

The Evolution of Income Concentration in Japan, 1885-2002: Evidence from Income Tax Statistics

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Abstract

In this paper, we construct the long-run series of top income shares and wage income shares in Japan using income tax statistics and investigate the evolution of income concentration in Japan from 1885 to 2002. We find that (1) a degree of 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 had taken place during and immediately after WWII; (3) a degree of income concentration has remained low throughout the post-1950 period despite the high economic growth; and (4) a major component of the top income in Japan has shifted dramatically from capital income to employment income over the course of 20th century. We attribute the dramatic fall in income concentration primarily to the collapse of capital income due to wartime taxation, war destruction, hyperinflation, and, to a lesser extent, postwar occupational reforms. We argue that the fundamental change in the institutional structure after WWII 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 institutional factors such as corporate governance and union structure as important determinants of wage income inequality.

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1. Introduction

Following the seminal work by Kuznets (1955), the evolution of income inequality during the process of economic development has attracted much attention in the economics literature. Some argue 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. Others view 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.

To cast better light on the on-going 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 and the United States (e.g., Soltow (1968, 1969); Williamson and Lindert (1980); Williamson (1985); Lindert (1986, 2000)). 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 a collective volume by Atkinson and Piketty (2005)). Although these studies focus on only the shares of top income groups due to the data limitation, 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 circa 1886, and the nation underwent three industrial revolutions – from textiles, heavy industries, to high-tech industries – within less than 100 years. To illustrate this point, **Figure A** 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 has 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 1885-1940 and at the rate of 4.7% in 1948-2002. Because the Japanese government introduced a comprehensive income tax system in 1887 – a remarkably early date by international standards¹ – we can trace the evolution of income concentration during the entire process of industrialization using the Japanese tax statistics. 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 complement the top income share series and investigate the causes of dynamic changes in income concentration, we also provide the series of income composition, top estates, and top wage income shares based on tax statistics.

From our data, three main findings follow. First, a degree of income concentration in Japan was extremely high throughout the pre-WWII period with some short-term fluctuations. This finding is somewhat contrary to the Kuznets hypothesis that associates an initial phase of industrialization with a rise in income inequality. Top income shares in Japan then declined abruptly and precipitously during WWII and remained relatively low for the rest of the 20th century. Our data thus indicate that the defining event for income concentration in Japan was a historical accident, namely the Second World War, and the institutional reforms triggered by the war.

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 caused by wartime taxation, war destruction, and postwar hyperinflation. Evidence from estate tax statistics confirms the drastic and permanent decline in top wealth during WWII. We argue that the changes in the institutional structure after WWII, such as the introduction of progressive taxes, new inheritance laws, and tax incentives for small asset owners, prevented the re-accumulation of large wealth. Importantly, such redistributive government policies, which likely hampered 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, a degree of wage income concentration also fell dramatically in the late 1930s and during WWII, but recovered somewhat in the

¹ For example, comprehensive income tax was instituted in Prussia in 1891, in the U.K. in 1909, in the U.S. in 1913, and in France in 1914.

1950s, and declined again in the 1960s. In sharp contrast to the United States (and other Anglo-Saxon countries), top wage income shares in Japan have remained remarkably stable and low over 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, the fall in wage income inequality also contributed to 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 such as corporate governance and internal labor markets as important determinants of wage inequality.

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 for the period 1885-2002, and Section 5 investigates the causes of the observed changes in income concentration. Section 6 presents the top wage income shares for the period 1924-2002. Section 7 provides comparative perspectives and concludes. The details of our estimation methods are presented in the Appendix.

2. Literature Review

By international standards, modern Japan has been widely perceived as a society of relatively high income equality (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 studies (Nishizaki et al. (1998); Kokumin Seikatsukyoku (1999)) together offer a better comparative picture. As **Table A** 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 economies. When we consider the distribution of income *after* tax and government transfers, as one may expect, Northern European welfare states scored below Japan (**Table B**). According to Burniaux et al. (1998), although the income inequality in Japan rose during the asset price appreciation in the late 1980s, Japan's ranking among the OECD countries remained approximately the same in the 1990s. 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 an equal society? To provide a historical perspective, we review the related literature.

There is an extensive body of empirical work – albeit published mostly in Japanese – examining Japan’s income distributions during the 20th century.² 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.³ Most notably, Shiomi et al. (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 (1995a,b) 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 (1982) 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 using the *Employment Status Survey* and *Farm Household Economics Survey*. Mizoguchi and Takayama (1984) used the *Survey of People’s Living Conditions* and other surveys to examine the changes in income inequality from 1962 to 1974. Mizoguchi and Terasaki (1995) subsequently extended their analysis to 1990. The income distribution of Japanese households can be also estimated from the *Household Survey* (e.g., Ohtake (2000)) 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 (see Mizoguchi and Takayama (1984) and Funaoka (2001)).

² For a comprehensive survey of income distribution before WWII, see Terasaki (1986); Minami (1995a), Chapter 1. For the post-WWII period, see Mizoguchi and Takayama (1984), Chapter 1; Mizoguchi and Terasaki (1995).

³ See, for example, Shiomi et al. (1933); Hayakawa (1951); Takahashi (1959).

Figure B summarizes the long-run changes in income inequality based on the above studies (for simplicity, we use the Gini coefficient to present their main findings).⁴ Although the Gini coefficients in the same year differ across studies, they display coherent time trends. First, the income inequality in Japan rose sharply from 1890 to 1940. Second, after WWII, the 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,” provoking a lively (and continuing) debate among Japanese scholars.

It is important to note that the Gini coefficients before 1940 and after 1955 in **Figure B** cannot be compared due to the data discontinuity. Nevertheless, a general consensus among scholars based on indirect evidence is that the income inequality dropped substantially between 1940 and 1955, presumably due to WWII and/or 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 to directly 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.⁵ In particular, due to the problem of small sample and top coding, household surveys cannot be used for a study of high income earners.

To fill these gaps, 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 1885 to 2002. Although top income shares are not necessarily an ideal 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, we can compare our data with that of other industrial nations and offer a comparative historical analysis of income concentration.

⁴ Pareto coefficients are converted to Gini coefficients by the formula $g=1/(2*p-1)$ assuming the Pareto Law.

⁵ Notable exceptions are Takahashi (1959) and Yazawa (1992). We discuss their findings in a later section.

3. Data and Methodology

In this section, we describe briefly the nature of our data and the broad steps of our estimation methodology. Readers interested in the details of the methods are referred to the Appendix at the end of the paper. Our estimations of top income rely on tax statistics published annually by the Japanese fiscal administration since the introduction of comprehensive and progressive income tax in 1887. They report the number of taxpayers, the amount of income reported, as well as taxed paid and the composition of income.⁶ We define the fiscal year as the year in which the tax was collected by the administration and the actual year as the year(s) when the income was earned. Actual and fiscal years are reported in Columns 1 and 2 of **Table 1**. As shown in **Table 1**, before the end of WWII, the tax in fiscal year t was collected based on income earned in year $t-1$.⁷ Starting in 1947, the income tax system became pay-as-you-earn (through the development of an extensive tax withholding system as in the United State), and fiscal and actual years coincide.

Before 1950, the tax unit was the family defined as a married couple with dependents or a single head of household with dependents. Incomes of family members in a single household were aggregated for tax purposes. Because of high exemptions levels, only a small fraction of households filed income tax returns in pre-WWII years. As a result, our analysis is restricted to the high end of the income distribution. That is, we can only provide estimate of the top 1% income share from 1885 to 1903, and from 1904 on, within the top 5% income share. Only after 1947, more than 10% of households in Japan filed income tax returns.

Starting in 1950, the income tax became individual, whereby spouses were taxed separately on their incomes. In order to produce homogeneous series over the entire period, we estimate top income shares at the individual level. Thus, our top groups are defined relative to the total number of adults (defined as those aged 20 and above) in Japan. The total number of adults is obtained from official population statistics. During the pre-1950 period, for the most years, the tax statistics breakdown total income into the income of household head and the income of dependents. The income of dependents is

⁶ Income composition is available by income brackets only after 1947.

⁷ For fiscal years 1887 to 1898, the tax was based on the average income earned in the previous three years. As a result, our first income distribution is for years 1884-1886.

very small relative to the head of household income and can be subtracted in order to obtain estimates of top individual incomes.⁸

Income, in our definition, is computed before individual income taxes and individual payroll taxes but after employers' payroll taxes and corporate income taxes. We use a gross income definition, including all income items reported on tax returns and before all deductions: salaries and wages, small business and farm income, partnership and fiduciary income, dividends, interest, rents, royalties, and other small items reported as other income. Realized capital gains are not an annual flow of income (in general, capital gains are realized by individuals in a lumpy way) and form a very volatile component of income with large aggregate variations from year to year depending on stock and land price variations. Furthermore, realized capital gains were not taxable before WWII. Therefore, in this study, we focus on series that exclude capital gains.⁹

As the top tail of the income distribution is very well approximated by a Pareto distribution, we use simple parametric interpolation methods to estimate the thresholds and average income levels for each of our top income groups. For example, as **Table 0** shows, in 2002 the top 0.01% income group consisted of approximately 10,000 individuals whose average income was \$1.2 million, while the top 1% income group consisted of approximately one million individuals whose average income was \$118,000. We then estimate shares of income by dividing the income amounts accruing to each fractiles by total personal income computed from National Income Accounts.¹⁰ The total and average real income per family from 1885 to 2002 are reported on Columns 7 and 8 of **Table 1**. We convert current incomes to real incomes (in 2002 yen) using the CPI deflator from *Long-Term Economic Statistics* (Ohkawa et al. (1967) and *Historical Statistics of Japan*), which is reported on Column 9 of **Table 1**.

We also construct top estate series using estate tax statistics published annually since 1904 (**Table 4**). Top estate groups are defined relative to the total number of adult (age 20 and above) deaths in each year obtained from official population statistics. Due to the difficulty in estimating total national wealth, the top estate series are expressed in the level, as opposed to the share, in real yen using the CPI deflator.

⁸ This correction method is appropriate as long as the share of dependent income is small. After 1950, the tax statistics, based on individual income, do not allow to reconstruct household income.

⁹ For comparison, we provide top income series with and without capital gains in Figure 6.

¹⁰ Note that National Income Accounts in the pre-WWII period are not as accurate as in the post-WII period, introducing potentially large errors in our estimates. We plan to find alternative estimates of household income.

Finally, we compute top wage income shares using the similar methodology (**Tables 5 and 6**). 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 that covers all employees excluding government employees and temporary employees.¹¹ Wage income in our definition includes wages, salaries, bonuses, and allowances, but does not include benefits in kind, pensions, and retirement benefits. Top groups are defined relative to the total number on employees in the statistics, and the total wage income denominator is simply the total wage income reported in the statistics. For the pre-WWII period, we use salary and bonus data reported in the annual income tax statistics for the years 1930-45. For earlier years, we use wage distributions published in the *Report on the Census of Labor* in 1924, 1927, and 1933, and use the *Monthly Labor Income Survey* in 1949 and 1954 to link the pre- and post-WWII data. Because these wage surveys report monthly cash wages that do not include bonuses, we use the data from the income tax statistics to correct for the omission (see the Appendix for details).

Over the 115 years of our sample period, not only the format of tax statistics was revised several times, but also there have been numerous changes in income and estate tax laws. These changes potentially affect the comparability of our data across years. Therefore, to construct homogeneous series, we make a number of careful adjustments to the original data (see the Appendix for detail descriptions). In particular, 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 1950, most individuals with only employment or pension income were no longer required to file self-assessed income tax returns.¹² As a result, even though most income earners pay income taxes in Japan, only a minority of taxpayers (approximately 10 to 15% of all adults) is required to file a self-assessed tax return. Fortunately, the Japanese tax administration publishes the statistics from the withholding tax system on wages and salaries that include virtually all wage earners in the private sector. We thus use these data to complete the self-assessed income tax statistics.

¹¹ We discuss how the exclusion of those groups might affect our results and comparability with the U.S results from Piketty and Saez (2003) in a later section.

¹² The withholding system incorporates a year-end adjustment that typically makes total taxes withheld correspond to total income taxes due. In such a case, no income tax return has to be filed, and the person does not appear in the official statistics of income tax returns.

The second and perhaps more serious issue is tax avoidance and evasion, i.e., lawful and unlawful under-reporting of income by taxpayers. Because the self-assessed income tax statistics are based on reported income, there is a concern that our data might reflect trends in tax avoidance or evasion rather than true changes in income inequality. To counter this problem, we propose some remedies and sensitivity analysis in Section 5.

4. Top Income Shares in Japan, 1885-2002

4.1 Background

To provide a historical background, **Figure 1** depicts the average real income per adult and the CPI in Japan from 1885 to 2002. The average real income more than quadrupled between 1885, the onset of industrialization, and 1938, the peak year before WWII. The real income grew particularly fast during WWI (1914-18) and during the period of aggressive military expansion (1932-38), but 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 per adult recovered quickly, surpassing the 1938 level by the mid 1950s. During the subsequent high-growth period (1955-73), the real income increased by a factor of six, achieving one of the fastest sustained economic growths in modern history. Since the collapse of the asset bubble in 1991, however, the average Japanese family experienced a moderate decline in real income.

4.2 Trends in Top Income Shares

Figure 2 reports our estimates of the top 1% income share from 1885 to 2002 and the next 4% (denoted as "top 5-1%") income shares from 1904 to 2002. We first focus on the top 1% income share series. From 1885 to 1941, the top 1% adult population in Japan received as much as 14 to 18% of total personal income. The share, however, fell abruptly and precipitously from 1941 to 1945 by a factor of two, and remained relatively stable at around 8% throughout the postwar period. There are fairly large fluctuations in the top 1% income share before WWII: after a steep fall in 1886-90, it declined temporarily during 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 from the very beginning of industrialization in Japan, and we detect no rise in income concentration associated with the initial stage of economic development. Similarly, the extraordinary economic growth from 1950 to 1973 was accompanied by little change in the top 1% income share. We observe only a modest increase in the top 1% income share in the 1990s.

The next 4% income share series displays a substantially different pattern. Throughout the pre-WWII period, the share was consistently smaller than the top 1% income share, where the next 4% population received about 12% of total income. After WWII, by contrast, it has been consistently and substantially higher than that of the top 1% and rose from 12% to 16% between 1970 and 2000, almost twice as large as the top 1% share. Most striking difference is that the next 4% share did not fall during WWII and spiked in the immediate postwar years. **Figure 2** thus suggests that the income de-concentration that took place during WWII in Japan was limited to the very top income groups.

Figure 3 demonstrates this point further by decomposing the top percentile into three subgroups: the bottom half (“top 1-0.5%”), the next 0.4% (“top 0.5-0.1%”), and the top 0.1%. Although the three series exhibit similar overall patterns, the *higher* income group experienced the *larger* fall in their share during WWII. While the share of the top 1-0.5% declined by less than 30% between pre- and post-WWII periods (from 3.5% to 2.5%), it was substantial for the next 0.4% (from 6% to 3%), and was enormous for the top 0.1% (from 7% to 2%). Also, note that the top 0.1% income share began to decline in 1937, an earlier year than the other series, and continued to decline until 1950.

Finally, **Figure 4** displays the income share of the top 0.01% adult population (corresponding to roughly the richest 10,000 taxpayers today) in Japan. As one may expect, the fall in the income share during WWII and immediate postwar years was even more pronounced for the top 0.01% group: it collapsed from the pre-WWII peak of 3.5% in 1937 to 0.5% in 1950 and has remained around the same level for the rest of the 20th century. To provide a comparative perspective, **Figure 4** also plots the top 0.01% income share series in the United States estimated by Piketty and Saez (2003). Although cross country comparisons entail some problems, the data indicate that the top 0.01% income share in Japan was comparable to, if not higher than, that in the United States during the interwar period. Recall that the United States in the 1920s was the world’s technological leader, characterized by giant corporations in capital-intensive industries that tended to

generate enormous fortunes and high income concentration. Therefore, it is perhaps surprising to observe that Japan, whose major exports were textiles and light machinery during the same period, exhibited a similarly high level of income concentration.¹³ The figure also illustrates a sharp contrast in the evolution of income concentration between the two countries in recent years. After plummeting to the historic low of 0.5-1.0% during WWII, the top income shares in both Japan and the United States had remained low at that level from the 1950s to the 1970s. However, the share in the United States has risen by a factor of five in the last 20 years, returning to the pre-WWII level, while the share in Japan has remained stable.

4.3 Trends in 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 from 1885 to 2002.¹⁴ Generally speaking, income can be divided into capital income (defined broadly as returns on assets, including dividends, interest, and rents) and labor income (defined broadly as returns on labor, including business and employment incomes). In **Figure 5**, we decompose the top 1% income share into four categories: (a) land rental income, (b) capital income other than land rental income (dividends, interest, and rents from residential and business buildings), (c) business income (profits from unincorporated businesses, self-employment income, and farm income), and (d) employment income (wages, salaries, bonuses, and pensions). We make the following three observations

First, from 1885 to 1940, the two major components of the top 1% income were capital income and business income. While employment income grew in its importance during this period, the share of land rental income declined steadily. As discussed later in detail, this trend likely reflects the gradual shift from an agrarian economy with concentrated land ownership and privately owned businesses towards an industrial economy with larger incorporated businesses. However, as noted above, this shift was not accompanied by any discernable increase in the top 1% income share.

