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The Evolution of Income Concentration in Japan, 1886-2002: Evidence from Income Tax Statistics

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ABSTRACT

This paper studies the evolution of income concentration in Japan from 1886 to 2002 by constructing long-run series of top income shares and top wage income shares, using income tax statistics. We find that (1) income concentration was extremely high throughout the pre-WWII period during which the nation underwent rapid industrialization; (2) a drastic de-concentration of income at the top took place in 1938-1945; (3) income concentration has remained low throughout the post-WWII period despite the high economic growth; and (4) top income composition in Japan has shifted dramatically from capital income to employment income over the course of the 20th century. We attribute the precipitous fall in income concentration during WWII primarily to the collapse of capital income due to wartime regulations and inflation. We argue that the change in the institutional structure under the occupational reforms made the one-time income de-concentration difficult to reverse. In contrast to the sharp increase in wage income inequality observed in the United States since 1970, the top wage income shares in Japan have remained remarkably stable over the recent decades. We show that the change in technology or tax policies alone cannot account for the comparative experience of Japan and the United States. Instead we suggest that institutional factors such as corporate governance and union structure are important determinants of wage income inequality.

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1. Introduction

Following the seminal work by Kuznets (1955), economists have devoted much effort to analysing the evolution of income inequality during the process of economic development. This analysis is also central for the policy debate: The left argues that concentration of wealth biases the political process in favor of the rich that in turn perpetuates the inequality, calling for progressive taxation as a necessary counter-measure. The right views concentration of wealth as a natural if not necessary outcome of economic growth. Thus, progressive taxation may redistribute income and reduce wealth concentration, but may also reduce economic growth by depressing entrepreneurship and capital accumulation incentives.

To cast better light on the debate, it is critical to understand the empirical relationship between economic growth and income distribution. To this end, economic historians have studied changes in income and wealth inequality over centuries in leading industrial nations such as Britain, the United States, or France (e.g., Soltow (1968, 1969); Williamson and Lindert (1980); Williamson (1985); Lindert (1986, 2000); Piketty, Postel-Vinay, and Rosenthal (2006)). Historical studies, however, were often hampered by the absence of long-run homogeneous series of income and wealth. Recently, a number of studies have used income tax statistics to generate such series for several European and Anglo-Saxon countries (see Atkinson and Piketty (2006) and Piketty (2005)). Although these studies focus on the shares of top income groups due to the nature of the data, they provide the first consistent series of income inequality measure in these countries that cover most of the 20th century.

The objective of this paper is to construct the long-run top income shares series for Japan and evaluate Japan's experience from 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 its process of industrialization was compressed within a very short time period. After the 1868 Meiji Restoration, modern economic growth in Japan took off in the 1880s, and the nation underwent three phases of industrial revolution – from textiles, heavy industries, to high-tech industries – within less than 100 years. To illustrate this point, **Figure 1** depicts the real GDP per capita in Japan, 1820-2004, against that in the United States, 1790-2004. Japan's GDP per capita in 1890 was at the level of U.S. GDP per capita in 1790, or about $1,200 in 2004 dollars which is roughly comparable to the GDP per capita of the poorest countries in the world today. By 1970, however, Japan caught up with other developed

countries, 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% in 1886-1940 and at 4.7% in 1948-2002. Because 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.[1] As the top income shares series compiled 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, marginal tax rates, top estates and its composition, and top wage income shares, all based on tax statistics.

From our data, three main findings follow. First, income concentration at the top 1% income group in Japan was extremely high throughout the pre-WWII period with some short-term fluctuations. Top income shares declined abruptly and precipitously during WWII and remained remarkably low for the rest of the 20th century. 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 accompanied large-scale government intervention, 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 WWII. Evidence from estate tax statistics confirms the drastic decline in top wealth holdings during and immediately after WWII. We argue that the transformation of the institutional structure under the postwar occupational reforms, such as the abolishment of primogeniture, the establishment of progressive tax, and the changes in corporate governance and union structure, prevented the re-concentration of income. Importantly, such redistributive government policies, which likely hindered the "natural" 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 WWII. In sharp contrast to the United States where wage income inequality has increased dramatically since the 1970s, top wage income shares in Japan have

[1] By contrast, comprehensive income tax was instituted in Prussia in 1891, in the United Kingdom in 1909, in the United States in 1913, and in France in 1914, times at which the industrial revolution was already well underway in those countries.

remained remarkably low in the last three decades. As employment income became a major component of the top income after WWII, in addition to the collapse of capital income, we identify the fall in wage income inequality as an important reason for the permanent decline in income concentration. Comparing the Japanese and U.S. 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 corporate governance and internal labor markets, as important determinants of wage inequality.

We draw two broader lessons from Japan's experience. First, our data indicate that Japan achieved two "economic miracles" before and after WWII under very different socio-economic conditions, casting immediate doubts on any theory that predicts simple correlations between economic growth and income inequality.[2] Second, it was the exogenous shock of WWII, rather than endogenous economic or political process, that transformed Japan into more equitable society. Consistent with the experience in many developing countries today, it underscores the difficulty of undertaking drastic redistributive policies in the absence of major impetus.

The rest of the paper is organized as follows. Section 2 summarizes the preceding literature on income inequality in Japan. Section 3 describes the data and estimation methods. Section 4 presents our findings from the top income shares series, 1886-2002. Section 5 investigates the causes of the observed changes in income concentration, using the top income composition and top estates series. Section 6 presents the top wage income shares series, 1929-2002. Section 7 provides comparative perspectives and concludes. The detail description of our data and methods, as well as a complete set of results, are presented in Appendix.

2. Literature Review

By international standards, modern Japan has been widely perceived as a society of relatively low income inequality (e.g., Sawyer (1976)). Although comparing income statistics across nations is notoriously difficult and must be interpreted with caution, recent OECD reports (Atkinson et al. (1995); Burniaux et al. (1998)) and Japanese government

[2] Our findings lend further support to the view that emphasizes the distinctiveness of the post-WWII economic systems in Japan (Okazaki and Okuno-Fijiwara (1993); Noguchi (1995); Teranishi (2005)). In stark contrast to the pre-WWII system that operated much like a neo-classical market economy, the post-WWII system seems to have facilitated high economic growth and low income inequality.

studies (Nishizaki et al. (1998); Kokumin Seikatsukyoku (1999)) together offer a better comparative picture. As **Panel A** of **Table 1** shows, in the mid 1980s, Japan's Gini coefficient of the distribution of household income *before* tax and government transfers was one of the lowest among major industrial nations. When we consider the distribution of income *after* tax and government transfers, as one may expect, Northern European welfare states ranked below Japan (see **Panel B**). Even though the income inequality in Japan rose somewhat during the asset price appreciation in the late 1980s, Japan's ranking among the OECD countries remained approximately the same in the 1990s (Burniaux et al. (1998)). In other words, one of the distinct characteristics of Japan today is its low income inequality in the absence of government redistribution. When did Japan become a nation of low income inequality? Or has Japan always been the so-called "equal society"?

There is an extensive body of empirical work – albeit published mostly in Japanese – examining Japan's income distributions during the 20th century.[3] The lack of household survey data has been a major obstacle in estimating the income distribution before WWII, however. In the absence of such data, some scholars used income tax statistics.[4] Most notably, Shiomi (1933) and Hayakawa (1951) combined national income tax statistics and local income tax records to estimate the income distributions of all households in selected cities and years. Using similar methods and compiling comprehensive local income tax data, Minami (1995, 1998) has recently provided the estimates of the income distribution of all Japanese households in selected years. By contrast, Ono and Watanabe (1976) studied the long-run changes in income inequality during the pre-WWII period, using several indirect measures such as urban-rural and intra-industry wage differentials. They also estimated the Pareto coefficients of the income distributions of high-income earners based on national income tax data and found that the time trends in these coefficients coincided with those indicated by the indirect measures. Otsuki and Takamatsu (1978) calculated the Pareto coefficients from 1887 to 1940 using the average and minimum household incomes based on the *Long-term Economic Statistics* (Ohkawa et al. (1974)).

For the post-WWII period, several types of survey data became available. Wada (1975) estimated the income distribution in the 1950s combining the *Employment Status Survey* and the *Farm Household Economics Survey*. Mizoguchi and Takayama (1984)

[3] For a comprehensive survey of income distribution before WWII, see Terasaki (1986); Minami (1995), Chapter 1. For the post-WWII period, see Mizoguchi and Takayama (1984), Chapter 1; Mizoguchi and Terasaki (1995); Yazawa (2004).
[4] See, for example, Shiomi (1933); Hayakawa (1951); Takahashi (1959).

and Mizoguchi and Terasaki (1995) used the *People's Living Conditions Survey* to examine the changes in income inequality from 1962 to 1990. The income distribution of Japanese households can be also estimated from the *Family Income and Expenditure Survey* (e.g., Ohtake (2005)) and the *Income Redistribution Survey* (e.g., Tachibanaki (2000)). Because these surveys employ disparate sampling methods and income definitions, the resulting estimates of income inequality can differ considerably.

Figure 2 summarizes the long-run changes in income inequality based on the above studies (for simplicity, we use the Gini coefficients to represent their findings).[5] Although the Gini coefficients in a given year differ across studies, they display coherent time trends. First, the income inequality in Japan rose sharply from 1890 to 1940. Second, after WWII, income inequality peaked around 1960, declined in the 1960s, and stabilized in the 1970s. Third, the income inequality has been on the rise since 1980, although scholars have disagreed over the extent of the increase. For example, in his recent study, Tachibanaki (1998) has declared Japan as an equal society a "myth," generating much discussion among scholars, government officials, and the rest of population.[6]

It is important to note that there is no data between 1940 and 1955. In addition, the Gini coefficients before 1940 and after 1955 in **Figure 2** cannot be compared due to major data discontinuity. Nevertheless, general consensus among scholars based on indirect evidence is that the income inequality dropped substantially between 1940 and 1955, presumably due to WWII and post-war occupational reforms (Mizoguchi and Terasaki (1995), p.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-WWII periods and shed better light on the process of the alleged fall in income inequality. Note also that most of the pre-WWII studies provide the estimates only for a handful of years that may or may not be representative data points. Furthermore, since most of the existing studies concern with the income distribution of entire population, we know relatively little about high-income groups.[7] 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, 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 2002. Although top income shares are not necessarily an ideal

[5] Pareto coefficients are converted to Gini coefficients by the formula g=1/(2*p-1) assuming the Pareto Law.
[6] Tachibanaki (2005) is an English version of Tachibanaki (1998). See Ohtake (2005) for the debate.
[7] For important exceptions, see Yazawa (1992) and Miyamoto and Abe (1995), Chapter 6.

measure of income inequality – as it does not reflect the shape of the bottom 95% of the income distribution – they nonetheless provide valuable information about the degree of income concentration that likely affects entrepreneurial incentives and capital accumulation in a capitalist economy. Finally, because we employ the same methodology used in the recent high income studies presented in Atkinson and Piketty (2006), we can compare our data with that of other industrial nations and offer a comparative historical analysis of income concentration.

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 Appendix at the end of the paper. 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.[8] We define "fiscal year" as the year in which tax returns were processed and tax collected, in contrast to "actual year" in which the income subject to taxation was earned. We identify the correspondence between actual years and fiscal years based on income tax laws and Japan National Tax Administration (1988), which is reported in columns (1) and (2) in **Table A0** in Appendix. 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, in our definition, is a *gross* income before deductions of direct 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, unincorporated business income, farm income, self-employment income, dividends, interest, rents, royalties, and other small items. Realized capital gains, however, is excluded from our definition of income for two reasons. First, realized capital gains were not taxable before 1947 in Japan and thus missing from the income tax statistics. Second, in general, realized capital gains form a volatile component of income with large fluctuations and not a steady source of annual income. Thus, in this study, we focus on the series that exclude capital gains.[9]

[8] Japan Ministry of Finance, Tax Bureau, *Shuzeikoku Tokei Nenposho*, 1887-1945, and Japan National Tax Administration, *Kokuzeikoku Tokei Nenposho,* 1946-2002.
[9] We present results including capital gains in Appendix (see Section A.4.3 and Figure A1).

Before 1950, the tax unit was "family" defined as a married couple (or a single household head) with cohabitating dependents. Incomes of family dependents 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. Thus, our top income groups are defined relative to the total number of adults, defined as age 20 and above, in Japan in each year based on official population statistics (reported in column (4) in **Table A0**). Because of high exemption points, only a small fraction of individuals filed income tax returns before 1947 (reported in column (6) in **Table A0**). For this reason, our analysis is necessarily restricted to the high end of the income distribution. That is, we can estimate the income share for the entire period of 1886-2002 only *within* the top 1% income group, while we also provide estimate of the top 5% income share for sub-periods.

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 2** shows, in 2002, the threshold income levels for the top 1% and 0.01% income groups in Japan were $110,000 and $264,000, respectively. The top 0.01% income group in the same year consisted of roughly 10,000 individuals who earned more than $649,000, and their average income was $1.2 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 1930-2002 and from *Long-Term Economic Statistics* (Ohkawa et al. (1974)) for 1886-1929.[10] The total and average real incomes per adult from 1886 to 2002 are reported in columns (7) and (8) in **Table A0**. We convert current income to real income in 2002 yen, using the CPI deflator from *Long-Term Economic Statistics* (Ohkawa et al. (1967)). Our top income shares estimates are reported in **Table A1** in Appendix.

We estimate the composition of income accrued to the top 1% group, using income composition statistics. For years in which composition data are reported by income brackets, we use a Pareto interpolation method to obtain the top 1% estimates. For years in which only aggregate composition data are published, we use these data.

[10] Note that estimates for total personal income before 1930 are less reliable than after 1930, introducing potentially biases in our estimates. See the Appendix Section A.2 for a discussion and a sensitivity analysis.

Our top income composition series are reported in **Table A2**. We also estimate marginal tax rates for the average individual in the top income groups from 1886 to 2002. The estimates are made for an individual with a non-working spouse and two dependent children and include standard deductions but exclude local taxes. The series are reported in **Table A3**.

Next, we construct top estates series using estate tax return statistics published annually by the tax administration since 1905. 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 B1** in Appendix.[11] We also provide estate composition series, 1926-2002, using aggregate estate composition data, which are presented in **Table B2**. Because estate compositions are not available by estate brackets, we cannot produce homogenous top estate composition series.

Finally, we compute top wage income shares using the similar methodology. For the post-WWII period, wage income data are compiled from the *Survey on Private Wages and Salaries* published by the tax administration annually since 1951.[12] The survey covers virtually all employees in the private sector but excludes government employees. Wage income in our definition includes wages, salaries, bonuses, and allowances, but exclude non-cash compensation and 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-WWII period, we use salary and bonus data reported in the income tax statistics for the fiscal years 1930-1945. 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 C1** in Appendix presents the number of wage income earners and total wage income from 1929 to 2002. Our estimates for top wage income shares for 1929-2002 are reported in **Table C2**, and marginal tax rates for top wage income earners for 1951-2002 are presented in **Table C3** in Appendix.

Over the 116 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

[11] Due to the difficulty in reconstructing estate statistics for actual years, our top estates for 1905-57 are imprecisely estimated. See Appendix Section B for a detailed discussion.
[12] Japan National Tax Administration, *Minkan Kyuyo no Jittai,* 1951-2002.
[13] Due to the limited data, our estimates for 1929-1944 are based on restrictive assumptions. See Appendix Section C for a detailed discussion.

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 Appendix 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 is required to file a self-assessed tax return. Fortunately, as mentioned above, the Japanese tax administration publishes the wage income 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 and produce top income shares series.

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 that is captured at source, farm income and business income in general are said to be subject to a higher degree of tax evasion. In effort to avoid tax, employers often shift their compensation from cash to perquisites. Most important, in the post-WWII period, all or part of interest and dividend incomes are taxed separately at flat rates and withheld at source (*gensen bunri kazei*) and missing from comprehensive income tax base. We discuss these problems associated with tax avoidance and evasion in Section 5 and provide sensitivity analysis.

4. Top Income Shares in Japan, 1886-2002

4.1 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 1881-84, the Japanese economy began to modernize and grow rapidly (see **Figure 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 (1981); Miyamoto et al. (1995), Chapter 6). The proportion of employment in agriculture declined from 78% in

1876 to 65% in 1900; and fell further to 51% in 1920, and 42% in 1940 (NRUS (1959). After WWII, it declined even faster from 44% in 1950, to 16% in 1973, and 7.3% in 1995.

To provide an overview of our sample period, **Figure 3** depicts the average real income per adult and the CPI in Japan from 1886 to 2002. The average real income more than quadrupled from 1886 to 1938, the peak year in the pre-WWII period. It grew particularly fast from 1887 to the end of Sino-Japanese War (1894-95), during WWI (1914-18), and during the period of military expansion (1932-38). Then the average income declined sharply towards the end of WWII (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 1944-48 during which consumer prices rose by 5,300%. After the postwar U.S. Occupation (1945-52), the average real income recovered quickly, surpassing the 1938 level by 1959. During the so-called high-growth period of 1955-73, real average incomes increased by a factor of six, achieving one of the fastest sustained economic growths in modern history. After the 1973 Oil Crisis, the 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 stable throughout the post-1950 period in Japan.

4.2 Trends in Top Income Shares

Figure 4 reports our estimates of the top 1% income share from 1886 to 2002 and the next 4% (denoted as "top 5-1%") income share for 1907-24, 1937-38, and 1947-2002. We first focus on the top 1% income share series. Between 1886 and 1938, the top 1% adult population in Japan received as much as 14 to 20% of total personal income. The share, however, fell abruptly and precipitously from 1938 to 1945 from 20% to 6.4%, and remained relatively stable at around 8% throughout the post-WWII period. There are fairly large fluctuations in the top 1% income share before WWII: after a steep fall in 1886-91, it declined temporarily during the Sino-Japanese War (1894-95), the Russo-Japanese War (1904-05), WWI (1914-18), and the Great Depression (1929-31), each time followed by an immediate recovery. In terms of the long-run trend, the top 1% income share was high throughout the initial stage of industrialization in 1886-1913 with no clear positive trend. Similarly, the extraordinary economic growth from 1950 to 1973 was accompanied by little change in the top 1% income share. Finally, despite the recent concerns over rising

income inequality, we observe only a modest increase in the top 1% income share in Japan during the last ten years.

The next 4% income share series displays a substantially different pattern. During the pre-WWII period, although estimates are not available for some years, the share was consistently smaller than the top 1% income share, where the next 4% population received on average about 12% of total income. By contrast, after 1947 it has been consistently and substantially larger than that of the top 1% and rose from 12% to 16% between 1970 and 2000, becoming almost twice as large as the top 1% income share. The most striking difference is that WWII did not have much impact on the next 4% income share. **Figure 4** thus suggests that the income de-concentration phenomenon that took place during WWII was limited to within the top 1% income groups.

Figure 5 demonstrates this point further by decomposing the top percentile into three subgroups: the top 0.1%, the next 0.4% ("top 0.5-0.1%"), and the bottom half of the top 1% ("top 1-0.5%"). Although the three series exhibit similar overall patterns, the *higher* income group experienced the *faster* and *larger* fall in their share during WWII. While the share of the top 1-0.5% group declined by 50% (from 4.0% to 2.0%) in 1941-45, for the next 0.4% group it fell by more than 60% (from 6.7% to 2.5%) in 1938-45, and for the top 0.1% group it fell by 80% (from 9.2% to 1.9%) in 1938-45. Our series shows that the fall for the top 0.01% income share is even more dramatic: it collapsed from 3.8% to 0.6% in 1938-45 and has remained around the same level for the rest of the 20th century (see **Table A1** in Appendix and **Figure 9**). Note also that, for the top 0.1% and 0.01% income groups, their shares show a positive trend before WWII, indicating gradual concentration of income at the very top.

