined relative to all regular employees for 1929–44 and all employees in the private sector for 1951–2005.

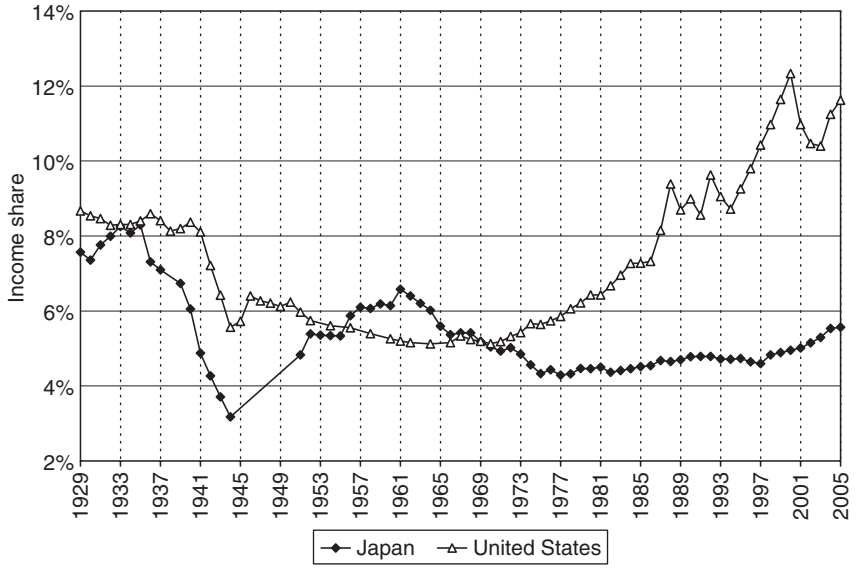

Figure 3.11 Top 1% wage income share in Japan and the United States, 1929 2005
Sources: Japan, Appendix Table 3C.2; USA, Piketty and Saez (2003: table IV, updated to 2005).

First, during 1929–35, Japan exhibited a high degree of wage income concentration where the top 5 per cent wage earners received more than 20 per cent of total wage income and the top 1 per cent received about 8 per cent of total wage income. As one might expect, the degree of wage income concentration is smaller than that of income concentration during the same period (8 per cent versus 16 per cent for the top 1 per cent group). High wage income inequality in Japan during the inter-war period can be explained by large intra- and inter-firm wage differentials. As discussed above, wages and bonuses paid to top management, white-collar employees, production workers, and unskilled labourers within the same firm were widely dispersed before the Second World War, resulting in high within-firm wage inequality (Showa Dojinkai 1960: 269, 263). In addition, with the growth of heavy industries with high capital intensity, productivity gap by industry as well as by firm size had widened since the First World War, resulting in substantial inter-firm wage differentials (Yasuba 1976).

Second, we observe a sharp decline in wage income concentration from 1935 to 1944, as the top 5 per cent wage income share fell from 23 per cent to 9 per cent and the top 1 per cent share from 8.9 per cent to 3.2 per cent. This 64 per cent decline in the top 1 per cent wage income share in 1935–44 is comparable to the 68 per cent decline in the top 1 per cent income share in 1938–45. According to our income composition data in Figure 3.7, the share of employment income in the top 1 per cent income remained fairly stable until 1940 and then dropped sharply in 1940–7. Therefore, we attribute the initial decline in wage income

concentration in 1935–40 to the tightening of labour markets due to military expansion that compressed the wage distribution from below. The further decline in 1940–4 is probably due to the wartime regulations that capped executive bonuses and standardized wages across firms. Although the decline in income concentration was largely a capital income phenomenon, the data indicate that employment income also played an important role.

Third, in the post-war period, top wage income shares rose substantially from 1951 to 1961 (no estimates are available for 1945–50), and then declined gradually over the next two decades. The initial increase in the 1950s is consistent with our income composition data that show a recovery of the employment income component in the top 1 per cent income after the Second World War. It is worth noting that the trends in the top wage income shares parallel the trends in income inequality of all households documented by the preceding studies (see Figure 3.2). Minami (1998) attributes the rise in income inequality in the 1950s and its decline in the 1960s to Japan's transition from the chronic labour surplus before 1960 to the chronic labour shortage after 1960. Considering the top wage income shares, their decline in the 1960s and 1970s can be further attributed to the diffusion of the so-called 'Japanese-style' management, including lifetime employment, enterprise unionism with joint labour–management consultation, and corporate governance that places more weight on employee values than shareholder values (Gordon 1985; Aoki 1988). For example, by the end of the 1960s, executives at large firms were entirely promoted from within (Okazaki 1999). In sharp contrast to the pre-war period, bonuses were no longer paid disproportionately to top executives but distributed more equally among regular employees. In fact, the average ratio of bonus to total compensation has been 20 per cent to 30 per cent for both corporate executives and rank-and-file employees in recent years (see Hart and Kawasaki 1999; Kubo 2004).

Finally, the top 1 per cent wage income share has increased steadily since 1997 from 4.6 per cent to 5.6 per cent, confirming the public concern that wage inequality in Japan is rising. Although this trend is new, the extent of the increase is modest by historical standards.[34]

Comparative Analysis of Japan and the United States

To facilitate international comparison, we also plot the top wage income shares in the United States, estimated by Piketty and Saez (2003), in Figures 3.10 and 3.11.[35] The figures indicate that the top wage income shares were roughly

[34] A recent study by Moriguchi (2008) suggests that there is no major structural change in the determinants of top wage income shares before and after 1997.

[35] In addition to wages, salaries, and bonuses, US wage income includes stock options. In Japan, stock option was legalized in 1997, while various restrictions remained until the revision of the commercial law in 2002 (Naito and Fujiwara 2004: 255 60). As their usage has been limited in both the number of firms and the amount of stocks granted, inclusion of stock options would not change our Japanese estimates.

comparable between the two countries during 1929–35. Then wage income concentration in both countries fell sharply by the end of the Second World War. In contrast to Japan, however, US top wage income shares had remained low during the 1950s and 1960s. Japan and the United States exhibited the similar degree of wage income concentration at the end of the 1960s. The pattern of wage income concentration has sharply diverged between the two countries since the 1970s, however. While the top 1 per cent wage income share in Japan has been nearly constant at around 5 per cent from 1970 to 2005, the share in the United States has risen exponentially from 5 per cent to 12 per cent during the same period. Consequently, today, the United States exhibits a much higher degree of wage income concentration than in Japan.

One may question that the wage income concentration in Japan is seriously underestimated because Japanese companies make extensive use of tax-exempted non-cash compensation.[36] According to Abowd and Kaplan (1999), the inclusion of in-kind benefits and perquisites to the sum of salary, bonus, and stock options would raise total compensation for Japanese CEOs in 1988–96 by 32 per cent and for American CEOs by 10 per cent. This difference, however, is far too small to explain the huge gap in top wage shares between the USA and Japan.

What explains the diverging trends in wage income concentration between the two countries, then? Note that, by 1980, Japan had virtually caught up with the United States in both the level of income per capita and the stage of industrialization, as both countries entered the third industrial revolution characterized by high technology industries. Therefore, the comparative experience of the United States and Japan suggests that technology alone cannot account for the change in wage inequality. At the very least, elements other than technology—government policies, labour market institutions, demography, and social norms regarding pay inequality[37]—have to be taken into consideration. Although understanding the relative contributions of those elements is beyond the scope of this chapter, below we briefly examine the effect of income tax policies on wage inequality.

To assess the impact of income tax rates on wage income distribution, Figure 3.12 presents the top 0.1 per cent wage income share and the effective marginal income tax rates faced by this group in Japan (in Panel A) and the United States (in Panel B) from 1960 to 2005. In the United States, a number of influential studies, such as Lindsey (1987) and Feldstein (1995), have argued that the reductions in the top marginal tax rates since the 1970s—especially the sharp reduction in the late 1980s—were the key factor that drove up high wage incomes. According to their view, referred to as supply side theory, lower tax rates would increase reported incomes through higher labour supply and/or a

[36] Although all non cash compensation is in principle taxable in Japan, expense account is fully exempted and company housing is partially exempted. See Appendix 3C.

[37] According to the ISSP Social Inequality III survey conducted in 1999, despite the higher income inequality in the United States than in Japan, 36% of 1,325 Japanese respondents strongly agreed with the statement, 'Differences in income in my country are too large', while only 23% of 1,272 US respondents strongly agreed with the same statement. These responses can be seen as an indication of lower tolerance to income inequality in Japan compared to the United States.

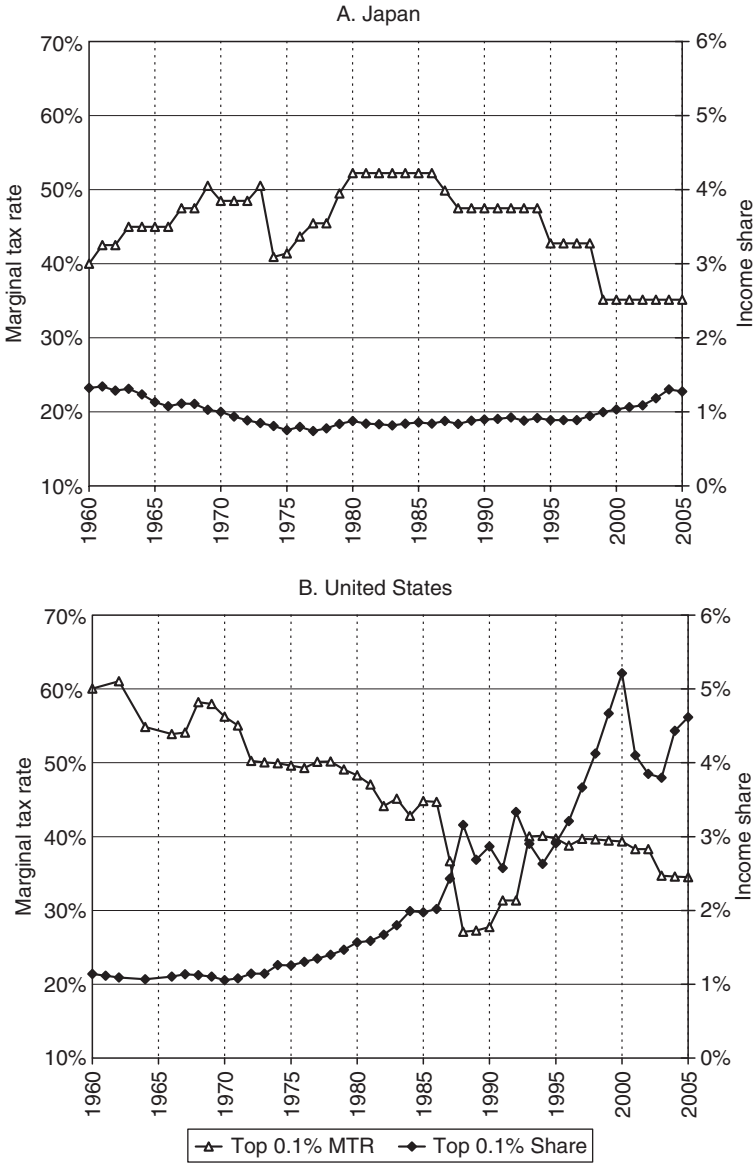

Figure 3.12 Top 0.1% wage income shares and marginal tax rates in Japan and the United States, 1960 2005

Sources: Japan, Appendix Table 3C.2 and computation by authors based on Table 3C3; USA, Saez (2004).

Notes: 'Top 0.1% MTR' refers to the effective marginal tax rate for the average tax payer in the top 0.1% wage income group with only wage income.
Marginal tax rate is estimated for an individual with non-working spouse and two dependent children.
Marginal tax rates in the USA are computed using micro tax return data and TAXSIM calculator.
Basic and dependent exemptions and employment income deductions are taken into account, but other non-standard tax reliefs and local income taxes are not included.
Social insurance contributions are defined as a fixed percentage of earnings up to the maximum earnings in both the US and Japan and therefore do not affect MTRs for the top 0.1% wage income earners. See Appendix 3C for details.

shift from tax-exempted forms of compensation to taxable compensation. Their conclusions have been challenged by subsequent studies and remain controversial (see Saez 2004 for an extensive survey). It is in this context that Japan's experience may offer a new insight. As shown in Panel A, the marginal tax rate faced by the top 0.1 per cent wage income earners in Japan has also declined by 20 percentage points between 1980 and 2005, the magnitude roughly comparable to that in the United States during the same period.[38] These reductions, however, have failed to generate supply side effects in Japan, at least until recently. The comparative experience of Japan and the United States thus also rules out tax incentives as the primary determinant of wage inequality. In case of Japan, highly developed internal labour markets, strong emphasis on firm-specific human capital, and the resulting absence of competitive markets for corporate executives might have played a key role in preventing the rise in wage inequality. By contrast, as Frydman (2005) documents, the inter-firm mobility of US executives has been increasing since the 1970s, indicating the presence of active labour markets and higher outside options for top managers in recent decades.

3.7 CONCLUDING REMARKS

In this chapter, we have studied the evolution of income concentration in Japan from 1886 to 2005 by constructing long-run series of top income shares and top wage income shares. To conclude our study, we re-evaluate Japan's historical experience from a comparative perspective.

According to our data, far from the egalitarian society that it is known for today, Japan was a nation with high income inequality during the first phase of industrialization. Although top income shares in Japan in the 1920s were extremely high by modern standards, they were roughly comparable to those of other industrial nations, such as Britain, the United States, France, Germany, and the Netherlands, during the same decade (Atkinson 2007a; Piketty and Saez 2003; Piketty 2003; Dell 2007; Atkinson and Salverda 2007). While most of these countries experienced a substantial decline in income concentration during the Great Depression, the impact of the Depression on the Japanese economy was far milder. As a result, even by international standards, Japan exhibited a high degree of income concentration on the eve of the Second World War: as of 1939, the top 1 per cent income earners received almost 20 per cent of total income in Japan, whereas the share was about 15 per cent in France, the United States, and Germany.

The top income shares in Japan then fell abruptly and dramatically during the Second World War and the impact of the war on top income shares was much

[38] The marginal tax rates in Japan and the USA exclude social security taxes and local income taxes. Including these components would not affect our comparative analysis. See notes in Figure 3.12 and Appendix 3C.

more pronounced in Japan than in the United States, or even Britain, France, and Germany. Our data indicate that this one-time income de-concentration process had a long lasting impact in Japan. We argue that the structural change of the economy after the Second World War transformed a temporary effect into a quasi-permanent one. In particular, we suggest that the fundamental changes in tax policies, corporate governance, and human resource management in the 1960s probably have prevented the re-concentration of income in Japan during the period of high economic growth. Although it is too early to say, a steady increase in top income shares in Japan over the last decade may well be a reflection of the ongoing structural change of the Japanese economy since the 1990s. This recent increase, however, is very modest compared with a dramatic increase in the income concentration in the USA and other Anglo-Saxon countries.

Finally, we draw two broader lessons from history. First, our data indicate that Japan achieved two 'economic miracles' before and after the Second World War under very different degrees of income concentration. Our findings thus cast doubt on simple relations between income inequality and economic growth often assumed in the literature, but instead suggest their complex relations to which specific institutional context matters (Banerjee and Duflo 2003). Second, according to the high-income studies, not only in Japan but in many leading industrial countries, income was once highly concentrated at the top. It was exogenous shocks such as the Great Depression and world wars, rather than endogenous technological or political process, that reduced income concentration in these countries. Consistent with the experience in many developing countries today, historical evidence underscores the difficulty of implementing drastic redistributive policies in the absence of a major exogenous impetus.

APPENDIX 3A: TOP INCOME SHARES

Definition of Income

Our primary data source is individual income tax return statistics published in *Annual Statistical Report* (*Zeimu Tokei Nenposho*) from 1887 by the Tax Bureau of Japan Ministry of Finance (*Shuzeikyoku*), renamed the National Tax Administration (*Kokuzeicho*) after 1947. Among other information, it publishes a table with the number of taxpayers residing in Japan, the amount of reported income, and the amount of income tax, by income brackets, which can be used to estimate top income shares. Note that the Tax Bureau's jurisdictional area was Japan proper and did not include colonies.

We define income as a gross income before deductions and payroll taxes paid by individuals, but after payroll taxes by employers and corporate income taxes. It includes employment income, business income, farm income, self employment income, and capital income, but excludes realized capital gains as discussed below.

We refer to the year of the annual report (the year when income tax returns were processed and tax was paid) as 'fiscal year' which may be different from 'actual year' in which the income subject to taxation was earned. Because tax laws affect the nature and definition of the reported income in the income tax statistics, we first summarize the evolution of income tax laws in Japan. Unless noted otherwise, the following description is based on Japan National Tax Administration (1988), which provides detailed history of the Japanese income tax system from 1887 to 1987.

Income Tax Laws, 1887–2005

National level individual income tax was first introduced in 1887 in Japan. During our sample period, there were three major income tax reforms in 1899, 1940, and 1947, and numerous minor revisions.

Under the 1887 income tax law, income was defined comprehensively to include capital income (interest, rents, and dividends), employment income (salaries, bonuses, benefits, and pensions), business and farm income, and other property income. It set a high exemption point (300 yen) and extremely low marginal tax rates (1.0 3.0 per cent) defined over five income brackets.

The 1899 law established income tax on three classes of income: corporate income, interest income, and individual income not included in the first two classes. Individual income tax during fiscal years 1899 1939 is thus often called 'Class III income tax'. It maintained the same exemption point (300 yen) and moderate tax rates (1.0 5.5 per cent) defined over twelve income brackets. Over the next two decades, income tax became increasingly progressive, with the highest marginal tax rate reaching 36 per cent by 1920. The tax rates were raised further by the temporary tax increase law in 1937 and the revised temporary tax increase law in 1938. Under the 1899 law, dividends and bonuses paid by corporations to individuals became non taxable. From fiscal year 1920, however, 60 per cent of dividends and bonuses became taxable, and 80 per cent from 1937. We thus correct for missing dividends and bonuses, for the fiscal years 1899 1939.

The 1940 tax reform, in preparation for the wartime economy, established separate taxes on corporate income and individual income. Individual income was subject to both schedule tax and comprehensive tax. Under the schedule tax, income was taxed at different (flat) rates by income source (i.e. real estate, dividend and interest, self employment, wage, forestry, and retirement incomes). In addition, comprehensive income tax was imposed on individuals' aggregate income above 5,000 yen with progressive tax rates that increased from 10 per cent to 65 per cent over twelve income brackets. We use the comprehensive income tax statistics in estimating top income shares for the fiscal years 1940 6.

The 1947 income tax reform, under the influence of US occupational authority, abol ished the schedule tax and established a unified comprehensive income tax. Realized capital gains became taxable for the first time in 1947. The 1947 law also introduced an extensive withholding system (*gensen choshu seido*) for wage earners. As a result, for most wage earners, income tax was withheld at source, and they were no longer required to file self assessed income tax returns (see Appendix 3C). The unified comprehensive income tax, culminating in the 1950 tax law, however, was soon replaced by the hybrid of comprehensive taxation, separate taxation withheld partially or wholly at source, and special exemptions in subsequent years. Under the hybrid system, instead of aggregating all incomes earned by an individual to apply a progressive tax rate, some incomes were taxed at flat rates separately from other incomes and some were tax exempted entirely (see below). Most important, separate taxation was introduced for interest income in 1951, for dividends in 1965, for part of real estate capital gains in 1969, which effectively gave substantial tax reduction to high income earners. Capital gains from stocks had been tax exempted from 1953 to 1988, but were taxed separately after the 1988 reform. In addition, various tax privileges had been given to small sized personal savings since 1963 until they were abolished by the 1988 tax reform.

Correspondence between Fiscal Years and Actual Years

In estimating top income shares series, it is important to know when the income reported in the tax statistics was actually earned. We first describe what the formal laws stipulated and then present our preferred specification based on how the laws were implemented. The following information is based on the tax codes reprinted in Japan National Tax Admin istration (1988).

For fiscal years 1887 98, the income tax law defined the income for tax purposes in year t as: for rents, farm income, and business income, the average of the incomes earned in previous three years (i.e. years t 1, t 2, t 3), and for interest, dividends, and employment income, projected income earned in the same year t. For fiscal years 1899 1925, all income except for farm income (which continued to be the average of previous three years) was defined as projected income earned in the same year. For fiscal years 1926 46, the law stated that the income reported for tax purposes should be based on the income earned in previous year t 1. Starting in fiscal year 1947, with the introduction of the withholding system for wage earners, income tax became a pay as you earn system, and income tax paid in year t was based on the income earned in the same year.

In summary, according to the legal definition, (1) for fiscal years 1887 98, reported income in fiscal year t corresponds to a weighted average of incomes earned in years t, t 1, t 2, and t 3; (2) for 1899 1925, reported income in fiscal year t corresponds primarily to income earned in year t; (3) for 1926 46, fiscal year t corresponds to actual year t 1; and (4) for 1947 2005, fiscal year t coincides with actual year t.

In reality, however, we believe that it was difficult for the tax authority to obtain an accurate estimate of projected income in the absence of any withholding system during fiscal years 1887 1925. In addition, not all taxpayers filed an income tax return during this period. According to the laws, taxpayers were required to file a return and report the amount of income in April each year. A locally elected committee then examined individ uals they deemed responsible for paying income tax, including those who did not file a return. The committee then determined the amount of income tax based both on the tax returns and their own enquiry. In fact, a large fraction of the people who paid income tax did not file a return (it was 48 78 per cent during 1903 25, the years for which data are available). Given this and the subsequent change in the 1926 law, we postulate that the committee was likely to rely on previous year's income as the best available estimate for projected income even before 1926, especially for those who did not file income tax returns. Thus, as our preferred specification, we assume that (1) for fiscal years 1887 1946, fiscal year t corresponds to actual year t 1; and (2) for 1947 2005, fiscal year t coincides with actual year t. Note that, due to the 1947 reform that adopted the pay as you earn system, income earned in 1946 was not subject to progressive comprehensive income tax (it was subject to special tax), and hence we do not have data for 1946. The correspondence between fiscal years (in which tax was paid) and actual years (in which income was earned) is summarized in columns (1) and (2) of Table 3A.1.

