

THE EVOLUTION OF INCOME CONCENTRATION IN JAPAN, 1886–2005: EVIDENCE FROM INCOME TAX STATISTICS

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Abstract—This paper studies the evolution of income concentration in Japan from 1886 to 2005 by constructing long-run series of top income shares and top wage income shares, using income tax statistics. We find that (i) income concentration was extremely high throughout the pre-WWII period during which the nation underwent rapid industrialization; (ii) a drastic de-concentration of income at the top took place in 1938–1945; (iii) income concentration remained low during the rest of the century but shows some sign of increase in the last decade; and (iv) top income composition in Japan has shifted dramatically from capital income to employment income over the course of the twentieth century. We attribute the precipitous fall in income concentration during WWII primarily to the collapse of capital income due to wartime regulations and inflation. We argue that the change in the institutional structure under the occupational reforms made the one-time income de-concentration difficult to reverse. In contrast to the sharp increase in wage income inequality observed in the United States since 1970, the top wage income shares in Japan have remained relatively stable over the last thirty years. We show that the change in technology or tax policies alone cannot account for the comparative experience of Japan and the United States. Instead we suggest that institutional factors such as internal labor markets and union structure are important determinants of wage income concentration.

I. Introduction

FOLLOWING the seminal work by Kuznets (1955), economists have devoted much effort to analyze the relationships between income inequality and economic growth.¹ Economics historians, in particular, have studied the evolution of income and wealth inequality during the process of industrialization in leading nations such as Britain or the United States (for example, Soltow, 1968, 1969; Williamson & Lindert, 1980; Williamson, 1985; Lindert, 1986, 2000). Those studies, however, were often hampered by the absence of long-run homogeneous data to document inequality. To overcome this limitation, a number of recent studies have used income tax statistics to generate top income shares series for several European and Anglo-Saxon countries that provide the first consistent series of inequality measure that cover a large part of the twentieth century (Atkinson & Piketty, 2007).

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

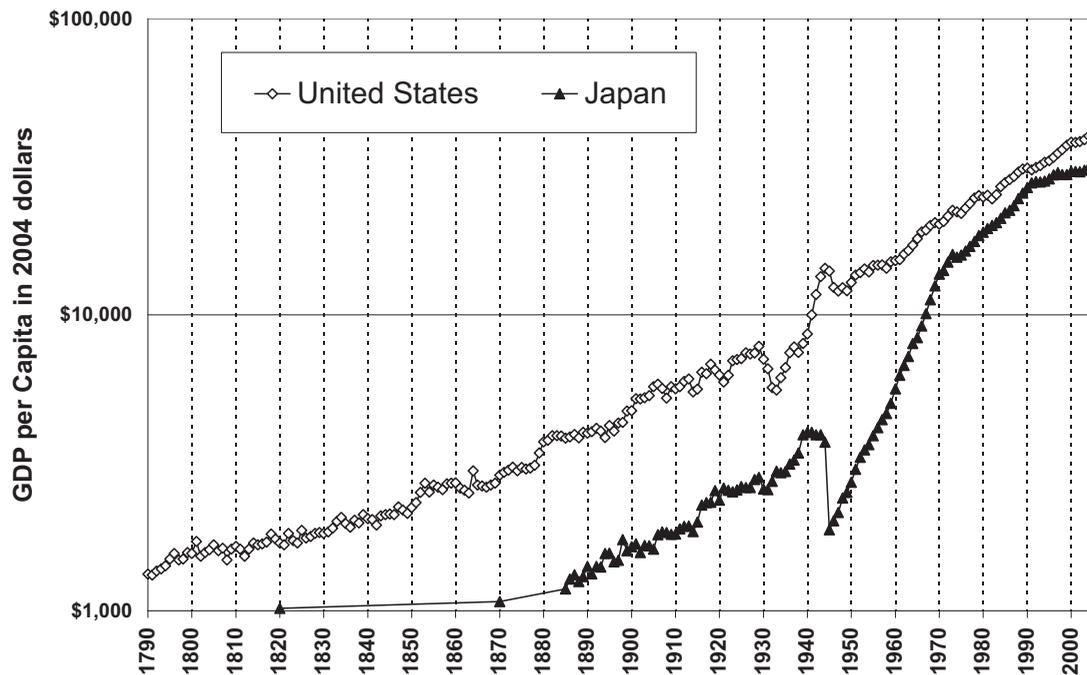
The primary objective of this paper is to construct homogeneous and continuous top income shares series for Japan and study income concentration in Japan from long-run historical and comparative perspectives. The data for Japan are of particular interest, not only because Japan is the world's second largest economy after the United States today, but also because we can construct top income shares series covering the full span of modern economic growth for Japan. Indeed, Japan's process of industrialization was compressed within a short time period. After the 1868 Meiji Restoration, the Japanese economy took off in the 1880s, and the nation underwent three phases of industrial revolution—from textiles, heavy industries, to high-technology industries—within less than 100 years. To illustrate this point, figure 1 depicts the real GDP per capita in Japan, 1820–2005, against that in the United States, 1790–2005. Japan's GDP per capita in 1890 was at the level of 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 less-developed countries today. Japan had caught up quickly since then, and now has a GDP per capita only slightly lower than the United States. Real GDP per capita in Japan grew at an annual compound rate of 2.7% in 1886–1940 and at 4.6% in 1948–2005.

As the Japanese government introduced a comprehensive income tax system in 1887—a remarkably early date by international standards—we can trace the evolution of income concentration during the entire process of industrialization using the Japanese tax statistics.² Because the top income shares series compiled so far for the Western countries span only part of their industrialization process, the Japanese data provide us with a unique opportunity to examine the relationship between income concentration and modern economic growth. To explore the causes of dynamic changes in income concentration and provide additional evidence, we also compile the series of top income composition, top estates and its composition, top wage income shares, and marginal tax rates for top wage income earners, all based on tax statistics.

We obtain three main findings. First, income concentration at the top 1% income group in Japan was extremely high during the pre-WWII period with some short-term fluctuations. Top income shares declined abruptly and precipitously during WWII and remained remarkably low for the rest of the twentieth century albeit a sign of increase in the last decade. Our data thus indicate that the defining

² By contrast, comprehensive income tax was instituted in the United Kingdom in 1909, in the United States in 1913, and in France in 1914, when the industrial revolution was already well under way in these countries.

FIGURE 1.—REAL GDP PER CAPITA IN JAPAN AND THE UNITED STATES, 1790–2005



Source: U.S. from Johnston and Williamson (2005) and national accounts; Japan from Maddison (1995) and national accounts.

event for the evolution of income concentration in Japan was a historical accident, namely the Second World War, which was accompanied by large-scale government interventions, inflation, and war destruction.

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

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

The rest of the paper is organized as follows. Section II summarizes the preceding literature on income inequality in Japan. Section III describes the data and estimation methods. Section IV presents our findings from the top income shares series, 1886–2005. Section V investigates the causes of the observed changes in income concentration, using top income composition and top estates series. Section VI presents the top wage income shares series, 1929–2005, and offers comparative analysis of the United States and Japan. Section VII provides comparative historical perspectives and concludes. The description of our data and methods, as well as a complete set of results (tables and figures numbered as A0, A1, . . . , D2), is presented in the supplemental appendix, which is available online at <http://www.mitpressjournals.org/doi/suppl/10.1162/rest.90.4.713>.

II. Income Inequality in Japan Past and Present

By international standards, Japan is widely perceived as a society with relatively low income inequality. Although comparing income statistics across nations has been difficult and should be interpreted with caution, recent OECD reports (Atkinson, Rainwater, & Smeeding, 1995; Burniaux et al., 1998) and Japanese government studies (Nishizaki, Yamada, & Ando, 1998; Kokumin Seikatsukyoku, 1999) provide better comparative data. As panel A of table 1 shows, as of the late 1980s, Japan's Gini coefficient of the distribution of household income *before* tax and government transfers was one of the lowest among major industrial nations. When we consider the distribution of income *after*

TABLE 1.—INCOME INEQUALITY IN OECD COUNTRIES

A. Income Before Tax and 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

B. Income After Tax and Transfers		
Country	Year	Gini Coefficients
U.S.	1986	0.347
Switzerland	1982	0.346
Ireland	1987	0.341
U.K.	1986	0.323
Italy	1986	0.321
France	1984	0.311
Canada	1987	0.305
Japan	1985	0.298
Sweden	1987	0.281
Germany	1984	0.277
Netherlands	1987	0.266
Belgium	1987	0.260
Finland	1987	0.255

Source: Nishizaki et al. (1998).

Source: Kokumin Seikatsukyoku (1999, chapter 3), and Atkinson et al. (1995, tables 4–10).

tax and government transfers, as one may expect, European welfare states ranked below Japan (see panel B). In other words, one of the distinct characteristics of contemporary Japan is its low income inequality in the absence of government redistribution. Recently, however, there have been growing concerns among Japanese people that income inequality is on the rise. Most notably, in his widely read book, Tachibanaki (1998) declared Japan as an equal society a “myth,” generating much debate among scholars, government officials, and the general public.³ When did Japan become the so-called equal society? And will Japan continue to be one as it enters the 21st century?

There is an extensive body of empirical work that examines the evolution of income equality in Japan.⁴ For the pre-WWII period, the lack of household survey data has been a major obstacle in measuring income inequality. Shiomi (1933) and Hayakawa (1951) instead used national and local income tax records to estimate the income distributions of all households in selected cities. Improving their methods and compiling comprehensive local income tax

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

⁴ For a comprehensive survey of income distributions in pre-WWII Japan, see Terasaki (1986) and Minami (1995, chapter 1). For the post-WWII period, see Mizoguchi and Takayama (1984, chapter 1), Mizoguchi and Terasaki (1995), and Yazawa (2004).

data, Minami (1995, 1998) estimated the income distributions of all households in Japan for selected years. Alternatively, Ono and Watanabe (1976) studied the long-run changes in income inequality, using several indirect measures such as urban-rural and intraindustry wage differentials. Otsuki and Takamatsu (1978) estimated the Pareto coefficients from 1887 to 1940 using the average and minimum household incomes based on the *Long-Term Economic Statistics* (Ohkawa et al., 1974).

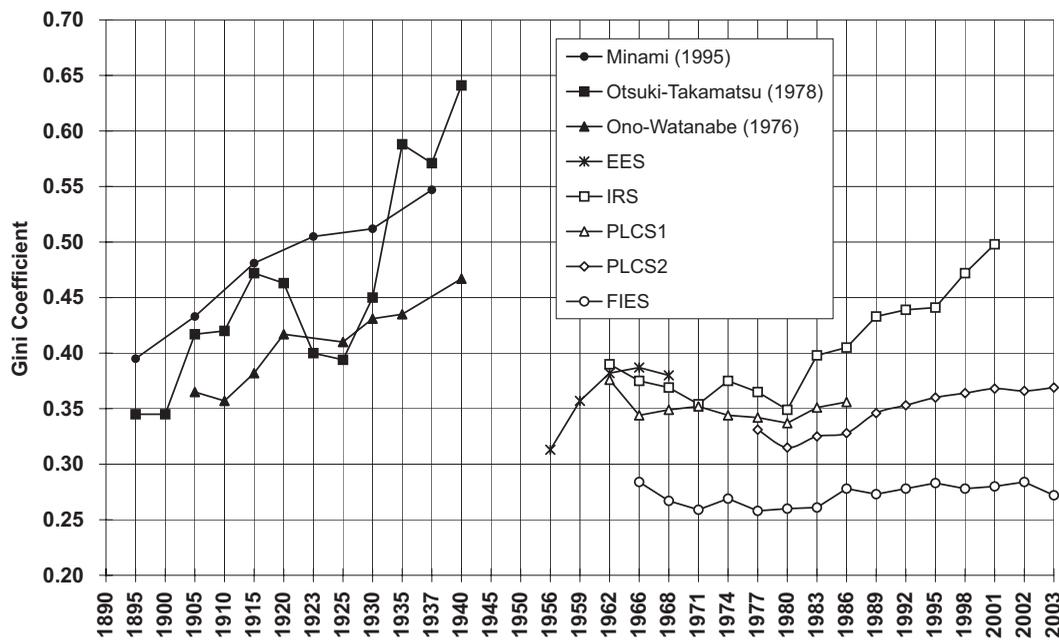
For the post-WWII period, several types of household survey data became available. Wada (1975) estimated the income distributions during the 1950s combining the *Employment Status Survey* and the *Farm Household Economics Survey*. Mizoguchi and Takayama (1984) and Mizoguchi and Terasaki (1995) used the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

Figure 2 summarizes the long-run changes in income inequality, measured by the Gini coefficient, based on the above studies. Although the estimates in a given year differ across studies, they display fairly coherent time trends. Namely, (i) income inequality in Japan rose sharply from 1890 to 1940; (ii) after WWII, it peaked around 1960, declined subsequently, and stabilized in the 1970s; and (iii) there has been an increase in income inequality since the 1980s, although scholars have disagreed over the extent of the increase and its causes.