Finally, to provide a comparative perspective, **Figure 6** plots the top 0.1% income share series in Japan with that 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% income share in Japan was higher than in the United States or Fance during the interwar period. Recall that the United States in the 1920s, in particular, was the world's technological leader with giant corporations in capital-intensive industries that generated enormous fortunes (Chandler (1962)). Therefore, it is perhaps surprising to observe that Japan, whose major exports were textiles and light machinery during the same period, exhibited the similar level of income concentration. The top 0.1% income share in the United States and France declined roughly in three stages, first during WWI, then during the Great Depression, and finally during WWII. Interestingly, by the 1960s, the

shares in all three countries had converged to 2%. 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 1980. While the top income shares in Japan and France have remained low, the share in the United States has tripled in the last two decades, returning to the pre-WWII level. In Section 6, we explore the divergent experience of Japan and the United States using wage income tax statistics.

4.3 Trends in Top Income Composition

To better understand the mechanisms that led to the drastic and permanent decline in the top 1% income share during WWII in Japan, we use composition data from the income tax statistics. In **Figure 7,** we decompose the top 1% income share into the five categories: (a) employment income (wages, salaries, bonuses, allowances, and pensions, excluding benefits-in-kind), and (b) business income (profits from unincorporated businesses, farm income, and self-employment income), and (c) rental income (from land and buildings, excluding imputed rents), and (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 homogenous as the fractions of adults filing tax returns fluctuated between 1% and 4% (see **Table A2** in Appendix). Second, because most interest income has been either tax exempted or taxed separately at source since 1947, and so were large part of dividends since 1965, these components were missing from the income tax statistics (Iwamoto et al. 1995). Namely, the disappearance of interest income and the low share of dividends after WWII in the top 1% income in our estimates can be due to the data limitation. Third, the introduction of the withholding system in 1949 might have reduced tax evasion of wage earners. By contrast, in the absence of such withholding system, a potentially large portion of business income is said to be missing from the income tax statistics.

With these caveats in mind, we make the following observations from the top income composition data. First, throughout the 1886-1937 period, approximately 50% of the top 1% income consisted of capital income (i.e., rents, interest, and dividends). Within capital income, dividends steadily gained its share, while the share of interest income declined. Although not shown in the figure, within rental income, farm rents were a major component in the earlier years, but its share declined after 1915. Initially, the share of

business income in the top 1% 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 likely 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 WWII, the top 1% income was almost entirely composed of business income. Third, since 1950, the share of employment income in the top 1% income has increased steadily at the expense of business income. This trend is likely due to the further shift towards a highly industrialized economy with large corporations. Unlike the United States in the similar stage of economic development, however, this shift was accompanied by little increase in income concentration in Japan. Finally, after WWII, capital income has become a less important component in the top 1% income.

To assess the robustness of the above findings, we provide three additional analyses. First, in **Figure A3** in Appendix, we present the average composition of total personal income in Japan from 1930 to 2002 based on National Accounts (in Panel A) and compare with the top 1% income composition (in Panel B). It shows that the share of capital income component in total personal income recovered from the collapse in WWII only gradually: not until the 1980s the shares of dividends and interest came close to their prewar peaks, and the share of rents has remained well below its prewar peak. As in the top 1% income, the share of business income in total personal income also declined monotonically and dramatically in the post-WWII period.[14] Second, we estimate top income composition using an alternative source, a household wealth survey, which includes the capital income components missing from the tax statistics. As we show in Section 5.5, our findings are robust to the inclusion of the missing components. Third, we examine the changes in wealth distribution using estate tax statistics, which we report in next section.

4.4 Evidence from Top Estates

Our income composition series suggest that capital income accrued to the top 1% income group fell dramatically during WWII, never returned to the pre-WWII level, and was replaced by employment income. Total capital income in the economy, however, did recover albeit gradually. Then the fall in the top capital income must have been caused by

[14] See Appendix Section A.4 for a detailed discussion.

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.[15]

Figure 8 plots the average sizes (in real 2002 yen) of the top 0.01% estates and the bottom half of top 1% estates ("top 1-0.5%") from 1905 to 2002 in logarithmic scale. The top 0.01% estates, namely, the "very top" wealth holdings, correspond to the roughly top 100 decedents in 2002, whose average was about 5 billion yen or $40 million.[16] By contrast, the average of the bottom half of top 1% estates, namely, the "moderately high" wealth holdings, was about 310 million yen or $2.5 million in the same year.[17] According to the figure, both the top 0.01% and 1-0.5% estates increased substantially from 1905 to 1936. The top 0.01% estates then declined precipitously by a factor of 140 from 1936 to 1949, and the top 1-0.5% estates declined by a factor of 18 during the same period. In contrast to top incomes, top estates not only fell dramatically in 1941-45 but also continued to fall during the initial four years of the postwar occupational reforms. Both estate levels grew rapidly during the high economic growth period of 1955-73, but they have been on decline since the burst of the asset bubble in 1991. While the level of the top 1-0.5% estates surpassed the pre-WWII peak by 1970, the level of top 0.01% estates in 2002 is still smaller (in real terms) than in 1936 in spite of a ten-fold increase in GDP per capita.

When we compare the two series, the top 0.01% estates were initially about 50 times larger than the bottom half of top 1% estates, and by the 1930s, about 100 times larger. Because of the differential impact of WWII and the postwar 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 2002 despite the changes in macro economic 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.

Table 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

[15] Due to the data limitation, our top estates series are less precisely estimated than top income share series. See Appendix Section B and Table B1 for complete results and a detailed discussion.
[16] Due to the small sample size (50 to 100), year-to-year estimates of the top 0.01% estates can be sensitive to the presence of a single extremely large wealth holder.
[17] Although $2.5 million may still seem large, given the high real estate prices in Japan, an upper-middle income class family owning a large apartment in Tokyo could leave an estate of that size. Studies suggest that the average household assets are considerably higher in Japan than in the United States (see Takayama (1992), Chapter 1).

9%.[18] Estates are decomposed into: (1) land (both farm and residential), (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, pensions, and life insurances). The figure shows that the largest component of the top 9% 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% in 1935 to 15% in 1950, and then rose to 22% 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 WWII and have not returned to the pre-WWII 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 and immediately after WWII. 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% income group. WWII and the occupational reforms had a very large impact on the high end of the 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 likely suffered a disproportionately large loss of their income. In other words, our data suggest that WWII and the subsequent reforms had an irreversible effect in wiping out high-income rentiers.

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 1886-1940 by both historical and international standards; (2) the drastic de-concentration of income at the top took place in 1938-45; (3) income concentration has remained low throughout the post-WWII period; (4) the size of top wealth relative to moderately high wealth declined sharply in 1936-49 and stayed low, and (5) top income composition has shifted dramatically from capital and

[18] Table B2 and Figure B1 present aggregate estate compositions from 1925 to 2002. See Appendix Section B.2 for details.

business incomes toward employment income over the course of the 20th century. In this section, we explore the causes of the evolution of income concentration.

5.1 High Income Concentration in pre-WWII Japan

One of the merits of our data is that they allow a quantitative comparison of income concentration before and after WWII. 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 prewar Japan.[19] 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 WWI, however, both the commercialization of agriculture and the rise of tenant unions led to lower rents and stronger tenant rights (Waswo and Nishida (2003), pp.14-7). 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% income during 1886-1915 and its gradual decline thereafter in our income composition data.

Second, before WWII, large firms raised its capital primarily from stock markets, and business ownership was heavily concentrated on a small number of individual (as opposed to institutional) shareholders. For example, Okazaki (2000) finds that, in 1935, at ten largest *zaibatsu* firms, top 10 shareholders held as much as 66% of total stocks (pp.103-5). In addition, prewar firms paid out high dividends to their shareholders. According to the study by Miyamoto et al. (1995) based on corporate charters of fifty companies in the 1880s, on average 70% 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%, while it was less than 50% in the 1950s (p.184).

[19] According to our data, the top income shares stayed relatively flat or increased only modestly from 1890 to 1940. By contrast, as **Figure 2** shows, concerning the income distribution of all households, the preceding studies find a sharp increase in income inequality during the same period. Our findings are not necessarily contradictory to these results, if the increase was driven by the changes in the lower end of the income distribution. In fact, Mizoguchi and Terasaki (1995) and Minami (1995) attribute the rising income inequality in 1890-1940 primarily to the widening rural and urban income gap and the increasing intra-industry wage differentials.

Third, during the interwar period, top management at large corporations received extremely high compensation. In addition to high monthly salary, they were rewarded large year-end bonuses. According to Miyamoto and Abe (1995), the same fifty corporate charters stipulated that 10% of profit be distributed as executive bonuses (p.276). At leading manufacturing firms, directors on average received 6% of profit in the form of bonus in the 1930s, compared to 2% in the 1960s (Okazaki (1993), p.184). At five leading electric power companies, executive bonus was 28 times larger than the average income per capita in 1936, while in 1955 it was only 1.5 times larger (Minami (1995), p.123). By contrast, paying bonus for rank-and-file employees was an exception rather than a norm in prewar firms. Moreover, large shareholders themselves were often corporate directors in prewar firms, exacerbating the income concentration. For example, Okazaki (2000) finds that, at twenty leading manufacturing firms, top ten shareholders held 23% of the director positions in 1935, while they held none after 1947 (pp.103-5).

In a unique study using individual-level data, Yazawa (1992) compares the 5,000 highest income taxpayers in 1936 and 1982 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% income group in our study – 31% were in retail business, 22% were in manufacturing, 22% were in finance, and 7% had no occupation (pp.155-9). He also shows that they were concentrated in metropolitan areas, such as Tokyo (45%) and Osaka (25%).[20] Only 2.2% of them, however, were the members of aristocracy and only 3.0% 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 prewar Japan proved favorable to the affluent class. Initially, both the 1886 income tax law and the 1905 estate tax law set extremely low tax rates in which the highest possible rates were 3% and 1.8%, respectively. Although the rates were increased subsequently, until the 1937 temporary tax increase law, the effective marginal tax rates for top income and estates groups had remained low (see **Table A3** in Appendix). In addition, the prewar 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

[20] Note that his sample covers 26 major prefectures out of total 47 prefectures in Japan, under-representing rural prefectures (p.149).

other words, with the minimum government intervention, rich families could accumulate their wealth over several generations before WWII.

5.2 Mechanisms of Income De-concentration in 1938-1945

Our data indicate that the top income shares fell precipitously and disproportionately during WWII, but not at all during the occupational reforms. We explore the two key questions in turn: how did WWII reduce the income concentration in such a short period of time, and why did the occupational reforms have such little impact?

WWII likely caused the drastic income de-concentration through three main channels: wartime regulations, inflation, and war destruction. First of all, after the 1937 China Incident and the promulgation of the 1938 National General Mobilization Act, the military government implemented a set of regulations affecting landlord rights, shareholder rights, and executive compensation (Hoshi (1998), Hoshi and Kashyap (2001), Chapter 3; Okazaki (1993)). With respect to landlords, the government facilitated the redistribution of farmland from landlords to tenants in 1938 and 1943, regulated rents and land prices starting in 1939, introduced a two-tier price system for rice production in 1941 under which the government paid much higher prices to owner- and tenant-farmers than to landlords, and revised land and house lease laws in 1941 to augment tenant rights (Waswo and Nishida (2003), pp.22-3). Although their primary goal was to stimulate food production, all of these measures reduced both land value and rental income for landlords.

With respect to shareholders, the government regulated dividends starting in 1939, and capped a dividend-to-equity ratio at 8% in 1940 and at 5% in 1945. As the ratio at major companies before WWII often exceeded 10%, the regulation considerably lowered the returns on stocks. Moreover, the pressure on shareholders led to the decline in the number of shareholders in director positions at major companies after 1940 (Okazaki (2000), p.108). The government also regulated interest rates for private bonds in order to encourage the absorption of government bonds, reducing the returns on corporate bonds. With respect to executives, the government controlled wages and salaries starting in 1939 and placed a ceiling on executive bonuses in 1940. The 1938 law mandated the establishment of works councils, aiming at productivity increase through employee empowerment. These measures likely compressed not only inter-firm but also within-firm pay differentials during WWII. As shown in **Figure 7**, the changes in the different components of the top 1% income coincide well with the timing of the corresponding wartime regulations, indicating their importance in reducing income concentration.

Moreover, despite the stringent controls, the price level began to surge after 1938 and rose dramatically towards the end of WWII (see **Figure 3**). The inflation likely played a key role in reducing the top estates, as it diminished the real value of fixed claim assets (e.g., bonds and deposits). It also likely played a role in the collapse of the top capital income, because it reduced not only interest income but also rental income as the 1941 lease laws made it difficult for landlords to increase rents. Furthermore, to finance the rapid military expansion, the government increased individual and corporate income taxes in 1937, 1938, 1940, 1942, 1944, and 1945 (Japan National Tax Administration (1988)). The sharp increase in corporate tax rates mechanically reduced dividend distributions from corporations to shareholders.[21]

Finally, WWII led to large-scale destruction of physical and human capital that claimed 25% of physical assets and 668,000 civilian casualties by the end (Keizai Antei Honbu (1947)). In particular, repeated air raids of major cities by the U.S. air force starting in March 1945 likely had a devastating effect on the high income earners who were concentrated in the metropolitan areas (Yazawa and Minami (1993), p.366). 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, WWII 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.

5.3 Impact of U.S. 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 postwar occupational reforms could potentially have a large effect in equalizing the income distribution (Yazawa and Minami (1993); Minami (1995)). Three particularly powerfully redistributive measures were implemented during this period.

First, the land reform in 1947-1950 mandated landlords to sell their farmland to ex-tenants, eliminating virtually all large- and medium-sized landowners. As a result, the percentage of land cultivated by tenants declined sharply from 46% in 1941 to 9% in 1955. Due to hyperinflation, compensation paid to landowners in real terms was a mere fraction of the land value. Second, to finance its large deficits, the government imposed

[21] At the same time, one may suspect that the higher marginal tax rates would have invited a higher degree of tax avoidance and evasion. Although we cannot deny this possibility, as discussed later, it was also true that the government intensified their effort to collect taxes during WWII.

extremely heavy and highly progressive property tax (*zaisan zei*) from 1946 to 1951. The property tax affected approximately 13% of all households in Japan in the initial year, and taxed away on average 33% of their properties. For the top 5,000 households, more than 70% of their properties were transferred to the government.

Third, under the dissolution of *zaibatsu* in 1946-48, 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 high to the lower end of distribution. In addition, the hyperinflation in 1944-48 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 postwar years, explaining the surge of business income component in the top 1% income in **Figure 7**.

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 WWII, rather than the occupational reforms, as 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 WWII, which likely had set off the process of income de-concentration well before the postwar democratization and demilitarization. As such, there was little room left for the occupational reforms in further reducing top incomes.[22] 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 WWII in reducing income concentration in such diverse countries as the

[22] It is also likely that some redistributive 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.

United Kingdom, France, the United States, and Canada (Atkinson and Piketty, 2006). Note that none of these countries was occupied after WWII and some did not even experienced major war destruction in their homelands. But, without exception, the war was accompanied by large-scale government intervention and inflation in these countries. In short, in the absence of quantitative evidence, the preceding studies have likely overstated the effect of the occupational reforms in equalizing income in Japan.

5.4 Low Income Concentration in Post-WWII Japan

Perhaps the more challenging question is why the top income shares did not recover from the profound yet temporary shock of WWII in the decades that followed. Why has the degree of income concentration in Japan remained at the historic low reached in the late 1940s? We argue that it was in this context that the occupational reforms played a critical role. Most simply, by redistributing assets and reducing wealth (as opposed to income) concentration, they equalized the distribution of capital income in subsequent years. More importantly, deriving their origins from the wartime policies, the postwar reforms transformed the one-time measures into lasting ones, facilitating a structural change in the Japanese economy that likely prevented re-concentration of income in subsequent decades.

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% income share in the pre-WWII 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. The fiscal environment faced by capitalists after WWII was vastly different. As **Figure 9** shows, after a spike in 1945-50 caused by temporary tax increases and hyperinflation, the marginal tax rate for the top 0.01% income group stayed high at around 60% from 1950 until the tax reform in the late 1980s. Tax rates on corporate income show similar trends. With respect to estate tax, the 1947 law abolished primogeniture and mandated the division of estate among surviving spouse and children, and the 1950 law instituted highly progressive estate and gift taxes with top rates in excess of 70%. As a result, inter-generational transfers of large wealth became much more difficult after WWII. Progressive taxation likely hindered the re-accumulation of large wealth, resulting in more equal distribution of capital income.

Second, the permanent decline in the share of capital income in the top 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 postwar period. As for interest income, the government expanded tax-exempted saving instruments for small asset holders since the 1960s until they were abolished in 1988. These measures had likely promoted wealth accumulation among the middle class, equalizing the distribution of interest income. With respect to dividend income, a new corporate governance system characterized by bank-centered debt finance and cross-shareholdings among affiliated companies likely resulted in stable institutional shareholders and low dividend rates (Fukao (1995); Teranishi (2000)). As a result, dividends too became less concentrated among top income groups in postwar Japan.

Third, the changes in human resource management and union structure in Japan likely 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 (2000)). Moreover, after violent confrontations in 1945-1955, 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 likely resulted in less wage differentials between white- and blue-collar employees as well as more equitable executive compensation. We will turn to wage income statistics to examine these hypotheses more closely in Section 6.

5.5 The Effects of Tax Evasion and Avoidance

In the above analysis, we provided historical explanations for the evolution of the top income shares estimated from the income tax statistics. As discussed briefly in Section 3, however, the incomes reported by individuals for tax purposes are subject to lawful and unlawful under-reporting, and hence may not reflect their true economic incomes. In this section, we discuss what is known about the extent of tax evasion and avoidance in Japan, and provide sensitivity analysis to show whether our findings can be explained away by these phenomena.

The precipitous and permanent drop in income concentration after WWII could be explained by tax evasion only if the evasion among top income groups relative to the rest of the population increased dramatically during WWII and remained high ever since. One may assume that tax evasion must have been rampant during WWII when labor and material shortages disrupted normal functioning of any administration. Yet, seeking additional sources for war finance, the government not only imposed various temporary taxes but also tightened the monitoring over tax collection during the war. For instance, both the numbers of local tax offices and their personnel rose during WWII (Japan National Tax Administration (1988)). Second, it is unlikely that tax evasion was lower in the prewar period when the tax administration was smaller and when most businesses did not compile systematic accounting records. By contrast, after WWII, both the enforcement power and technology available for the tax administration were considerably expanded, and most economic transactions took place within large corporations or financial institutions that used accounting methods leaving records that the tax administration could examine. 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 from 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.[23] According to the estimate by Hayashi (1987), while nearly 100% of employment incomes were captured, only 50% of business income and 10% of farm income were reported to the tax administration. However, both business and farm income components in the top income are 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-WWII period. For example, if we assume that only 10% of farm income and 50% of business income are reported in 1999, then our estimate of the top 1% income share would increase modestly from 7.8% to 8.5%.[24] 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.

[23] Most advanced countries face similar problems. For example, in the U.S., the Internal Revenue Service also estimates that most income tax evasion takes place among small business owners.

[24] In 1999, business income and farm income represent 8.3% and 0.1% of reported incomes in the top1% income group. With no evasion, they would represent 16.6% and 1%, respectively, and the top 1% income share would be approximately 9% larger than our estimate.

