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Top Wage Incomes in Japan, 1951-2005  
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**ABSTRACT**

Using wage income tax statistics, we construct continuous series of upper wage income shares in Japan from 1951 to 2005 to document the evolution of top wage incomes and investigate their long-run determinants. We find that, while the middle wage income class gained enormously both in absolute and relative terms during the period of high economic growth, the upper wage income class fared comparatively better after 1975. In particular, the share of total wage accruing to the top 1% wage earners has risen steadily in the last ten years. Using a simple time-series regression analysis, we find that marginal income tax rates, corporate performance, female labor participation, and labor disputes are important determinants of top wage income shares in post-WWII Japan. Although not conclusive, our results suggest that much of the recent gains in wage income shares at the top can be explained by the changes in these four factors, placing a less emphasis on a story of structural change.

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## 1. Introduction

Japan has been known for its solid middle class and relatively egalitarian society for much of the post-WWII era. Recently, however, there is growing perception among the Japanese public that income inequality is rising. Scholars have documented a gradual increase in inequality since the 1980s using a variety of household survey data. Yet, there is much debate over the timing and extent of the recent changes in income inequality, as well as its causes and implications for a future course of development (Tachibanaki 2005; Ohtake 2005).

With respect to wage income, labor economists have identified ageing of the Japanese workforce, an increase in non-standard employment, and the rise of unemployment among the youth as major factors contributing to rising inequality (Ohtake 2005; Genda 2005). At the same time, some argue that intra-firm pay inequality is also increasing as top executives are receiving higher compensation in recent years due to changes in corporate governance and payment structure. We know relatively little about the upper end of wage distribution, however, due to the lack of adequate data. In this paper, using wage income tax statistics, we study the evolution of top wage incomes in 1951-2005, evaluate recent trends from a historical and comparative perspective, and investigate the determinants of top wage income shares.

## 2. Data and Methods

We briefly describe our data and methodology for estimating top wage income shares (see Appendix for a complete description). Our wage income data are compiled from wage income tax statistics published annually in the *Survey on Private Wages and Salaries* by the National Tax Administration since 1951.<sup>1</sup> The statistics cover all employees in the private sector who worked for the same employer throughout a calendar year, but exclude employees in the public sector, day laborers and temporary workers whose job duration was shorter than a year, and employees who were hired midyear.<sup>2</sup> Because the survey is based on the data filed by employers of all sizes who are legally responsible for withholding income tax at source for their employees, it provides comprehensive and accurate information on private wages and salaries. In particular, compared to household surveys, it offers more precise data on the high end of wage

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<sup>1</sup> Japan National Tax Administration, *Minkan Kyuuyo no Jittai*, 1951-2005.

<sup>2</sup> Our data thus include part-time workers and workers employed by temporary help firms, provided they worked for the same employer throughout a year.

income distribution. Wage income in our definition is the sum of wages, salaries, bonuses, overtime pay, allowances, and taxable part of non-cash compensation, but excludes non-taxable fringe benefits and retirement benefits. As a result, our wage income data are subject to income shifting where employers manipulate the form of compensation to avoid taxation. Because of an extensive and sophisticated withholding system, however, wage income in Japan is subject to a minimum tax evasion, i.e., unlawful underreporting of income (Hayashi 1987; Ishi 2001).

Top wage income groups (e.g., top 0.1%, 1%, 10% groups) are defined relative to the total number of regular employees in the private sector in Japan.<sup>3</sup> The unit of observation is thus individual and not household. We estimate the total wage income denominator based on total salaries from National Accounts. **Table 1** presents the number of wage earners and total wage income for 1951-2005. We estimate the wage income numerator (i.e., the amount of wage income accruing to a given top group) from wage income tax statistics using Pareto interpolations. Our estimates of top wage income shares for 1951-2005 are reported in **Table 2**.

We also estimate the effective marginal tax rates for various upper wage income groups for 1951-2005. The estimates are made for an individual with a non-working spouse and two dependent children, assuming that all income is employment income. Our estimates incorporate both national and local income taxes and take standard exemptions into account, but exclude non-standard exemptions and social insurance contributions. We summarize major changes in income tax laws from 1951 to 2005 in **Table 3**. Our estimates of the marginal tax rates series are reported in **Table 4**.

### **3. Top Wage Incomes in Japan, 1951-2005**

In preceding work, Moriguchi and Saez (2007) have presented the shares of wage income that accrued to the top 1% and 5% population of the wage income earners in Japan from 1929 to 2005. We briefly summarize the earlier findings to motivate this paper (see **Figure 1**). First, the top 5% and 1% wage income shares in Japan were substantially higher in pre-WWII years and then declined dramatically in 1935-45 due to tightening labor markets during military expansion and far-reaching wartime labor regulations. Second, the shares increased rapidly in the 1950s in Japan, temporarily surpassing the U.S. levels during the

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<sup>3</sup> According to the definition used by the Japanese government, “regular employees (*joko*)” include not only employees on indefinite contracts but also those who have worked for the same employer for more than a year under repeated one-year contracts. Therefore, regular employees include full-time as well as part-time employees who have stable employment relations.

early 1960s. Third, compared to the U.S. where the top wage income shares show an enormous gain since the 1970s, the shares in Japan have been relatively stable, where we find a steady but modest increase in these shares over the last decade.<sup>4</sup> Taking advantage of more comprehensive wage income tax statistics starting in 1951, this paper improves and expands our previous estimates for top wage income shares and empirically investigates the long-run determinants of top wage incomes in post-WWII Japan.

### 3.1 Top Wage Income Shares and Levels in Japan, 1951-2005

We construct series of wage income shares for various upper wage income groups, starting with the top 40% wage earners and going up to the top 0.01% wage earners.<sup>5</sup> **Table 5-a** presents the threshold wage income levels for nine upper wage income groups in 2005, the most recent year for which the statistics are available. In 2005, the average wage income of regular employees in the private sector in Japan was 4.3 million yen (or \$39,000). To be part of the top 10% group, one must earn an annual income of at least 7.8 million yen (or \$71,000). The thresholds for the top 1% and 0.1% groups are 15.7 million yen (or \$143,000) and 39 million (or \$355,000), respectively. **Table 5-a** also presents the number of wage earners in each of nine “disjoint” intermediate income groups and their average wage income in 2005. For example, the average income of the bottom half of the top 10% wage income group (denoted by “top 10-5%”) was 8.8 million yen (\$80,000), and the average income of the bottom half of the top 1% group (denoted by “top 1-0.5%”) was 25 million yen (\$160,000). The top 0.01% group consists of 4,600 wage earners with the average income of 130 million yen (or \$1.2 million). To provide a comparative perspective, **Table 5-b** presents the threshold and average wage incomes in the U.S. in 2004 and Japan in 2005 (all expressed in U.S. dollar). The U.S. estimates are from Kopczuk, Saez, and Song (2007). Although the average wage incomes in the two countries are virtually equal, due to dramatically more dispersed wage distribution in the U.S., the threshold wage income for the top 1% group in the U.S. is 1.5 times higher compared to Japan, and that for the top 0.1% group is 2.5 times higher. The average wage income of the top 0.1% group in the U.S. is in fact 4 times larger than that in Japan.

To provide an overall picture of the changes in employees’ living standards in postwar Japan, **Figure 2** presents the growth of the average wage incomes (expressed in

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<sup>4</sup> The growing wage inequality in the U.S. in recent decades has been a subject of many studies, yet its causes are still debated. See Lemiex (2007) for a comprehensive survey.

<sup>5</sup> Note, however, that our top 0.01% wage income share series rely heavily on interpolations and are less precisely estimated.

real 2002 yen) for top wage income groups over the 1951-2005 period. For all groups, real income grew very rapidly from 1951 to 1973 during the period of high economic growth and continued to grow at a modest pace after the 1973 Oil Crisis until the end of the Bubble period in 1990. Except for the top 1% group and above, real income grew little in 1990-2005. For example, the average wage income for the top 40% group rose 4.3 times in 1951-73 and 5.9 times in the entire period. Its compound annual growth rate was impressive 6.8% in 1951-73 but declined markedly to 1.0% in 1973-2005, with the average growth rate of 3.4% over the entire period. For the top 5% group, their real income grew at 6.1% in 1951-73 and 1.1% in 1973-2005, with the average rate of 3.1% for the entire period. By comparison, for the top 0.1% group, it grew more slowly at 5.3% in 1951-73 but at a higher rate of 2.1% in 1973-2005, resulting in six-fold increase in real income over the 1951-2003 period. These data indicate that the lower-middle class in Japan gained more relative to upper-middle and elite class during the high-growth period, while the upper class gained more relative to the lower-middle class in more recent decades.

To examine the evolution of wage income inequality more precisely, we construct top wage income shares series. **Figure 3-a** depicts the changes in the top 40% shares from 1951 to 2005. The share of total wage income accruing to the top 40% wage income earners has increased substantially over the period from 51% to 66% with short-term fluctuations. **Figure 3-b** decomposes the top 40% share into the shares of the top 10%, next 10% (denoted by “top 20-10%”), and the bottom half of the top 40% groups. It shows that the gain in the top 40% share during the first 25 years of the period accrued primarily to the *bottom* half of the top 40% group, while the gain in the last 25 years went mostly to the *top* half of the same group. On average, the top 10% group received 25% of total wage income in 1951-2002.

**Figure 3-c** decomposes the top 10% wage income shares into the shares of the top 1%, next 4% (denoted by “top 5-1%”), and the bottom half of the top 10% groups. The three shares show similar time trends. The top 1% group received 5% of total wage income on average with long-run fluctuations: it peaked in 1961, then declined steadily until 1975, and increased modestly since 1997 from 4.6% to 5.6%.

We decompose the top 1% wage income shares into the shares of the top 0.1%, next 0.4%, and the bottom half of the top 1% wage income groups (**Figure 3-d**), and further decompose the top 0.1% shares into the top 0.01%, next 0.04%, and the bottom half of the top 0.1% groups (**Figure 3-e**). Again the shares of within the top 1% groups

exhibit similar time trends: a sharp increase in the 1950s followed by a sharp decline in 1961-75, little change in 1975-95, and a marked increase since 1997. On average, the top 0.1% group received just 1% of total wage income in Japan in 1951-2005. Over the last ten years, the top 0.1% share increased by 44% from 0.9% to 1.3%, but it still is less than its historic peak reached in 1962. While the top 0.01% wage income share shows a sharper rise in recent years, as our estimates on the very top group rely heavily on Pareto interpolations especially for recent decades, we have less confidence in this observation.

In summary, we find that the shares of the top 10% wage income group and above rose initially in the 1950s but declined in the subsequent two decades, reaching their lowest in the mid 1970s. Since then, the shares have been relatively stable, but show some sign of increase since the late 1990s particularly at the very top wage income groups.

### **3.2 Evidence from Corporations Financial Statement Statistics, 1960-2005**

The above observations suggest that a faster growth of wage income at the high end of the distribution might be another driver of rising inequality in recent years. We hence turn to the *Corporations Financial Statement Statistics* published annually by the Ministry of Finance since 1960 to document the trends in executive compensation.<sup>6</sup> The statistics are based on a survey of incorporated companies in all industries except for finance and insurance.<sup>7</sup> It reports financial data of corporations by industry and the size of corporation, including directors' salaries and bonuses and employees' salaries. Directors are defined as the board of directors including corporate executives who are also employees of the company, while employees are defined as non-director employees. Bonus is defined narrowly as bonus that is paid out of net profits at the end of fiscal year, and any other compensation (including wages, allowances, and bonuses in a broader usage of the term) that is part of labor cost is classified as salary.<sup>8</sup> By this definition, bonus is exclusively paid to directors.

In large publicly-traded firms in Japan after WWII, virtually all directors have been employees, consisting of a chairman, a CEO, vice-CEOs, senior executives (who typically hold major departmental positions in the company), and junior executives, with few outside directors (Kato 1997; Kubo 2005). As such, one could view directors'

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<sup>6</sup> Japan Ministry of Finance, *Hojin Kigyo Tokei Chosa Nenpo*, 1960-2005.

<sup>7</sup> Because employees in finance and insurance industry receive the highest average wage income among all industries in Japan according to *the Survey of Private Wages and Salaries*, the statistics understate wage income inequality.

<sup>8</sup> Bonuses paid out of net profits are not deductible for tax purposes, while labor cost is.

compensation as de facto executive compensation. Since 1997, however, a series of legal reforms reportedly led firms to increase a number of outside directors albeit gradually (Kubo 2005). According to Abe (2003), among all listed Japanese manufacturing companies, the average number of directors per firm declined from 16.3 in 1990 to 11.6 in 2001, while the number of outside directors per firm declined comparatively less from 3.2 to 2.6. Therefore, the use of directors' compensation as a proxy for executive compensation is less valid in recent years, potentially biasing the data.

**Figure 4** presents the ratio of the average director compensation, with and without bonus, to the average employee salary by firm size. "Medium" corporations refer to firms with capital 10 to 100 million yen, "large" corporations refer to firms with capital 100 million to 1 billion yen, and "very large" corporations refer to those with capital over 1 billion yen. The average compensation in each category is weighted by employment. Because these categories are fixed at nominal value over 45 years, one must note that the composition of firms within each category has changed substantially over time. For this reason, **Figure 4** also plots the changes in firm size measured by *employment* in each category. In fact, the average number of employees in "very large" corporations declined from 5,000 in the early 1960s to 1,200 in the early 2000s. **Table 6** reports the average numbers of employees and directors per firm by category, as well as the distribution of firms across categories. For the period after 1990, "very large" firms stably represents the top 0.2% of all corporations with roughly 500,000 directors (or executives in our interpretation). As positive correlations between firm size (measured by employment) and the level of executive compensation are well documented (Kato and Rockel 1992; Xu 1997), the directors in "very large" corporations likely make up large part of our top 0.1% wage income group in 1990-2005.

One of the striking patterns in **Figure 4** is a drastic compression of director-employee wage disparity from 1960 to 1975 in all firm categories. This, however, is largely driven by the declining firm size (measured by employment), as bigger firms exhibit higher intra-firm pay differentials. One robust finding is that the ratio of director compensation to employee compensation in "very large" corporations has increased sharply from 2.5 times in 2000 to 4.8 times in 2005 despite the continuing decline in firm size measured by employment (see **Figure 4-d**). In particular, the percentage of bonus in director's total pay jumped from the average of 11.9% in 1990-2000 to 48.8% in 2005.

To examine whether the recent increase in director/executive compensation can be explained by corporate performance, **Figure 5** plots the compensation ratio series

against returns on sales (ROS) series for “large” and “very large” corporations. Although ROS has also increased in 2001-5, historically, we observe no strong positive correlations between the two series. To see whether or not the recent change is associated with a change in corporate governance, we also plot the ratio of dividends to capital. The dividend-capital ratio shows a similar increase (or much sharper increase for “large” corporations) in 2001-5, departing from relatively stable trends during the previous decades.

There is small but growing literature on the determinants of executive compensation in Japanese firms. In principle, the amount of individual directors’ bonus in Japan is set by a CEO based on their rank and performance. Directors’ monthly salaries are also determined by a CEO, but in practice, they are said to be often determined as a proportion of the highest paid employees’ wages (Kubo 2005, p.430). Empirically, some studies have found a positive relationship between firm performance and executive or director compensation (Kaplan 1994; Xu 1997; Kato 1997), while others have found no such relationship in Japanese data (Kato and Rockel 1992; Kubo 2003). Kubo (2003) finds positive correlations between director’s salaries and employee wages. Interpreting weaker correlations between executive pay and firm performance in Japan compared to the U.S., Abe et al. (2005) go further to suggest that, executive compensation in Japan is designed primarily to motivate employees who will be promoted to directors as a prize, rather than to motivate directors to improve firm performance. The stable director-employee compensation ratio among “very large” corporations from 1975 to 2000 despite the sizable fluctuations in ROS is largely consistent with the above view. We need further research, however, to determine whether the recent change is a temporary phenomena explained by short-term economic factors or a break from historical trends driven by a structural change in corporate governance or executive labor markets.

#### **4. The Determinants of Top Wage Incomes in Japan**

In this section, we investigate the long-run determinants of top wage income shares using time-series regression analyses. We first estimate the effects of income tax on reported wage income by exploiting across-time variations in the data.

##### **4.1 Income Tax Policies and Marginal Tax Rates in Japan, 1951-2005**

As **Table 3** documents, from 1951 to 2005, the Japanese income tax system has undergone several major tax reforms. The highest statutory marginal tax rate for national

income tax, for instance, rose from 55% to 75% between 1951 and 1962 and then fell from 75% to 35% between 1983 and 1999. Accordingly, effective marginal tax rates for wage income earners have changed substantially over the postwar period. Furthermore, due to the changes in progressiveness of income tax over time, tax rates have evolved differently across wage levels. To assess the impact of government tax policies on wage income shares, we first construct annual series of marginal tax rates (MTRs) for various upper wage income groups (see Appendix for details).

We estimate effective marginal tax rates faced by the average individual in each wage income group, assuming that an individual has one non-working spouse and two dependent children and that all incomes are wage income. The average marginal tax rates in each group are weighted by wage income. Our marginal tax rates incorporate both national and local income taxes, but exclude social insurance contributions, corporate taxes, and non-income taxes. To obtain tax rates using tax schedules, we convert wage income to its taxable amount by adjusting for standard deductions (basic, spouse, dependent, and employment income deductions) and tax reductions (e.g., proportional tax reductions in 1994-96 and 1999-2005), which are summarized in **Table 3**. To our knowledge, we offer the first precise and continuous estimates of marginal tax rates for a wide range of wage income groups in Japan over the entire postwar period (see **Table 4**).<sup>9</sup>

**Figure 6-a** depicts the average marginal tax rates of national income tax for various upper wage income groups. The highest statutory marginal tax rates (denoted by “top MTR”) are also reported in the figure. It is important to note that the changes in the top marginal tax rates do not necessarily correlate with the changes in the effective marginal tax rates even for the highest wage income group (i.e., top 0.01%). This is because the effective marginal tax rates are affected also by the changes in deductions as well as income brackets. For example, the 1957 tax reform simultaneously increased the number of income brackets and tax rates and expanded employment income deductions (**Table 3**). As a result, the effective rates fell sharply across most income groups, while the top statutory rates increased. We will come back to this point when we discuss an instrument for the effective marginal tax rates in our regression analysis.

**Figure 6-b** presents *total* marginal tax rates, the sum of national and local income taxes, for various upper wage income groups. Local income taxes in Japan consist of prefectural and municipal inhabitants income taxes. As local income taxes have evolved

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<sup>9</sup> By comparison, our previous estimates in Moriguchi and Saez (2007) incorporated neither local income taxes nor full details of exemptions, and were produced for a few selected top wage income groups.

largely in parallel to national income tax, the overall time trends in the total marginal tax rates are similar to the trends in national rates. The levels of the total marginal tax rates are 5 to 19 percentage points higher after the inclusion of local taxes. Importantly, due to a progressive structure of local income taxes, their inclusion magnifies across-group variations in marginal tax rates.

