

表 5 の下段からも分かるように、公的年金を中心とする若年層からの所得移転によって高齢層の所得が平均的に上昇し、それによって高齢層内部の格差が相対的に縮小するからである。したがって、現行の再分配政策に年齢階層内の格差を縮小する効果があるとしても、そのかなりの部分は実質的に年齢階層間の所得移転によってもたらされたものと言える。

IV まとめ

本稿では、『所得再分配調査』の個票に基づき、1990年代における所得格差の1990年代における所得格差の変化やその背景を概観した。得られた主要な結論は、以下の通りである。まず、1990年代における所得格差の動向については、先行研究の分析結果と同様に、格差の拡大傾向が見られること、そしてその格差拡大のかなりの部分が人口高齢化によって説明できることが確認された。ただし、若年層で格差がかなり拡大しており、今後の動向を注視する必要がある。また、税制・社会保障制度を再分配政策としてまとめて見た場合、年齢階層間での再分配効果の比重がやや高まっていることが分かる。この背景にも人口高齢化が働いているが、年齢階層内の再分配効果についても、それが顕著な形で発揮されるのは高齢層においてであるという点に注目すべきである。

なお、次のような点が今後の研究課題として残っている。まず、1980年代と1990年代において、格差拡大やその要因がどのように異なっているかをチェックすることが、すぐに思いつくテーマとして挙げられる。また、本稿の分析対象となっているのは年間所得であるが、格差拡大の変化やその要因を分析するためには、本来なら生涯所得に注目しなければならない。Oshio (forthcoming)は、生涯所得に注目して公的年金の世代内再分配効果を『所得再分配調査』に基づいて大雑把に試算しているが、日本ではパネル・データが利用可能でないため実証分析はかなり難しい。大竹・齊藤(1996)やOhtake and Saito(1998)は生涯所得格差を代理するものとして消費格差に注目しているが、参考にすべき分析手法と言える。それ以外の方法として、各時点のクロスセクションデータをつなぎ合わせ、擬似パネル・データを作成することにより、生涯所得ベースの所得格差の変化や再分配政策のあり方を検討することも考えられる。

注

- 1)この点は、対象期間を1994年までとしている西崎・山田・安藤（1998）でも指摘されているところである。
- 2) 同白書はさらに、単身世帯や核家族世帯など世帯構造を1996年調査時点で固定してジニ係数を計算し直すことにより、格差拡大の約7割が世帯構造の変化によって説明できると指摘している。
- 3) 以上の手法については、対数分散の場合について説明した大竹・齊藤（1999）参照。
- 4) 対数分散とよく似た発想に基づく、所得格差を示す指標として平方変動係数（SCV: Squared Coefficient of Variation）がある。ただし、平方変動係数は、所得格差を世帯属性よりもむしろ所得源泉に注目して要因分解するのに適している。
- 5) 実際、年齢を1歳刻みなし5歳刻みで同様のグラフを描くと、世帯主が30歳代前半から40歳代前半の世帯のウェイトが大きく低下していることが確認できる。これは、人口高齢化だけでなく、比較的若年の世代における世帯構造の変化が、所得格差の変化に影響している可能性を示唆するものである。

参考文献

- 岩本康志（2000）「ライフサイクルから見た不平等度」国立社会保障・人口問題研究所編『家族・世帯の変容と生活保障機能』東京大学出版会，pp.75-94.
- 大竹文雄（1994）「1980年代の所得・資産分配」『季刊理論経済学』第45巻第5号，pp.385-402.
- _____（2003）「所得格差の拡大はあったのか」樋口美雄・財務省財務総合政策研究所編著『日本の所得格差と社会階層』日本評論社，pp.3-19.
- _____・齊藤 誠（1996）「人口高齢化と消費の不平等度」『日本経済研究』第33号，pp.11-35.
- _____・_____（1999）「所得格差化の背景とその政策的含意——年齢階層内効果、年齢階層間効果、人口高齢化効果——」『季刊社会保障研究』第35巻第1号，pp. 65-75.
- 玄田有史（2002）「見過ごされた所得格差——若年世代 vs. 引退世代，自営業 vs. 雇用者」『季刊社

会保障研究』第38巻第3号, pp. 199-211.

_____ (2003) 「劣化する若年と自営業の所得構造」 樋口美雄・財務省財務総合政策研究所編
著『日本の所得格差と社会階層』日本評論社, pp.145-168.

厚生労働省 (2002) 『厚生労働白書』(2002年版).

西崎文平・山田 泰・安藤栄祐 (1998) 『日本の所得格差』経済企画庁経済研究所.