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 non-cash compensation instead of wages, which will be discussed in Section 6.2. Another way is to take advantage of special exemptions. As stated earlier, during the post-WWII period, various special treatments had been given to different components of capital income, most notably, interest, dividends, and realized capital gains (Iwamoto et al. (1995)). These treatments effectively allowed taxpayers to pay tax separately at source (*gensen bunri kazei*), instead of aggregating these components to other incomes and face progressive income tax schedule. As a result, the self-assessed income tax statistics do not include these capital income components. Therefore, it is important 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)*.[25] 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 (i.e., interest, dividends, and the returns on life and other insurance policies) in total income for various top income groups. In **Table 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% income group. For the top 0.5% 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% income group and above using NSFIE 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 necessarily valid.

Second, according to Iwamoto et al. (1995), in recent decades, because of tax exemptions and separate taxation at source, approximately 80% of dividend income, over

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

99% of interest income, and 100% of the returns on insurance savings are not subject to the 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 very small portion of total income for the top income groups. For example, they respectively constitute 1.9%, 2.2%, and 4.5% of total income for the bottom half of the top 1% income group (the column "top 1-0.5%" 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%) of total personal income in Japan. Even if we make the extreme assumption that all dividends and interest income go to the top 1% income group, it would increase the top 1% income share by 2.8 percentage point from 7.8% to 10.6%. Observe that this upper bound estimate is still substantially smaller than the pre-WWII share of 16%.

We provide similar sensitivity analysis for 1979-1999, using the NSFIE data. Our results are reported in **Table D1** in Appendix. Consistent with the estimates from the income tax statistics, the table shows that there is only a very modest increase in the top top 5% income shares during this period. The share of the three capital income components in total income for the top 5% 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-WWII to post-WWII period.

6. Top Wage Income Shares in Japan, 1929-2002

6.1 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 pecuniary benefits, but excludes non-cash compensation and retirement benefits. For the pre-WWII 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-WWII period, we use wage income statistics in the *Survey on Private Wages and Salaries* published annually by the tax administration since 1951. Our estimates of the top 5% and 1% wage income shares series in Japan are shown in **Figures 10 and 11**.

First, during 1929-1935, Japan exhibited a high degree of wage income concentration where the top 5% received more than 20% of total wage income and the top 1% received about 8% 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% versus 16% for the top 1% group). High wage income inequality in Japan during the interwar 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 laborers within the same firm were widely dispersed before WWII, resulting in high within-firm wage inequality (Showa Dojinkai (1960), p.269 and p.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% wage income share fell from 23% to 9% and the top 1% share from 8.9% to 3.2%. This 64% decline in the top 1% wage income share in 1935-44 is comparable to the 68% decline in the top 1% income share in 1938-45. According to our income composition data in **Figure 7**, the share of employment income in the top 1% income remained fairly stable until 1940 and then dropped sharply in 1940-47. Therefore, we attribute the initial decline in wage income concentration in 1935-40 to the tightening of labor markets due to military expansion that compressed the wage distribution from below. The further decline in 1940-44 is likely due to the wartime regulations that capped executive bonus 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-WWII period, top wage income shares rose substantially from 1951 to 1961, and then declined gradually over the next two decades. This initial increase is consistent with our income composition data that show the recovery of the employment income component in the top 1% income after WWII. It is worth noting that the trends in the top wage income shares parallel the trends in the income inequality of all households

documented by the preceding studies (see **Figure 2**). Minami (1995b) attributes the rise in income inequality in the 1950s and its decline in the 1960s to the Japan's transition from the chronic labor surplus before 1960 to the chronic labor 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, and joint labor-management consultation that tended to compress within-firm wage dispersion (Gordon (1985); Aoki (1988)). For example, by the end of the 1960s, executives at large firms were entirely promoted from within (Okazaki 2000). In sharp contrast to the pre-WWII period, bonuses were no longer paid disproportionately to top executives but distributed more equally among regular employees. In fact, recent studies indicate that the average ratio of bonus to total compensation in Japan is 20 to 30% for both corporate executives and rank-and-file employee (Hart and Kawasaki (1999); Kubo (2004)).

Finally, despite the concern about the rising income inequality in Japan over the last two decades (Tachibanaki (1995, 2005)), we find only a slight increase in the top 5% and 1% wage income shares. This is consistent with Ohtake (2005) who finds a relatively modest increase in income inequality due largely to demographic changes, such as the rise in single-person and old-age households in Japan.

6.2 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 10 and 11**. In addition to wages, salaries, bonuses, and pecuniary benefits, U.S. wage income includes stock options. In Japan, stock option became legal only after 1997, and its usage has been limited both in the number of firms and the amount of stocks granted.[26] As a result, inclusion of stock options would not change our Japanese estimates.

The figures indicate that the top wage income shares were roughly comparable in the two countries during 1929-35. Then wage income concentration in both countries fell sharply by the end of WWII. In contrast to Japan, however, U.S. top wage income shares had remained low in the 1950s and 1960s. As a result, 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

[26] Naito and Fujiwara (2004). pp.255-60. Various restrictions on stock options remained until the further revision of the commercial law in 2002.

since the 1970s, however. While the top 1% wage income share in Japan has been nearly constant at around 5% from 1970 to 2000, the share in the United States has risen exponentially from 5% to 12% 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 non-cash compensation, such as company housing and expense account. 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% and for American CEOs by 10%. Taking an extreme case where the top 1% wage income earners receive all perquisites,[27] this would increase the Japanese share in 1992 from 4.8% to 6.4% and the U.S. share from 9.6% to 10.6%. In other words, although the inclusion of non-cash compensation would certainly reduce the difference, the top 1% wage income share would have been substantially higher in the United States than in Japan by the early 1980s.

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, on the contrary to what recent skill-biased technological progress theories have posited (see Acemoglu (2002) for a survey), the comparative experience of the United State and Japan suggests that technology alone cannot account for the change in wage inequality. At the very least, elements other than technology – demographic changes, government policies, and institutional factors (e.g., labor markets, social norms regarding pay inequality) – have to be taken into consideration. Although understanding the relative contributions of those elements is beyond the scope of this paper, 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 12** presents the top 0.1% 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 2002. 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

[27] We assume so to provide an upper bound for the Japanese estimate, as perquisites are most likely distributed more equally among all employees in Japan than in the United States.

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 income tax rates would increase reported incomes through higher labor supply and/or a shift from tax-exempted forms of compensation to taxable cash 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% wage income earners in Japan has also declined by 2% between 1980 and 2000, the magnitude roughly comparable to that in the United States between 1970 and 1987. These reductions, however, have failed to generate any supply-side effects in Japan. 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 labor markets 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 U.S. executives have been increasing since the 1970s, indicating the presence of active labor markets for top managers in recent decades.

7. Concluding Remarks

In this paper, we have compiled the long-run series of top income shares and wage income shares and explored the dynamic evolution of income concentration in Japan over the last 116 years. To conclude our study, we review Japan's experience from a comparative perspective.

According to our data, Japan was a nation of high income concentration throughout the pre-WWII period. Although the degree of income concentration in Japan was extremely high during the early part of the 20th century by historical standards, it was roughly comparable to that of other industrial nations, such as Britain, the United States, France, and Germany, during the same period (Atkinson (2006); Piketty and Saez (2003); Piketty (2003); Dell (2004)). These countries experienced a substantial decline in income concentration during the interwar period, due largely to the Great Depression and the subsequent government intervention that imposed progressive taxation. By contrast, the impact of the Great Depression on the Japanese economy was far milder (Moriguchi (2003)), and as we have shown, income and estate taxes remained low in Japan until the

late 1930s. As a result, even by international standards, Japan exhibited a high degree of income concentration at the eve of WWII. For example, as late as in 1939, the top 1% income earners received almost 20% of total income in Japan, whereas the share was about 15% in France, the United States, and Germany.

As in the other countries, the top income shares in Japan fell abruptly and dramatically during WWII. Analysing the series of income composition, top estates, and top wage income shares, we show that this sharp reduction in income concentration was due to the collapse of capital income and the compression of wage income caused by wartime regulations and inflation. Due to the higher level of income concentration prior to WWII, the impact of WWII in reducing income concentration was much more pronounced in Japan than in the United States, or even Britain, France, and Germany.

Our data show that this one-time income de-concentration process had a long lasting impact in Japan. We argue that the structural change of the economy that had taken place after WWII transformed the temporary effect into a permanent one. In particular, we suggest that the fundamental changes in the tax system, corporate governance, and human resource management likely have prevented the re-concentration of income in Japan. Interestingly, Japan achieved the most impressive and sustained economic growth under the environment unfavourable to capital accumulation and without significant increase in income concentration. Our findings thus raise some doubt on the view that free accumulation and transfer of wealth is a necessary condition for macro economic growth.

According to our wage income series, the degree of wage income concentration in pre-WWII Japan was high and roughly comparable to that in the United States during the same period. Top wage income shares fell sharply in the late 1930s and during WWII due to tight labor markets and wartime regulations. Wage income inequality rose initially in the 1950s but declined in the subsequent two decades, and has increased slightly since the 1980s. This recent increase in Japan, however, is very small compared to the recent surge in wage income concentration in Anglo-Saxon countries. Based on our comparative analysis, we argue that neither technology nor tax policy alone can explain the change in wage income inequality. Instead we emphasize the importance of understanding the interactions between technology, government policies, and institutional factors governing corporate compensation policies.

APPENDIX

A. Top Income Shares

A.1. 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.[28] Among other information, it publishes a table with the number of taxpayers, the amount of reported income, and the amount of income tax, by income brackets, which can be used to estimate top income shares.

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. Following description is based on Japan National Tax Administration (1988), which provides detailed history of Japanese income tax system from 1887 to 1987.

A.1.1. Income Tax Laws, 1887-2002

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%) defined over 5 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%) defined over 12 income brackets. Over the next two decades, income tax became increasingly progressive, with the highest marginal tax rate reaching 36% 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% of dividends and bonuses became taxable, and 80% from 1937. We thus correct for missing dividends and bonuses, for the fiscal years 1899-1939 (see Section A.3.4).

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-

[28] The tax bureau's jurisdictional area was Japan proper, not including colonies.

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% to 65% over 12 income brackets. We use the comprehensive income tax statistics in estimating top income shares for the fiscal years 1940-1946.

The 1947 income tax reform, under the influence of U.S. occupational authority, abolished the schedule tax and established a unified comprehensive income tax. Realized capital gains became taxable for the first time in 1947 (see Section A.3.2 for details). 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 a self-assessed tax return (see Section A.3.1 for details). The unified comprehensive income tax, culminated in the 1950 tax law, however, was soon replaced by the hybrid of comprehensive taxation, separate taxation at source (*gensen bunri kazei*), 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. Most important, separate taxation was introduced for interest income in 1953, for dividends in 1965, for part of real estate capital gains in 1969. Capital gains from stocks had been tax exempted since 1953, and so had interest income from certain personal savings in 1963, until most of these exemptions were abolished under the 1988 tax reform (see Section A.4.3 for details).

A.1.2. 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 Ministry of Finance, Tax Bureau (1988).

For fiscal years 1887-1898, 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 3 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 3 years) was defined as projected income earned in the same year. For fiscal years 1926-1946, 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 1887-1898, 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 1926-1946, fiscal year *t* corresponds to actual year *t*-1; and (4) for 1947-2002, 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 individuals 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 inquiry. In fact, a large fraction of the people who paid income tax did not file a return (it was 48-78% during 1903-1925, 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 1947-2002, 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 A0**.

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 1887-1898, we place 50% weight on income in year *t* and 50% weight on the simple average of incomes in years *t*-1, *t*-2, *t*-3. For fiscal years 1899-1925, we place 100% weight on income *t,* as farm income constituted relatively small portion of total income. **Figure A4** plots the top 0.1% income share series using the legal definitions ("formal law" series), along with our series ("preferred specification"). Except for years 1916-1922, two series exhibit fairly similar levels and trends.

A.1.3. Tax Units

For fiscal years 1887-1949, the unit of income tax was "family" defined as a married couple with dependents (e.g., children and old parents) or a single head of household with dependents. Incomes of cohabitating 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 1950-2002 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 1903-1938 and 1949, the statistics provide a breakdown of total income into the income of household head and the income of dependents, by income brackets. According to these data, the latter is very small relative to the former (less than 5% 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 A0**, is estimated as follows. First, we take the total population from *Japan Statistical Yearbook* (2003), p. 32. Based on census data, the yearbook reports the estimated total population as of January 1 for years 1886-1919 and as of October 1 for years 1920-2002. Then we take the estimated population of people younger than 20 years old for years 1885-1920 from Ohkawa et al. (1974), Volume 2, pp.166-171. Starting in 1920, Japanese census, conducted every ten years, reports population by age.[29] 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.

[29] Available online at http://www.stat.go.jp/english/data/nenkan/zuhyou/y0207000.xls.

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 paper, 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 (which fluctuated between 2.65 and 2.95 with no trend).

A.2. 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.

A.2.1. System of National Accounts, 1930-2002

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, 1930-1976, reported in *Historical Statistics of Japan*, Volume 3, Section 13-5, (2) the 68SNA, 1955-1998, reported in *Historical Statistics of Japan*, Table 3.6,[30] (3) the 93SNA, 1980-2002, reported in *Historical Statistics of Japan,* Table 3.24.[31] The SNAs are fairly detailed and provide the breakdown of personal income into the main components: wages and salaries, social contributions of employers and employees, personal capital income (dividends, net interest income, rents received), unincorporated business income (agricultural income, imputed 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 security contributions, personal capital income, and unincorporated business income (excluding imputed rents). The old SNA does not report imputed rents separately from received rents for 1946-1976. We have estimated imputed rents for the old SNA using the 68SNA, assuming that the fraction of imputed rents in total rents for 1946-1955 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 imputation has a very small effect on our total income denominator.

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 1999-2002 period, the 68SNA for the 1955-1998 period, and from the old SNA for the 1930-1954 period, and then spliced together. The 93SNA and 68SNA personal income denominators

[30] Available online at http://www.stat.go.jp/english/data/chouki/index.htm.
[31] Available online at http://www.stat.go.jp/english/data/chouki/index.htm.

are extremely close in 1998 (less than 1% 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% higher than the 68SNA in 1955. Therefore, in order to obtain homogeneous series, we have reduced old SNA personal income by 4.4% 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 other estimates from other authors.

A.2.2. 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), Volume 1, Table 8, column (9). Personal disposable income in 1930 is 11.5% 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%.

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*, Volume 3, Table 13-3, pp. 344-349).

Yamada estimates from 1875 to 1948 are about 10 to 15% percent higher than Ohkawa et al. estimates before 1900, comparable during the 1900-1915 period, and about 10 to 20% lower during the 1915-1930 period. 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 incomes shares were much higher in the pre-WWII period than in the post-WWII period.

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

Finally, the Cabinet Bureau of Statistics series from 1887 to 1935 report substantially (about 40%) higher estimates than Ohkawa et al. estimates in the 1887-1895 period and then much (about 30%) lower estimates in the period 1900-1935. Those estimates are obtained directly from taxable income, however, and therefore the least appropriate as an independent denominator in our study.

A.2.3. Consumer Price Index, 1886-2002

We use a consumer price index (CPI) to deflate our nominal income series. Our CPI estimates for years 1886-1938 and 1946-1950 are from Ohkawa et al. (1967), *Long-Term Economic Statistics of Japan since 1868*, Vol. 8, p.135, column (1). Estimates for 1938-1946 are obtained from taking the ratios of real National Income to nominal National Income from *Historical Statistics of Japanese Economy*, p. 7 and pasted to the Okhawa estimates. For the 1950-2002 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 A0,** column (9). The total real personal income denominator and average personal income per adult are reported in columns (7) and (8) in **Table A0**.

A.3. Top Income Numerator

For the numerator, we estimate the income accrued to top income groups (e.g., top 0.01%, 0.1%, 0.5%, 1% 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 the Pareto coefficient for each year using the distribution tables in the income tax statistics. We then employ a simple 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. To produce homogenous 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.

A.3.1. Combining Self-assessed Income Statistics and Wage Income Statistics, 1951-2002

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 1951-2002, only 10-15% of all adults filed a self-assessed tax return 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 a self-assessed tax return. We use these statistics to complement the self-assessed income tax statistics. The wage income statistics has been summarized in *Annual Statistical Report* and published in more detail in *Survey on Private Wages and Salaries* since 1952. The data include the distribution (by wage income brackets) of annual wage income (the sum of wages or salaries, cash benefits, and bonuses) for all employees in the private sector, but excludes employees in the public sector, daily-hired employees, and retirees. We inflate the survey distribution by a uniform 10 percent 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 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, (3) 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 tax returns. Thus, before combining the wage income statistics and the self-assessed statistics, we have to subtract wage earners filing self-assessed 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 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 earners (by wage income brackets) for those self-assessed wage income earners. 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 2002, the self-assessed tax return statistics report that there are 40,035 tax 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 distribution 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 the self-assessed tax returns. We then subtract out this distribution from the wage income distribution based on the wage income 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 a self-assessed income tax return. Finally, we add the 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 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.[32]

For years 1951-1962, 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 tax statistics (without making the correction described above). We then correct top income share estimates for years 1951-1962 by the ratio of estimates for 1963 with the correction applied to estimates for 1963 where the correction is not applied.

A.3.2. Removing Capital Gains, 1947-2002

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 with special tax rates and special exemptions that changed over time (see Ishi (2001), pp.143-44). To obtain consistent estimates, we remove capital gains from our data for the 1947-2002 period as follows.

We first compute the share of realized capital gains in each top income groups using the income composition data by brackets and simple linear interpolation (as in Piketty and Saez, 2003). Second, we subtract 80% of the realized capital gain component from our top income share estimates. For example, if the top 1% income share with

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

capital gains is 6%, and the share of capital gains is 50%, we estimate the top 1% income share as 6*(1-0.5*0.8)=3.6%. Removing 100% 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 U.S. 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% rule generates fairly accurate estimates.

Although we do not know if the 80% 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% 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 A1,** we present the top 0.1% 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% 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 A1**, the realized capital gains in fact had a large impact on the top 0.1% income share during the two episodes of asset appreciation. It should be noted that only part of realized capital gains were taxable and thus included in the income tax statistics.[33] Due to the complex and time varying exemption rules for capital gains, it is difficult to correct for unreported capital gains with the available data. As a result, the series including full capital gains (as opposed to taxable capital gains) would 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 postwar period than in the prewar period, it must be noted that the distributions of land and stocks were probably much more equal after WWII than before. Thus the inclusion of capital gains would not change our main finding that income concentration fell drastically from the prewar period to the postwar period.

A.3.3. Erosion of Comprehensive Income Tax Base, 1950-2002

Soon after the introduction of the unified comprehensive income tax system in 1947-1950, the Japanese government began to give special tax measures to various components of income (see Ishi (2001), Chapter 8; Iwamoto et al. (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) a full exemption of certain income from taxation, (2) an option for taxpayer to choose separate taxation at a flat rate for certain income (instead of a progressive tax rate applied to aggregate income), and (3) separate taxation for certain income with its tax entirely withheld at source. If one exercised an option to choose a separate taxation for certain income (*sentaku bunri kazei*), then it is reported in

[33] Capital gains (*joto shotoku*) reported in the self-assessed income tax statistics are the taxable amount after exemptions and deductions as opposed to the full value (the information based on phone conversation with a Japan Tax Administration officer on May 5, 2006).

the self-assessed income tax statistics. By contrast, any income exempted from tax (*hikazei*) or for which tax is 100% withheld at source (*gensen bunri kazei*) does not appear in the statistics.