¹³ Although not shown in Figure 4, the top 0.1% and 1% income shares in Japan and the United States during the interwar period were also comparably high.

¹⁴ Unfortunately, no composition data are available before 1900 except for 1885. From 1947 and on, composition by income brackets is available. For the period 1950-2002, we have estimated composition only twice a decade. Complete annual series will be estimated in a subsequent revision.

Second, during the First World War, the land rental, capital, and employment income components fell sharply. This can be attributed primarily to high inflation in 1916-20 (see **Figure 1**), as it likely reduced the real value of fixed claim assets (e.g., interest and rents) and salaries (assuming nominal rigidity). Note that these components returned to their original levels shortly after WWI as inflation subsided. Similarly, during the Second World War, the capital and employment income components collapsed. As a result, during 1945-48, the top 1% income was almost entirely composed of business income. In a sharp contrast to the previous war, however, the employment income component rose dramatically, comprising one half of the top income by 1950, whereas the land rental and other capital income components never returned to its pre-WWII level.¹⁵ In other words, WWII seems to have had a permanent and irreversible effect in wiping out high-income rentiers in Japan, indicating some structural change accompanied by it.

Finally, from 1950 to today, within labor income, the share of employment income in the top income has increased steadily at the expense of business income. This shift is likely due to the continuing shift towards highly industrialized economy with large corporations in capital and R&D intensive industries. It is worth noting, however, that the United States in the similar developmental stage exhibited much higher level of income concentration.

The above observations provide better insights as to why the precipitous decline in top income shares during WWII was concentrated *within* the top 1% income group. Because generally the share of capital income in total income is an increasing function of the income level, WWII likely had a larger effect in reducing the income of higher income earners.

4.4 Evidence from Top Estates

Our top income shares and income composition data suggest that capital income (dividends, interest, and rents) accrued to the top income groups declined once and for all during and immediately after WWII. According to the National Account data, however, capital income per se did not disappear from the economy after WWII.¹⁶ In other words, the fall in the top capital income must have been caused by a permanent decline in wealth

¹⁵ We must discuss if this trend could be attributed to the tax evasion after 1950 under the withholding system.

¹⁶ Find more information about capital vs. labor income in the pre-WWII period.

concentration. In order to test this hypothesis, we turn to estate tax statistics available since 1905 with the introduction of national estate tax in Japan.¹⁷

Table 4 presents the sizes of average real estates (in 2002 yen) for five different upper groups from 1905 to 2002.¹⁸ The upper groups are defined relative to the total number of adult decedents reported in Column 1. **Figure 7** displays the averages of the top 0.01% estates and the bottom half of top 1% estates (“top 1-0.5%”) in logarithmic scales. Note that the top 0.01% estates correspond to the estates of the top 100 decedents today, whose average was about 5 billion yen or \$40 million in 2002. By contrast, the average of the bottom half of top 1% estates was about \$2.5 million in 2002. Although this still is a large number, given the high real estate prices in Japan, an upper middle income class family could accumulate an estate of that size.¹⁹

According to **Figure 7**, both the average top 0.01% and 1-0.5% estates increased rapidly from 1905 to 1937.²⁰ The top 0.01% estates then declined precipitously by a factor of 100 from 1937 to 1948, while the top 1-0.5% estates declined by a factor 12 during the same period. Note that the very top estates not only fell more dramatically during WWII than the moderately high estates, but continued to fall during the postwar reforms. In the post-WWII period, both estate levels grew very fast during the high economic growth period of 1960-73 and declined after the burst of the asset bubble in 1991. Although the level of the bottom half of top 1% estates surpassed the pre-WWII peak by 1970, the level of top 0.01% estates in the early 2000s was still smaller (in real terms) than in the late 1930s in spite of a ten-fold increase in GDP per capita during this period.

Figure 8 plots the *ratio* of the average top 0.01% estates to the average top 1-0.5% estates from 1905 to 2002. It shows that the top 0.01% estates were about 60 times larger than the bottom half of top 1% estates in the early part of the 20th century. As the very top estates grew faster on average than the moderately high estates, by the late 1930s, the top 0.01% estates were more than 100 times larger than the top 1-0.5% estates. However, because of the differential impact of WWII on the two estate levels, by 1947, the former were only about 20 times larger than the latter. Moreover, this ratio has

¹⁷ We plan to use estate composition data in future work.

¹⁸ Missing years are due to some data inconsistency. Continuous series will be presented in a revised version.

¹⁹ For example, 2,000 square feet apartments in downtown Tokyo could sell for comparable prices (check).

²⁰ Because the top 0.01% estate series is based on a small sample (50 to 100), year to year estimates can be sensitive to the presence of a single extremely large wealth holder.

remained relatively constant from 1960 to 2002 despite the change in Japan's macro economic conditions, such as the high economic growth and the post-bubble stagnation.

In summary, the evidence from estate tax statistics indicates a permanent reduction in the level of high wealth relative to moderately high wealth during and immediately after WWII in Japan. This dramatic fall in wealth concentration at the very top is consistent with our findings from the top income shares and explains why the top capital income declined permanently after WWII.

5. Understanding the Evolution of Income Concentration

Using the income tax statistics, we have documented that (1) a degree of income concentration in Japan was extremely high before WWII, from both historical and comparative viewpoints, but without any positive time trend; (2) the drastic de-concentration of income at the top had taken place during and immediately after WWII; (3) a degree of income concentration has remained low throughout the post-1950 period; and (4) the major component of the top income has shifted dramatically from capital and business incomes to employment income over the course of 20th century. In this section, we explore the causes of the evolution of income concentration documented above.

5.1 High Income Concentration in pre-WWII Japan

One of the merits of our data is that it facilitates a quantitative comparison of income concentration before and after WWII. Our data strongly confirm the received view based on qualitative and circumstantial evidence that there was high concentration of income and wealth among the elite class in prewar Japan. Existing studies suggest three major constituencies of the very rich, i.e., 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 a large number of 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 tenancy rights (Waswo and Nishida (2003), pp.14-7). These observations are consistent with the

substantive land rental income component in the top 1% income during 1885-1915 and a gradual decline thereafter shown in **Figure 5**.

Second, before WWII, large firms raised its capital primarily from stock markets, and the business ownership was heavily concentrated on a small number of shareholders. For example, in 1935, at ten largest *zaibatsu* and ten largest non-*zaibatsu firms*, top 10 shareholders held 66% and 32% of total stocks, respectively (Okazaki (2000), pp.103-5). In addition, prewar firms paid high dividends to their shareholders. For example, dividends at major companies routinely exceeded 10% of equity (Okazaki (2000), p.108). At leading manufacturing firms, the average dividend to profit ratio was nearly 70% in the 1930s in contrast to less than 50% in the 1950s (Okazaki (1993), p.184).

Third, during the interwar period, top management at large corporations received extremely high compensation. For example, 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 (1995a), p.123). At leading manufacturing firms, directors received 6% of profit in the form of bonus in the 1930s, while they received only 2% of profit in the 1960s (Okazaki (1993), p.184). Moreover, large shareholders themselves were often corporate directors in prewar firms, exacerbating the income concentration. For example, at twenty leading manufacturing firms, top ten shareholders held 23% of the director positions in 1935, while they held none in 1947 (Okazaki (2000), 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, the amounts of income tax paid, addresses, and occupational titles. According to the study, in 1936, the average income of the top 1,000 income earners was 164 times higher than the national average, whereas in 1982 it was only 37 times higher (p.155). Out of the top 5,000 income earners in 1936, 31% were in retail business, 22% were in manufacturing, 22% were in finance, and 7% had no occupation (p.159). The study also shows that these top income earners were concentrated in metropolitan areas, such as Tokyo (45%) and Osaka (25%).²¹ 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

²¹ Note that his sample covers 26 major prefectures out of total 47 prefectures in Japan, under-representing rural prefectures (p.149).

be overstated (pp.160-6). Yazawa (1992)'s findings are broadly consistent with our data and underscore the importance of business and capital income components in the top income in the late 1930s.

Finally, the legal system in prewar Japan was favorable to the affluent class. In addition to the absence of highly progressive income tax as discussed later, the prewar inheritance law was based on primogeniture that allowed the first-born son (or a designated legal heir) to inherit the entire family estate (“*ie*”) under preferential estate tax rates.

In contrast to the preceding studies, we do not find a sharp increase in income inequality (measured by top income shares) between 1890 and 1940. This is not necessarily contradictory if a rise in income inequality documented by the previous studies was driven by the change in the lower end of the income distribution. For example, Mizoguchi and Terasaki (1995) and Minami (1995a) attribute the rising inequality during this period to the widening rural and urban income gap and the increasing intra-industry wage differentials by firm size. If the very top income groups were made up mostly of absentee landlords, large shareholders, and high-powered executives as suggested above, these factors might have had little impact on the income concentration at the very top. Nevertheless, our findings cast some doubt on the Kuznets hypothesis that associates an initial phase of industrialization with rising income concentration.²²

5.2 The Mechanisms of Income De-concentration in 1938-47

Our data indicate that the top income shares fell precipitously and disproportionately during WWII and continued to fall somewhat in the immediate postwar years. We assess the impact of WWII separately from the impact of postwar occupational reforms in the following analysis.

WWII likely caused the drastic income de-concentration through three main channels. First, after the 1937 China Incident and the promulgation of the 1938 National General Mobilization Law, the military government implemented a set of regulations that placed tight control over landowner rights, shareholder rights, and wages (including executive compensation). For instance, to increase food production, the government expanded its land distribution policy in 1938, and again in 1943, which encouraged tenant

²² By contrast, British and U.S. historical data provide some empirical support to the Kuznets hypothesis (Lindert (2000)).

farmers to gain ownership of the land they cultivated. State controls on rents and land prices after 1939 also increased the value of tenancy rights vis-à-vis landowner rights. In 1941, the government introduced a two-tier rice pricing system that paid a considerably higher price to owner-farmers and tenants who actually cultivated the land than to landlords who did not (Waswo and Nishida (2003), pp.22-3). Similarly, the government not only intervened in stock markets, but also effectively capped dividend rates at 8% of equity after 1940 and 5% of equity after 1945. Furthermore, starting in 1940, the government regulated wage, salaries, and executive bonuses that tended to reduce intra-firm wage inequality (Okazaki (2000), pp.114-120). These wartime regulations may explain the fall of land rental, capital, and employment income components in the top income starting in the late 1930s.

Second, to finance the rapid military expansion, the government increased tax rates on personal and corporate incomes in 1937, 1938, 1940, 1942, 1944, and in 1945 (Okurasho Shuzeikyoku (1988); see Columns (4)-(8) in **Table 2**).²³ As shown in **Figure 9**, marginal income tax rates for the top 0.01% income earners rose sharply from 39% to 64% during this period. As higher tax rates reduced the net returns on assets, these changes might have made it more difficult for high income rentiers to sustain their assets, further reducing their subsequent capital income.

Third, WWII resulted in a large-scale destruction of wealth, including 25% of physical capital and 668,000 civilian casualties (Keizai Antei Honbu (1947)). In particular, repeated air raids of major cities by the U.S. air force starting in early 1945 likely had a devastating effect on the high income earners who were concentrated in the metropolitan areas (Yazawa and Minami (1993), p.366). Finally, the business income component of the top income remained largely intact during WWII, presumably because the wartime government reintroduced profit motives to induce higher outputs in strategic industries as well as in agricultural production (Okazaki (1993), p.198; Waswo and Nishida (2003), p.22).

Upon Japan's surrender in August 1945, the nation was placed under the indirect governance of the Supreme Commander for the Allied Powers from 1945 to 1952. As Yazawa and Minami (1993) point out, hyperinflation in 1944-48 and postwar occupational reforms together potentially had a large effect in equalizing the income distribution. Three powerfully redistributive measures were implemented during this period.

²³ The government also raised estate (and probably property) tax rates. Find more data.

First, the land reform in 1947-50 mandated landlords to sell their farmlands 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. Importantly, due to hyperinflation, the amount of compensation paid to landowners was negligible (Minami (1995a), p.115). Second, the government imposed extremely heavy and highly progressive property tax (*zaisan zei*) from 1946 to 1951. Because the exemption level was set relatively low, the property tax affected approximately 13% of all households in the initial year. On average the tax amounted to 33% of households' property values, while for the top 5,000 households it was more than 70% (Minami (1995a), pp.125-6). Third, under the dissolution of *zaibatsu* in 1946-48, not only ex- and current directors of *zaibatsu* firms were expelled, but also their shares were confiscated and redistributed to a large number of employees and other investors at a market price (Minami (1995a), pp.121-3). As a result, these reforms likely transferred a significant amount of wealth from the high to the lower end of income distribution. Last but not least, the hyperinflation was a final blow to the high income earners who relied on capital income. 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.

Despite the emphasis placed on the importance of the occupational reforms in reducing income inequality by the preceding studies, our data show that their impact was limited to the top 0.1% income shares and was modest compared to the impact of WWII (**Figures 3 and 4**). 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. Yet, it is consistent with the comparative evidence that indicates the universal role of WWII in reducing income concentration in industrial nations, including the United States who won the war (Atkinson and Piketty (2005)). Furthermore, our finding is also consistent with the view that the postwar reforms were in many ways a continuation of the wartime policies (e.g., Okazaki (2000)). That is, the restrictions on landowner and shareholder rights, the redistribution of farmland, 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. In short, WWII and the occupational reforms can be seen as a one-

time shock that evened out wealth inequality in Japan through the combination of regulations, destruction, inflation, and confiscation.

5.3 Low Income Concentration in Post-WWII Japan

The more difficult question to answer is why large fortunes 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? After all, much of the postwar reforms were either temporary (e.g., property tax and dividend controls) or subsequently reversed (e.g., the formation of corporate groups, *keiretsu*, and the rise of large institutional shareholders). In the following analysis, we argue that the postwar reforms were accompanied by the fundamental change in institutions that prevented the re-accumulation of high wealth.

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 large top 0.1% income share in the pre-WWII period had been accumulated at the time when progressive taxation 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 shown in **Figure 9**, the marginal income tax rate for the 0.01% top income group rose sharply in the late 1930s and (after a spike in 1945-50 due to temporary tax increases and hyperinflation) remained high at around 60% from the 1950s to the 1980s. In a parallel development, corporate income tax also became progressive after the 1930s. Moreover, new inheritance laws in 1947 abolished primogeniture and mandated the division of estate among children and a spouse. After 1950, the government instituted highly progressive estate and gift taxes that made inter-generational transfer of large wealth much more difficult.

The permanent decline in the capital income component of the top income after 1950 can be also attributed to the development of tax-exempted saving instruments for small asset holders. Since the 1960s, the government introduced various measures that made interest income accruing from postal savings, small accounts and investments, and employee savings non-taxable. Although these measures were abolished by the 1988 tax reforms, they had encouraged capital accumulation among the middle income families relative to the high income earners, contributing to more equal wealth distribution in Japan.

Second, the changes in corporate governance, human resource management, and union structure in Japan likely had an impact on the distribution of wages and executive compensation within and across corporations. In a contrast to the interwar period, corporate governance of major Japanese companies after WWII was characterized by long-term relations with main banks based on debt finance (rather than equity finance) and cross shareholdings by large and stable institutional investors (e.g., banks, insurance companies) (Teranishi (2000)). As the so-called “lifetime employment” became a hallmark of human resource management at large- and medium-sized firms in the 1960s, most if not all company directors positions were filled by long-term employees promoted from within, resulting in a stronger voice of employees vis-à-vis shareholders in corporate decision making (Okazaki (2000)). Moreover, after WWII, most large corporations were organized by single enterprise unions, which consisted exclusively of employees of the company including not only blue- and white-collar employees but also middle managers. By the 1970s, Management regularly consulted with, and disclosed financial information to, unions over personnel matters including wages and promotions (Morishima (1991); Moriguchi (2000); Kato and Morishima (2002)). As a result, despite the re-emergence of powerful corporate groups in the post-WWII period, the changes in corporate governance and union structure might have contributed to lower dividend rates, less concentration of shares among individual shareholders, and more equal wage distributions within firms. We will turn to wage income data to examine these possibilities more closely in Section 6.

5.4 The Effects of Tax Evasion and Avoidance

In the above analysis, we provided explanations for the changes in the top income shares we have documented using income tax statistics. As discussed briefly in Section 3, however, the incomes reported by individuals for tax purposes might be biased by unlawful and lawful 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, and provide some 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 (i.e., unlawful under-reporting of income) only if the evasion among top income groups 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 imposed various temporary taxes and tightened the monitoring over tax collection during the war (Japan Ministry of Finance (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 sophisticated accounting methods.