Using **Figure 6-b** and **Table 4**, we briefly discuss the evolution of income tax policies in postwar Japan. From 1951 to 1970, income tax became increasingly progressive as the government raised both the number of brackets from 11 to 19 and top marginal tax rates from 55% to 75%. As the economy grew rapidly, marginal income tax rates increased during this period for all groups, but higher income groups experienced larger increases. The 1974 reform, which liberalized employment income deduction, decreased the marginal tax rates only temporarily. The 1984 tax reform reduced the number of brackets and tax rates for the first time since 1951, followed by the 1987-89 reforms that quickly brought down the top marginal tax rates to 50% and the number of brackets to 5. The reforms in the 1980s, however, affected only the top 0.1% group and above. As a result, marginal tax rates for the top 1% group and below continued to rise until the 1994 reform that provided a large one-time tax break in the form of proportional tax reduction to stimulate the economy. The 1999 reform further reduced tax rates and the number of brackets, while instituting a permanent proportional tax reduction. Reflecting these policy changes, the difference between the average marginal tax rates of the top 0.01% group and the top 40% groups has evolved from 32% in 1951, to 42% in 1960, 61% in 1970, 55% in 1980, 34% in 1990, and 25% in 2005.

## 4.2 Estimating Tax Elasticity of Wage Income Shares

Taking advantage of large temporal and across-group variations in the effective marginal tax rates (MTRs), we empirically investigate the effect of income tax on wage incomes by wage income group. **Figure 7** plots the top wage income share series against the marginal tax rate series for top 10%, 1%, and 0.1% groups. We observe no clear correlation between the two series for the top 10% group (see **Figure 7-a**). By contrast, the two series are seemingly negatively correlated for the top 1% group (see **Figure 7-b**) and for the top 0.1% group (see **Figure 7-c**).

We estimate the elasticity of wage income with respect to the net-of-tax rate, defined as  $1 - \text{MTR}$ , expressed in %. In general, we expect lower net-of-tax rates to negatively affect reported wage income in the tax statistics through three main channels:

(1) tax evasion or underreporting of wage income by workers, (2) income shifting by employers from taxable to non-taxable form of compensation, such as fringe benefits and perquisites, and (3) the reduction in labor supply in response to lower net returns (assuming no income effect). As mentioned, our data are subject to minimum tax evasion due to Japan's sophisticated withholding system, but are subject to income shifting. For example, even though all non-cash compensation is in principle taxable in Japan, in practice it is not the case. Expense accounts for business purposes and employers' contributions to private pensions are fully exempted, and company housing is partially exempted. Stock options are typically taxed, not as wage income, but as capital gains at the point of exercise.<sup>10</sup> Recreation or entertainment provided exclusively for executives is fully taxed, however. Accordingly, we need to interpret our results with caution, particularly in terms of their welfare implications.

There is extensive literature estimating the effects of marginal tax rates on taxable income (e.g., Lindsey 1987; Feldstein 1995; Slemrod 1996). In the following empirical analysis, we closely follow the methodology described in Saez (2004) and adopt a simple time-series regression framework using repeated cross-section data from 1951 to 2005. Our dependent variable is log of wage income shares.<sup>11</sup> Because we expect the elasticity to differ across different wage income groups, all our regressions are run for a single wage income group. In the simplest specification, we regress log of wage income share on log of net-of-tax rate (NOTR), defined by  $1 - \text{MTR}$ , and a constant term. Descriptive statistics for these variables are reported in **Table 7**. In addition, to control for non-tax related wage income growth (due, for example, to capital deepening, technological progress, or human capital accumulation) in each group, we also add linear and quadratic time controls. In the subsequent section, we explicitly control for non-tax factors in multivariate regressions. Finally, due to the progressive structure of income tax, higher nominal wage income leads to higher marginal tax rates (i.e., "bracket creep"), indicating reverse causality that may bias our elasticity estimates downward.<sup>12</sup> A standard way to counter this problem is to use the top statutory marginal tax rate as an instrument for the effective marginal tax rate under the assumption that the former is exogenously determined by law but correlated with the latter.

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<sup>10</sup> In Japan, stock options were legalized for the first time in 1997 and not yet widely practiced (Naito and Fujiwara 2004).

<sup>11</sup> We use shares, instead of levels, to control for economy-wide nominal and real wage income growth documented in Figure 2. Our results are robust to an alternative specification in which we use threshold wage income levels (relative to mean wage income levels) instead of wage income shares.

<sup>12</sup> Note that the elasticity is defined with respect to the net-of-tax rate, not marginal tax rate.

**Table 8-a** presents our regression results for a number of specifications from the top 40% group to the top 0.01% group. The first column presents the results from the OLS regression in the simplest specification with robust standard errors. As low Durbin-Watson statistics indicate serial correlations in the error terms, we report the Newey-West standard errors in the second column.<sup>13</sup> We add linear and quadratic time controls in the third and fourth columns, respectively, to control for group-specific time trends. In the last column, we report the results from a 2SLS regression where the marginal tax rates are instrumented by the top statutory marginal tax rates to address the issue of reverse causality.

In almost all specifications, the coefficient, i.e., the elasticity of wage income share with respect to the net-of-tax rate, increases *monotonically* as we move from the top 40% to top 0.1% wage income group. In other words, as one would expect, higher wage income earners are more responsive to changes in marginal tax rates either through tax planning or labor supply decisions, if not both. This pattern is broken at the top 0.01% group, however, and what is more, the elasticity estimates for the top 0.01% group are sensitive to the specification as they vary widely from -0.57 to 0.40. We attribute this to the fact that the top 0.01% wage income shares are less precisely estimated than the other shares, as we rely heavily on Pareto interpolations due to top coding in the data. Therefore, in the rest of the analysis, we focus primarily on the estimates for the top 0.1% group and below. The specification with quadratic time controls performs better for the lower wage income groups, largely because, for the top 1% group and above, net-of-tax rates and quadratic controls are highly collinear. With the 2SLS regression, the elasticity estimate for the top 0.1% group increases substantially from 0.45 to 1.16, suggesting potentially large underestimate resulting from reverse causality. The IV estimates, however, are highly sensitive to specification and are often not statistically significant. This is probably because our instrument, top statutory MTR, is not highly correlated with the effective MTR below the top 0.01% group as we observed in **Figure 6**.

In our most preferred specification, i.e., the regression with linear time controls, the elasticity for the top 0.1% group is estimated to be 0.67; that is to say, the decline in the marginal tax rate by 1% will increase the wage income share by 0.67%. For the top 1% group, our estimate is 0.43, and for the top 10% group, it is 0.20. For the top 40% group, the elasticity is effectively zero, which is consistent with the fact that this group faces the average marginal tax rate of only 20 to 30%. According to these results, a 26.6%

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<sup>13</sup> We also ran regressions including lagged dependent variables and obtained similar results.

reduction in the marginal tax rates (from 65% to 47.7%) for the top 0.1% group from 1995 to 2000 would have increased their wage income share by 17.8% or 0.16 percentage point, from 0.89% to 1.05%. The actual top 0.1% share in 2000 was 1.03%.

Finally, in **Table 8-b**, we compare our elasticity estimates for Japan with the U.S. counterparts obtained by Saez (2004) using the 1960-2000 data and similar methodology. The estimates are roughly comparable in magnitude, but the U.S. estimates are larger for the top 1% wage income group and above.

#### **4.3 Determinants of Top Wage Income Shares, 1953-2005: Multivariate Analysis**

We introduce additional variables to the regression analysis to study more generally the long-run determinants of top wage income shares. First, motivated by our discussion on executive compensation, we include corporate performance, measured by the average returns on sales (ROS) of all corporations. Second, to account for changes in workers' bargaining power, we also include labor disputes rate (DISP), defined by the share of workers involved in labor disputes with dispute acts<sup>14</sup>, or alternatively, we use unionization rate (UNION), defined by the share of union membership in total employment. We also control for the heterogeneity of labor force, measured by female labor participation rate (FLP). Finally, we include inflation (INFL) to control for nominal wage rigidity that may differ across income groups. **Table 7** presents the definitions of the variables and descriptive statistics. In the regression analysis, we take log of all variables, except for INFL (which takes negative values), to provide elasticity estimates.

In **Table 9**, we first report the regression results for the top 0.1% wage income group in a variety of specifications. In Panel A, the regressions (1)-(4) include no time controls, in Panel B, the regressions (5)-(8) include linear time controls, and in Panel C, the regressions (9)-(12) include both linear and quadratic time controls. In each panel, we progressively add more independent variables. Although not reported in the table, UNION was not statistically significant in any specifications.<sup>15</sup> We report Newey-West standard errors for all specifications to correct for serial correlations. Comparing Panels A and B, we note that linear time trends are statistically significant and tend to improve adjusted R-square. Moreover, most coefficients are fairly robust to the inclusion of linear time trends. By contrast, comparing Panels B and C, we note that the coefficients for NOTR and FLP

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<sup>14</sup> Dispute acts include lockouts, strikes, and slowdowns.

<sup>15</sup> The lack of union effect on top wage income shares may seem surprising, but it is consistent with empirical studies that find little union wage premium in Japan in contrast to the case in the U.S. (Tachibanaki and Noda 2000; Rebeck 2005, p.81).

are sensitive to the inclusion of quadratic time controls, while the coefficients for quadratic time trends themselves are not significant and virtually zero, indicating possible multicollinearity between quadratic time trends and the other two variables. We thus select the specification with linear time controls.

Observe that, when we explicitly control for non-tax factors, the elasticity estimate for the top 0.1% group drops substantially from 0.67 to 0.28 (see the regressions (5) and (7)), indicating a potentially large omitted variable bias in the estimate with only time controls. According to the results from the regression (7), 1% rise in net-of-tax rate, corporate profitability, and female labor participation will increase the top 0.1% wage income share by 0.28%, 0.27%, and 0.71%, respectively, whereas 1% rise in labor disputes will reduce the same share by 0.10%.

To highlight across-group differences more clearly, in the following analysis, we use the wage income shares of eight “disjoint” wage income groups (e.g., top 40-20%, top 20-10%, top 10-5%) as our dependent variables, instead of “nested” groups (e.g., top 40%, top 20%, top 10%). In **Table 10**, we present the results for three specifications with linear time trends. We focus on **Table 10-b** as the most preferred specification, but our results are robust to alternative specifications (see **Tables 10-a and 10-c**). In **Table 10-b**, except for the top 0.01% group whose shares are imprecisely estimated, the coefficients for the log of NOTR, ROS, FLP, and DISP change *monotonically* as we move from the lower to higher wage income groups. In particular, for the top 40-20% group, the elasticity estimates with respect to the net-of-tax rates are negative and significant, implying that wage earners in this group *increase* their wage incomes, relative to other groups, in response to lower net-of-tax rates. This can be attributed either to possible downward bias in our elasticity estimate due to reverse causality, or to income effects that may dominate substitution effects for the lower income groups. Corporate performance has positive effects on wage income shares across all groups, but benefits the higher wage income groups comparatively more than the lower groups.<sup>16</sup> For example, 1% rise in ROS will increase the top 0.1-0.01% share by 0.24%, but for the top 1-0.5% share the increase will be 0.17%, and for the top 10-5% group only 0.04%. The same pattern holds for female labor participation, where 1% rise in FLP will increase the top 0.1-0.01% share by 0.85%, the top 5-1% share by 0.61%, and *reduce* the top 40-20% share by 0.84%. We attribute these results to a low share of women in managerial positions and substantive and persistent female-male pay differentials in Japan (Rebick 2005). For labor disputes with

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<sup>16</sup> We obtain qualitatively the same results when we use GDP growth rate instead of ROS.

dispute acts, 1% rise in DISP will reduce the top 0.1-0.01% share by 0.08%, but *increase* the top 40-20% share by 0.03%. Therefore, our estimates indicate that labor militancy reduces wage income disparity.<sup>17</sup>

Finally, using the regression coefficients in **Table 10-b**, we generate fitted values and plot them against the actual values of wage income shares for each wage income group in **Figure 8**. Except for the top 0.01% group, the predicted values track the actual values fairly well. In particular, for the top 1% wage income group and above, **Figures 8-e, 8-f, and 8-g** show that much of the rise in their shares in the last ten years can be accounted for by the changes in the four variables and their historical coefficients. That is, the fall in marginal tax rates in the mid 1990s, the improvement in corporate performance since 2001, and the downward trends in labor disputes since the 1980s are likely to be major driving forces behind the recent increase in wage income inequality, offsetting a negative effect of the decline in female labor participation in the 1990s.

## 5. Concluding Remarks

In this paper, we used wage income tax statistics to document the evolution of top wage incomes in Japan after WWII. Using a simple time-series regression analysis, we then investigated the long-run determinants of wage income shares for various upper wage income groups. Our data indicate that, while the lower middle wage income class gained enormously during the period of high economic growth both in absolute and relative terms, the upper wage income class fared comparatively better since 1975, and especially during the last decade. The recent increase in the wage income shares for the top 1% group and above in Japan, however, is very modest compared to that in the U.S.

We identified marginal income tax rates, corporate performance, female labor participation, and labor disputes as important determinants of the top wage income shares. In particular, even after explicitly controlling for socio-economic factors, we found that marginal income tax rates have negative and sizable effects on the top 1% wage income shares and above. Although it is less than conclusive, our results suggest that much of the recent gains in the wage income shares at the top can be explained by the above four factors, placing less emphasis on a story of structural change.

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<sup>17</sup> When we use labor disputes rate defined by labor disputes in general (rather than labor disputes with dispute acts), the results are not significant.

## Appendix

### A1. Wage Income Shares, 1951-2005

The National Tax Administration has annually published the statistics on wage income in the *Survey on Private Wages and Salaries* since 1951.<sup>18</sup> The survey covers all employees in the private sector, but excludes day workers, employees in the public sector, and retirees. It also excludes employees in those establishments where no employee has withholding income tax to pay. Because the survey is based on the data filed by employers of all sizes who are legally responsible for withholding tax at source for their employees, it provides accurate and comprehensive information on wage income. From this survey, we use the statistics for employees in the private sector who worked under the same employer throughout a calendar year, which include full-time and part-time workers with job duration longer than a year but exclude temporary workers with shorter job duration as well as full-time workers who were hired midyear. It also excludes employees in an establishment in which no employee has an amount of income tax withheld. The statistics include a distribution table that reports the number of wage earners and the amount of annual wage income by wage income brackets, which we use to estimate top wage income shares.

Our definition of wage income includes wages, salaries, bonuses, overtime pay, allowances, and taxable part of fringe benefits, but excludes retirement benefits and non-taxable fringe benefits. It is before subtracting employee's social insurance contributions (for national health and pension plans) and before including employer's social insurance contributions.<sup>19</sup> Although all non-cash compensation is in principle taxable in Japan, expense accounts for business purposes are fully exempted, and so is company housing if employees bear at least 50% of its costs based on official valuation. Recreation or entertainment provided exclusively for executives is fully taxed, however. Stock option, which was legalized in 1997 and liberalized in 2002 in Japan, is in principle not taxed as wage income but taxed as capital gains at the point of exercise.<sup>20</sup>

We use a standard Pareto Interpolation method to estimate top wage income shares. We define top groups relative to the total number of regular employees in the private sector in Japan. Note that the definition of "regular employees (*joko*)" in the government statistics in Japan includes not only employees on indefinite contracts but also those employees who have worked for the same employer more than a year under repeated fixed contracts.<sup>21</sup> Therefore, regular employees include both full-time and part-time workers with stable employment, corresponding closely to the employees covered by the wage income tax statistics discussed above. The series for regular employees are estimated using the Labour Force Survey as follows.<sup>22</sup> We define the number of regular employees (*joko*) in the private sector as the total number of employees minus the number temporary employees (*rinji*) minus the number of day labourers (*hiyatoi*) minus government employees (*komu*). Because the number of temporary employees in 1948-58 and the number of government employees in 1951-52 are not available, we use the ratio of temporary to total employees in 1959 and the ratio of government to regular employees in 1953 to estimate the numbers for missing years. Our estimates are reported in **Table 1**. As shown in the table, the coverage of the survey has rose from about 60% of regular employees in the private sector in the 1950s to over 90% by the early 1970s. The lower coverage of the survey in the early period is likely due to high exemption levels that removed a large number of (presumably small) establishments

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<sup>18</sup> National Tax Administration, *Minkan Kyuuyo Jittai Chosa (Survey of Private Wages and Salaries)*. The statistics for recent years are available online at: <http://www.nta.go.jp/category/toukei/tokei-e.htm>.

<sup>19</sup> This information is based on the author's phone conversation with a Japan Tax Administration officer on May 5, 2006.

<sup>20</sup> The definition of wage income and the detailed descriptions of exemptions and special treatments are in Section 2 of National Tax Administration (2004), *Heisei 16-nen 6-gatsu Gensen Choshu no Aramashi (Outline of Withholding Tax)*, available at: <http://www.nta.go.jp/category/pamph/gensen/5151/01.htm>.

<sup>21</sup> Rebick (2005), p.58.

<sup>22</sup> The data are available online in Tables 19-7 and 19-8, *Historical Statistics of Japan*, at <http://www.stat.go.jp/english/data/chouki/19.htm>.

from the survey's sample as they had no employee with income tax withheld. In fact, according to our MTR estimates, only the top 20% wage income earners paid positive income tax in 1953-60 and only the top 40% did so in 1951-71, supporting the above conjecture.

To obtain top wage income shares, we divide the amounts of wages and salaries accruing to top wage income groups by 90% of total wages and salaries from National Accounts. The denominator is reported in **Table 1**, under the label, "total wage income." To be consistent with our definition of wage income, total wages and salaries from National Accounts include employees' social insurance contributions but exclude employers' social insurance contributions. In recent years, where the coverage of the survey is virtually complete for regular employees in the private sector, total wage reported in the survey are approximately 90% of wages and salaries from National Accounts. Thus, we use the factor 90% to correct for the exclusion of day laborers, temporary workers, and government employees in the wage income survey. We present all values in real 2002 yen, using CPI. Our estimates for wage income shares for 1951-2005 are reported in **Table 2**.

## **A2. Marginal Tax Rates for Top Wage Income Earners, 1951-2005**

To estimate the average marginal tax rates (MTRs), we first estimate MTRs at the *threshold* wage income level for each wage income group for each year. We assume that a taxpayer at each threshold income has only employment income and forms a household with a non-working spouse and two dependent children. Our estimates include both national and local income taxes and take standard deductions into account, but exclude non-standard exemptions (e.g., exemptions for housing loans, life insurance premiums, and medical expenses), social insurance contributions, corporate income tax, and non-income taxes. To obtain net taxable income, we subtract basic, spouse, and two dependent exemptions as well as employment income deductions from the threshold wage income. We then use a statutory tax schedule, which presents increasing marginal tax rates by income brackets, to obtain tax liability. Finally, we adjust tax liability to account for tax reductions (e.g., proportional tax reductions) to compute MTR for a given taxable income level.