To see if our estimates are sensitive to the specification of years, we also estimate top income shares series using the legal definitions. In doing so, based on income composition data, for fiscal years 1887 98, we place 50 per cent weight on income in year t and 50 per cent weight on the simple average of incomes in years t 1, t 2, t 3. For fiscal years 1899 1925, we place 100 per cent weight on income t, as farm income constituted a relatively small portion of total income. Figure 3A.4 plots the top 0.1 per cent income share series using the legal definitions ('formal law' series), along with our series ('preferred specifica tion'). Except for years 1916 22, two series exhibit fairly similar levels and trends.

Tax Units

For fiscal years 1887 1949, the unit of income tax was 'family' defined as a married couple with dependants (e.g. children and old parents) or a single head of household with dependants. Incomes of cohabiting family members in a single household were aggregated for income tax purposes. Starting in fiscal year 1950, the unit of income tax became 'individual' whereby spouses are taxed separately on their incomes. The income tax statistics in 1950 2005 do not allow us to reconstruct household income. To produce homogeneous series over the entire period, we choose the individual as the tax unit. Fortunately, in fiscal years 1903 38 and 1949, the statistics provide a breakdown of total income into the income of household head and the income of dependants, by income brackets. According to these data, the latter is very small relative to the former (less than 5 per cent of the former in general). Hence, we substitute household income for household head's income, which leads to slight upward bias in our estimates.

Our top income groups are defined relative to the total number of adults, defined as 20 years old and above, in Japan (not including colonies). The total adult population, reported in Table 3A.1, is estimated as follows. First, we take the total population from Japan Statistics Bureau (2003: 32). Based on census data, the yearbook reports the estimated total population as of 1 January for years 1886 1919 and as of 1 October for years 1920 2005. Then we take the estimated population of people younger than 20 years old for years 1885 1920 from Ohkawa, Shinohara, and Umemura (1974: ii. 166 71).

Starting in 1920, the Japanese census, conducted every ten years, reports population by age.[39] We estimate the population of people younger than 20 years old in between census years by assuming its ratio to the total population changes linearly between census years. We define our total adult population series as the total population minus the population younger than 20 years old.

For the 1887 1949 period, we also computed top income shares using 'household' as the tax unit (the total number of households in Japan is obtained from Otsuki and Takamatsu 1982: table 1, p. 340). The results are not reported in the chapter, but available upon request. We found that the pattern of household top income shares is very similar to the pattern of individual top income shares, as the ratio of adults to households remained stable during 1885 1950 (it fluctuated between 2.65 and 2.95 with no trend).

Total Income Denominator

In order to obtain top income shares, we need to estimate the total income in Japan to be used as the denominator. This denominator should ideally be total personal income reported on tax returns *had* everybody been required to file an income tax return. As only a small fraction of households filed income tax returns before 1947, the income tax statistics cannot be used to estimate the denominator, and we must rely on National Accounts data.

System of National Accounts, 1930–2005

The System of National Accounts (SNA) in Japan has provided comprehensive estimates of national income since 1930. There are three partially overlapping series: (1) the old SNA, 1930 76, reported in Japan Statistics Bureau (1989: iii, section 13 5), (2) the 68SNA, 1955 98, reported ibid., table 3.6,[40] (3) the 93SNA, 1980 2005, reported ibid., table 3.24.[41] The SNAs are fairly detailed and provide the breakdown of personal income into the main components: wages and salaries, social contribu tions of employers and employees, personal capital income (dividends, net interest income, rents received), unincorporated business income (agricultural income, im puted rents of homeowners, and other business income).

Social contributions of employers and imputed rents are not part of the taxable individual income. Hence we define our personal income denominator as the sum of wages and salaries, employees' social insurance contributions, personal capital in come, and unincorporated business income (excluding imputed rents). The old SNA does not report imputed rents separately from received rents for 1946 76. We have estimated imputed rents for the old SNA using the 68SNA, assuming that the fraction of imputed rents in total rents for 1946 55 is equal to the fraction from 68SNA in 1955, the first year the 68SNA becomes available. Similarly, the old SNA does not report a breakdown of social contributions between employees and employers. We assume that social contributions from 1930 to 1954 are divided as in year 1955. Social contributions were very small during that period, and therefore this imput ation has a very small effect on our total income denominator.

[39] Available online at http://www.stat.go.jp/english/data/nenkan/zuhyou/y0207000.xls.
[40] Available online at http://www.stat.go.jp/english/data/chouki/index.htm.
[41] Available online at http://www.stat.go.jp/english/data/chouki/index.htm.

The 93SNA reports the returns on insurance funds separately, but this item was included in personal capital income in the old SNA and the 68SNA. We added back the returns on insurance funds to personal capital income for the 93SNA years to obtain consistent series even though the returns on insurance funds are not part of the taxable income.

Our personal income denominator is obtained from the 93SNA for the 1999 2005 period, the 68SNA for the 1955 98 period, and from the old SNA for the 1930 54 period, and then spliced together. The 93SNA and 68SNA personal income denominators are extremely close in 1998 (less than 1 per cent difference) so we do not make any correction to connect the 68SNA and 93SNA in 1998. The old SNA personal income denominator in 1955 is 4.4 per cent higher than the 68SNA in 1955. Therefore, in order to obtain homogeneous series, we have reduced old SNA personal income by 4.4 per cent so that the old SNA matches the 68SNA exactly in 1955. The old SNA does not provide estimates for 1945. Therefore, we have assumed, as in Maddison (1995), that real income in 1945 is one half of real income in 1944, based on estimates from other authors.

Personal Income Denominator, 1886–1930

We estimate the personal income denominator for the years 1886 1930 based on the series of personal disposable income in Japan proper in Ohkawa et al. (1974: i, table 8, column 9). Personal disposable income in 1930 is 11.5 per cent higher than the personal income denominator in the same year estimated above from the old SNA. Therefore, to obtain homogeneous series, we have reduced personal disposable income from 1886 to 1929 by 11.5 per cent.

It is important to note that total income estimates before 1930 are much less reliable than those after 1930, as no elaborate system of national accounts had existed. Although the estimates by Ohkawa et al. (1974) are considered most definite and reliable, there are three other national income estimates (reported in *Historical Statistics of Japan*, iii, table 13 3, pp. 344 9).

Yamada estimates from 1875 to 1948 are about 10 to 15 per cent percent higher than Ohkawa et al. estimates before 1900, comparable during the 1900 15 period, and about 10 to 20 per cent lower during 1915 30. Using Yamada estimates would have produced a more markedly increasing pattern of top income shares during the period 1885 to 1930 but would not have changed the conclusion that top income shares were much higher in the pre Second World War period than in the post war period.

Hijikata estimates from 1900 to 1937 are substantially (40 to 50 per cent) lower than Ohkawa et al. estimates during the 1900 20 period and somewhat (about 20 per cent) lower from 1920 to 1937. Thus Hijikata estimates would have led to even higher top income shares in the 1900 37 period and more declining pattern of top income shares over the 1900 37 period.

Finally, the Cabinet Bureau of Statistics series from 1887 to 1935 report substantially (about 40 per cent) higher estimates than Ohkawa et al. estimates in the 1887 95 period and then much (about 30 per cent) lower estimates in the period 1900 35. Those estimates are obtained directly from taxable income, however, and therefore the least appropriate as an independent denominator in our study.

Consumer Price Index, 1886–2005

We use a consumer price index (CPI) to deflate our nominal income series. Our CPI estimates for years 1886 1938 and 1946 50 are from Ohkawa et al. (1967: viii. 135, column 1). Estimates for 1938 46 are obtained from taking the ratios of real National Income to

nominal National Income from *Historical Statistics of Japan*, p. 7, and pasted to the Okhawa estimates. For the 1950 2005 period, our CPI estimates are from *Japan Statistical Yearbook*. Then the pre and post 1950 series are spliced together. The price index (with base 100 in 2002) is reported in Table 3A.1, column (9). The total real personal income denominator and average personal income per adult are reported in columns (7) and (8) in Table 3A.1.

Top Income Numerator

For the numerator, we estimate the income accrued to top income groups (e.g. top 0.01 per cent, 0.1 per cent, 0.5 per cent, 1 per cent, etc.), defined relative to the total adult population, as follows. Because the top tail of the income distribution is well approximated by a Pareto distribution, we estimate Pareto coefficients bracket by bracket for each year using the distribution tables in the income tax statistics. We employ the same parametric interpolation method, as in Piketty and Saez (2003), to estimate threshold income levels for the top income groups. We obtain the top income numerators for the respective top income groups simply by aggregating all incomes above the thresholds.

In almost all years up to the late 1970s, the top bracket contains fewer than the top 0.01 per cent individuals. For recent decades, however, the top bracket contains about the top 0.05 per cent individuals. We thus extrapolate within the top bracket assuming a constant Pareto parameter within the top bracket. Starting in 2005 (the latest year available), the tax administration made available a distribution table with much finer income brackets at the top.[42] According to these data, our extrapolation method within the top bracket in fact provides a fairly close (within 5 per cent) estimate for year 2005.

To produce homogeneous series, the income definition in the statistics has to be consistent across years. Below, we discuss major corrections we made to the original data to ensure consistency.

Combining Self-Assessed Income Tax Statistics and Wage Income Tax Statistics, 1951–2005

Our primary data source for the post 1947 period is the self assessed income tax statistics that are summarized in *Annual Statistical Report*, 1947 2005, and published in more detail in the results of the sample survey for self assessed income tax in the *Survey on Self Assessed Income Tax* since 1963.[43] Due to the extensive and sophisticated withholding system, most individuals in Japan with only employment or pension income are not required to file self assessed income tax returns. Typically, at the end of the year, there is an adjustment in the last amount withheld so that total tax withheld coincides exactly with total income tax due. As a result, although most income earners in Japan paid income taxes in 1951 2005, only 10 15 per cent of all adults filed tax returns each year. That is to say, a large number of income earners are missing from the self assessed income tax statistics.

Fortunately, the Japanese tax administration also publishes wage income tax statistics that cover most private wage earners regardless of whether they filed tax returns. We use these statistics to complement the self assessed income tax statistics. As described in Appendix 3C, the data include the distribution (by wage income brackets) of annual

[42] Available at: http://www.nta.go.jp/category/toukei/tokei/h17/hyouhon.htm.

[43] National Tax Administration (1963 2005), *Shikoku Shookuzei no Jittai*, which is available online for recent years at: http://www.nta.go.jp/category/toukei/tokei e.htm.

wage income for virtually all employees in the private sector, but exclude government employees and retirees. We inflate the survey distribution by a uniform 10 per cent factor in order to account for the people not included in the wage income survey. This is equivalent to assuming that their income distribution is the same as that of private sector employees, which probably introduces a slight upward bias in our estimates.

We then combine the self assessed income tax statistics and the wage income tax statistics to obtain a complete income distribution. The key difficulty is that those wage earners (1) who have income larger than 200,000 yen from other sources, (2) whose employment income exceeds 20 million yen, and (3) who receive wages from two or more employers during the year are required to file self assessed income tax returns. Thus, before combining the wage income statistics and the self assessed statistics, we have to subtract wage earners filing tax returns from the wage income survey. We use the income composition data from the self assessed income tax statistics to do so.

Starting in 1963, the composition tables in the statistics present the number of wage earners (defined as taxpayers with any wage income) and the reported wage income, by income bracket. From those statistics, we estimate a distribution of wage income (by wage income brackets) for those wage income earners who filed tax returns. We obtain such a distribution by assuming that the ranking by total income and the ranking by wage income are the same. For example, in 2005, the self assessed income tax statistics report that there are 40,035 filers in the top income bracket of incomes above 50 million yen. Those filers report on average 94.260 million yen. Among those 40,035 filers, 29,916 report some wage income, and the total wage income reported in the top bracket by those 29,916 wage earners is 1,227 billion yen. We assume that the top bracket of the wage income distribu tion contains 29,916 wage earners reporting on average 41.021 million yen (1,227 billion divided by 29,916) of wage income. We repeat this procedure for each bracket. We then need to estimate the wage income thresholds corresponding to those brackets. We proceed as follows. We first estimate the wage share in each bracket as the ratio of the average wage income in the bracket (41.021 million yen in the example given above) divided by the average total income in the bracket (94.260 million yen in the example given above). We then estimate the wage income thresholds corresponding to those brackets as the threshold for total income (50 million yen in the example given) times the mean of the wage share in the corresponding bracket and the bracket just below (in the example given above, these are the brackets 50 million and above, and 20 to 50 million yen respectively).

The above procedure generates a distribution of wage income by brackets for wage earners filing tax returns. We then subtract out this distribution from the wage income distribution based on the wage income tax statistics. This subtraction is done by assuming that the two distributions are Pareto distributed bracket by bracket. The resulting net distribution represents all wage income earners who did not file tax returns. Finally, we add this net distribution to the original self assessed income distribution (using the same Pareto interpolation method) to obtain the final wage income distribution.

The key assumption underlying this method is that, among the self assessed income tax return filers with positive wage income, the ranking by total income is identical to the ranking by wage income. If this assumption is not met, then our method would overstate the number of high wage filers in the final distribution and hence create small upward bias in our top income share estimates. For the analysis of income inequality, it would be extremely valuable if the tax administration produces aggregated tables that show the distribution of income earners regardless of whether a self assessed income tax return was filed.[44]

[44] Currently, the administration does not compile such data even for internal purposes.

For years 1951 62, the self assessed income tax statistics did not report wage income or the number of wage income earners by income brackets, but only in the aggregate. As a result, for these years, we first estimate top income shares by adding wage income earners from the wage survey to the self assessed income tax statistics (without making the correction described above). We then correct top income share estimates for years 1951 62 by the ratio of estimates for 1963 with the correction applied to estimates for 1963 where the correction is not applied.

Removing Capital Gains, 1947–2005

For fiscal years 1887 1946, although never explicitly stated in the income tax laws, from the fact that no capital gains were reported in the composition data, we conclude that capital gains were not subject to individual income tax during this period. Since 1947, realized capital gains have become taxable, but they have been subject to special exemp tions and separate taxation that changed over time (Ishi 2001: 143 4). Because (1) capital gains reported in the self assessed income tax statistics are the taxable value after special exemptions and deductions[45] and (2) those capital gains whose tax was entirely withheld at source are not reported in the statistics, even after 1947, our data capture only part of realized capital gains.[46] To obtain consistent estimates, we remove capital gains from our data for the 1947 2005 period as follows.

We first compute the share of realized capital gains in each top income group using the income composition data by brackets and simple linear interpolation (as in Piketty and Saez 2003). Second, we subtract 80 per cent of the realized capital gain component from our top income share estimates. For example, if the top 1 per cent income share with capital gains is 6 per cent, and the share of capital gains is 50 per cent, we estimate the top 1 per cent income share as 6*(1 0.5*0.8)=3.6 per cent. Removing 100 per cent of the capital gain component would bias the income shares downwards, as the ranking of taxpayers by income excluding capital gains is not necessarily equal to the ranking including capital gains. This issue also arises in the US study by Piketty and Saez (2003) and the Canadian study by Saez and Veall (2005). Using micro data where it is possible to estimate income shares with and without capital gains, Saez and Veall (2005) conclude that the 80 per cent rule generates fairly accurate estimates.

[45] Based on the author's phone conversation with a Japan Tax Administration officer on 5 May 2006.

[46] Capital gains from stocks were taxed under comprehensive income tax in 1947 53, but were tax exempted in 1953 88 except for the cases involving large volume and frequent trading. From 1989 to 2005, capital gains from stocks are either taxed separately and withheld at source (and thus missing from our data) or taxed separately as part of self assessed income tax (included in our data). In 2001 3, for capital gains from listed stocks held for more than 1 year, special deduction of 1 million yen was granted (thus under reported in our data). Capital gains from bonds are not taxed throughout the 1947 2005 period. Capital gains from real estate (mostly land) were taxed under comprehensive income tax in 1947 68 after certain deduction, but for long term capital gains (real estate held for more than three years), only 50% of the amount after deduction was taxed (thus under reported in our data). From 1969 to 1975, long term capital gains (real estate held for more than five years) were taxed separately at flat rates as part of self assessed income tax. In 1976 88, part of long term capital gains from real estate were taxed under comprehensive income tax. From 1989 to 2005, all long term capital gains from real estate were taxed separately as part of self assessed income tax, but with numerous special deductions and tax rates depending on the nature and usage of land (thus under reported in our data).

Although we do not know if the 80 per cent rule applies also to the case of Japan, the following observation provides some assurance. If the correction factor is too large (such as excluding 100 per cent of realized gains), then when capital gains surge, the series excluding capital gains should dip. If the correction factor is too small, then when capital gains surge, the series excluding capital gains should rise. In Figure 3A.1, we present the top 0.1 per cent income share series with and without realized capital gains for the post 1947 period. It shows that the series without capital gains are fairly stable during the two periods of asset appreciation, first in the early 1970s and then in the late 1980s. This suggests that the 80 per cent rule for correcting capital gains is fairly adequate. To further improve our methodology, it would be necessary to have an access to individual micro data in Japan.

According to Figure 3A.1, realized capital gains in fact had a large impact on the top 0.1 per cent income share during the two episodes of asset appreciation as well as in recent years. As noted above, however, capital gains reported in the self assessed income tax statistics are subject to considerable underestimate. The series including full capital gains would thus display even larger spikes in the early 1970s and late 1980s. Nevertheless, the figure indicates that the impact of capital gains on the top shares tends to be short lived, as capital gains in general are realized in a lumpy manner and do not constitute a source of steady annual income. We thus believe that the inclusion of capital gains would not change the *long run* trends in the top income shares series. Furthermore, although we suspect that realized capital gains from land and stocks are much higher in the post war period than in the pre war period, it must be noted that the distributions of land and stocks were probably much more equal after the Second World War than before. Thus the inclusion of capital gains would not change our main finding that income concentration fell drastically from the pre war period to the post war period.

Erosion of Comprehensive Income Tax Base, 1950–2005

Soon after the introduction of the unified comprehensive income tax system in 1947 50, the Japanese government began to give special tax measures to various components of income (see Ishi 2001: chapter 8; Iwamoto, Fujishima, and Akiyama 1995). As a result, the erosion of comprehensive income tax base poses a potentially serious problem for us when using the income tax statistics. These special measures are: (1) full exemption from taxation (*hikazei*), (2) separate taxation at a flat rate with its tax entirely withheld at source (*gensen bunri kazei*), and (3) separate taxation at flat rate that is only partially withheld at source and requires self assessed income tax returns (*shinkoku bunri kazei*). While income subject to (3) is included in the self assessed income tax statistics, income subject to (1) and (2) is missing from these statistics.

According to the estimates by Iwamoto, Fujishima, and Akiyam (1995), before the 1988 reform, 70 80 per cent of total interest income was tax exempted under the tax privilege given to small sized personal savings, 20 per cent was taxed separately and withheld at source, and only 0.3 per cent was subject to progressive comprehensive income tax. After the 1988 reform, only 20 per cent of total interest income was tax exempted, but almost 80 per cent was taxed separately and withheld at source, leaving less than 0.1 per cent of interest income under the comprehensive income tax. For dividend income, about 70 per cent was taxed separately and withheld at source, and 30 per cent was subject to compre hensive taxation throughout the 1980 2005 period.

Consequently, virtually all interest income and about 70 per cent of dividend income are missing from the income tax statistics in recent decades. Ishi (1979, 2001) has attempted to compute a comprehensive income base in order to assess the effect of tax erosion on taxes

collected, using unpublished data obtained from the fiscal administration. In our chapter, we do not try to incorporate missing interest and dividend income directly in our estimates but rather assess the sensitivity of our estimates to those missing components using a wealth survey as described in Appendix 3D.

Imputing Missing Capital Income, 1898–1938

During fiscal years 1887 98, the income tax base was comprehensive, fully including dividends, interest, and bonuses. During fiscal years 1899 1920, dividend, bonuses, and part of interest income were excluded from Class III income and hence disappeared from the statistics. From August of 1920 to 1936, 60 per cent of dividends and bonuses were included in Class II income, 80 per cent from 1937 to 1939, and 100 per cent after 1940. Interest income was fully included again starting only in fiscal year 1940. These changes potentially create discontinuities in our data, especially for top income groups to which capital income constituted a large share.

First, for fiscal years 1921 39, we can recover missing dividends and bonuses from total reported dividends and bonuses in the Class III income tax statistics, because we know that a fixed percentage of dividends and bonuses are taxed (60 per cent in 1921 36 and 80 per cent in 1937 9). For fiscal years 1899 1920, no dividends or bonuses are reported, and therefore we have to rely on an alternative source to estimate dividends and bonuses. From fiscal years 1899 1939, corporate income was taxed separately as Class I income tax (we assume that for corporate income, fiscal year t corresponds to actual year t 1). For 1921 39, we can thus estimate corporate profits, using Class I income tax statistics, and total dividends and bonuses paid out to individuals, using Class III income tax statistics. During 1921 35, about 50 per cent of corporate profits were paid out as dividends and about 20 per cent of corporate profits were paid out as bonuses. For 1936 8, corporate profits were very high (around 12 15 per cent of the total personal income denominator), but dividends did not exceed 5 per cent of the total personal income. Therefore, we assume that 50 per cent of corporate profits were paid out as dividends in 1899 1920, up to 5 per cent of total personal income (the 5 per cent rule was binding during the high profit years 1915 18). We also assume that 20 per cent of corporate profits were paid out as bonuses in 1899 1920, up to 2 per cent of total personal income.

Second, we assume that 75 per cent of those missing dividends and bonuses go to the top 1 per cent income earners, 68 per cent to the top 0.5 per cent, 52 per cent to the top 0.1 per cent, 43 per cent to the top 0.05 per cent, and 27 per cent to the top 0.01 per cent. Those percentages are based on the relative composition of dividend income in top groups in the United States in 1916 in the analysis of Piketty and Saez (2003). We reluctantly use this assumption in the absence of the equivalent income composition data for Japan before 1947. Figure 3A.2 presents top 0.1 per cent income share series before and after the corrections for actual years 1898 1938. As the figure shows, our method smoothes most of the discontinuities in the raw data due to the capital income exclusions and seems therefore acceptable.