For instance, it is widely believed that there is little tax evasion in Japan today concerning employment, dividend, and interest incomes precisely because the withholding system established in 1950 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. According to the most recent 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 today 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.²⁴ In summary, it is difficult to argue that the apparent permanent decline in income concentration was due to tax evasion.

In addition to tax evasion, individuals may under-report their true income using legal means and instruments (i.e., tax avoidance). Over the last fifty years, various exemptions and special treatments have been given to different components of income in Japan, especially to interest income and real estate capital gains. In particular, as discussed above, the development of tax-favored saving instruments since the 1960s sheltered a significant fraction of interest income from the progressive income taxation. These treatments effectively gave taxpayers the option of paying a separate tax rate at source (*gensen bunri kazei*) on those components, instead of aggregating them to their other incomes and facing the progressive tax schedule. As a consequence, the self-assessed income tax statistics do not report those components that are taxed separately.

²⁴ We plan to provide the re-estimated top income shares after 1950, assuming that only 50% of business income and 10% of farm income were reported in a future revision.

However, because most of the saving instruments favored small asset owners, this reporting bias would likely result in the overestimate, rather than underestimate, of the top income shares in the post-war period. Nonetheless, it is important to carefully evaluate the impact of tax avoidance. Ishi (1979, 2001) has attempted to estimate a comprehensive income base in order to assess the extent of tax erosion, using household surveys and unpublished data obtained from the tax administration. Building upon his methodology, we plan to correct for the missing income components in the tax statistic in future research.

6. Top Wage Income Shares in Japan, 1924-2002

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 allowances. For the pre-WWII period, we use wage distribution tables published in the *Report on the Census of Labor* in 1924, 1927, and 1933, and salary and bonus data reported in annual income tax statistics in 1930-1945. For the post-WWII period, we use the *Monthly Labor Income Survey* in 1949 and 1954 and the *Survey on Private Wages and Salaries* published annually by the tax administration since 1951. **Figures 10 and 11** present the top 5% and 1% wage income shares in Japan from 1924 to 2002, together with equivalent series in the United States from 1927 to 2002 from Piketty and Saez (2003).²⁵

First, during 1924-1935, 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), yet it is higher compared to the post-WWII period. High wage income inequality in Japan during the interwar period can be explained by large intra-firm, and to a lesser extent, inter-firm wage differentials. As discussed above, wages and bonuses paid to top management, white-collar employees, and production workers within the same firm were widely dispersed before WWII, resulting in high intra-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

²⁵ Discuss comparability between Japanese and U.S. data.

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 24% to 9% and the top 1% share from 8.6% to 3.2%. According to our income composition data in **Figure 5**, the share of employment income in the top 1% income remained fairly stable until 1940 then dropped sharply until around 1947. In light of this observation, 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 compensation as well as reduced wage differentials across firms by imposing stringent wage control. Compared to the top income shares, the decline in top wage income shares during WWII was smaller yet substantial. It shows that, although the decline in income concentration was largely a capital income phenomenon, employment income also played a nontrivial role.

Third, after WWII, top wage income shares had recovered somewhat by 1949, rose until 1961, and then declined gradually over the next two decades. This initial increase is consistent with our income composition data that show the immediate recovery of the employment income component in the top income after WWII. The reasons for the initial rise of the top wage income shares are subject to further investigation.²⁶ It is worth noting that the trends of the top wage income shares parallel the trends in the income inequality of all households in Japan reported in the previous studies (see **Figure B**). It implies that while capital income played a major role in determining the evolution of the top income shares, employment income played more important role in determining the overall income inequality in the economy. Minami (1995b) attributes the rise in income inequality in the 1950s and its decline in the 1960s primarily to the Japan's transition from the chronic labor surplus before 1960 to the chronic labor shortage after 1960. Concerning the top wage income shares, their decline can be explained by the institutionalization of lifetime employment and enterprise unionism in the 1960s that compressed intra-firm wage dispersion. In particular, by this period, executives at large firms were entirely promoted from within and received relatively modest compensation. According to our

²⁶ This is puzzling given the rise of unions and the purge of top management in major firms immediately after WWII.

income tax statistics, for example, bonuses were no longer concentrated on the top wage earners but distributed proportionately to wages and salaries.

Finally, despite the concern about the rising income inequality in Japan over the last two decades (Tachibanaki (1995)), in terms of wage income, we find only a slight increase in the top 5% and 1% wage income shares.

6.2 Comparative Analysis of Japan and the United States

As shown in **Figures 10 and 11**, the top wage income shares were roughly comparable in the United States and Japan during 1924-35. Then wage income concentration in both countries fell sharply by the end of WWII. In contrast to Japan, however, the 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, however, has sharply diverged between the two countries since the 1970s. 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.

What explains the sharp divergence? Note that it occurred at a time when 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 based on high technology. 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 (e.g., female labor force participation, aging), government policies (e.g., tax incentives, minimum wages), and institutional factors (e.g., internal 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 average marginal income tax rates faced by this group in Japan (**Panel A**) and the United States (**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 1970s – especially the sharp reduction in the late 1980s – were the key factor that drove up high 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 new insight. As shown in **Panel A**, the marginal tax rate faced by the top 0.1% wage 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. However, these reductions have failed to generate any supply-side effects in Japan.²⁷ The comparative experience of Japan and the United States thus also rules out income tax incentives as the primary determinant of wage inequality. In the case of Japan, highly developed internal labor markets and the resulting absence of competitive markets for corporate executives might have played an important role in preventing the rise in wage inequality.

7. Concluding Remarks

In this paper, we document the evolution of income concentration in Japan from 1885 to 2002, using the series of top income shares and wage income shares we have constructed from income tax statistics. 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 and wealth concentration in Japan was extremely high during the early part of the 20th century by historical standards, it was comparable to that of other industrial nations, such as Britain, the United States, France, and Germany, during the same period (Atkinson (2002); Piketty and Saez

²⁷ In this context, it is ironic to re-read Lindsey (1990) who predicted that supply-side effects would be very large in Japan. The prediction was based on the fact that large Japanese companies relied extensively on tax-exempt forms of compensation, such as business meals, vacation, and corporate cars.

(2003); Piketty (2003); Dell (2004); see also **Figure 13**). These countries experienced a substantial decline in income concentration during the interwar period, due largely to the Great Depression and the introduction of highly progressive income and estate taxation. By contrast, as we have shown, income and estate taxes remained low in Japan until the late 1930s, and the impact of the Great Depression on the Japanese economy was far milder (Moriguchi (2003)). 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 only about 15% in France, the United States, and even in Nazi Germany.

As in the other countries, the top income shares (especially the very top shares) in Japan fell abruptly and dramatically during WWII. Our income composition data and estate tax data indicate that this sharp reduction in income concentration was due primarily to the collapse of capital income, as large fortunes were hit hard by the wartime taxation, war destruction, post-war hyperinflation, and redistributive policies implemented under the U.S. occupation. 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 in the post-war period transformed the temporary effect into a permanent one. In particular, we suggest that the fundamental changes in government tax policies, corporate governance, and union structure likely have kept wealth concentration in Japan at the low level. Interestingly, Japan achieved the most impressive and sustained economic growth under the environment unfavourable to capital accumulation and without significant increase in income or wealth 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, but they recovered quickly and peaked in the early 1960s. After a decline in the subsequent two decades, wage income inequality has increased only 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 (e.g., the United States, Britain, Canada). 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

Our data are from personal income tax return statistics compiled annually by the Japanese taxation authorities since 1887.²⁸ The Tax Bureau of the Ministry of Finance (renamed the National Tax Administration in 1947) has published *Annual Statistical Report* since 1883 to date for every single year. The annual reports contain the distributions of reported incomes by brackets, which can be used to construct top income share series (see below). The breakdown by sources of income (such as wages and salaries, business income, dividends) is available by income brackets after 1947. Before 1947, the composition of income is only available at the aggregate level.

A1. Tax Units

From 1887 to 1949, the tax unit was the family defined as a married couple with dependents (such as children or 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 1950, the income tax became individual, whereby spouses are taxed separately on their incomes. In order to produce homogeneous series over the entire period, we have decided to estimate top income shares at the individual level. Thus, our top groups are defined relative to the total number of adults (defined as those aged 20 and above) in Japan. The total number of adults is obtained from official population statistics (based primarily on census data) and is reported in Table 1.

For the pre-1950 period, for most years, the tax statistics distributions breakdown total income into head of household income and the income of dependents. The income of dependents is very small relative to the head of household income and can be subtracted in order to obtain estimates of top individual incomes.²⁹

For the pre-1950, it is also possible to compute top income shares using the household as the tax unit. Total households in Japan can be obtained from Otsuki and Takamatsu (1978), Table 1, p.340. We have computed such top income shares. Those results are not reported in the present paper but will be used later on for performing a careful comparison with studies on pre-war inequality which focus in general on the household unit. The pattern of household top income shares is very close to the pattern of individual top income shares because the ratio of adults to households is very stable across the period 1885 to 1950 (it fluctuates between 2.65 and 2.95 but with no trend over the period).

A2. Total Income Denominator

In order to obtain top income shares, we need to estimate the total income 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

²⁸ Japan Ministry of Finance, Tax Bureau (1988) provides detailed history of income tax system, including tax laws and aggregate statistics.

²⁹ This correction method is appropriate as long as the share of dependent income is small. After 1950, the tax statistics, based on individual income, do not allow to reconstruct household income. That is why we focus on individual income in this study.

households filed income tax returns in the pre-war period, the income tax statistics cannot be used to estimate the denominator and we have to rely on National Accounts data.

In the post war period, National Accounts are relatively detailed and provide the breakdown of personal income into the main components: wages and salaries, employers' social contributions, personal capital income (dividends, interest, rents), unincorporated business income. Social contributions, imputed rents (included in unincorporated business income), and returns on insurance policies (included in personal capital income) are not part of the individual taxable income. Hence we define our personal income denominator as the sum of wages and salaries, personal capital income (excluding insurance policy income), and unincorporated business income (excluding imputed rents). Those statistics are obtained from the National Accounts section of the annual *Japan Statistical Yearbook* (Table Distribution of National Income and National Disposable Income).

For the period before 1950 when such a decomposition is not available, we use the series of disposable income from *Estimates of Long-Term Economic Statistics of Japan* since 1868, vol.1, *National Income* (Ohkawa et al.), p. 200, col. (8). Those series are available for the period 1885-1970. Over the period 1950-1970, they are relatively close to our National Account series described above (on average 5% larger). Thus, we estimate our denominator for the period 1885-1950 as 95% of the disposable income from Ohkawa et al. It is important to note, however, that there is considerable uncertainty in total income estimates for pre-war Japan as no elaborate system of National Accounts existed in that period. Other National Income series have been proposed by other authors which diverge substantially from Ohkawa et al. Ohkawa et al. are on the high end estimates and hence would tend to bias our top income share results downward in the pre-war period. We need to compare our total income denominator (per adult or per household) to other studies on pre-war income inequality to provide a more accurate comparison.

We use a consumer price index (CPI) to deflate our nominal income series in a number of tables. Our CPI estimates for the period 1885 to 1950 are from *Estimates of Long-Term Economic Statistics of Japan since 1868*, vol. 8 Prices, p. 135, col. (1). For the period 1950 on, our CPI estimates are from the *Japan Statistical Yearbooks*.

A3. Construction of Top Income Shares

Our series are constructed using a simple Pareto interpolation method as in Piketty and Saez (2003). There are a number of important changes in the tax law that affect the comparability over time of the income tax statistics we use and which must be corrected for in order to obtain homogeneous series over the full period.

1) Combining Self-assessed Income Statistics and Wage Income Statistics (1950-2002)

Because of the development of an extensive withholding system in Japan, most individuals with only employment or pension income are no longer required to file self-assessed income tax returns starting in 1950. At the end of the year, there is an adjustment in the last amount withheld so that total taxes withheld correspond exactly to total income taxes due. In that case, no income tax return has to be filed and the person does not appear in the official statistics of self-assessed income tax returns. As a result, although most income earners pay income taxes in the 1950-2002 period, only a minority of taxpayers (about 10-15% of all adults) is required to file a self-assessed tax return.

Therefore, the official tax statistics are missing a large number of income earners. Fortunately, the Japanese fiscal administration also publishes statistics from the withholding tax system on wage earners which include virtually all wage earners in the private sector and which we use to complete the self-assessed income tax statistics. Those wage income statistics are summarized in the main *Annual Statistical Report* of the fiscal administration (where the statistics on self-assessed income tax returns also appear). They are also published in much more detail in the annual (since 1951) *Survey on Private Wages and Salaries*. Those statistics report the distribution (by wage income brackets) of annual wage income for all employees in Japan but excluding employees in the public sector (government employees) and temporary workers. It also excludes retirees. We inflate the survey distribution by a uniform factor in order to account for the fact that government workers and retiree employees are not included in the wage survey distribution (TO BE DONE).³⁰

We need to combine the self-assessed income tax statistics and the survey of private wages and salaries statistics in order to obtain a complete income distribution as follows. The key difficulty is that a number of wage earners file self-assessed tax returns (primarily because they have other sources of income). Those wage earners appear in both the self-assessed and the wage survey statistics. Thus, before combining the wage survey with the self-assessed statistics, we need to subtract wage earners filing self-assessed returns from the wage survey. We use the composition information by income bracket from the self-assessed income tax statistics to do so. Those composition tables report, by income brackets, the number of wage earners (defined as taxpayers with any wage income) and the wage income reported for each income bracket. From those statistics, we estimate a distribution of wage income earners (by wage income brackets) for those self-assessed wage income earners. (GIVE MORE DETAILS.) We then subtract out this distribution from the wage income distribution from the wage survey report. This net distribution represents all wage income earners who did not file a self-assessed income tax return. We then add the net distribution to the original self-assessed income distribution.

2) Tax Erosion (1950-2002)

The potentially more serious issue is the erosion of the tax base. Over the years, special treatment has been given to various components of income, especially interest income, and some forms of realized capital gains. In particular, the development of tax favored saving instruments shelters an important fraction of interest income from the progressive income tax. In effect, those special treatments in general give taxpayers the option of paying a separate tax rate at source on those components instead of aggregating them to their other incomes and facing the progressive tax schedule. As a result, the self-assessed income tax statistics do not report those components taxed separately. Ishi (2001) has attempted to compute comprehensive measures of income in order to assess the effects of tax erosion on taxes collected using unpublished data obtained from the fiscal administration. We build upon his methodology and use alternative sources such as the Survey of Private Savings in order to correct for the missing income components. (TO BE DONE)

³⁰ This amounts to assuming that government employees and retirees have the same income distribution as private sector employees, which probably introduces a slight upward bias in our estimates.

3) Treatment of Capital Gains (1947-2002)

Before 1947, realized capital gains were not included in the income tax base. From 1947 on, realized capital gains have been taxable (often with special tax rates and special exemptions varying over time). Realized capital gains are included in the income tabulations for the 1947-2002 period. Therefore, in order to obtain consistent series with the pre-1947 period, we need to remove capital gains from our top income share estimates. We use the composition tabulations by income brackets to do so.

We first compute the share of realized capital gains in each top income groups using the composition tabulations and a straightforward linear interpolation method (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 capital gains is 6%, and the share of capital gains is 50%, we estimate the top 1% income share as $6 \times (1 - 0.5 \times 0.8) = 3.6\%$. Removing 100% of the capital gain component would bias the income shares downward 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 U.S. study by Piketty and Saez (2003) and the Canadian study by Saez and Veall (2003). Using micro-data where it is possible to estimate income shares with and without capital gains, they conclude that the 80% rule is giving quite good estimates.

We have also estimated income share series including capital gains. For those, we still need to adjust the capital gain component (and the income share series) upward to reflect the fact that, in a number of years, only a given fraction of realized capital gains is taxable and hence included in the published statistics.

4) Capital Income Exclusions (1899-1939)

In the pre-war period, the treatment of dividend and interest income changes over the period. From 1887 to 1898, the income tax base is comprehensive and fully includes dividend and interest income. However, from 1899 to 1920, dividend and interest income were taxed separately and hence disappears from the income tax statistics. From 1921 to 1936, 60% of dividend income is included in reported income, 80% from 1937-1939, and 100% after 1940. Interest income disappears completely from the progressive income tax base from 1899 to 1939 and is fully included again starting in 1940. Those changes create large discontinuities in the data, especially for very top groups. We correct for those discontinuities by inflating each top share by a given percentage so as to smooth the discontinuities [TO BE IMPROVED UPON WITH COMPOSITION DATA AND TOTAL DIVIDENDS AND INTEREST INCOME FROM OTHER SCHEDULAR TAXES].

Below some threshold, a fraction of employment income could be deducted from reported income, and hence does not appear in the statistics. This deduction is not significant at the very top for which employment income is minimal. However, it is substantial below the top 1%, and we correct for it using composition data [TO BE COMPLETED].