We estimate MTRs at the threshold wage income levels for national and local income taxes separately, as they employ different tax schedules, exemption rules, and tax reductions. Detailed tax codes for national income tax are obtained from Japan National Tax Administration (1988), pp.154-207, for years 1951-88; OECD (1988-96), *Tax/Benefits Position of Production Workers*, for years 1986-94; Ishi (2001), pp.344-5, for year 1995; OECD (1997-98), *Tax/Benefits Position of Employees*, for years 1996-7; and OECD (1999-2006), *Taxing Wages*, for years 1998-2005.<sup>23</sup> **Table 3** summarizes the changes in tax codes from 1951 to 2005. For local income taxes in Japan, as part of inhabitant taxes, municipal and prefectural governments introduced progressive income taxes on the same income base as the national income tax, since 1950 and 1954, respectively. Tax codes for municipal and prefectural income taxes are collected from online publications by the Ministry of Internal Affairs and Communications.<sup>24</sup> Unlike in the U.S. or Canada, Japanese local governments in principle adopt uniform "standard tax schedule" set by the national government, and hence there is virtually no variation in local tax rates. Total MTRs are simply the sum of the MTRs for national income tax and the MTRs for local income taxes.

To estimate the MTR for the average taxpayer in each wage income group, we take the income-weighted average as follows. We denote highest statutory MTR by "TopMTR," MTR at wage income threshold for the top 0.01% group by "MTR P99.99," average MTR for the top 0.01% group by "MTR 0.01%," and the top 0.01% wage income share by "Share 0.01%." First, we compute the MTR for the top 0.01% group as:

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<sup>23</sup> Supplementary information was obtained by the author from an National Tax Administration officer through e-mail dated August 15, 2007.

<sup>24</sup> Japan Ministry of Internal Affairs and Communications, *Chihozei no Zeiritsuto no Suii: Dofukenminzei, Kojin (The Changes in Local Tax Rates: Prefectural Inhabitant Tax)*, and *Shichosonminzei, Kojin (Municipal Inhabitant Tax)*, downloaded in June 2007 from Section 17, Items 1 and 10 at: [http://www.soumu.go.jp/czaisei/czaisei\\_seido/ichiran06\\_h17.html](http://www.soumu.go.jp/czaisei/czaisei_seido/ichiran06_h17.html).

$MTR\ 0.01\% = (MTR\ P99.99 + Top\ MTR) / 2,$   
where a simple average is used as an approximation for this group. We then compute the MTR for the top 0.05% group as:

$$MTR\ 0.05\% = \{ Share\ 0.05-0.01\% * (MTR\ P99.95 + MTR\ P99.99) / 2 + Share\ 0.01\% * MTR\ 0.01\% \} / Share\ 0.05\%.$$

This amounts to estimating MTR 0.05% as the average of MTR 0.01% and MTR 0.05-0.01%, weighted by income shares, where MTR 0.05-0.01% is computed using a simple average,  $(MTR\ P99.95 + MTR\ P99.99) / 2,$  as an approximation. We then repeat the same procedure to estimate the MTRs for the next top wage income groups, using MTR 0.01% and MTR 0.05% estimated above. Our estimates for the average MTRs are presented in **Table 4**.

Our marginal tax rates do not take into account social insurance contributions. Since their introduction in the early 1950s, social insurance contributions for public pensions and national health insurance in Japan have been determined as a fixed percentage of monthly earnings up to a maximum amount of monthly earnings set by law. The cap on monthly earnings has been set at around twice the average earnings of all insurers and revised periodically to adjust for inflation.<sup>25</sup> As a result, including social insurance taxes would hardly affect our estimates for MTRs for top 1% wage income group and above, but increase those for the lower wage income groups.

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<sup>25</sup> See "Tsuiseki Nenkin Kaikaku (Pension Reform)" published in *Yomiuri Shimbun Online* on June 4, 2004, at: <http://www.yomiuri.co.jp/atmoney/special/43/kaikaku53.htm> and *Kosei Hakusho (White Paper on Health and Welfare)* in 1965 available online at: <http://www.hakusyō.mhlw.go.jp/wpdocs/hpaz196501/b0163.html>.

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**Table 1: Employees, Wage Income, and Inflation in Japan, 1951-2005**

Year	Wage Earners			Wage Income		Inflation
	Total Number of Employees ('000s)	Number of Employees in the Statistics ('000s)	% of Employees in the Statistics	Total Wage Income (billions 2002 yen)	Average Wage Income ('000s 2002 yen)	CPI (2002 base 100)
1951	11,835	6,463	54.6	11,104	938	15.19
1952	12,275	6,838	55.7	12,846	1,046	16.03
1953	14,340	6,939	48.4	14,870	1,037	17.08
1954	14,800	7,625	51.5	15,439	1,043	18.12
1955	15,370	8,219	53.5	16,486	1,073	18.02
1956	16,660	8,745	52.5	18,813	1,129	18.12
1957	17,790	9,431	53.0	20,549	1,155	18.65
1958	18,860	10,268	54.4	22,776	1,208	18.54
1959	19,020	10,856	57.1	25,316	1,331	18.75
1960	20,220	11,715	57.9	28,091	1,389	19.49
1961	21,210	12,962	61.1	31,665	1,493	20.43
1962	22,190	14,106	63.6	35,153	1,584	21.90
1963	23,230	15,250	65.6	38,029	1,637	23.47
1964	24,080	16,123	67.0	42,642	1,771	24.41
1965	25,050	17,170	68.5	46,583	1,860	25.98
1966	26,160	18,277	69.9	50,978	1,949	27.34
1967	27,670	19,773	71.5	56,392	2,038	28.39
1968	28,690	20,676	72.1	62,196	2,168	29.96
1969	29,190	22,066	75.6	69,588	2,384	31.53
1970	30,230	24,244	80.2	77,696	2,570	33.94
1971	31,230	26,480	84.8	86,792	2,779	35.93
1972	31,620	27,096	85.7	96,653	3,057	37.61
1973	32,880	28,181	85.7	108,657	3,305	42.01
1974	33,220	29,895	90.0	110,902	3,338	52.28
1975	33,460	30,321	90.6	114,416	3,419	58.46
1976	34,020	31,068	91.3	117,435	3,452	64.01
1977	34,260	31,151	90.9	120,527	3,518	69.14
1978	34,360	32,113	93.5	125,063	3,640	71.66
1979	35,050	32,534	92.8	129,837	3,704	74.28
1980	35,860	33,361	93.0	130,085	3,628	80.25
1981	36,460	33,659	92.3	132,860	3,644	84.12
1982	36,920	33,996	92.1	136,637	3,701	86.43
1983	37,730	34,928	92.6	140,826	3,732	88.00
1984	38,260	35,306	92.3	145,394	3,800	89.99
1985	38,660	36,938	95.5	148,370	3,838	91.77
1986	39,320	37,287	94.8	153,379	3,901	92.19
1987	39,640	37,670	95.0	157,781	3,980	91.98
1988	40,540	37,918	93.5	165,970	4,094	92.40
1989	41,760	38,470	92.1	173,262	4,149	94.60
1990	43,160	39,307	91.1	181,689	4,210	97.53
1991	44,770	40,339	90.1	189,819	4,240	100.68
1992	45,890	41,247	89.9	195,086	4,251	102.35
1993	46,570	42,770	91.8	197,072	4,232	103.51
1994	46,900	43,726	93.2	201,399	4,294	104.03
1995	47,090	44,395	94.3	203,262	4,316	103.71
1996	47,540	44,895	94.4	207,393	4,362	103.71
1997	47,910	45,265	94.5	209,891	4,381	104.65
1998	47,500	45,446	95.7	206,707	4,352	104.54
1999	46,900	44,984	95.9	202,901	4,326	103.82
2000	46,840	44,939	95.9	207,231	4,424	102.47
2001	46,770	45,097	96.4	207,932	4,446	100.91
2002	46,040	44,724	97.1	198,802	4,400	100.00
2003	45,980	44,661	97.1	198,322	4,313	99.70
2004	46,080	44,530	96.6	197,278	4,281	99.70
2005	46,310	44,936	97.0	199,881	4,316	99.39

Notes: See Appendix for details.

The total number of employees is the number of regular employees, which include employees on indefinite contracts and employees who have worked for the same employer for more than one year on definite contracts.

The number of employees in the statistics is the number of employees in the private sector who worked for the same employer throughout a calendar year reported in the Survey of Private Wages and Salaries.

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

Table 2 Top Wage Income Shares in Japan, 1951-2005

Year	Top 40%	Top 20%	Top 10%	Top 5%	Top 1%	Top 0.5%	Top 0.1%	Top 0.05%	Top 0.01%	Top 40-20%	Top 20-10%	Top 10-5%	Top 5-1%	Top 1-0.5%	Top 0.5-0.1%	Top 0.1-0.05%	Top 0.05-0.01%	Year
1951	51.47	35.86	23.20	14.70	4.83	2.98	0.97	0.60	0.19	15.61	12.67	8.50	9.87	1.85	2.01	0.37	0.41	1951
1952	53.39	37.18	24.37	15.60	5.39	3.37	1.10	0.69	0.22	16.21	12.82	8.77	10.21	2.02	2.27	0.41	0.47	1952
1953	51.17	36.58	24.06	15.46	5.35	3.36	1.12	0.70	0.22	14.59	12.51	8.61	10.11	2.00	2.23	0.42	0.48	1953
1954	51.78	36.90	24.20	15.48	5.34	3.36	1.11	0.70	0.23	14.88	12.70	8.72	10.14	1.98	2.25	0.42	0.47	1954
1955	52.34	36.99	24.19	15.43	5.34	3.34	1.10	0.69	0.22	15.35	12.80	8.77	10.09	2.00	2.24	0.41	0.47	1955
1956	54.60	39.00	25.77	16.67	5.88	3.64	1.24	0.75	0.25	15.60	13.23	9.11	10.79	2.24	2.41	0.48	0.51	1956
1957	56.37	40.52	26.84	17.31	6.10	3.79	1.29	0.79	0.25	15.86	13.68	9.53	11.21	2.31	2.50	0.51	0.53	1957
1958	55.61	39.87	26.47	17.13	6.06	3.80	1.28	0.81	0.26	15.74	13.41	9.34	11.06	2.27	2.51	0.47	0.55	1958
1959	56.05	39.99	26.49	17.18	6.19	4.04	1.32	0.81	0.25	16.06	13.50	9.31	11.00	2.15	2.72	0.51	0.56	1959
1960	56.93	40.52	27.00	17.48	6.14	3.90	1.32	0.83	0.26	16.42	13.52	9.52	11.34	2.24	2.58	0.50	0.56	1960
1961	58.92	41.39	27.41	17.91	6.58	4.23	1.34	0.83	0.26	17.53	13.98	9.50	11.33	2.35	2.89	0.52	0.56	1961
1962	58.56	40.62	26.85	17.70	6.40	4.07	1.29	0.79	0.25	17.94	13.77	9.14	11.31	2.33	2.78	0.50	0.54	1962
1963	59.18	40.51	26.67	17.31	6.20	3.90	1.31	0.82	0.27	18.66	13.84	9.36	11.11	2.31	2.59	0.50	0.55	1963
1964	58.80	39.91	26.17	16.96	6.02	3.74	1.24	0.76	0.24	18.89	13.74	9.21	10.94	2.28	2.50	0.47	0.52	1964
1965	57.43	38.45	25.01	16.12	5.59	3.43	1.13	0.70	0.23	18.98	13.44	8.89	10.53	2.16	2.30	0.43	0.48	1965
1966	56.70	37.85	24.43	15.62	5.37	3.31	1.08	0.65	0.20	18.85	13.42	8.81	10.25	2.06	2.23	0.43	0.45	1966
1967	59.51	39.10	25.08	16.00	5.42	3.37	1.11	0.68	0.22	20.41	14.02	9.08	10.58	2.05	2.26	0.44	0.46	1967
1968	60.60	39.74	25.49	16.24	5.41	3.36	1.11	0.68	0.21	20.86	14.25	9.25	10.83	2.05	2.26	0.43	0.47	1968
1969	60.70	39.75	25.24	15.98	5.18	3.21	1.03	0.63	0.19	20.95	14.52	9.26	10.79	1.97	2.18	0.40	0.44	1969
1970	62.37	40.18	25.50	15.95	5.04	3.10	1.00	0.61	0.19	22.19	14.68	9.55	10.91	1.94	2.10	0.39	0.43	1970
1971	62.53	40.13	25.19	15.63	4.93	2.99	0.94	0.56	0.18	22.40	14.94	9.57	10.70	1.94	2.05	0.37	0.38	1971
1972	62.45	40.04	25.24	15.70	5.02	2.96	0.89	0.53	0.16	22.41	14.81	9.54	10.68	2.06	2.07	0.36	0.37	1972
1973	62.37	39.89	24.91	15.44	4.85	2.81	0.85	0.52	0.16	22.48	14.98	9.47	10.59	2.04	1.96	0.33	0.36	1973
1974	62.48	39.56	24.47	14.97	4.56	2.72	0.81	0.48	0.15	22.92	15.09	9.49	10.41	1.84	1.91	0.33	0.34	1974
1975	60.52	38.17	23.54	14.33	4.33	2.57	0.75	0.45	0.13	22.36	14.63	9.20	10.00	1.76	1.82	0.31	0.32	1975
1976	61.85	38.96	24.01	14.63	4.43	2.61	0.80	0.47	0.13	22.89	14.95	9.38	10.19	1.82	1.82	0.32	0.34	1976
1977	60.23	37.86	23.36	14.11	4.29	2.54	0.74	0.44	0.13	22.37	14.51	9.25	9.82	1.76	1.79	0.30	0.31	1977
1978	60.36	37.85	23.32	14.06	4.32	2.59	0.78	0.46	0.14	22.50	14.53	9.26	9.74	1.73	1.82	0.32	0.32	1978
1979	61.52	38.76	23.92	14.53	4.47	2.69	0.84	0.51	0.16	22.76	14.84	9.40	10.06	1.78	1.86	0.33	0.35	1979
1980	61.69	38.83	23.91	14.51	4.46	2.71	0.88	0.55	0.19	22.86	14.92	9.40	10.05	1.75	1.83	0.33	0.36	1980
1981	61.57	38.87	23.92	14.62	4.50	2.72	0.84	0.51	0.16	22.70	14.95	9.30	10.12	1.79	1.88	0.33	0.35	1981
1982	61.12	38.37	23.47	14.32	4.37	2.64	0.83	0.51	0.17	22.75	14.90	9.15	9.96	1.73	1.81	0.32	0.35	1982
1983	61.99	38.97	23.78	14.57	4.42	2.66	0.82	0.50	0.16	23.02	15.19	9.21	10.15	1.75	1.85	0.32	0.34	1983
1984	61.49	38.88	23.81	14.60	4.46	2.70	0.84	0.52	0.17	22.61	15.07	9.22	10.13	1.76	1.86	0.32	0.35	1984
1985	63.03	39.85	24.30	14.85	4.51	2.73	0.86	0.53	0.17	23.19	15.55	9.45	10.33	1.78	1.87	0.33	0.36	1985
1986	63.66	40.40	24.70	15.08	4.54	2.71	0.84	0.52	0.17	23.26	15.71	9.62	10.54	1.83	1.87	0.32	0.35	1986
1987	64.14	40.54	25.08	15.28	4.68	2.79	0.88	0.54	0.17	23.60	15.46	9.80	10.60	1.89	1.91	0.34	0.37	1987
1988	64.05	40.76	25.15	15.33	4.65	2.75	0.84	0.51	0.16	23.29	15.62	9.82	10.67	1.90	1.91	0.33	0.35	1988
1989	64.30	40.98	25.32	15.43	4.70	2.78	0.88	0.54	0.17	23.33	15.65	9.90	10.73	1.92	1.91	0.34	0.37	1989
1990	64.72	41.33	25.59	15.61	4.78	2.84	0.90	0.55	0.17	23.39	15.74	9.99	10.82	1.94	1.95	0.35	0.37	1990
1991	65.00	41.60	25.78	15.76	4.79	2.87	0.91	0.55	0.18	23.40	15.82	10.01	10.98	1.91	1.97	0.35	0.38	1991
1992	65.13	41.70	25.92	15.85	4.79	2.88	0.92	0.57	0.18	23.44	15.78	10.08	11.05	1.91	1.96	0.36	0.38	1992
1993	64.94	41.48	25.70	15.66	4.72	2.83	0.88	0.53	0.17	23.46	15.78	10.04	10.94	1.90	1.95	0.35	0.37	1993
1994	65.22	41.65	25.74	15.57	4.71	2.84	0.92	0.57	0.18	23.58	15.91	10.18	10.86	1.87	1.92	0.35	0.38	1994
1995	65.37	41.70	25.76	15.54	4.73	2.85	0.89	0.54	0.17	23.67	15.93	10.23	10.80	1.89	1.96	0.35	0.37	1995
1996	65.16	41.43	25.46	15.29	4.64	2.80	0.89	0.55	0.18	23.73	15.97	10.18	10.65	1.84	1.91	0.34	0.37	1996
1997	65.29	41.48	25.42	15.21	4.60	2.78	0.89	0.55	0.18	23.82	16.05	10.22	10.61	1.82	1.89	0.34	0.37	1997
1998	65.62	41.80	25.73	15.54	4.83	2.96	0.94	0.57	0.18	23.82	16.06	10.20	10.71	1.87	2.01	0.37	0.39	1998
1999	65.57	41.90	25.89	15.73	4.89	3.00	1.00	0.62	0.21	23.67	16.00	10.16	10.84	1.89	2.01	0.37	0.41	1999
2000	65.05	41.58	25.74	15.68	4.95	3.07	1.03	0.65	0.22	23.47	15.84	10.06	10.73	1.88	2.04	0.38	0.43	2000
2001	64.94	41.49	25.68	15.66	5.01	3.12	1.06	0.67	0.24	23.46	15.81	10.02	10.65	1.89	2.06	0.39	0.44	2001
2002	66.63	42.50	26.29	16.08	5.15	3.21	1.09	0.68	0.23	24.13	16.21	10.21	10.93	1.94	2.12	0.40	0.45	2002
2003	66.75	42.75	26.56	16.32	5.29	3.34	1.18	0.76	0.27	23.99	16.19	10.24	11.03	1.95	2.16	0.42	0.49	2003
2004	66.84	43.03	26.90	16.65	5.54	3.53	1.30	0.85	0.32	23.81	16.13	10.25	11.11	2.00	2.23	0.45	0.53	2004
2005	66.37	42.76	26.77	16.61	5.57	3.55	1.27	0.82	0.30	23.61	15.99	10.17	11.04	2.02	2.28	0.45	0.52	2005

Notes: Computations by authors based on wage income tax statistics in the *Surveys on Private Wages and Salaries*; see Appendix for details.  
Wage income is defined as the sum of wages, salaries, bonuses, allowances, and taxable fringe benefits, excluding retirement benefits and non-taxable benefits.  
Top wage income groups are defined relative to regular employees in the private sector in Japan.