橘木俊詔 (1998) 『日本の経済格差』岩波書店.

舟岡史雄 (1999) 「日本の所得格差についての検討」『経済研究』第52巻第2号, pp.117-131.

松浦克己 (2002) 「日本における分配問題の概観」宮島 洋・連合総合生活開発研究所編著『日
本の所得分配と格差』東洋経済新報社, pp.25-48.

Ohtake, F. and M. Saito (1998), "Population aging and consumption inequality in Japan,"
The Review of Income and Wealth, Ser.44, No.3, pp.361-381.

Oshio, T. (forthcoming), "Social security and intragenerational redistribution of lifetime
income in Japan," *The Japanese Economic Review*.

表1 所得格差の変化とその要因分解(1989年→1998年)

平均対数偏差		1989年 (A)	1998年 (B)	不等の変化幅 (C)=(B)-(A)	年齢階層内効果 [% of (C)]	年齢階層間効果 [% of (C)]	年齢別人口効果 [% of (C)]
当初所得	原数値	0.258	0.320	0.063 (変化率:24.3%)	-0.002 [-3.0%]	-0.010 [-15.8%]	0.055 [87.3%]
	等価所得	0.235	0.298	0.063 (変化率:26.7%)	0.002 [3.6%]	-0.007 [-10.4%]	0.050 [79.1%]
再分配所得	原数値	0.102	0.104	0.002 (変化率:2.3%)	-0.004	-0.003	0.010
	等価所得	0.084	0.087	0.003 (変化率:3.8%)	0.000	0.002	0.004

対数分散		1989年 (A)	1998年 (B)	不等の変化幅 (C)=(B)-(A)	年齢階層内効果 [% of (C)]	年齢階層間効果 [% of (C)]	年齢別人口効果 [% of (C)]
当初所得	原数値	0.532	0.696	0.164 (変化率:30.9%)	-0.002 [-1.2%]	0.030 [18.0%]	0.123 [75.0%]
	等価所得	0.469	0.630	0.162 (変化率:34.5%)	0.007 [4.6%]	0.030 [18.3%]	0.110 [67.8%]
再分配所得	原数値	0.108	0.100	-0.008 (変化率:-7.2%)	-0.012	0.000	0.008
	等価所得	0.086	0.082	-0.005 (変化率:-5.6%)	-0.007	0.000	0.004

(注): 等価所得ベースにおける不平等度の寄与率分解は、変化幅が小さいので表示していない。

表2 アトキンソン指数の変化(1989年→1998年)

	1989年		1998年		不平等の変化幅 (C)=(B)-(A)
	(A)	(B)	(A)	(B)	
当初所得	原数値	22.7	27.4	4.7	
	等価所得	21.0	25.8	4.8	
再分配所得	原数値	9.7	9.9	0.2	
	等価所得	8.1	8.4	0.3	

(%ポイント)

	1989年		1998年		不平等の変化幅 (C)=(B)-(A)
	(A)	(B)	(A)	(B)	
当初所得	原数値	17.0	19.5	2.5	
	等価所得	16.1	18.6	2.6	
再分配所得	原数値	10.4	10.5	0.1	
	等価所得	8.9	9.4	0.5	

ε=0.5の場合

表3 年齢階層別に見た所得状況の変化

世帯主の年齢	25-39歳	40-59歳	60-74歳
世帯構成比(%)			
1989年	24.5	52.5	23.0
1998年	23.2	46.8	30.0
当初所得の相対比(40-59歳=100, 等価所得ベース)			
1989年	75.6	100.0	63.2
1998年	77.4	100.0	54.3
所得格差(平均対数偏差、等価所得ベース)			
1989年	0.055	0.116	0.666
1998年	0.074	0.112	0.714
[1989年→98年の変化率]	[34.0%]	[-3.6%]	[7.2%]

表4 再分配政策の寄与度分解

平均対数偏差		当初所得 (D)	再分配所得 (E)	不平等の変化幅 (F)=(E)-(D)	年齢階層内効果 [% of (F)]	年齢階層間効果 [% of (F)]
原数値	1989年	0.258	0.102	-0.156	-0.147 [94.7%]	-0.008 [5.3%]
	1998年	0.320	0.104	-0.216	-0.197 [91.3%]	-0.019 [8.7%]
等価所得	1989年	0.235	0.084	-0.151	-0.143 [94.6%]	-0.008 [5.4%]
	1998年	0.298	0.087	-0.211	-0.190 [90.2%]	-0.021 [9.8%]
対数分散						
原数値	1989年	0.5318	0.1081	-0.424	-0.297 [70.1%]	-0.127 [29.9%]
	1998年	0.6962	0.1003	-0.596	-0.393 [65.9%]	-0.203 [34.1%]
等価所得	1989年	0.4688	0.0864	-0.382	-0.272 [71.1%]	-0.111 [28.9%]
	1998年	0.6304	0.0815	-0.549	-0.365 [66.5%]	-0.184 [33.5%]