5) Fiscal Years versus Effective Years

For 1887 to 1898 taxation years, incomes reported for tax purposes are based on the average of the previous 3 years (i.e., for year 1887, incomes reported are the average of incomes earned in 1884, 1885, 1886). From 1899 to 1946 tax years, the incomes reported correspond incomes earned in the previous year only. Starting in 1947, a withholding

system is created and the income tax becomes a pay-as-you earn system. Thus, since 1947, income statistics correspond exactly to the tax year. Because of the switch to the pay-as-you earn system in 1947, incomes earned in 1946 were not subject to the progressive income tax, and hence no income statistics are available for that year. The correspondence between taxation years and years in which income is earned is reported in Columns 1 and 2 of Table 1. In principle, averaging over 3 years should lower top income shares because of fluctuations in income. We do not correct for this, and thus our top shares for the years 1885-1897 are probably slightly biased downward.

A4. Construction of Top Income Composition Series

[TO BE COMPLETED.]

B. Top Estates

B1. Construction of Top Estate Series

Japan has imposed a national estate tax on an annual basis since 1905. Statistics on the estate tax have been consistently reported in main tax statistics report. Those statistics report the distribution of estates for a wide range of brackets. We use those statistics to estimate series of the level of estates for various groups at the top of the estate distribution. Those groups are defined relative to the total number of adults (aged 20 and above) decedents in Japan. The series of adult decedents in Japan is obtained from published vital statistics of number of deaths by age and gender groups in the *Japan Statistical Yearbook* (from 1985 to 2002) and in the *Historical Statistics of Japan*, pp. 218-219 for the period 1900-1985. The total number of adult deaths in Japan is reported on col. (1) in Table 4. The number of estate tax returns is reported on col. (2). Col. (3) shows that the estate tax returns cover only a minority of deaths (about 5% in the recent period).

For the period 1905-1949, we assume that estate tax statistics reported for year t correspond to deaths taking place mostly in year $t-1$ (NEED TO DOUBLE CHECK). For the period 1950-2002, estate tax statistics reported in year t correspond to deaths occurring in year t .

Estate tax statistics present the tabulations by size of estates. Estates are defined as the sum of all properties (all real estate and household properties, unincorporated business assets, stocks of closely held and publicly traded corporations, bonds, cash, deposits, value of remaining pension rights, etc.) net of all debts and liabilities. Therefore, virtually all components of transmittable wealth are included in the determination of the net estate for tax purposes and hence should give an accurate estimate of the value of wealth held by decedents. Although there are large exemptions for spousal bequests and substantial standard deductions for each heir, tabulations are reported by size of net estates before computing all those deductions. As a result, our series report the economic value of net estates rather than the taxable portion of estates.

The estate series are produced using the standard Pareto interpolation method. We do not attempt to estimate shares of estates for each fractile because there is no simple way to compute the total level of estates left by all decedents in each year (including those who did not file estate tax returns). Table 5 displays the levels (expressed in thousands of 2002 Yen) of estates for various upper groups of the distribution.

There are a number of changes in the estate tax law that can potentially affect our series:

1) Pre-1947 Inheritance Law

From 1905 to up until 1947, the inheritance laws were defined by the old Civil Code. Under the old law, there was a distinction between succeeding a house (*ie*) as a house head (*koshu*), which includes both status and property of the house, and succeeding a property. The former is called “house inheritance (*katoku sozoku*)” and the latter is called “property inheritance (*isan sozoku*)”.

House inheritance followed when house heads died, disappeared, retired after age 60, or if house heads were female and they got married. Retirement is the second largest reason next to death. Under this system, the first son inherited the house name and all the property. If there was no son, a house head could choose a legal successor. If there was no son and no legal successor has been chosen before the death of the house head, then the family members had to select a successor. In any case, under the house inheritance, entire property went to one person to preserve the house.

Property inheritance followed when non-house heads died, disappeared, or if non-house heads gave the legally-certified amount of property to their heirs. Gift is the second largest reason next to death. Under this system, children divided the property equally. If there were no children, then a spouse inherited all the property. If there were no children or spouse, then elderly family members divided the property equally.

The inheritance tax data from 1905 to 1948 record both forms of inheritance in separate tabulations. For our estimation, we add the distributions of house inheritance and property inheritance. The former is by far the dominant form of inheritance at the top. We consider all forms of house inheritance (not only those from deaths), because house inheritance due to retirement should be considered as a transmission of wealth from one generation to the next and not counting it would lead us to underestimate the number of estates which were transmitted to the next generation. We also include all property inheritance cases (although ignoring the cases not due to death would not alter our series very much).

2) Post-1947 Inheritance Law

After 1947, Japan switched to a modern form of inheritance law. For years 1950 to 1957, under the recommendations of the Shoup Commission, Japan adopted an inheritance tax system (instead of an estate tax system). As a result, the tax statistics for those years are reported by size of inheritances, and not estates. As estates are typically divided between several heirs, those distributions are not directly comparable to the estate distributions. That is why, we have dropped those years from the analysis although we plan to include them (with an adjustment) in future revision (TO BE DONE).

Since 1958, Japan has used a hybrid system of an estate tax and inheritance tax. However, the statistics have always been presented by size of estates and hence are comparable to the pre-1947 statistics.

B2. Construction of Estate Composition Series

Estate tax statistics report the composition of estates starting in 1926. [TO BE COMPLETED.]

C. Top Wage Income Shares

The National Tax Administration has annually published the statistics on wages and salaries in the *Survey on Private Wages and Salaries* beginning in 1951.³¹ This survey covers all regular employees in the private sector, but excludes temporary and daily workers, retirees, and government employees. The survey provides distributions of individual annual wage income by brackets that can be exploited to construct top wage income share series from 1951 to 2002. Our definition of wage income includes wages, salaries, overtime pay, bonuses, and various allowances, but excludes benefits in kind and retirement benefits. We again adopt a simple Pareto Interpolation technique to estimate top wage income shares from those statistics. In the case of our wage income series, the upper groups are defined relative to the total number of regular employees in the private sector in Japan (see Tables 4 and 5). We obtain shares by dividing the amounts of wages and salaries accruing to top wage income groups by 90% total wages and salaries from National Accounts (see Table 6). The factor 90% is chosen because our statistics exclude non-regular employees and government employees. For most 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 very close to 90% of wages and salaries from National Accounts.

For the pre-WWII period, we use the data of salaries and bonuses reported in income composition tables in the annual income statistics for the years 1930-45. These data include the amounts of salaries and bonuses earned by the people who filed income tax returns and the numbers of taxpayers for each category. [EXPLAIN ESTIMATION METHODS HERE.]

To extend our series to earlier years, we also use prewar and postwar wage surveys. The distribution of wage income is available only in 1924, 1927, and 1933, in the *Report of Census of Labor* published by the Statistical Bureau, and in 1949 and from 1954 on in the *Monthly Labor Income Survey* reprinted in the *Yearbook of Labor Statistics*. [WE MAY BE ABLE TO ADD MORE YEARS. CHECK.] Those surveys ask employees to report their monthly cash wages that included monthly wages, salaries, and allowances, but exclude bonuses. The surveys publish tabulations of the distribution of employees by the size of monthly cash wages. We estimate top wage income shares based on the total number of workers and the total amount of wages reported in these survey. The prewar wage surveys cover employees in manufacturing and mining only, while the postwar surveys cover all industries. [DISCUSS POSSIBLE BIAS.] These surveys are in general designed to be representative of all employees. For year 1954, we compute top wage income shares based on the *Monthly Labor Income Survey* and based on the *Survey on Private Wages and Salaries*. Results are similar for groups below the top 1%. The top 1% share is about 35% higher in the annual survey than in the monthly survey. [WHY?] In order to adjust the monthly results, we assume that the discrepancy between the monthly and annual measures for years 1924, 1927, and 1933 would have been the same of the discrepancy in 1954. We hence adjust our monthly wage income shares for those years by the 1954 correction factor. [STRONG ASSUMPTION.]

Because the monthly wage survey data do not include bonuses, we must correct for the omission. According to the *Survey on Private Wages and Salaries* that report wages and bonuses separately, for the period after 1951, bonuses were substantial but

³¹ Some records indicate that the survey started in 1948, but we cannot locate the 1948-50 surveys.

distributed proportionately to wages, and hence do not affect our wage income shares. For the pre-WWII period, however, the exclusion of bonuses would seriously underestimate top wage income shares. [EXPLAIN THE CORRECTION USING INCOME TAX STATISTICS HERE.]

D. Income Tax Rates

The Japanese income tax structure has gone through many reforms over the course of the period we study. The *Hundred-Year History of Income Tax* provides a comprehensive description of the development and evolution of the income tax in Japan for the period 1887-1987. The annual report also provides some information on the tax system.

Marginal tax rates reported in Table 4 have been computed as follows. We consider each of the raw income thresholds P99.9 and P99.99, etc. estimated from the interpolation methods described in Appendix Section B. We then assume that the taxpayer at each of these income thresholds is a married taxpayer (who can claim the married exemption level) with two dependents (for example a married couple with two children under 18). We therefore subtract from raw income the married exemption and two dependent exemptions. We also subtract the average level of deductions claimed on top of marital and personal exemptions at the corresponding percentiles to obtain net taxable income.³² Tax liability is then obtained from taxable income from a standard tax schedule with increasing marginal tax rates by income brackets, from which the marginal tax rate for any taxable income level can be easily obtained. The marginal tax rate we report includes the standard deductions for earned income, etc.

We have estimated the (income weighted) marginal tax rate for the top 0.1% and top 0.01% groups in Japan in Table 2 as follows. (TO BE COMPLETED)

³² For years 1920 to 1928, no additional deductions were allowed. For 1929 to 1945, we have assumed that deductions amounted to 2% of gross income at all percentiles (which is true on average for year 1946, the first year these details are available). From 1946 to 2000, the level of deductions increases slightly over time and we have made approximate computations for each year and percentile threshold using the available tables from *Taxation Statistics*.

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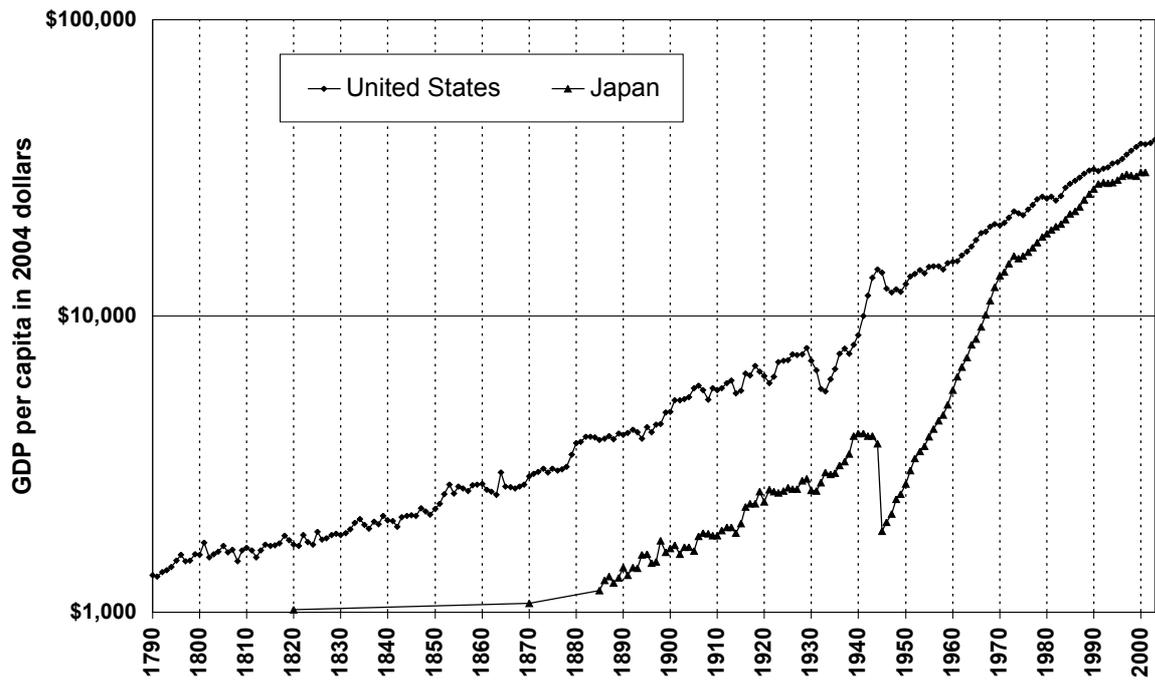


FIGURE A
Historical real GDP per capita growth in Japan and the U.S.

Source: United States is Louis Johnston and Samuel H. Williamson (2004) compilation of previous historical estimates and National Accounts. Japan is Maddison series up to 1994 and National Accounts since 1994.

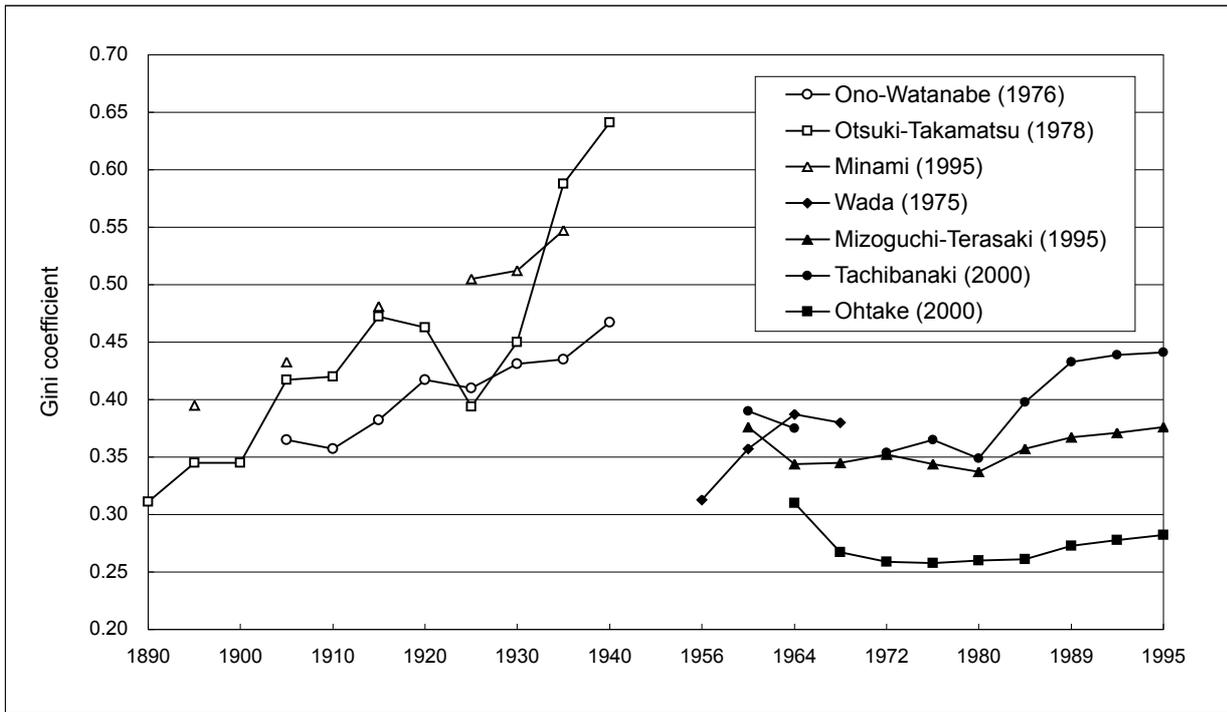


FIGURE B
The Evolution of Income Inequality in Japan, 1890-1995

Source: Ono and Watanabe (1976), Table 6; Otsuki and Takamatsu (1978), Table 4; Minami (1995), Table 6-4, Series I' & II; Wada (1975), p.21; Mizoguchi and Terasaki (1995), Table 1, supplemented by Mizoguchi and Takayama (1984), Table 1-2, and Funaoka (2001), Table 6; Tachibanaki (1998), Table 3-1, supplemented by Tachibanaki (2000), p.45; Ohtake (2000), Table 1.
Note: Gini coefficient is for the estimated distribution of income before tax and government transfers in all Japanese households.