We have not made any correction for exempted interest income for fiscal years 1899 1939. From 1899 to 1919, only a small fraction of interest income (interest income from public bonds only) was excluded from Class III income tax. It was taxed separately at source (regardless of one's income level) as Class II income, and represented less than 1 per cent of the total personal income denominator. Starting in August of 1920, in addition to public bond interest, interest from bank deposits was also excluded from Class III income and moved to Class II income. As a result, the ratio of Class II income to the total personal

income denominator jumped from less than 1 per cent to about 5 per cent in 1921. The total interest income reported in Class III income tax statistics, however, shows no break, implying that the top income earners did not have much bank deposit interest. Therefore, we assume that no correction is necessary for these interest income exclusions. In addition, for fiscal years 1913 39, for income less than certain amounts, 10 to 20 per cent of employment income was tax exempted and excluded from the Class III income statistics. Again, we do not correct for this exemption, as it was not a significant amount for top income earners.

Top Income Composition, 1886–2005

The composition of reported income by income source is published in the income tax statistics at the aggregate level for fiscal years 1887, 1901 46, and 1951 62, and by income brackets for fiscal years 1947 50 and 1963 2005. Using these data, we estimate the composition of the income accrued to the top 1 per cent income group. Although a finer decomposition can be done, we use five income categories: (1) employment income (wages, salaries, bonuses, and pensions), (2) business income (unincorporated business profits, farm income, and self employment income), (3) rental income (rents from farmland, residential land, residential buildings, and business buildings), (4) interest income, and (5) dividends. Table 3A.3 reports the fraction of the people filing income tax returns and the composition of the top 1 per cent income.

For fiscal years 1887 1946, aggregate composition data are available in 1887 and 1901 46 (thus there is no estimate for actual years 1887 99 and 1946). The categories of income composition changed over the years. For fiscal years 1887 and 1901 39, the income from 'farmland (*tahata*)' includes both farm income from selling crops from the land (labelled 'owner cultivator (*jisaku*)') and rental income from leasing the land to tenants (labelled 'tenant (*kosaku*)').[47] For 1917 39, the breakdown of the farmland income is reported in the statistics. For 1887 and 1901 16, because no such breakdown is given, we estimate the amount of rental income included in the farmland income, using the ratio of rental income to the farmland income in 1917 (the first year for which the breakdown is available). For fiscal years 1901 39, we use the imputed value of dividends and bonuses in computing the income composition.

As the composition data by income brackets are not available before 1947, our estimate for the top 1 per cent income composition in 1886 1945 is simply the composition of the total income reported in the income tax statistics. Because the fraction of population filing income tax returns fluctuated from year to year depending on exemption points and the conditions of the economy, our top income composition series are not consistent over these years. In particular, between 1906 and 1925, relatively high fractions of adults (2.5 per cent to 4.6 per cent) filed income tax returns. If we assume that the share of capital income increases with income, our estimates for these years probably understate the share of capital income in the top 1 per cent income compared to other years.

For fiscal years 1947 50 and 1963 2005, the composition of the top 1 per cent income is estimated from composition data by income brackets, using a linear Interpolation method as in Piketty and Saez (2003). (We provide no estimates for 1951 62. For 1963 2005, we provide estimates only twice a decade.) Realized capital gains are removed as described above. It is important to note that, as explained earlier, almost all interest income after

[47] These definitions are explicitly stated for the first time in Japan Ministry of Finance (1938: 36, note 3 a).

1947 and large part of dividends after 1965 are taxed separately at source and thus missing from the income composition. In addition, the introduction of the withholding system for wage earners in 1949 probably reduced the degree of tax evasion in wage income, contributing to a sudden increase in the share of employment income in 1947 50. In order to assess these issues, we compare the composition of the top income based on the tax statistics with the composition of the total personal income based on National Accounts.

In Figure 3A.3, Panel A shows the composition of the top 1 per cent income, and Panel B shows the composition of the total personal income denominator estimated from National Accounts from 1930 to 2005. It is important to keep in mind that (1) imputed rents are excluded from the total personal income because they are not included in the income tax statistics; but (2) returns on insurance funds (which are not taxable and not included in income tax statistics) are included and distributed among the dividend and interest incomes in the total personal income. As mentioned above, we cannot separate the returns from insurance funds from dividends and interest except for recent years with the SNA98 series. The SNA98 data show that over half of dividends are actually earned through insurance funds. As a result, the total personal income estimated from National Accounts would show a larger fraction of capital income than the total income in income tax returns had everybody been required to file a tax return.

Comparing Panels A and B is nevertheless instructive. In 1930, the top 1 per cent income group received a far larger share of their income as dividends (33 per cent) than the national average (3 per cent), but they received smaller shares of income as interest income (2 per cent) and employment income (30 per cent) than the national averages (15 per cent and 45 per cent, respectively). Note that, as in the top 1 per cent income, the capital income component in total personal income declined sharply during 1937 47 from 20 per cent to less than 1 per cent. The dividend component in the total personal income had recovered to its pre Second World War share by 1980, but the shares of interest and rental income components have remained relatively low. Finally, the employment income component in total personal income fell sharply in 1944 6 and then increased substantially from 1947 to 2005 at the expense of the business income component. But its rise during 1948 50 was much smaller than that in the top 1 per cent income share, indicating that the sudden increase in the latter is probably due to the introduction of the withholding system.

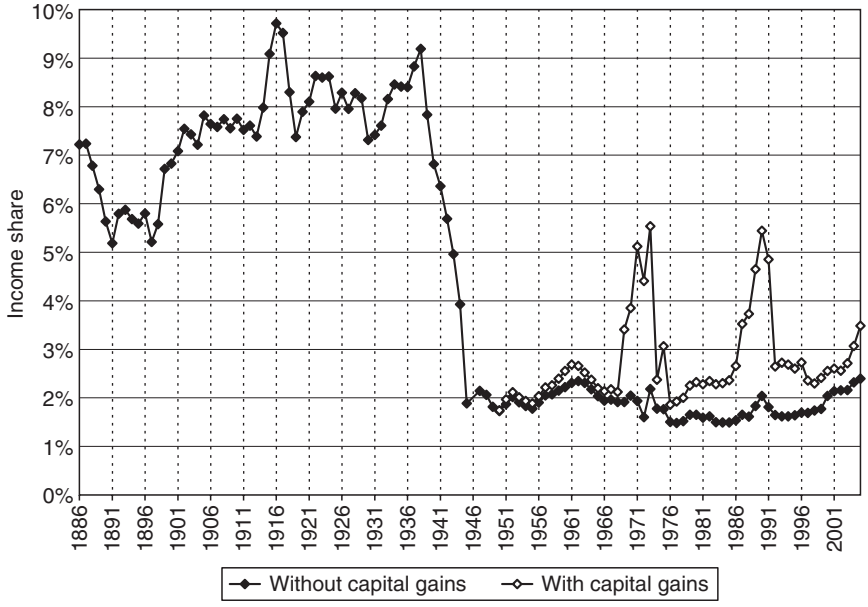

Figure 3A.1 Top 0.1% income share in Japan with and without capital gains

Sources: Series without capital gains, Appendix Table 3A.2; series with capital gains based on authors' computations.

Notes: Realized captal gains are not taxable and not included in the income tax return statistics in 1886–1945. In 1947–2005, only part of realized capital gains are reported in the statistics due to special tax treatments. See Appendix 3A for details.

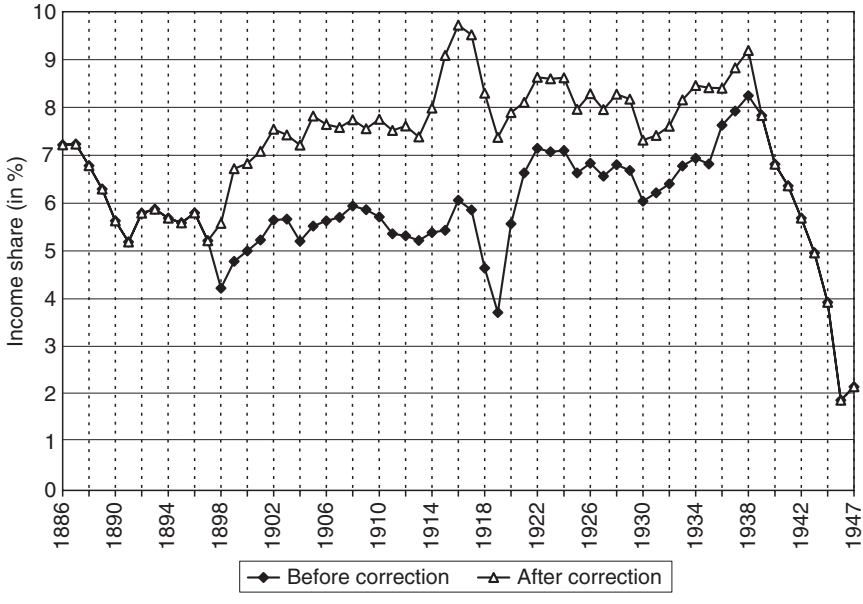

Figure 3A.2 Top 0.1% income share in Japan before and after correction, 1886 1947

Sources: Series after correction, Appendix Table 3A.2; series before correction based on authors' computations.

Notes: Dividends and bonuses are fully exempted from individual income tax in 1898–1919 and partially exempted in 1920–38. See Appendix 3A for the method of correction.

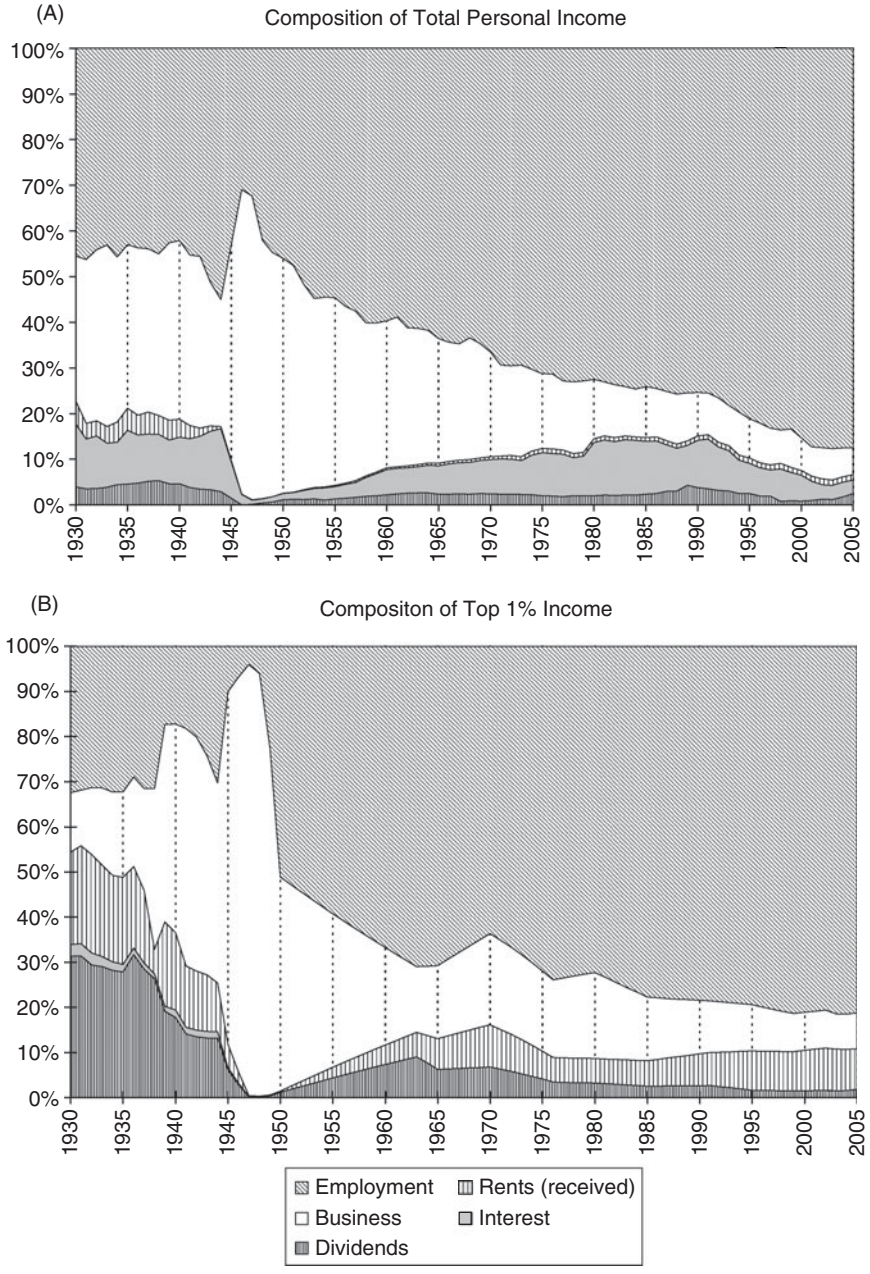

Figure 3A.3 Composition of total personal income and top 1% income, Japan 1930 2005

Notes: Panel A presents the composition of total personal income denominator based on National Accounts. Panel B presents the composition of top 1% income based on Appendix Table 3A.3. Imputed rents are excluded from rents in Panel A to be comparable to Panel B.

Returns on insurance policices are included in dividends and interest in Panel A.

All returns on insurance policies after 1947, almost all interest income after 1947, and large part of dividends after 1965 are not included in Panel B. See Appendix 3A for details.

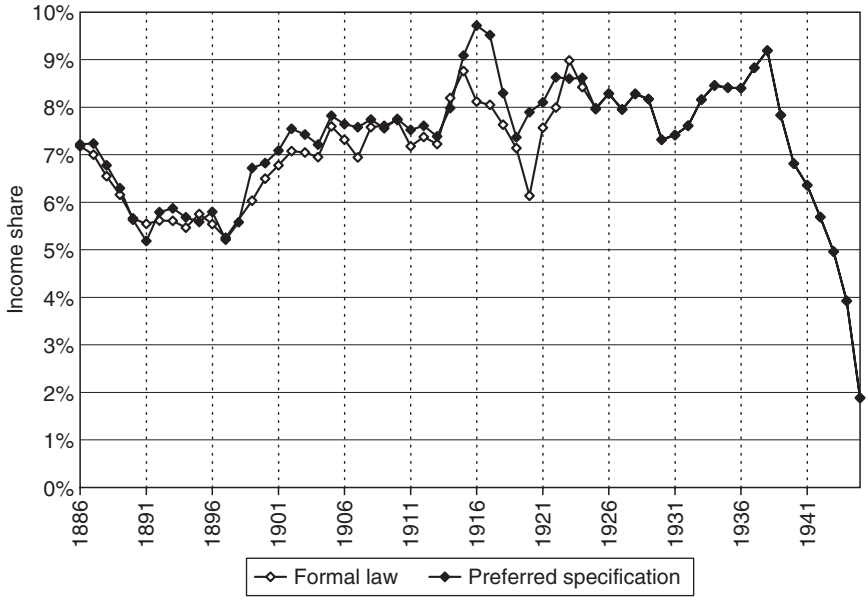

Figure 3A.4 Top 0.1% income share in alternative specification of years, Japan 1886 1945

Notes: 'Preferred Specification' series are from Appendix Table 3A.2; 'Formal Law' series are by authors' computation.
In 'Formal Law' series, actual years are defined based on the income tax laws' stipulations.
For the definition of 'Preferred Specification' series, see Appendix 3A.

Table 3A.1 Reference totals for population, income, inflation, and marginal tax rates, Japan, 1886 2005

Years			Population and Tax units				Income		Inflation	MTR
(1)	(2a)	(2b)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Actual Year, (incomes earned in)	Fiscal Year (tax paid in)	Fiscal Year (Japanese Calendar)	Population ('000s)	Number of adults ('000s)	Number of tax returns ('000s)	(5)/(4) (%)	Total income (2002 billion yen)	Average income (2002 '000 yen)	CPI (2002 base 100)	Top Marginal Tax Rate (%)
1886	1887	20	38,541	21,853	118.6	0.54	3,708	170	0.0151	3.0
1887	1888	21	38,703	21,908	139.5	0.64	3,552	162	0.0161	3.0
1888	1889	22	39,029	22,054	115.6	0.52	3,867	175	0.0158	3.0
1889	1890	23	39,473	22,267	115.4	0.52	4,072	183	0.0168	3.0
1890	1891	24	39,902	22,471	115.9	0.52	4,363	194	0.0179	3.0
1891	1892	25	40,251	22,629	117.1	0.52	4,991	221	0.0171	3.0
1892	1893	26	40,508	22,734	124.1	0.55	5,186	228	0.0160	3.0
1893	1894	27	40,860	22,892	129.3	0.56	5,438	238	0.0161	3.0
1894	1895	28	41,142	23,011	134.7	0.59	5,943	258	0.0167	3.0
1895	1896	29	41,557	23,203	151.7	0.65	6,387	275	0.0182	3.0
1896	1897	30	41,992	23,405	172.8	0.74	6,222	266	0.0201	3.0
1897	1898	31	42,400	23,623	195.3	0.83	6,636	281	0.0224	3.0
1898	1899	32	42,886	23,884	288.6	1.21	6,754	283	0.0243	5.5
1899	1900	33	43,404	24,162	349.5	1.45	7,425	307	0.0229	5.5
1900	1901	34	43,847	24,399	406.3	1.67	6,808	279	0.0257	5.5
1901	1902	35	44,359	24,674	457.9	1.86	7,117	288	0.0251	5.5
1902	1903	36	44,964	25,000	507.9	2.03	6,928	277	0.0261	5.5
1903	1904	37	45,546	25,313	543.0	2.15	7,111	281	0.0274	9.4
1904	1905	38	46,135	25,630	580.5	2.27	8,021	313	0.0281	20.4
1905	1906	39	46,620	25,889	638.4	2.47	7,614	294	0.0291	20.4
1906	1907	40	47,038	26,110	702.4	2.69	7,827	300	0.0297	20.4
1907	1908	41	47,416	26,234	860.0	3.28	7,864	300	0.0328	20.4
1908	1909	42	47,965	26,452	930.4	3.52	8,079	305	0.0317	20.4

1909	1910	43	48,554	26,689	947.6	3.55	8,453	317	0.0305	20.4
1910	1911	44	49,184	26,947	964.5	3.58	8,738	324	0.0305	20.4
1911	1912	1	49,852	27,223	1,013.5	3.72	9,290	341	0.0328	20.4
1912	1913	2	50,577	27,528	707.9	2.57	9,342	339	0.0346	22.0
1913	1914	3	51,305	27,832	727.1	2.61	9,602	345	0.0357	22.0
1914	1915	4	52,039	28,137	718.2	2.55	9,760	347	0.0329	22.0
1915	1916	5	52,752	28,427	712.6	2.51	11,040	388	0.0308	22.0
1916	1917	6	53,496	28,732	771.0	2.68	12,513	436	0.0332	22.0
1917	1918	7	54,134	29,046	779.5	2.68	14,128	486	0.0408	30.0
1918	1919	8	54,739	29,341	1,079.8	3.68	15,488	528	0.0549	30.0
1919	1920	9	55,033	29,469	994.2	3.37	15,556	528	0.0730	36.0
1920	1921	10	55,963	29,937	1,168.2	3.90	14,618	488	0.0764	36.0
1921	1922	11	56,666	30,283	1,280.9	4.23	14,615	483	0.0700	36.0
1922	1923	12	57,390	30,639	1,400.5	4.57	15,192	496	0.0690	36.0
1923	1924	13	58,119	30,997	1,389.9	4.48	14,726	475	0.0683	36.0
1924	1925	14	58,876	31,369	1,432.3	4.57	15,022	479	0.0689	36.0
1925	1926	1	59,737	31,796	804.4	2.53	15,885	500	0.0698	36.0
1926	1927	2	60,741	32,298	732.2	2.27	16,380	507	0.0666	36.0
1927	1928	3	61,659	32,805	693.8	2.11	17,008	518	0.0656	36.0
1928	1929	4	62,595	33,323	700.5	2.10	17,653	530	0.0631	36.0
1929	1930	5	63,461	33,803	677.9	2.01	17,717	524	0.0617	36.0
1930	1931	6	64,450	34,350	569.0	1.66	18,521	539	0.0554	36.0
1931	1932	7	65,457	34,907	528.2	1.51	18,558	532	0.0490	36.0
1932	1933	8	66,434	35,449	569.6	1.61	19,515	551	0.0496	36.0
1933	1934	9	67,432	36,002	629.7	1.75	20,430	567	0.0511	36.0
1934	1935	10	68,309	36,491	679.3	1.86	20,914	573	0.0518	36.0
1935	1936	11	69,254	37,018	740.7	2.00	22,612	611	0.0531	36.0
1936	1937	12	70,114	37,499	815.2	2.17	23,754	633	0.0543	65.8
1937	1938	13	70,630	37,646	1,226.6	3.26	24,982	664	0.0585	55.0
1938	1939	14	71,013	37,921	1,404.0	3.70	25,666	677	0.0641	55.0
1939	1940	15	71,380	38,260	219.2	0.57	26,544	694	0.0802	65.0
1940	1941	16	71,933	38,686	266.0	0.69	25,016	647	0.1021	65.0
1941	1942	17	72,218	38,879	726.3	1.87	25,727	662	0.1137	72.0
1942	1943	18	72,880	39,275	878.6	2.24	24,509	624	0.1387	72.0

(*continued*)