It is important to note not only that there is no estimate between 1940 and 1955, but also that Gini coefficients before 1940 and after 1955 in figure 2 cannot be compared because of major data discontinuity. These limitations notwithstanding, the general consensus among historians based on mostly qualitative evidence is that income inequality dropped substantially between 1940 and 1955, presumably due to WWII or postwar occupational reforms, if not both (Mizoguchi & Terasaki, 1995, p. 61). One of the objectives of this study, therefore, is to compile new data that enable us for the first time to compare the level of inequality between the pre- and post-WWII periods and shed better light on the process of the alleged fall in income inequality. In addition, most of the pre-WWII studies provide the estimates only for selected years that may or may not be representative. Furthermore, since most studies are concerned with the income distribution of all households, we know relatively little about high-income groups.⁵ In particular, due to the problem of small sample and top-coding, household surveys cannot be used for a study of high-income earners.

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

FIGURE 2.—CHANGE IN INCOME INEQUALITY IN JAPAN, 1890–2003



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); Tachibanaki (1998, table 3-1); Ohtake (2005, table 1-1).
 Notes: Gini coefficient for income distribution (before tax and government transfers) of all Japanese households are reported. EES refers to Employment Status Survey; PLCS refers to People's Living Conditions Survey; FIES refers to Family Income and Expenditure Survey; and IRS refers to Income Redistribution Survey.

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

III. Data and Methodology

In this section, we describe briefly the nature of our data and the methods of estimation. A complete description can be found in the appendix. Our estimates of top income shares are based on income tax return statistics published annually by the Japanese tax administration since the introduction of national income tax in 1887.⁶ Typically, the statistics present the number of taxpayers, the amount of income reported by taxpayers, the amount of income tax

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

paid, and the composition of the reported income, all by income brackets.

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

Before 1950, the tax unit was “family” defined as a married couple (or a single household head) with cohabitating dependents. Incomes of family dependents in a single household were aggregated for tax purposes. Starting in 1950, the tax unit became “individual,” whereby spouses were taxed separately on their incomes. To produce homogeneous series over the entire period, we estimate top income shares using the individual tax unit for the pre-1950

⁷ We present results including reported realized capital gains in figure A2 in the appendix. See appendix section A.3.2 for a detailed discussion.

TABLE 2.—THRESHOLDS AND AVERAGE INCOMES FOR TOP INCOME GROUPS

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

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

period. For most years before 1950, the statistics by income brackets provide a breakdown of income into the income of household head and the income of dependents. According to these data, the latter is very small relative to the former (less than 5% of the former in general). Hence, we substitute household income for household head's income, which leads to a slight but minor upward bias in our estimates.

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

As the top tail of the income distribution is well approximated by a Pareto distribution, we estimate the Pareto coefficient for each year using the tabulations of taxpayers by income brackets. We then use simple parametric interpolation methods to estimate the thresholds and average income levels of top income groups. As table 2 presents, in 2005, the threshold income levels for the top 1% and 0.1% income groups in Japan were 13.8 million yen (or \$125,000) and 34.2 million yen (or \$311,000), respectively. The top 0.01% income group in the same year consisted of roughly 10,000 individuals who earned more than 88 million yen (or \$0.8 million), and their average income was almost 200 million yen (or \$1.8 million).

We estimate a top income share by dividing the amount of income accruing to a top income group by total personal income computed from National Accounts for 1930–2005 and from *Long-Term Economic Statistics* (Ohkawa et al., 1974) for 1886–1929.⁹ The total and average real incomes per adult from 1886 to 2005 are reported in table A0 in the

appendix. We convert current income to real income in 2002 yen, using the CPI deflator from *Long-Term Economic Statistics* (Ohkawa et al., 1967). Our top income shares estimates are reported in table A1 in the appendix.

We estimate the composition of income accrued to the top 1% group, using income composition statistics. For years in which composition data are reported by income brackets, we use a Pareto interpolation method to obtain the top 1% estimates. For years in which only aggregate composition data are published, we use these data. Our top income composition series are reported in table A2 in the appendix.

Next, we construct top estates series using estate tax return statistics published annually by the tax administration since 1905. Estates are defined as the sum of all properties (including real estate, household properties, business assets, stocks, bonds, deposits, cash, and other claims) net of debts and liabilities.¹⁰ Top estate groups are defined relative to the total number of adult deaths in Japan in each year obtained from official population statistics. Due to the difficulty in estimating total assets in Japan, the top estate series are expressed in the level (as opposed to the share) in 2002 yen using the CPI deflator. Our top estates estimates are reported in table B1 in the appendix.¹¹ We also provide estate composition series 1926–2005, using aggregate estate composition data, which are presented in table B2 in the appendix. Because estate compositions are not available by estate brackets, we cannot produce homogeneous series for top estate composition.

Finally, we compute top wage income shares using a similar methodology. For the post-WWII period, wage income data are compiled from the *Survey on Private Wages and Salaries* published by the tax administration annually since 1951.¹² The survey covers virtually all employees in

⁸ We cannot extrapolate our top 5% income share estimates to the full period because of data limitations. See table A0 in the appendix for the relevant information.

⁹ Note that estimates for total personal income before 1930 are less reliable than after 1930, introducing potential biases in our estimates. See appendix section A.2 for a discussion and a sensitivity analysis.

¹⁰ Because estate value reported in the statistics is before standard deductions but after special tax reductions, our data underestimate the true estate value. See appendix section B.1 for a discussion.

¹¹ Our top estates for 1905–1957 are imprecisely estimated because of the difficulty in reconstructing estate statistics by actual years of death (as opposed to filing year); see appendix section B for a detailed discussion.

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

the private sector who worked throughout a year but excludes government employees. Wage income in our definition includes wages, salaries, bonuses, allowances, and taxable part of noncash compensation, but excludes retirement benefits. Top groups are defined relative to the total number of regular employees in the private sector in Japan. Our estimates of the total wage income denominator are based on total salaries from national accounts. For the pre-WWII period, we use salary and bonus data reported in the income tax return statistics for the fiscal years 1930–1945. Top groups are defined relative to the total number of regular employees in Japan. The total wage income denominators are based on total salaries and wages from national accounts.¹³ Table C1 in the appendix presents the number of wage income earners and total wage income from 1929 to 2005. Our estimates for top wage income shares for 1929–2005 are reported in table C2 in the appendix. We also estimate marginal tax rates for the top wage income groups from 1951 to 2005. The estimates are made for an individual with a nonworking spouse and two dependent children, assuming that all income is employment income. Our estimates include standard deductions but exclude local taxes and social insurance contributions. The marginal tax rates series are reported in table C3 in the appendix.

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

First, after the introduction of an extensive withholding system (*gensen choshu seido*) in 1949, most individuals with only employment or pension income were no longer required to file self-assessed income tax returns. As a result, even though most income earners pay income taxes in Japan, only a minority of taxpayers file tax returns. Fortunately, as mentioned above, the Japanese tax administration publishes wage income tax statistics from the withholding system that include virtually all wage earners in the private sector. We thus use these data to complement the self-assessed income tax statistics to produce top income shares series.¹⁴

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

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

IV. Top Income Shares in Japan, 1886–2005

A. Historical Background

During the early Meiji period, Japan was predominantly a rural society based on agriculture and handicraft industry. After the fiscal reform that resulted in the Matsukata deflation in 1881–1884, the Japanese economy began to modernize and grow in earnest (see figure 1). Large-scale corporations in modern industries, such as railroads and textiles, were formed for the first time in the late 1880s. As a result, most historians regard 1886 as the starting year of the industrial revolution in Japan (Minami, 1994; Miyamoto & Abe, 1995, chapter 6). The proportion of employment in agriculture declined from 78% in 1876 to 65% in 1900; and fell further to 51% in 1920, and 42% in 1940 (NRUS, 1959). After WWII, it declined even faster from 44% in 1950, to 16% in 1973, and 7.3% in 1995.

To provide an overview of our sample period figure 3 depicts the average real income per adult and the CPI in Japan from 1886 to 2005. The average real income more than quadrupled from 1886 to 1938, the peak year in the pre-WWII period. It grew particularly fast from 1887 to the end of Sino-Japanese War (1894–1895), during WWI (1914–1918), and during the period of military expansion (1932–1938). Then the average income declined sharply toward the end of WWII (1939–1945), which 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 1944–1948 where consumer prices rose by 5,300% during the period of four years. After the postwar U.S. occupation (1945–1952), the average real income recovered quickly, surpassing the 1938 level by 1959. During the period of high economic growth in 1955–1973, real average incomes increased by a factor of six, achieving one of the fastest sustained economic growths in modern history. After the 1973 oil crisis, the income grew at a slower pace in 1975–1990. Since the collapse of the asset bubble in 1991, the average real income has declined for a decade. Except for the brief period during the oil crisis, the inflation rate has been low throughout the post-1950 period in Japan.

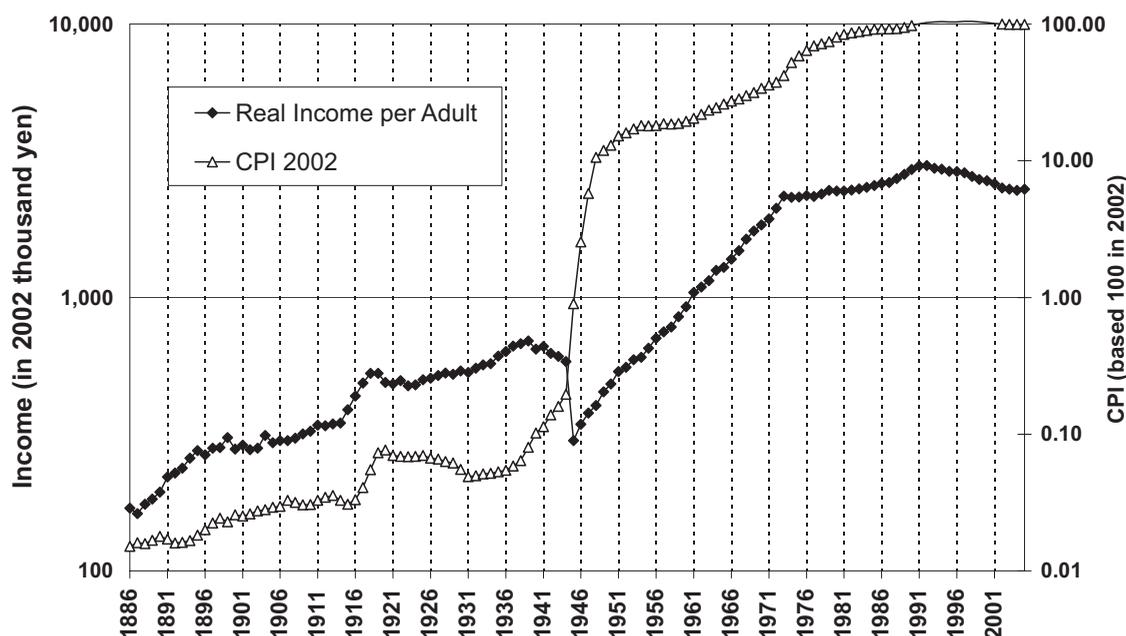
B. Trends in Top Income Shares

Figure 4 reports our estimates of the top 1% income share from 1886 to 2005 and the next 4% (denoted as “top

¹³ Due to data limitations, our estimates for 1929–1944 are based on restrictive assumptions. See appendix section C for a detailed discussion.

¹⁴ See appendix section A.3.1 for a description of our method.

FIGURE 3.—AVERAGE REAL INCOME AND CONSUMER PRICE INDEX IN JAPAN, 1886–2005



Source: Appendix table A0.

5%–1%”) income share for 1907–1924, 1937–1938, and 1947–2005. We first focus on the top 1% income share series. Between 1886 and 1938, the top 1% adult population in Japan received as much as 14% to 20% of total personal income. The share, however, fell abruptly and precipitously from 1938 to 1945 from 20% to 6.4%, and remained relatively stable at around 8% throughout the rest of the twentieth century. There are fairly large fluctuations in the top 1% income share before WWII: after a steep fall in 1886–1891,¹⁵ it declined temporarily during the Sino-Japanese War (1894–1895), the Russo-Japanese War (1904–1905), WWI (1914–1918), and the Great Depression (1929–1931), each time followed by an immediate recovery. As figure 1 shows, the 1929 depression in Japan, in particular, was shorter and far milder than in the United States and other industrial countries (Moriguchi, 2003). In terms of the long-run trend, the top 1% income share was high throughout the initial stage of industrialization in 1900–1938. Similarly, the extraordinary economic growth from 1950 to 1973 was accompanied by little change in the top 1% income share. Finally, consistent with the recent concerns over rising income inequality, we observe a steady increase in the top 1% income share in Japan over the last ten years from 7.3% in 1995 to 9.2% in 2005. Although the 2005 number is still low by the pre-WWII standard, it is the highest level since the end of WWII.