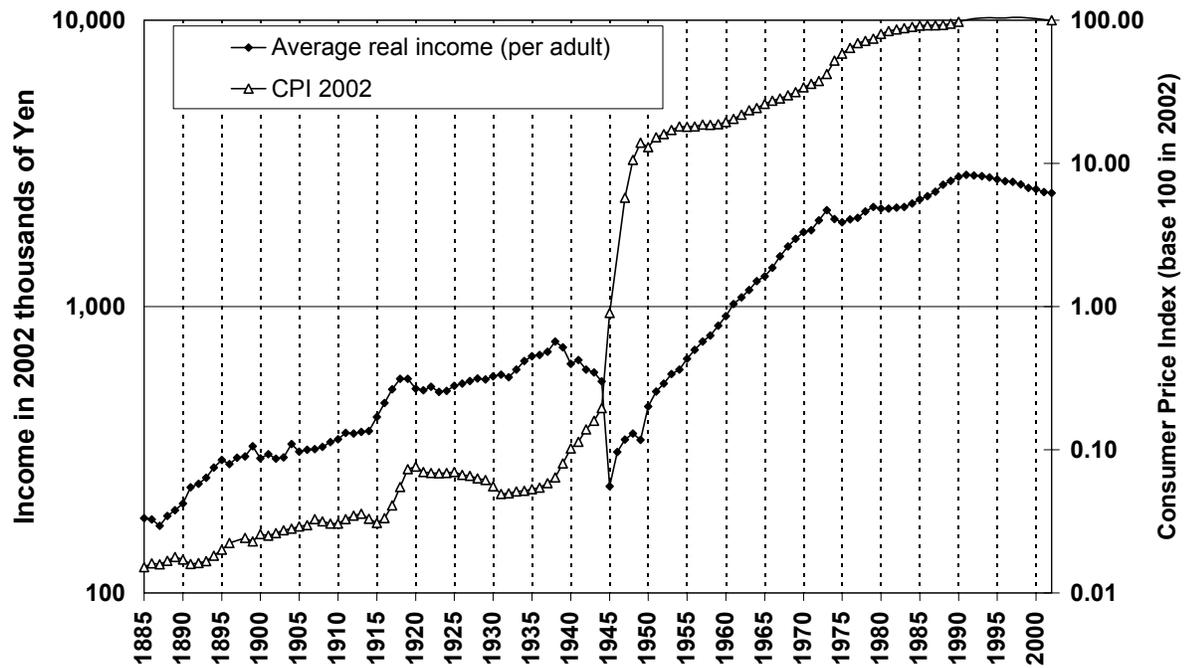


FIGURE 1

Average Real Income and Consumer Price Index in Japan, 1885-2002

Source: Table 1, columns Average real income per adult (in real 2002 thousand of Yen) and CPI (base 100 in 2002) Average real incomes multiplied by about 15 from 1885 to 2000. More growth than in the US from 1800 to 2000.

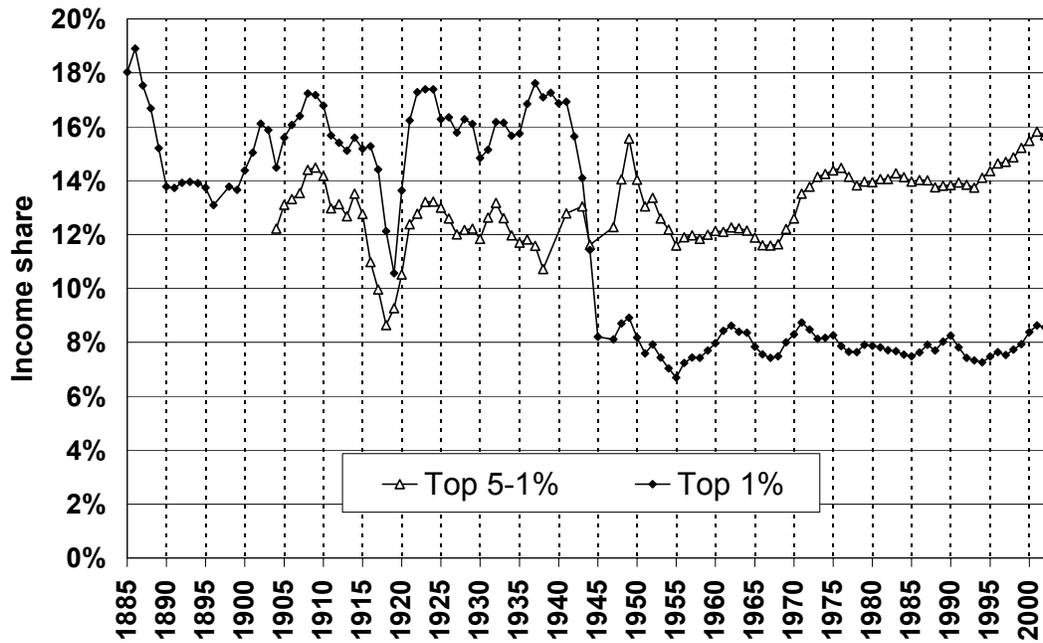


FIGURE 2
 Top 5-1%, 1% Income Share in Japan, 1885-2002

Source: Table 3, columns top 1% and top 5-1%

Reason why top 5-1% increases from 1968 to 1976 while top 5-1% wage income share is stable is due to the fact that fraction of wages in denominator increase from 57% to 76% in that period (stable before and stable afterwards)

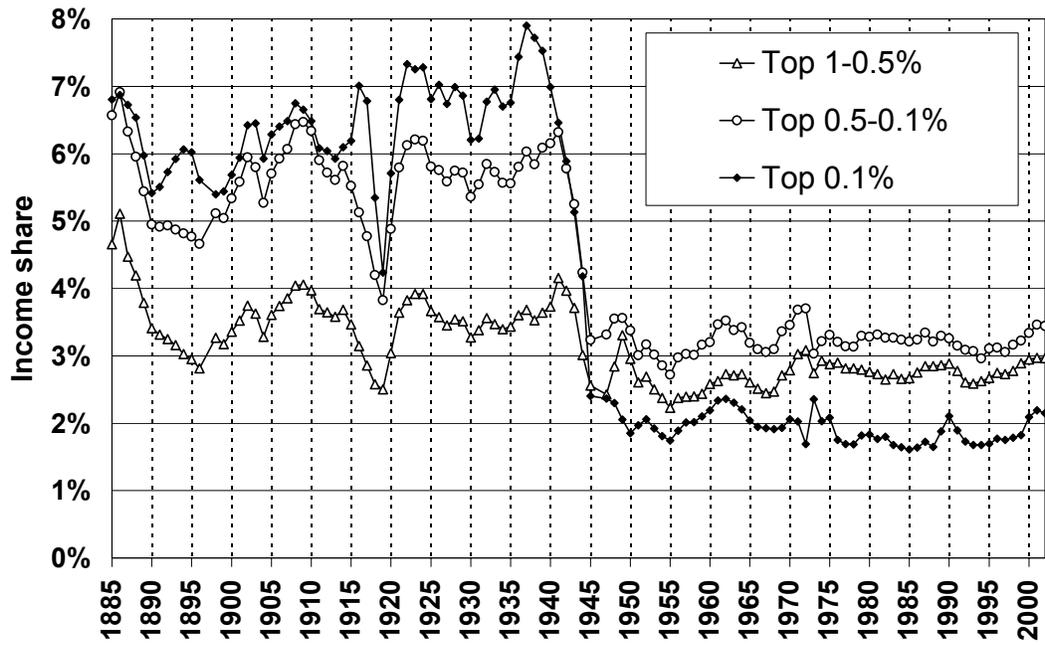


FIGURE 3

Top 1-0.5%, 0.5-0.1%, and 0.1% Income Share in Japan, 1885-2002

Source: Table 3

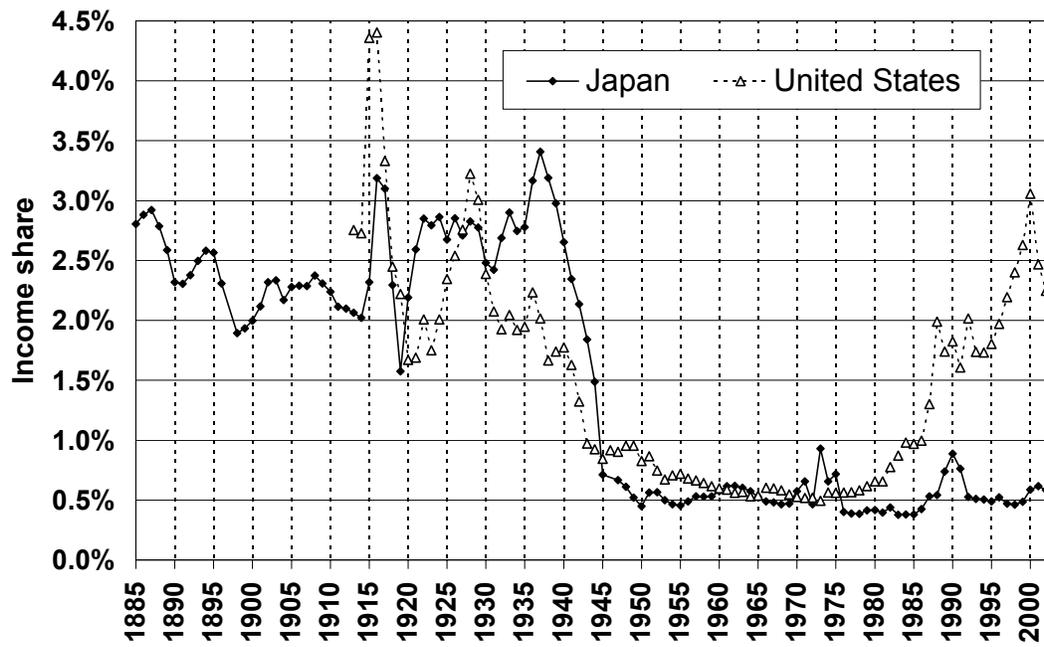


FIGURE 4

Top 0.01% Income Share in Japan (and the United States), 1885-2002

Source: Japan, Table 3, column top 0.01%

United States, Piketty and Saez (2003), Table II, column P99.99-100, series updated to 2002.

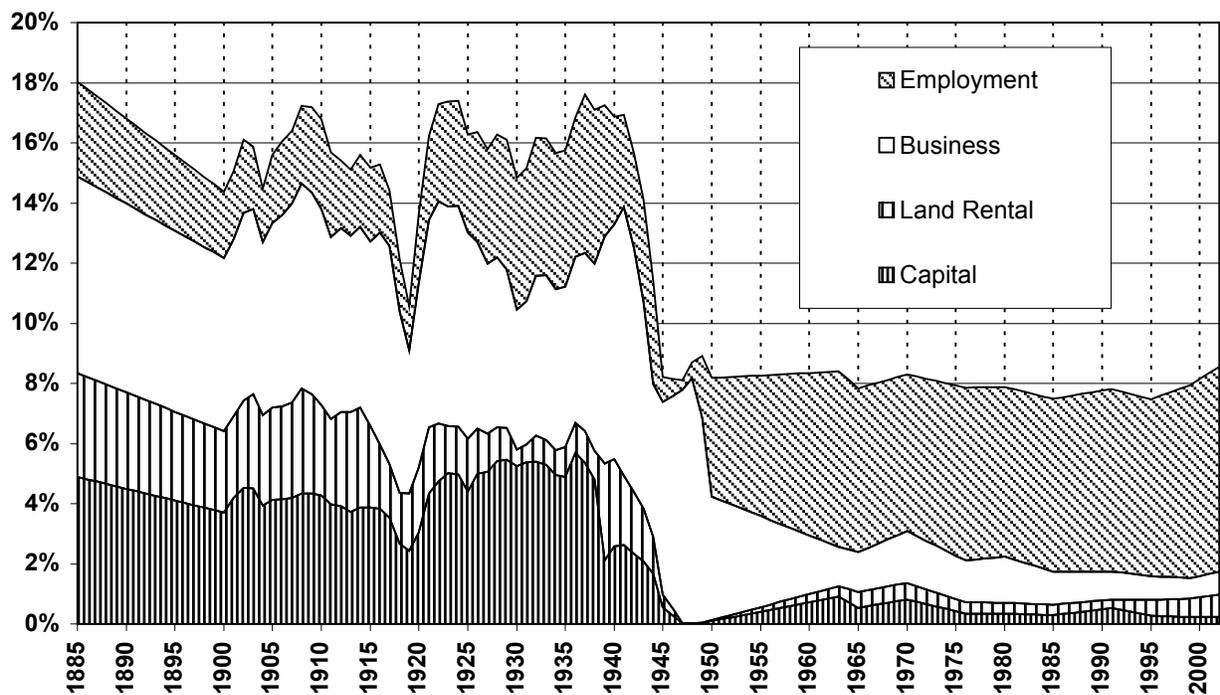


FIGURE 5
Income Composition of Top 1% in Japan, 1885-2002

Source: Japan, Table 4

The figure displays the composition of those top incomes into Capital Income (dividends, interest, non-land rental income), Land Rental Income, Business Income (unincorporated business profits, farming income, self-employment income), and Employment Income (wages, salaries, bonuses, pensions).