**Table 3: Standard Exemptions and Tax Reductions in National Income Tax, 1951-2005**

Year	Basic Exemption (per tax unit)	Dependent Exemption (per dependent)	Spouse Exemption (per spouse)	Employment Income Deduction	Number of Brackets and the Range of Tax Rates	Proportional Tax Reduction
1950	25	12	12	15% of income deduction, maximum 30	8 brackets, 20-55%	none
1951	38	17	17	15% , max 30	11 brackets, 20-55%	none
1952	50	20	20	15% , max 30	8 brackets, 20-55%	none
1953	60	35*	35	15% , max 45	11 brackets, 15-65%	none
1954	68	38 8*	39	15% , max 45	11 brackets, 15-65%	none
1955	75	40*	40	15% , max 52.5	11 brackets, 15-65%	none
1956	80	40*	40	17% , max 70	11 brackets, 15-65%	none
1957	88	47 5*	48	20-7 5% depending on income, max 110	13 brackets, 10-70%	none
1958	90	50*	50	20-10% , max 120	13 brackets, 10-70%	none
1959	90	65*	65	20-10% , max 120	13 brackets, 10-70%	none
1960	90	70*	70	20-10% , max 120	13 brackets, 10-70%	none
1961	90	50**	90	20-10% , max 120	13 brackets, 10-70%	none
1962	97.5	50**	97.5	20-10% , max 120	15 brackets, 8-75%	none
1963	107.5	50**	103.75	20-10% , max 120	15 brackets, 8-75%	none
1964	117.5	50**	108.8	20-7 5% , max 135	15 brackets, 8-75%	none
1965	127.5	57 5**	117.5	20-7 5% , max 147 5	15 brackets, 8-75%	none
1966	137.5	60**	127.5	20-7 5% , max 172 5	15 brackets, 8.5-75%	none
1967	147.5	67 5	145	20-10% , max 210	15 brackets, 9-75%	none
1968	157.5	77 5	157.5	20-7 5% , max 265	15 brackets, 9.5-75%	none
1969	167.5	95	167.5	20- 2% , max 348	16 brackets, 10-75%	none
1970	177.5	115	177.5	20- 4% , max 468	19 brackets, 10-75%	none
1971	195	135	195	20-5% , max 522.5	19 brackets, 10-75%	none
1972	200	140	200	20-5% , max 530	19 brackets, 10-75%	none
1973	207.5	155	207.5	20- 4% , max 710	19 brackets, 10-75%	none
1974	232.5	220	232.5	35% -7% , minimum guarantee 437 5	19 brackets, 10-75%	none
1975	260	260	260	40-10% , min guarantee 500	19 brackets, 10-75%	none
1976	260	260	260	40-10% , min guarantee 500	19 brackets, 10-75%	none
1977	290	290	290	40-10% , min guarantee 500	19 brackets, 10-75%	none
1978	290	290	290	40-10% , min guarantee 500	19 brackets, 10-75%	none
1979	290	290	290	40-10% , min guarantee 500	19 brackets, 10-75%	none
1980	290	290	290	40-10% , min guarantee 500	19 brackets, 10-75%	none
1981	290	290	290	40-10% , min guarantee 500	19 brackets, 10-75%	none
1982	290	290	290	40-10% , min guarantee 500	19 brackets, 10-75%	none
1983	290	290	290	40-10% , min guarantee 500	19 brackets, 10-75%	none
1984	330	330	330	40-5% , min guarantee 570	15 brackets, 10.5-70%	none
1985	330	330	330	40-5% , min guarantee 570	15 brackets, 10.5-70%	none
1986	330	330	330	40-5% , min guarantee 570	15 brackets, 10.5-70%	none
1987	330	330	330***	40-5% , min guarantee 570	12 brackets, 10.5-60%	none
1988	330	330	330***	40-5% , min guarantee 570	5 brackets, 10-60%	none
1989	350	350	350***	40-5% , min guarantee 650	5 brackets, 10-50%	none
1990	350	350	350***	40-5% , min guarantee 650	5 brackets, 10-50%	none
1991	350	350	350***	40-5% , min guarantee 650	5 brackets, 10-50%	none
1992	350	350	350***	40-5% , min guarantee 650	5 brackets, 10-50%	none
1993	350	350**	350***	40-5% , min guarantee 650	5 brackets, 10-50%	none
1994	350	350**	350***	40-5% , min guarantee 650	5 brackets, 10-50%	20% of tax reduction, max 2,000
1995	380	380**	380***	40-5% , min guarantee 650	5 brackets, 10-50%	15% of tax reduction, max 50
1996	380	380**	380***	40-5% , min guarantee 650	5 brackets, 10-50%	15% of tax reduction, max 50
1997	380	380**	380***	40-5% , min guarantee 650	5 brackets, 10-50%	none
1998	380	380**	380***	40-5% , min guarantee 650	5 brackets, 10-50%	95 of lump-sum tax reduction
1999	380	480**	380***	40-5% , min guarantee 650	4 brackets, 10-37%	20% of tax reduction, max 250
2000	380	480**	380***	40-5% , min guarantee 650	4 brackets, 10-37%	20% of tax reduction, max 250
2001	380	380**	380***	40-5% , min guarantee 650	4 brackets, 10-37%	20% of tax reduction, max 250
2002	380	380**	380***	40-5% , min guarantee 650	4 brackets, 10-37%	20% of tax reduction, max 250
2003	380	380**	380***	40-5% , min guarantee 650	4 brackets, 10-37%	20% of tax reduction, max 250
2004	380	380**	380	40-5% , min guarantee 650	4 brackets, 10-37%	20% of tax reduction, max 250
2005	380	380**	380	40-5% , min guarantee 650	4 brackets, 10-37%	20% of tax reduction, max 250

Sources: Japan National Tax Administration (1988), pp.154-207; OECD (1988-96), *Tax/Benefit Position of Production Workers*; Ishi (2001), Tables 17.8 and 17.9; OECD (1997-98), *Tax/Benefit Position of Employees*; OECD (1999-2007), *Taxing Wages*.

Notes:

All amounts are expressed in nominal 1,000 yen.

\* The amount of dependent exemption is different for the second child.

\*\* The amount of dependent exemption varies depending on the age of a child.

\*\*\* Additional special spouse exemption is allowed for a non-working spouse.

Standard exemptions for local income taxes are different from the above.

**Table 4: Marginal Tax Rates for Top Wage Income Groups in Japan, 1951-2005**

Year	MTR for Top 40%	MTR for Top 20%	MTR for Top 10%	MTR for Top 5%	MTR for Top 1%	MTR for Top 0.5%	MTR for Top 0.1%	MTR for Top 0.05%	MTR for Top 0.01%	Top Statutory MTR	Year
1951	30.89	39.00	44.81	49.53	55.63	57.59	62.13	63.21	63.90	64.90	1951
1952	30.36	38.26	43.47	47.89	56.12	58.89	61.98	63.21	64.90	64.90	1952
1953	22.16	30.60	38.72	43.15	51.47	54.27	58.30	60.30	66.00	71.50	1953
1954	22.64	31.27	39.54	44.18	52.71	55.52	59.73	61.82	67.50	73.13	1954
1955	23.36	32.22	41.33	46.92	54.33	57.52	63.65	65.84	72.00	78.00	1955
1956	24.96	34.12	42.59	47.20	54.79	58.37	65.72	69.21	75.31	78.33	1956
1957	17.16	23.05	28.30	32.08	40.21	43.97	51.74	55.44	67.90	83.20	1957
1958	17.20	23.10	28.40	32.31	40.64	44.70	54.08	58.63	71.53	84.45	1958
1959	16.23	21.83	27.85	32.76	41.40	45.16	54.35	59.03	72.20	85.60	1959
1960	18.51	25.20	31.36	35.10	43.77	47.78	56.69	61.09	72.40	85.60	1960
1961	20.66	26.23	30.13	34.33	44.19	47.91	56.96	61.24	72.40	85.60	1961
1962	19.25	24.00	28.87	33.97	45.39	50.19	58.16	62.02	76.00	93.00	1962
1963	19.86	25.09	29.29	33.76	45.89	51.14	60.31	65.05	78.50	93.00	1963
1964	20.80	26.63	31.69	37.22	47.61	51.64	62.06	66.45	78.50	93.00	1964
1965	20.52	26.45	31.54	37.07	47.55	51.68	62.19	66.61	78.50	93.00	1965
1966	19.00	24.10	29.24	35.01	46.50	51.49	61.83	66.40	78.50	93.00	1966
1967	20.94	26.66	31.50	37.17	48.26	52.37	62.25	66.58	78.50	93.00	1967
1968	22.52	28.96	34.67	40.18	51.53	56.11	63.47	66.90	79.00	93.00	1968
1969	21.34	27.05	31.97	36.88	48.09	53.36	63.67	67.59	79.00	93.00	1969
1970	20.68	26.02	30.35	35.36	46.95	52.86	65.15	70.01	81.50	93.00	1970
1971	20.42	25.41	29.50	33.78	44.16	50.45	64.61	70.27	81.50	93.00	1971
1972	24.44	28.04	32.17	36.82	48.14	54.17	65.11	69.90	81.50	93.00	1972
1973	25.86	30.28	34.96	39.85	51.53	57.35	66.26	70.20	81.50	93.00	1973
1974	25.08	28.02	31.11	34.68	43.06	47.84	59.26	65.16	79.00	93.00	1974
1975	25.51	28.45	31.52	35.07	44.47	50.24	61.68	66.28	79.00	93.00	1975
1976	26.40	29.87	33.22	37.21	46.89	52.04	63.56	68.03	79.50	93.00	1976
1977	27.25	30.35	33.98	38.23	49.04	54.61	64.51	68.30	79.50	93.00	1977
1978	28.57	32.18	36.03	40.32	50.06	55.11	65.91	70.73	82.00	93.00	1978
1979	29.75	33.43	37.41	42.53	53.84	59.02	69.07	72.96	82.50	93.00	1979
1980	30.85	34.59	39.01	43.88	54.89	60.32	71.44	76.13	85.00	93.00	1980
1981	31.38	35.40	39.72	44.31	56.24	61.33	71.00	75.80	85.00	93.00	1981
1982	31.47	35.61	40.12	44.99	57.50	63.06	71.89	75.88	85.00	93.00	1982
1983	32.62	36.83	41.52	46.91	58.19	62.92	71.80	75.80	85.00	93.00	1983
1984	31.44	35.47	40.20	45.06	56.54	62.45	73.41	76.78	82.50	88.00	1984
1985	33.95	38.87	44.23	49.16	59.82	64.60	73.55	76.73	82.50	88.00	1985
1986	34.90	39.45	44.18	49.08	59.70	64.57	73.60	76.77	82.50	88.00	1986
1987	33.30	37.70	41.83	47.17	58.87	63.18	69.02	70.93	75.00	78.00	1987
1988	33.80	39.25	44.38	49.42	60.71	64.66	68.46	70.06	73.50	76.00	1988
1989	31.15	37.49	43.67	49.23	58.90	61.58	65.00	65.00	65.00	65.00	1989
1990	31.19	37.53	43.70	49.26	58.91	61.58	65.00	65.00	65.00	65.00	1990
1991	31.23	37.54	43.70	49.23	58.95	61.58	65.00	65.00	65.00	65.00	1991
1992	32.87	40.10	47.77	52.71	58.97	61.60	65.00	65.00	65.00	65.00	1992
1993	31.18	37.51	43.65	49.20	58.92	61.56	65.00	65.00	65.00	65.00	1993
1994	29.09	34.24	39.33	44.12	51.09	54.32	62.93	65.00	65.00	65.00	1994
1995	30.34	37.86	46.62	52.73	58.95	61.56	65.00	65.00	65.00	65.00	1995
1996	27.17	32.93	38.72	42.97	49.77	52.90	59.13	61.65	65.00	65.00	1996
1997	28.53	33.43	38.75	42.96	49.78	52.91	59.10	61.64	65.00	65.00	1997
1998	31.72	35.55	39.02	43.30	50.61	54.16	63.04	65.00	65.00	65.00	1998
1999	25.01	29.48	34.29	38.91	45.86	47.66	50.00	50.00	50.00	50.00	1999
2000	25.04	29.52	34.34	38.97	45.90	47.68	50.00	50.00	50.00	50.00	2000
2001	25.05	29.55	34.38	39.02	45.92	47.69	50.00	50.00	50.00	50.00	2001
2002	24.68	29.33	34.40	39.02	45.92	47.69	50.00	50.00	50.00	50.00	2002
2003	24.77	29.41	34.48	39.09	45.99	47.74	50.00	50.00	50.00	50.00	2003
2004	24.89	29.54	34.59	39.19	46.06	47.79	50.00	50.00	50.00	50.00	2004
2005	25.28	29.79	34.62	39.21	46.03	47.76	50.00	50.00	50.00	50.00	2005

Notes: The table reports the (income-weighted) average marginal tax rates for top wage income groups for an individual with a non-working spouse and two dependent children, assuming that all income is employment income. Marginal tax rates include national and local (prefectural and municipal) income taxes, but excludes social security contributions, corporate income tax, and non-income taxes. Standard deductions (basic, spouse, dependent, and employment income deductions) and tax reductions are taken into account, but non-standard exemptions for housing loans, insurance and pension premiums, medical expenses are not incorporated.

**Table 5-a: Thresholds and Average Wage Incomes for Top Groups in Japan in 2005**

Percentile Threshold	Wage Income Threshold (in 2005 yen)	Wage Income Group	Number of Wage Earners	Average Wage Income in Each Group (in 2005 yen)
		Full Population	46,310,000	4,316,000
Top 40%	4,254,000	Top 40-20%	9,262,000	5,126,000
Top 20%	6,037,000	Top 20-10%	4,631,000	6,940,000
Top 10%	7,882,000	Top 10-5%	2,315,500	8,830,000
Top 5%	9,781,000	Top 5-1%	1,852,400	11,983,000
Top 1%	15,754,000	Top 1-0.5%	231,550	17,522,000
Top 0.5%	19,413,000	Top 0.5-0.1%	185,240	24,701,000
Top 0.1%	34,316,000	Top 0.1-0.05%	43,995	39,033,000
Top 0.05%	44,393,000	Top 0.05-0.01%	18,524	56,865,000
Top 0.01%	80,714,000	Top 0.01%	4,631	129,978,000

Notes: Computations are based on wage income tax statistics.

Wage income is the sum of wages and salaries, bonuses, allowances, and taxable benefits, but excludes retirement income.

Top groups are defined relative to regular employees in the private sector in Japan. "Top 20-10%" refers to the bottom 10% of the top 40% income group, and "top 20-10%" refers to the bottom 10% of the top 20% income group, and so on.

Total wage income denominator is estimated based on the National Accounts.

Amounts are expressed in 2005 yen.

**Table 5-b: Comparing Thresholds and Average Wage Incomes for Top Groups in the U.S. and Japan**

Percentile Threshold	Wage Income Threshold in the U.S. (in 2004 dollar)	Wage Income Threshold Japan (in 2005 dollar)	Wage Income Group	Average Wage Income in the U.S. (in 2004 dollar)	Average Wage Income in Japan (in 2005 dollar)
			Full Population	39,176	39,236
Top 40%	33,042	38,673	Top 40-20%	41,869	46,600
Top 20%	53,173	54,882	Top 20-10%	63,114	63,091
Top 10%	76,211	71,655	Top 10-5%	85,304	80,273
Top 5%	98,681	88,918	Top 5-1%	134,639	108,936
Top 1%	219,153	143,218	Top 1-0.5%	260,240	159,291
Top 0.5%	319,402	176,482	Top 0.5-0.1%	456,234	224,555
Top 0.1%	771,353	311,964	Top 0.1%	1,914,153	502,373

Source: U.S., Kopczuk, Saez, and Song (2007), Table 1. Japan, see above.

Notes: U.S. estimates are for 2004. Japanese estimates are for 2005 and expressed in 2005 U.S. dollar using the exchange rate of \$1=110 yen.

The U.S. data cover commerce and industry employees, excluding government, farm, domestic, and self-employed workers.