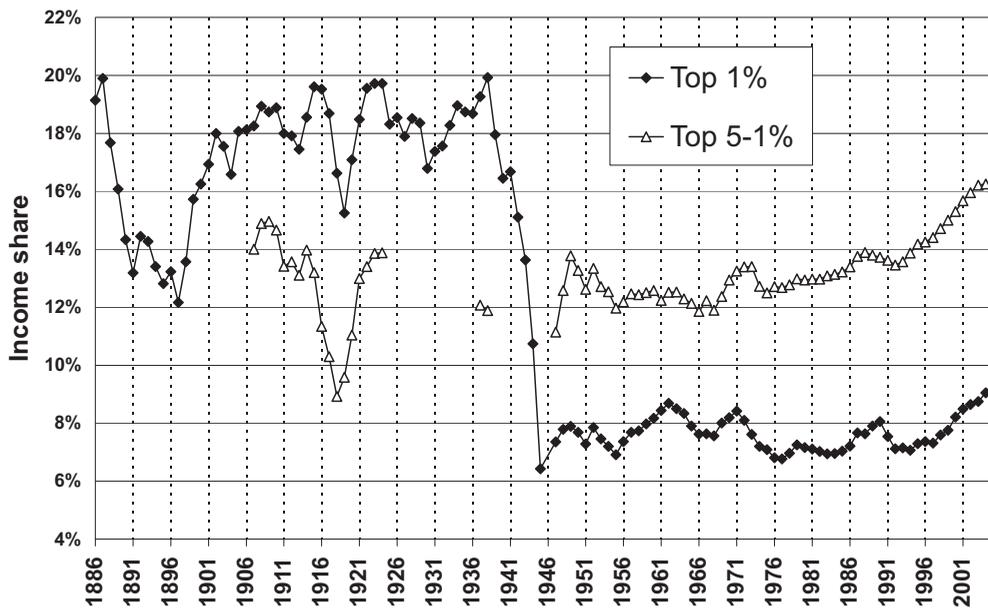
The next 4% income share series displays a substantially different pattern. During the pre-WWII period, although

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

Figure 5 demonstrates this point further by decomposing the top percentile into three subgroups: the top 0.1%, the next 0.4% (“top 0.5%–0.1%”), and the bottom half of the top 1% (“top 1%–0.5%”). Although the three series exhibit similar overall patterns, the *higher* income group experienced the *earlier* and *larger* fall in their shares during WWII. While the share of the top 1%–0.5% group declined by 50% (from 4.0% to 2.0%) in 1941–1945, for the next 0.4% group it fell by more than 60% (from 6.7% to 2.5%) in 1938–1945, and for the top 0.1% group it fell by 80% (from 9.2% to 1.9%) in 1938–1945. The fall for the top 0.01% income share is even more dramatic: it collapsed from 3.8% to 0.6% in 1938–1945 and has remained around the same level for the rest of the twentieth century with only a modest increase in the last several years (see table A1 in the appendix and figure 9). It offers a sharp contrast to the pre-WWII period during which the top 0.01% income share shows a positive trend, claiming an increasing share of total personal income.

¹⁵ The estimates for early years are less reliable compared to later years due to larger measurement errors in assessing income by the tax administration. See appendix 1.2.

FIGURE 4.—TOP 1% AND NEXT 4% INCOME SHARES IN JAPAN, 1886–2005



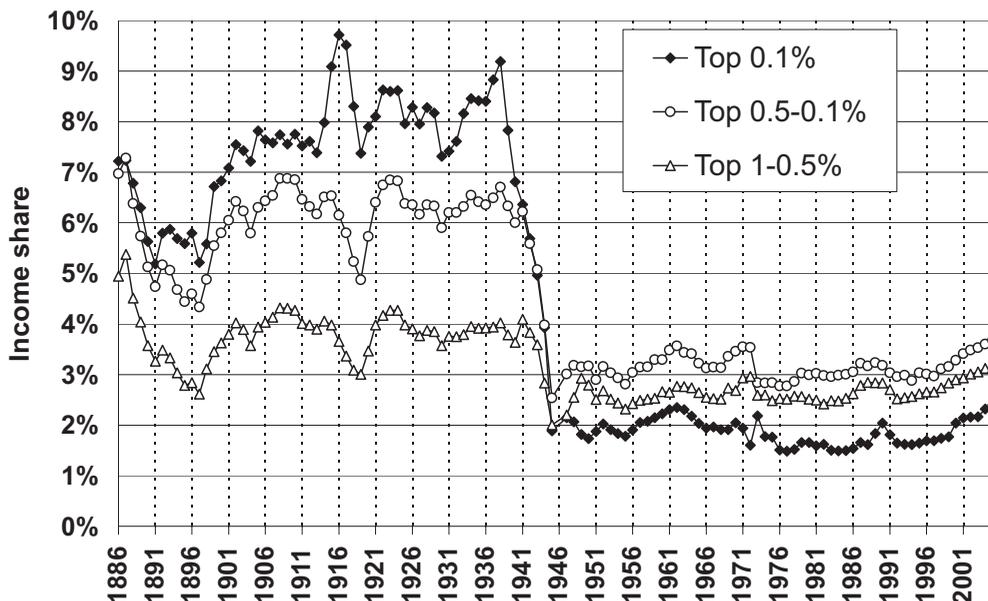
Source: Appendix table A1.

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

Finally, to provide a comparative perspective, figure 6 plots the top 0.1% income share series in Japan with those in the United States and France, estimated respectively by Piketty and Saez (2003) and Piketty (2003), using the same methodology. The data indicate that the top 0.1% income share in Japan was roughly comparable to, if not higher than in, the United States or France during the interwar period. Recall that the United States, in particular, was the world’s uncontested technological leader by the 1920s where giant

corporations in capital-intensive industries generated enormous fortunes (Chandler, 1962). The top 0.1% income shares in the United States and France declined roughly in three stages, first during WWI, then during the Great Depression, and finally during WWII. Interestingly, by the 1960s, the shares in all three countries had converged to 2%. The figure illustrates a sharp contrast in the evolution of income concentration between the United States, on one hand, and Japan and France, on the other hand, since the

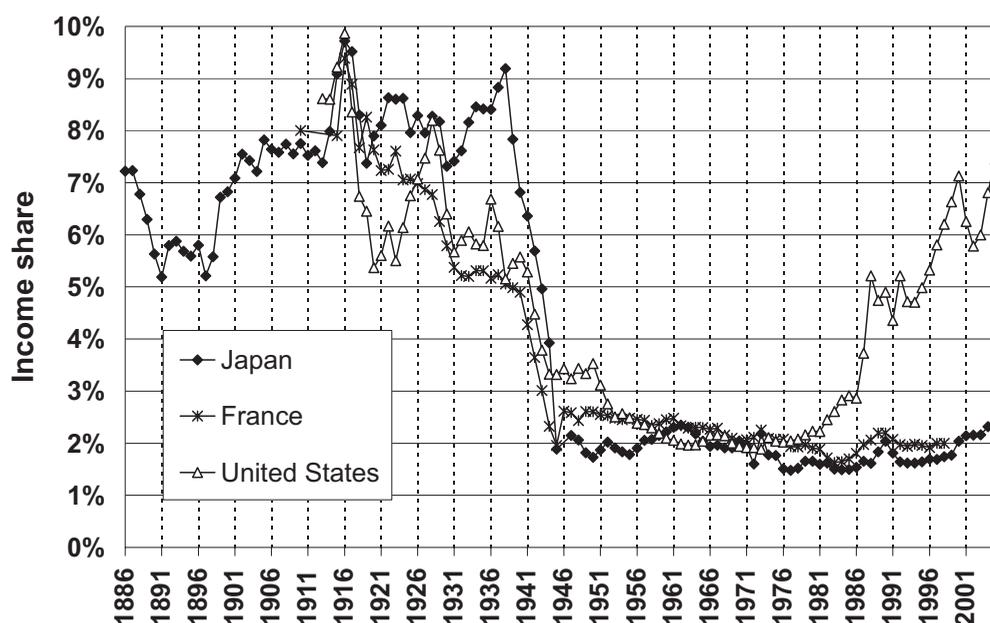
FIGURE 5.—DECOMPOSITION OF TOP 1% INCOME SHARE IN JAPAN, 1886–2005



Source: Appendix table A1.

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

FIGURE 6.—TOP 0.1% INCOME SHARES IN JAPAN, THE UNITED STATES, AND FRANCE



Source: Japan, appendix table A1; U.S., Piketty and Saez (2003) updated to 2005; France, Piketty (2003).

1970s. While the top income shares in Japan and France have remained relatively low, the share in the United States has tripled in the last two decades, returning to the pre-WWII level. In section VI, we explore the divergent experience of Japan and the United States using wage income tax statistics.

C. Trends in Top Income Composition

To better understand the mechanisms that led to the drastic decline in the top 1% income share during WWII in Japan, we use composition data from the income tax statistics. In figure 7, we decompose the top 1% income share into five categories: (i) employment income (wages, salaries, bonuses, allowances, and pensions); (ii) business income (profits from unincorporated businesses, farm income, and self-employment income); (iii) rental income (from land and buildings, excluding imputed rents); (iv) interest income (from bonds, deposits, and savings accounts, excluding returns on insurance policies); and (v) dividends (from privately held and publicly traded stocks). Immediate caveats are in order.

First, for 1886–1945, our estimates are based on the composition of total income reported in the income tax statistics. During this period, the series are not homogeneous as the fractions of adults filing tax returns fluctuated between 1% and 4% (see table A2 in the appendix). Second, because almost all interest income has been either tax exempted or taxed separately and withheld at source since 1947, and so was a large part of dividends since 1965, these components were missing from the self-assessed income tax statistics (Iwamoto et al., 1995). Third, the introduction of the withholding system in 1949 likely reduced tax evasion

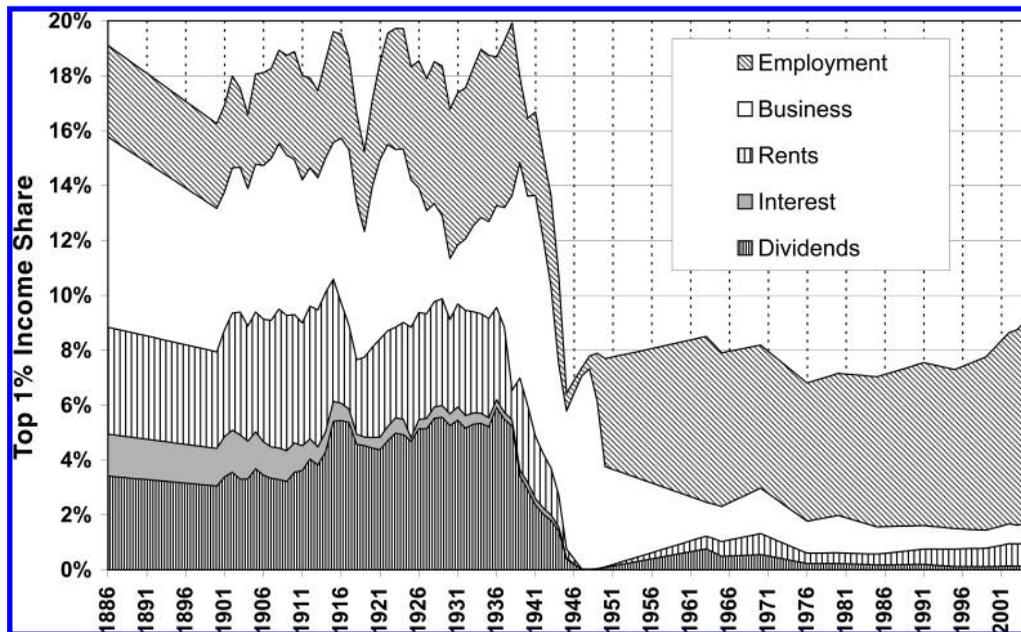
of wage earners relative to others. We address these important issues in section IV E.

With these caveats in mind, we make the following observations from the top income composition data. First, throughout the 1886–1937 period, approximately 50% of the top 1% income consisted of capital income (that is, rents, interest, and dividends). Within capital income, dividends steadily gained its share, while the share of interest income declined. Although not shown in figure 7, within rental income, farm rents were a major component in the earlier years, but its share declined after 1915. Initially, the share of business income in the top 1% income was higher than the share of employment income, but by 1930 the order was reversed. The decline of farm rents and the rise of employment income likely reflect the gradual shift from an agrarian economy with concentrated land ownership to an industrial economy with professional managers. Second, from 1937 to 1947, both the capital income and employment income components fell dramatically: right after WWII, the top 1% income was almost entirely composed of business income. Third, since 1950, the share of employment income in the top 1% income has increased steadily at the expense of business income. This trend is likely due to the further shift toward a highly industrialized economy with large corporations. Finally, as we discuss in more detail in section IV E, after WWII, capital income has become a less important component in the top 1% income.