According to the estimates by Iwamoto et al. (1995), before the 1988 reform, 70-80% of total interest income was tax exempted under the tax privilege given to small-sized personal savings, 20% was taxed separately and withheld at source, and only 0.3% was subject to progressive comprehensive income tax. After the 1988 reform, only 20% of total interest income was tax exempted, but almost 80% was taxed separately and withheld at source, leaving less than 0.1% under the comprehensive tax. For dividend income, about 70% was taxed separately and withheld at source, and 30% was subject to comprehensive taxation throughout 1980-2002.

Consequently, virtually all interest income and about 70% 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 paper, 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 Section D.

A.3.4. Imputing Missing Capital Income, 1898-1938

During fiscal years 1887-1898, 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% of dividends and bonuses were included in Class II income, 80% from 1937 to 1939, and 100% 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 1921-1939, 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% in 1921-1936 and 80% in 1937-1939). 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 1921-1939, 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 1921-1935, about 50% of corporate profits were paid out as dividends and about 20% of corporate profits were paid out as bonuses. For 1936-1938, corporate profits were very high (around 12-15% of the total personal income denominator), but dividends did not exceed 5% of the total personal income. Therefore, we assume that 50% of corporate profits were paid out as dividends in 1899-1920, up to 5% of total personal income (the 5% rule was binding during the high profit years 1915-1918). We also assume that 20% of corporate profits were paid out as bonuses in 1899-1920, up to 2% of total personal income.

Second, we assume that 75% of those missing dividends and bonuses go to the top 1% income earners, 68% to the top 0.5%, 52% to the top 0.1%, 43% to the top 0.05%, and 27% to the top 0.01%. 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 A2** presents top 0.1% 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% 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% to about 5% in 1921. The total interest income reported in Class III income tax statistics, however, show 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 1913-1939, for income less than certain amounts, 10 to 20% 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.

A.4. Top Income Composition, 1886-2002

The composition of reported income by income source is published in the income tax statistics at the aggregate level for fiscal years 1887, 1901-1946, and 1951-1962, and by income brackets for fiscal years 1947-1950 and 1963-2002. Using these data, we estimate the composition of the income accrued to the top 1% 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 A2** reports the fraction of the people filing income tax returns and the composition of the top 1% income.

For fiscal years 1887-1946, aggregate composition data are available in 1887 and 1901-1946 (thus there is no estimate for actual years 1887-1899 and 1946). The categories of income composition changed over the years. For fiscal years 1887 and 1901-1939, 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)*").[34] For 1917-1939, the breakdown of the farmland income is reported in the statistics. For 1887 and 1901-1916, 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 1901-1939, we use the imputed value of dividends and bonuses (see Section A.3.4) in computing the income composition.

As the composition data by income brackets are not available before 1947, our estimate for the top 1% 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% to 4.6%) filed income tax returns. If we assume that the share of capital income increases

[34] These definitions are explicitly stated for the first time in *Annual Statistical Report* (1938), p.36, note 3-a.

with income, our estimates for these years likely understate the share of capital income in the top 1% income compared to other years.

For fiscal years 1947-1950 and 1963-2002, the composition of the top 1% 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 1951-1962. For 1963-2002, we provide estimates only twice a decade.) Realized capital gains are removed as described in Section A3.2. It is important to note that, as explained in Section A3.3, almost all interest income after 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 likely reduced the degree of tax evasion in wage income, contributing to a sudden increase in the share of employment income in 1947-1950. 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 A3**, Panel A shows the composition of the top 1% income, and Panel B shows the composition of the total personal income denominator estimated from National Accounts (see Section A.2.1), from 1930 to 2002. 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 in A.2.1, 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% income group received a far larger share of their income as dividends (33%) than the national average (3%), but they received smaller shares of income as interest income (2%) and employment income (30%) than the national averages (15% and 45%, respectively). Note that, as in the top 1% income, the capital income component in total personal income declined sharply during 1937-1947 from 20% to less than 1%. The dividend component in the total personal income had recovered to its pre-WWII 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 1944-1946 and then increased substantially from 1947 to 2002 at the expense of the business income component. But its rise during 1948-1950 was much smaller than that in the top 1% income share, indicating that the sudden increase in the latter is likely due to the introduction of the withholding system.

A.5. Marginal Tax Rates, 1886-2002

We estimate marginal tax rates faced by the average taxpayers in top income groups reported in **Table A3** as follows. First, we estimate marginal tax rates (MTRs) at the income thresholds for the top 0.1% and 0.01% groups, respectively (denoted as MTR at P99.9 and P99.99 and reported in columns (2) and (3)). For each group, we have already estimated the threshold income level (see Section A.3). We assume that the taxpayer at each threshold income is married with two dependents (e.g., a married couple with two children under 18). To obtain net taxable income, we subtract the married exemption and two dependent exemptions from the threshold income. We further subtract the average amount of standard deductions (for earned income, medical expense, insurance

premiums and so on) at the corresponding top income group. We then use a standard tax schedule (that presents increasing marginal tax rates by income brackets) to obtain tax liability, from which MTR for a given taxable income level can be easily inferred. Top MTR (presented in column (4) in **Table A3**) is simply the highest possible marginal tax rate according to the tax schedule. The marginal tax rates do not include local income taxes (prefectural and municipal) and social insurance contributions

Second, we estimate the income-weighted marginal tax rates for the top 0.1% and 0.01% groups, respectively (reported in columns (5) and (6) in **Table A3**) as follows. The top 0.01% MTR is computed as: MTR Top 0.01% = (MTR at P99.99+Top MTR)/2, where we use a simple average as an approximation of the MTR for this group. The top 0.1% MTR is then computed as: {Income Share of P99.9-99.99 * (MTR at P99.9+MTR at P99.99)/2 + Income Share of P99.99-100 * MTR Top 0.01%} / (Income Share of P99.9-100). This amounts to estimating the Top 0.1% MTR as the average (weighted by income) of the MTRs for top 0.01% group and the bottom 99% of the top 1% group (denoted as P99.9-99.99) where the MTR for P99.9-99.99 is estimated as (MTR at P99.9+MTR at P99.99)/2.

B. Top Estates

B.1. Definition of Estate

We compile top estate series, using estate tax return statistics published in *Annual Statistical Report* (*Zeimu Tokei Nenposho)* from 1905 to 2002. 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 1942-43, 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.

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-WWII developments.

B.1.1. Estate Tax Laws, 1905-2002

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 1905-1946, 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 entire family estate as a new familyhead (*koshu*) after the death or retirement (at age sixty or older) of the former familyhead. 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% for family inheritance and 0.1%-1.8% for ordinary inheritance) defined over 20 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 1905-1947 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% defined over 19 brackets. For ordinary inheritance, the exemption point was set lower (5,000 yen) and the tax rates higher (5.5%-70%).[35]

As part of the postwar democratization, the 1947 estate tax law abolished the distinction 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%.[36] 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 Commission, 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 1950-1957, distribution tables are based on the size of inheritances as opposed to estates. To provide homogenous series, we convert inheritance statistics to estate statistics (see B.1.3). 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% defined over 11 brackets.[37]

Finally, with the 1958 reform, Japan adopted a hybrid system of estate tax and inheritance 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 1958-2002 are presented by the size of estates and hence are directly comparable to the statistics for 1905-1949.

[35] *Annual Statistical Report* (1950), p.280.
[36] *Annual Statistical Report* (1950), p.279.
[37] *Annual Statistical Report* (1950), p.278.

B.1.2. 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 fact, due to delays in both filing and processing, before WWII, majority of the tax returns filed for the deaths in year *t* were likely processed in year *t*+1, and some in even later years.[38] 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.[39] Because the statistics in 1905-1949 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 1905-1935, 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 1937-1939. For actual year 1937, we add the "1937 law" estates reported in fiscal years 1937-1940. For actual year 1938, we add the "1938 law" estates reported in fiscal year 1938 and 60% of the "1938 law" estates reported in fiscal year 1939. For actual year 1939, we add 40% of the "1938 law" estates reported in fiscal year 1939 and the "1938 law" estates reported in fiscal year 1940. The fractions 60% and 40% 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 1948 and 1949 estimates should be fairly accurate.

For actual years 1940-1945, 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

[38] This statement is based on tables in the annual reports in 1905-1936 that provides the number of returns pending from previous fiscal years.

[39] 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.

"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 1947-1949. This may result in an overestimate, because we pool the statistics from three annual reports that include virtually all the 1946 deaths as well as some deaths in 1944 and 1945. Given the hyperinflation in 1944-46, however, the effect of the extra returns from 1944 and 1945 on our 1946 estimate should be small.

For actual years 1947-1949, we assume that "1947 law" estates reported in 1947-1948 correspond to the deaths in 1947, that 70% of the "1947 law" estates reported in 1949 correspond to the deaths in 1948, and that 30% 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 9 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% 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 1950-1957, 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% 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 1958-2002, 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%), we make no corrections.

B.1.3. Correcting for Deductions, 1905-1952

For fiscal years 1905-1952, distribution tables are presented by the "taxable value" of estate (or inheritance for 1950-1952), namely the size of estate (or inheritance) net of debts and after deductions. By contrast, for fiscal years 1953-2002, tables are presented by the size of estate (or inheritance) net of debt and before deductions. For fiscal years 1953-57, 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 1905-1952. Below, we describe deductions and our methods of correction.

For fiscal years 1905-1914, there was no major deduction (only for funeral expenses), and we make no corrections. For fiscal years 1915-1925, 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 1940-1946, 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 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% deduction from the amount inherited), and minor deduction (small deduction for minors younger than 18 year 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 1953-2002, we make no corrections as tabulations are presented in estates net of debts before deductions.

B.1.4. Converting Inheritance Statistics to Estate Statistics, 1950-1957

For all fiscal years except 1950-1957, the unit of observation in the tax statistics is "estate" defined as the properties owned by the decedent. For fiscal years 1950-1957, the unit of observation switches to "inheritance" defined as the properties received by an heir. As a result, tax statistics in 1950-57 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 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 1950-1957 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 WWII.

B.2. Construction of Top Estate Series, 1905-2002

We define top groups (e.g., top 1%, top 0.1%) 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 1985-2002 and in *Historical Statistics of Japan*, pp.218-219, for years 1905-1985. These series are reported in column (1) in **Table B1**. The number of estate tax returns (after the adjustments described in Section B.1.2) is reported on 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% in 1942 to the low of 1% 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 Section A.2.3). **Table B1** displays our estimates of top estates series from 1905 to 2002. 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.

B.3. Estate Composition, 1925-2002

Estate composition data are available only at the aggregate level for fiscal years 1926-2002, except for years 1942-43. Because composition data by brackets are not reported, it is not possible to create homogenous top estate composition series. In **Table B2** and **Figure B1,** 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 of (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% in **Figure B1**, as we define estates net of debts to be 100%. 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 1926-1946 and to actual year *t* for fiscal years 1947-2002 (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 top estate series described in Section B.1.2.

Column (1) in **Table B2** reports the fraction of adult decedents filing estate tax returns (these numbers are different from those column (1) in **Table B1** 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% in 1957 to 0.9% in 1958 (due to the high exemption level under the 1958 law), which likely 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** 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% (9.0% in 1935, 8.8% in 1950, and 8.0% in 1987). Estates before subtracting debts are defined to be 100%. 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. 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 WWII and has not returned to the pre-WWII level to date, despite the high economic growth in the post-WWII period.

C. 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, note that our estimates for 1929-1944 are less precise than and not fully homogenous with the 1951-2002 estimates.

C.1. Top Wage Income Shares, 1951-2002

The National Tax Administration has annually published the statistics on wages and salaries in the *Survey on Private Wages and Salaries* (*Minkan Kyuyo no Jittai*) since 1951.[40] The survey covers all employees (except for daily-paid employees) in the private sector but excludes 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 non-cash compensation (such as company housing, expense account, stock options) and retirement benefits. It is before subtracting employee's social security contributions and before including employer's social security contributions.[41] Thanks to of 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 1951-2002.

We again use a standard Pareto Interpolation method to estimate top wage income shares. We define top groups (top 5% and 1%) relative to the total number of regular employees, which excludes temporary workers as well as daily employees, in the private sector in Japan. The series for regular employees for 1951-2002 are obtained from *Historical statistics of Japan,* Table 19-7,[42] and are reported in column (2) in **Tables C1**. The number of employees in the wage income survey is reported in column (3). As shown in column (4), from 1951 to 2002, the coverage of the survey has rose from 55% to 97% 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% of total wages and salaries from National Accounts. The denominator is reported in column (7) in **Tables C1**, 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 security contributions and exclude employers' social security contributions. In recent years, where the coverage of the survey is almost complete for regular employees in the private sector, total wage reported in the survey are approximately 90% of wages and salaries from National Accounts. Thus, we use the factor 90% 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% and 5% wage income shares for 1951-2002 are reported in **Table C2** and **Figures 10 and 11.**

C.2. Top Wage Income Shares, 1929-1944

For fiscal years 1930-1945, 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

[40] 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*). We cannot locate the original 1950 and 1951 surveys. The data for 1951 are found in Takahashi (1959).
[41] The information is based on phone conversation with a Japan Tax Administration officer on May 5, 2006).
[42] Available online at http://www.stat.go.jp/english/data/chouki/19.htm.

and bonuses they earned. The income tax statistics in fiscal years 1920-1929 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 1930-1945 correspond to actual years 1929-1944 for the reasons described in Section A.1.2.

For the denominator, we take the total salaries (excluding employers' social security contributions) from the old SNA for 1930-1944. 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 this period do not exclude temporary workers, we use regular employees to be consistent with the 1951-2002 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 1, 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 1929-1944, 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 1930-1939, the earned income credit allowed taxpayers to deduct 20% of wage income for those with total income under 6,000 yen and 10% for those with total income between 6,000 and 12,000 yen. We therefore assume that the average deduction was 15% and inflate the reported amount of salaries by a factor 1/0.85. For fiscal years 1940-1945, the earned income credit is 10% of wage income for those with total income below 10,000 yen. We assume that the average deduction is 8% and inflate the reported salaries by a factor 1/0.92. Because, for fiscal years 1930-1936, only 60% of bonuses are taxable and reported in the statistics, we inflate bonuses by a factor 1/0.6. Similarly, for fiscal years 1937-1939, as only 80% of bonuses are reported in the statistics, we inflate bonuses by a factor 1/0.8. For fiscal years 1940-1945, as 100% 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 downward.

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% and 5% 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 1929-1944, on average about 3% of regular employees filed income tax returns. This fraction changes over time. In particular, it falls sharply from 6.72% in 1938 (fiscal year 1939) to 0.76% 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(share of wage income in 1938)-log(share of wage income in 1939)}/{log(fraction of wage income filers in 1938)-log(fraction of wage income filers in 1939)}. The estimated coefficient is *a*=2.76. Assuming that the Pareto coefficient is constant for 1929-1944, we compute the top 1% and top 5% income share for each year (which are reported in **Table C2**). 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 C2**.

The assumption that the Pareto coefficient is constant across years 1929-1944 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 1929-1944: in the early 1930s, when 2 to 3% of wage earners filed income tax returns, their wage income was more than 15% of the total salaries from National Accounts; by contrast, in 1944, almost 5% of wage earners filed income tax returns but their wage income was only about 9% of all wages and salaries.

C.3 Marginal Tax Rates, 1951-2002

Marginal tax rates for top wage income earners for 1951-2002 are computed using a method similar to the marginal tax rates for top income groups described in Section A.5. Marginal tax rates (MTRs) are estimated for an individual with non-working spouse and two dependent children, assuming that all income is employment income. The estimates take into account the exemptions and graduated employment income deduction, based on the information from Japan Ministry of Finance, Tax Bureau (1988), Ishi (2001), p.82, and OECD (1998-2002), *Taxing Wages*. The marginal tax rates do not include local income taxes (prefectural and municipal) and social insurance contributions. In **Table C3**, we present our estimates for MTRs at the income thresholds for the top 10%, 5%, 1%, 0.1%, and 0.01% groups (denoted as MTR at P90, P95, P99, P99.9, and P99.99, respectively).

D. 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)*.[43] 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.[44] 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.

D.1 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).[45] We use these

[43] 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. (1989).
[44] We cannot use 1969 and 1974 NSIFE data, because the sample in these years excludes households with professionals and managers.
[45] Table 24, available online at http://www.stat.go.jp/english/data/zensho/1999/menu.htm.

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 assets holdings into capital income, using total capital income from personal income reported in National Accounts.[46] 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 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% group and above with the 1999 NSFIE data.

D.2 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 oppose 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.[47] Instead, we can compare NSFIE estimates across years, using the 1999 NSFIE estimates as a benchmark. We compute the share of three capital income components in total income for top 5% and 10% income groups, using the same methodology as described in Section D.1. Because the brackets of the NSFIE tabulations in earlier years are not as finely defined, the top bracket contains 2% to 6% of all households. Due to small sample and top coding, we cannot provide accurate estimates above the top 5% groups with these data. The results are reported in **Table D1.**

[46] As Hayashi et al. (1988) demonstrate, capital income in the NSFIE is seriously underreported and cannot be used. We thus use the asset holdings data to estimate capital income. According to Takayama et al. (1989), NSFIE data on assets, including stocks and bonds, are fairly accurate.

[47] See Atkinson (2006b) for a discussion of the link between individual and family based income shares.

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TABLE 1
Income Inequality in OECD Countries

A. Income Before Tax & Transfers

Country	Year	Gini Coefficients
Ireland	1987	0.461
Sweden	1987	0.439
U.K.	1986	0.428
France	1984	0.417
U.S.	1986	0.411
Switzerland	1982	0.407
Germany	1984	0.395
Finland	1987	0.379
Canada	1987	0.374
Italy	1986	0.361
Netherlands	1987	0.348
Japan	1989	0.317
Belgium	1988	0.273

Source: Nishizaki et al. (1998)

B. Income After Tax & Transfers

Country	Year	Gini Coefficients
U.S.	1986	0.347
Switzerland	1982	0.346
Ireland	1987	0.341
U.K.	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
Netherlands	1987	0.266
Belgium	1987	0.260
Finland	1987	0.255

Source: Kokumin Seikatsukyoku (1999), Chapter 3, and Atkinson et al. (1996), Table 4-10.

TABLE 2
Thresholds and Average Incomes for Top Income Groups in 2002

Percentile threshold (1)	**Income threshold** (2)	**Income Groups** (3)	**Number of tax units (adults age 20 and above)** (4)	**Average income in each group** (5)
		Full Population	102,139,153	$20,152
Top 10%	$50,748	Top 10-5%	5,106,958	$57,666
Top 5%	$65,672	Top 5-1%	4,085,566	$80,346
Top 1%	$109,649	Top 1-0.5%	510,696	$121,291
Top .5%	$137,412	Top 0.5-0.1%	408,557	$175,391
Top .1%	$264,372	Top 0.1-0.01%	91,925	$352,165
Top .01%	$648,543	Top 0.01%	10,214	$1,174,672

Source: See Appendix Secion A.
Notes: Income is defined as annual gross income reported on tax returns before individual income taxes and employees' payroll taxes but excluding capital gains. Amounts are expressed in 2002 dollars, assuming an exchange rate of $1= 125 yen.

TABLE 3
Top Estates Composition in Japan, 1935, 1950, and 1987

	Estate Composition						
Year	Agricultural Land (1)	Residential Land (2)	Houses & 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%

Source: Table B2.
Notes: The table presents the compositions of top estates in 1935, 1950, and 1987
In each year, approximately top 9% of adult decedents filed estate tax returns.
Sum of all components is 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.