Table 3A.1 Continued

Years			Population and Tax units				Income		Inflation	MTR
(1)	(2a)	(2b)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Actual Year, (incomes earned in)	Fiscal Year (tax paid in)	Fiscal Year (Japanese Calendar)	Population ('000s)	Number of adults ('000s)	Number of tax returns ('000s)	(5)/(4) (%)	Total income (2002 billion yen)	Average income (2002 '000 yen)	CPI (2002 base 100)	Top Marginal Tax Rate (%)
1943	1944	19	73,903	39,867	1,053.9	2.64	24,277	609	0.1595	74.0
1944	1945	20	74,433	40,194	1,114.6	2.77	23,415	583	0.1960	74.0
1945	1946	21	72,147	38,999	343.3	0.88	11,690	300	0.9026	67.0
1946			75,750	40,988			14,104	344	2.56	
1947	1947	22	78,101	42,303	7,290.9	17.23	15,986	378	5.76	75.0
1948	1948	23	80,002	43,377	7,399.8	17.06	17,467	403	10.58	85.0
1949	1949	24	81,773	44,382	7,609.9	17.15	20,063	452	11.93	85.0
1950	1950	25	84,115	45,700	4,318.1	9.45	22,065	483	12.99	55.0
1951	1951	26	84,541	46,410			24,853	536	15.19	55.0
1952	1952	27	85,808	47,591			26,446	556	16.03	55.0
1953	1953	28	86,981	48,734			28,885	593	17.08	65.0
1954	1954	29	88,239	49,938			30,137	603	18.12	65.0
1955	1955	30	90,077	51,488			33,545	652	18.02	65.0
1956	1956	31	90,172	52,053			36,977	710	18.12	65.0
1957	1957	32	90,928	53,004			39,694	749	18.65	70.0
1958	1958	33	91,767	54,012			42,095	779	18.54	70.0
1959	1959	34	92,641	55,051			46,773	850	18.75	70.0
1960	1960	35	94,302	56,572			52,292	924	19.49	70.0
1961	1961	36	94,287	57,255			59,791	1,044	20.43	70.0
1962	1962	37	95,181	58,496			63,838	1,091	21.90	75.0
1963	1963	38	96,156	59,801			68,886	1,152	23.47	75.0
1964	1964	39	97,182	61,153			76,764	1,255	24.41	75.0

1965	1965	40	99,209	63,156	81,472	1,290	25.98	75.0
1966	1966	41	99,036	63,773	87,954	1,379	27.34	75.0
1967	1967	42	100,196	65,256	96,852	1,484	28.39	75.0
1968	1968	43	101,331	66,739	109,011	1,633	29.96	75.0
1969	1969	44	102,536	68,285	119,546	1,751	31.53	75.0
1970	1970	45	104,665	70,471	129,768	1,841	33.94	75.0
1971	1971	46	106,100	71,661	138,988	1,940	35.93	75.0
1972	1972	47	107,595	72,898	154,441	2,119	37.61	75.0
1973	1973	48	109,104	74,150	174,040	2,347	42.01	75.0
1974	1974	49	110,573	75,382	175,373	2,326	52.28	75.0
1975	1975	50	111,940	76,550	178,345	2,330	58.46	75.0
1976	1976	51	113,094	77,578	182,870	2,357	64.01	75.0
1977	1977	52	114,165	78,554	183,911	2,341	69.14	75.0
1978	1978	53	115,190	79,502	190,195	2,392	71.66	75.0
1979	1979	54	116,155	80,413	197,947	2,462	74.28	75.0
1980	1980	55	117,060	81,286	199,280	2,452	80.25	75.0
1981	1981	56	117,902	82,375	201,987	2,452	84.12	75.0
1982	1982	57	118,728	83,459	206,147	2,470	86.43	75.0
1983	1983	58	119,536	84,537	211,201	2,498	88.00	75.0
1984	1984	59	120,305	85,595	216,423	2,528	89.99	70.0
1985	1985	60	121,049	86,641	222,426	2,567	91.77	70.0
1986	1986	61	121,660	87,598	228,851	2,613	92.19	70.0
1987	1987	62	122,239	88,536	233,389	2,636	91.98	60.0
1988	1988	63	122,745	89,427	243,536	2,723	92.40	60.0
1989	1989	1	123,204	90,288	255,023	2,825	94.60	60.0
1990	1990	2	123,611	91,114	267,838	2,940	97.53	50.0
1991	1991	3	124,101	92,200	279,382	3,030	100.68	50.0
1992	1992	4	124,567	93,273	283,116	3,035	102.35	50.0
1993	1993	5	124,938	94,281	280,026	2,970	103.51	50.0
1994	1994	6	125,265	95,259	280,972	2,950	104.03	50.0
1995	1995	7	125,570	96,224	278,334	2,893	103.71	50.0
1996	1996	8	125,864	97,185	280,772	2,889	103.71	50.0
1997	1997	9	126,166	98,155	280,338	2,856	104.65	50.0

(*continued*)

Table 3A.1 Continued

Years			Population and Tax units				Income		Inflation	MTR
(1)	(2a)	(2b)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Actual Year, (incomes earned in)	Fiscal Year (tax paid in)	Fiscal Year (Japanese Calendar)	Population ('000s)	Number of adults ('000s)	Number of tax returns ('000s)	(5)/(4) (%)	Total income (2002 billion yen)	Average income (2002 '000 yen)	CPI (2002 base 100)	Top Marginal Tax Rate (%)
1998	1998	10	126,486	99,142			274,392	2,768	104.54	50.0
1999	1999	11	126,686	100,039			270,310	2,702	103.82	37.0
2000	2000	12	126,926	100,970			269,971	2,674	102.47	37.0
2001	2001	13	127,291	101,642			264,609	2,603	100.91	37.0
2002	2002	14	127,480	102,175			257,286	2,518	100.00	37.0
2003	2003	15	127,687	102,724			255,669	2,489	99.70	37.0
2004	2004	16	127,776	103,281			254,820	2,467	99.70	37.0
2005	2005	17	127,757	103,830			258,324	2,488	99.39	37.0

Notes: Computation by authors: see Appendix 3A for details.
Actual year is the year in which income subject to taxation was earned, and fiscal year is the year in which tax returns were processed and income tax was paid.
Tax unit is defined as adult individual with age 20 and above.
Population estimates are based on Census data.
Number of tax returns are based on income tax return statistics.
Total income is based on personal disposable income from Ohkawa et al. (1974) for 1886–1930 and personal income from National Accounts for 1930–2005.
CPI is from Ohkawa et al. (1967) for 1886–1950 and *Japan Statistical Yearbook* for 1950–2005.
Top marginal tax rate is the highest statutory marginal tax rate from the National individual income tax stipulated by the law before exemptions and deductions.

Table 3A.2 Top income shares in Japan, 1886 2005

Year	Top 5% (1)	Top 1% (2)	Top 0.5% (3)	Top 0.1% (4)	Top 0.01% (5)	Top 5 1% (9)	Top 1 0.5% (10)	Top 0.5 0.1% (11)	Top 0.1 0.01% (12)	Top 0.01% (5)
1886		19.14	14.19	7.22	2.98		4.94	6.97	4.24	2.98
1887		19.89	14.52	7.24	3.03		5.38	7.28	4.20	3.03
1888		17.67	13.16	6.78	2.95		4.51	6.38	3.84	2.95
1889		16.07	12.03	6.30	2.68		4.04	5.74	3.61	2.68
1890		14.33	10.76	5.63	2.44		3.57	5.13	3.19	2.44
1891		13.19	9.92	5.19	2.22		3.27	4.74	2.97	2.22
1892		14.45	10.96	5.79	2.43		3.49	5.17	3.37	2.43
1893		14.27	10.94	5.87	2.44		3.33	5.06	3.44	2.44
1894		13.40	10.37	5.69	2.40		3.03	4.68	3.29	2.40
1895		12.82	10.03	5.59	2.38		2.79	4.44	3.21	2.38
1896		13.23	10.39	5.80	2.47		2.84	4.59	3.33	2.47
1897		12.16	9.55	5.21	2.15		2.62	4.33	3.07	2.15
1898		13.57	10.46	5.58	2.02		3.11	4.88	3.56	2.02
1899		15.72	12.27	6.72	2.51		3.45	5.55	4.21	2.51
1900		16.26	12.63	6.83	2.51		3.63	5.80	4.32	2.51
1901		16.93	13.14	7.09	2.62		3.80	6.05	4.47	2.62
1902		17.99	13.97	7.55	2.80		4.02	6.42	4.75	2.80
1903		17.55	13.66	7.43	2.74		3.89	6.23	4.69	2.74
1904		16.58	13.01	7.21	2.74		3.57	5.79	4.48	2.74
1905		18.07	14.13	7.82	2.97		3.94	6.31	4.85	2.97
1906		18.12	14.08	7.64	2.83		4.04	6.44	4.81	2.83
1907	32.25	18.26	14.12	7.58	2.76	14.00	4.13	6.54	4.82	2.76
1908	33.82	18.93	14.62	7.74	2.79	14.89	4.32	6.88	4.95	2.79
1909	33.71	18.74	14.43	7.56	2.68	14.96	4.31	6.88	4.87	2.68
1910	33.54	18.88	14.61	7.75	2.81	14.66	4.27	6.85	4.95	2.81
1911	31.40	17.99	13.98	7.52	2.77	13.41	4.01	6.46	4.75	2.77
1912	31.48	17.91	13.93	7.61	2.83	13.57	3.98	6.32	4.79	2.83
1913	30.56	17.45	13.56	7.38	2.73	13.11	3.90	6.17	4.65	2.73
1914	32.53	18.55	14.49	7.98	2.92	13.98	4.06	6.51	5.06	2.92

(*continued*)

Table 3A.2 Continued

Year	Top 5% (1)	Top 1% (2)	Top 0.5% (3)	Top 0.1% (4)	Top 0.01% (5)	Top 5 1% (9)	Top 1 0.5% (10)	Top 0.5 0.1% (11)	Top 0.1 0.01% (12)	Top 0.01% (5)
1915	32.79	19.60	15.63	9.09	3.70	13.19	3.98	6.54	5.39	3.70
1916	30.87	19.52	15.87	9.72	4.38	11.34	3.65	6.15	5.33	4.38
1917	28.98	18.68	15.32	9.52	4.31	10.30	3.36	5.80	5.20	4.31
1918	25.55	16.62	13.54	8.30	3.68	8.93	3.09	5.24	4.62	3.68
1919	24.83	15.25	12.24	7.37	3.12	9.58	3.01	4.87	4.25	3.12
1920	28.12	17.09	13.62	7.90	3.23	11.04	3.46	5.73	4.67	3.23
1921	31.47	18.48	14.51	8.10	3.15	12.99	3.98	6.40	4.95	3.15
1922	32.96	19.55	15.38	8.63	3.40	13.41	4.17	6.75	5.23	3.40
1923	33.58	19.72	15.45	8.60	3.37	13.85	4.27	6.85	5.23	3.37
1924	33.60	19.72	15.45	8.62	3.43	13.88	4.27	6.83	5.19	3.43
1925		18.32	14.34	7.96	3.16		3.98	6.38	4.80	3.16
1926		18.55	14.64	8.29	3.39		3.90	6.36	4.90	3.39
1927		17.89	14.12	7.96	3.22		3.77	6.17	4.73	3.22
1928		18.51	14.64	8.28	3.37		3.87	6.36	4.91	3.37
1929		18.35	14.51	8.17	3.33		3.85	6.33	4.84	3.33
1930		16.78	13.21	7.32	2.95		3.57	5.90	4.37	2.95
1931		17.38	13.62	7.42	2.92		3.76	6.20	4.50	2.92
1932		17.56	13.81	7.61	3.03		3.75	6.20	4.58	3.03
1933		18.28	14.48	8.16	3.40		3.79	6.32	4.76	3.40
1934		18.96	15.01	8.46	3.49		3.95	6.55	4.97	3.49
1935		18.74	14.83	8.41	3.49		3.91	6.42	4.93	3.49
1936		18.68	14.76	8.40	3.57		3.92	6.36	4.84	3.57
1937	31.34	19.26	15.33	8.83	3.80	12.07	3.94	6.50	5.03	3.80
1938	31.81	19.92	15.90	9.19	3.81	11.89	4.02	6.71	5.38	3.81
1939		17.95	14.16	7.83	3.10		3.79	6.33	4.73	3.10
1940		16.45	12.82	6.82	2.59		3.64	6.00	4.23	2.59
1941		16.67	12.58	6.36	2.31		4.09	6.22	4.05	2.31
1942		15.11	11.28	5.69	2.07		3.83	5.59	3.63	2.07
1943		13.63	10.04	4.96	1.78		3.59	5.08	3.18	1.78
1944		10.74	7.91	3.93	1.40		2.83	3.98	2.53	1.40
1945		6.43	4.42	1.89	0.56		2.01	2.54	1.33	0.56

1946										
1947	18.50	7.36	5.16	2.15	0.61	11.15	2.20	3.01	1.54	0.61
1948	20.37	7.79	5.24	2.06	0.55	12.58	2.55	3.18	1.51	0.55
1949	21.67	7.89	4.97	1.82	0.46	13.77	2.92	3.15	1.35	0.46
1950	20.96	7.69	4.90	1.73	0.42	13.27	2.79	3.17	1.31	0.42
1951	19.90	7.28	4.77	1.87	0.53	12.62	2.51	2.90	1.34	0.53
1952	21.19	7.85	5.18	2.02	0.55	13.34	2.68	3.16	1.47	0.55
1953	20.17	7.46	4.94	1.91	0.49	12.71	2.51	3.04	1.42	0.49
1954	19.73	7.20	4.76	1.83	0.47	12.53	2.44	2.93	1.37	0.47
1955	18.87	6.91	4.59	1.78	0.46	11.96	2.32	2.81	1.32	0.46
1956	19.55	7.37	4.94	1.90	0.49	12.18	2.43	3.04	1.42	0.49
1957	20.15	7.69	5.20	2.05	0.54	12.46	2.49	3.14	1.51	0.54
1958	20.17	7.74	5.23	2.08	0.54	12.43	2.51	3.15	1.54	0.54
1959	20.48	7.97	5.44	2.15	0.54	12.51	2.53	3.30	1.61	0.54
1960	20.75	8.17	5.51	2.22	0.58	12.57	2.66	3.29	1.64	0.58
1961	20.68	8.44	5.79	2.31	0.60	12.24	2.65	3.49	1.71	0.60
1962	21.19	8.68	5.91	2.35	0.61	12.51	2.77	3.57	1.74	0.61
1963	21.03	8.50	5.74	2.31	0.60	12.53	2.76	3.43	1.71	0.60
1964	20.62	8.33	5.59	2.18	0.56	12.29	2.74	3.41	1.61	0.56
1965	20.04	7.91	5.26	2.04	0.52	12.13	2.65	3.22	1.51	0.52
1966	19.47	7.62	5.07	1.94	0.49	11.85	2.55	3.13	1.45	0.49
1967	19.86	7.63	5.11	1.96	0.49	12.23	2.53	3.14	1.48	0.49
1968	19.45	7.56	5.05	1.91	0.46	11.89	2.51	3.13	1.45	0.46
1969	20.38	8.01	5.27	1.91	0.47	12.37	2.73	3.36	1.45	0.47
1970	21.13	8.19	5.50	2.05	0.57	12.94	2.69	3.46	1.48	0.57
1971	21.67	8.42	5.49	1.94	0.63	13.25	2.93	3.55	1.31	0.63
1972	21.49	8.10	5.14	1.60	0.44	13.39	2.96	3.54	1.16	0.44
1973	21.01	7.62	5.02	2.18	0.86	13.40	2.59	2.84	1.32	0.86
1974	19.93	7.20	4.61	1.78	0.57	12.73	2.60	2.83	1.21	0.57
1975	19.58	7.08	4.60	1.77	0.61	12.50	2.48	2.84	1.16	0.61
1976	19.52	6.81	4.28	1.51	0.34	12.71	2.52	2.78	1.16	0.34
1977	19.45	6.77	4.26	1.48	0.34	12.68	2.51	2.78	1.14	0.34
1978	19.74	6.96	4.39	1.52	0.35	12.78	2.57	2.86	1.18	0.35
1979	20.23	7.25	4.68	1.65	0.38	12.98	2.57	3.03	1.28	0.38
1980	20.10	7.16	4.65	1.65	0.38	12.94	2.51	2.99	1.28	0.38
1981	20.07	7.11	4.61	1.59	0.36	12.97	2.50	3.02	1.24	0.36

(*continued*)

Table 3A.2 Continued

Year	Top 5% (1)	Top 1% (2)	Top 0.5% (3)	Top 0.1% (4)	Top 0.01% (5)	Top 5 1% (9)	Top 1 0.5% (10)	Top 0.5 0.1% (11)	Top 0.1 0.01% (12)	Top 0.01% (5)
1982	19.99	7.02	4.60	1.62	0.40	12.96	2.42	2.98	1.23	0.40
1983	20.03	6.94	4.46	1.50	0.34	13.08	2.48	2.96	1.16	0.34
1984	20.09	6.95	4.48	1.49	0.35	13.14	2.48	2.98	1.15	0.35
1985	20.25	7.03	4.50	1.50	0.35	13.22	2.53	3.01	1.14	0.35
1986	20.60	7.21	4.59	1.54	0.40	13.39	2.62	3.05	1.14	0.40
1987	21.42	7.66	4.88	1.65	0.51	13.75	2.78	3.23	1.14	0.51
1988	21.52	7.63	4.79	1.62	0.53	13.89	2.84	3.17	1.09	0.53
1989	21.70	7.90	5.07	1.83	0.72	13.80	2.84	3.23	1.11	0.72
1990	21.78	8.05	5.22	2.04	0.86	13.73	2.83	3.18	1.18	0.86
1991	21.16	7.54	4.84	1.81	0.73	13.62	2.70	3.03	1.08	0.73
1992	20.58	7.12	4.60	1.65	0.50	13.46	2.52	2.96	1.15	0.50
1993	20.72	7.15	4.61	1.62	0.49	13.57	2.54	2.99	1.13	0.49
1994	20.93	7.07	4.50	1.62	0.49	13.87	2.57	2.88	1.13	0.49
1995	21.47	7.30	4.68	1.64	0.47	14.17	2.62	3.03	1.17	0.47
1996	21.61	7.36	4.71	1.69	0.50	14.25	2.66	3.01	1.20	0.50
1997	21.72	7.32	4.66	1.69	0.45	14.41	2.66	2.97	1.24	0.45
1998	22.30	7.59	4.85	1.74	0.45	14.72	2.74	3.11	1.29	0.45
1999	22.77	7.76	4.93	1.77	0.47	15.01	2.83	3.16	1.30	0.47
2000	23.52	8.22	5.32	2.04	0.57	15.30	2.90	3.28	1.47	0.57
2001	24.16	8.49	5.55	2.14	0.60	15.67	2.93	3.41	1.54	0.60
2002	24.60	8.65	5.64	2.16	0.58	15.95	3.01	3.48	1.57	0.58
2003	24.96	8.75	5.70	2.16	0.60	16.21	3.05	3.53	1.57	0.60
2004	25.29	9.04	5.92	2.32	0.69	16.25	3.12	3.60	1.63	0.69
2005	25.33	9.20	6.07	2.40	0.80	16.13	3.14	3.67	1.60	0.80

Notes: Computations by authors based on income tax return statistics and wage income tax statistics: See Appendix 3A for details.
Year refers to 'actual year' in Appendix Table 3A.1.
Income is defined comprehensively to include employment income, business income, farm income, and capital income, but capital gains are excluded.
Top groups are defined relative to adult population (age 20 and above) in Japan.
The total income denominator is defined as total personal income in Japan from National Accounts.
Top 5–1% refers to the top 5% income group excluding the top 1%.
Top 5% and 5–1% income share series are not estimated for those years in which the fractions of adults filing tax returns are too small.
Series are adjusted upward for years 1898–1938 to correct for non-taxable capital income components (see Appendix and Figure 3A.3).

Table 3A.3 Top 1% income share and composition in Japan, 1886–2005

Actual Year	Top 1% income share (%) (1)	Fraction population filing (%) (2)	% Composition of top 1% income				
			Dividends (3)	Interest (4)	Business income (5)	Employment income (6)	Rental income (7)
1886	19.14	0.54	17.88	7.98	36.28	17.45	20.41
1900	16.26	1.67	18.77	8.42	32.17	18.99	21.65
1901	16.93	1.86	20.01	8.63	29.76	18.63	22.97
1902	17.99	2.03	19.74	8.50	29.47	18.58	23.71
1903	17.55	2.15	18.83	9.17	30.05	16.45	25.50
1904	16.58	2.27	19.99	8.25	30.23	16.21	25.32
1905	18.07	2.47	20.34	7.47	29.81	18.20	24.19
1906	18.12	2.69	19.02	6.74	30.90	18.69	24.66
1907	18.26	3.28	18.26	6.27	32.32	17.88	25.28
1908	18.93	3.52	17.38	6.02	31.83	18.00	26.76
1909	18.74	3.55	17.17	5.96	31.23	19.33	26.31
1910	18.88	3.58	18.85	5.64	29.95	20.81	24.75
1911	17.99	3.72	20.07	5.03	28.92	21.08	24.90
1912	17.91	2.57	22.56	4.08	28.22	18.19	26.96
1913	17.45	2.61	21.86	3.77	27.61	18.13	28.63
1914	18.55	2.55	23.09	3.97	26.38	19.13	27.43
1915	19.60	2.51	27.61	3.67	25.43	20.58	22.72
1916	19.52	2.68	27.88	3.21	30.67	19.48	18.76
1917	18.68	2.68	28.73	2.61	34.28	18.03	16.35
1918	16.62	3.68	27.51	2.17	34.68	19.27	16.36
1919	15.25	3.37	29.67	2.02	30.00	19.19	19.12
1920	17.09	3.90	25.92	2.33	34.21	18.37	19.18
1921	18.48	4.23	23.66	2.48	35.39	19.14	19.33
1922	19.55	4.57	24.05	2.64	34.66	20.77	17.88
1923	19.72	4.48	25.23	2.83	32.82	22.36	16.77
1924	19.72	4.57	25.01	2.79	32.01	22.25	17.94

(*continued*)

Table 3A.3 Continued

Actual Year	Top 1% income share (%) (1)	Fraction population filing (%) (2)	% Composition of top 1% income				
			Dividends (3)	Interest (4)	Business income (5)	Employment income (6)	Rental income (7)
1925	18.32	2.53	25.56	0.71	29.33	22.44	21.95
1926	18.55	2.27	27.67	1.82	24.45	25.02	21.04
1927	17.89	2.11	28.71	2.12	21.00	26.88	21.29
1928	18.51	2.10	29.87	2.18	19.31	27.91	20.74
1929	18.35	2.01	30.28	2.30	16.48	29.72	21.21
1930	16.78	1.66	31.30	2.55	13.23	32.41	20.51
1931	17.38	1.51	31.36	2.75	12.35	31.89	21.65
1932	17.56	1.61	29.38	2.60	14.83	31.34	21.84
1933	18.28	1.75	29.04	2.23	17.15	31.39	20.18
1934	18.96	1.86	28.14	1.94	18.48	32.29	19.15
1935	18.74	2.00	27.81	1.71	18.89	32.31	19.28
1936	18.68	2.17	31.65	1.50	19.87	28.95	18.03
1937	19.26	3.26	28.46	1.29	22.61	31.50	16.14
1938	19.92	3.70	26.30	1.09	35.61	31.55	5.45
1939	17.95	0.57	19.11	1.09	43.83	17.29	18.68
1940	16.45	0.69	17.72	1.64	46.29	17.25	17.11
1941	16.67	1.87	14.11	1.42	52.66	18.20	13.61
1942	15.11	2.24	13.48	1.45	51.86	20.12	13.09
1943	13.63	2.64	13.20	1.46	48.59	24.20	12.54
1944	10.74	2.77	13.19	1.37	44.33	30.25	10.85
1945	6.43	0.88	6.05	0.59	78.15	10.05	5.16
1947	7.36		0.13	0.05	95.56	4.05	0.22
1948	7.79		0.13	0.03	93.69	6.00	0.15
1949	7.89		0.34	0.01	77.03	22.43	0.18
1950	7.69		1.13	0.00	47.49	51.13	0.26

1963	8.50	9.01	0.00	14.59	70.99	5.41
1965	7.91	6.21	0.00	16.14	70.80	6.85
1970	8.19	6.74	0.00	20.19	63.69	9.38
1976	6.81	3.45	0.00	17.20	73.92	5.42
1980	7.16	3.18	0.00	19.07	72.29	5.45
1985	7.03	2.50	0.00	14.08	77.78	5.64
1991	7.54	2.63	0.00	11.44	78.61	7.32
1995	7.30	1.62	0.00	10.25	79.43	8.69
1999	7.76	1.43	0.01	8.41	81.41	8.74
2002	8.65	1.56	0.01	8.40	80.60	9.41
2003	8.75	1.44	0.01	7.85	81.40	9.29
2004	9.04	1.55	0.01	7.85	81.50	9.09
2005	9.20	1.80	0.01	7.94	81.22	9.03

Notes: Computations based on income tax return statistics and wage income tax statistics; see Appendix 3A.
Business income includes unincorporated business profits, farm income, and self-employment income.
Employment income includes wages, salaries, bonuses, and pensions.
Rental income includes rents from farm land, residential land, housing, and buildings. For 1886 and 1900–45, composition estimates are based on aggregate income composition and thus imprecisely estimated.
In particular, for 1906–25, relatively high fractions of adults (2.5% to 4.6%) filed income tax returns.
For 1947–50 and 1963–2005, composition estimates are based on composition data by income brackets.
For 1951–62, no estimates are provided because only aggregate composition data are available.
Virtually all interest income after 1947 and large part of dividends after 1965 are not reported in income tax returns.