D. Evidence from Top Estates

Our income composition series suggest that capital income accrued to the top 1% income group fell dramatically during WWII, never returned to the pre-WWII level, and

FIGURE 7.—COMPOSITION OF TOP 1% INCOME IN JAPAN, 1886–2005



Source: Appendix table A2.

Notes: Computations based on income tax return statistics; see appendix section A.4. Business income includes unincorporated business profits, farm income, and self-employment income. Employment income includes wages, salaries, bonuses, and pensions. Rental income includes rents from farm land, residential land, housing, and buildings, but excludes imputed rents. For 1886 and 1900–1945, estimates are based on aggregate income composition and thus are imprecise. For 1951–1962, no estimates are available. Most interest income in 1947–2005 and a large part of dividends in 1965–2005 are missing from the statistics (see appendix section A.3 for details).

was replaced by employment income. National accounts show that total capital income in the economy, however, did recover albeit gradually (see figure A3 in the appendix). Therefore the fall in the top capital income must have been caused by a permanent decline in *wealth* concentration. In order to test this hypothesis, we turn to estate tax return statistics published annually since the introduction of estate tax in 1905.

Figure 8 plots the average sizes (in real 2002 yen) of the top 0.01% estates and the bottom half of top 1% estates (“top 1%–0.5%”) from 1905 to 2005 in logarithmic scale. Recall that top estate groups are defined relative to the total number of adult deaths in each year. The top 0.01% estates, namely, the “very top” wealth holdings, correspond to the roughly top 100 decedents in 2005, whose average was about 5.3 billion yen, or \$48 million. By contrast, the average of the bottom half of top 1% estates, namely, the “moderately high” wealth holdings, was about 300 million yen, or \$2.7 million, in the same year. According to the figure, both the top 0.01% and 1%–0.5% estates increased substantially from 1905 to 1936. The top 0.01% estates then declined precipitously by a factor of 140 from 1936 to 1949, and the top 1%–0.5% estates declined by a factor of 18 during the same period. In contrast to top incomes, top estates not only fell dramatically in 1941–1945 but also *continued* to fall during the initial four years of the postwar occupational reforms. Both estate levels grew rapidly during the high economic growth period of 1955–1973, but they have been on decline since the burst of the asset bubble

in 1991. While the level of the top 1%–0.5% estates surpassed the pre-WWII peak by 1970, the level of top 0.01% estates in 2005 is still smaller (in real terms) than in 1936 in spite of a tenfold increase in GDP per capita.¹⁶

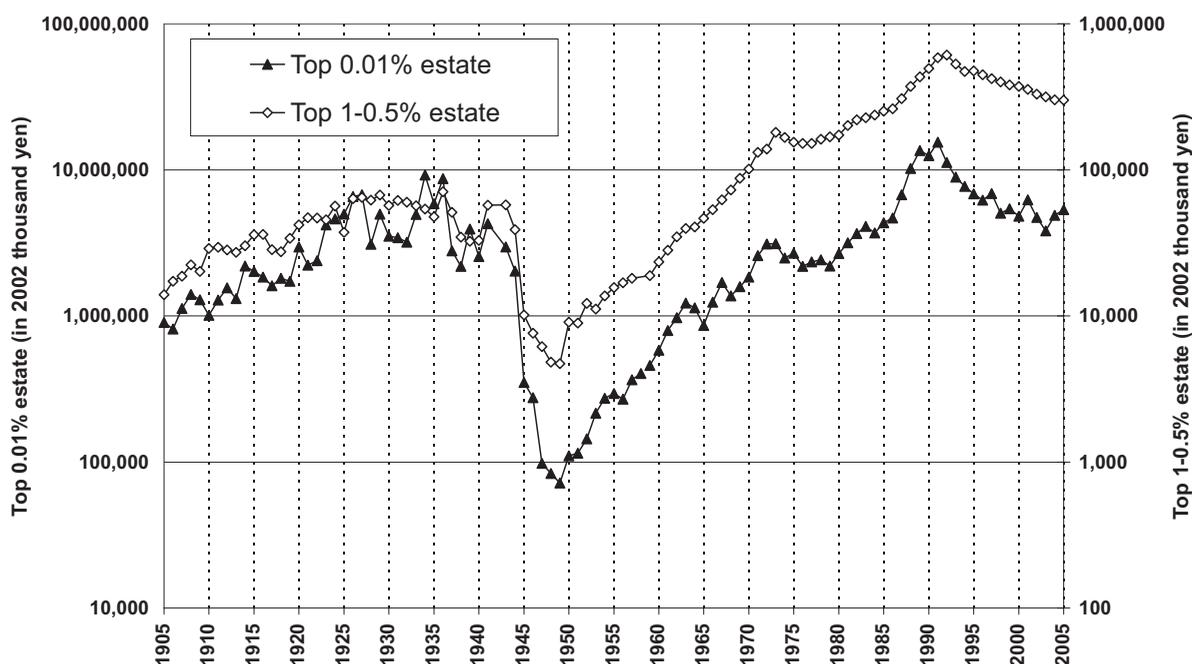
When we compare the two series, the top 0.01% estates were initially about 50 times larger than the bottom half of top 1% estates, and by the 1930s, about 100 times larger. Because of the differential impacts of WWII and the postwar reforms on the two estate levels, however, by 1949 the former were only about 20 times larger than the latter. Moreover, this ratio has remained fairly constant from 1950 to 2005 despite the major changes in macroeconomic conditions during these years. In other words, there was a permanent decline in the level of the top wealth *relative to* the moderately high wealth after 1950.¹⁷

Table 3 presents estate compositions for selected years, 1935, 1950, and 1987, for which the fraction of adult

¹⁶ For the reason stated in footnote 10, our series likely underestimate true estate value. This problem is particularly serious concerning land because of low official valuation prices and special tax treatments. Because the share of land in total estate is higher in recent decades as shown below in estate composition data, our estimates likely suffer from greater downward bias in more recent periods. See appendix section B.1 for a discussion.

¹⁷ It is important to note that top estates do not necessarily correspond to top capital incomes because the former is based on individuals who died in a given year, while the latter is based on all living individuals. The link between those two distributions can shift over time if the age distribution of decedents changes over time. That is why we examine the relative sizes between very high and moderately high estates in the same year to assess changes in wealth concentration.

FIGURE 8.—TOP 0.01% ESTATE AND TOP 1–0.5% ESTATE IN JAPAN, 1905–2005



Source: Appendix table B1.

Notes: Computations based on estate tax return statistics. The average estate levels (in 2002 yen) of the top 0.01% group and the bottom half of the top 1% are reported. The 1905–1957 estate levels are less precisely estimated than the 1958–2005 estate levels. Due to special tax treatments, land values in estates are subject to considerable underestimates. See appendix section B for details.

decedents filing estate tax returns are constant at about 9%.¹⁸ Estates are decomposed into (i) land (farm and residential land), (ii) houses and structures, (iii) business assets (unincorporated business assets and farm assets), (iv) stocks, (v) fixed claim assets (bonds, cash, deposits, and savings accounts), and (vi) other assets (including household properties, pension rights, and life insurance). The table shows that the largest component of the top 9% estates shifted from financial assets (stocks and fixed claim assets) in 1935 to movable properties (business assets, houses and structures, and household properties) in 1950, to real estate (predominantly residential land) in 1987. The share of stocks and fixed claim assets in the top estates declined sharply from 49% in 1935 to 15% in 1950, and then rose to 22% in 1987. Namely, the share of financial assets in large estates in the midst of the bubble period was still less than half of that in 1935. Thus the top estate composition data provide additional evidence for our claim that the shares of dividends and interest in the top income collapsed during WWII and have not returned to the pre-WWII level to date.

To summarize, our top estates series suggest that a permanent reduction in the level of the top wealth relative to the moderately high wealth took place during and immediately after WWII. This dramatic fall in wealth concentration at the top not only is consistent with our findings from the top income shares series, but also provides better insights as to why the precipitous decline in top income shares was

concentrated *within* the top 1% income group. WWII and the occupational reforms had a very large impact on the high end of wealth distribution, destroying much of the source of capital income. Because in general the share of capital income in total income increases with the size of income, top income earners likely suffered a disproportionately large loss of their income. In other words, our data suggest that WWII and the subsequent reforms likely had a lasting effect in wiping out high-income rentiers.

E. The Effects of Tax Evasion

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

The dramatic and seemingly permanent drop in income concentration after WWII could be explained by tax evasion only if the evasion among top income groups relative to the rest of the population increased dramatically during WWII and remained high ever since. One may assume that tax evasion must have been rampant during WWII when labor and material shortages disrupted normal functioning of any administration. Yet, seeking additional sources for war finance, the government imposed various temporary taxes and intensified an effort to collect tax during the war. Not only did the numbers of local tax offices and their personnel increase during WWII, but tax evasion was deemed highly unpatriotic (Japan National Tax Administration, 1988). Second, it is unlikely that evasion was lower in the prewar

¹⁸ Table B2 and figure B1 present aggregate estate compositions from 1925 to 2002. See appendix section B.2 for details.

TABLE 3.—TOP ESTATES COMPOSITION IN JAPAN, 1935, 1950, AND 1987

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

Notes: Computations based on estate tax return statistics (see appendix section B.3 and table B2). In 1935, 1950, and 1987, approximately top 9% of adult decedents filed estate tax returns. Business assets include assets of unincorporated business and farm assets. Fixed claim assets include bonds, cash, deposits, savings accounts, and other claims. Other assets include household assets, pensions, life insurance, and other items. Sum of all components in each year is 100%.

period when the tax administration was smaller and when most businesses did not compile systematic accounting records that the tax administration could examine. By contrast, after WWII, both the enforcement power and technology available for the tax administration were considerably expanded, and many economic transactions took place within large corporations or financial institutions with established accounting methods. For instance, it is widely believed that there is little tax evasion in Japan today concerning employment, dividend, and interest incomes, precisely because the sophisticated withholding system captures these incomes at source with the cooperation 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.¹⁹ According to the estimate by Hayashi (1987), while nearly 100% of employment incomes were captured, only 50% of business incomes and 10% of farm incomes were reported to the tax administration. However, both business and farm income components in the top income are so small in recent years that it would require rates of evasion an order of magnitude higher than these estimated rates to generate the top income shares as high as in the pre-WWII period. For example, if we assume that only 10% of farm income and 50% of business income are reported in 1999, then our estimate of the top 1% income share would increase modestly from 7.8% to 8.5%.²⁰ In short, it is difficult to argue that the apparent permanent decline in income concentration was due to tax evasion or unlawful underreporting of income.

In addition to tax evasion, individuals may shift their income using legal means to reduce tax payments. One such example is the usage of tax-exempted noncash compensation in place of wages, which will be discussed in section VI B. Another way is to take advantage of special treatments and tax favors. During the post-WWII period, various tax privileges had been given to different components of capital

income, most notably, interest and dividends. These measures effectively allowed taxpayers to pay tax separately at source at flat rates without filing tax returns. As a result, the self-assessed income tax statistics do not include these capital income components. Therefore, it is critical to evaluate the impact of the missing capital income components on our estimates of the top income shares.

The best available source for estimating the distribution of capital income by income group is the comprehensive household survey, *National Survey of Family Income and Expenditure* (NSFIE).²¹ In particular, the NSFIE in 1999 reports the holdings of various financial assets per household tabulated by the size of the household head's income. We combine these asset distribution data and national accounts data to estimate the shares of three capital income components missing from the tax statistics—interest, dividends, and the returns on life and other insurance policies—in total income for various top income groups. In table 4, we compare our estimates from the income tax statistics in 1999 (in panel B) with the estimates from the NSFIE in the same year (in panel C). Three observations follow.

First, the estimated average incomes from the NSFIE coincide well with those from the tax statistics up to the top 1% income group. For the top 0.5% income group, the two estimates differ significantly, however. Because the NSFIE uses a representative sample (about 10,000 households) that contains few observations at the high end of income distribution, it is difficult to provide precise estimates for the top 0.5% income group and above using NSFIE data. It is important to note that we find no systematic downward bias in estimating the average incomes using tax statistics compared with the NSFIE. The claim that the tax statistics are useless because of systematic underreporting is thus not valid.

Second, according to Iwamoto et al. (1995), in recent decades, due to exemptions and separate taxation withheld at source, approximately 80% of dividend income, over 99% of interest income, and 100% of the returns on insurance savings are not subject to progressive income tax and not included in the self-assessed income tax statistics. The

¹⁹ Not only Japan but most advanced countries face similar problems. For example, in the United States, the Internal Revenue Service also estimates that most income tax evasion takes place among small-business owners.