TABLE 4

Sensitivity Analysis Using the NSFIE Data in 1999

Income Groups	Average Income (in thousand yen)	Fraction of Capital Income Component to Total Individual Income: Net Interest Income (%)	Dividend Income (%)	Returns on Insurance Policies (%)	All Returns on Liquid Assets (%)
(1)	(2)	(3)	(4)	(5)	(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					
Top 10-5%	7,781	-0.4%	0.9%	5.2%	5.7%
Top 5-1%	10,381	0.5%	1.3%	4.6%	6.3%
Top 1-0.5%	14,391	1.9%	2.2%	4.5%	8.6%
Top 0.5%	22,958	1.3%	2.3%	3.8%	7.3%
Top 0.1%	n.a.	n.a.	n.a.	n.a.	n.a.

Source: See Appendix Section A.3.3. and Section D.1.

Notes: Table compares the composition of capital income by income group based on three independent sources.

National average in Panel A is based on the total personal income from National Accounts.

Estimates in Panel B are based on self-assessed income tax return statistics for year 1999.

Income is defined as annual gross income reported in the tax returns, excluding capital gains.

All returns on insurance policies, almost all 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* for year 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 based on life and other insurance holdings.

Due to small sample size, estimates for the top 0.5% are imprecise and estimates for the top 0.1% are not available.

Table A0: Reference Totals for Population, Income, and Inflation, 1886-2002

Years			Population and Tax units				Income		Inflation
(1) Actual Year (incomes earned in)	(2a) Fiscal Year (tax paid in)	(2b) Fiscal Year (Japanese Calendar)	(3) Population ('000s)	(4) Number of adults ('000s)	(5) Number of tax returns ('000s)	(6) (5)/(4) (%)	(7) Total income (2002 billion Yen)	(8) Average income (2002 '000 yen)	(9) CPI (2002 base 100)
1886	1887	20	38,541	21,853	118.6	0.54	3,708	170	0.0151
1887	1888	21	38,703	21,908	139.5	0.64	3,552	162	0.0161
1888	1889	22	39,029	22,054	115.6	0.52	3,867	175	0.0158
1889	1890	23	39,473	22,267	115.4	0.52	4,072	183	0.0168
1890	1891	24	39,902	22,471	115.9	0.52	4,363	194	0.0179
1891	1892	25	40,251	22,629	117.1	0.52	4,991	221	0.0171
1892	1893	26	40,508	22,734	124.1	0.55	5,186	228	0.0160
1893	1894	27	40,860	22,892	129.3	0.56	5,438	238	0.0161
1894	1895	28	41,142	23,011	134.7	0.59	5,943	258	0.0167
1895	1896	29	41,557	23,203	151.7	0.65	6,387	275	0.0182
1896	1897	30	41,992	23,405	172.8	0.74	6,222	266	0.0201
1897	1898	31	42,400	23,623	195.3	0.83	6,636	281	0.0224
1898	1899	32	42,886	23,884	288.6	1.21	6,754	283	0.0243
1899	1900	33	43,404	24,162	349.5	1.45	7,425	307	0.0229
1900	1901	34	43,847	24,399	406.3	1.67	6,808	279	0.0257
1901	1902	35	44,359	24,674	457.9	1.86	7,117	288	0.0251
1902	1903	36	44,964	25,000	507.9	2.03	6,928	277	0.0261
1903	1904	37	45,546	25,313	543.0	2.15	7,111	281	0.0274
1904	1905	38	46,135	25,630	580.5	2.27	8,021	313	0.0281
1905	1906	39	46,620	25,889	638.4	2.47	7,614	294	0.0291
1906	1907	40	47,038	26,110	702.4	2.69	7,827	300	0.0297
1907	1908	41	47,416	26,234	860.0	3.28	7,864	300	0.0328
1908	1909	42	47,965	26,452	930.4	3.52	8,079	305	0.0317
1909	1910	43	48,554	26,689	947.6	3.55	8,453	317	0.0305
1910	1911	44	49,184	26,947	964.5	3.58	8,738	324	0.0305
1911	1912	1	49,852	27,223	1,013.5	3.72	9,290	341	0.0328
1912	1913	2	50,577	27,528	707.9	2.57	9,342	339	0.0346
1913	1914	3	51,305	27,832	727.1	2.61	9,602	345	0.0357
1914	1915	4	52,039	28,137	718.2	2.55	9,760	347	0.0329
1915	1916	5	52,752	28,427	712.6	2.51	11,040	388	0.0308
1916	1917	6	53,496	28,732	771.0	2.68	12,513	436	0.0332
1917	1918	7	54,134	29,046	779.5	2.68	14,128	486	0.0408
1918	1919	8	54,739	29,341	1,079.8	3.68	15,488	528	0.0549
1919	1920	9	55,033	29,469	994.2	3.37	15,556	528	0.0730
1920	1921	10	55,963	29,937	1,168.2	3.90	14,618	488	0.0764
1921	1922	11	56,666	30,283	1,280.9	4.23	14,615	483	0.0700
1922	1923	12	57,390	30,639	1,400.5	4.57	15,192	496	0.0690
1923	1924	13	58,119	30,997	1,389.9	4.48	14,726	475	0.0683
1924	1925	14	58,876	31,369	1,432.3	4.57	15,022	479	0.0689
1925	1926	1	59,737	31,796	804.4	2.53	15,885	500	0.0698
1926	1927	2	60,741	32,298	732.2	2.27	16,380	507	0.0666
1927	1928	3	61,659	32,805	693.8	2.11	17,008	518	0.0656
1928	1929	4	62,595	33,323	700.5	2.10	17,653	530	0.0631
1929	1930	5	63,461	33,803	677.9	2.01	17,717	524	0.0617
1930	1931	6	64,450	34,350	569.0	1.66	18,521	539	0.0554
1931	1932	7	65,457	34,907	528.2	1.51	18,558	532	0.0490
1932	1933	8	66,434	35,449	569.6	1.61	19,515	551	0.0496
1933	1934	9	67,432	36,002	629.7	1.75	20,430	567	0.0511
1934	1935	10	68,309	36,491	679.3	1.86	20,914	573	0.0518
1935	1936	11	69,254	37,018	740.7	2.00	22,612	611	0.0531
1936	1937	12	70,114	37,499	815.2	2.17	23,754	633	0.0543
1937	1938	13	70,630	37,646	1,226.6	3.26	24,982	664	0.0585
1938	1939	14	71,013	37,921	1,404.0	3.70	25,666	677	0.0641
1939	1940	15	71,380	38,260	219.2	0.57	26,544	694	0.0802
1940	1941	16	71,933	38,686	266.0	0.69	25,016	647	0.1021
1941	1942	17	72,218	38,879	726.3	1.87	25,727	662	0.1137
1942	1943	18	72,880	39,275	878.6	2.24	24,509	624	0.1387
1943	1944	19	73,903	39,867	1,053.9	2.64	24,277	609	0.1595
1944	1945	20	74,433	40,194	1,114.6	2.77	23,415	583	0.1960
1945	1946	21	72,147	38,999	343.3	0.88	11,690	300	0.9026
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
1948	1948	23	80,002	43,377	7,399.8	17.06	17,467	403	10.58
1949	1949	24	81,773	44,382	7,609.9	17.15	20,063	452	11.93
1950	1950	25	84,115	45,700	4,318.1	9.45	22,065	483	12.99

1951	1951	26	84,541	46,410	24,853	536	15.19
1952	1952	27	85,808	47,591	26,446	556	16.03
1953	1953	28	86,981	48,734	28,885	593	17.08
1954	1954	29	88,239	49,938	30,137	603	18.12
1955	1955	30	90,077	51,488	33,545	652	18.02
1956	1956	31	90,172	52,053	36,977	710	18.12
1957	1957	32	90,928	53,004	39,694	749	18.65
1958	1958	33	91,767	54,012	42,095	779	18.54
1959	1959	34	92,641	55,051	46,773	850	18.75
1960	1960	35	94,302	56,572	52,292	924	19.49
1961	1961	36	94,287	57,255	59,791	1,044	20.43
1962	1962	37	95,181	58,496	63,838	1,091	21.90
1963	1963	38	96,156	59,801	68,886	1,152	23.47
1964	1964	39	97,182	61,153	76,764	1,255	24.41
1965	1965	40	99,209	63,156	81,472	1,290	25.98
1966	1966	41	99,036	63,773	87,954	1,379	27.34
1967	1967	42	100,196	65,256	96,852	1,484	28.39
1968	1968	43	101,331	66,739	109,011	1,633	29.96
1969	1969	44	102,536	68,285	119,546	1,751	31.53
1970	1970	45	104,665	70,471	129,768	1,841	33.94
1971	1971	46	106,100	71,661	138,988	1,940	35.93
1972	1972	47	107,595	72,898	154,441	2,119	37.61
1973	1973	48	109,104	74,150	174,040	2,347	42.01
1974	1974	49	110,573	75,382	175,373	2,326	52.28
1975	1975	50	111,940	76,550	178,345	2,330	58.46
1976	1976	51	113,094	77,578	182,870	2,357	64.01
1977	1977	52	114,165	78,554	183,911	2,341	69.14
1978	1978	53	115,190	79,502	190,195	2,392	71.66
1979	1979	54	116,155	80,413	197,947	2,462	74.28
1980	1980	55	117,060	81,286	199,280	2,452	80.25
1981	1981	56	117,902	82,375	201,987	2,452	84.12
1982	1982	57	118,728	83,459	206,147	2,470	86.43
1983	1983	58	119,536	84,537	211,201	2,498	88.00
1984	1984	59	120,305	85,595	216,423	2,528	89.99
1985	1985	60	121,049	86,641	222,426	2,567	91.77
1986	1986	61	121,660	87,598	228,851	2,613	92.19
1987	1987	62	122,239	88,536	233,389	2,636	91.98
1988	1988	63	122,745	89,427	243,536	2,723	92.40
1989	1989	1	123,204	90,288	255,023	2,825	94.60
1990	1990	2	123,611	91,114	267,838	2,940	97.53
1991	1991	3	124,101	92,200	279,382	3,030	100.68
1992	1992	4	124,567	93,273	283,116	3,035	102.35
1993	1993	5	124,938	94,281	280,026	2,970	103.51
1994	1994	6	125,265	95,259	280,972	2,950	104.03
1995	1995	7	125,570	96,224	278,334	2,893	103.71
1996	1996	8	125,864	97,185	280,772	2,889	103.71
1997	1997	9	126,166	98,155	280,338	2,856	104.65
1998	1998	10	126,486	99,142	274,392	2,768	104.54
1999	1999	11	126,686	100,039	270,310	2,702	103.82
2000	2000	12	126,926	100,970	269,971	2,674	102.47
2001	2001	13	127,291	101,642	264,609	2,603	100.91
2002	2002	14	127,435	102,139	257,286	2,519	100.00

Source: See Appendix Section A.

Notes: 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 peronal income from National Accounts for 1930-2002.

CPI is from Ohkawa et al. (1967) for 1886-1950 and *Japan Statistical Yearbook* for 1950-2002.

Table A1: Top Income Shares in Japan, 1886-2002

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
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
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

Notes: Computations by authors: See Appendix Section A for details.

Year refers to "actual year" in Table A0.

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 demonimator is defined as total personal income in Japan from National Accounts.

"Top 5-1%" refers to the bottom 4% of the top 5% income group.

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 Section A.3.4 and Figure A2).

Table A2: Top 1% Income Share and Composition in Japan, 1886-2002

Actual Year	Top 1% income share (%)	Fraction population filing (%)	Composition of top 1% income				
			Dividends	Interest	Business income	Employment income	Rental income
	(1)	(2)	(3)	(4)	(5)	(6)	(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%
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%	80.61%	9.41%

Notes: Computations by authors based on tax return statistics. See Appendix Section A.4 for details.
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 1900-1945, composition estimates are based on aggregate income composition and thus imprecisely estimated.
In particular, for 1906-1925, relatively high fractions of adults (2.5% to 4.6%) filed income tax returns.
For 1947-1950 and 1963-2002, composition estimates are based on composition data by income brackets.
For 1951-1962, no estimates are provided because only aggregate composision data are available.
Virtually all interest income after 1947 and large part of dividends after 1965 are missing from the income tax statistics.

Table A3: Marginal Income Tax Rates in Japan, 1886-2002

Actual Year (incomes earned in)	Fiscal Year (tax collected in)	Marginal Tax Rates				
		Marginal Tax Rate at P99.9	Marginal Tax Rate at P99.99	Top Marginal Tax Rate	Marginal Tax Rate Top 0.1%	Marginal Tax Rate Top 0.01%
(1)		(2)	(3)	(4)	(5)	(6)
1886	1887	1.0	1.5	3.0	1.7	2.3
1887	1888	1.0	1.5	3.0	1.7	2.3
1888	1889	1.0	1.5	3.0	1.7	2.3
1889	1890	1.0	1.5	3.0	1.7	2.3
1890	1891	1.0	1.5	3.0	1.7	2.3
1891	1892	1.0	1.5	3.0	1.7	2.3
1892	1893	1.5	1.5	3.0	1.8	2.3
1893	1894	1.5	1.5	3.0	1.8	2.3
1894	1895	1.5	1.5	3.0	1.8	2.3
1895	1896	1.5	1.5	3.0	1.8	2.3
1896	1897	1.5	1.5	3.0	1.8	2.3
1897	1898	1.5	1.5	3.0	1.8	2.3
1898	1899	1.5	2.5	5.5	2.7	4.0
1899	1900	1.7	2.5	5.5	2.8	4.0
1900	1901	1.7	2.5	5.5	2.8	4.0
1901	1902	1.7	2.5	5.5	2.8	4.0
1902	1903	1.7	2.5	5.5	2.8	4.0
1903	1904	2.89	4.25	9.4	4.8	6.8
1904	1905	3.91	7.50	20.4	8.8	13.9
1905	1906	3.91	7.50	20.4	8.8	13.9
1906	1907	4.60	7.50	20.4	9.0	13.9
1907	1908	4.60	7.50	20.4	8.9	13.9
1908	1909	4.60	7.50	20.4	8.9	13.9
1909	1910	4.60	7.50	20.4	8.8	13.9
1910	1911	4.60	7.50	20.4	8.9	13.9
1911	1912	4.60	7.50	20.4	8.9	13.9
1912	1913	5.5	10.0	22.0	10.8	16.0
1913	1914	5.5	10.0	22.0	10.8	16.0
1914	1915	5.5	10.0	22.0	10.8	16.0
1915	1916	5.5	10.0	22.0	11.1	16.0
1916	1917	5.5	12.0	22.0	12.5	17.0
1917	1918	8.5	17.0	30.0	17.6	23.5
1918	1919	10.5	17.0	30.0	18.1	23.5
1919	1920	8.0	15.0	36.0	17.4	25.5
1920	1921	9.5	15.0	36.0	17.7	25.5
1921	1922	9.5	15.0	36.0	17.4	25.5
1922	1923	9.5	15.0	36.0	17.5	25.5
1923	1924	9.5	15.0	36.0	17.4	25.5
1924	1925	9.5	15.0	36.0	17.5	25.5
1925	1926	9.5	15.0	36.0	17.5	25.5
1926	1927	9.5	15.0	36.0	17.7	25.5
1927	1928	9.5	15.0	36.0	17.6	25.5
1928	1929	9.5	15.0	36.0	17.6	25.5
1929	1930	9.5	15.0	36.0	17.7	25.5
1930	1931	8.0	15.0	36.0	17.1	25.5
1931	1932	8.0	15.0	36.0	17.0	25.5
1932	1933	8.0	15.0	36.0	17.1	25.5
1933	1934	8.0	15.0	36.0	17.3	25.5
1934	1935	8.0	15.0	36.0	17.3	25.5
1935	1936	9.5	15.0	36.0	17.7	25.5
1936	1937	35.0	40.0	70.0	44.9	55.0
1937	1938	13.0	25.0	50.0	27.0	37.5
1938	1939	16.0	28.0	50.0	29.0	39.0
1939	1940	20.0	40.0	65.0	38.9	52.5
1940	1941	25.0	40.0	65.0	40.1	52.5
1941	1942	30.0	48.0	72.0	46.6	60.0
1942	1943	30.0	48.0	72.0	46.6	60.0
1943	1944	36.0	54.0	74.0	51.8	64.0

1944	1945	36.0	54.0	74.0	51.8	64.0
1945	1946	36.0	55.0	67.0	50.1	61.0
1946						
1947	1947	65.0	70.0	75.0	68.9	72.5
1948	1948	82.0	85.0	85.0	83.9	85.0
1949	1949	65.0	75.0	85.0	72.5	80.0
1950	1950	55.0	55.0	55.0	55.0	55.0
1951	1951	48.0	53.0	55.0	51.5	54.0
1952	1952	53.0	55.0	55.0	54.3	55.0
1953	1953	50.0	55.0	65.0	54.4	60.0
1954	1954	50.0	55.0	65.0	54.4	60.0
1955	1955	50.0	55.0	65.0	54.4	60.0
1956	1956	50.0	60.0	65.0	56.9	62.5
1957	1957	35.0	40.0	70.0	42.1	55.0
1958	1958	35.0	45.0	70.0	44.6	57.5
1959	1959	35.0	45.0	70.0	44.4	57.5
1960	1960	35.0	45.0	70.0	44.5	57.5
1961	1961	40.0	45.0	70.0	46.4	57.5
1962	1962	40.0	45.0	75.0	47.1	60.0
1963	1963	40.0	50.0	75.0	49.6	62.5
1964	1964	40.0	50.0	75.0	49.5	62.5
1965	1965	40.0	50.0	75.0	49.5	62.5
1966	1966	40.0	50.0	75.0	49.4	62.5
1967	1967	45.0	50.0	75.0	51.2	62.5
1968	1968	45.0	50.0	75.0	51.1	62.5
1969	1969	46.0	55.0	75.0	54.1	65.0
1970	1970	42.0	55.0	75.0	53.1	65.0
1971	1971	42.0	55.0	75.0	53.8	65.0
1972	1972	42.0	55.0	75.0	53.0	65.0
1973	1973	46.0	55.0	75.0	56.2	65.0
1974	1974	35.3	46.5	69.8	46.5	58.1
1975	1975	37.8	45.0	67.5	46.5	56.3
1976	1976	37.8	49.5	67.5	47.1	58.5
1977	1977	41.4	49.5	67.5	48.4	58.5
1978	1978	41.4	49.5	67.5	48.4	58.5
1979	1979	45.0	54.0	67.5	52.1	60.8
1980	1980	47.5	57.0	71.3	55.0	64.1
1981	1981	47.5	57.0	71.3	54.9	64.1
1982	1982	47.5	57.0	71.3	55.1	64.1
1983	1983	47.5	57.0	71.3	54.9	64.1
1984	1984	47.5	57.0	66.5	54.5	61.8
1985	1985	47.5	57.0	66.5	54.5	61.8
1986	1986	47.5	57.0	66.5	54.7	61.8
1987	1987	47.5	52.3	57.0	51.3	54.6
1988	1988	47.5	47.5	57.0	49.1	52.3
1989	1989	47.5	47.5	57.0	49.4	52.3
1990	1990	47.5	47.5	47.5	47.5	47.5
1991	1991	47.5	47.5	47.5	47.5	47.5
1992	1992	47.5	47.5	47.5	47.5	47.5
1993	1993	47.5	47.5	47.5	47.5	47.5
1994	1994	47.5	47.5	47.5	47.5	47.5
1995	1995	38.0	47.5	47.5	44.1	47.5
1996	1996	38.0	47.5	47.5	44.1	47.5
1997	1997	38.0	47.5	47.5	44.0	47.5
1998	1998	38.0	47.5	47.5	44.0	47.5
1999	1999	35.2	35.2	35.2	35.2	35.2
2000	2000	35.2	35.2	35.2	35.2	35.2
2001	2001	35.2	35.2	35.2	35.2	35.2
2002	2002	35.2	35.2	35.2	35.2	35.2

Notes: Computation by authors; see Appendix Section A.5 for details.
Marginal tax rates for a taxpayer with a non-working spouse and two dependent children are estimated.
Exemptions and standard deductions are taken into account, and local taxes are excluded.
"Marginal tax rate at P99.9" refers to the marginal tax rate at the income threshold for the top 0.1% group.
"Top marginal tax rate" is the highest marginal tax rate stipulated by the law.
"Marginal tax rate Top 0.1%" refers to the income-weighted average marginal tax rate for the top 0.1% group.