APPENDIX 3B: TOP ESTATES

Definition of Estate

We compile top estate series, using estate tax return statistics published in *Annual Statistical Report* (*Zeimu Tokei Nenposho*) from 1905 to 2005. Except for 1943, the statistics include a distribution table with the number of decedents who paid estate tax, the amount of estate, and the amount of tax, by estate brackets. The aggregate estate composition is also available starting in 1926, except for years 1942 3, but not by estate brackets.

In the tax statistics, estates are defined as the sum of all properties (real estate, houses, household properties, unincorporated business assets, farm assets, stocks, bonds, cash, deposits, tenant rights, intellectual property rights, pension rights, etc.) net of all debts and liabilities. As virtually all components of transferable wealth are included in the definition of estates for tax purposes, the statistics provide an accurate estimate of the value of net worth held by decedents. The value of estate reported in the estate tax statistics, however, is taxable value after standard deductions in 1905 52, and before standard deductions but after special reductions (especially with respect to real estate) in 1953 2005. As we discuss below, we correct for standard deductions but do not correct for special reductions.

Below, we refer to the year of the annual report (the year when estate tax returns were processed) as 'fiscal year' which may be different from 'actual year' in which the estate subject to taxation was transferred from an ancestor to heirs due to the ancestor's death. We first summarize the evolution of estate tax laws in Japan, based on the tax codes reprinted at the end of the annual reports in 1931 and 1950 as well as Ishi (2001: chapter 12), which summarizes post war developments.

Estate Tax Laws, 1905–2005

The first estate tax law in Japan was promulgated in January 1905 and enforced in April 1905. During our sample period, there were three major reforms in estate tax laws in 1947, 1950, and 1958, and many minor revisions.

For fiscal years 1905 46, the Japanese estate tax law was based on a 'family system' (*ie seido*) defined by the old Civil Code. To maintain the family system, the law distinguished the inheritance of family estate (*katoku sozoku*), which we refer to as 'family inheritance', from ordinary inheritance (*isan sozoku*). Under family inheritance, a single heir succeeded to the entire family estate as a new family head (*koshu*) after the death or retirement (at age 60 or older) of the former family head. Commonly it was the first son who became a new family head, while if there was no son, a family head named a legal heir. By contrast, under ordinary inheritance, estate was transferred to heirs when a non family head died or decided to give his or her estate to their heirs while alive. The estate was divided equally among children. If there were no children, then it went to a spouse. If there were no surviving children or spouse, then lineal ascendants inherited the estate.

The 1905 law set the exemption point of 1,000 yen for family inheritance and 500 yen for ordinary inheritance with progressive but extremely low marginal tax rates (i.e. 0.05 1.3 per cent for family inheritance and 0.1 1.8 per cent for ordinary inheritance) defined over twenty estate brackets. Gifts given to heirs within one year prior to the inheritance were aggregated to estates for tax purposes. Military personnel who died in war were exempted from estate tax. In 1926, the exemption point for family inheritance was increased to 5,000 yen and for ordinary inheritance to 1,000 yen.

Under the 1905 law, the inheritance tax statistics in fiscal years 1905 47 report the two forms of inheritance in separate tabulations. In estimating top estates, we aggregate the distributions of family inheritance and ordinary inheritance. The former is by far the dominant form of inheritance at the top of the estate distribution because non family heads rarely owned large assets. We consider all forms of inheritance (not only those from deaths), because family inheritance due to retirement should be considered as an inter generational transfer of wealth, and excluding it would lead us to underestimate the number of estates. We also include all ordinary inheritance cases, although excluding the cases not due to death would not change our series by much.

The 1905 law was superseded by the 1937 temporary tax increase law and the 1938 revised temporary tax increase law, both of which imposed additional tax on estates to increase wartime revenue. The 1940 estate tax law established highly progressive tax rates, while keeping the preferential treatment for family inheritance. As of 1946, the exemption point was 20,000 yen for family inheritance with marginal tax rates of 1.5 55 per cent defined over nineteen brackets. For ordinary inheritance, the exemption point was set lower (5,000 yen) and the tax rates higher (5.5 70 per cent).[48]

As part of the post war democratization, the 1947 estate tax law abolished the distinc tion between family and ordinary inheritance and established a modern system of separate estate and gift taxes. It set the exemption point of 20,000 yen for estate tax with low marginal tax rates of 1.0 6.0 per cent.[49] The estate tax statistics continue to present tabulations by the size of estate under the 1947 law.

Under the 1950 estate tax law, following the recommendations by the Shoup Commis sion, Japan adopted inheritance tax based on cumulative amount of inheritance and gifts received by an heir (also known as 'accession tax'). As a result, for fiscal years 1950 7, distribution tables are based on the size of inheritances as opposed to estates. To provide homogeneous series, we convert inheritance statistics to estate statistics (see Appendix 3B). The 1950 law also changed fiscal year from accounting year (starting in April) to calendar year (starting in January). It set the exemption point of 200,000 yen and highly progressive tax rates of 25 90 per cent defined over eleven brackets.[50]

Finally, with the 1958 reform, Japan adopted a hybrid system of estate tax and inher itance tax. It initially set the very high exemption point of 1.8 million yen, resulting in the much smaller number of people filing estate tax returns. The statistics for fiscal years 1958 2005 are presented by the size of estates and hence are directly comparable to the statistics for 1905 49.

Correspondence between Fiscal Years and Actual Years

Estate tax statistics reported in fiscal year *t* are the estate tax returns *processed* in year *t*, and do not necessarily coincide with the returns filed for the deaths that took place in year *t*. In

[48] Japan National Tax Administration, *Annual Statistical Report* (1950: 280).
[49] Ibid. 279.
[50] Ibid. 278.

fact, due to delays in both filing and processing, before the Second World War, majority of the tax returns filed for the deaths in year t were probably processed in year $t+1$, and some in even later years.[51] Thus, strictly speaking, the statistics in fiscal year t correspond to a weighted sum of the estate distributions in actual years t, t 1, t 2, etc.[52] Because the statistics in 1905 49 do not break down processed returns by the year of death but instead pool them in one distribution table, it is difficult to reconstruct the estate distribution corresponding to an actual year.

By contrast, starting in 1950, the distribution table in fiscal year t covers only the deaths taking place in the same year t, and separate aggregate statistics are reported for the tax returns processed in year t but filed in previous years. Furthermore, when there is a revision in estate tax laws in 1937, 1938, 1940, and 1947, annual reports in subsequent years publish separate estate distribution tables according to which version of law applies. For example, the 1937 statistics have two distribution tables, one for the '1905 law' estates (which reports the returns filed before 1937 but processed in 1937) and the other for the '1937 law' estates (which reports the returns filed and processed in 1937). In this case, we know for sure that the '1937 law' estates include only the deaths in 1937, while the '1905 law' estates consist primarily of the deaths in 1936 and 1935.

In the world of constant price, using the statistics in year t to estimate top estates in year t would result in smoother time series, as it amounts to taking a moving average over several years. During a period of high inflation, however, by placing a higher weight on current year than actually is, it would lead to a large upward bias in our estimates. Therefore, it is important to reconstruct an estate distribution for a given actual year as much as possible, exploiting the information based on legal changes. We determine the correspondence between actual and fiscal years as follows.

For actual years 1905 35, in the absence of better information, we assume that estate tax returns reported in fiscal year $t+1$ correspond to the deaths in year t (which is a median year among t 1, t, $t+1$). We thus ignore the small number of returns reported in fiscal year 1905 and use only the 1906 statistics to estimate the 1905 distribution.

For actual year 1936, we add the distribution tables of the '1905 law' estates reported in fiscal years 1937 9. For actual year 1937, we add the '1937 law' estates reported in fiscal years 1937 40. For actual year 1938, we add the '1938 law' estates reported in fiscal year 1938 and 60 per cent of the '1938 law' estates reported in fiscal year 1939. For actual year 1939, we add 40 per cent of the '1938 law' estates reported in fiscal year 1939 and the '1938 law' estates reported in fiscal year 1940. The fractions 60 per cent and 40 per cent are chosen so that the total numbers of estates in 1938 and 1939 are approximately equal. Note that 1937 is the only year for which we can recover all and only deaths in 1937. Thus our 1937 estimate is most precise among all. By contrast, our respective estimates for 1938 and 1939 are imprecise, but the average of the 1938 and 1939 estimates should be fairly accurate.

For actual years 1940 5, we assume that the '1940 law' estates reported in fiscal year $t+1$ correspond the deaths in year t 1. We thus ignore very small number of the '1940 law' estates reported in 1940 in estimating the 1940 distribution. The distribution table is not available in fiscal year 1943, so we have no estimate for 1942.

For 1946, we add the '1940 law' estates reported in 1947 9. This may result in an overestimate, because we pool the statistics from three annual reports that include virtually

[51] This statement is based on tables in the annual reports in 1905 36 that provide the number of returns pending from previous fiscal years.

[52] As the law stipulates that estate tax is based on the value of estate at the time of deaths, we assume that the statistics sum up nominal estates across years without correcting for inflation. Late returns are subject to penalty or adjustment, which is imposed in addition to estate tax.

all the 1946 deaths as well as some deaths in 1944 and 1945. Given the hyperinflation in 1944 6, however, the effect of the extra returns from 1944 and 1945 on our 1946 estimate should be small.

For actual years 1947 9, we assume that '1947 law' estates reported in 1947 8 correspond to the deaths in 1947, that 70 per cent of the '1947 law' estates reported in 1949 correspond to the deaths in 1948, and that 30 per cent of the '1947 law' estates reported in 1949 and all the '1947 law' estates reported in 1950 and 1951 correspond to the deaths in 1949. We then inflate the numbers for 1949 by a factor 12/9 to adjust for the fact that the '1947 law' applied to only nine months during fiscal year 1949 (from April to December 1949) as the new law took effect in January 1950 and thereafter followed the calendar year schedule. The 70 30 per cent split of the 1949 statistics between 1948 and 1949 is chosen so that the total numbers of estates in 1948 and 1949 are roughly equal. Although our respective estimates for 1948 and 1949 are imprecise, their average is fairly accurate.

For actual years 1950 7, the statistics in year t report the estates for deaths in year t that are processed by March of year $t+1$. As a result, approximately 80 per cent of the deaths in year t are included in the statistics in year t. The remaining portion is reported, only at the aggregate level and not by brackets, in the statistics in the subsequent fiscal years. We assume that the distribution of estates reported in later fiscal years is the same as the distribution reported in fiscal year t, and we inflate the distribution in year t accordingly.

For fiscal years 1958 2005, with the introduction of the new hybrid system, the statistics in year t report the deaths in year t processed by June of year $t+1$. Because the number of deaths in year t reported in later years becomes small (less than 10 per cent), we make no corrections.

Correcting for Standard Deductions, 1905–1952

For fiscal years 1905 52, distribution tables are presented by the taxable value of estate (or inheritance for 1950 2), namely the size of estate net of debts and *after* standard deductions. By contrast, for fiscal years 1953 2005, tables are presented by the size of estate net of debt and before standard deductions (but after special reductions). For fiscal years 1953 7, both the amounts of inheritance before and after deductions are reported. To obtain the true value of estates, we need to add back deductions for fiscal years 1905 52. Below, we describe deductions and our methods of correction.

For fiscal years 1905 14, there was no major deduction (only for funeral expenses), and we make no corrections. For fiscal years 1915 25, the deduction for family inheritance, called 'Section 3 2 deduction', was introduced. It allowed 1,000 yen deduction for estates below 3,000 yen and 500 yen deduction for estates below 5,000 yen. The statistics in these years are presented by the size of estate after the deduction. Therefore, we add back the Section 3 2 deduction for family inheritance, using the aggregate amount of Section 3 2 deductions. We then add together the distributions of family and ordinary inheritances using a standard Pareto interpolation method.

The 1940 law introduced 1,000 yen deduction per dependent family member. In 1942, the amount of dependent deduction was increased. For fiscal years 1940 6, the statistics report only the aggregate amount of dependent deductions. We compute the average deduction per estate from the aggregate data and add it back to the original tabulations.

The 1947 law abolished dependent family deductions and introduced a basic deduction of 50,000 yen per estate for estate tax purposes as well as per gift for gift tax purposes. We add back 50,000 yen per estate and gift to the original tabulations.

The 1950 law introduced four types of standard deductions: basic deduction (150,000 yen per heir), small amount deduction (30,000 yen per heir for inheritance smaller than certain size), spouse deduction (50 per cent deduction from the amount inherited), and minor deduction (small deduction for minors younger than 18 years old). The basic deduction was increased to 300,000 yen in 1952. We add back deductions of 180,000 yen per heir for years 1950 and 1951 and 330,000 yen per heir for 1952, which are the sum of the basic deduction and the small amount deduction for the respective years. We do not correct for the spouse and minor deductions because they are relatively small relative to the two other deductions according to the aggregate statistics.

For fiscal years 1953 2005, we make no corrections for these deductions as tabulations are presented in estates net of debts before deductions.

The Problem of Special Reductions, 1950–2005

In recent decades, the government has introduced various special tax treatments primarily for real estate to reduce the tax burden on heirs. Because the value of estate reported in the estate tax statistics is before standard deductions but after special reductions from these treatments,[53] our estimates are subject to a potentially large downward bias. There are two sources of the bias. First, the official valuation price for land is substantially lower than the market price. For example, according to Ishi (2001), the official price was about 40 60 per cent of market price in the 1980s (table 17.3). Second, if heirs can claim real estates of decedents as their residences or family business assets, then they may receive a large reduction in taxable value. For example, in 2005, up to 400 square metre of land, only 20 to 50 per cent of total real estate value is taxable.[54] As a result, our data underestimate the true value of estates especially when land is an important component of estates. If the share of land in top estates has increased over the post war period as the composition data suggest, then our series in the recent decades may be subject to serious underestimation.

We do not try to correct for special reductions, however, for the following reasons. First, due to a complex and time varying nature of special tax treatments concerning real estate, it is difficult to make an accurate correction. In addition, because we do not have estate composition data by estate brackets, we do not know the shares of land in the top 0.01 per cent and 1 0.5 per cent estates and their changes over time. Finally, we have little information about the valuation method and special treatments of real estate in the pre Second World War period.

Converting Inheritance Statistics to Estate Statistics, 1950–1957

For all fiscal years except 1950 7, the unit of observation in the tax statistics is 'estate' defined as the properties owned by the decedent. For fiscal years 1950 7, the unit of observation switches to 'inheritance' defined as the properties received by an heir. As a result, tax statistics in 1950 7 report the number of heirs and the amount of inheritances ranked by brackets of inherited wealth. As the estate of a decedent is typically divided among multiple heirs, the inheritance statistics are not directly comparable to the estate statistics. In this study, we estimate series based on the estate unit.

To convert inheritance distributions to estate distributions, we simply assume that each decedent has 2.5 heirs and that estates are divided equally among heirs. The number, 2.5, is

[53] This information is based on the author's phone conversation with a Japan Tax Administration officer on 5 May 2006.

[54] Japan National Tax Bureau (2006), Heisei 18 nenbun: Souzokuzei no Aramashi (2006: Outline of Estate Tax), available online at: http://www.nta.go.jp/category/pamph/souzoku/h18sikata/index.htm.

taken from the average ratio of estate to inheritance in the 1958 statistics which simultaneously report the number of estates (decedents) and the number of inheritances (heirs) for the first time. From the inheritance statistics, we estimate estate distributions by multiplying the brackets by 2.5 (for example, the bracket 200,000 to 500,000 yen becomes the bracket 500,000 to 1,250,000 yen), and by dividing by 2.5 the number of inheritances in each bracket to obtain the number of estates.

Note that our estimates for 1950–7 are based on strong assumptions and have a larger margin of errors than in other years. Nevertheless, these estimates provide important evidence for the years immediately after the Second World War.

Construction of Top Estate Series, 1905–2005

We define top groups (e.g. top 1 per cent, top 0.1 per cent) relative to the total number of adult decedents in each year. The series of adult decedents in Japan is taken from the number of deaths by age groups published in *Japan Statistical Yearbook* for years 1985–2005 and in *Historical Statistics of Japan*, pp. 218–19, for years 1905–85. These series are reported in column (1) in Table 3B.1. The number of estate tax returns (after the adjustments described above) is reported in column (2). As column (3) indicates, the fraction of adult decedents filing the estate tax returns varies across years depending on exemption points and economic conditions, ranging from the high of 31 per cent in 1942 to the low of 1 per cent in 1958.

We estimate the average size of estate for various upper groups of the estate distribution, using a standard Pareto interpolation method. We convert the nominal value of estates to the real value, expressed in 2002 yen, using the CPI deflator (see Appendix 3A). Table 3B.1 displays our estimates of top estates series from 1905 to 2005. Unlike our top income shares, we do not attempt to estimate the shares of estates left by top decedents, because there is no simple way to compute the total amount of estates left by all decedents in each year, including those who did not file estate tax returns.

Estate Composition, 1925–2005

Estate composition data are available only at the aggregate level for fiscal years 1926–2005, except for years 1942–3. Because composition data by brackets are not reported, it is not possible to create homogeneous top estate composition series. In Table 3B.2 and Figure 3B.1, we present the decomposition of aggregate estates into eight categories: (1) agricultural land (i.e. farm land, forest land, and tenant right), (2) residential land (i.e. housing land and leasehold), (3) houses and structures, (4) business assets (i.e. machinery, goods, raw materials, intellectual property rights, account receivable, agricultural equipment, and farm products), (5) stocks (for both privately held and publicly traded companies), (6) fixed claim assets (i.e. public and corporate bonds, cash, deposits, savings accounts, and other claims), (7) other assets (which includes household properties, life insurance, pensions, and standing timber), and (8) debts (i.e. private debts and public obligation). Note that the sum of the first seven categories may exceed 100 per cent in Figure 3B.1, as we define estates net of debts to be 100 per cent. The composition estimates are based directly on the aggregate estates composition published in the annual reports. For simplicity, we assume that fiscal year t corresponds to actual year $t - 1$ for fiscal years 1926–46 and to actual year t for fiscal years 1947–2005 (because composition data are reported only for the returns filed under the new law after 1947). In other words, we do not use the complex specification of years we used for the top estate series.

Column (1) in Table 3B.2 reports the fraction of adult decedents filing estate tax returns (these numbers are different from those in column (1) in Table 3B.1 due to the different specification of years). Because the estate composition is sensitive to the fraction filing returns, and the fraction fluctuates substantially from year to year, it is difficult to see trends in estate composition from these series. For example, the fraction drops from 26.1

per cent in 1957 to 0.9 per cent in 1958 (due to the high exemption level under the 1958 law), which probably caused a sharp fall in the share of agricultural land, on one hand, and a large increase in the share of stocks.

To facilitate better comparison, Table 3.3 presents top estate compositions for selected years, 1935, 1950, and 1987, for which the fractions of adult decedents filing returns are comparable at around 9 per cent (9.0 per cent in 1935, 8.8 per cent in 1950, and 8.0 per cent in 1987). Estates before subtracting debts are defined to be 100 per cent. It shows that the largest component of top estates in Japan shifted from financial assets (stocks and fixed claim assets) in 1935 to movable property (business assets, houses and structures, and household properties) in 1950, to real estate (agricultural and residential land) in 1987. Note that, as discussed, if our data underestimate the true value of land compared to other estate components, then the share of financial assets in top estates in 1987 would be even smaller. Thus the top estate composition data provide additional support for our finding based on the top income shares series that, top capital income collapsed during the Second World War and has not returned to the pre war level to date, despite the high economic growth in the post war period.