²⁰ In 1999, business income and farm income represent 8.3% and 0.1% of reported incomes in the top 1% income group. With no evasion, they would represent 16.6% and 1%, respectively, and the top 1% income share would be approximately 9% or 0.7 percentage point larger than our estimate.

²¹ Statistics Bureau of Japan, *National Survey of Family Income and Expenditure* (*Zenkoku Shohi Jittai Chosa*). See appendix section D for a detailed discussion.

TABLE 4.—SENSITIVITY ANALYSIS USING THE NSFIE DATA IN 1999

Income Groups (1)	Average Income (in thousand yen) (2)	Fraction of Capital Income Component to Total Individual Income			
		Net Interest Income (%) (3)	Dividend Income (%) (4)	Returns on Insurance Policies (%) (5)	All Returns on Liquid Assets (%) (6) = (3)+(4)+(5)
A. National Average from National Accounts					
All	2,805	1.9%	0.9%	4.3%	7.1%
B. Income Tax Statistics Estimates					
Top 10%–5%	7,530	0.0%	0.0%	0.0%	0.0%
Top 5%–1%	10,601	0.0%	0.1%	0.0%	0.1%
Top 1%–0.5%	16,276	0.0%	0.3%	0.0%	0.3%
Top 0.5%	32,754	0.0%	2.1%	0.0%	2.1%
Top 0.1%	67,662	0.0%	4.2%	0.0%	4.2%
C. NSFIE Estimates (105,139 households)					
Top 10%–5% (5,257 hlds.)	7,781	–0.4%	0.9%	5.2%	5.7%
Top 5%–1% (4,206 hlds.)	10,381	0.5%	1.3%	4.6%	6.3%
Top 1%–0.5% (526 hlds.)	14,391	1.9%	2.2%	4.5%	8.6%
Top 0.5% (526 hlds.)	22,958	1.3%	2.3%	3.8%	7.3%
Top 0.1%	n.a.	n.a.	n.a.	n.a.	n.a.

Notes: Computations based on the following three independent sources (see appendix section A.3.3 and section D.1). National average in panel A is based on total personal income in 1999 from national accounts. Estimates in panel B are based on the self-assessed income tax return statistics in 1999. Income is defined as annual gross income reported in the tax returns, excluding capital gains. All returns on insurance policies, almost all interest income, and a large part of dividends are not subject to comprehensive income tax and not reported in the self-assessed income tax returns. Estimates in panel C are based on the *National Survey of Family Income and Expenditure in 1999*. Net interest income is estimated based on the holdings of bonds, deposits, and loan trusts, net of liabilities. Dividend income is estimated based on stock holdings. Returns on insurance policies are estimated based on life and other insurance holdings. The number of households in the NSFIE in each group is reported in column 1 of panel C. Estimates for the top 0.5% group are based on 526 households and thus are imprecise, and estimates for the top 0.1% group are not available due to too few households.

NSFIE estimates indicate that, compared with the national average, the higher income group receives larger portions of their income as dividends but smaller portions of their income as interest or the returns on insurance policies. Furthermore, even in the NSFIE data, the three capital income components make up a very small portion of total income for the top income groups. For example, they respectively constitute 1.9%, 2.2%, and 4.5% of total income for the bottom half of the top 1% income group (the row “top 1%–0.5%” in panel C). Taken together, the table suggests that these components are not particularly concentrated at the top of the income distribution in today’s Japan.

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

We provide similar sensitivity analysis for 1979–1999, using the NSFIE data. Our results are reported in table D1 in the appendix. Consistent with the estimates from the income tax statistics, the table shows that there is only a very modest increase in the top 5% income shares during this period. The share of the three capital income components in total income for the top 5% group was only moderately higher than the national average in 1979 and 1984, and was actually lower than the national average in 1989, 1994, and 1999. Therefore, fully incorporating the missing components would have only small effects (a slight increase in the 1980s and a slight decrease in the 1990s) on our estimates for the top income shares. In summary, adding back the missing capital income components would not

change our main conclusion that the degree of income concentration fell drastically in Japan from the pre-WWII to post-WWII period.

V. Understanding the Evolution of Income Concentration

Using the income and estate tax statistics, we have documented that (i) income concentration in Japan was extremely high during 1886–1938 by both historical and international standards; (ii) the drastic de-concentration of income at the top took place in 1938–1945; (iii) income concentration remained low for the next five decades with a sign of increase in the last ten years; (iv) the size of top wealth relative to moderately high wealth declined sharply from 1936 to 1949 and stayed low; and (v) top income composition has shifted dramatically from capital and business incomes toward employment income over the course of the twentieth century. In this section, we explore the causes of the evolution of income concentration.

A. A High Level of Income Concentration in Pre-WWII Japan

One of the merits of our data is that they allow a quantitative comparison of income concentration before and after WWII. Our findings strongly confirm the received view based largely on qualitative evidence that there was high concentration of income and wealth among the elite class in prewar Japan.²² Preceding studies suggest three

²² Our data show that the top 1% income share increased only modestly from 1890 to 1940. By contrast, the preceding studies find a sharp increase in Gini coefficients during the same period (see figure 2). Our findings are not necessarily contradictory, if the rise in inequality was driven by

major constituencies of the very rich: landlords, shareholders, and corporate executives.

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

Second, before WWII, large firms raised capital primarily from stock markets, and business ownership was heavily concentrated on a small number of individual (as opposed to institutional) shareholders.²³ In addition, prewar firms paid out high dividends to their shareholders. According to the study by Miyamoto and Abe (1995) based on corporate charters of fifty companies in the 1880s, on average 70% of profit was distributed to shareholders as dividends (p. 276). Okazaki (1993) also finds that in the 1930s the average dividend to profit ratio at leading manufacturing firms was close to 70%, while it was less than 50% in the 1950s (p.184).

Third, during the interwar period, top management at large corporations received very high compensation. In addition to high monthly salary, they were rewarded with large year-end bonuses. According to Miyamoto and Abe (1995), the same fifty corporate charters stipulated that 10% of profits be distributed as executive bonuses (p. 276).²⁴ At leading manufacturing firms, directors on average received 6% of profit in the form of a bonus in the 1930s, compared with just 2% in the 1960s (Okazaki, 1993, p. 184). At five leading electric power companies, executive bonus was 28 times larger than the average income in Japan in 1936, while in 1955 it was only 1.5 times larger (Minami, 1995, p. 123). Moreover, before WWII, it was common practice for major shareholders to assume positions as corporate directors, which exacerbated income concentration.²⁵

In a unique study using individual-level data, Yazawa (1992) examines the 5,000 highest-income taxpayers in 1936 based on *Who's Who* that published their names, income tax paid, addresses, and occupational titles. He finds

changes in the lower end of income distribution without changing the mean. For example, Mizoguchi and Terasaki (1995) attribute the rise primarily to a widening rural-urban income gap.

²³ For example, Okazaki (1999) finds that, in 1935, at the ten largest *zaibatsu* firms, top ten shareholders held as much as 66% of total stocks (pp. 103–105).

²⁴ By contrast, paying bonuses for rank-and-file employees was an exception rather than a norm in prewar firms.

²⁵ For example, Okazaki (1999) finds that, at twenty leading manufacturing firms, top ten shareholders held 23% of the director positions in 1935, while they held none after 1947 (pp. 103–105).

that, out of the top 5,000 income earners in 1936—which corresponds roughly to the top 0.01% income group in our study—31% were in retail business, 22% were in manufacturing, 22% were in finance, and 7% had no occupation (pp. 155–159). He also shows that they were concentrated in metropolitan areas, such as Tokyo (45%) and Osaka (25%).²⁶ Only 2.2% of them, however, were members of aristocracy and merely 3.0% were affiliated with *zaibatsu* holding companies, which indicates that the importance of aristocrats and *zaibatsu* families among the elite class should not be overstated (pp. 160–166).

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

B. Mechanisms of Income De-concentration in 1938–1945

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

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

Dividends were regulated starting in 1939 where a dividend to equity ratio was capped at 8% in 1940 and at 5% by 1945, compared with the typical prewar ratio of over 10%. In addition, government pressure led to the decline in the number of shareholders holding director positions at major corporations after 1940 (Okazaki, 1999, p. 108). The government also intervened in stock and bond markets to encourage the absorption of war bonds, reducing the returns on corporate shares and bonds. It regulated wages and salaries after 1939, standardizing wages across firms and

²⁶ Note that Yazawa's (1992) sample covers 26 major prefectures out of a total of 47 prefectures in Japan, underrepresenting rural prefectures (p. 149).

industries. The government also mandated the establishment of works councils to empower blue collar employees in 1938 and placed a ceiling on executive bonuses in 1940, compressing within-firm pay inequality. Finally, the government redistributed farmland from landlords to tenants starting in 1938, regulated rents and land prices after 1939, set up a two-tier price system for rice production in 1941 that rewarded tenants and penalized landlords, and revised land and house lease laws in 1941 to augment tenant rights (Waswo & Nishida, 2003, pp. 22–23). Although their goal was to stimulate food production, these measures reduced both land value and rental income of landlords. As figure 7 shows, changes in different components of the top 1% income coincide well with the timing of the corresponding wartime regulations, underscoring their importance in explaining the process of de-concentration.

Furthermore, to finance the massive war effort, the government imposed increasingly heavy individual and corporate income taxes in 1937, 1938, 1940, 1942, 1944, and 1945 (Japan National Tax Administration, 1988). The sharp increase in corporate income tax reduced after tax profits, which in turn reduced dividend and bonuses paid out to shareholders and executives.²⁷ Moreover, despite the stringent controls, the price level began to surge after 1938 and rose dramatically toward the end of WWII (see figure 3). Inflation likely played a major role in reducing the top estates, as it diminished the real value of fixed claim assets (such as bonds and deposits). It also contributed to the collapse of the top capital income by reducing interest income as well as rental income.²⁸

Finally, WWII brought about large-scale destruction of the nation's wealth, claiming 25% of physical assets and 668,000 civilian casualties (Keizai Antei Honbu, 1948). In particular, air raids of major Japanese cities by the allied force between February and August 1945 likely had a devastating effect on the high-income earners who were concentrated in the metropolitan areas (Yazawa & Minami, 1993, p. 366).²⁹ Note, however, that the late timing of the bombing implies that it could not have been a major reason for the income de-concentration that had started in 1938. In summary, WWII can be seen as a one-time shock that reduced income and wealth inequality in Japan through the combination of government regulations, inflation, and war destruction.

C. Impact of U.S. Occupational Reforms in 1945–1952

Upon Japan's surrender in August 1945, the nation was placed under the indirect governance of the Supreme Com-

mander for the Allied Powers until 1952. As preceding studies have emphasized, the postwar occupational reforms could potentially have a large effect in equalizing the income distribution (Yazawa & Minami, 1993; Minami, 1995). Three particularly powerfully redistributive measures were implemented during this period.

First, the land reform in 1947–1950 mandated landlords to sell their farmland to tenants, eliminating virtually all large- and medium-sized landowners. As a result, the percentage of land cultivated by tenants declined sharply from 46% in 1941 to 9% in 1955. Due to hyperinflation, compensation paid to landowners in real terms was a mere fraction of the land value. Second, to finance large deficits, the government imposed extremely heavy and highly progressive property tax (*zaisan zei*) from 1946 to 1951. The property tax affected approximately 13% of all households in Japan in the initial year, and taxed away on average 33% of their properties. For the top 5,000 households, more than 70% of their properties were transferred to the government.

Third, under the dissolution of *zaibatsu* in 1946–1948, not only were ex- and current directors of *zaibatsu* firms expelled, but also their stocks were confiscated and redistributed to a large number of employees and other investors at a market price. Consequently, these three measures transferred a significant amount of assets (that is, land, stocks, and other household properties) from the higher to lower end of the distribution. In addition, the hyperinflation in 1944–1948 hit high-income rentiers hard. By contrast, farmers and small-business owners who sold their products in underground markets were said to have earned substantive income in the immediate postwar years, explaining the surge of the business income component in the top 1% income in figure 7.