Table B1: Levels of Top Estates in Japan, 1905-2002

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 .1-.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
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%	3,073	7,089	10,146	22,523	61,411	2,069	4,032	7,052	18,202	61,411
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
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	970,000	44,329	4.57%	224,236	589,069	846,304	1,779,609	4,755,073	133,028	331,834	612,978	1,449,002	4,755,073

Notes: Computations by authors based on estate tax return statistics. See Appendix Section B 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 (in 2002, 1,000 yen = $8).
For the correspondence between actual and fiscal years, see Appendic Section B.1.2.
Due to the difficulty in reconstructing estate statistics for actual years, our estimate for each year is imprecise, but their moving average are more accurate.
For 1950-1957, inheritance statistcs are converted to estate statistics; see Appendix Section B.1.4 for details.

Table B2: Estate Composition in Japan, 1926-2002

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)
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	19.4%	19.4%	14.4%	36.0%	11.9%	5.8%	16.2%	13.7%	-17.3%
1952	16.2%	16.2%	13.2%	28.9%	10.8%	7.4%	17.7%	17.3%	-11.6%
1953	18.4%	18.4%	18.0%	26.0%	9.8%	12.3%	10.9%	20.0%	-15.4%
1954	23.9%	23.9%	21.3%	23.8%	8.5%	9.0%	8.9%	19.2%	-14.5%
1955	24.9%	24.9%	24.4%	21.7%	9.7%	8.3%	8.9%	16.9%	-14.8%
1956	25.5%	25.5%	25.3%	20.1%	11.0%	9.1%	5.5%	15.3%	-11.8%
1957	26.1%	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%
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	4.6%	23.3%	43.4%	5.8%	0.5%	6.7%	21.7%	12.2%	-13.7%

Notes: Computations by authors based on aggregate estate tax return statistics. See Appendix Section B.2 for details.
Estates net of debts are defined to be 100%.
Business assets include assets of unincorproate 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 fluctulates from year to year,
estate compositions may not be directly comprable across years.

Table C1: Reference totals for wage earners, wage income, and inflation, 1948-2002

Years		Regular Wage Earners			Wage Income		Inflation
(1a) Actual Year (wage earned)	(1b) Fiscal Year (tax paid)	(2) Number of employees ('000s)	(3) Number of tax returns ('000s)	(4) (2)/(1) (%)	(7) Total wage income (billions 2002 Yens)	(8) Average wage income ('000s 2002 yens)	(9) 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
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	202,579	4,400	100.00

Notes: See Appendix C 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* 1949-2002.

Wage Income is defined as wages, salaries, allowances, and bonuses, excluding noncash benefits and retirement benedits.

Total wage income is defined as 90% of total wages and salaries from National Accounts.

Table C2: Top Wage Income Shares in Japan, 1929-2002

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 .1-.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	23.99	14.56	4.47	2.72	0.88	0.19	9.43	10.09	1.76	1.84	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	23.46	14.32	4.36	2.64	0.83	0.17	9.14	9.95	1.73	1.81	0.67
1983	23.78	14.56	4.41	2.66	0.82	0.16	9.21	10.15	1.75	1.85	0.66
1984	23.82	14.60	4.46	2.70	0.84	0.17	9.22	10.14	1.77	1.86	0.67
1985	24.28	14.83	4.51	2.73	0.86	0.17	9.45	10.32	1.78	1.87	0.69
1986	24.67	15.06	4.54	2.71	0.84	0.17	9.61	10.53	1.83	1.87	0.67
1987	25.04	15.26	4.67	2.79	0.88	0.17	9.78	10.59	1.89	1.91	0.70
1988	25.10	15.30	4.65	2.75	0.84	0.16	9.80	10.65	1.90	1.91	0.68
1989	25.30	15.41	4.70	2.78	0.88	0.17	9.89	10.72	1.92	1.90	0.70
1990	25.54	15.57	4.77	2.84	0.90	0.17	9.97	10.80	1.94	1.94	0.72
1991	25.71	15.72	4.77	2.87	0.90	0.17	9.99	10.95	1.91	1.96	0.73
1992	25.79	15.77	4.77	2.87	0.92	0.18	10.03	11.00	1.90	1.95	0.74
1993	25.51	15.54	4.69	2.80	0.87	0.17	9.97	10.86	1.88	1.93	0.71
1994	25.43	15.38	4.65	2.80	0.91	0.18	10.05	10.72	1.85	1.90	0.73
1995	25.54	15.40	4.69	2.82	0.88	0.17	10.14	10.71	1.87	1.94	0.71
1996	25.25	15.16	4.60	2.78	0.88	0.18	10.09	10.56	1.83	1.90	0.70
1997	25.21	15.08	4.56	2.75	0.88	0.18	10.13	10.52	1.80	1.87	0.70
1998	25.57	15.44	4.80	2.94	0.94	0.18	10.13	10.64	1.86	2.00	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	25.80	15.78	5.05	3.15	1.07	0.23	10.02	10.72	1.90	2.08	0.84

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

Table C3: Wage Income Tax and Marginal Tax Rates in Japan, 1951-2002

Year	Basic exemption per tax unit ('000 current yen)	Exemption for each dependent ('000 current yen)	Marginal Tax Rates on Employment Income: Marginal Tax Rate at P90 (%)	Marginal Tax Rate at P95 (%)	Marginal Tax Rate at P99 (%)	Marginal Tax Rate at P99.9 (%)	Marginal Tax Rate at P99.99 (%)	Top Marginal Tax Rate (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1950	25	12						55.0
1951	38	17	30.0	33.0	43.0	48.0	53.0	55.0
1952	50	20	30.0	38.0	43.0	53.0	55.0	55.0
1953	60	35	21.3	30.0	40.0	50.0	55.0	65.0
1954	68	34	21.3	35.0	45.0	50.0	55.0	65.0
1955	75	40	21.3	30.0	40.0	50.0	55.0	65.0
1956	80	40	20.6	30.0	40.0	50.0	60.0	65.0
1957	88	48	12.0	18.0	25.0	35.0	40.0	70.0
1958	90	50	12.0	18.0	25.0	35.0	45.0	70.0
1959	90	65	13.5	18.0	25.0	35.0	45.0	70.0
1960	90	70	13.5	18.0	25.0	35.0	45.0	70.0
1961	90	50	9.0	18.0	25.0	40.0	45.0	70.0
1962	98	50	13.5	20.0	25.0	40.0	45.0	75.0
1963	108	50	13.5	20.0	30.0	40.0	50.0	75.0
1964	118	50	13.9	20.0	30.0	40.0	50.0	75.0
1965	128	58	15.0	20.0	30.0	40.0	50.0	75.0
1966	138	60	15.0	20.0	30.0	40.0	50.0	75.0
1967	148	68	15.0	20.0	30.0	45.0	50.0	75.0
1968	158	78	20.0	20.0	30.0	45.0	50.0	75.0
1969	168	95	17.3	21.1	29.4	46.0	55.0	75.0
1970	178	115	14.6	16.4	25.9	42.0	55.0	75.0
1971	190	130	12.6	15.2	22.8	42.0	55.0	75.0
1972	200	140	14.4	17.1	27.0	42.0	55.0	75.0
1973	208	155	16.4	19.1	28.8	46.0	55.0	75.0
1974	233	220	12.0	15.1	22.7	35.3	46.5	69.8
1975	260	260	12.8	16.8	24.3	37.8	45.0	67.5
1976	260	260	14.4	16.8	27.0	37.8	49.5	67.5
1977	290	290	14.4	16.8	27.0	41.4	49.5	67.5
1978	290	290	16.8	19.2	30.6	41.4	49.5	67.5
1979	290	290	16.8	19.2	30.6	45.0	54.0	67.5
1980	290	290	16.8	21.6	34.2	47.5	57.0	71.3
1981	290	290	19.2	24.3	36.1	47.5	57.0	71.3
1982	290	290	19.2	24.3	36.1	47.5	57.0	71.3
1983	290	290	19.2	24.3	36.1	47.5	57.0	71.3
1984	330	330	20.0	22.5	33.3	47.5	57.0	66.5
1985	330	330	22.5	27.0	38.0	47.5	57.0	66.5
1986	330	330	22.5	27.0	38.0	47.5	57.0	66.5
1987	330	330	22.5	27.0	38.0	47.5	52.3	57.0
1988	330	330	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	380	18.0	19.0	28.5	38.0	47.5	47.5
1999	380	380	18.0	19.0	28.5	35.2	35.2	35.2
2000	380	380	18.0	19.0	28.5	35.2	35.2	35.2
2001	380	380	18.0	19.0	28.5	35.2	35.2	35.2
2002	380	380	18.0	18.0	28.5	35.2	35.2	35.2

Notes: Computations by authors; see Appendix Section C.3 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.

Exemptions and deductions are taken into account.

Local income taxes and social security contributions are excluded.

"Marginal tax rate at P99.9" refers to the marginal tax rate at the income threshold for the top 0.1% group.

"Top marginal tax rate" is the highest marginal tax rate stipulated by the law.

TABLE D1
Senitivity Analysis using the NSFIE Data, 1979-1999

Income Groups	Income Share	Fraction of Capital Income Component to Total Household Income			
		Net Interest Income (%)	Dividend Income (%)	Returns on Insurance Policies (%)	All Returns on Liquid Assets (%)
(1)	(2)	(3)	(4)	(5)	(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 are by authors; see Appendix Section D.2 for details.
Estimates are based on the *National Survey of Family Income and Expenditure,* 1979-1999.
In contrast to Table 3, Panel C, these NSFIE estimates are based on the household unit and not the 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 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.

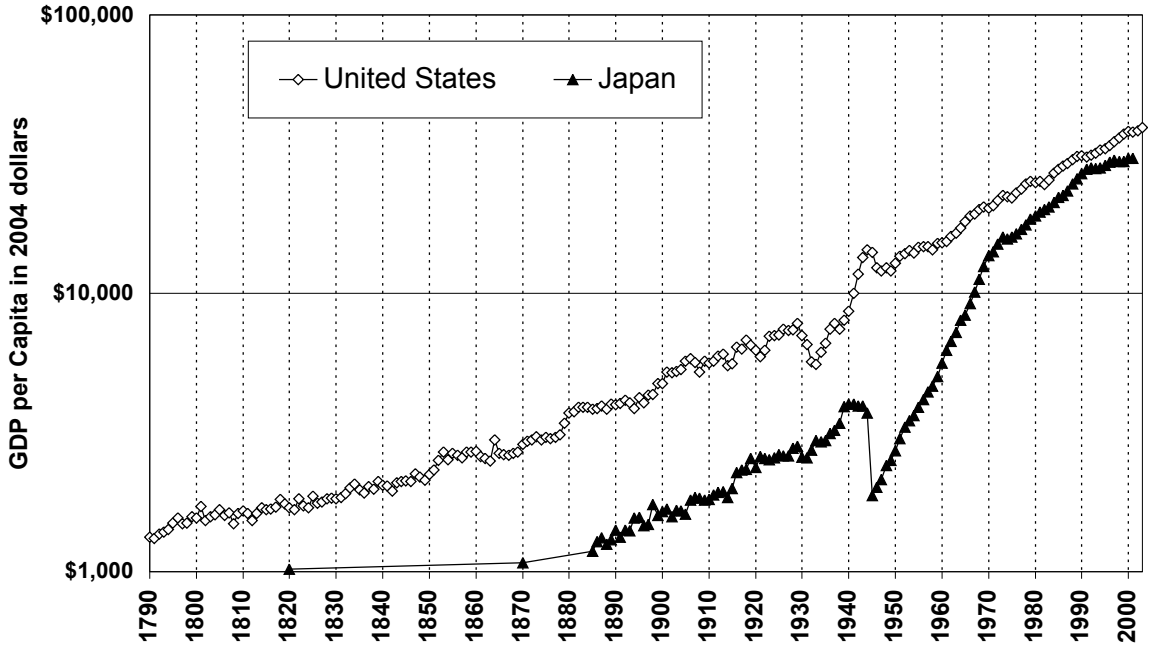


FIGURE 1
Real GDP per Capita in Japan and the United States, 1790-2002

Source: U.S. from Johnston and Williamson (2004); Japan from Maddison (1995) and National Accounts.

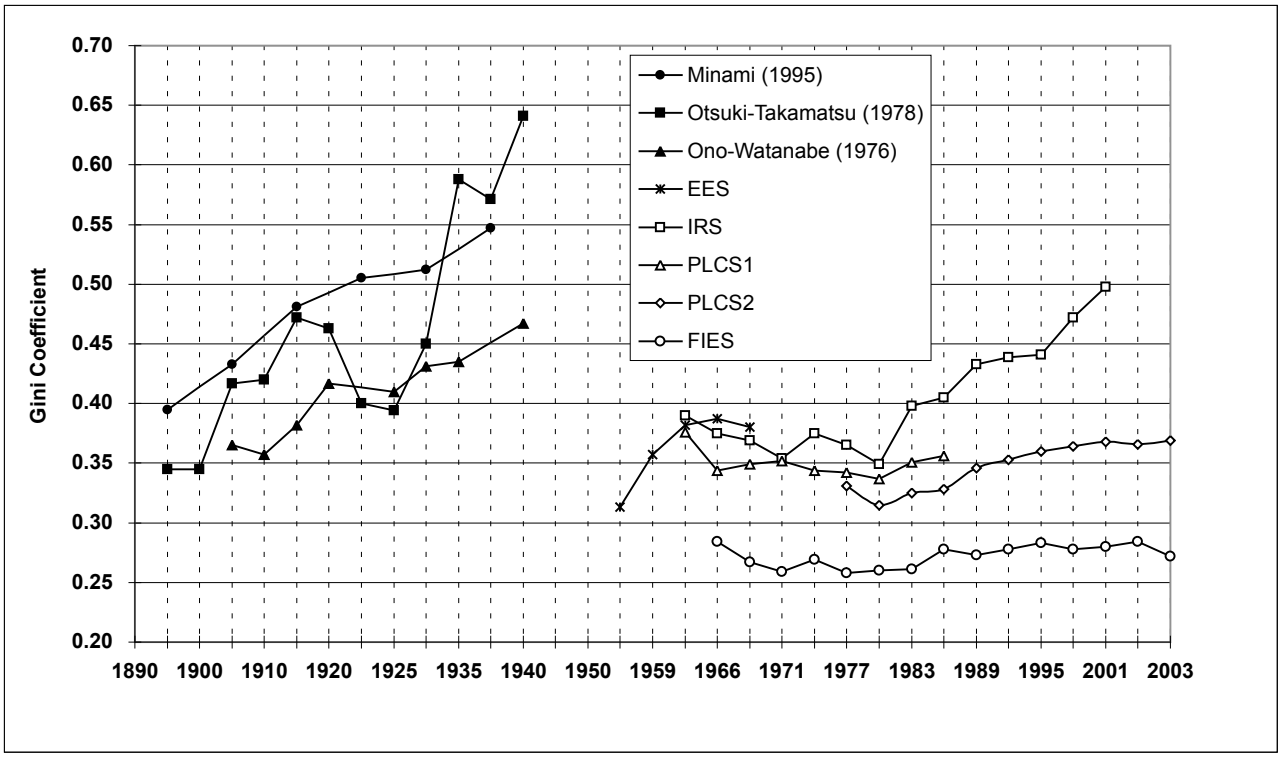


FIGURE 2
Change in Income Inequality in Japan, 1890-2003

Sources: Ono and Watanabe (1976), Table 6; Otsuki and Takamatsu (1978), Table 4; Minami (1995), Table 6-4, Series I' & II; Wada (1975), p.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 to *People's Living Conditions Survey* ; FIES to *Family Income and Expenditure Survey* ; and IRS to *Income Redistribution Survey* .

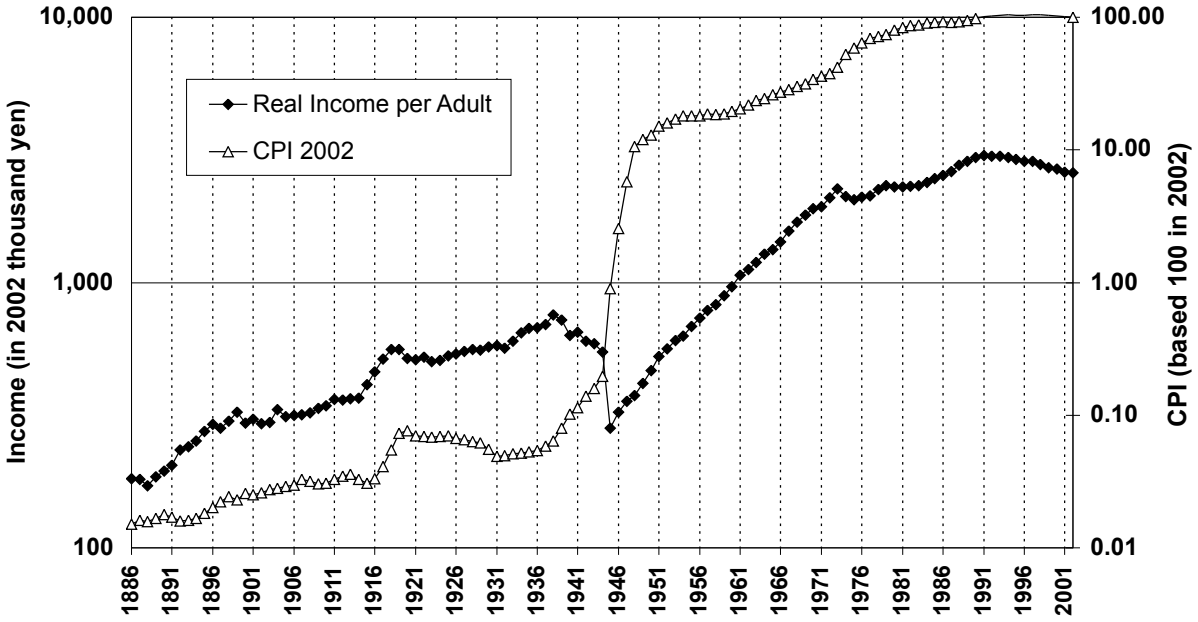


FIGURE 3
Average Real Income & Consumer Price Index in Japan, 1886-2002

Source: Table A0, columns (8) and (9).