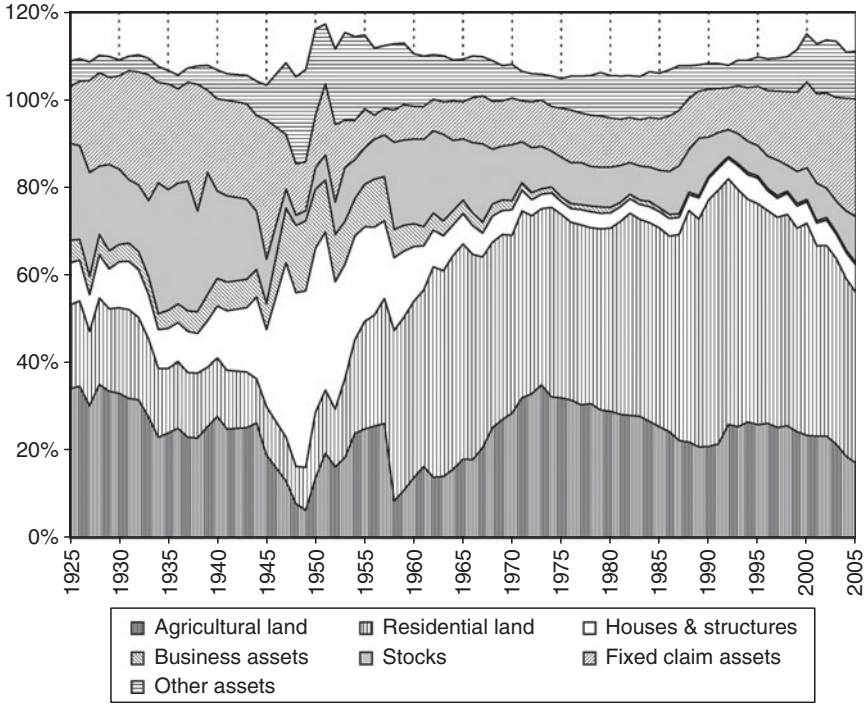

Figure 3B.1 Composition of aggregate estates in Japan, 1925 2005

Source: Appendix Table 3B.2.

Notes: Estimates are based on aggregate estate compositions in estate tax return statistics.
Total exceeds 100% because estates net of debts are defined to be 100%.
Business assets include assets of unincorporated business and farm assets.
Fixed claim assets include bonds, cash, deposits, savings accounts, and other claims.
Other assets include household assets, pensions, life insurance, and other items.
Because of changes in the fractions of decedents filing estate tax returns, compositions are not directly comparable across years.
See Appendix 3B for details and Table 3.3 for the comparison for selected years.

Table 3B.1 Levels of top estates in Japan, 1905 2005

Actual Year	# Adults decedents (age 20+)	# Estate tax returns	Fraction filing (2)/(1) (%)	Top 5%	Top 1%	Top 0.5%	Top 0.1%	Top 0.01%	Top 5 1%	1 0.5%	0.5 0.1%	0.1 0.01%	Top 0.01%
					(in 2002 thousand yen)						(in 2002 thousand yen)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1905	569,672	23,712	4.16%		39,392	64,835	198,661	901,558		13,949	31,378	120,562	901,558
1906	543,109	28,616	5.27%		45,040	72,802	211,676	813,024		17,277	38,084	144,860	813,024
1907	566,733	36,175	6.38%	15,584	51,531	84,366	254,796	1,123,517	6,597	18,696	41,758	158,272	1,123,517
1908	548,334	39,237	7.16%	17,912	58,793	95,276	286,795	1,402,816	7,691	22,310	47,396	162,793	1,402,816
1909	575,094	32,028	5.57%	16,589	56,481	92,782	283,268	1,291,437	6,616	20,180	45,161	171,249	1,291,437
1910	558,154	47,374	8.49%	22,553	72,255	115,499	316,869	1,010,887	10,128	29,011	65,157	239,756	1,010,887
1911	544,055	48,742	8.96%	23,610	77,321	125,174	352,886	1,280,724	10,183	29,469	68,245	249,793	1,280,724
1912	548,046	47,512	8.67%	22,756	74,641	120,952	355,126	1,556,543	9,784	28,330	62,409	221,635	1,556,543
1913	536,993	44,678	8.32%	21,723	71,455	115,717	335,938	1,314,140	9,290	27,193	60,662	227,248	1,314,140
1914	573,534	38,228	6.67%	25,599	86,139	142,114	445,128	2,193,444	10,464	30,163	66,360	250,870	2,193,444
1915	564,966	39,494	6.99%	29,558	93,657	151,434	449,383	2,020,034	13,534	35,880	76,947	274,866	2,020,034
1916	623,196	47,784	7.67%	29,643	94,427	152,784	450,664	1,846,290	13,447	36,070	78,314	295,594	1,846,290
1917	627,640	38,810	6.18%	24,052	78,852	129,357	394,225	1,611,504	10,352	28,347	63,140	258,972	1,611,504
1918	805,793	55,695	6.91%	23,155	74,756	122,025	375,739	1,812,031	10,255	27,487	58,596	216,151	1,812,031
1919	679,934	89,488	13.16%	27,485	82,934	131,870	386,419	1,722,991	13,623	33,998	68,233	237,911	1,722,991
1920	762,101	137,236	18.01%	36,323	119,074	196,202	611,416	2,967,517	15,635	41,946	92,399	349,627	2,967,517
1921	668,956	130,990	19.58%	39,004	125,096	203,175	583,687	2,224,272	17,481	47,017	108,047	401,400	2,224,272
1922	678,237	124,684	18.38%	38,259	122,443	198,027	573,425	2,385,135	17,214	46,859	104,177	372,123	2,385,135
1923	698,548	111,840	16.01%	42,558	147,548	249,657	828,157	4,204,570	16,311	45,440	105,032	452,999	4,204,570
1924	670,083	123,347	18.41%	50,675	173,139	289,821	922,560	4,619,893	20,059	56,456	131,636	511,745	4,619,893
1925	642,982	55,684	8.66%		143,539	249,748	870,863	4,977,148		37,331	94,469	414,609	4,977,148
1926	619,940	80,104	12.92%	59,195	206,900	350,207	1,160,326	6,574,218	22,269	63,592	147,678	558,782	6,574,218
1927	648,975	129,086	19.89%	61,676	219,861	375,121	1,241,465	6,754,041	22,130	64,601	158,535	628,956	6,754,041
1928	669,274	103,160	15.41%	50,903	168,752	275,595	805,520	3,085,179	21,441	61,910	143,114	552,225	3,085,179
1929	680,466	97,308	14.30%	59,419	208,628	350,154	1,089,098	4,979,980	22,116	67,102	165,418	656,778	4,979,980
1930	659,662	83,424	12.65%	48,492	163,268	269,457	813,457	3,513,034	19,798	57,080	133,457	513,504	3,513,034
1931	698,288	90,670	12.98%	50,409	167,367	273,077	808,731	3,435,020	21,169	61,656	139,163	516,921	3,435,020
1932	661,659	86,854	13.13%	48,645	161,180	262,320	763,163	3,190,738	20,511	60,039	137,109	493,432	3,190,738
1933	681,678	88,183	12.94%	51,836	180,098	303,452	977,032	4,953,259	19,771	56,743	135,057	535,229	4,953,259
1934	711,414	89,302	12.55%	58,750	218,392	382,800	1,400,199	9,212,205	18,840	53,985	128,450	532,199	9,212,205

(*continued*)

Table 3B.1 Continued

Actual Year	# Adults decedents (age 20+)	# Estate tax returns	Fraction filing (2)/(1) (%)	Top 5%	Top 1%	Top 0.5%	Top 0.1%	Top 0.01%	Top 5 1%	Top 1 0.5%	Top 0.5 0.1%	Top 0.1 0.01%	Top 0.01%
						(in 2002 thousand yen)					(in 2002 thousand yen)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1935	675,407	60,615	8.97%	47,671	174,540	301,451	1,037,972	5,867,339	15,954	47,628	117,321	501,376	5,867,339
1936	727,603	88,670	12.19%	68,402	251,557	432,446	1,479,465	8,685,852	22,613	70,668	170,692	678,755	8,685,852
1937	704,060	92,998	13.21%	43,012	141,033	231,026	690,390	2,789,699	18,507	51,039	116,185	457,134	2,789,699
1938	768,112	69,350	9.03%	28,395	88,619	142,662	431,383	2,182,804	13,339	34,575	70,481	236,781	2,182,804
1939	769,360	68,364	8.89%	31,955	113,299	194,161	679,059	3,927,140	11,619	32,436	72,936	318,161	3,927,140
1940	739,777	77,478	10.47%	30,212	103,742	174,681	570,871	2,544,649	11,830	32,803	75,633	351,562	2,544,649
1941	714,781	148,649	20.80%	48,400	159,663	262,040	828,514	4,287,115	20,584	57,286	120,422	444,224	4,287,115
1942	748,709												
1943	769,258	170,180	22.12%	45,618	146,793	235,967	680,682	2,957,416	20,324	57,619	124,788	427,712	2,957,416
1944	798,830	125,523	15.71%	31,850	99,640	160,261	461,951	2,026,342	14,903	39,019	84,838	288,130	2,026,342
1945	1,363,345	191,638	14.06%	7,763	24,385	38,617	101,827	350,494	3,608	10,152	22,814	74,198	350,494
1946	869,315	270,172	31.08%	6,108	15,939	24,265	65,757	275,103	3,650	7,613	13,892	42,496	275,103
1947	726,363	107,956	14.86%	4,686	10,632	15,095	33,909	97,929	3,199	6,170	10,391	26,795	97,929
1948	640,123	122,240	19.10%	3,764	8,724	12,617	29,180	83,594	2,524	4,831	8,477	23,134	83,594
1949	629,361	150,834	23.97%	3,588	8,277	11,847	26,298	71,704	2,416	4,708	8,234	21,253	71,704
1950	630,765	37,229	5.90%	6,899	14,407	19,764	40,802	110,093	5,021	9,051	14,505	33,103	110,093
1951	594,257	51,678	8.70%	6,905	13,946	18,948	39,448	114,833	5,145	8,945	13,823	31,072	114,833
1952	569,367	21,565	3.79%		19,097	25,982	55,272	144,030		12,212	18,659	45,410	144,030
1953	595,400	12,138	2.04%		20,005	28,878	69,276	216,189		11,131	18,779	52,952	216,189
1954	567,040	16,443	2.90%		23,802	33,909	80,485	273,472		13,694	22,265	59,042	273,472
1955	562,344	19,839	3.53%		27,902	40,197	96,142	294,328		15,606	26,211	74,122	294,328
1956	599,844	23,100	3.85%		29,721	42,585	99,389	268,874		16,856	28,384	80,557	268,874
1957	635,827	26,585	4.18%		34,174	50,240	122,064	365,110		18,108	32,284	95,059	365,110
1958	581,735	5,296	0.91%			54,320	137,146	403,321			33,613	107,571	403,321
1959	591,577	6,749	1.14%			61,058	149,072	458,069			39,055	114,739	458,069
1960	618,324	9,146	1.48%		51,054	78,636	194,021	582,115		23,472	49,790	150,900	582,115
1961	615,040	11,316	1.84%		63,860	99,588	251,310	793,981		28,132	61,657	191,013	793,981
1962	636,949	9,428	1.48%		76,879	119,048	297,964	972,761		34,710	74,319	222,987	972,761
1963	605,286	11,253	1.86%		87,321	134,906	338,515	1,223,391		39,737	84,004	240,195	1,223,391

1964	612,370	10,404	1.70%	92,580	144,622	372,134	1,133,167		40,537	87,744	287,575	1,133,167		
1965	642,338	13,161	2.05%	97,174	147,776	344,552	859,992		46,571	98,583	287,281	859,992		
1966	619,868	9,238	1.49%	110,085	166,776	399,034	1,242,750		53,395	108,712	305,288	1,242,750		
1967	623,871	11,294	1.81%	131,925	201,489	498,842	1,693,012		62,361	127,151	366,157	1,693,012		
1968	636,652	14,524	2.28%	141,016	209,379	479,215	1,372,335		72,653	141,921	379,979	1,372,335		
1969	645,792	19,315	2.99%	168,872	250,106	557,592	1,585,821		87,638	173,234	443,345	1,585,821		
1970	666,723	24,479	3.67%	193,456	285,891	635,198	1,843,569		101,022	198,564	500,935	1,843,569		
1971	639,945	25,920	4.05%	249,332	367,274	829,692	2,584,884		131,390	251,669	634,671	2,584,884		
1972	640,574	30,191	4.71%	284,154	429,325	971,775	3,101,611		138,984	293,712	735,127	3,101,611		
1973	666,465	29,171	4.38%	343,481	506,656	1,100,018	3,118,922		180,306	358,315	875,696	3,118,922		
1974	671,039	32,879	4.90%		307,439	447,926	967,684	2,486,612			166,953	317,986	798,914	2,486,612
1975	666,391	14,186	2.13%		284,933	415,587	914,293	2,680,877			154,280	290,910	718,006	2,680,877
1976	670,510	15,567	2.32%		277,698	404,017	855,731	2,185,130			151,379	291,088	708,020	2,185,130
1977	659,717	17,358	2.63%		278,874	406,110	872,242	2,346,307			151,638	289,577	708,457	2,346,307
1978	667,058	19,677	2.95%		292,682	423,570	911,458	2,418,108			161,794	301,598	744,052	2,418,108
1979	663,373	22,144	3.34%		301,048	434,008	888,935	2,190,017			168,087	320,276	744,370	2,190,017
1980	698,060	26,315	3.77%		318,722	464,612	1,001,483	2,669,051			172,832	330,395	816,197	2,669,051
1981	696,931	31,017	4.45%		370,232	539,247	1,157,527	3,170,641			201,217	384,677	933,847	3,170,641
1982	690,132	35,328	5.12%		404,664	589,622	1,276,338	3,658,561			219,707	417,943	1,011,647	3,658,561
1983	719,124	38,826	5.40%	153,608	421,691	616,350	1,363,240	4,094,148		86,588	227,032	429,627	1,059,806	4,094,148
1984	720,529	42,323	5.87%	158,408	428,137	619,625	1,313,990	3,693,978		90,976	236,648	446,034	1,049,547	3,693,978
1985	733,797	47,270	6.44%	170,913	463,314	675,198	1,472,996	4,347,620		97,812	251,430	475,748	1,153,594	4,347,620
1986	749,125	50,857	6.79%	177,011	480,513	699,249	1,544,482	4,679,174		101,135	261,777	487,940	1,196,183	4,679,174
1987	735,429	57,992	7.89%	212,242	584,161	861,857	2,018,490	6,755,997		119,262	306,466	572,699	1,492,101	6,755,997
1988	769,676	50,204	6.52%	258,699	748,812	1,125,328	2,790,812	10,222,238		136,170	372,297	708,957	1,965,098	10,222,238
1989	778,517	41,521	5.33%	311,516	946,480	1,460,636	3,696,641	13,548,109		152,775	432,323	901,635	2,602,033	13,548,109
1990	805,350	48,220	5.99%	342,202	1,014,153	1,533,905	3,665,958	12,483,065		174,215	494,402	1,000,891	2,686,279	12,483,065
1991	814,604	56,480	6.93%	401,415	1,197,474	1,809,678	4,385,354	15,453,762		202,400	585,270	1,165,759	3,155,531	15,453,762
1992	839,909	46,032	5.48%	409,193	1,191,916	1,774,560	3,944,065	11,237,538		213,512	609,272	1,232,184	3,133,679	11,237,538
1993	868,210	44,268	5.10%	352,589	1,000,843	1,472,683	3,225,954	8,924,398		190,525	529,004	1,034,365	2,592,793	8,924,398
1994	864,048	38,880	4.50%	316,674	894,958	1,318,912	2,874,797	7,707,469		172,103	471,004	929,941	2,337,834	7,707,469
1995	909,318	42,814	4.71%	314,596	872,533	1,269,445	2,680,425	6,837,903		175,112	475,620	916,700	2,218,483	6,837,903
1996	884,329	40,929	4.63%	298,487	815,102	1,182,011	2,500,882	6,192,633		169,333	448,194	852,294	2,090,687	6,192,633

(*continued*)

Table 3B.1 Continued

Actual Year	# Adults decedents (age 20+)	# Estate tax returns	Fraction filing (2)/(1) (%)	Top 5%	Top 1%	Top 0.5%	Top 0.1%	Top 0.01%	Top 5 1%	Top 1 0.5%	Top 0.5 0.1%	Top 0.1 0.01%	Top 0.01%		
						(in 2002 thousand yen)					(in 2002 thousand yen)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)		
1997	909,812	41,223	4.53%		284,271	773,023	1,124,849	2,435,816	6,878,787		162,083	421,196	797,108	1,942,152	6,878,787
1998	922,486	41,490	4.50%		267,737	709,706	1,019,806	2,127,238	5,044,079		157,245	399,605	742,949	1,803,145	5,044,079
1999	971,827	42,185	4.34%		258,585	686,285	990,990	2,079,118	5,414,767		151,660	381,580	718,957	1,708,490	5,414,767
2000	952,505	40,217	4.22%		251,075	654,660	937,014	1,976,370	4,819,662		150,179	372,306	677,176	1,660,448	4,819,662
2001	961,722	37,903	3.94%		244,755	654,291	952,826	2,095,136	6,228,714		142,371	355,757	667,248	1,635,849	6,228,714
2002	984,349	44,378	4.51%		221,832	584,442	840,089	1,768,465	4,725,404		131,180	328,794	607,995	1,439,916	4,725,404
2003	1,006,976	44,409	4.41%		213,259	557,643	798,969	1,670,914	3,829,872		127,163	316,318	580,983	1,431,030	3,829,872
2004	1,021,197	43,495	4.26%		202,437	525,665	750,080	1,614,293	4,873,247		121,630	301,250	534,027	1,252,187	4,873,247
2005	1,035,418	45,126	4.36%		205,567	533,709	767,573	1,711,500	5,333,576		123,531	299,845	531,591	1,309,048	5,333,576

Notes: Computations by authors based on estate tax return statistics. See Appendix 3B for details.
Top groups are defined relative to the total number of adult decedents (age 20 and above).
Estates are defined as all properties owned by decedents before deductions net of debts.
The average size (as opposed to share) of estate for each top group is reported in 2002 thousand yen ($1 = 110 yen).
For the correspondence between actual and fiscal years, see Appendix 3B.
Due to the difficulty in reconstructing estate statistics for actual years, our estimate for each year in 1905–49 is imprecise, but their moving average is relatively accurate.
Because estates are before deductions but after special reductions, our data underestimate the true value of estates; see Appendix 3B for details.
For 1950–7, inheritance statistcs are converted to estate statistics; see Appendix 3B for details.