**Table 6: No. of Employees and Directors by Firm Size in Japan, 1960-2005**

Year	All Corporations			"Medium" Corporations Capital 10 million to 100 million yen				"Large" Corporations Capital 100 million to 1 billion yen				"Very Large" Corporations Capital over 1 billion yen				Year
	No. of Firms	No. of Employees per Firm	No. of Directors per Firm	No. of Firms	% in All Firms	No. of Employees per Firm	No. of Directors per Firm	No. of Firms	% in All Firms	No. of Employees per Firm	No. of Directors per Firm	No. of Firms	% in All Firms	No. of Employees per Firm	No. of Directors per Firm	
1960	497,206	28.6	2.9	11,141	2.2%	169.7	6.7	1,726	0.35%	830.1	9.8	415	0.08%	5,450.9	14.9	1960
1961	437,266	32.1	2.7	10,911	2.5%	170.6	6.4	2,190	0.50%	737.5	10.1	537	0.12%	4,996.7	14.7	1961
1962	450,784	32.2	2.5	13,145	2.9%	164.7	5.7	2,599	0.58%	676.6	9.1	638	0.14%	4,655.1	14.5	1962
1963	464,519	30.8	2.7	15,235	3.3%	142.4	6.0	2,999	0.65%	628.8	9.3	713	0.15%	4,431.1	14.6	1963
1964	479,973	32.0	2.9	19,667	4.1%	128.3	5.7	3,436	0.72%	579.2	9.3	804	0.17%	4,231.0	14.6	1964
1965	515,502	30.7	2.9	26,489	5.1%	122.1	5.5	3,631	0.70%	570.7	8.7	827	0.16%	4,160.6	14.8	1965
1966	558,016	30.0	2.6	33,274	6.0%	111.8	5.0	3,801	0.68%	537.1	8.5	900	0.16%	3,906.4	16.5	1966
1967	586,315	29.7	2.4	38,336	6.5%	104.9	4.8	4,369	0.75%	518.3	8.7	953	0.16%	3,877.4	14.4	1967
1968	780,797	26.5	2.6	47,429	6.1%	98.1	4.9	4,759	0.61%	506.7	8.6	1,018	0.13%	3,811.7	14.6	1968
1969	825,605	26.1	2.2	53,645	6.5%	90.0	4.0	5,671	0.69%	480.7	7.5	1,099	0.13%	3,732.9	13.8	1969
1970	874,692	25.3	2.2	61,955	7.1%	86.4	3.9	6,016	0.69%	462.9	7.3	1,185	0.14%	3,648.0	13.9	1970
1971	921,020	23.7	2.4	70,828	7.7%	75.5	4.1	6,593	0.72%	435.2	7.3	1,252	0.14%	3,531.8	14.0	1971
1972	960,230	23.7	2.4	80,699	8.4%	70.6	4.0	7,248	0.75%	404.9	7.1	1,375	0.14%	3,252.2	13.5	1972
1973	1,034,124	22.4	2.3	97,009	9.4%	62.6	3.8	7,889	0.76%	383.1	6.9	1,473	0.14%	3,167.0	13.7	1973
1974	1,108,107	21.8	2.3	113,833	10.3%	57.9	3.7	8,896	0.80%	355.9	6.7	1,576	0.14%	3,042.4	13.5	1974
1975	1,208,701	20.9	2.4	138,195	11.4%	53.8	3.9	9,852	0.82%	313.3	7.2	1,634	0.14%	2,889.5	14.0	1975
1976	1,292,536	19.4	2.5	158,856	12.3%	46.6	3.8	10,115	0.78%	299.6	7.1	1,704	0.13%	2,754.6	14.6	1976
1977	1,351,042	18.4	2.4	176,441	13.1%	42.7	3.6	10,351	0.77%	282.2	7.1	1,793	0.13%	2,594.5	13.7	1977
1978	1,426,441	19.0	2.4	196,759	13.8%	44.7	3.6	10,585	0.74%	280.3	6.8	1,851	0.13%	2,470.5	13.5	1978
1979	1,510,275	18.1	2.5	217,458	14.4%	42.0	3.6	11,030	0.73%	274.7	6.8	1,913	0.13%	2,380.8	13.5	1979
1980	1,567,764	17.8	2.5	236,927	15.1%	40.2	3.6	13,045	0.83%	250.4	6.5	2,020	0.13%	2,296.5	13.4	1980
1981	1,714,885	17.1	2.4	264,273	15.4%	38.2	3.4	13,415	0.78%	250.1	6.5	2,088	0.12%	2,263.4	13.7	1981
1982	1,748,967	17.0	2.4	279,223	16.0%	38.6	3.4	13,876	0.79%	244.6	6.4	2,195	0.13%	2,219.1	13.5	1982
1983	1,795,050	16.2	2.5	294,153	16.4%	35.3	3.5	14,222	0.79%	236.3	6.4	2,298	0.13%	2,159.0	13.8	1983
1984	1,819,109	16.9	2.4	306,080	16.8%	36.8	3.4	14,680	0.81%	232.2	6.3	2,458	0.14%	2,064.3	13.7	1984
1985	1,830,568	17.2	2.4	316,833	17.3%	37.6	3.4	15,119	0.83%	226.0	6.4	2,598	0.14%	2,138.5	13.7	1985
1986	1,874,121	17.0	2.3	333,419	17.8%	36.8	3.3	15,675	0.84%	217.9	6.0	2,691	0.14%	2,095.1	13.7	1986
1987	1,929,759	17.1	2.4	353,101	18.3%	37.3	3.3	16,733	0.87%	211.4	5.9	2,846	0.15%	1,986.3	13.5	1987
1988	1,980,540	17.4	2.4	376,205	19.0%	36.4	3.3	17,442	0.88%	212.0	5.8	3,088	0.16%	1,940.0	13.4	1988
1989	1,937,322	17.7	2.4	377,751	19.5%	36.3	3.3	18,916	0.98%	201.5	5.8	3,414	0.18%	1,844.7	13.3	1989
1990	2,020,455	17.1	2.4	406,618	20.1%	33.4	3.2	19,997	0.99%	196.7	5.7	3,805	0.19%	1,752.0	13.2	1990
1991	2,106,584	17.9	2.4	439,047	20.8%	33.7	3.3	21,474	1.02%	194.0	5.7	4,065	0.19%	1,722.7	13.4	1991
1992	2,237,566	16.7	2.4	485,684	21.7%	31.9	3.2	22,718	1.02%	194.8	5.5	4,245	0.19%	1,701.1	13.3	1992
1993	2,335,355	16.3	2.4	551,083	23.6%	29.8	3.1	23,494	1.01%	192.0	5.4	4,485	0.19%	1,634.0	13.0	1993
1994	2,407,278	16.0	2.4	617,706	25.7%	28.1	3.1	23,734	0.99%	187.5	5.4	4,718	0.20%	1,549.1	12.9	1994
1995	2,449,248	15.5	2.3	681,600	27.8%	26.2	3.0	23,994	0.98%	182.8	5.3	4,897	0.20%	1,478.6	12.7	1995
1996	2,467,846	14.9	2.3	809,590	32.8%	21.7	2.8	24,317	0.99%	182.1	5.2	5,114	0.21%	1,422.1	12.5	1996
1997	2,433,951	15.4	2.3	1,080,091	44.4%	18.4	2.7	24,883	1.02%	180.4	5.2	5,237	0.22%	1,389.0	12.4	1997
1998	2,470,470	15.4	2.3	1,134,857	45.9%	18.0	2.6	25,726	1.04%	180.7	5.1	5,310	0.21%	1,365.3	12.0	1998
1999	2,509,912	15.4	2.3	1,149,791	45.8%	17.8	2.6	26,089	1.04%	186.0	4.9	5,386	0.21%	1,324.6	11.3	1999
2000	2,548,399	15.4	2.3	1,156,152	45.4%	18.6	2.7	26,414	1.04%	171.7	4.8	5,472	0.21%	1,263.3	10.8	2000
2001	2,607,923	14.2	2.3	1,175,140	45.1%	16.7	2.6	27,301	1.05%	166.0	4.6	5,559	0.21%	1,225.1	10.4	2001
2002	2,626,954	13.8	2.2	1,173,103	44.7%	16.2	2.6	27,960	1.06%	165.1	4.6	5,671	0.22%	1,208.0	9.9	2002
2003	2,638,798	13.9	2.2	1,142,236	43.3%	16.5	2.6	28,220	1.07%	172.5	4.4	5,686	0.22%	1,187.0	9.5	2003
2004	2,701,573	14.6	2.3	1,149,142	42.5%	17.8	2.7	28,213	1.04%	189.4	4.8	5,620	0.21%	1,205.7	9.9	2004
2005	2,718,777	15.3	2.3	1,144,365	42.1%	19.4	2.7	27,645	1.02%	204.1	4.6	5,616	0.21%	1,200.7	9.8	2005

Source: Ministry of Finance, *Corporations Financial Statement Statistics*.

**Table 7: Variable Definitions and Descriptive Statistics**

Variable	Definition	No. of Observations	Mean	Median	Max	Min	Standard Deviations	Source
WIS 0.01	Top 0.01% wage income share (expressed in %)	55	0.20	0.19	0.32	0.13	0.04	Table 2
WIS 0.1-0.01	Top 0.1-0.01% wage income share	55	0.81	0.76	1.08	0.61	0.14	Table 2
WIS 0.5-0.1	Top 0.5-0.1% wage income share	55	2.11	2.01	2.89	1.79	0.27	Table 2
WIS 1-0.5	Top 1-0.5% wage income share	55	1.96	1.92	2.35	1.73	0.17	Table 2
WIS 5-1	Top 5-1% wage income share	55	10.61	10.68	11.34	9.74	0.42	Table 2
WIS 10-5	Top 10-5% wage income share	55	9.52	9.47	10.25	8.50	0.48	Table 2
WIS 20-10	Top 20-10% wage income share	55	14.76	14.94	16.21	12.51	1.10	Table 2
WIS 40-20	Top 40-20% wage income share	55	21.16	22.70	24.13	14.59	3.08	Table 2
NOTR 0.01	Net-of-tax rate, defined by 100 - Marginal Tax Rate, for top 0.01% wage income group (expressed in %)	55	28.44	26.50	50.00	15.00	10.71	See Appendix and Table 4
NOTR 0.1-0.01	Net-of-tax rate for top 0.1-0.01% group	55	39.53	40.00	50.95	28.50	6.57	See Appendix and Table 4
NOTR 0.5-0.1	Net-of-tax rate for top 0.5-0.1% group	55	48.75	50.00	60.09	37.00	6.30	See Appendix and Table 4
NOTR 1-0.5	Net-of-tax rate for top 1-0.5% group	55	55.35	56.50	66.18	45.00	6.45	See Appendix and Table 4
NOTR 5-1	Net-of-tax rate for top 5-1% group	55	63.01	64.23	73.00	50.00	6.25	See Appendix and Table 4
NOTR 10-5	Net-of-tax rate for top 10-5% group	55	71.22	72.50	81.20	60.00	5.62	See Appendix and Table 4
NOTR 20-10	Net-of-tax rate for top 20-10% group	55	77.57	77.50	90.00	68.00	5.67	See Appendix and Table 4
NOTR 40-20	Net-of-tax rate for top 40-20% group	55	84.53	82.90	99.00	73.00	7.77	See Appendix and Table 4
ROS	Returns on sales, defined by Operational Profits/ Sales, for all corporations (expressed in %)	52	3.88	3.59	6.03	2.14	1.15	<i>Corporations Financial Statement Statistics</i> by Ministry of Finance
FLP	Female labor participation rate, defined by Female Labor Force/ Female Population age 15 and above (expressed in %)	53	50.22	49.90	56.70	45.70	2.76	<i>Labour Force Survey</i> by Ministry of Health, Labour and Welfare
DISP	Dispute rate, defined by Workers Involved in Disputes with Dispute Acts / Total Employment (expressed in %)	55	5.43	5.82	14.49	0.05	4.45	<i>Labour Dispute Statistics</i> by Ministry of Health, Labour and Welfare
UNION	Unionization rate, defined by Union Members/ Total Employment (expressed in %)	55	29.96	32.10	42.57	18.70	5.78	<i>Trade Union Basic Survey</i> by Ministry of Health, Labour and Welfare
INFL	Inflation rate, defined by $CPI(t)-CPI(t-1)/CPI(t-1)$ , expressed in %	55	3.87	3.10	24.44	-1.52	4.71	<i>Japan Statistical Yearbook</i> by Ministry of Internal Affairs and Commerce

**Table 8-a: Elasticities of Wage Income Shares with respect to Net-of-Tax Rates in Japan**

Dependent Variable	OLS with robust std. err. (no time controls)	OLS with N-W std. err. (no time controls)	OLS with N-W std. err. (linear time controls)	OLS with N-W std. err. (quadratic time controls)	2SLS with IV (quadratic time controls)
<b>Top 40% share</b>	-0.45 (0.10)***	-0.45 (0.13)***	0.07 (0.10)	0.17 (0.05)***	0.11 (0.07)
<b>Top 20% share</b>	0.01 (0.07)	0.01 (0.12)	0.20 (0.08)**	0.19 (0.09)**	-0.03 (0.08)
<b>Top 10% share</b>	0.16 (0.06)**	0.16 (0.12)	0.20 (0.10)**	0.21 (0.12)*	0.00 (0.08)
<b>Top 5% share</b>	0.26 (0.07)***	0.26 (0.14)*	0.23 (0.13)*	0.24 (0.14)*	0.07 (0.10)
<b>Top 1% share</b>	0.51 (0.10)***	0.51 (0.19)***	0.43 (0.17)**	0.33 (0.19)*	0.29 (0.15)**
<b>Top 0.5% share</b>	0.61 (0.09)***	0.61 (0.17)***	0.56 (0.14)***	0.39 (0.20)*	0.45 (0.17)**
<b>Top 0.1% share</b>	0.65 (0.08)***	0.65 (0.13)***	0.67 (0.11)***	0.45 (0.25)*	1.16 (0.38)**
<b>Top 0.01% share</b>	0.30 (0.06)***	0.30 (0.10)***	0.40 (0.11)***	-0.04 (0.13)	-0.57 (0.24)**

Notes:

Dependent variable is log (top wage income share) for t=1951-2005.

Independent variables are a constant and log (net-of-tax rate) with or without time trends.

For the OLS regression in the first column and 2SLS regression, robust standard errors are reported in the parentheses.

For the other OLS regressions, Newey-West standard errors with 8 lags are reported in the parentheses.

For the 2SLS regression, log (net-of-tax rate) is instrumented with log (100 - highest statutory MTR).

\*\*\*= significant at 1%, \*\*= significant at 5%, \*= significant at 10%.

**Table 8-b: Comparing Elasticity Estimates in the U.S. and Japan**

Dependent Variable	U.S.	Japan
<b>Top 10% share</b>	0.10	0.20**
<b>Top 5% share</b>	0.17*	0.23*
<b>Top 1% share</b>	0.39***	0.43**
<b>Top 0.5% share</b>	0.51***	0.56***
<b>Top 0.1% share</b>	0.82***	0.67***
<b>Top 0.01% share</b>	0.96**	0.40***

Source: U.S., Saez (2004), Table 5, column (2). Japan, Table 8-a above, third column.

Notes: U.S. estimates are for 1960-2000, OLS regression with quadratic time controls and Newey-West standard errors.

\*\*\*= significant at 1%, \*\*= significant at 5%, \*= significant at 10%.

**Table 9: Determinants of Top 0.1% Wage Income Share in Japan: Various Specifications**

Dependent Variable: Log of Top 0.1% Wage Income Share

Independent Variables	Panel A				Panel B				Panel C			
	OLS Regression (1)	OLS Regression (2)	OLS Regression (3)	OLS Regression (4)	OLS Regression (5)	OLS Regression (6)	OLS Regression (7)	OLS Regression (8)	OLS Regression (9)	OLS Regression (10)	OLS Regression (11)	OLS Regression (12)
Log (Net-of-Tax Rate)	0.645 (0.130)***	0.496 (0.141)***	0.339 (0.097)***	0.384 (0.100)***	0.669 (0.109)***	0.429 (0.112)***	0.278 (0.085)***	0.316 (0.088)***	0.448 (0.247)*	0.190 (0.194)	0.184 (0.201)	0.222 (0.199)
Log (ROS)		0.150 (0.067)**	0.339 (0.089)***	0.351 (0.088)***		0.297 (0.121)**	0.265 (0.093)***	0.279 (0.094)***		0.323 (0.086)***	0.287 (0.075)***	0.301 (0.079)***
Log (FLP)		1.480 (0.584)**	1.391 (0.329)***	1.089 (0.358)***		1.732 (0.486)***	0.709 (0.471)	0.531 (0.492)		0.841 (0.612)	0.471 (0.529)	0.289 (0.498)
Log (DISP)			-0.044 (0.019)**	-0.032 (0.021)			-0.103 (0.034)***	-0.009 (0.036)**			-0.077 (0.043)*	-0.064 (0.046)
INFL (in %)				-0.006 (0.003)**				-0.004 (0.003)				-0.004 (0.003)
Linear Time Controls					-0.004 (0.001)***	0.004 (0.003)	-0.009 (0.005)*	-0.008 (0.005)*	-0.018 (0.014)	-0.019 (0.017)	-0.018 (0.017)	-0.018 (0.016)
Quadratic Time Controls									0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
<i>D-W Statistics</i>	0.28	0.51	0.69	0.78	0.41	0.63	0.72	0.77	0.32	0.54	0.64	0.70
<i>Adjusted R Square</i>	0.425	0.784	0.833	0.839	0.590	0.805	0.851	0.855	0.639	0.840	0.859	0.862
<i>No. of Observations</i>	55	52	52	52	55	52	52	52	55	52	52	52

Notes:

Dependent variable is log (top 0.1% wage income share) where t=1953-2005.

See Table 7 for the definitions of the variables.

Newey-West standard errors with 8 lags are reported in the parentheses.

\*\*\*= significant at 1%, \*\*= significant at 5%, \*= significant at 10%.

**Table 10-a: Determinants of Wage Income Shares in Japan: Multivariate Regressions (1)**

Wage Income Group	Log (NOTR)	Log (ROS)	Log (FLP)	Linear Time Trend	Adjusted R Square
<b>Top 40-20%</b>	-0.404 (0.140)***	0.089 (0.057)	-1.070 (0.221)***	0.006 (0.001)***	0.944
<b>Top 20-10%</b>	-0.168 (0.048)***	0.041 (0.022)*	-0.100 (0.097)	0.004 (0.000)***	0.935
<b>Top 10-5%</b>	0.045 (0.063)	0.035 (0.017)**	0.277 (0.104)***	0.004 (0.000)***	0.805
<b>Top 5-1%</b>	0.130 (0.072)*	0.096 (0.015)***	0.579 (0.092)***	0.003 (0.001)***	0.652
<b>Top 1-0.5%</b>	0.213 (0.058)***	0.187 (0.026)***	1.028 (0.118)***	0.003 (0.001)***	0.778
<b>Top 0.5-0.1%</b>	0.356 (0.054)***	0.215 (0.053)***	1.429 (0.214)***	0.003 (0.001)**	0.834
<b>Top 0.1-0.01%</b>	0.434 (0.086)***	0.272 (0.098)***	1.749 (0.376)***	0.003 (0.003)	0.847
<b>Top 0.01%</b>	0.224 (0.153)	0.457 (0.204)**	2.004 (1.015)**	0.007 (0.006)	0.640

**Table 10-b: Determinants of Wage Income Shares in Japan: Multivariate Regressions (2)**

Wage Income Group	Log (NOTR)	Log (ROS)	Log (FLP)	Log (DISP)	Linear Time Trend	Adjusted R Square
<b>Top 40-20%</b>	-0.213 (0.126)*	0.091 (0.052)*	-0.836 (0.237)***	0.034 (0.017)**	0.011 (0.002)***	0.952
<b>Top 20-10%</b>	-0.080 (0.074)	0.045 (0.020)**	0.085 (0.094)	0.019 (0.011)*	0.007 (0.001)***	0.946
<b>Top 10-5%</b>	0.071 (0.069)	0.037 (0.015)**	0.383 (0.195)**	0.008 (0.015)	0.005 (0.002)***	0.809
<b>Top 5-1%</b>	0.134 (0.086)	0.097 (0.016)***	0.607 (0.142)***	0.002 (0.012)	0.004 (0.002)**	0.653
<b>Top 1-0.5%</b>	0.164 (0.083)**	0.168 (0.035)***	0.593 (0.195)***	-0.033 (0.017)*	-0.002 (0.003)	0.802
<b>Top 0.5-0.1%</b>	0.281 (0.068)***	0.186 (0.048)***	0.785 (0.234)***	-0.052 (0.018)***	-0.004 (0.003)	0.862
<b>Top 0.1-0.01%</b>	0.313 (0.066)***	0.244 (0.078)***	0.851 (0.380)**	-0.084 (0.029)***	-0.007 (0.004)*	0.881
<b>Top 0.01%</b>	-0.007 (0.092)	0.389 (0.124)***	0.727 (0.937)	-0.200 (0.050)***	-0.013 (0.007)*	0.754