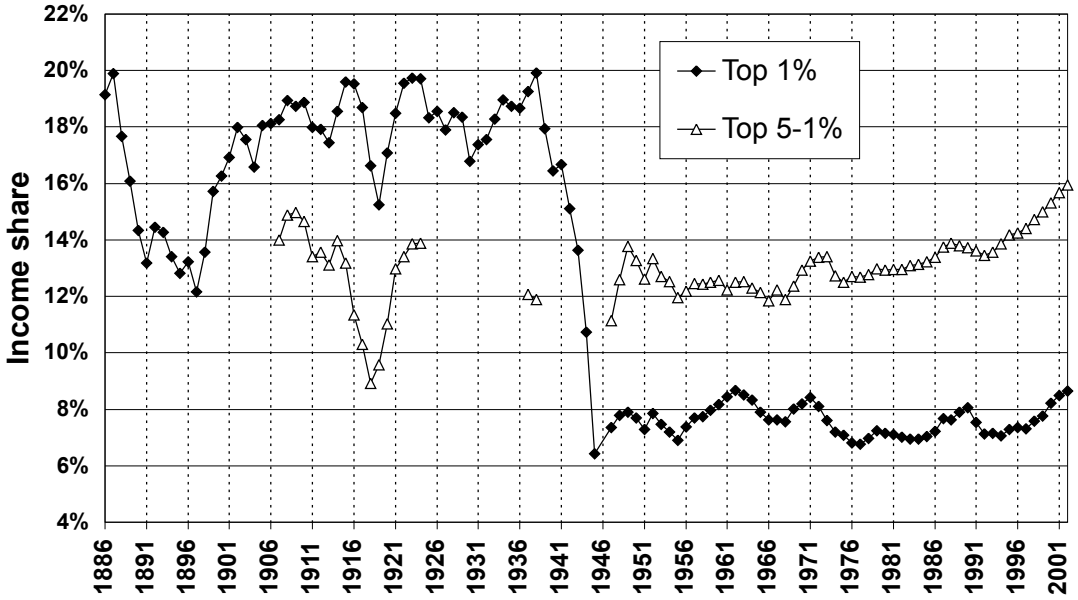


FIGURE 4
Top 1% and Next 4% Income Shares in Japan, 1886-2002

Source: Table A1, columns (2) and (9).
Note: "Top 5-1%" share refers to the share of income accrued to the bottom 4% of the top 5% income group.

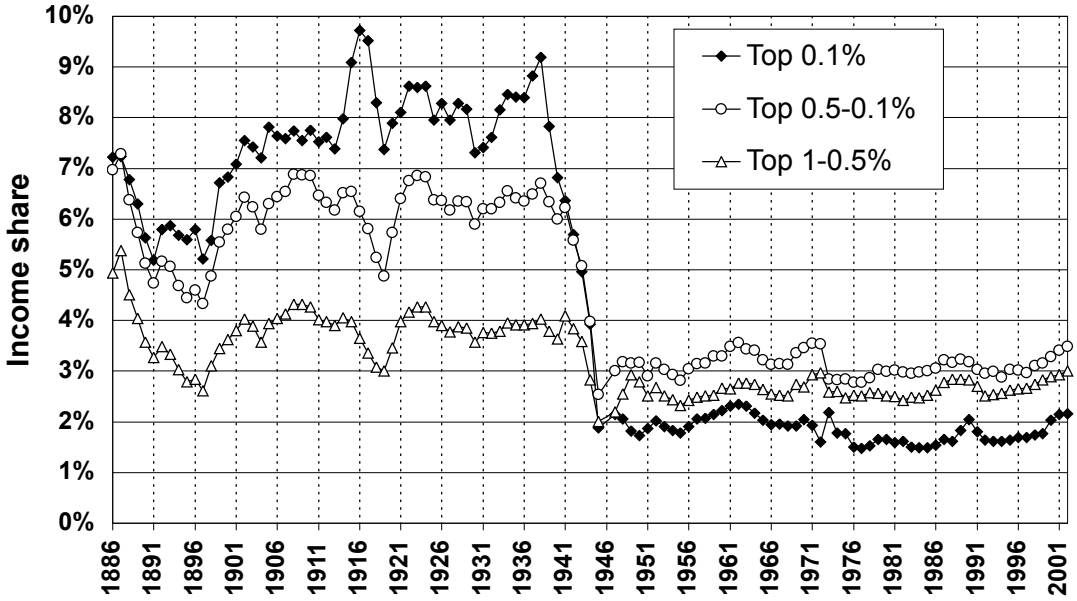


FIGURE 5
Decomposition of Top 1% Income Share in Japan, 1886-2002

Source: Table A1, columns (4), (10), and (11).
Notes: "Top 0.5-0.1%" share refers to the share of income accrued to the bottom 0.4% of the top 0.5% income group.
"Top 1-0.5%" share refers to the share of income accrued to the bottom 0.5% of the top 1% income group.

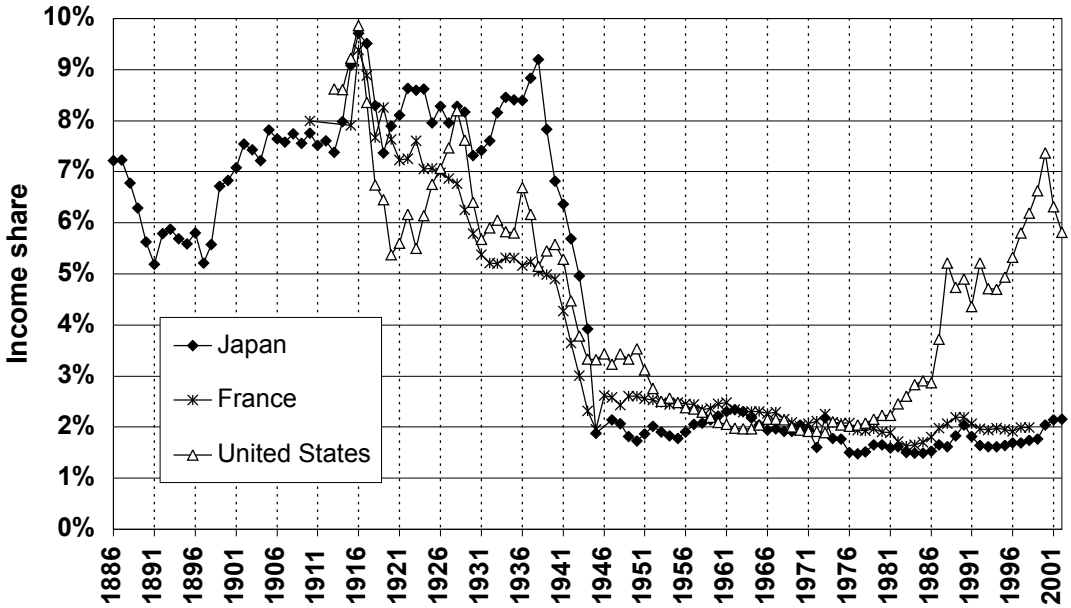


FIGURE 6
Top 0.1% Income Shares in Japan, the United States, and France.

Source: Japan, Table A1, column (4); U.S., Piketty and Saez (2003); France, Piketty (2003).

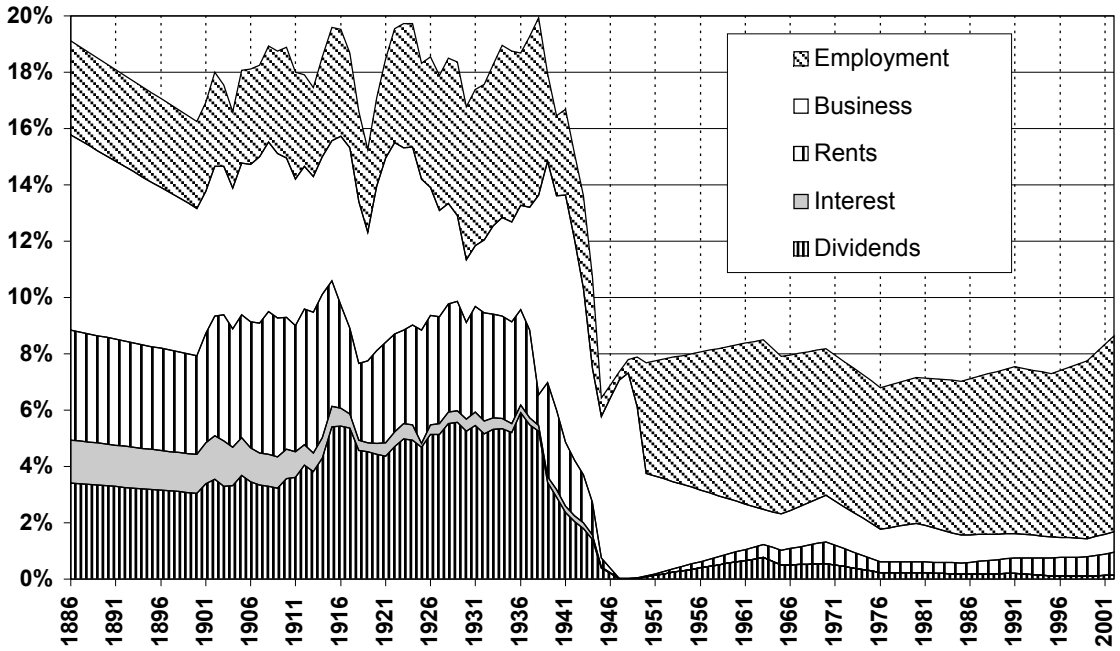


FIGURE 7
Composition of Top 1% Income in Japan, 1886-2002

Source: Table A2.
Notes: Computations by authors based on income tax return statistics. See Appendix Section A.4 for details.
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 1886-1945, composition estimates are based on aggregate income composition and thus imprecisely estimated.
In particular, for 1906-1925, relatively high fractions of adults (2.5% to 4.6%) filed income tax returns.
For 1947-2002, top 1% income composition estimates are based on composition data by income brackets.
For 1887-1899, 1946, and 1951-1962, no estimates are provided because data are not available.
For 1963-2002, estimates are provided only twice a decade.
Virtually all interest income after 1947 and large part of dividends after 1965 are missing from the income tax statistics.

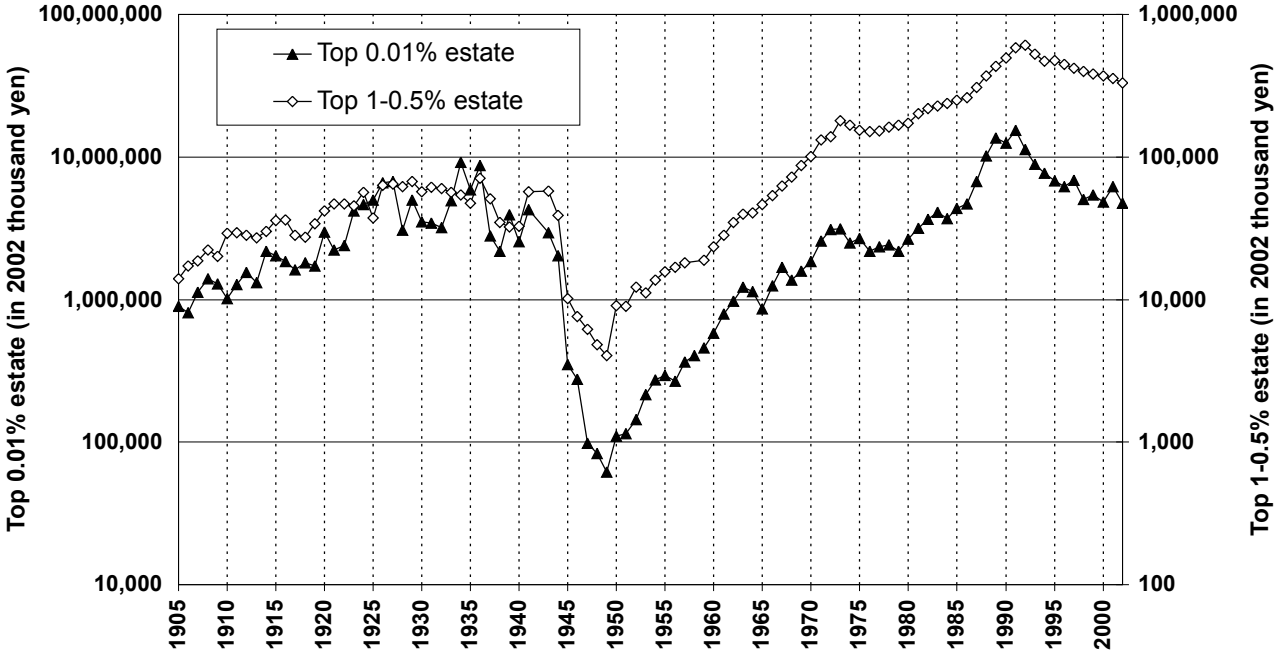


FIGURE 8
Top 0.01% Estate and Top 1-0.5% Estate in Japan, 1905-2002

Source: Table B1, columns (8) and (10).
Notes: The average estate levels (in 2002 yen) of the top 0.01% group and the bottom half of the top 1% are reported.
The 1905-1957 estate levels are much less precisely estimated than the 1958-2002 levels.
See Appendix Section B for details.

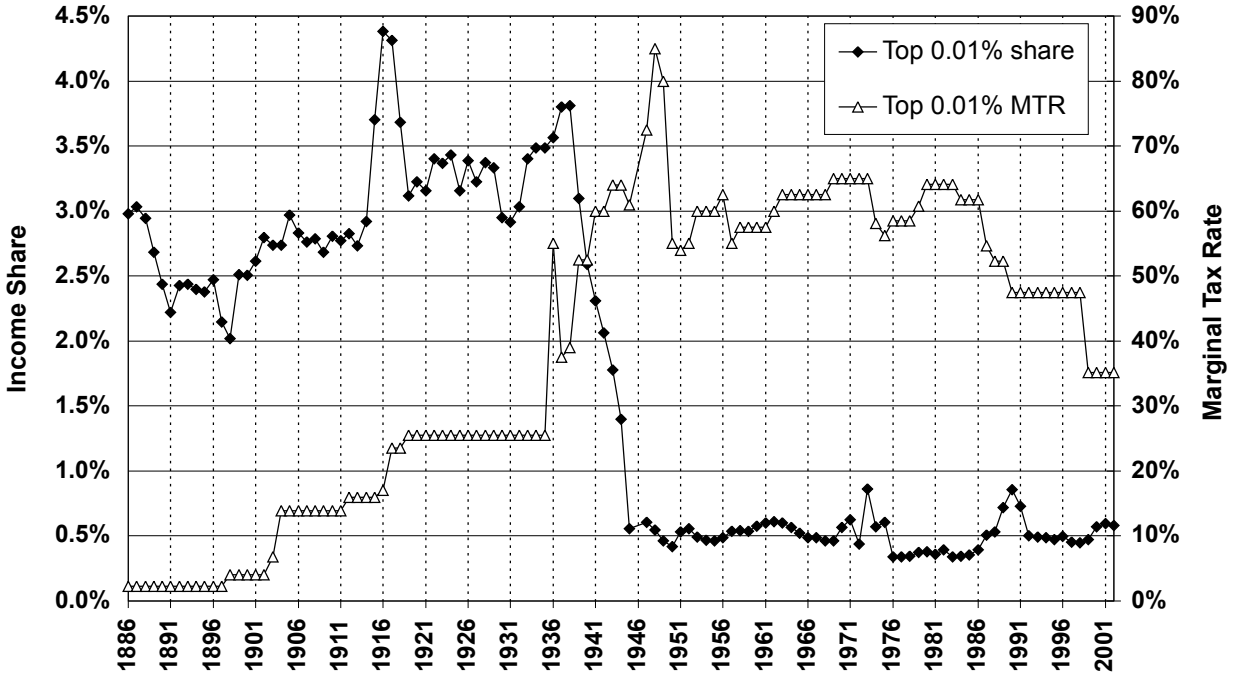


FIGURE 9
Top 0.01% Income Share and Marginal Tax Rate, 1886-2002

Source: Table A1, column (13) and Table A3, column (6).
Notes:
Top 0.01% MTR refers to the marginal tax rate for the average taxpayer in the top 0.01% income group.
Marginal tax rate is estimated for an individual with non-working spouse and two dependent children.
Marginal tax rate takes standard deductions into account and excludes local income taxes.

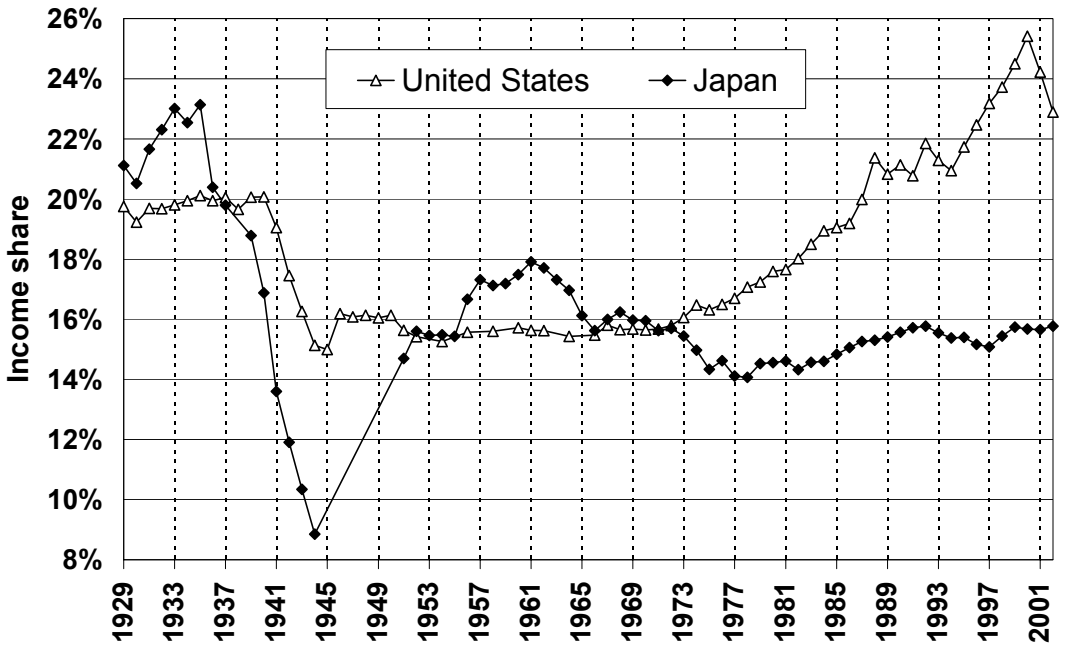


FIGURE 10

Top 5% Wage Income Share in Japan and the United States, 1929-2002

Source: Japan, Table C2, column (2); U.S., Piketty and Saez (2003), Table IV, column P90-100, updated to 2002.
Note: the 1929-1944 estimates are less precise than the 1951-2002 estimates and are not fully comparable to the 1951-2002 estimates. See Appendix Section C for details.

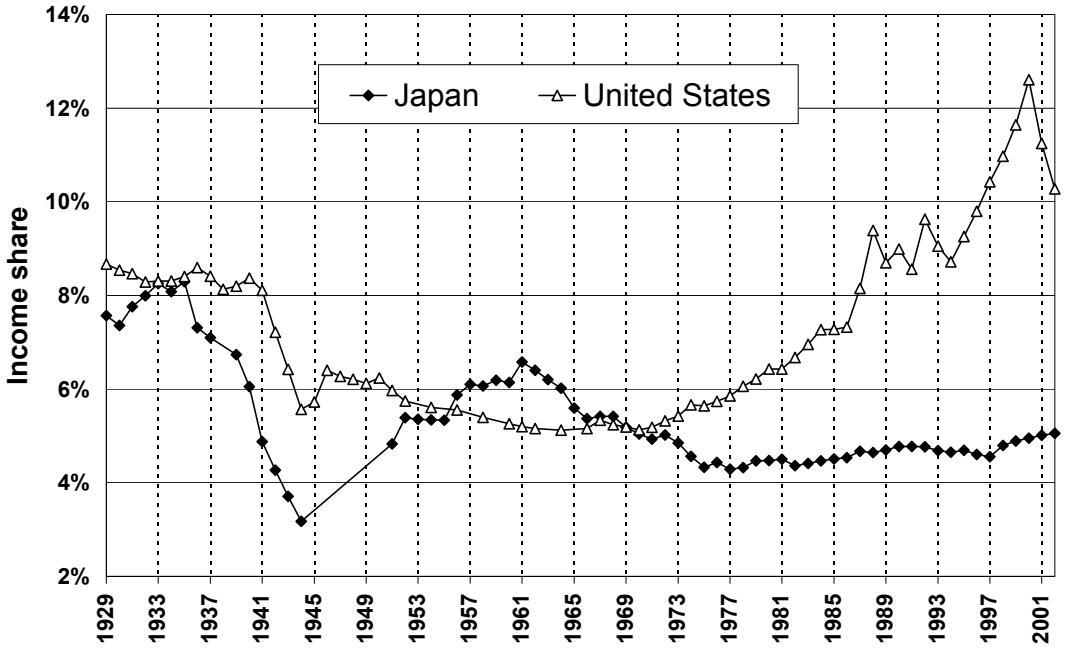


FIGURE 11

Top 1% Wage Income Share in Japan and the United States, 1929-2002

Source: Japan, Table C2, column (3); U.S., Piketty and Saez (2003), Table IV, column P99-100, updated to 2002.
Note: the 1929-1944 estimates are less precise than the 1951-2002 estimates and are not fully comparable to the 1951-2002 estimates. See Appendix Section C for details.