Despite the emphasis placed on the importance of the occupational reforms in reducing income inequality in the literature, our data indicate that, although they affected the top estate levels, they had practically no impact on the top income shares. Namely, we find WWII, rather than the occupational reforms, as the single most important event in reducing income concentration. Our finding may seem surprising at first, but the following observations indicate otherwise. First, our finding is consistent with the view that the occupational reforms were in many ways a *continuation* of the wartime policies (Okazaki & Okuno-Fujiwara, 1993; Noguchi, 1995; Teranishi, 2005). That is, the restrictions on landlord and shareholder rights, the adoption of progressive taxation, and the check on executive compensation had already begun during WWII, which likely had set off the process of income de-concentration well before the postwar democratization and demilitarization. As such, there was little room left for the occupational reforms in further reducing top incomes.³⁰ By contrast, our top estates series

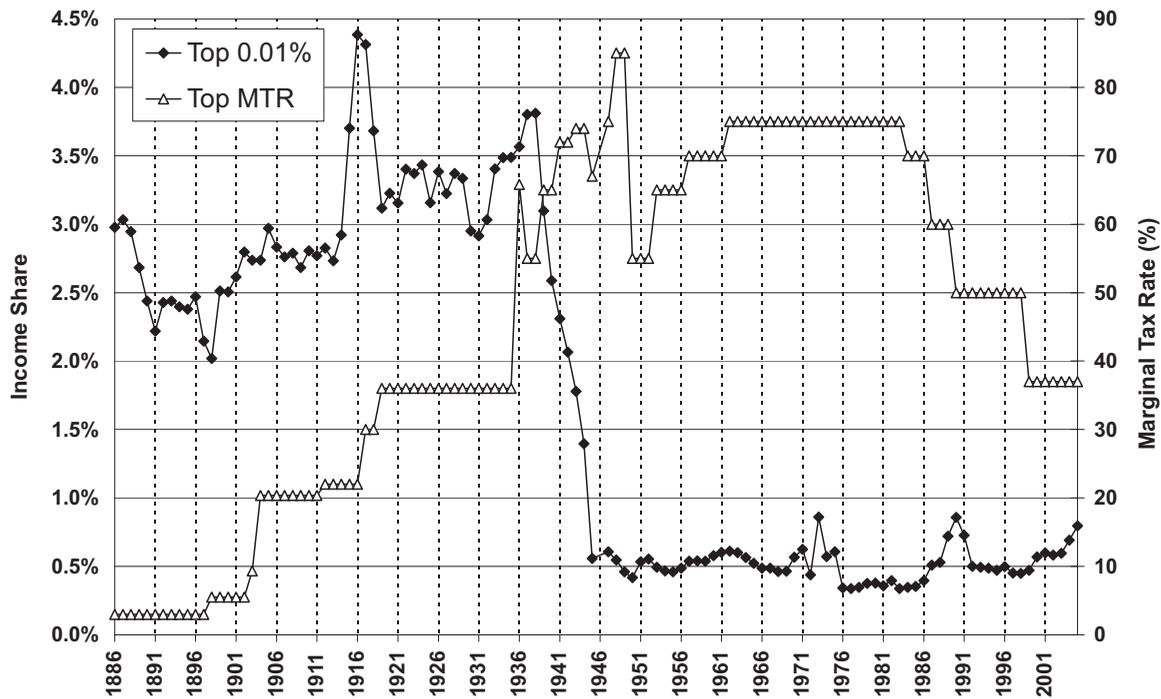
²⁷ One may suspect that higher marginal income tax rates might have invited a higher degree of tax avoidance. Although we cannot deny this possibility, as discussed in section IV E, the government also intensified their effort to collect taxes during WWII.

²⁸ The 1941 land and house lease laws made it difficult for landlords to raise rents.

²⁹ The bombing destroyed 51% of built-up area in Tokyo and 26% of that in Osaka (USSBS, 1947, table 30).

³⁰ It is also likely that some measures equalized income at the lower end of the distribution without changing the mean. For example, the land reform redistributed land primarily from middle-sized landowners to

FIGURE 9.—TOP 0.01% INCOME SHARE AND MARGINAL TAX RATE, 1886–2005



Source: Appendix table A1.

Note: "Top 0.01%" refers to the top 0.01% income share. "Top MTR" refers to the highest statutory marginal tax rates for individual income tax without taking deductions and exemptions into account.

indicate that the reforms did have a large effect in reducing *wealth* concentration, whose implications will be discussed in next section.

Second, our finding is also consistent with the comparative evidence that indicates a universal role of WWII in reducing income concentration in such diverse countries as the United Kingdom, France, the United States, and Canada (Atkinson & Piketty, 2007). Note that none of these countries was occupied after WWII and some did not even experience major war destruction in their homelands. But, without exception, the war was accompanied by large-scale government intervention in these countries.³¹ In short, in the absence of quantitative evidence, the preceding studies have likely overstated the effect of the occupational reforms in equalizing income in Japan.

D. A Low Level of Income Concentration in Post-WWII Japan

Perhaps the more challenging question is why the top income shares did not recover from the profound yet temporary shock of WWII in the decades that followed. Why did the degree of income concentration in Japan remain at the historic low reached in the late 1940s for the next fifty years? We argue that it was in this context that the occupa-

tional reforms played a critical role. By redistributing assets and reducing wealth (as opposed to income) concentration, they directly equalized the distribution of capital income in subsequent years. More importantly, deriving their origins from the wartime policies, the postwar reforms transformed many one-time measures into lasting ones, facilitating a structural change in the Japanese economy that likely prevented re-concentration of income during the ensuing period of high economic growth.³²

First, the fiscal reforms in 1950 made progressive taxation a permanent feature of the Japanese tax system. Recall that the enormous fortunes that generated the high top 1% income share in the pre-WWII period had been accumulated at the time when progressive income tax hardly existed and capitalists could reinvest almost all of their incomes for further capital accumulation. As pointed out by Piketty (2003) in the context of France, the fiscal environment faced by Japanese capitalists after WWII, too, was vastly different. As figure 9 shows, after a spike in 1938–1949 caused by the combined effect of temporary tax increases and hyperinflation, the highest statutory marginal tax rate for individual income tax stayed at 60%–75% from 1950 until the 1988 tax reform. Tax rates on corporate income show similar trends. With respect to estate tax, the 1947 law abolished primogeniture and mandated the division of es-

tenants, creating a large number of small-sized farmers. In such cases, we may not observe much change in the top 1% income share.

³¹ By contrast, in Switzerland and Sweden who remained neutral during WWII, the data indicate a much smaller effect of WWII on top income shares (Dell, Piketty, & Saez, 2007; Roine & Waldenström, 2006).

³² Our findings thus lend support to the view that emphasizes the uniqueness of the post-WWII Japanese economic system in contrast to the pre-WWII system that was more market oriented (Okazaki & Okuno-Fujiwara, 1993; Noguchi, 1995; Teranishi, 2005).

tate among surviving spouse and children, and the 1950 law instituted highly progressive estate and gift taxes with top marginal tax rates in excess of 70%. As a result, intergenerational transfers of large wealth became much more difficult after WWII. Progressive taxation likely hindered the reaccumulation of large wealth, resulting in more equal distribution of capital income.

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

Third, the changes in human resource management and the collective bargaining structure in Japan likely compressed wage distributions within firms. As the so-called lifetime employment became a hallmark of human resource management at large firms in the 1960s, most if not all management positions were filled by long-term employees promoted from within (Okazaki, 1999). Moreover, after violent confrontations in 1945–1955, most large firms in Japan were organized by single enterprise unions that represented both white and blue collar employees of the firms. By the 1970s, management regularly consulted with unions over personnel matters including wages and promotions (Morishima, 1991; Moriguchi, 2000; Kato & Morishima, 2002). These changes likely resulted in less wage differentials between white and blue collar employees as well as more equitable executive compensation. We will turn to wage income tax statistics in the next section to examine these hypotheses more closely.

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

employment practices, and major policy reforms concerning income tax and commercial laws.

VI. Top Wage Income Shares in Japan, 1929–2005

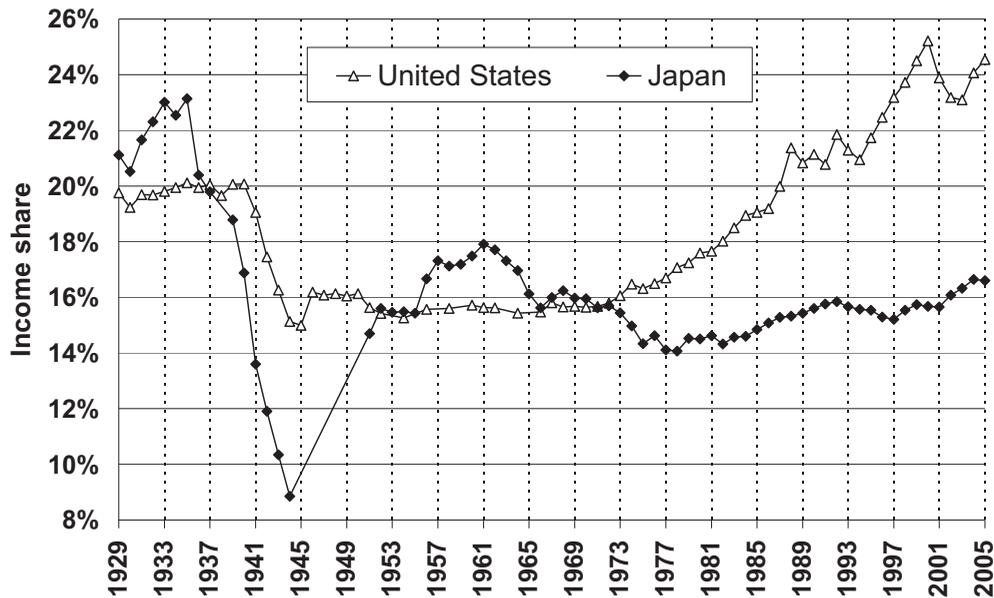
A. Trends in Wage Income Concentration

In this section, we present our estimates of top *wage income* shares in Japan to investigate the role of employment income in the evolution of income concentration. Wage income in our definition includes wages, salaries, bonuses, and part of noncash compensation, but excludes retirement benefits. For the pre-WWII period, we use salary and bonus data reported in annual income tax statistics for fiscal years 1930–1945 (corresponding to actual years 1929–1944). For the post-WWII period, we use the results of the statistical survey in the *Survey on Private Wages and Salaries* published annually by the tax administration since 1951. The survey covers all employees in the private sector who worked throughout a year except for daily-hired workers. Our estimates of the top 5% and 1% wage income shares series in Japan are shown in figures 10 and 11.

First, during 1929–1935, Japan exhibited a high degree of wage income concentration where the top 5% wage earners received more than 20% of total wage income and the top 1% received about 8% of total wage income. As one might expect, the degree of wage income concentration is smaller than that of income concentration during the same period (8% versus 16% for the top 1% group). High wage income inequality in Japan during the interwar period can be explained by large intra- and interfirm wage differentials. As discussed above, wages and bonuses paid to top management, white collar employees, production workers, and unskilled laborers within the same firm were widely dispersed before WWII, resulting in high within-firm wage inequality (Showa Dojinkai, 1960, pp. 263 and 269). In addition, with the growth of heavy industries with high capital intensity, the productivity gap by industry as well as by firm size had widened since the First World War, resulting in substantial interfirm wage differentials (Yasuba, 1976).

Second, we observe a sharp decline in wage income concentration from 1935 to 1944, as the top 5% wage income share fell from 23% to 9% and the top 1% share from 8.9% to 3.2%. This 64% decline in the top 1% wage income share in 1935–1944 is comparable to the 68% decline in the top 1% income share in 1938–1945. According to our income composition data in figure 7, the share of employment income in the top 1% income remained fairly stable until 1940 and then dropped sharply in 1940–1947. Therefore, we attribute the initial decline in wage income concentration in 1935–1940 to the tightening of labor markets due to military expansion that compressed the wage distribution from below. The further decline in 1940–1944 is likely due to the wartime regulations that capped executive bonuses and standardized wages across firms. Although

FIGURE 10.—TOP 5% WAGE INCOME SHARE IN JAPAN AND THE UNITED STATES, 1929–2005



Source: Japan, appendix table C2; U.S., Piketty and Saez (2003 table IV), updated to 2005.

Notes: Computation based on income tax return statistics for 1929–1944 and wage income tax statistics for 1951–2005; see appendix section C for details. The 1929–1944 estimates are less precise and not fully comparable to the 1951–2005 estimates. Estimate for 1938 and 1945–1950 are not available.