**Table 10-c: Determinants of Wage Income Shares in Japan: Multivariate Regressions (3)**

Wage Income Group	Log (NOTR)	Log (ROS)	Log (FLP)	Log (DISP)	INFL	Linear Time Trend	Adjusted R Square
<b>Top 40-20%</b>	-0.217 (0.159)	0.090 (0.056)	-0.827 (0.285)***	0.034 (0.019)*	0.000 (0.002)	0.011 (0.002)***	0.952
<b>Top 20-10%</b>	-0.100 (0.083)	0.040 (0.020)**	0.141 (0.101)	0.016 (0.012)	0.001 (0.001)	0.007 (0.002)***	0.948
<b>Top 10-5%</b>	0.057 (0.083)	0.030 (0.014)**	0.464 (0.187)**	0.004 (0.016)	0.002 (0.001)*	0.005 (0.002)**	0.822
<b>Top 5-1%</b>	0.122 (0.094)	0.089 (0.019)***	0.681 (0.161)***	-0.001 (0.013)	0.002 (0.001)	0.003 (0.002)*	0.669
<b>Top 1-0.5%</b>	0.154 (0.091)*	0.162 (0.041)***	0.651 (0.196)***	-0.036 (0.020)*	0.001 (0.002)	-0.002 (0.003)	0.804
<b>Top 0.5-0.1%</b>	0.283 (0.070)***	0.187 (0.049)***	0.776 (0.237)***	-0.052 (0.022)**	-0.000 (0.002)	-0.004 (0.003)	0.862
<b>Top 0.1-0.01%</b>	0.354 (0.062)***	0.260 (0.077)***	0.660 (0.380)*	-0.070 (0.031)**	-0.005 (0.002)**	-0.006 (0.004)	0.886
<b>Top 0.01%</b>	-0.041 (0.119)	0.374 (0.128)***	1.012 (1.167)	-0.214 (0.048)***	0.004 (0.005)	-0.014 (0.007)*	0.756

Notes:

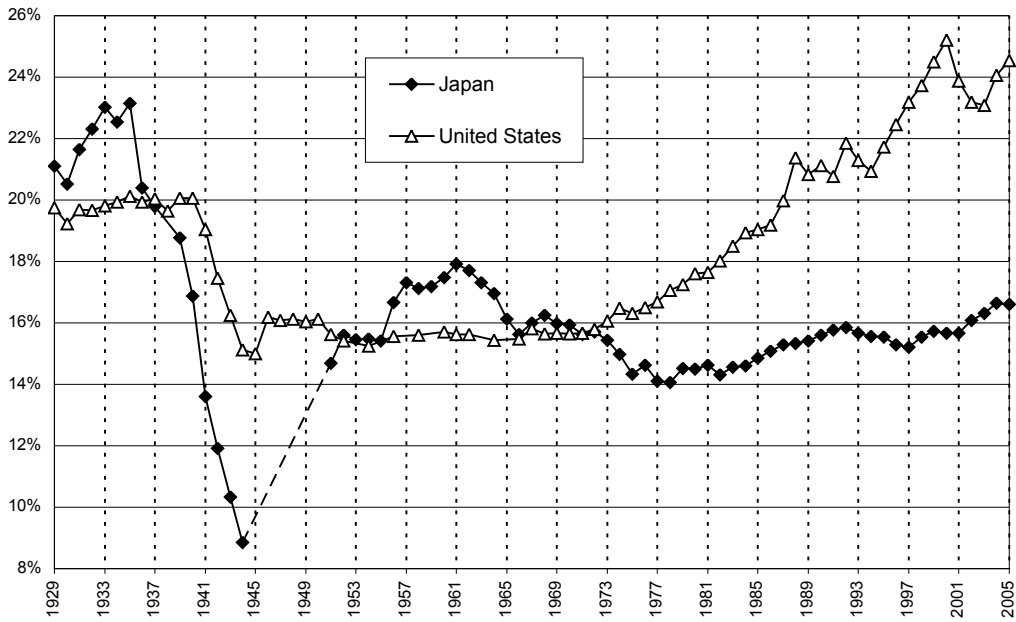
Dependent variable is log (top wage income share) for each top wage income group where t=1953-2005.

Log (NOTR) is defined by log (100-MTR). See Table 7 for the definitions of other variables.

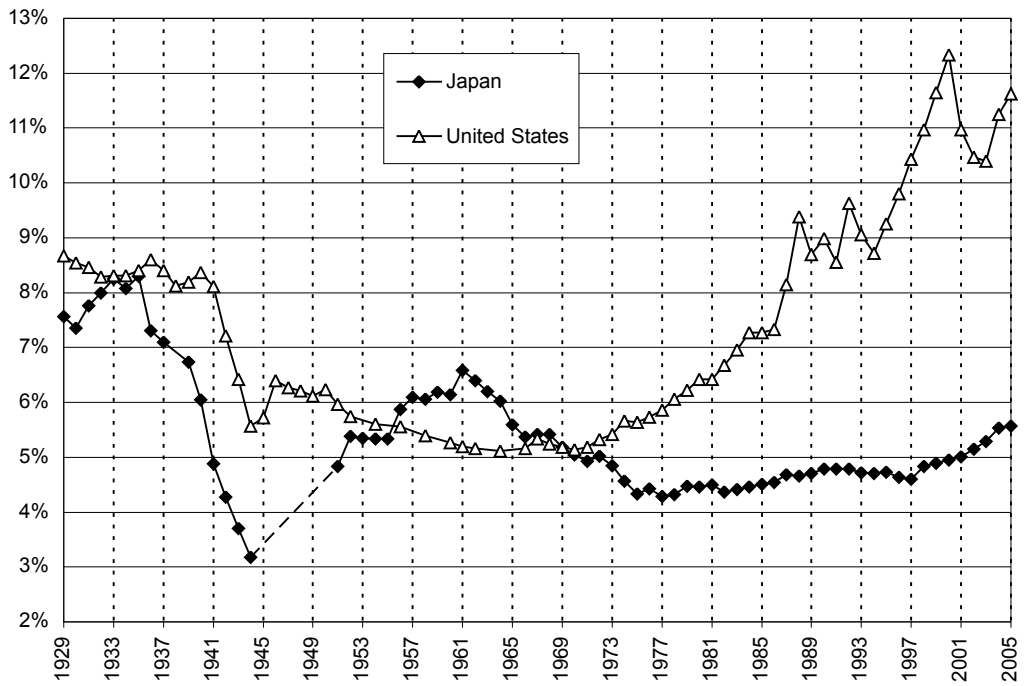
Newey-West standard errors with 8 lags are reported in the parentheses.

\*\*\*= significant at 1%, \*\*= significant at 5%, \*= significant at 10%.

**Figure 1-a: Top 5% Wage Income Share in Japan and the U.S., 1929-2005**



**Figure 1-b: Top 1% Wage Income Share in Japan and the U.S., 1929-2005**



Source: Japan, Moriguchi and Saez (2007), Table C2; U.S., Piketty and Saez (2003), Table IV, updated to 2005.

Figure 2: Average Wage Income of Top Groups in Japan

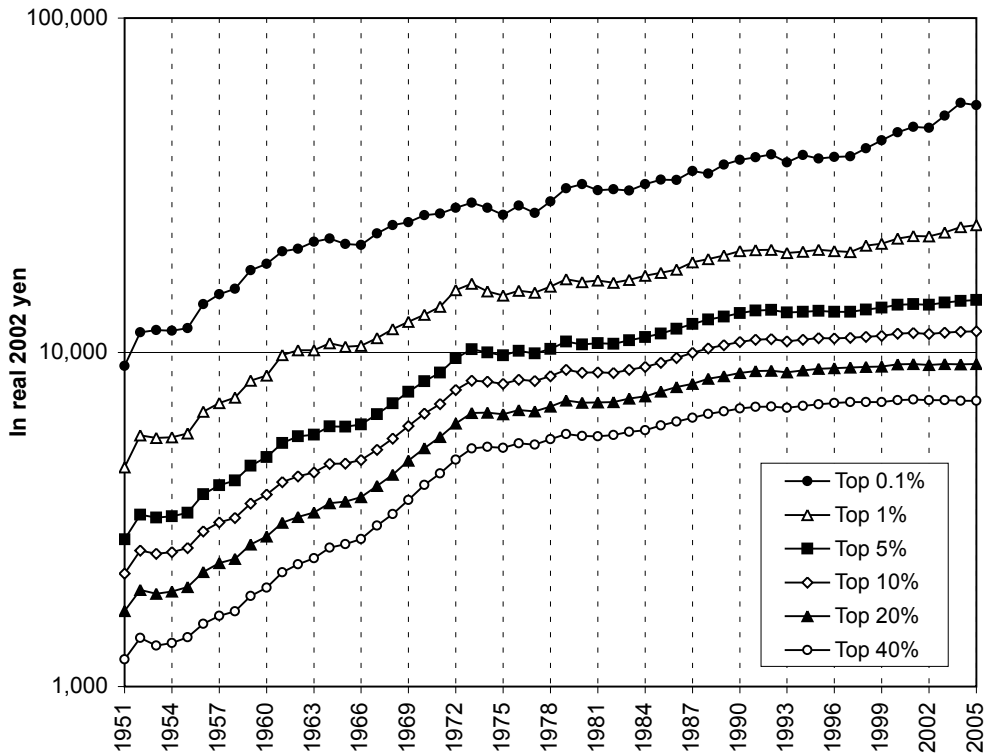
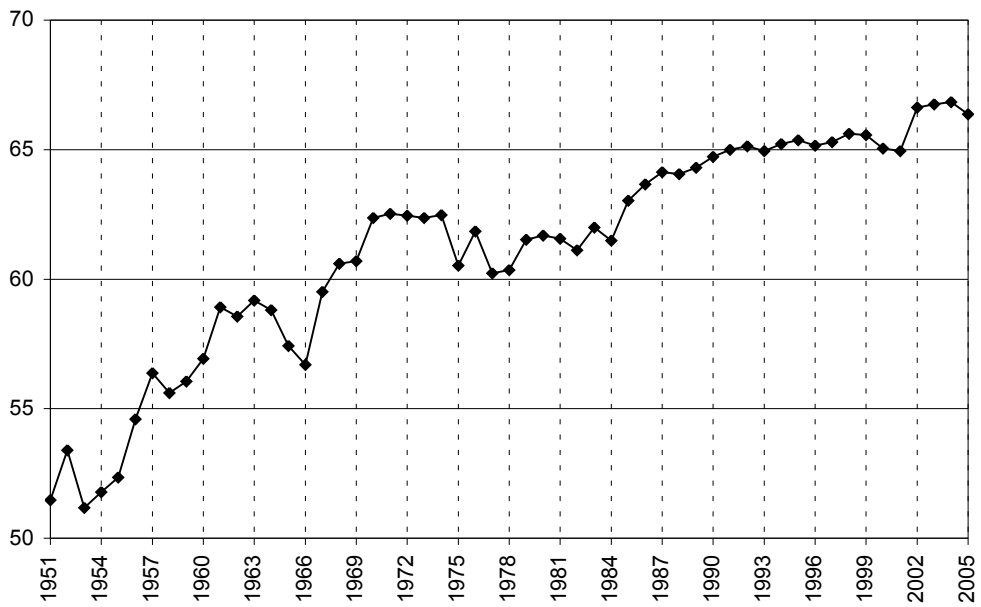
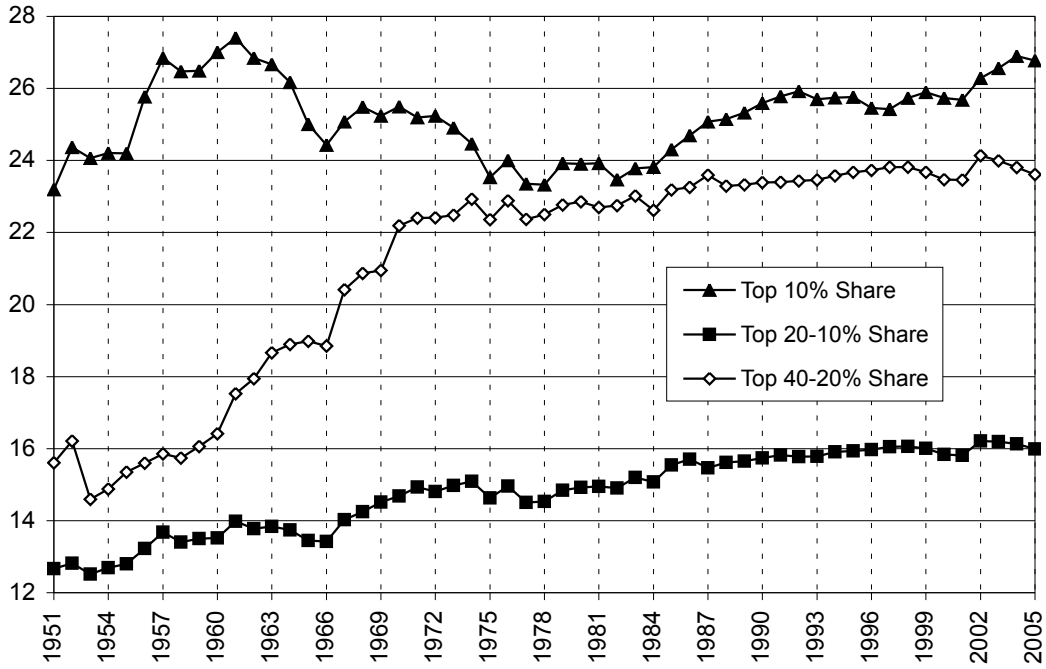


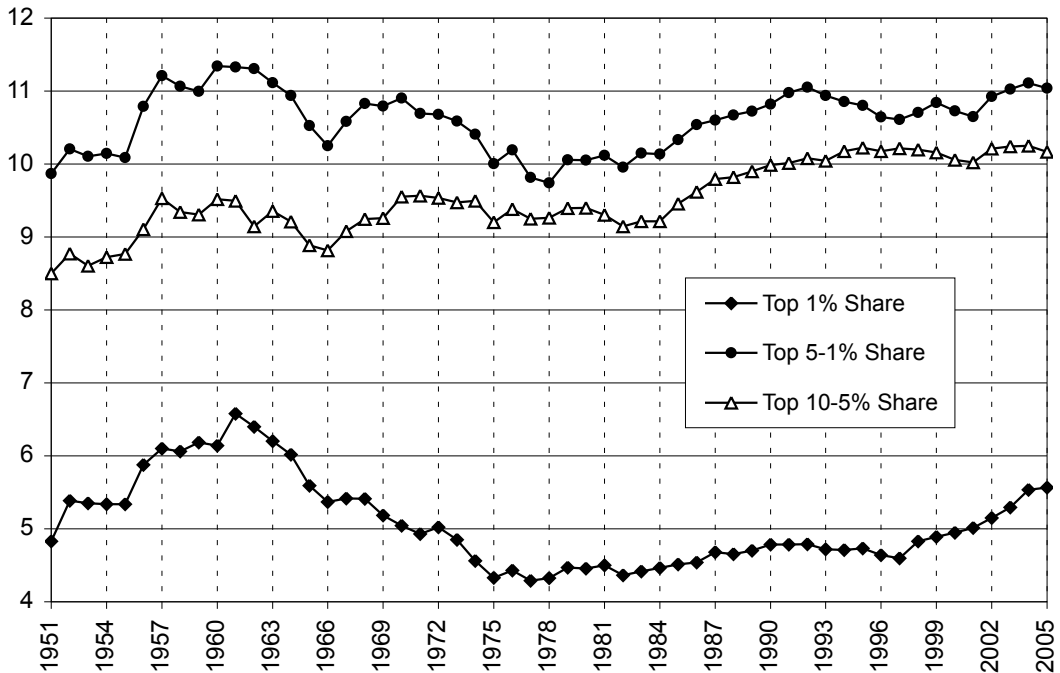
Figure 3-a: Top 40% Wage Income Shares in Japan



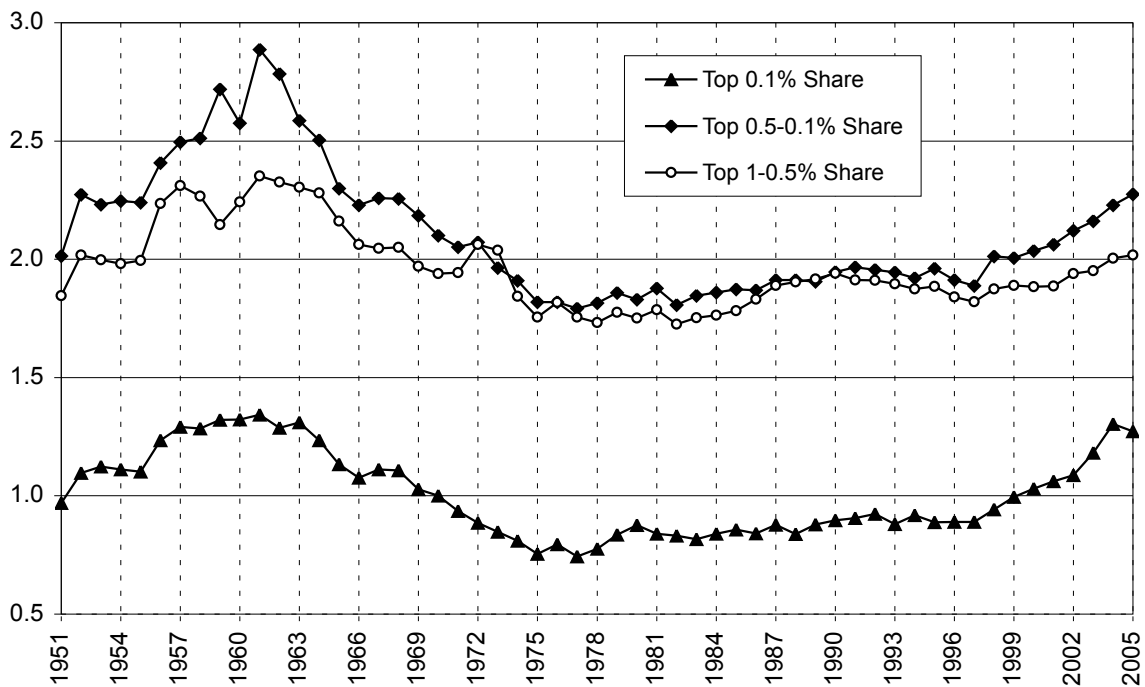
**Figure 3-b: Decomposition of Top 40% Wage Income Shares in Japan**