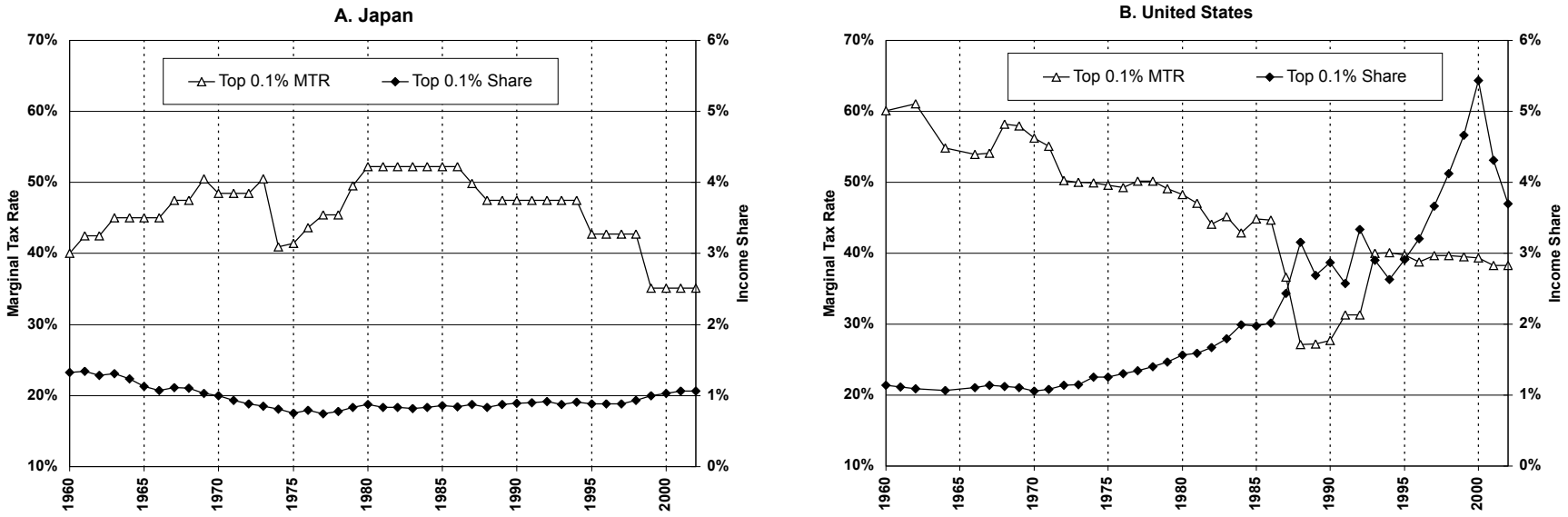


FIGURE 12
Top 0.1% Wage Income Shares and Marginal Tax Rates in Japan and the United States, 1960-2002

Source: Japan, Table C2, column (5) and computation by authors' based on Table C3 (see Appendix Section C.3 for details); U.S., Saez (2004).
Notes: "Top 0.1% MTR" refers to the marginal tax rate for the average individual in the top 0.1% wage income group with only wage income and with a non-working spouse and two dependent children.
Marginal tax rates in Japan exclude local income taxes and social insurance contributions.
Marginal tax rates in the U.S. are computed using micro tax return data and TAXSIM calculator and exclude state income taxes.

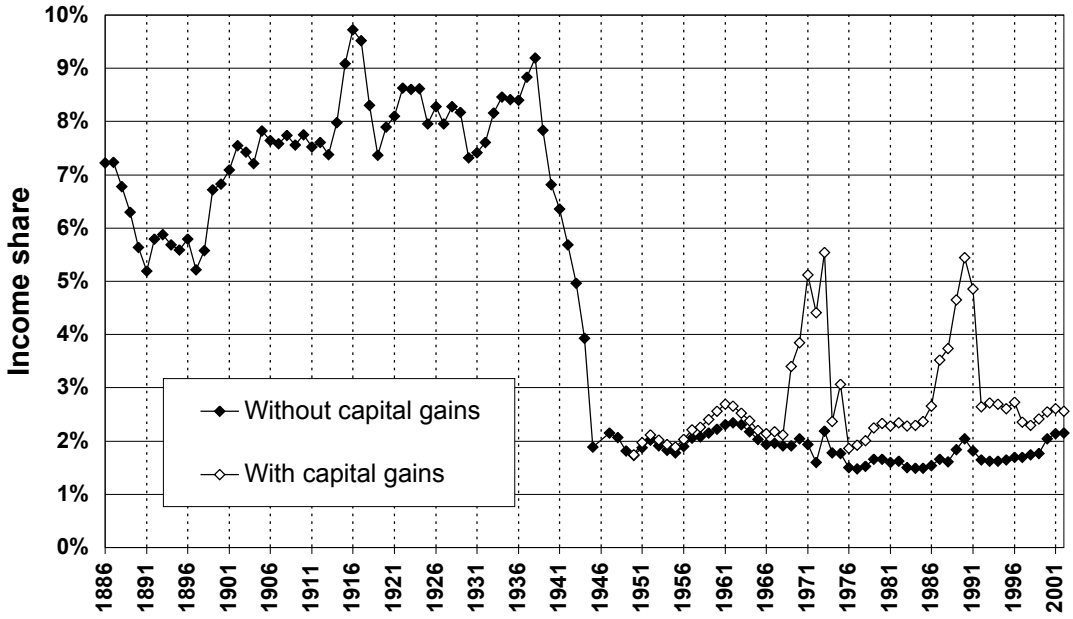


FIGURE A1
Top 0.1% Income Share in Japan With & Without Capital Gains

Source: Series without capital gains, Table A1, column (4); series with capital gains based on authors' computations.
Note: See Appendix Section A.3.2 for details.

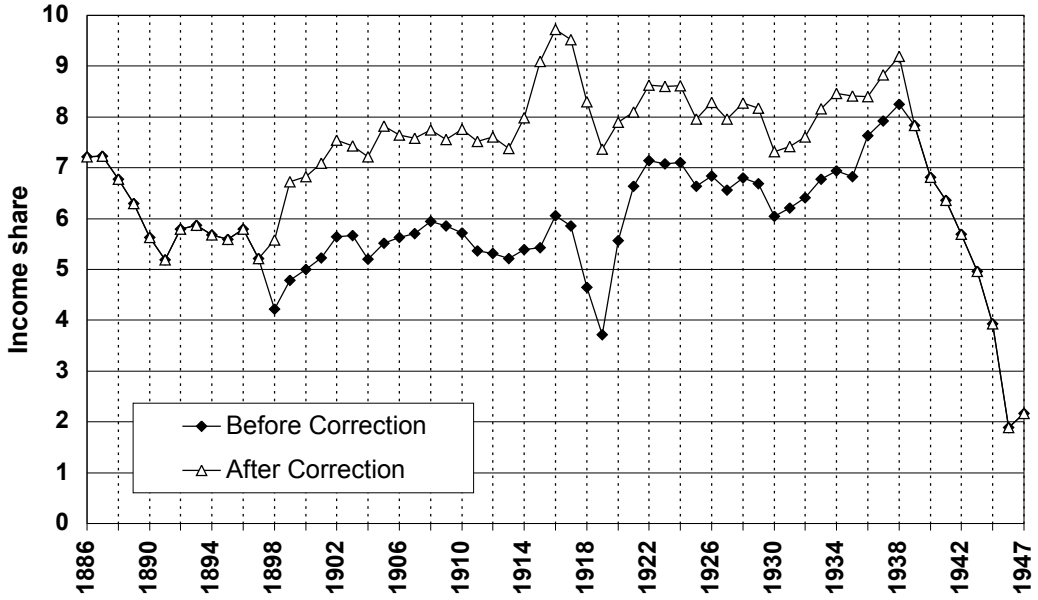
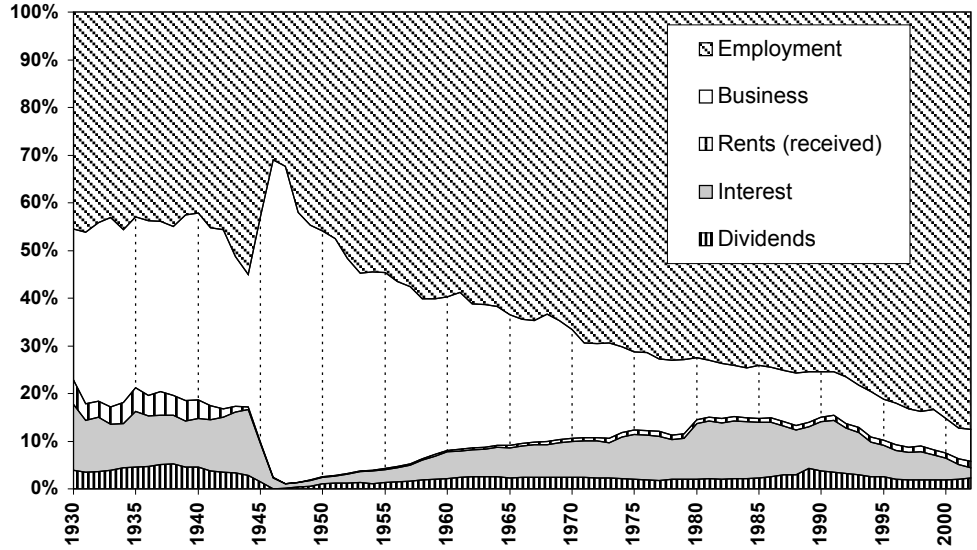


FIGURE A2
Top 0.1% Income Share Before & After Correction, 1886-1947

Source: Series after correction, Table A1, column (4); 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 1920-1938. See Appendix Section A.3.4 for the method of correction.

A. Composition of Total Personal Income



B. Compositon of Top 1% Income

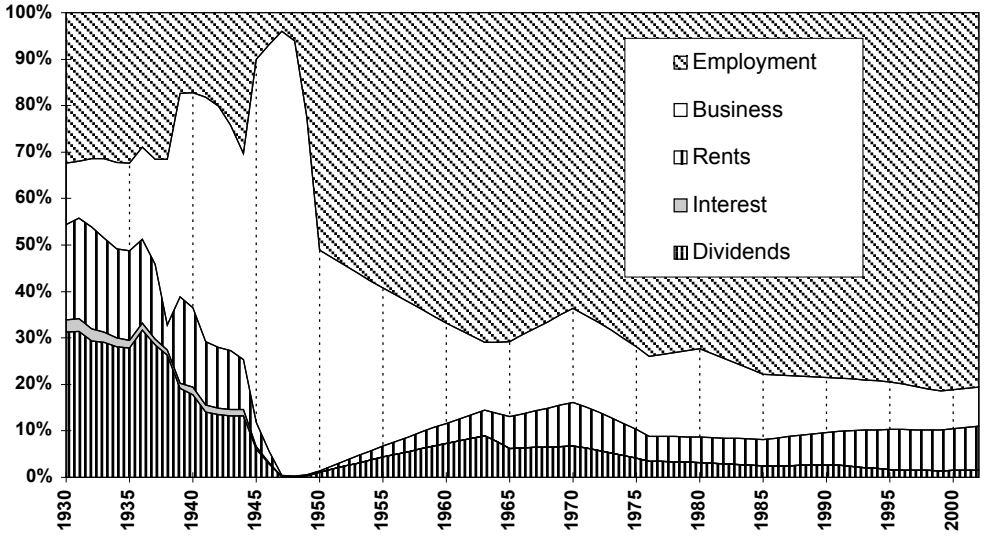


FIGURE A3

Compositions of Total Personal Income & Top 1% Income, 1930-2002

Notes: Panel A presents the composition of total personal income denominator based on National Accounts.
Imputed rents are excluded from rents because they are not included in the income tax statistics.
Returns on insurance funds are included in dividends and interest, but not included in income tax statistics.
Panel B presents the composition of top 1% income from Table A2.
All returns on insurance funds after 1947, almost all interest income after 1947 and large part of dividends after 1965 are missing from income tax statistics.
See Appendix Section A.4 for details.

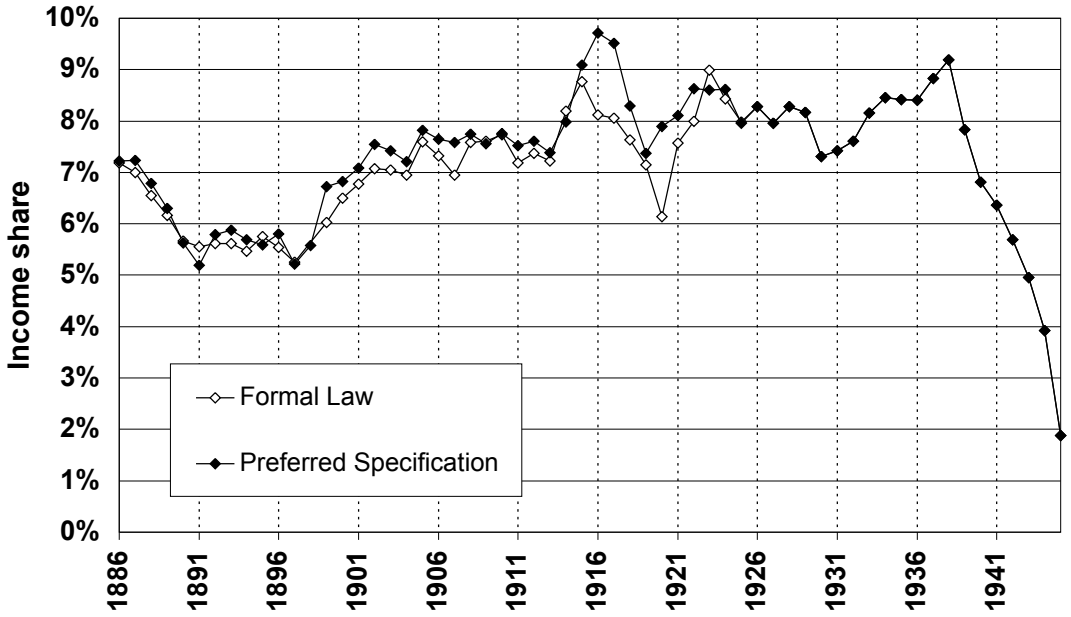


FIGURE A4
Top 0.1% Income Share in Alternative Sepcification of Years, 1886-1945

Notes: "Preferred Specification" series are from Table A1, column (4). "Formal Law" series are by authors' computation.
In "Formal Law" series, we define actual years based on the income tax laws' stipulations.
See Appendix Section A.1.2 for the definitions.

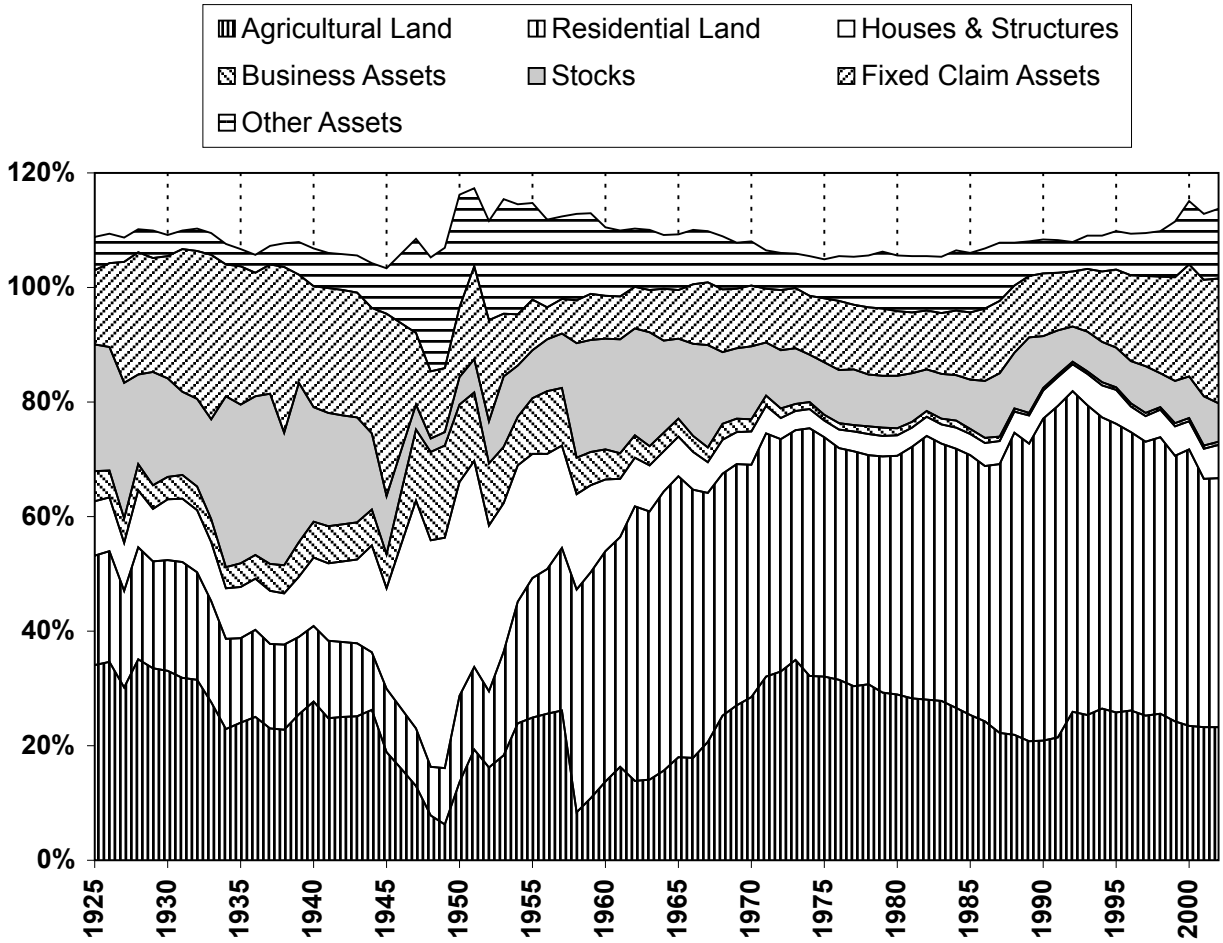


FIGURE B1
Composition of Aggregate Estates in Japan, 1925-2002

Source: Table B2.
Notes: Estimates are based on aggregate estate compositions in estate tax 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 comprable across years.
See Appendix Section B.3 for details.