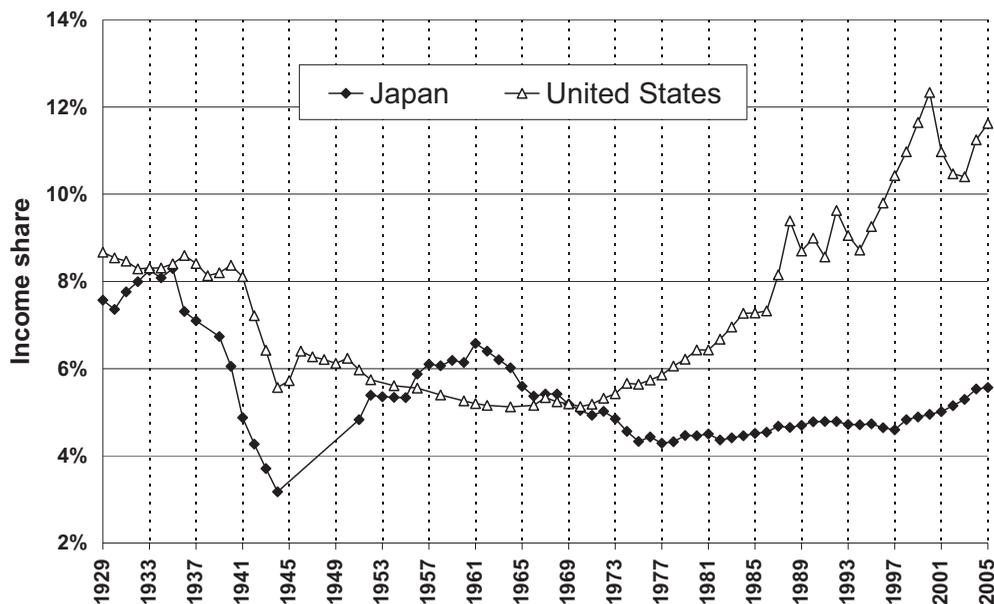
Wage income includes wages, salaries, allowances, and bonuses, but excludes retirement benefits and nontaxable part of noncash benefits. Top wage income groups are defined relative to all regular employees for 1929–1944 and all employees in the private sector for 1951–2005.

the decline in income concentration was largely a capital income phenomenon, the data indicate that employment income also played an important role.

Third, in the post-WWII period, top wage income shares rose substantially from 1951 to 1961 (no estimates are available for 1945–1950), and then declined gradually over the next two decades. After staying at around 4.5% from 1980 to 1997, the top 1% wage income share has increased

modestly since 1997, reaching 5.6% by 2005. The initial increase in the 1950s is consistent with our income composition data that show a recovery of the employment income component in the top 1% income after WWII. It is worth noting that the trends in the top wage income shares parallel the trends in income inequality of all households documented by the preceding studies (see figure 2). Minami (1998) attributes the rise in income inequality in the 1950s

FIGURE 11.—TOP 1% WAGE INCOME SHARE IN JAPAN AND THE UNITED STATES, 1929–2005



Source: Japan, appendix table C2; U.S., Piketty and Saez (2003, table IV), updated to 2005.

and its decline in the 1960s to Japan's transition from the chronic labor surplus before 1960 to the chronic labor shortage after 1960. Considering the top wage income shares, their decline in the 1960s and 1970s can be further attributed to the diffusion of the so-called Japanese-style management, including lifetime employment, enterprise unionism with joint labor-management consultation, and corporate governance that places more weight on employee values than shareholder values (Gordon, 1985; Aoki, 1988). For example, by the end of the 1960s, executives at large firms were entirely promoted from within (Okazaki, 1999). In sharp contrast to the pre-WWII period, bonuses were no longer paid disproportionately to top executives but distributed more equally among regular employees. In fact, the average ratio of bonus to total compensation has been 20% to 30% for both corporate executives and rank-and-file employees in recent years (Hart & Kawasaki, 1999; Kubo, 2004).

B. Comparative Analysis of Japan and the United States

To facilitate international comparison, we also plot the top wage income shares in the United States, estimated by Piketty and Saez (2003), in figures 10 and 11.³³ The figures indicate that the top wage income shares were roughly comparable between the two countries during 1929–1935. Then wage income concentration in both countries fell sharply by the end of WWII. In contrast to Japan, however, U.S. top wage income shares had remained low during the 1950s and 1960s. Japan and the United States exhibited a similar degree of wage income concentration at the end of the 1960s. The pattern of wage income concentration has sharply diverged between the two countries since the 1970s, however. While the top 1% wage income share in Japan has been nearly constant at around 5% from 1970 to 2005, the share in the United States has risen exponentially from 5% to 12% during the same period. Consequently, today, the United States exhibits a much higher degree of wage income concentration than in Japan.

One may question that the wage income concentration in Japan is seriously underestimated because Japanese companies make extensive use of tax-exempted noncash compensation.³⁴ According to Abowd and Kaplan (1999), the inclusion of in-kind benefits and perquisites to the sum of salary, bonus, and stock options would raise total compensation for Japanese CEOs in 1988–1996 by 32% and for American CEOs by 10%. This difference, however, is far

too small to explain the huge gap in top wage shares between the United States and Japan.

What explains the diverging trends in wage income concentration between the two countries then? Note that, by 1980, Japan had virtually caught up with the United States in both the level of income per capita and the stage of industrialization, as both countries entered the third industrial revolution characterized by high-technology industries. Therefore, the comparative experience of the United States and Japan suggests that technology alone cannot account for the change in wage inequality. At the very least, elements other than technology—government policies, labor market institutions, demography, and social norms regarding pay inequality³⁵—have to be taken into consideration. Although understanding the relative contributions of those elements is beyond the scope of this paper, below we briefly examine the effect of income tax policies on wage inequality.

To assess the impact of income tax rates on wage income distribution, figure 12 presents the top 0.1% wage income share and the effective marginal income tax rates faced by this group in Japan (in panel A) and the United States (in panel B) from 1960 to 2005. In the United States, a number of influential studies, such as Lindsey (1987) and Feldstein (1995), have argued that the reductions in the top marginal tax rates since the 1970s—especially the sharp reduction in the late 1980s—were the key factor that drove up high-wage incomes. According to their view, referred to as supply-side theory, lower tax rates would increase reported incomes through higher labor supply and/or a shift from tax-exempted forms of compensation to taxable compensation. Their conclusions have been challenged by subsequent studies and remain controversial (see Saez, 2004, for an extensive survey). It is in this context that Japan's experience may offer a new insight. As shown in panel A, the marginal tax rate faced by the top 0.1% wage income earners in Japan has also declined by 20 percentage points between 1980 and 2005, the magnitude roughly comparable to that in the United States during the same period.³⁶ These reductions, however, have failed to generate supply-side effects in Japan, at least until recently. The comparative experience of Japan and the United States thus also rules out tax incentives as the primary determinant of wage inequality. In the case of Japan, highly developed internal labor markets, strong emphasis on firm-specific human capital, and the resulting absence of competitive markets for corporate executives might have played a key role in preventing

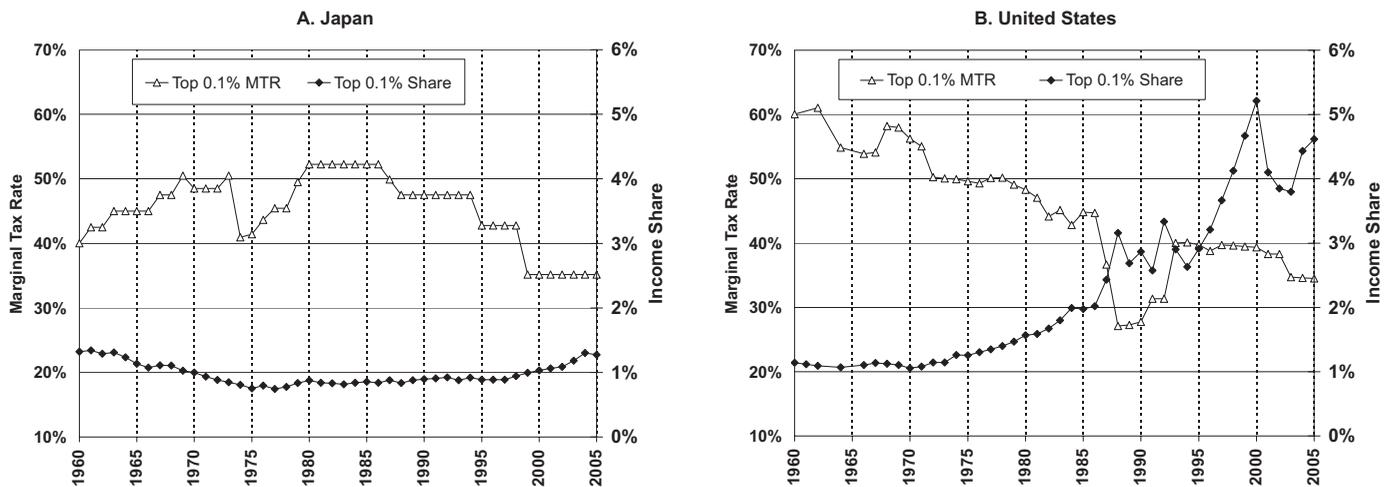
³³ In addition to wages, salaries, and bonuses, U.S. wage income includes stock options. In Japan, stock options were legalized in 1997, while various restrictions remained until the revision of the commercial law in 2002 (Naito & Fujiwara, 2004, pp. 255–260). As usage of stock options has been limited in both the number of firms and the amount of stocks granted, inclusion of stock options would not change our Japanese estimates.

³⁴ Although all noncash compensation is in principle taxable in Japan, expense accounts are fully exempted and company housing is partially exempted. See appendix section C.1.

³⁵ According to the ISSP Social Inequality III survey conducted in 1999, despite the higher income inequality in the United States than in Japan, 36% of 1,325 Japanese respondents strongly agreed with the statement, "Differences in income in my country are too large," while only 23% of 1,272 U.S. respondents strongly agreed with the same statement. These responses can be seen as an indication of lower tolerance to income inequality in Japan compared with the United States.

³⁶ The marginal tax rates in Japan and the United States exclude social security taxes and local income taxes. Including these components would not affect our comparative analysis. See notes in figure 12 and appendix section C.5.

FIGURE 12.—TOP 0.1% WAGE INCOME SHARES AND MARGINAL TAX RATES IN JAPAN AND THE UNITED STATES, 1960–2005



Source: Japan, appendix table C2 and computation by authors based on table C3; U.S., Saez (2004).

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

the rise in wage inequality. By contrast, as Frydman (2005) documents, the interfirm mobility of U.S. executives has been increasing since the 1970s, indicating the presence of active labor markets and higher outside options for top managers in recent decades.

VII. Concluding Remarks

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

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

The top income shares in Japan then fell abruptly and dramatically during WWII, and the impact of WWII on top

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

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

culty of implementing drastic redistributive policies in the absence of a major exogenous impetus.