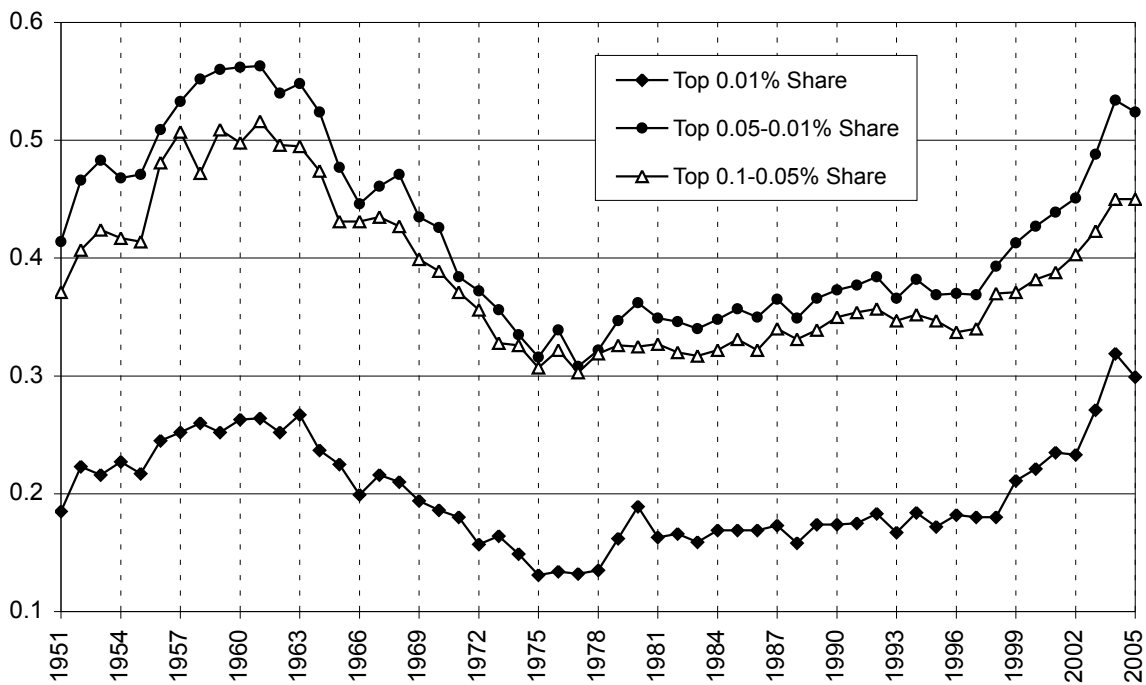
**Figure 3-c: Decomposition of Top 10% Wage Income Share in Japan**

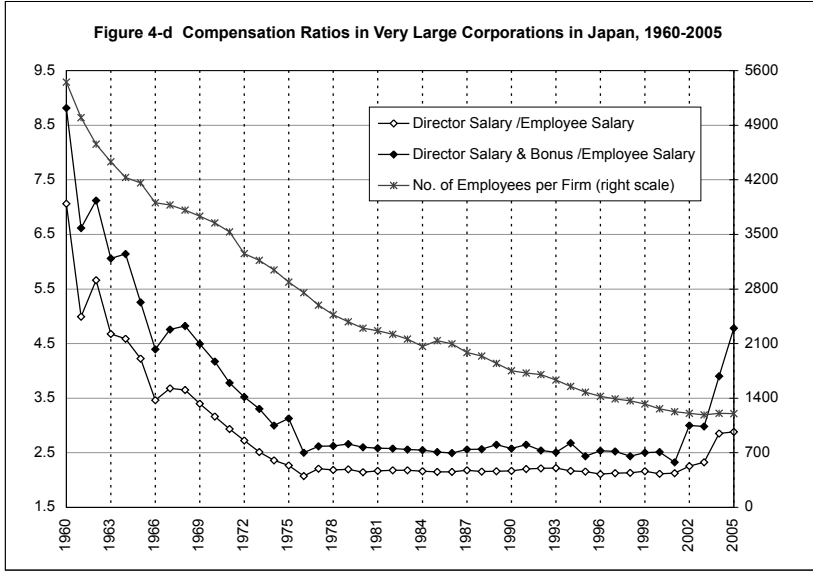
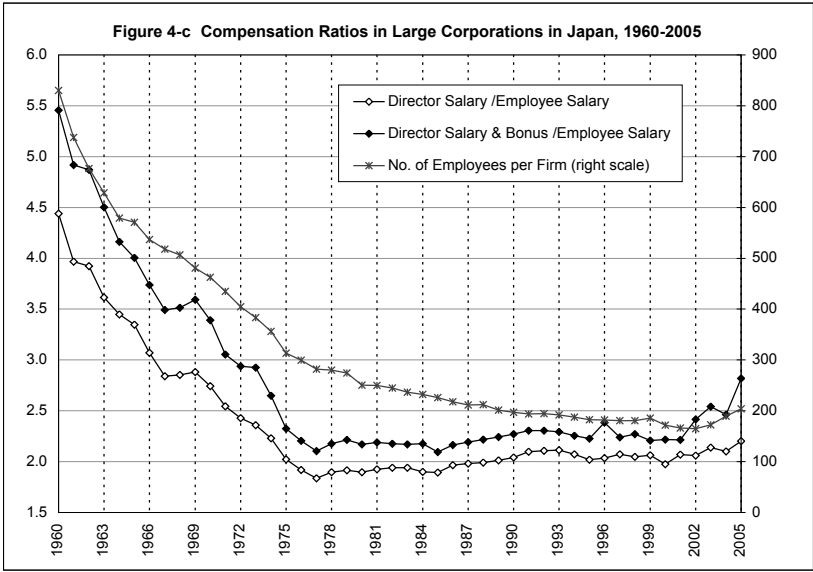
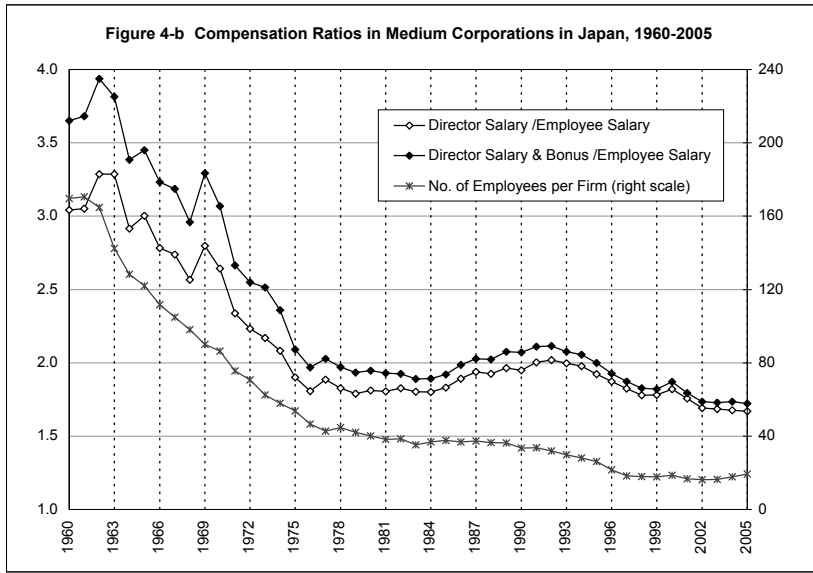
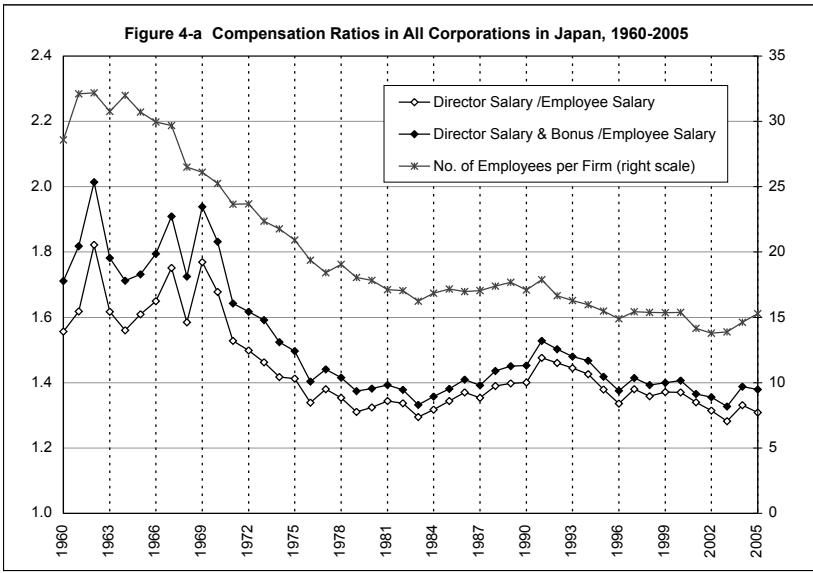


**Figure 3-d: Decomposition of Top 1% Wage Income Share in Japan**



**Figure 3-e: Decomposition of Top 0.1% Wage Income Share in Japan**





Sources: Ministry of Finance (1960-2005), *Corporations Financial Statement Statistics*.  
 Notes: "Medium corporations" are defined as firms with capital between 10 million and 100 million yen. "Large corporations" are defined as firms with capital between 100 million and 1 billion yen. "Very large corporations" are defined as firms with capital over 1 billion yen. "Directors" include directors who are also employees, and "employees" exclude those employees who are also directors. "Director bonus" is bonus paid out of net profits at the end of fiscal year.

Figure 5-a: Firm Performance in Large Corporations in Japan, 1960-2005

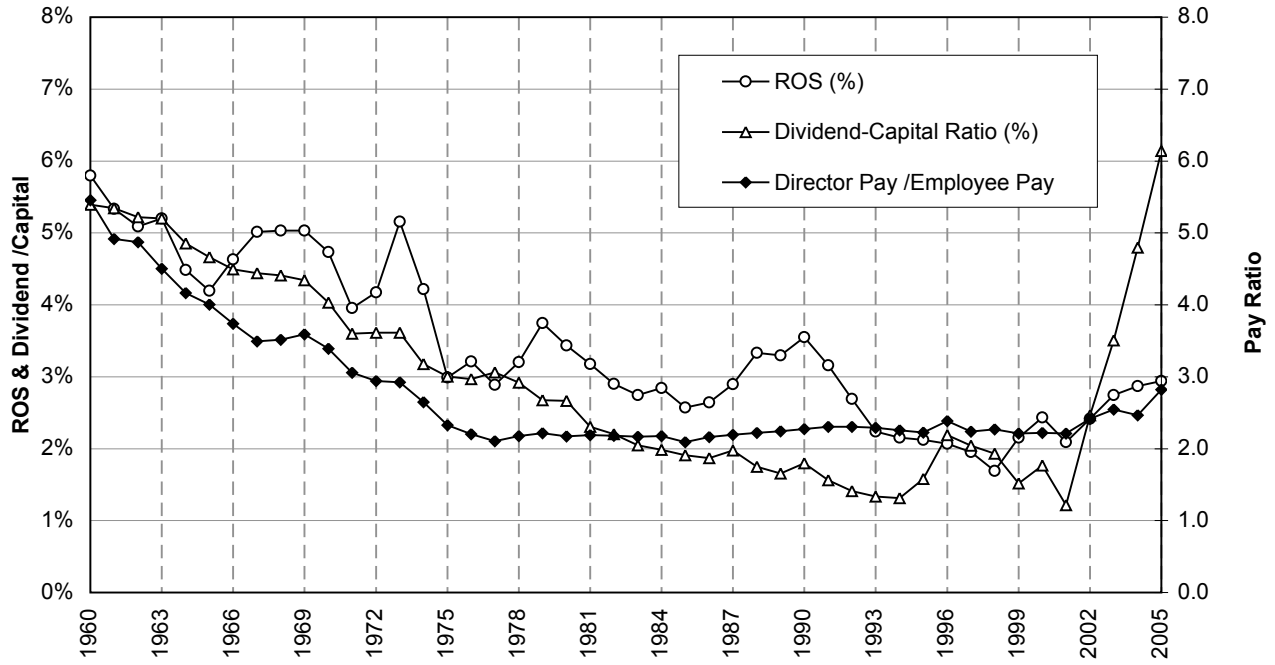
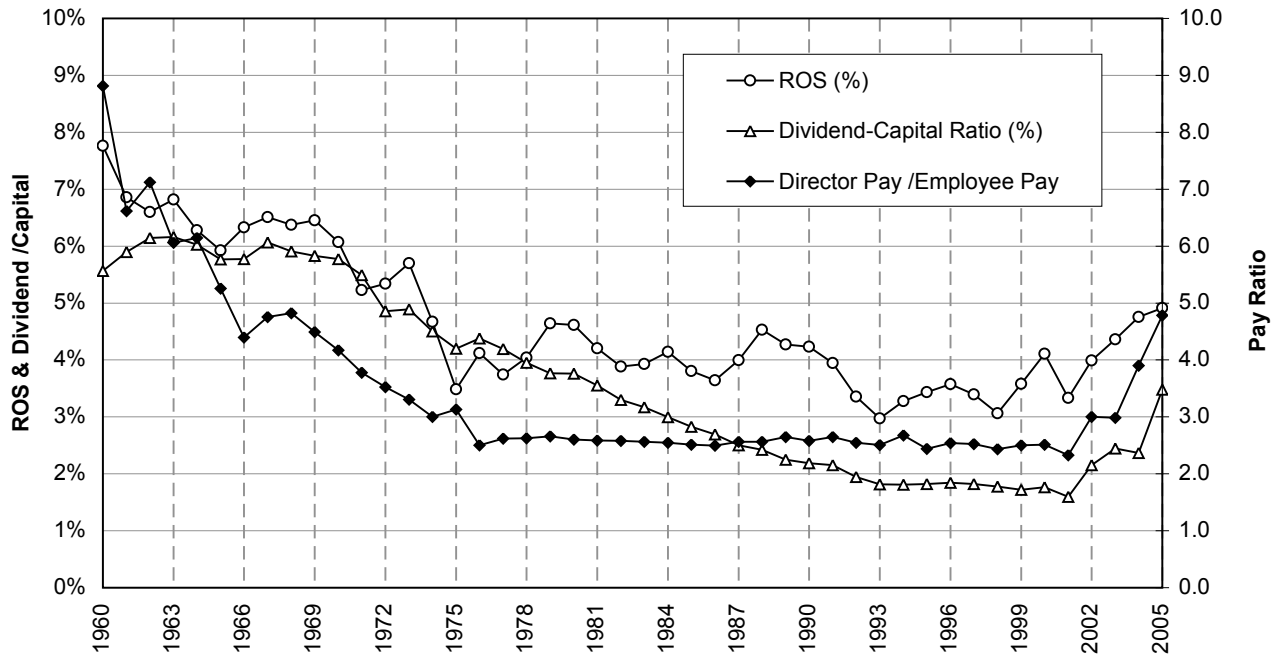
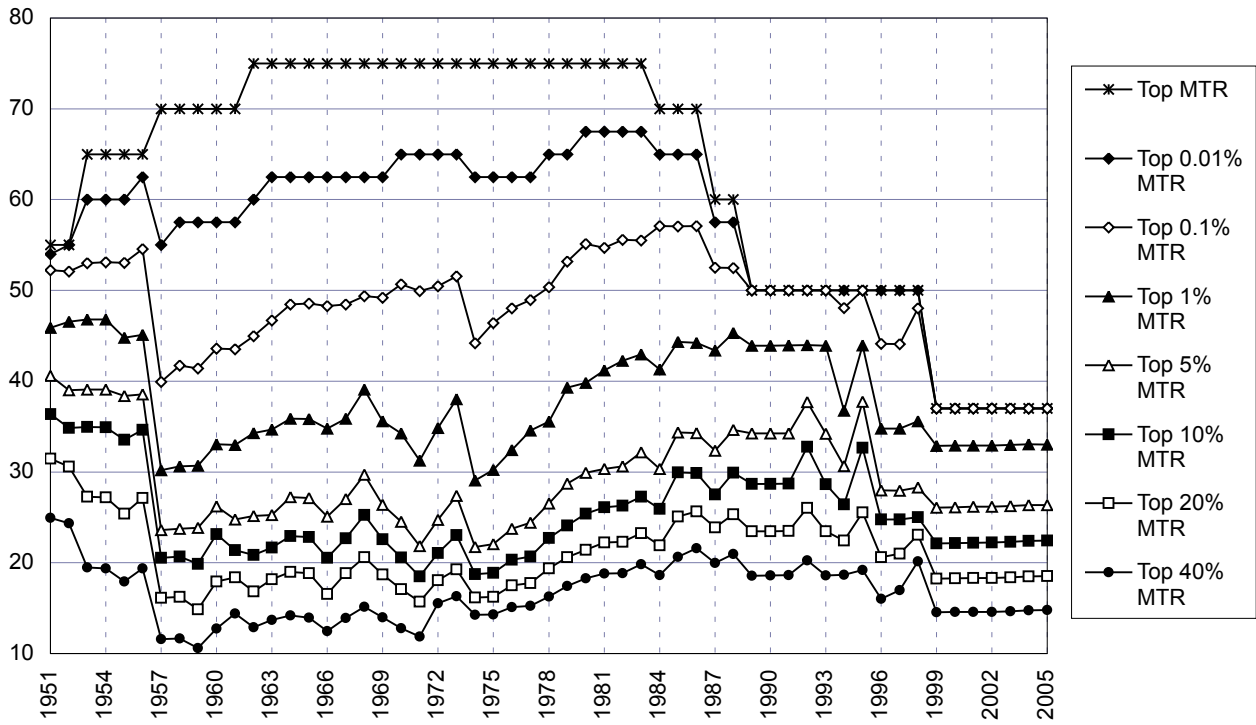