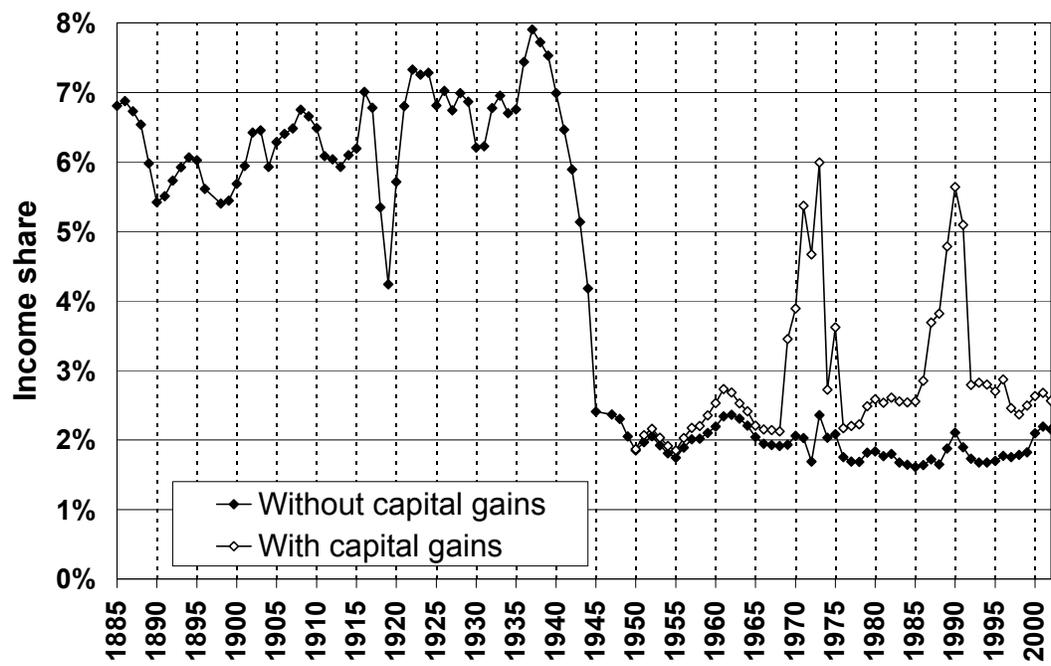


FIGURE 6

Top 0.1% Income Share in Japan excluding and including capital gains

Source: Japan, Table 3, column top 0.1%

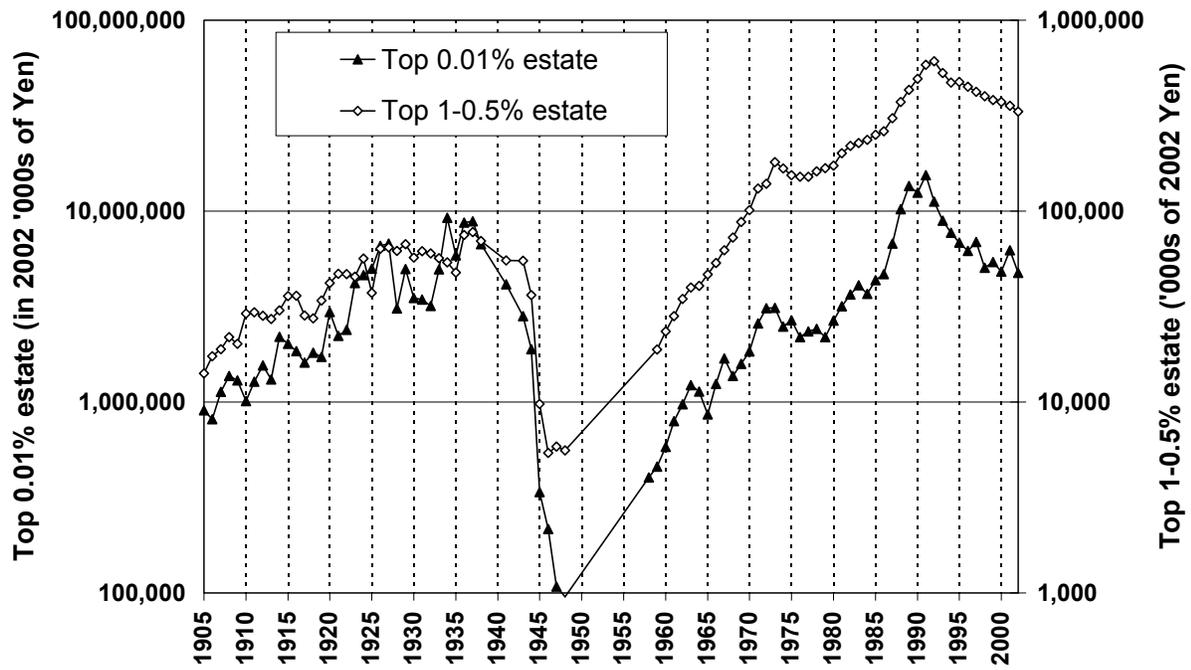


FIGURE 7

Average top 0.01% estates and top 1-0.5% estates in Japan, 1905-2002

Source: Table 4

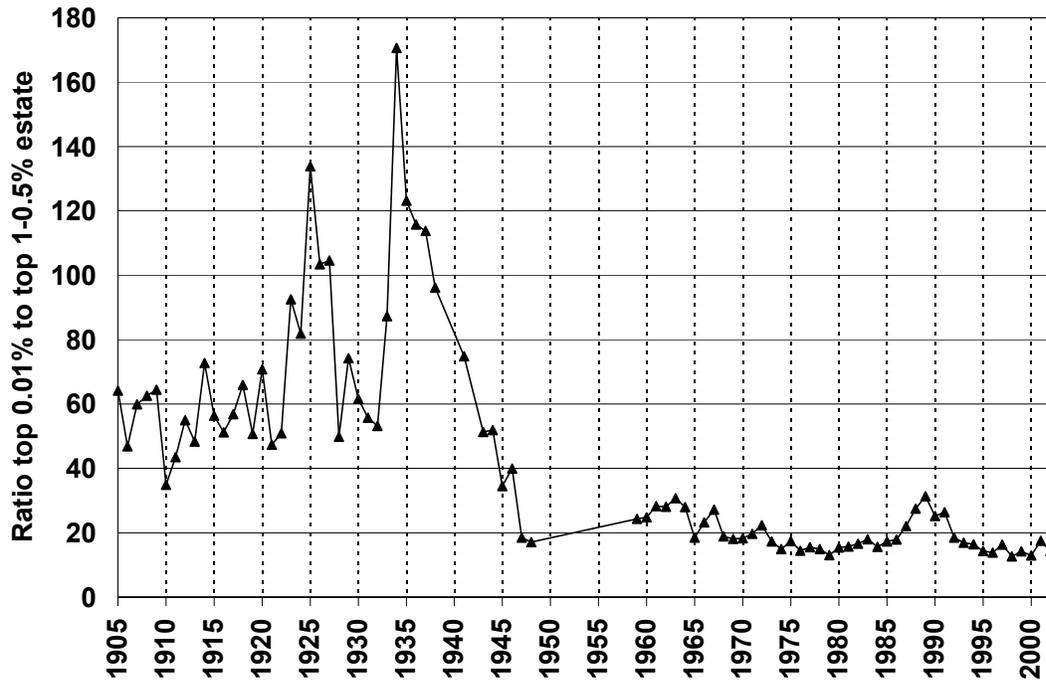


FIGURE 8

Top 0.01% to Top 1-0.5% Estates ratio in Japan, 1904-2002

Source: Table 5, column top 0.01% divided by column top 1-0.5%

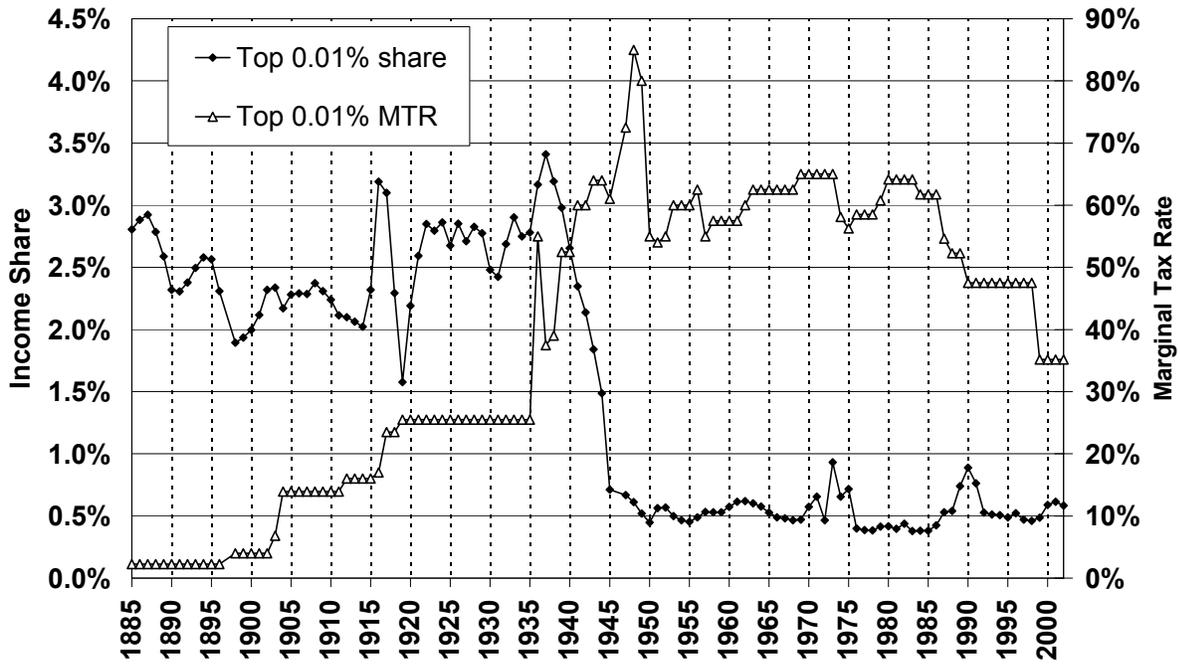


FIGURE 9

Top 0.01% income share and marginal tax rate, 1885-2002

Source: Top 0.01% income share from Table 3.

Marginal tax rate for Top 0.01% from Table 2.

Marginal tax rate includes only national income tax (and excludes local income taxes).

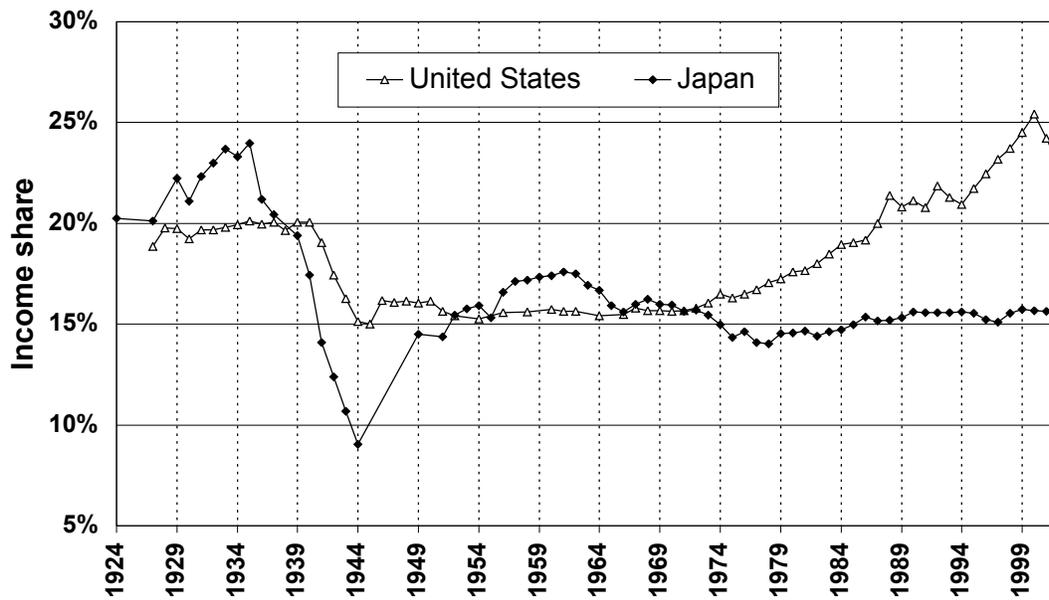


FIGURE 10

Top 5% Wage Income Share in Japan (and the United States), 1924-2002

Source: Japan, Table 5, column top 5%, and authors' computations based on salaries and bonuses reported in 1930-45 tax returns. United States, Piketty and Saez (2003), Table IV, column P90-100, series updated to 2002.

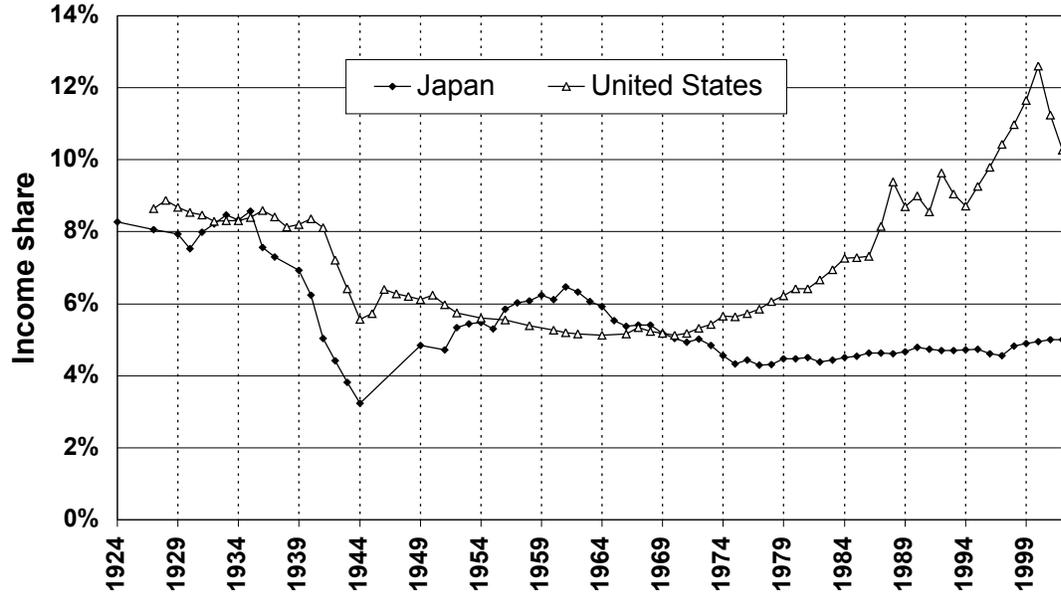
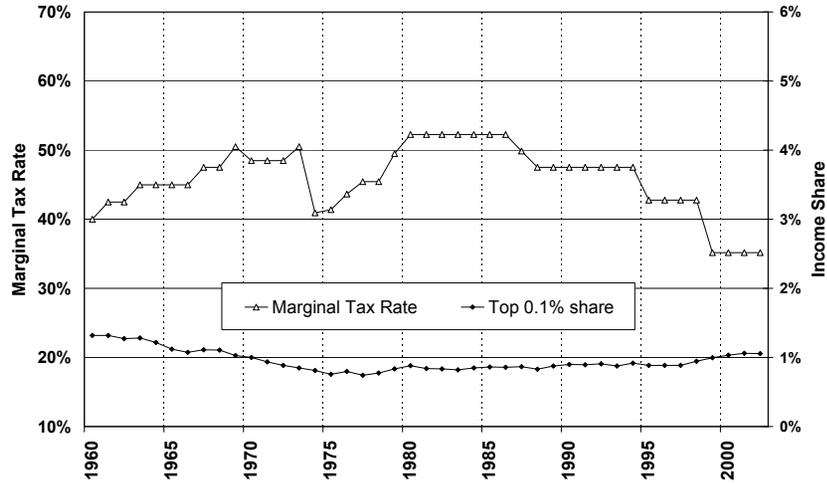


FIGURE 11

Top 1% Wage Income Share in Japan (and the United States), 1924-2002

Source: Japan, Table 5, column top 5%, and authors' computations based on salaries and bonuses reported in 1930-45 tax returns. United States, Piketty and Saez (2003), Table IV, column P90-100, series updated to 2002.

A. Japan



B. United States

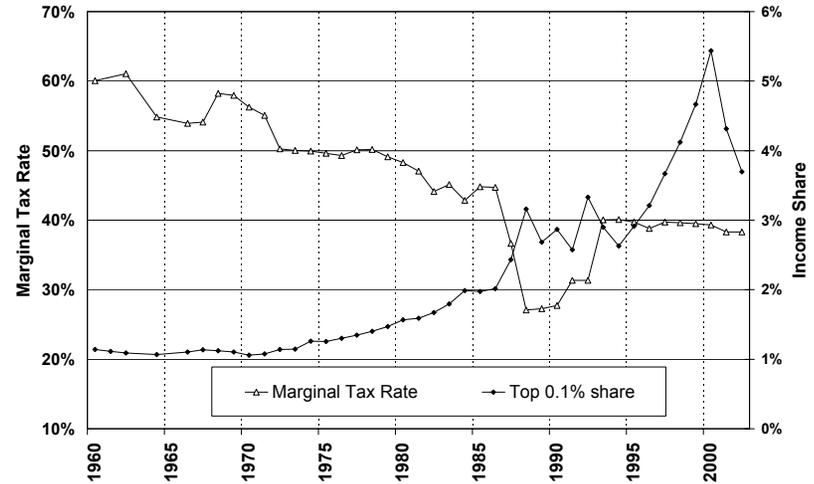


FIGURE 12

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

Source: Japan marginal tax rate computations based on Table 7

Marginal tax rates in Japan exclude local income taxes and social insurance contributions.

Computed for the average wage earner in the top 0.1% with only wage income, a non-working spouse and two children

United States, Saez (2004) computations using micro tax return data and TAXSIM calculator (does not include state income taxes).

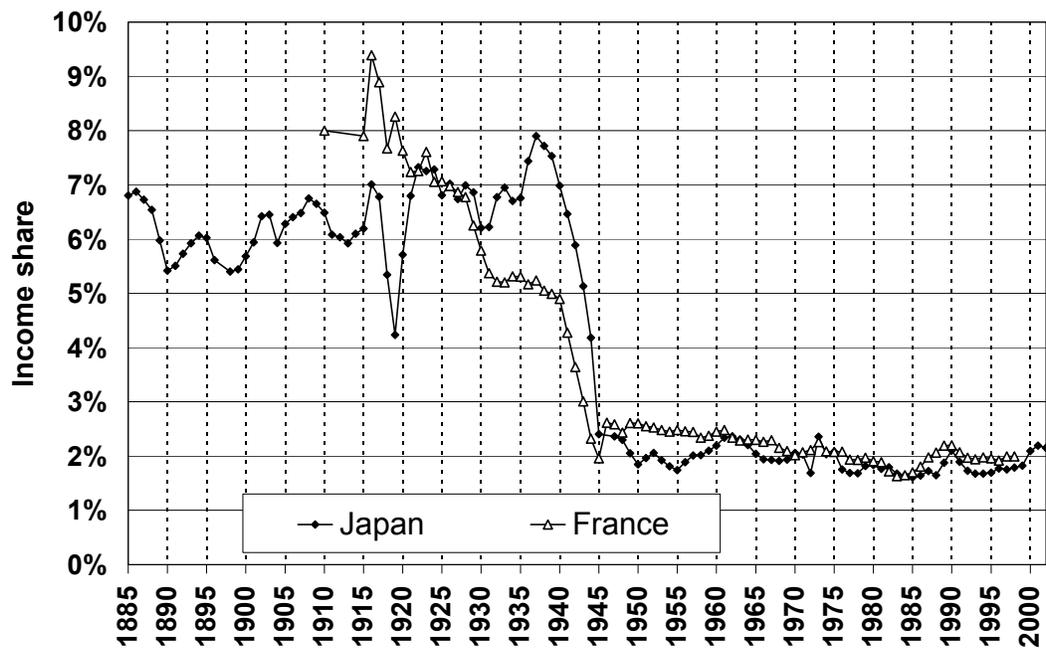


FIGURE 13
 Top 0.1% Income Share in Japan and France, 1885-2002

Source: Japan, Table 3, column top 0.1%
 France, Piketty (2003)

Income Inequality in OECD Countries

Table 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)

Table 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	1988	0.260
Finland	1987	0.255

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

TABLE 0**Thresholds & Average Incomes in Top Income Groups in 2002**

Percentile Threshold	Income Threshold	Income Group	Number of Tax Units	Average Income in Each Group
		Full Population	102,669,500	\$19,960
Top 10%	\$48,838	Top 10-5%	5,133,475	\$55,742
Top 5%	\$63,890	Top 5-1%	4,106,780	\$78,279
Top 1%	\$106,710	Top 1-0.5%	513,348	\$118,450
Top 0.5%	\$134,433	Top 0.5-0.1%	410,678	\$171,791
Top 0.1%	\$259,991	Top 0.1-0.01%	92,403	\$347,262
Top 0.01%	\$641,681	Top 0.01%	10,267	\$1,165,922

Note: \$1 = 125 yen in 2002.