REFERENCES

- Abowd, John, and Steven Kaplan, "Executive Compensation: Six Questions That Need Answering," *Journal of Economic Perspectives* 13:4 (1999), 145–168.
- Aoki, Masahiko, *Information, Incentives, and Bargaining in the Japanese Economy* (Cambridge: Cambridge University Press, 1988).
- Atkinson, Anthony B., "Top Incomes in the United Kingdom over the Twentieth Century," in Anthony Atkinson and Thomas Piketty (Eds.), *Top Incomes from a Historical and International Perspective* (Oxford: Oxford University Press, 2007).
- Atkinson, Anthony, and Thomas Piketty (Eds.), *Top Incomes from a Historical and International Perspective* (Oxford: Oxford University Press, 2007).
- Atkinson, Anthony, Lee Rainwater, and Timothy Smeeding, *Income Distribution in OECD Countries: Evidence from the Luxembourg Income Study* (Paris: OECD, 1995).
- Atkinson, Anthony, and Wiemer Salverda, "Top Incomes in the Netherlands over the Twentieth Century," in Anthony Atkinson and Thomas Piketty (Eds.), *Top Incomes from a Historical and International Perspective* (Oxford: Oxford University Press, 2007).
- Banerjee, Abhijit, and Esther Duflo, "Inequality and Growth: What Can the Data Say?" *Journal of Economic Growth* 8:3 (2003), 267–299.
- Barro, Robert, "Inequality and Growth in a Panel of Countries," *Journal of Economic Growth* 5:1 (2000), 5–32.
- Burniaux, Jean-Marc, Thai-Thanh Dang, Douglas C. Fore, Michael F. Förster, Marco Mira D'Ercole, and Howard Oxley, *Income Distribution and Poverty in Selected OECD Countries* (Paris: OECD, 1998).
- Chandler, Alfred, *Strategy and Structure* (Cambridge, MA: MIT Press, 1962).
- Dell, Fabien, "Top Incomes in Germany throughout the Twentieth Century: 1891–1998," in Anthony Atkinson and Thomas Piketty (Eds.), *Top Incomes from a Historical and International Perspective* (Oxford: Oxford University Press, 2007).
- Dell, Fabien, Thomas Piketty, and Emmanuel Saez, "The Evolution of Top Income and Wealth Concentration in Switzerland over the Twentieth Century," in Anthony Atkinson and Thomas Piketty (Eds.), *Top Incomes from a Historical and International Perspective* (Oxford: Oxford University Press, 2007).
- Feldstein, Martin, "The Effect of Marginal Tax Rates on Taxable Income: A Panel Study of the 1986 Tax Reform Act," *Journal of Political Economy* 103:3 (1995), 551–572.
- Forbes, Kristin, "A Reassessment of the Relationship between Inequality and Growth," *American Economic Review* 90:4 (2000), 869–887.
- Frydman, Carola, "Rising Through the Ranks: The Evolution of the Market for Corporate Executives, 1936–2003," Harvard University mimeograph (2005).
- Fukao, Mitsuhiro, *Financial Integration, Corporate Governance, and the Performance of Multinational Companies* (Washington, DC: Brookings Institution, 1995).
- Gordon, Andrew, *The Evolution of Labor Relations in Japan: Heavy Industry 1853–1955* (Cambridge, MA: Harvard University Press, 1985).
- Hart, R., and S. Kawasaki, *Work and Pay in Japan* (Cambridge: Cambridge University Press, 1999).
- Hayakawa, Miyoji, "The Application of Pareto's Law of Income to Japanese Data," *Econometrica* 19 (1951), 174–183.
- Hayashi, Hiroaki, "Shotokuzei: Kinrou Shotoku to Shisan Shotoku (Income Tax: Labor Income and Capital Income)," in Hashimoto and Yomamoto, (Eds.), *Nihongata Zeisei Kaikaku (Japanese-style Tax Reform)* (Tokyo: Yuhikaku, 1987).
- Hoshi, Takeo, "Japanese Corporate Governance as a System," in Klaus J. Hopt, Hideki Kanda, Mark Roe, Eddy Wymeersch, and Stefan Prigge (Eds.), *Comparative Corporate Governance: The State of the Art and Emerging Research* (Oxford, UK: Oxford University Press, 1998).
- Hoshi, Takeo, and Anil Kashyap, *Corporate Financing and Governance in Japan* (Cambridge, MA: MIT Press, 2001).
- Ishi, Hiromitsu, *The Japanese Tax System*, 3rd ed. (New York: Oxford University Press, 2001).
- Iwamoto, Yasushi, Yuichi Fujishima, and Norifumi Akiyama, "Rishi Haito Kazei no Hyoka to Kadai" (Evaluating Interest and Dividends Taxation), *Finansharu Rebyu* 35 (1995), 27–50.
- Japan National Tax Administration, *Shotokuzei Hyakunenshi* (Hundred-Year History of Income Tax) (1988).
- Johnston, Louis, and Samuel Williamson, "The Annual Real and Nominal GDP for the United States, 1790–Present," Economic History Services (October 2005), at <http://www.eh.net/hmit/gdp/>.
- Kato, Takao, and Motohiro Morishima, "The Productivity Effects of Participatory Employment Practices," *Industrial Relations* 41 (2002), 487–520.
- Keizai Antei Honbu, *Wagakuni Keizai no Senso Higai (Economic Damage of WWII in Japan)* (Tokyo: Keizai Antei Honbu, 1948).
- Kokumin Seikatsukyoku, *Shin Kokumin Seikatsu Shihyo* (New People's Life Indicators) (Tokyo: Okurasho Insatsukyoku, 1999).
- Kubo, Katsuyuki, "Executive Compensation in Japan and the UK," in Joseph Fan et al. (Eds.), *Designing Financial Systems in East Asia and Japan* (London: Routledge Curzon, 2004).
- Kuznets, Simon, "Economic Growth and Economic Inequality," *American Economic Review* 45 (1955), 1–28.
- Lindert, Peter, "Unequal English Wealth since 1670," *Journal of Political Economy* 94 (1986), 1127–1162.
- "Three Centuries of Inequality in Britain and America," in Atkinson and Bourguignon (Eds.), *Handbook of Income Distribution* (Amsterdam: North-Holland, 2000).
- Lindsey, Lawrence, "Individual Taxpayer Response to Tax Cuts: 1982–1984, with Implications for the Revenue Maximizing Tax Rate," *Journal of Public Economics* 33 (1987), 173–206.
- Maddison, Angus, *Monitoring the World Economy, 1820–1992* (Paris: OECD Press, 1995).
- Minami, Ryoshin, *The Economic Development of Japan*, 2nd ed. (New York: St. Martin's Press, 1994).
- *Nihon no Keizai Hatten to Shotoku Bunpu (Japan's Economic Development and Income Distribution)* (Tokyo: Iwanami Shoten, 1995).
- "Economic Development and Income Distribution in Japan: An Assessment of the Kuznets Hypothesis," *Cambridge Journal of Economics* 22:1 (1998), 39–58.
- Miyamoto, Matao, and Takeshi Abe, *Keiei Kakushin to Kogyoka (Managerial Innovations and Industrialization)* (Tokyo: Iwanami Shoten, 1995).
- Mizoguchi, Toshiyuki, and Noriyuki Takayama, *Equity and Poverty under Rapid Economic Growth: The Japanese Experience* (Tokyo: Kinokuniya, 1984).
- Mizoguchi, Toshiyuki, and Yasuhiro Terasaki, "Kakei no Shotoku Bunpu Hendo no Keizai, Shakai oyobi Sangyo Kozoteki Yoin (Economic, Social, and Industrial Factors Determining the Changes in Income Distribution of Households)," *Keizai Kenkyu* 46 (1995), 59–77.
- Moriguchi, Chiaki, "The Evolution of Employment Relations in U.S. and Japanese Manufacturing Firms, 1900–1960," NBER working paper no. 7939 (2000).
- "Implicit Contracts, the Great Depression, and Institutional Change: A Comparative Analysis of U.S. and Japanese Employment Relations, 1920–1940," *Journal of Economic History* 63 (2003), 625–645.
- Morishima, Motohiro, "Information Sharing and Collective Bargaining in Japan: Effects on Wage Negotiation," *Industrial and Labor Relations Review* 44 (1991), 469–485.
- Naito, Ryoyu, and Shoji Fujiwara, *Stokku Opushon no Jitsumu (Practicing Stock Options)* (Tokyo: Shoji Homu, 2004).
- Nishizaki, Fumihira, Yutaka Yamada, and Eisuke Ando, *Nihon no Shotoku Kakusa: Kokusai Hikaku no Shiten kara (Income Inequality in Japan: An International Comparison)* (Tokyo: Keizai Kikakucho Keizai Kenkyusho, 1998).
- Noguchi, Yukio, *1940-nen Taisei (The 1940 System)* (Tokyo: Toyo Keizai Shinpo, 1995).
- NRUS (Nihon Rodo Undo Shiryo Kanko Linkai), *Nihon Rodo Undo Shiryo* (Historical Data of the Labor Movement in Japan), vol. 10: Statistics (Tokyo: Nihon Rodo Undo Shiryo Kanko Linkai, 1959).
- Ohkawa, Kazushi, Miyoei Shinohara, and Mataji Umemura, *Choki Keizai Tokei: Kakaku*, vol. 8 (Estimates of Long-Term Economic Statistics of Japan: Prices) (Tokyo: Toyo Keizai Shimposha, 1967).
- Ohkawa, Kazushi, Miyoei Shinohara, and Mataji Umemura, *Choki Keizai Tokei: Kokumin Shotoku*, vol. 1 (Estimates of Long-Term

- Economic Statistics of Japan: National Income) (Tokyo: Toyo Keizai Shinposha, 1974).
- Ohtake, Fumio, *Nihon no Fubyodo (Inequality in Japan)* (Tokyo: Nihon Keizai Shinbunsha, 2005).
- Okazaki, Tetsuji, "The Japanese Firm under the Wartime Planned Economy," *Journal of the Japanese and International Economics* 7 (1993), 175–203.
- "Corporate Governance," in Okazaki and Okuno-Fujiwara (Eds.), *Japanese Economic System and Its Historical Origins* (New York: Oxford University Press, 1999).
- Okazaki, Tetsuji, and Masahiko Okuno-Fujiwara (Eds.), *Gendai Nihon Keizai Sisutemu no Genryu (Historical Origins of the Japanese Economic System)* (Tokyo: Nihon Keizai Shinbunsha, 1993).
- Ono, Akira, and Tsunehiko Watanabe, "Changes in Income Inequality in the Japanese Economy," in H. Patrick (Ed.), *Japanese Industrialization and Its Social Consequences* (Berkeley: University of California Press, 1976).
- Otsuki, Toshiyuki, and Nobukiyo Takamatsu, "An Aspect of the Size Distribution of Income in Prewar Japan" (pp. 331–348), *Papers and Proceedings of the Conference on Japan's Historical Development Experience and Contemporary Developing Countries: Issues for Comparative Analysis* (Tokyo: International Development Center of Japan, 1978).
- Piketty, Thomas, "Income Inequality in France, 1901–1998," *Journal of Political Economy* 111 (2003), 1004–1042.
- Piketty, Thomas, and Emmanuel Saez, "Income Inequality in the United States, 1913–1998," *Quarterly Journal of Economics* 118 (2003), 1–39.
- Roine, Jesper, and Daniel Waldenström, "Top Incomes in Sweden over the Twentieth Century," SSE/EFI Working Paper Series in Economics and Finance no. 602 (2006).
- Saez, Emmanuel, "Reported Incomes and Marginal Tax Rates, 1960–2000: Evidence and Policy Implications," in James Poterba (Ed.), *Tax Policy and the Economy*, vol. 18 (Cambridge: MIT Press, 2004).
- Saez, Emmanuel, and Michael Veall, "The Evolution of High Incomes in Northern America: Lessons from Canadian Evidence," *American Economic Review* 95:3 (2005), 831–849.
- Shiomi, Saburo et al., *Kokumin Shotoku no Bunpai (Distribution of National Income)* (Tokyo: Yuhikaku, 1933).
- Showa Dojinkai (Ed.), *Wagakuni Chingin Kozo no Shiteki Kosatsu (Historical Reflections on the Japanese Wage Structure)* (Tokyo: Shiseido, 1960).
- Soltow, Lee, "Long-Run Changes in British Income Inequality," *Economic History Review* 21 (1968), 17–29.
- "Evidence on Income Inequality in the United States, 1866–1965," *Journal of Economic History* 29 (1969), 279–286.
- Tachibanaki, Toshiaki, *Nihon no Keizai Kakusa (Economic Inequality in Japan)* (Tokyo: Iwanami Shoten, 1998).
- "Nihon no Shotoku Kakusa ha Kakudai shiteiruka? (Is Income Inequality in Japan Rising?)" *Nihon Rodo Kenkyu Zasshi* 480 (2000), 41–51.
- *Confronting Income Inequality in Japan* (Cambridge, MA: MIT Press, 2005).
- Takahashi, Chotaro, *Dynamic Changes of Income and Its Distribution in Japan* (Tokyo: Kinokuniya Bookstore, 1959).
- Takayama, Noriyuki, *Sutokku Ekonomi (Stock Economy)* (Tokyo: Toyo Keizai Shinposha, 1992).
- Takayama, Noriyuki et al., "Zensho no Gaiyo to Deta no Ginmi (Outline and Reliability of NSFIE Data)," *Keizai Bunseki* 116 (1988), 43–59.
- Teranishi, Juro, "Main Bank System," in Okazaki and Okuno-Fujiwara (Eds.), *Japanese Economic System and Its Historical Origins* (New York: Oxford University Press, 1999).
- *Evolution of the Economic System in Japan* (Cheltenham: Edward Elgar, 2005).
- Terasaki, Yasuhiro, "Senzenki no Shotoku Bunpu no Hendo: Tenbo (The Evolution of Income Distribution before WWII: A Survey)," *Nagasaki Daigaku Kyoyobu Kiyo: Jinbun Kagakuhen* 26 (1986).
- USSBS (United States Strategic Bombing Survey), *Effects of Air Attack on Japanese Urban Economy: Summary Report* (Washington, DC: Urban Areas Division, 1947).
- Wada, Richard, "Impact of Economic Growth on the Size Distribution of Income: The Postwar Experience of Japan," International Labour Office working paper (1975).
- Waswo, Ann, and Yoshiaki Nishida (Eds.), *Farmers and Village Life in Twentieth-century Japan* (London: Routledge Curzon, 2003).
- Williamson, Jeffrey, *Did British Capitalism Breed Inequality?* (Boston: Allen and Unwin, 1985).
- Williamson, Jeffrey G., and Peter H. Lindert, *American Inequality: A Macroeconomic History* (New York: Academic Press, 1980).
- Yasuba, Yasukichi, "The Evolution of Dualistic Wage Structure," in H. Patrick (Ed.), *Japanese Industrialization and Its Social Consequences* (Berkeley: University of California Press, 1976).
- Yazawa, Hirotake, "Kogaku Shotokusha ni kansuru Senzen Sengo Hikaku (Comparison of High-income Earners Before and After WWII)," *Nihon Keizai Kenkyu* 23 (1992), 146–185.
- *Kindai Nihon no Shotoku Bunpu to Kazoku Keizai (Income Distribution and Family Economics in Modern Japan)* (Tokyo: Tokyo Tosho Senta, 2004).
- Yazawa, Hirotake, and Ryoshin Minami, "Dainiji Taisen Chokugo ni okeru Shotoku Bunpu no Byodouka Yoin (Equalization Factors of the Income Distribution Immediately after WWII)," *Keizai Kenkyu* 44 (1993), 365–373.