Figure 5-b: Firm Performance in Very Large Corporations in Japan, 1960-2005



**Figure 6-a: National Marginal Tax Rates for Top Wage Income Groups, 1951-2005**



**Figure 6-b: Total Marginal Tax Rates for Top Wage Income Groups, 1951-2005**

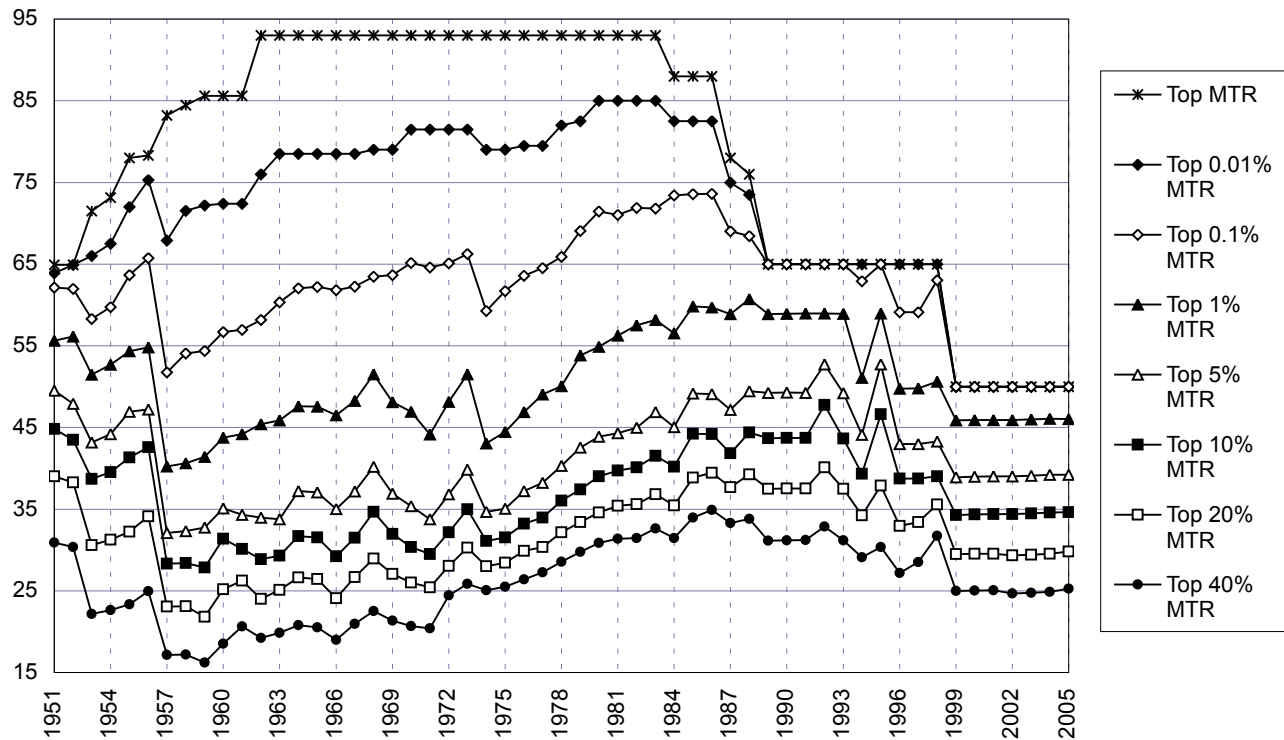


Figure 7-a: Top 10% Wage Income Share and MTR

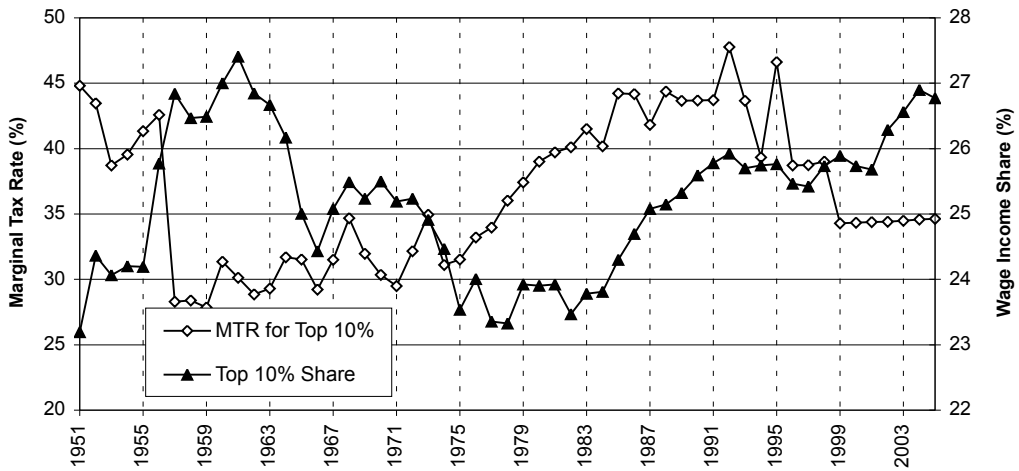


Figure 7-b: Top 1% Wage Income Share and MTR

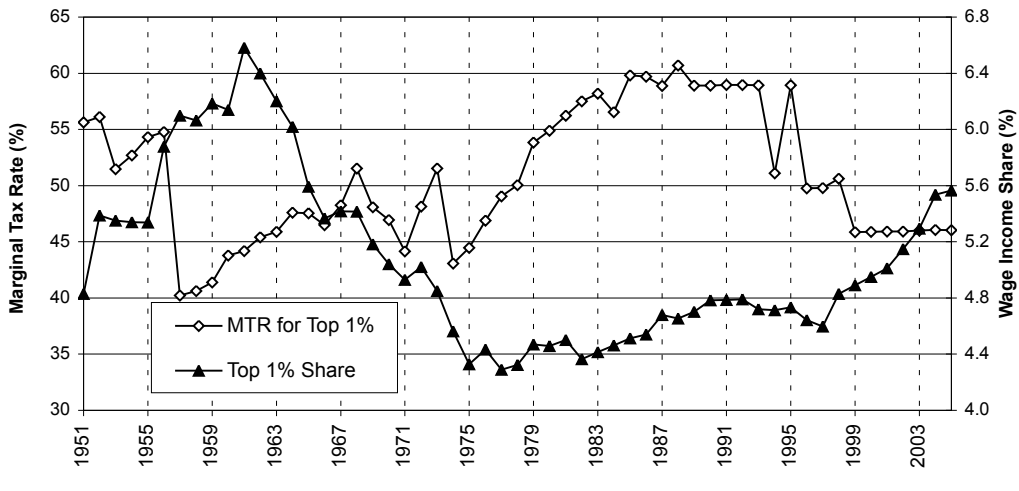


Figure 7-c: Top 0.1% Wage Income Share and MTR

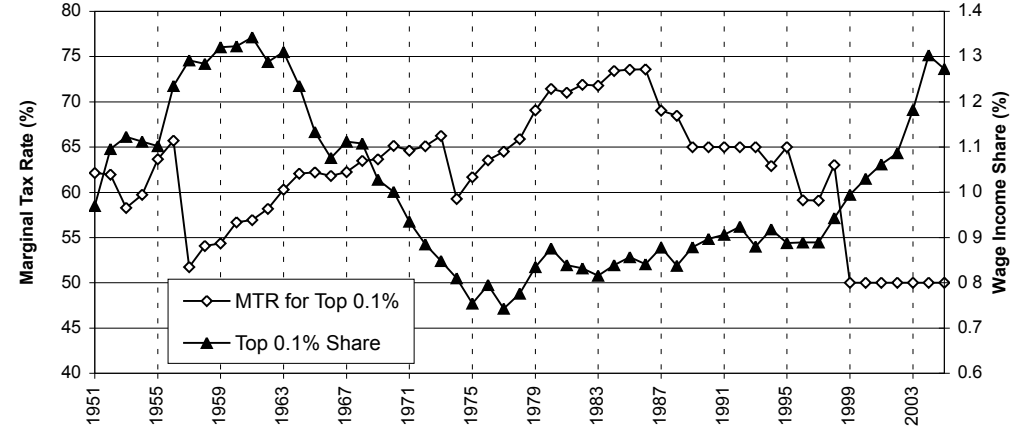


Figure 8-a: Top 40-20% Wage Income Share

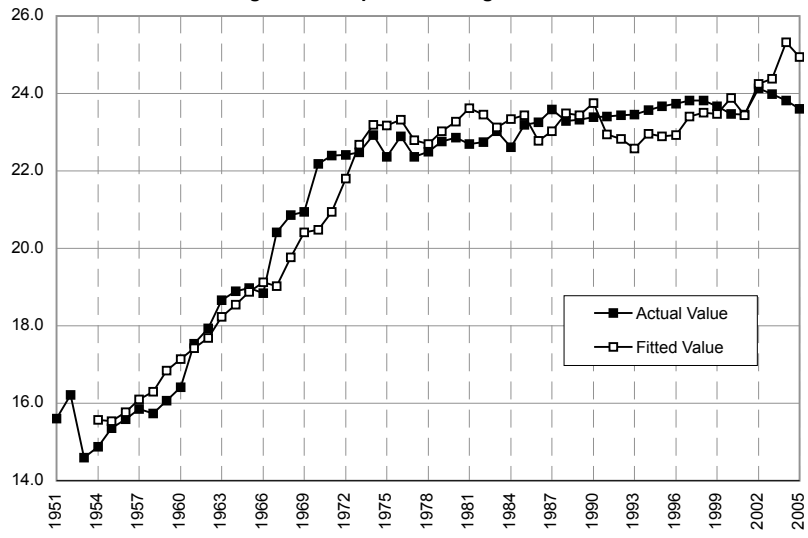


Figure 8-b: Top 20-10% Wage Income Share

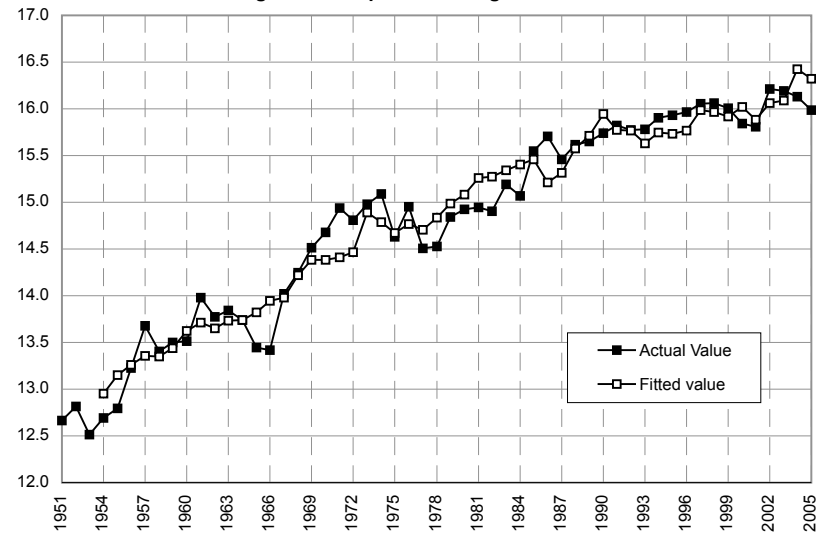


Figure 8-c: Top 10-5% Wage Income Share

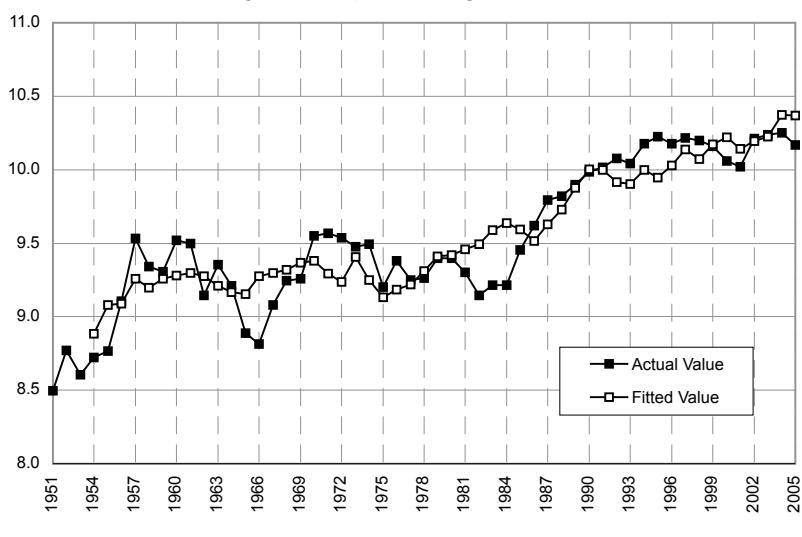
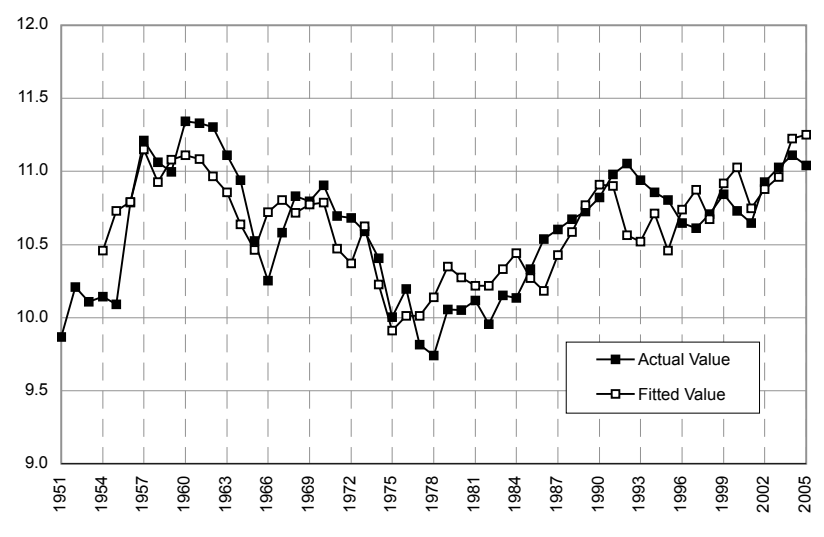


Figure 8-d: Top 5-1% Wage Income Share



Notes:

For each wage income group, the coefficients in Table 10-b are used to compute fitted values. Independent variables are log (NOTR), log (ROS), log (FLP), and log (DISP) with linear time controls.

Figure 8-e: Top 1-0.5% Wage Income Share

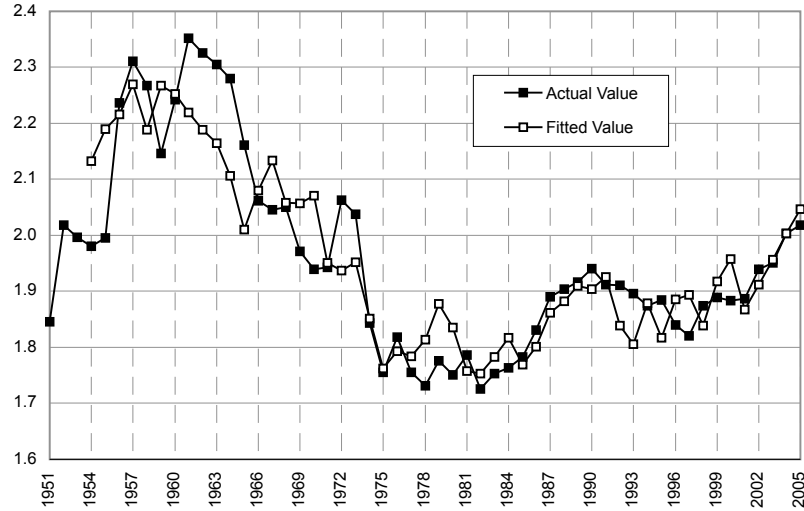


Figure 8-f: Top 0.5-0.1% Wage Income Share

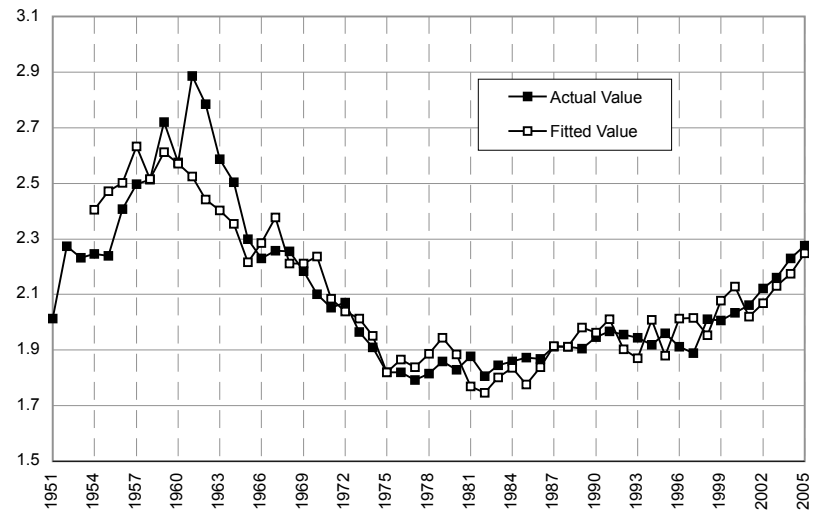


Figure 8-g: Top 0.1-0.01% Wage Income Share

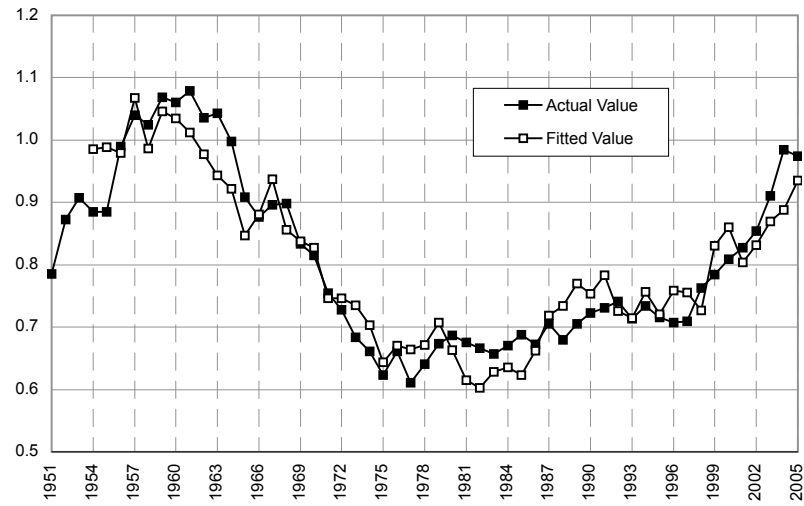
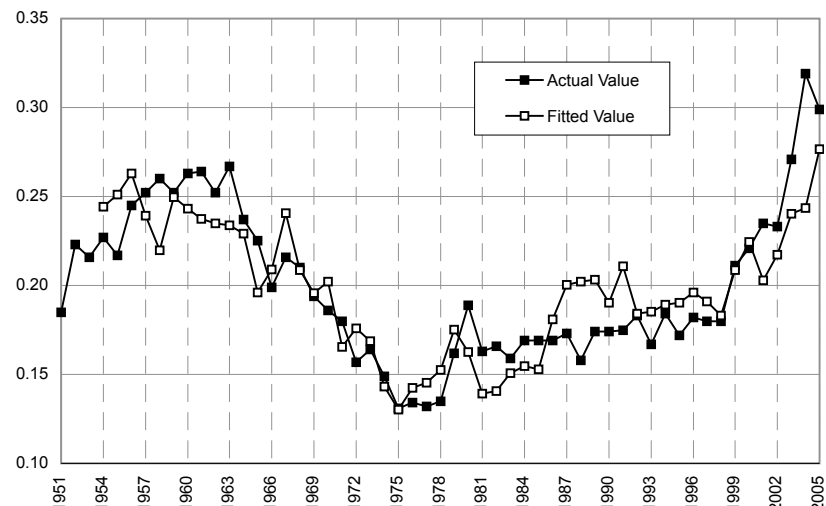


Figure 8-h: Top 0.01% Wage Income Share



Notes:

For each wage income group, the coefficients in Table 10-b are used to compute fitted values. Independent variables are log (NOTR), log (ROS), log (FLP), and log (DISP) with linear time controls.