Table 1: Reference Totals for Population, Income, and Inflation, 1885-2002

Years		Population and Tax units				Income		Inflation	
(1)	(2a)	(2b)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Actual Year	Fiscal Year	Fiscal Year	Population	Number of adults (20+)	Number of tax returns	(5)/(4)	Total income (2002 billion Yen)	Average income (2002 '000 yen)	CPI (2002 base 100)
(incomes earned in)	(tax paid in)	(Japanese Calendar)	('000s)	('000s)	('000s)	(%)			
1884-6	1887	20	38,541	21,853	118.6	0.54	3,955	181	0.0151
1885-7	1888	21	38,703	21,908	139.5	0.64	3,731	170	0.0161
1886-8	1889	22	39,029	22,054	115.6	0.52	3,898	177	0.0158
1887-9	1890	23	39,473	22,267	115.4	0.52	3,934	177	0.0168
1888-90	1891	24	39,902	22,471	115.9	0.52	4,098	182	0.0179
1889-91	1892	25	40,251	22,629	117.1	0.52	4,776	211	0.0171
1890-2	1893	26	40,508	22,734	124.1	0.55	5,432	239	0.0160
1891-3	1894	27	40,860	22,892	129.3	0.56	5,597	245	0.0161
1892-4	1895	28	41,142	23,011	134.7	0.59	5,719	249	0.0167
1893-5	1896	29	41,557	23,203	151.7	0.65	5,885	254	0.0182
1894-6	1897	30	41,992	23,405	172.8	0.74	5,997	256	0.0201
1895-7	1898	31	42,400	23,623	195.3	0.83	6,153	260	0.0224
1898	1899	32	42,886	23,884	288.6	1.21	6,363	266	0.0243
1899	1900	33	43,404	24,162	349.5	1.45	7,863	325	0.0229
1900	1901	34	43,847	24,399	406.3	1.67	7,198	295	0.0257
1901	1902	35	44,359	24,674	457.9	1.86	7,525	305	0.0251
1902	1903	36	44,964	25,000	507.9	2.03	7,361	294	0.0261
1903	1904	37	45,546	25,313	543.0	2.15	7,530	297	0.0274
1904	1905	38	46,135	25,630	580.5	2.27	8,493	331	0.0281
1905	1906	39	46,620	25,889	638.4	2.47	8,067	312	0.0291
1906	1907	40	47,038	26,110	702.4	2.69	8,266	317	0.0297
1907	1908	41	47,416	26,234	860.0	3.28	8,334	318	0.0328
1908	1909	42	47,965	26,452	930.4	3.52	8,554	323	0.0317
1909	1910	43	48,554	26,689	947.6	3.55	8,980	336	0.0305
1910	1911	44	49,184	26,947	964.5	3.58	9,268	344	0.0305
1911	1912	1	49,852	27,223	1,013.5	3.72	9,864	362	0.0328
1912	1913	2	50,577	27,528	707.9	2.57	9,914	360	0.0346
1913	1914	3	51,305	27,832	727.1	2.61	10,162	365	0.0357
1914	1915	4	52,039	28,137	718.2	2.55	10,338	367	0.0329
1915	1916	5	52,752	28,427	712.6	2.51	11,709	412	0.0308
1916	1917	6	53,496	28,732	771.0	2.68	13,244	461	0.0332
1917	1918	7	54,134	29,046	779.5	2.68	14,945	515	0.0408
1918	1919	8	54,739	29,341	1,079.8	3.68	16,422	560	0.0549
1919	1920	9	55,033	29,469	994.2	3.37	16,474	559	0.0730
1920	1921	10	55,963	29,937	1,168.2	3.90	15,462	516	0.0764
1921	1922	11	56,666	30,283	1,280.9	4.23	15,468	511	0.0700
1922	1923	12	57,390	30,639	1,400.5	4.57	16,081	525	0.0690
1923	1924	13	58,119	30,997	1,389.9	4.48	15,612	504	0.0683
1924	1925	14	58,876	31,369	1,432.3	4.57	15,939	508	0.0689
1925	1926	1	59,737	31,796	804.4	2.53	16,816	529	0.0698
1926	1927	2	60,741	32,298	732.2	2.27	17,378	538	0.0666
1927	1928	3	61,659	32,805	693.8	2.11	18,015	549	0.0656
1928	1929	4	62,595	33,323	700.5	2.10	18,689	561	0.0631
1929	1930	5	63,461	33,803	677.9	2.01	18,792	556	0.0617
1930	1931	6	64,450	34,350	569.0	1.66	19,605	571	0.0554
1931	1932	7	65,457	34,907	528.2	1.51	20,180	578	0.0490
1932	1933	8	66,434	35,449	569.6	1.61	20,088	567	0.0496
1933	1934	9	67,432	36,002	629.7	1.75	21,689	602	0.0511
1934	1935	10	68,309	36,491	679.3	1.86	23,550	645	0.0518
1935	1936	11	69,254	37,018	740.7	2.00	24,824	671	0.0531
1936	1937	12	70,114	37,499	815.2	2.17	25,394	677	0.0543
1937	1938	13	70,630	37,646	1,226.6	3.26	26,147	695	0.0585
1938	1939	14	71,013	37,921	1,404.0	3.70	28,595	754	0.0641
1939	1940	15	71,380	38,260	219.2	0.57	27,602	721	0.0802
1940	1941	16	71,933	38,686	266.0	0.69	24,415	631	0.1021
1941	1942	17	72,218	38,879	726.3	1.87	25,305	651	0.1137
1942	1943	18	72,880	39,275	878.6	2.24	23,677	603	0.1387
1943	1944	19	73,903	39,867	1,053.9	2.64	23,450	588	0.1595
1944	1945	20	74,433	40,194	1,114.6	2.77	22,005	547	0.1960
1945	1946	21	72,147	38,999	343.3	0.88	9,179	235	0.9026
1946			75,750	40,988			12,740	311	2.56
1947	1947	22	78,101	42,303	7,290.9	17.23	14,508	343	5.76

1948	1948	23	80,002	43,377	7,399.8	17.06	15,648	361	10.58
1949	1949	24	81,773	44,382	7,609.9	17.15	15,208	343	13.93
1950	1950	25	84,115	45,700	4,318.1	9.45	20,460	448	12.99
1951	1951	26	84,541	46,410			23,453	505	15.19
1952	1952	27	85,808	47,591			25,654	539	16.03
1953	1953	28	86,981	48,734			28,304	581	17.08
1954	1954	29	88,239	49,938			30,105	603	18.12
1955	1955	30	90,077	51,488			33,838	657	18.02
1956	1956	31	90,172	52,053			36,710	705	18.12
1957	1957	32	90,928	53,004			40,039	755	18.65
1958	1958	33	91,767	54,012			42,790	792	18.54
1959	1959	34	92,641	55,051			47,223	858	18.75
1960	1960	35	94,302	56,572			52,393	926	19.49
1961	1961	36	94,287	57,255			58,496	1,022	20.43
1962	1962	37	95,181	58,496			62,995	1,077	21.90
1963	1963	38	96,156	59,801			68,335	1,143	23.47
1964	1964	39	97,182	61,153			75,070	1,228	24.41
1965	1965	40	99,209	63,156			80,583	1,276	25.98
1966	1966	41	99,036	63,773			87,090	1,366	27.34
1967	1967	42	100,196	65,256			97,835	1,499	28.39
1968	1968	43	101,331	66,739			108,117	1,620	29.96
1969	1969	44	102,536	68,285			117,787	1,725	31.53
1970	1970	45	104,665	70,471			128,355	1,821	33.94
1971	1971	46	106,100	71,661			132,489	1,849	35.93
1972	1972	47	107,595	72,898			145,850	2,001	37.61
1973	1973	48	109,104	74,150			160,831	2,169	42.01
1974	1974	49	110,573	75,382			152,421	2,022	52.28
1975	1975	50	111,940	76,550			150,792	1,970	58.46
1976	1976	51	113,094	77,578			156,198	2,013	64.01
1977	1977	52	114,165	78,554			160,463	2,043	69.14
1978	1978	53	115,190	79,502			171,026	2,151	71.66
1979	1979	54	116,155	80,413			178,982	2,226	74.28
1980	1980	55	117,060	81,286			178,592	2,197	80.25
1981	1981	56	117,902	82,375			181,189	2,200	84.12
1982	1982	57	118,728	83,459			184,953	2,216	86.43
1983	1983	58	119,536	84,537			188,209	2,226	88.00
1984	1984	59	120,305	85,595			195,964	2,289	89.99
1985	1985	60	121,049	86,641			205,235	2,369	91.77
1986	1986	61	121,660	87,598			212,757	2,429	92.19
1987	1987	62	122,239	88,536			222,773	2,516	91.98
1988	1988	63	122,745	89,427			238,038	2,662	92.40
1989	1989	1	123,204	90,288			247,899	2,746	94.60
1990	1990	2	123,611	91,114			258,586	2,838	97.53
1991	1991	3	124,101	92,200			265,940	2,884	100.68
1992	1992	4	124,567	93,273			267,521	2,868	102.35
1993	1993	5	124,938	94,281			269,047	2,854	103.51
1994	1994	6	125,265	95,259			268,961	2,823	104.03
1995	1995	7	125,570	96,224			267,530	2,780	103.71
1996	1996	8	125,864	97,185			266,392	2,741	103.71
1997	1997	9	126,166	98,155			267,927	2,730	104.65
1998	1998	10	126,486	99,142			264,651	2,669	104.54
1999	1999	11	126,686	100,039			259,579	2,595	103.82
2000	2000	12	126,926	100,970			259,824	2,573	102.47
2001	2001	13	127,291	101,642			255,351	2,512	100.91
2002	2002	14	127,435	102,139			254,841	2,495	100.00

Notes: Population estimates based on census data from Historical Statistics of the Japanese Economy (p. 7).

Tax units defined as total adult population (aged 20 and above)

CPI from Estimates of Long-Term Economic Statistics of Japan since 1868, Vol. 8 Prices, p. 135, col. (1).

Disposable income from Estimates of Long-Term Economic Statistics of Japan since 1868, National Income (Ohkawa, Takamatsu, Yamamoto), p. 200, col. (8). Estimates from 1939-1946 from National Income real and nominal ratio from Historical Statistics of the Japanese Economy, p. 7.

Estimates from 1949 on are from the Japanese Statistical Yearbooks

Table 2: Income Tax and Marginal Tax Rate in Japan, 1887-2002

Actual Year (incomes earned)	Fiscal Year (tax collected)	Basic exemption per tax unit ('000s of nominal Yens)	Exemption for each dependent ('000s of nominal Yens)	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)	(0)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1884-6	1887	0.300		1.0	1.5	3.0	1.7	2.3
1885-7	1888	0.300		1.0	1.5	3.0	1.7	2.3
1886-8	1889	0.300		1.0	1.5	3.0	1.7	2.3
1887-9	1890	0.300		1.0	1.5	3.0	1.7	2.3
1888-90	1891	0.300		1.0	1.5	3.0	1.7	2.3
1889-91	1892	0.300		1.0	1.5	3.0	1.7	2.3
1890-2	1893	0.300		1.5	1.5	3.0	1.8	2.3
1891-3	1894	0.300		1.5	1.5	3.0	1.8	2.3
1892-4	1895	0.300		1.5	1.5	3.0	1.8	2.3
1893-5	1896	0.300		1.5	1.5	3.0	1.8	2.3
1894-6	1897	0.300		1.5	1.5	3.0	1.8	2.3
1895-7	1898	0.300		1.5	1.5	3.0	1.8	2.3
1898	1899	0.300		1.5	2.5	5.5	2.7	4.0
1899	1900	0.300		1.7	2.5	5.5	2.8	4.0
1900	1901	0.300		1.7	2.5	5.5	2.8	4.0
1901	1902	0.300		1.7	2.5	5.5	2.8	4.0
1902	1903	0.300		1.7	2.5	5.5	2.8	4.0
1903	1904	0.300		2.89	4.25	9.4	4.7	6.8
1904	1905	0.300		3.91	7.50	20.4	8.7	13.9
1905	1906	0.300		3.91	7.50	20.4	8.7	13.9
1906	1907	0.300		4.60	7.50	20.4	8.9	13.9
1907	1908	0.300		4.60	7.50	20.4	8.8	13.9
1908	1909	0.300		4.60	7.50	20.4	8.8	13.9
1909	1910	0.300		4.60	7.50	20.4	8.8	13.9
1910	1911	0.300		4.60	7.50	20.4	8.8	13.9
1911	1912	0.300		4.60	7.50	20.4	8.8	13.9
1912	1913	0.400		5.5	10.0	22.0	10.6	16.0
1913	1914	0.400		5.5	10.0	22.0	10.6	16.0
1914	1915	0.400		5.5	10.0	22.0	10.5	16.0
1915	1916	0.400		5.5	10.0	22.0	10.8	16.0
1916	1917	0.400		5.5	12.0	22.0	12.5	17.0
1917	1918	0.500		8.5	17.0	30.0	17.7	23.5
1918	1919	0.500		10.5	17.0	30.0	17.9	23.5
1919	1920	0.800		8.0	15.0	36.0	16.7	25.5
1920	1921	0.800		9.5	15.0	36.0	17.3	25.5
1921	1922	0.800		9.5	15.0	36.0	17.3	25.5
1922	1923	0.800		9.5	15.0	36.0	17.4	25.5
1923	1924	0.800		9.5	15.0	36.0	17.4	25.5
1924	1925	0.800		9.5	15.0	36.0	17.5	25.5
1925	1926	1.200		9.5	15.0	36.0	17.5	25.5
1926	1927	1.200		9.5	15.0	36.0	17.6	25.5
1927	1928	1.200		9.5	15.0	36.0	17.6	25.5
1928	1929	1.200		9.5	15.0	36.0	17.6	25.5
1929	1930	1.200		9.5	15.0	36.0	17.6	25.5
1930	1931	1.200		8.0	15.0	36.0	17.1	25.5
1931	1932	1.200		8.0	15.0	36.0	17.0	25.5
1932	1933	1.200		8.0	15.0	36.0	17.1	25.5
1933	1934	1.200		8.0	15.0	36.0	17.3	25.5
1934	1935	1.200		8.0	15.0	36.0	17.2	25.5
1935	1936	1.200		9.5	15.0	36.0	17.7	25.5
1936	1937	1.200		35.0	40.0	70.0	44.9	55.0
1937	1938	1.000		13.0	25.0	50.0	27.0	37.5
1938	1939	1.000		16.0	28.0	50.0	29.0	39.0
1939	1940	5.000		20.0	40.0	65.0	38.9	52.5
1940	1941	5.000		25.0	40.0	65.0	40.1	52.5
1941	1942	3.000		30.0	48.0	72.0	46.6	60.0
1942	1943	3.000		30.0	48.0	72.0	46.6	60.0
1943	1944	3.000		36.0	54.0	74.0	51.8	64.0

1944	1945	3.000	36.0	54.0	74.0	51.8	64.0
1945	1946	10.000	36.0	55.0	67.0	50.1	61.0
1946							
1947	1947	4.800	65.0	70.0	75.0	68.9	72.5
1948	1948	10.325	82.0	85.0	85.0	83.9	85.0
1949	1949	15.000	65.0	75.0	85.0	72.5	80.0
1950	1950	25.000	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	54.5	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	44.6	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	49.6	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	53.1	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	47.0	58.5
1977	1977		41.4	49.5	67.5	48.5	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: Official tax year refers to the year in which the income tax is collected. Year income earned refers to the years the income is actually earned. From tax years 1887 to 1898, tax is based on average income from the three previous years. From 1899 to 1946, tax is assessed based on previous year income. From 1947 on, the income tax becomes pay-as-you-earn, and tax is based on incomes in current year.

Incomes earned in 1946 taxed according to special schedule, no statistics reported (see Shiomi, p. 69).

For years, 1899-1925: income tax based on estimated income (not on income reported by the taxpayers).

The tax unit is the family from 1887 to 1949. In 1950, the income tax shifts to an individual base system (following Shoup commission).