Table 3B.2 Estate composition in Japan, 1925–2005

		% Estate composition							
Year	Fraction decedents filing returns % (1)	Agricultural Land (2)	Residential Land (3)	Houses & Structures (4)	Business Assets (5)	Stocks (6)	Fixed Claim Assets (7)	Other Assets (8)	Debts (9)
1925	9.6	34.1	19.1	9.6	5.2	22.2	12.9	5.9	8.9
1926	15.3	34.6	19.4	9.4	4.7	21.5	14.7	5.1	9.4
1927	19.9	30.2	16.9	8.4	4.2	23.7	21.1	4.2	8.7
1928	15.4	35.1	19.6	9.9	4.6	15.6	21.3	4.0	10.2
1929	14.3	33.5	18.7	9.1	4.1	19.7	19.9	4.7	9.9
1930	12.6	33.0	19.4	10.6	3.9	17.2	21.3	3.7	9.1
1931	13.0	31.9	20.1	11.1	4.1	14.6	24.9	3.3	10.0
1932	13.1	31.6	18.7	10.9	4.1	15.3	25.8	3.9	10.3
1933	12.9	27.6	17.7	10.3	4.0	17.4	28.7	3.8	9.5
1934	12.6	23.0	15.7	8.8	3.6	29.9	23.0	3.7	7.6
1935	9.0	24.0	14.8	9.0	4.2	27.6	24.2	3.1	6.7
1936	14.0	25.0	15.2	8.9	4.2	27.6	21.6	3.1	5.7
1937	16.8	23.0	14.8	9.3	4.7	29.6	22.6	3.2	7.3
1938	19.5	22.8	14.9	9.0	4.9	23.0	28.9	4.2	7.8
1939	6.7	25.4	13.6	10.5	6.0	27.9	18.8	5.7	7.9
1940	10.5	27.7	13.2	11.9	6.3	20.0	21.1	6.6	6.8
1941	20.8	24.9	13.5	13.5	6.5	19.7	21.8	6.1	6.0
1944	15.7	26.3	10.1	18.6	6.3	13.3	21.9	7.8	4.3
1945	14.1	18.9	11.1	17.5	5.9	10.2	31.9	7.9	3.3
1947	17.0	13.0	10.0	39.8	12.4	4.4	12.5	16.4	8.5
1948	28.7	7.8	8.5	39.6	15.4	2.3	11.8	19.9	5.3
1949	30.9	6.3	9.8	40.2	16.0	2.4	11.2	21.0	6.9
1950	8.8	13.7	15.1	37.3	13.5	4.8	12.1	19.7	16.2
1951	6.4	19.4	14.4	36.0	11.9	5.8	16.2	13.7	17.3
1952	3.6	16.2	13.2	28.9	10.8	7.4	17.7	17.3	11.6
1953	1.7	18.4	18.0	26.0	9.8	12.3	10.9	20.0	15.4
1954	2.3	23.9	21.3	23.8	8.5	9.0	8.9	19.2	14.5
1955	2.8	24.9	24.4	21.7	9.7	8.3	8.9	16.9	14.8
1956	3.2	25.5	25.3	20.1	11.0	9.1	5.5	15.3	11.8
1957	3.5	26.1	28.4	17.8	10.1	9.5	6.0	14.4	12.4
1958	0.9	8.4	38.9	16.6	6.4	20.0	7.4	15.1	12.8
1959	1.1	10.9	39.4	15.2	5.9	19.5	8.0	14.2	13.0
1960	1.5	13.8	40.2	12.5	5.2	19.3	7.5	12.0	10.5
1961	1.8	16.3	40.2	10.1	4.4	20.0	7.4	11.6	10.0
1962	1.5	13.9	47.9	8.4	3.9	18.7	7.3	10.2	10.3
1963	1.9	14.0	46.9	7.9	3.4	19.8	7.4	10.6	10.1
1964	1.7	15.7	48.7	7.0	3.2	16.0	9.0	9.4	9.1
1965	2.1	18.0	49.1	6.9	3.1	14.0	8.5	9.7	9.3
1966	1.5	17.9	46.8	6.6	2.8	16.1	10.3	9.5	10.0
1967	1.8	20.7	43.4	5.5	2.5	17.9	11.0	9.0	9.8
1968	2.3	25.2	42.2	6.0	2.7	12.5	10.9	9.2	8.9
1969	3.0	27.0	42.2	5.5	2.4	12.3	10.4	8.0	7.8
1970	3.7	28.5	40.6	5.8	2.2	12.8	10.6	7.7	8.1
1971	4.1	32.0	42.5	4.8	1.7	9.3	9.4	6.7	6.5

(*continued*)

Table 3B.2 Continued

Year	Fraction decedents filing returns % (1)	% Estate composition: Agricultural Land (2)	Residential Land (3)	Houses & Structures (4)	Business Assets (5)	Stocks (6)	Fixed Claim Assets (7)	Other Assets (8)	Debts (9)
1972	4.7	33.0	40.6	3.7	1.7	10.2	10.4	6.5	6.0
1973	4.4	35.0	40.2	3.3	1.3	9.7	10.6	6.0	5.9
1974	4.9	32.2	43.2	3.3	1.3	8.3	10.2	7.0	5.5
1975	2.2	32.0	41.8	2.9	1.0	9.1	11.2	6.8	4.9
1976	2.4	31.5	40.5	3.2	1.1	9.3	12.0	7.8	5.4
1977	2.7	30.4	41.0	3.4	1.1	9.6	11.3	8.4	5.4
1978	3.0	30.7	40.1	3.6	1.3	9.0	11.8	9.0	5.6
1979	3.4	29.2	41.3	3.6	1.4	9.1	11.7	9.9	6.2
1980	3.8	28.9	41.7	3.5	1.2	9.2	11.3	9.7	5.6
1981	4.5	28.3	43.9	3.4	1.0	8.4	10.6	9.9	5.5
1982	5.2	28.0	46.0	3.4	1.0	7.2	10.3	9.6	5.5
1983	5.5	27.8	44.9	3.4	1.0	7.8	10.6	9.9	5.4
1984	6.0	26.6	45.3	3.7	1.2	7.9	11.3	10.5	6.4
1985	6.6	25.4	45.3	3.7	0.9	8.6	11.8	10.4	6.1
1986	6.9	24.3	44.6	4.0	0.9	9.9	12.7	10.5	6.8
1987	8.0	22.2	47.0	3.9	0.8	11.0	12.6	10.2	7.9
1988	6.6	21.9	52.8	3.6	0.6	9.7	11.8	7.4	7.8
1989	5.3	20.8	51.9	4.9	0.5	13.2	10.8	6.0	8.0
1990	6.0	20.9	56.3	4.9	0.5	9.0	10.9	6.0	8.4
1991	6.9	21.5	57.9	5.0	0.4	7.7	10.1	5.7	8.3
1992	6.5	25.9	56.0	4.7	0.4	6.2	9.5	5.1	7.9
1993	6.1	25.4	54.0	5.5	0.5	6.9	10.9	5.9	9.1
1994	5.3	26.5	50.8	5.6	0.5	7.1	12.3	6.3	9.1
1995	5.6	25.9	50.4	5.9	0.5	6.9	13.6	6.7	9.8
1996	5.5	26.2	48.5	4.5	0.5	7.4	15.0	7.2	9.4
1997	5.3	25.2	47.9	4.4	0.6	8.1	15.7	7.6	9.5
1998	5.4	25.6	48.2	4.8	0.5	5.9	16.9	7.9	9.8
1999	5.2	24.3	46.4	5.1	0.6	7.3	18.1	9.7	11.5
2000	5.1	23.4	48.3	4.9	0.5	7.2	19.6	11.0	15.1
2001	4.8	23.2	43.4	5.2	0.6	8.6	20.4	11.5	12.8
2002	4.5	23.3	43.4	5.8	0.5	6.7	21.7	12.2	13.7
2003	4.4	21.4	42.3	5.5	0.5	7.1	23.7	12.8	13.4
2004	4.3	18.6	40.4	6.0	0.6	9.0	25.7	10.6	10.9
2005	4.4	17.1	38.9	6.2	0.5	10.6	27.0	10.8	11.1

Notes: Computations by authors based on aggregate estate tax return statistics. See Appendix 3B for details.
Estates net of debts are defined to be 100%.
Business assets include assets of unincorporate business and farm assets.
Fixed claim assets include bonds, cash, deposits, savings accounts, and other claims.
Other assets include household properties, pensions, life insurance, and other items.
Because the fraction of decedents filing estate tax returns fluctuates from year to year, estate compositions may not be directly comparable across years. See Table 3.3 for the comparison of top estate compositions for selected years.

APPENDIX 3C: TOP WAGE INCOME SHARES

In estimating top wage income shares, we use two different sets of statistics for the pre and post 1950 period, as discussed below. As a result, our estimates for 1929 44 are less precisely estimated than the 1951 2005 estimates and two series are not fully homoge neous.

Top Wage Income Shares, 1951–2005

The National Tax Administration has annually published the statistics on wages and salaries in the results of the statistical survey of the actual status for salary in the private sector in the *Survey on Private Wages and Salaries* (*Minkan Kyuyo no Jittai*) since 1951.[55] The survey covers all employees in the private sector who worked for the same employer throughout a calendar year, but excludes temporary workers whose job duration is shorter than a year, regular employees who are hired mid year, government employees, and retirees. Because the survey is based on the data filed by employers who are legally responsible for withholding tax at source for their employees, it provides accurate and detailed information on wages and salaries, often by firm size, industry, tenure, and sex. The statistics include a distribution table that reports the number of wage earners and the amount of annual wage income by wage income brackets, which we use to estimate top wage income shares.

Our definition of wage income includes wages, salaries, overtime pay, bonuses, and various allowances, but excludes retirement benefits and part of non cash compensation. It is before subtracting employee's social insurance contributions and before including employer's social insurance contributions.[56] Although all non cash compensation is in principle taxable, expense accounts for business purposes are fully exempted, and so is company housing if employees bear at least 50 per cent of its costs based on official valuation. Recreation or entertainment provided exclusively for executives is fully taxed, however. Stock option, which was legalized in 1997 and liberalized in 2002 in Japan, is in principle not taxed as wage income but taxed as capital gains at the point of exercise.[57] Thanks to the sophisticated withholding system with end of year adjustments, the tax statistics in fiscal year *t* report wages and salaries earned in the same year *t*. Therefore, fiscal year and actual year coincide for the wage income tax statistics in 1951 2005.

We again use a standard Pareto interpolation method to estimate top wage income shares. We define top groups (top 5 per cent and 1 per cent) relative to the total number of

[55] The first survey was conducted in 1949, but its sample differs from the subsequent surveys and its results were never published (National Tax Administration (1980), *Minkan Kyuuyo Jittai Chosa Sanjunen no Ayumi* (30 Year History of the Survey of Private Wages and Salaries)). We cannot locate the original 1950 and 1951 surveys. The data for 1951 are found in Takahashi (1959). The results of the statistical survey for recent years are available at http://www.nta.go.jp/category/toukei/tokei e.htm.

[56] This information is based on the author's phone conversation with a Japan Tax Administration officer on 5 May 2006.

[57] For the definition of wage income and the detailed descriptions of exemptions and special treatments, see section 2 of National Tax Bureau (2004), Heisei 16 nen 6 gatsu Gensen Choshu no Aramashi (June 2004: Outline of Withholding Tax), available online at http://www.nta.go.jp/category/pamph/gensen/5151/01.htm.

regular employees, which excludes temporary as well as daily hired workers, in the private sector in Japan. The series for regular employees for 1951 2005 are obtained from *Historical Statistics of Japan*, table 19 7,[58] and are reported in column (2) in Table 3C.1. The number of employees in the wage income survey is reported in column (3). As shown in column (4), from 1951 to 2005, the coverage of the survey rose from 55 per cent to 97 per cent of regular employees in the private sector.

To obtain top wage income shares, we divide the amounts of wages and salaries accruing to top wage income groups by 90 per cent of total wages and salaries from National Accounts. The denominator is reported in column (7) in Table 3C.1, under the label 'total wage income'. To be consistent with our definition of wage income, total wages and salaries from National Accounts include employees' social insurance contributions and exclude employers' social insurance contributions. In recent years, where the coverage of the survey is almost complete for regular employees in the private sector, total wages reported in the survey are approximately 90 per cent of wages and salaries from National Accounts. Thus, we use the factor 90 per cent to correct for the exclusion of daily employees and government employees in the wage income survey. We present all values in real 2002 yen, using CPI. Our estimates for top 1 per cent and 5 per cent wage income shares for 1951 2005 are reported in Table 3C.2 and Figures 3.10 and 3.11.

Top Wage Income Shares, 1929–1944

For fiscal years 1930 45, the annual reports publish the data on salaries and bonuses as part of the composition tables in income tax statistics. The data include the numbers of taxpayers who received salaries and bonuses, respectively, and the amounts of salaries and bonuses they earned. The income tax statistics in fiscal years 1920 9 also report the amounts of salaries and bonuses but not the numbers of salary and bonus earners. We thus cannot use the data before 1929 to estimate top wage income shares. We assume that fiscal years 1930 45 correspond to actual years 1929 44 for the reasons described in Appendix 3A.

For the denominator, we take the total salaries (excluding employers' social insurance contributions) from the old SNA for 1930 44. For 1929, we extrapolate total salaries assuming that the fraction of salaries in total personal income is the same as in 1930.

We define top groups relative to the total number of regular employees. Although the tax statistics during the 1929 44 period do not exclude temporary workers, we use regular employees to be consistent with the 1951 2005 estimates. Moreover, naturally, most if not all top wage earners are regular employees. The total number of regular employees in Japan is estimated as follows. The total number of employees is reported in *Historical Statistics of Japan*, volume i, table 3 6, for years 1930, 1940, and 1947. For 1930, employees and family workers are not reported separately, thus we assume that the fraction of family workers to total employees in 1930 is the same as in 1940. We then estimate the total number of employees for years between 1930, 1940, and 1947, simply by linear interpolation. Finally, we estimate the number of regular employees for 1929 44, using the fraction of regular employees to total employees in 1953, the first year in which such information is available. These assumptions are restrictive, but our estimates are not very sensitive to these assumptions.

We make the following adjustments to the salaries and bonuses reported in the income tax statistics to recover the full value. For fiscal years 1930 9, the earned income credit allowed taxpayers to deduct 20 per cent of wage income for those with total income under

[58] Available online at http://www.stat.go.jp/english/data/chouki/19.htm.

6,000 yen and 10 per cent for those with total income between 6,000 and 12,000 yen. We therefore assume that the average deduction was 15 per cent and inflate the reported amount of salaries by a factor 1/0.85. For fiscal years 1940 5, the earned income credit is 10 per cent of wage income for those with total income below 10,000 yen. We assume that the average deduction is 8 per cent and inflate the reported salaries by a factor 1/0.92. Because, for fiscal years 1930 6, only 60 per cent of bonuses are taxable and reported in the statistics, we inflate bonuses by a factor 1/0.6. Similarly, for fiscal years 1937 9, as only 80 per cent of bonuses are reported in the statistics, we inflate bonuses by a factor 1/0.8. For fiscal years 1940 5, as 100 per cent of bonuses are reported, we make no adjustment.

The number of bonus earners in the income tax statistics is always smaller than the number of salary earners. We assume that all bonus earners also have some wage income, so that we can attribute all bonuses to all the taxpayers reporting positive salaries. Furthermore, we assume that those reporting salaries and bonuses on income tax returns represent the top wage income earners. This assumption does not necessarily hold, as individuals with large non wage income and modest wage income also file tax returns, and may bias our estimates of top wage income shares down ward.

Thus, from the aggregate statistics, we can compute the share of total wage income accruing to the tax return filers with positive wage income. To obtain the shares of wage income accruing to fixed fractions of wage earners (e.g. top 1 per cent and 5 per cent groups) using a standard Pareto interpolation method, however, we need at least two observations on the share of income and the fraction of employees per year. Because we have only one such observation per year, we proceed as follows.

For years 1929 44, on average about 3 per cent of regular employees filed income tax returns. This fraction changes over time. In particular, it falls sharply from 6.72 per cent in 1938 (fiscal year 1939) to 0.76 per cent in 1939 (fiscal year 1940), because of the large increase in the exemption level for comprehensive income tax under the 1940 law. We assume that the distribution of wage income did not change significantly from 1938 to 1939 and that the Pareto coefficient remained the same. Then we estimate the Pareto coefficient using the standard formula: $(1\ \ 1/a) = \{\log(\text{share of wage income in 1938})\ \ \log(\text{share of wage income in 1939})\}/\{\log(\text{fraction of wage income filers in 1938})\ \ \log(\text{fraction of wage income filers in 1939})\}$. The estimated coefficient is a=2.76. Assuming that the Pareto coefficient is constant for 1929 44, we compute the top 1 per cent and top 5 per cent income share for each year (which are reported in Table 3C.2). Because we use 1938 and 1939 to estimate the Pareto coefficient, by definition our top wage income shares in 1938 and 1939 are identical. Therefore, we exclude the 1938 estimates from Table 3C.2.

The assumption that the Pareto coefficient is constant across years 1929 44 is certainly restrictive. Our finding, a sharp decline in top wage income shares during this period, however, should be robust. The raw data clearly indicate that there was a large decline in wage income concentration during 1929 44: in the early 1930s, when 2 to 3 per cent of wage earners filed income tax returns, their wage income was more than 15 per cent of the total salaries from National Accounts; by contrast, in 1944, almost 5 per cent of wage earners filed income tax returns but their wage income was only about 9 per cent of all wages and salaries.

Marginal Tax Rates for Top Wage Income Earners, 1951–2005

We estimate marginal tax rates (MTRs) at the wage income thresholds for the top 10 per cent, 5 per cent, 1 per cent, 0.1 per cent, and 0.01 per cent groups (denoted as MTR at P90,

P95, P99, P99.9, and P99.99, respectively, in Table 3C.3) in 1951 2005 as follows. We assume that a taxpayer at each threshold income has only employment income and forms a household with a non working spouse and two dependent children. To obtain net taxable income, we subtract basic, spouse, and two dependent exemptions and employment income deductions from the threshold wage income. Tax codes describing exemptions and deductions in each year are available in Japan National Tax Administration (1988) and OECD (1998 2005), *Taxing Wages*. We then use a standard tax schedule (that presents increasing marginal tax rates by income brackets) to obtain tax liability, from which we estimate MTR for a given taxable income level. Top MTR in Table 3C.3 is the highest statutory marginal tax rate according to the tax schedule after employment income deductions.[59]

To estimate the MTR for the average taxpayer in the top 0.1 per cent wage income group (presented in Figure 3.12, Panel A), we use the following method. First, we compute the MTR for the top 0.01 per cent group as: MTR Top 0.01 per cent = (MTR at P99.99 + Top MTR)/2, where a simple average is used as an approximation for the MTR for this group. We then compute the MTR for the top 0.1 per cent group as: MTR Top 0.1 per cent = {Income Share of Top 0.1 0.01 per cent Group * (MTR at P99.9 + MTR at P99.99)/2 + Income Share of Top 0.01 per cent Group * MTR Top 0.01 per cent} / {Income Share of Top 0.1 per cent Group}. This amounts to estimating MTR Top 0.1 per cent as the income weighted average of MTR Top 0.01 per cent and MTR Top 0.1 0.01 per cent where MTR Top 0.1 0.01 per cent is computed using a simple average, (MTR at P99.9 + MTR at P99.99)/2.

Our marginal tax rates do not take into account social insurance contributions and local income taxes. In Japan, since their introduction in the early 1950s, social insurance taxes (for pensions and health insurance) have been determined as a fixed percentage of monthly earnings up to a maximum amount of monthly earnings set by law. The cap on monthly earnings has been set at around twice the average earnings of all insurers and revised periodically to adjust for inflation.[60] As a result, as in the USA, social insurance taxes hardly affect the top 1 per cent wage income earners in Japan.

For local income taxes (municipal and prefectural taxes) in Japan, local governments introduced a significant progressive income tax on the same income base as the national income tax since 1950 (Ishi 2001). Although the share of local income taxes in total income taxes (local and national combined) has grown over the 1950 2005 period, its progressivity has declined (the highest statutory marginal tax rates for local income has declined from 18 per cent in 1950 to 13 per cent in 2005.[61] Therefore, adding local MTRs to our national MTRs would probably magnify the decline in the marginal tax rates for top wage income earners in Japan during 1950 2005.[62]

In 2005, the share of local income taxes in total income taxes in Japan was 25 per cent, while the share of local income taxes in total income taxes (federal and state combined) in the USA is 22 per cent. The share of local income taxes in Japan is in fact comparable to the tax of high tax states such as California or New York. In short, the inclusion of social insurance contributions and local taxes would not affect our comparative analysis of Japan and the United States.

[59] In 2005, for example, for employment income over 10 million yen, 1.7 million yen plus 5% of the employment income can be deducted from taxable income, reducing MTR by 5%.

[60] See 'Tsuiseki Nenkin Kaikaku (Pension Reform)' published in Yomiuri Shimbun Online on 4 June 2004, at http://www.yomiuri.co.jp/atmoney/special/43/kaikaku53.htm and Kosei Hakusho (White Paper on Health and Welfare) in 1965 available online at http://wwwhakusyo.mhlw.go.jp/wpdocs/hpaz196501/b0163.html.

[61] The data on local tax rates in Japan, 1950 2005, are available at http://www.soumu.go.jp/czaisei/czaisei seido/ichiran06 h17.html.

[62] See Moriguchi (2008) for MTR estimates incorporating local income taxes that confirms this point.

Table 3C.1 Reference totals for wage earners, wage income, and inflation, Japan, 1948 2005

Years		Regular Wage Earners			Wage Income		Inflation
(1a)	(1b)	(2)	(3)	(4)	(7)	(8)	(9)
Actual Year wage earned	Fiscal Year (tax paid)	Number of employees ('000s)	Number of tax returns ('000s)	(3)/(2) (%)	Total wage income (billions 2002 yen)	Average wage income ('000s 2002 yen)	CPI (2002 base 100)
1929	1930	9,821	336	3.42	7,911	806	0.062
1930	1931	10,009	302	3.02	8,791	878	0.055
1931	1932	10,197	274	2.69	8,969	880	0.049
1932	1933	10,385	291	2.81	8,996	866	0.050
1933	1934	10,573	322	3.05	9,190	869	0.051
1934	1935	10,761	353	3.28	9,971	927	0.052
1935	1936	10,949	384	3.51	10,135	926	0.053
1936	1937	11,137	425	3.82	10,828	972	0.054
1937	1938	11,326	655	5.78	11,450	1,011	0.059
1938	1939	11,514	774	6.72	12,053	1,047	0.064
1939	1940	11,702	89	0.76	11,806	1,009	0.080
1940	1941	11,528	102	0.89	11,012	955	0.102
1941	1942	11,355	243	2.14	12,150	1,070	0.114
1942	1943	11,181	325	2.90	11,662	1,043	0.139
1943	1944	11,007	444	4.03	12,986	1,180	0.159
1944	1945	10,834	532	4.91	13,459	1,242	0.196
1948	1948	11,006			6,904	627	10.58
1949	1949	10,729	1,410	13.14	7,225	673	13.93
1950	1950	10,928	5,114	46.80	9,532	872	12.99
1951	1951	11,835	6,463	54.61	11,104	938	15.19
1952	1952	12,275	6,838	55.70	12,846	1,046	16.03
1953	1953	14,340	6,939	48.39	14,870	1,037	17.08
1954	1954	14,800	7,625	51.52	15,439	1,043	18.12
1955	1955	15,370	8,219	53.47	16,486	1,073	18.02
1956	1956	16,660	8,745	52.49	18,813	1,129	18.12

(*continued*)

Table 3C.1 Continued

Years		Regular Wage Earners			Wage Income		Inflation
(1a)	(1b)	(2)	(3)	(4)	(7)	(8)	(9)
Actual Year wage earned	Fiscal Year (tax paid)	Number of employees ('000s)	Number of tax returns ('000s)	(3)/(2) (%)	Total wage income (billions 2002 yen)	Average wage income ('000s 2002 yen)	CPI (2002 base 100)
1957	1957	17,790	9,431	53.01	20,549	1,155	18.65
1958	1958	18,860	10,268	54.44	22,776	1,208	18.54
1959	1959	19,020	10,856	57.08	25,316	1,331	18.75
1960	1960	20,220	11,715	57.94	28,091	1,389	19.49
1961	1961	21,210	12,962	61.11	31,665	1,493	20.43
1962	1962	22,190	14,106	63.57	35,153	1,584	21.90
1963	1963	23,230	15,250	65.65	38,029	1,637	23.47
1964	1964	24,080	16,123	66.96	42,642	1,771	24.41
1965	1965	25,050	17,170	68.54	46,583	1,860	25.98
1966	1966	26,160	18,277	69.87	50,978	1,949	27.34
1967	1967	27,670	19,773	71.46	56,392	2,038	28.39
1968	1968	28,690	20,676	72.07	62,196	2,168	29.96
1969	1969	29,190	22,066	75.59	69,588	2,384	31.53
1970	1970	30,230	24,244	80.20	77,696	2,570	33.94
1971	1971	31,230	26,480	84.79	86,792	2,779	35.93
1972	1972	31,620	27,096	85.69	96,653	3,057	37.61
1973	1973	32,880	28,181	85.71	108,657	3,305	42.01
1974	1974	33,220	29,895	89.99	110,902	3,338	52.28
1975	1975	33,460	30,321	90.62	114,416	3,419	58.46
1976	1976	34,020	31,068	91.32	117,435	3,452	64.01
1977	1977	34,260	31,151	90.93	120,527	3,518	69.14
1978	1978	34,360	32,113	93.46	125,063	3,640	71.66
1979	1979	35,050	32,534	92.82	129,837	3,704	74.28
1980	1980	35,860	33,361	93.03	130,085	3,628	80.25
1981	1981	36,460	33,659	92.32	132,860	3,644	84.12

1982	1982	36,920	33,996	92.08	136,637	3,701	86.43
1983	1983	37,730	34,928	92.57	140,826	3,732	88.00
1984	1984	38,260	35,306	92.28	145,394	3,800	89.99
1985	1985	38,660	36,938	95.55	148,370	3,838	91.77
1986	1986	39,320	37,287	94.83	153,379	3,901	92.19
1987	1987	39,640	37,670	95.03	157,781	3,980	91.98
1988	1988	40,540	37,918	93.53	165,970	4,094	92.40
1989	1989	41,760	38,470	92.12	173,262	4,149	94.60
1990	1990	43,160	39,307	91.07	181,689	4,210	97.53
1991	1991	44,770	40,339	90.10	189,819	4,240	100.68
1992	1992	45,890	41,247	89.88	195,086	4,251	102.35
1993	1993	46,570	42,770	91.84	197,072	4,232	103.51
1994	1994	46,900	43,726	93.23	201,399	4,294	104.03
1995	1995	47,090	44,395	94.28	203,262	4,316	103.71
1996	1996	47,540	44,895	94.44	207,393	4,362	103.71
1997	1997	47,910	45,265	94.48	209,891	4,381	104.65
1998	1998	47,500	45,446	95.68	206,707	4,352	104.54
1999	1999	46,900	44,984	95.91	202,901	4,326	103.82
2000	2000	46,840	44,939	95.94	207,231	4,424	102.47
2001	2001	46,770	45,097	96.42	207,932	4,446	100.91
2002	2002	46,040	44,724	97.14	198,802	4,400	100.00
2003	2003	45,980	44,661	97.13	198,322	4,313	99.70
2004	2004	46,080	44,530	96.64	197,278	4,281	99.70
2005	2005	46,310	44,936	97.03	199,881	4,316	99.39

Notes: See Appendix 3C for details.
Due to the extensive withholding system for wage earners, actual years and fiscal years coincide for 1949–2002.
The number of employees is total number of regular employees in the private sector.
The number of tax returns is based on income tax statistics for 1929–1944, and *Survey on Private Wages and Salaries* for 1949–2005.
Wage Income is defined as wages, salaries, allowances, bonuses, and taxable part of noncash benefits, but excludes retirement benefits. Total wage income is defined as 90% of total wages and salaries from National Accounts.

Table 3C.2 Top wage income shares in Japan, 1929 2005

Year	Top 10% (1)	Top 5% (2)	Top 1% (3)	Top 0.5% (4)	Top 0.1% (5)	Top 0.01% (6)	Top 10 5% (7)	Top 5 1% (8)	Top 1 0.5% (9)	Top 0.5 0.1% (10)	Top 0.1 0.01% (11)
1929		21.11	7.57					13.54			
1930		20.51	7.35					13.16			
1931		21.65	7.76					13.89			
1932		22.30	8.00					14.31			
1933		23.01	8.25					14.76			
1934		22.55	8.08					14.46			
1935		23.14	8.30					14.84			
1936		20.39	7.31					13.08			
1937		19.80	7.10					12.70			
1938											
1939		18.78	6.73					12.05			
1940		16.88	6.05					10.83			
1941		13.60	4.88					8.73			
1942		11.91	4.27					7.64			
1943		10.34	3.71					6.63			
1944		8.85	3.17					5.68			
1951	23.20	14.70	4.83	2.98	0.97	0.19	8.50	9.87	1.85	2.01	0.79
1952	24.37	15.60	5.39	3.37	1.10	0.22	8.77	10.21	2.02	2.27	0.87
1953	24.06	15.46	5.35	3.36	1.12	0.22	8.61	10.11	2.00	2.23	0.91
1954	24.20	15.48	5.34	3.36	1.11	0.23	8.72	10.14	1.98	2.25	0.89
1955	24.19	15.43	5.34	3.34	1.10	0.22	8.77	10.09	2.00	2.24	0.89
1956	25.77	16.67	5.88	3.64	1.24	0.25	9.11	10.79	2.24	2.41	0.99
1957	26.84	17.31	6.10	3.79	1.29	0.25	9.53	11.21	2.31	2.50	1.04
1958	26.47	17.13	6.06	3.80	1.28	0.26	9.34	11.06	2.27	2.51	1.02
1959	26.49	17.18	6.19	4.04	1.32	0.25	9.31	11.00	2.15	2.72	1.07
1960	27.00	17.48	6.14	3.90	1.32	0.26	9.52	11.34	2.24	2.58	1.06
1961	27.41	17.91	6.58	4.23	1.34	0.26	9.50	11.33	2.35	2.89	1.08
1962	26.85	17.70	6.40	4.07	1.29	0.25	9.14	11.31	2.33	2.78	1.04
1963	26.67	17.31	6.20	3.90	1.31	0.27	9.36	11.11	2.31	2.59	1.04
1964	26.17	16.96	6.02	3.74	1.24	0.24	9.21	10.94	2.28	2.50	1.00
1965	25.01	16.12	5.59	3.43	1.13	0.23	8.89	10.53	2.16	2.30	0.91
1966	24.43	15.62	5.37	3.31	1.08	0.20	8.81	10.25	2.06	2.23	0.88
1967	25.08	16.00	5.42	3.37	1.11	0.22	9.08	10.58	2.05	2.26	0.90
1968	25.49	16.24	5.41	3.36	1.11	0.21	9.25	10.83	2.05	2.26	0.90
1969	25.24	15.98	5.18	3.21	1.03	0.19	9.26	10.79	1.97	2.18	0.83

1970	25.50	15.95	5.04	3.10	1.00	0.19	9.55	10.91	1.94	2.10	0.82
1971	25.19	15.63	4.93	2.99	0.94	0.18	9.57	10.70	1.94	2.05	0.76
1972	25.24	15.70	5.02	2.96	0.89	0.16	9.54	10.68	2.06	2.07	0.73
1973	24.91	15.44	4.85	2.81	0.85	0.16	9.47	10.59	2.04	1.96	0.68
1974	24.47	14.97	4.56	2.72	0.81	0.15	9.49	10.41	1.84	1.91	0.66
1975	23.54	14.33	4.33	2.57	0.75	0.13	9.20	10.00	1.76	1.82	0.62
1976	24.01	14.63	4.43	2.61	0.80	0.13	9.38	10.19	1.82	1.82	0.66
1977	23.36	14.11	4.29	2.54	0.74	0.13	9.25	9.82	1.76	1.79	0.61
1978	23.32	14.06	4.32	2.59	0.78	0.14	9.26	9.74	1.73	1.82	0.64
1979	23.92	14.53	4.47	2.69	0.84	0.16	9.40	10.06	1.78	1.86	0.67
1980	23.91	14.51	4.46	2.71	0.88	0.19	9.40	10.05	1.75	1.83	0.69
1981	23.92	14.62	4.50	2.72	0.84	0.16	9.30	10.12	1.79	1.88	0.68
1982	23.47	14.32	4.37	2.64	0.83	0.17	9.15	9.96	1.73	1.81	0.67
1983	23.78	14.57	4.42	2.66	0.82	0.16	9.21	10.15	1.75	1.85	0.66
1984	23.81	14.60	4.46	2.70	0.84	0.17	9.22	10.13	1.76	1.86	0.67
1985	24.30	14.85	4.51	2.73	0.86	0.17	9.45	10.33	1.78	1.87	0.69
1986	24.70	15.08	4.54	2.71	0.84	0.17	9.62	10.54	1.83	1.87	0.67
1987	25.08	15.28	4.68	2.79	0.88	0.17	9.80	10.60	1.89	1.91	0.71
1988	25.15	15.33	4.65	2.75	0.84	0.16	9.82	10.67	1.90	1.91	0.68
1989	25.32	15.43	4.70	2.78	0.88	0.17	9.90	10.73	1.92	1.91	0.71
1990	25.59	15.61	4.78	2.84	0.90	0.17	9.99	10.82	1.94	1.95	0.72
1991	25.78	15.76	4.79	2.87	0.91	0.18	10.01	10.98	1.91	1.97	0.73
1992	25.92	15.85	4.79	2.88	0.92	0.18	10.08	11.05	1.91	1.96	0.74
1993	25.70	15.66	4.72	2.83	0.88	0.17	10.04	10.94	1.90	1.95	0.71
1994	25.74	15.57	4.71	2.84	0.92	0.18	10.18	10.86	1.87	1.92	0.73
1995	25.76	15.54	4.73	2.85	0.89	0.17	10.23	10.80	1.89	1.96	0.72
1996	25.46	15.29	4.64	2.80	0.89	0.18	10.18	10.65	1.84	1.91	0.71
1997	25.42	15.21	4.60	2.78	0.89	0.18	10.22	10.61	1.82	1.89	0.71
1998	25.73	15.54	4.83	2.96	0.94	0.18	10.20	10.71	1.87	2.01	0.76
1999	25.89	15.73	4.89	3.00	1.00	0.21	10.16	10.84	1.89	2.01	0.78
2000	25.74	15.68	4.95	3.07	1.03	0.22	10.06	10.73	1.88	2.04	0.81
2001	25.68	15.66	5.01	3.12	1.06	0.24	10.02	10.65	1.89	2.06	0.83
2002	26.29	16.08	5.15	3.21	1.09	0.23	10.21	10.93	1.94	2.12	0.85
2003	26.56	16.32	5.29	3.34	1.18	0.27	10.24	11.03	1.95	2.16	0.91
2004	26.90	16.65	5.54	3.53	1.30	0.32	10.25	11.11	2.00	2.23	0.98
2005	26.77	16.61	5.57	3.55	1.27	0.30	10.17	11.04	2.02	2.28	0.97

Notes: Computations by authors based on income tax return statistics and wage income tax statistics; see Appendix 3C for details.
Wage income is defined as wages, salaries, allowances, and bonuses, excluding retirement benefits and non-taxable part of noncash benefits.
Top wage income groups are defined relative to all regular employees for 1929–1944 and regular employees in the private sector for 1951–2005.
Estimates are based on income tax statistics for 1929–44 and *Survey on Private Wages and Salaries* for 1951–2005.
The 1929–44 estimates are less precise than the 1951–2002 estimates and not fully comparable to the 1951–2005 estimates.

Table 3C.3 Wage income tax and marginal tax rates in Japan, 1951 2005

Year (1)	Basic Exemption per Tax Unit ('000 current yen) (2)	Exemption per Dependent ('000 current yen) (3)	Marginal Tax Rate at P90 (%) (4)	Marginal Tax Rates on Wage Income				
				Marginal Tax Rate at P95 (%) (5)	Marginal Tax Rate at P99 (%) (6)	Marginal Tax Rate at P99.9 (%) (7)	Marginal Tax Rate at P99.99 (%) (8)	Top Marginal Tax Rate (%) (9)
1950	25.0	12.0						55.0
1951	38.0	17.0	30.0	33.0	43.0	48.0	53.0	55.0
1952	50.0	20.0	30.0	38.0	43.0	53.0	55.0	55.0
1953	60.0	35.0	21.3	30.0	40.0	50.0	55.0	65.0
1954	67.5	38.8	21.3	35.0	45.0	50.0	55.0	65.0
1955	75.0	40.0	21.3	30.0	40.0	50.0	55.0	65.0
1956	80.0	40.0	20.6	30.0	40.0	50.0	60.0	65.0
1957	87.5	47.5	12.0	18.0	25.0	35.0	40.0	70.0
1958	90.0	50.0	12.0	18.0	25.0	35.0	45.0	70.0
1959	90.0	65.0	13.5	18.0	25.0	35.0	45.0	70.0
1960	90.0	70.0	13.5	18.0	25.0	35.0	45.0	70.0
1961	90.0	50.0	9.0	18.0	25.0	40.0	45.0	70.0
1962	97.5	50.0	13.5	20.0	25.0	40.0	45.0	75.0
1963	107.5	50.0	13.5	20.0	30.0	40.0	50.0	75.0
1964	117.5	50.0	13.9	20.0	30.0	40.0	50.0	75.0
1965	127.5	57.5	15.0	20.0	30.0	40.0	50.0	75.0
1966	137.5	60.0	15.0	20.0	30.0	40.0	50.0	75.0
1967	147.5	67.5	15.0	20.0	30.0	45.0	50.0	75.0
1968	157.5	77.5	20.0	20.0	30.0	45.0	50.0	75.0
1969	167.5	95.0	17.3	21.1	29.4	46.0	55.0	75.0
1970	177.5	115.0	14.6	16.4	25.9	42.0	55.0	75.0
1971	195.0	135.0	12.6	15.2	22.8	42.0	55.0	75.0
1972	200.0	140.0	14.4	17.1	27.0	42.0	55.0	75.0
1973	207.5	155.0	16.4	19.1	28.8	46.0	55.0	75.0
1974	232.5	220.0	12.0	15.1	22.7	35.3	46.5	69.8
1975	260.0	260.0	12.8	16.8	24.3	37.8	45.0	67.5
1976	260.0	260.0	14.4	16.8	27.0	37.8	49.5	67.5

1977	290.0	290.0	14.4	16.8	27.0	41.4	49.5	67.5
1978	290.0	290.0	16.8	19.2	30.6	41.4	49.5	67.5
1979	290.0	290.0	16.8	19.2	30.6	45.0	54.0	67.5
1980	290.0	290.0	16.8	21.6	34.2	47.5	57.0	71.3
1981	290.0	290.0	19.2	24.3	36.1	47.5	57.0	71.3
1982	290.0	290.0	19.2	24.3	36.1	47.5	57.0	71.3
1983	290.0	290.0	19.2	24.3	36.1	47.5	57.0	71.3
1984	330.0	330.0	20.0	22.5	33.3	47.5	57.0	66.5
1985	330.0	330.0	22.5	27.0	38.0	47.5	57.0	66.5
1986	330.0	330.0	22.5	27.0	38.0	47.5	57.0	66.5
1987	330.0	330.0	22.5	27.0	38.0	47.5	52.3	57.0
1988	330.0	330.0	18.0	27.0	38.0	47.5	47.5	57.0
1989			18.0	27.0	38.0	47.5	47.5	57.0
1990			18.0	27.0	38.0	47.5	47.5	47.5
1991			27.0	27.0	38.0	47.5	47.5	47.5
1992			27.0	27.0	38.0	47.5	47.5	47.5
1993			27.0	27.0	38.0	47.5	47.5	47.5
1994			27.0	28.5	38.0	47.5	47.5	47.5
1995			18.0	19.0	28.5	38.0	47.5	47.5
1996			18.0	19.0	28.5	38.0	47.5	47.5
1997			18.0	19.0	28.5	38.0	47.5	47.5
1998	380.0	380.0	18.0	19.0	28.5	38.0	47.5	47.5
1999	380.0	380.0	18.0	19.0	28.5	35.2	35.2	35.2
2000	380.0	380.0	18.0	19.0	28.5	35.2	35.2	35.2
2001	380.0	380.0	18.0	19.0	28.5	35.2	35.2	35.2
2002	380.0	380.0	18.0	18.0	28.5	35.2	35.2	35.2
2003	380.0	380.0	18.0	18.0	28.5	35.2	35.2	35.2
2004	380.0	380.0	18.0	18.0	28.5	35.2	35.2	35.2
2005	380.0	380.0	18.0	18.0	28.5	35.2	35.2	35.2

Notes: Computations by authors based on wage income tax statistics; see Appendix 3C for details.
Marginal tax rates for a taxpayer with a non-working spouse and two dependent children are estimated, assuming all income is employment income.
Basic and dependent exemptions and employment income deductions are taken into account, but various non-standard tax reliefs are excluded.
Local income taxes and social insurance contributions are also excluded. Social insurance contributions are capped at about twice the average wage and therefore do not affect marginal tax rates above P99.
'Marginal tax rate at P90 (or P99.99)' refers to the marginal tax rate at the income threshold for the top 10% (or 0.01%) wage income group.
'Top marginal tax rate' refers to the highest statutory marginal tax rate net of employment income deductions.

APPENDIX 3D: SENSITIVITY ANALYSIS USING THE NSFIE DATA

The best available source for estimating the distribution of capital income by income group is the *National Survey of Family Income and Expenditure* (*NSFIE*).[63] NSFIE is conducted once in every five years and covers over 50,000 households, one of the largest and most comprehensive household surveys in Japan. Starting in 1979, the survey has reported the holdings of various financial assets per household by income class in its savings and liabilities section.[64] We compute top income shares and their income composition using NSFIE data, and compare these estimates with the income tax statistics estimates to evaluate the impact of the capital income erosion on our top income shares series.

Individual-Unit Estimates for 1999

In 1999, the NSFIE statistics report tabulations by the size of the household head's income (in addition to tabulations by the size of total household income).[65] We use these data to estimate top income shares and the composition of capital income, using individual as the unit of observation as in our series based on the income tax statistics. The NSFIE statistics present, by the size of household head's income, the average income of the household head and the average amount of financial assets owned by all household members by asset types, such as demand deposits, time deposits, insurance savings, securities (stocks, trust funds, public and corporate bonds), and liabilities. In our analysis, we divide the assets into three groups: (1) stocks, (2) returns on insurance policies, and (3) fixed claim assets net of liabilities (containing all financial assets except stocks and insurance savings).

We convert the asset holdings into capital income, using total capital income from personal income reported in National Accounts.[66] For example, to estimate dividend income, we take total dividends accrued to individuals from National Accounts and allocate them across households in proportion to the distribution of stocks by income class reported in the NSFIE. We then compute the share of each component in total income for top income groups. In doing so, we assume that the NSFIE represents all Japanese households and that all household assets reported in the survey belong to the household head. We make these extreme assumptions to generate an upper bound on our estimates.

In Table 3.4, we compare our income tax statistics results (in Panel B) with the estimates from the NSFIE (in Panel C) for the year 1999. Unlike income tax statistics, because NSFIE uses a representative sample, it contains few observations at the very high end of income distribution. As a result, we cannot provide accurate estimates for the top 0.1 per cent group and above with the 1999 NSFIE data.

[63] Statistics Bureau of Japan, *National Survey of Family Income and Expenditure* (Zenkoku Shohi Jittai Chosa). For the reliability of NSFIE compared to other household surveys, see Takayama et al. (1988).

[64] We cannot use 1969 and 1974 NSIFE data, because the sample in these years excludes households with professionals and managers.

[65] Table 24, available online at http://www.stat.go.jp/english/data/zensho/1999/menu.htm.

[66] As Hayashi, Ando, and Ferris (1988) demonstrate, capital income in the NSFIE is seriously under reported and cannot be used. We thus use the asset holdings data to estimate capital income. According to Takayama et al. (1988), NSFIE data on assets, including stocks and bonds, are fairly accurate.

Table 3D.1 Sensitivity analysis using the Japanese NSFIE data, 1979 1999

		Fraction of Capital Income Component to Total Household Income			
Income Groups (1)	Income Share (2)	Net Interest Income (3)	Dividend Income (4)	Returns on Insurance Policies (5)	All Returns on Liquid Assets (6) (3) + (4) + (5)
1979					
All	100.0%	6.2%	1.4%	3.0%	10.7%
Top 10 5%	8.8%	6.9%	2.2%	2.7%	11.8%
Top 5%	13.4%	8.4%	3.6%	2.5%	14.6%
1984					
All	100.0%	8.0%	0.8%	3.5%	12.4%
Top 10 5%	9.0%	9.1%	1.5%	3.2%	13.8%
Top 5%	13.4%	10.5%	1.9%	2.9%	15.4%
1989					
All	100.0%	7.4%	1.1%	5.2%	13.7%
Top 10 5%	9.0%	6.9%	1.4%	4.4%	12.6%
Top 5%	14.2%	5.8%	2.9%	4.2%	12.9%
1994					
All	100.0%	6.4%	0.8%	4.5%	11.7%
Top 10 5%	9.1%	5.1%	1.0%	3.9%	9.9%
Top 5%	14.2%	4.1%	1.3%	3.3%	8.7%
1999					
All	100.0%	1.9%	0.9%	4.3%	7.1%
Top 10 5%	9.3%	1.7%	0.7%	3.5%	6.0%
Top 5%	13.8%	1.7%	0.9%	3.1%	5.7%

Notes: Computations by authors based on the *National Survey of Family Income and Expenditure*; see Appendix 3D for details.
In contrast to Table 3.4, Panel C, the NSFIE estimates above are based on the household (as opposed to individual) unit.
Net interest income is estimated based on the holdings of bonds, deposits, and loan trusts, net of liabilities.
Dividend income is estimated based on stock holdings.
Returns on insurance policies are estimated based on the holdings of life and other insurance savings.
Estimates for above the top 5% groups are not available due to the problem of small sample and top coding in the NSFIE data.

Household-Unit Estimates for 1979, 1984, 1989, 1994, and 1999

From 1979 to 1999, the NSFIE statistics present tabulations by the size of the total household income (as opposed to household head's income). We use these data to compute top income shares and capital income composition, using household as the unit of observation. Note that, because the income shares are no longer based on the individual unit, the levels of the NSFIE estimates and the income tax statistics estimates are not directly comparable.[67] Instead, we can compare NSFIE estimates across years, using the

[67] See Atkinson (2007b) for a discussion of the link between individual and family based income shares.

1999 NSFIE estimates as a benchmark. We compute the share of three capital income components in total income for top 5 per cent and 10 per cent income groups, using the same methodology as described above. Because the brackets of the NSFIE tabulations in earlier years are not as finely defined, the top bracket contains 2 per cent to 6 per cent of all households. Due to small sample and top coding, we cannot provide accurate estimates above the top 5 per cent groups with these data. The results are reported in Table 3D.1.

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