(Source is the History of the Income Tax in Japan, 1887-1987, in Japanese)

1947	20.39	8.11	5.68	2.37	0.67	12.28	2.43	3.31	1.70	0.67
1948	22.74	8.70	5.85	2.30	0.61	14.04	2.85	3.55	1.69	0.61
1949	24.48	8.92	5.61	2.05	0.52	15.56	3.31	3.56	1.53	0.52
1950	22.22	8.18	5.23	1.85	0.45	14.03	2.96	3.38	1.40	0.45
1951	20.64	7.59	4.98	1.97	0.56	13.05	2.61	3.01	1.40	0.56
1952	21.29	7.92	5.23	2.06	0.57	13.37	2.69	3.17	1.49	0.57
1953	20.04	7.44	4.94	1.92	0.50	12.59	2.50	3.02	1.42	0.50
1954	19.23	7.04	4.67	1.81	0.47	12.19	2.38	2.86	1.35	0.47
1955	18.29	6.69	4.46	1.74	0.45	11.59	2.23	2.72	1.29	0.45
1956	19.14	7.24	4.86	1.89	0.49	11.90	2.38	2.97	1.40	0.49
1957	19.40	7.44	5.04	2.01	0.53	11.97	2.40	3.03	1.48	0.53
1958	19.27	7.43	5.03	2.02	0.53	11.84	2.40	3.01	1.49	0.53
1959	19.70	7.70	5.26	2.10	0.53	12.00	2.44	3.16	1.57	0.53
1960	20.11	7.97	5.39	2.19	0.57	12.14	2.58	3.20	1.62	0.57
1961	20.53	8.43	5.81	2.34	0.62	12.10	2.63	3.47	1.72	0.62
1962	20.88	8.62	5.89	2.36	0.62	12.26	2.73	3.53	1.74	0.62
1963	20.63	8.40	5.69	2.31	0.60	12.23	2.71	3.38	1.70	0.60
1964	20.51	8.36	5.63	2.21	0.58	12.15	2.73	3.42	1.63	0.58
1965	19.73	7.84	5.24	2.04	0.53	11.89	2.61	3.19	1.52	0.53
1966	19.17	7.56	5.04	1.94	0.49	11.61	2.51	3.10	1.45	0.49
1967	19.02	7.43	4.98	1.93	0.48	11.59	2.44	3.05	1.45	0.48
1968	19.13	7.49	5.01	1.91	0.47	11.65	2.47	3.10	1.45	0.47
1969	20.22	8.00	5.29	1.93	0.47	12.21	2.71	3.36	1.46	0.47
1970	20.89	8.30	5.52	2.06	0.57	12.59	2.78	3.46	1.49	0.57
1971	22.25	8.73	5.71	2.03	0.66	13.52	3.03	3.68	1.37	0.66
1972	22.25	8.48	5.40	1.69	0.47	13.77	3.09	3.70	1.23	0.47
1973	22.28	8.13	5.39	2.36	0.93	14.14	2.74	3.03	1.43	0.93
1974	22.42	8.18	5.25	2.03	0.66	14.25	2.93	3.22	1.38	0.66
1975	22.65	8.27	5.39	2.08	0.72	14.38	2.87	3.31	1.36	0.72
1976	22.33	7.86	4.96	1.75	0.40	14.48	2.90	3.21	1.35	0.40
1977	21.79	7.65	4.83	1.69	0.39	14.14	2.82	3.14	1.30	0.39
1978	21.46	7.64	4.82	1.68	0.38	13.83	2.82	3.13	1.30	0.38
1979	21.88	7.91	5.12	1.82	0.42	13.96	2.80	3.30	1.40	0.42
1980	21.83	7.88	5.12	1.83	0.42	13.95	2.76	3.28	1.42	0.42
1981	21.87	7.81	5.08	1.77	0.40	14.06	2.73	3.32	1.37	0.40
1982	21.78	7.71	5.07	1.80	0.44	14.06	2.65	3.27	1.36	0.44
1983	21.95	7.67	4.94	1.68	0.38	14.28	2.73	3.27	1.30	0.38
1984	21.68	7.54	4.88	1.64	0.38	14.14	2.66	3.24	1.26	0.38
1985	21.45	7.49	4.82	1.61	0.38	13.96	2.67	3.21	1.23	0.38
1986	21.66	7.63	4.88	1.64	0.42	14.03	2.75	3.24	1.22	0.42
1987	21.92	7.91	5.07	1.72	0.53	14.01	2.85	3.34	1.19	0.53
1988	21.45	7.70	4.86	1.65	0.54	13.75	2.85	3.21	1.11	0.54
1989	21.85	8.03	5.17	1.88	0.74	13.82	2.86	3.29	1.14	0.74
1990	22.09	8.25	5.36	2.11	0.89	13.84	2.89	3.26	1.22	0.89
1991	21.75	7.82	5.04	1.89	0.76	13.93	2.78	3.15	1.13	0.76
1992	21.27	7.42	4.82	1.73	0.53	13.85	2.61	3.09	1.20	0.53
1993	21.08	7.33	4.74	1.68	0.51	13.75	2.59	3.07	1.17	0.51
1994	21.38	7.27	4.64	1.68	0.51	14.11	2.63	2.96	1.17	0.51
1995	21.83	7.47	4.80	1.70	0.49	14.36	2.67	3.11	1.21	0.49
1996	22.28	7.64	4.89	1.77	0.52	14.64	2.75	3.12	1.25	0.52
1997	22.24	7.54	4.81	1.75	0.47	14.70	2.73	3.06	1.28	0.47
1998	22.60	7.73	4.95	1.79	0.46	14.87	2.78	3.16	1.33	0.46
1999	23.15	7.94	5.05	1.82	0.49	15.22	2.89	3.23	1.34	0.49
2000	23.86	8.38	5.43	2.09	0.59	15.48	2.95	3.34	1.51	0.59
2001	24.45	8.63	5.66	2.19	0.62	15.82	2.97	3.46	1.58	0.62
2002	24.25	8.56	5.59	2.15	0.58	15.69	2.97	3.44	1.57	0.58

Notes: Computations by authors based on tax return statistics. See Appendix Section B for details.

Series for Top 5-1% are not complete because the tax return population does not cover those groups in all years.

Income defined as sum of all sources of income: labor income, business income, farm income, land and property rentals, dividend income.

Income definition excludes realized capital gains.

Series are corrected upward for years where not all dividend income is included in taxable income.

Table 5: Reference totals for wage earners, wage income, and inflation, 1948-2002

Years		Regular Wage Earners			Income		Inflation
(1a)	(1b)	(2)	(3)	(4)	(7)	(8)	(9)
Year	Year (Japan)	Number of Wage earners in Wage Survey (‘000s)	Returns Wage Survey (‘000s)	(2)/(1) (%)	Total wage income (billions 2002 Yens)	Average wage income (‘000s 2002 yens)	CPI (2002 base 100)
1948	23	10,998			6,472	588	10.58
1949	24	10,722	1,410	13.15	6,798	634	13.93
1950	25	10,920	5,114	46.83	9,006	825	12.99
1951	26	11,827	6,463	54.65	11,338	959	15.19
1952	27	12,267	6,838	55.74	12,951	1,056	16.03
1953	28	14,330	6,939	48.42	14,590	1,018	17.08
1954	29	14,810	7,625	51.49	15,031	1,015	18.12
1955	30	15,370	8,219	53.47	16,602	1,080	18.02
1956	31	16,660	8,745	52.49	18,918	1,136	18.12
1957	32	17,790	9,431	53.01	20,794	1,169	18.65
1958	33	18,860	10,268	54.44	22,706	1,204	18.54
1959	34	19,020	10,856	57.08	25,106	1,320	18.75
1960	35	20,220	11,715	57.94	28,211	1,395	19.49
1961	36	21,210	12,962	61.11	32,251	1,521	20.43
1962	37	22,190	14,106	63.57	35,566	1,603	21.90
1963	38	23,240	15,250	65.62	38,876	1,673	23.47
1964	39	24,080	16,123	66.96	43,351	1,800	24.41
1965	40	25,040	17,170	68.57	47,146	1,883	25.98
1966	41	26,160	18,277	69.87	50,979	1,949	27.34
1967	42	27,670	19,773	71.46	56,392	2,038	28.39
1968	43	28,690	20,676	72.07	62,197	2,168	29.96
1969	44	29,190	22,066	75.59	69,589	2,384	31.53
1970	45	30,230	24,244	80.20	77,697	2,570	33.94
1971	46	31,230	26,480	84.79	86,793	2,779	35.93
1972	47	31,620	27,096	85.69	96,653	3,057	37.61
1973	48	32,870	28,181	85.73	108,658	3,306	42.01
1974	49	33,220	29,895	89.99	110,901	3,338	52.28
1975	50	33,470	30,321	90.59	114,415	3,418	58.46
1976	51	34,020	31,068	91.32	117,435	3,452	64.01
1977	52	34,260	31,151	90.93	120,527	3,518	69.14
1978	53	34,360	32,113	93.46	125,288	3,646	71.66
1979	54	35,040	32,534	92.85	129,837	3,705	74.28
1980	55	35,850	33,361	93.06	130,085	3,629	80.25
1981	56	36,460	33,659	92.32	132,481	3,634	84.12
1982	57	36,930	33,996	92.06	135,966	3,682	86.43
1983	58	37,730	34,928	92.57	140,099	3,713	88.00
1984	59	38,270	35,306	92.26	144,151	3,767	89.99
1985	60	38,660	36,938	95.55	147,104	3,805	91.77
1986	61	40,000	37,287	93.22	152,292	3,807	92.19
1987	62	40,946	37,670	92.00	163,155	3,985	91.98
1988	63	41,215	37,918	92.00	169,149	4,104	92.40
1989	1	41,815	38,470	92.00	174,283	4,168	94.60
1990	2	43,160	39,307	91.07	181,341	4,202	97.53
1991	3	44,086	40,339	91.50	189,337	4,295	100.68
1992	4	44,834	41,247	92.00	194,137	4,330	102.35
1993	5	46,238	42,770	92.50	195,653	4,231	103.51
1994	6	47,017	43,726	93.00	198,958	4,232	104.03
1995	7	47,090	44,395	94.28	201,514	4,279	103.71
1996	8	47,256	44,895	95.00	205,684	4,353	103.71
1997	9	47,422	45,265	95.45	208,182	4,390	104.65
1998	10	47,490	45,446	95.70	205,426	4,326	104.54
1999	11	46,900	44,984	95.91	202,948	4,327	103.82
2000	12	46,840	44,939	95.94	207,272	4,425	102.47
2001	13	46,770	45,097	96.42	208,644	4,461	100.91
2002	14	46,040	44,724	97.14	205,981	4,474	100.00

Notes: Number of wage earners is total number of regular wage earners (excludes temporary and daily employees), based on labor force survey.

Sources: Historical Statistics of Japan (Table 3.8, male and female regular wage earners) for period 1948-1985,

Japan statistical yearbook, Table 16.3 for period 1985-2002 (interpolated every 5 years between 1985 and 1995).

Number of wage earners (based on income tax withholding) from Report on Salaries and Wages in Private Firms (1952-2002)

The report includes only regular workers (excludes temporary and daily workers), excludes all government employees, and excludes employees in firms where no employee has amount of withholding income tax to pay.

Total wage income defined as 90% of wages and salaries from National Accounts (includes bonuses, stockoptions (to check))

Sources: Historical Statistics of Japan up to 1985, Table 13-13,

Japan statistical yearbook, Table 3.6 for period 1990-2001 (interpolated between 1985 and 1990).

CPI from Japan Statistical Yearbook, Table 17-6 (Basic Group Index).

In 2002, on average, 1000 Yens = \$8 or \$1 = 125 Yens

Table 6: Top Wage Income Shares in Japan, 1951-2002

	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)
1924	24.82	15.82	5.52	3.53	1.23		9.00	10.31	1.99	2.30	
1927	25.16	15.99	5.47	3.46	1.18		9.17	10.52	2.01	2.28	
1933	28.51	18.20	6.31	4.02	1.39		10.30	11.90	2.29	2.63	
1949	23.02	14.51	4.85	3.02	0.97		8.51	9.66	1.83	2.04	
1951	22.71	14.39	4.73	2.92	0.95	0.18	8.32	9.66	1.81	1.97	0.77
1952	24.16	15.46	5.34	3.34	1.09	0.22	8.70	10.12	2.00	2.25	0.87
1953	24.52	15.75	5.45	3.42	1.14	0.22	8.77	10.30	2.03	2.27	0.92
1954	24.87	15.91	5.49	3.45	1.14	0.23	8.96	10.42	2.04	2.31	0.91
1955	24.03	15.32	5.30	3.32	1.09	0.22	8.71	10.02	1.98	2.23	0.88
1956	25.63	16.57	5.85	3.62	1.23	0.24	9.06	10.73	2.22	2.39	0.99
1957	26.53	17.11	6.03	3.74	1.28	0.25	9.42	11.08	2.28	2.47	1.03
1958	26.55	17.18	6.08	3.81	1.29	0.26	9.37	11.10	2.27	2.52	1.03
1959	26.71	17.33	6.24	4.07	1.33	0.25	9.38	11.09	2.17	2.74	1.08
1960	26.89	17.41	6.11	3.88	1.32	0.26	9.48	11.29	2.23	2.56	1.06
1961	26.91	17.59	6.46	4.15	1.32	0.26	9.32	11.13	2.31	2.83	1.06
1962	26.53	17.50	6.32	4.03	1.27	0.25	9.04	11.17	2.30	2.75	1.02
1963	26.10	16.94	6.07	3.81	1.28	0.26	9.15	10.87	2.26	2.53	1.02
1964	25.74	16.68	5.92	3.68	1.22	0.23	9.06	10.76	2.24	2.46	0.98
1965	24.70	15.92	5.53	3.39	1.12	0.22	8.78	10.40	2.14	2.27	0.90
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	15.43	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	14.34	4.33	2.57	0.75	0.13	9.20	10.01	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	23.28	14.04	4.32	2.59	0.78	0.13	9.24	9.72	1.73	1.81	0.64
1979	23.92	14.52	4.47	2.69	0.84	0.16	9.39	10.05	1.78	1.86	0.67
1980	23.98	14.56	4.47	2.72	0.88	0.19	9.43	10.08	1.76	1.84	0.69
1981	23.98	14.66	4.51	2.72	0.84	0.16	9.33	10.14	1.79	1.88	0.68
1982	23.58	14.39	4.39	2.65	0.84	0.17	9.19	10.01	1.73	1.82	0.67
1983	23.90	14.64	4.44	2.68	0.82	0.16	9.26	10.20	1.76	1.86	0.66
1984	24.03	14.73	4.50	2.72	0.85	0.17	9.30	10.23	1.78	1.88	0.68
1985	24.49	14.96	4.55	2.75	0.86	0.17	9.53	10.41	1.80	1.89	0.69
1986	25.14	15.36	4.63	2.76	0.86	0.17	9.79	10.73	1.87	1.90	0.68
1987	24.77	15.15	4.63	2.79	0.87	0.17	9.62	10.53	1.83	1.93	0.70
1988	24.92	15.19	4.62	2.73	0.83	0.16	9.73	10.58	1.89	1.90	0.67
1989	25.18	15.34	4.67	2.77	0.87	0.17	9.84	10.66	1.91	1.89	0.70
1990	25.59	15.60	4.78	2.84	0.90	0.17	9.98	10.82	1.94	1.95	0.72
1991	25.50	15.59	4.73	2.84	0.90	0.17	9.91	10.86	1.89	1.95	0.72
1992	25.50	15.58	4.71	2.83	0.91	0.18	9.92	10.87	1.88	1.92	0.73
1993	25.57	15.58	4.70	2.81	0.88	0.17	9.99	10.88	1.89	1.93	0.71
1994	25.78	15.59	4.72	2.84	0.92	0.18	10.19	10.87	1.88	1.92	0.74
1995	25.76	15.54	4.73	2.85	0.89	0.17	10.22	10.80	1.88	1.96	0.72
1996	25.35	15.22	4.62	2.79	0.89	0.18	10.13	10.60	1.83	1.90	0.70
1997	25.23	15.09	4.56	2.76	0.88	0.18	10.14	10.53	1.81	1.87	0.71
1998	25.73	15.53	4.83	2.95	0.94	0.18	10.19	10.70	1.87	2.01	0.76
1999	25.89	15.73	4.89	3.00	1.00	0.21	10.16	10.84	1.89	2.01	0.78
2000	25.73	15.67	4.95	3.06	1.03	0.22	10.06	10.73	1.88	2.03	0.81
2001	25.67	15.65	5.01	3.12	1.06	0.24	10.02	10.64	1.89	2.06	0.83
2002	25.58	15.65	5.01	3.12	1.06	0.23	9.94	10.64	1.89	2.06	0.83

Notes: Computations for years 1951-2002 by authors based on Report on Salaries and Firms in the private sector. See Appendix Section C for details. Universe is all regular employees in the private sector (excludes daily and temporary employees and all government employees). Wage Income defined as wages, salaries, and bonuses. Computations for 1924-1950 are based on the monthly labor income survey.

Table 7: Individual Income Taxation of Wage Income in Japan, 1950-2002

Tax Year	Basic exemption per tax unit ('000s of nominal Yens)	Exemption for each dependent ('000s of nominal Yens)	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		
(0)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
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: Official tax year refers to the year in which the income tax is collected. Year income earned refers to the years the income is actually earned. year income. From 1947 on, the income tax becomes pay-as-you-earn, and tax is based on incomes in current year.

In 1950, the income tax shifts to an individual base system (following Shoup commission).

(Source is the History of the Income Tax in Japan, 1887-1987, in Japanese)

Marginal tax rates are estimated for a husband with non-working spouse and two dependent children and assuming that all income is from employment income. The marginal tax rates take into account the graduated employment income deduction.

Marginal tax rates do not include local income taxes (prefectural and municipal) and social insurance contributions.

Sources: 100 years of income tax in Japan before 1989. From 1989-2002, Ishii (2001), p. 82, and OECD Taxing Wages, 1998 on.