表5 再分配政策の年齢階層別効果（1998年、等価所得ベース）

平均対数偏差の変化幅(当初所得→再分配所得)			
世帯主の年齢	不平等の変化幅	年齢階層内効果	年齢階層間効果
25-39歳	0.010	-0.003	0.013
40-59歳	0.009	-0.015	0.024
60-74歳	-0.230	-0.172	-0.058
全体	-0.211	-0.190	-0.021

参考: 平均所得(万円)

世帯主の年齢	当初所得	再分配所得
25-39歳	359	320
40-59歳	464	419
60-74歳	252	375
全体	376	383

Income inequality and redistribution policies in Japan during the 1980s and 1990s*

– Can population aging entirely explain widening inequality? –

Takashi Oshio**

Graduate School of Economics, Kobe University

Abstract

We overview the long-term trend of income inequality and the effects of redistribution policies during the 1980s and 1990s in Japan. We confirm the following facts. First, Japan is a relatively uneven society on an annual income basis and the pace of widening inequality has been faster than in many other countries. Second, while widening inequality during the past two decades was largely attributable to population aging, within-age inequality has also been widening and younger cohorts tend to face wider inequality. Third, income redistribution has been concentrated heavily on between-age redistribution, while within-age income redistribution has been quite limited.

JEL classification: D31, D63

Key words: Japan, income inequality, income redistribution.

* The original version of this paper was presented to the Workshop on the Role of Social Security in the Era of Changing Family Structure and Working Style with Special Reference on Income Distribution, organized by the National Institute of Population and Social Security in January, 2005. We are grateful to Richard V. Burkhauser, Jan Nelissen, Eiji Tajika, Tetsuo Fukawa, and Akiko S. Oishi for helpful comments and discussions. The data used in the paper were made available to the author by the Ministry of Health, Labour and Welfare of Japan, the notice number No.0826001 dated 26th August 2004.

** Correspondence to: Takashi Oshio, Kobe University, 2-1 Rokkodai-cho, Nada-ku, Kobe, Hyogo 657-8501, Tel and fax: +81-78-657-8501, E-mail: oshio@econ.kobe-u.ac.jp.

1. Introduction

Income inequality has kept widening in Japan during the 1980s and 1990s, when the country faced both the “bubble” expansion and the subsequent long recession. According to the Survey on Income Redistribution (SIR) conducted by the Ministry of Health, Labour and Welfare (MHLW), the Gini coefficient of pre-tax and pre-transfer (not equivalized) income rose to 0.419 in 2001 from 0.349 in 1980. It is often argued that the SIR tends to indicate a higher inequality than other household surveys, but the uptrend of inequality is commonly observed in most surveys over the past few decades as reported by Ohtake (2003). Some researchers suspect that Japan is now among the countries in which income is most unevenly distributed. Unfortunately, Japan does not participate in the Luxembourg Income Study (LIS), making it difficult to assess the degree of its uneven distribution from an international perspective. The MHLW (2004), however, tentatively compared Japan’s Gini coefficient in 1998 of equivalized (household size-adjusted) disposable income with those of Sweden, Germany, France, the United Kingdom and the United States, recognizing that income is distributed more evenly in Japan than in the latter two countries and less evenly than in the former three.

The widening trend in income inequality has stimulated debates among economists, sociologists as well as government officials in Japan as to whether the country is moving toward a more unequal and stratified society. Among others, Tachibanaki (1998) and Sato (2000) point out several warning signals of widening inequality in Japan from economic and sociological viewpoints, respectively. Partly inspired by their studies, many empirical analyses have focused on income distribution and its changes in recent years, since income inequality is of great concern for economic policies and social security schemes. Generally speaking, Japanese economists as well as government officials tend to be cautious in interpreting the recent trend observed from household surveys as an imminent warning signal of moving toward a more

uneven society. For example, Ohtake (1994) emphasized early on that widening income inequality during the 1980s was mostly attributable to population aging. He also found no significant change in within-age income inequality, even though it tended to widen as age increased. The impact of population aging has also been emphasized by other researchers including Ohtake and Saito (1996) (1999), Iwamoto (2000), and Shirahase (2002), whose analyses are based on different surveys on income and expenditures, including the SIR. Their studies covered the period over the 1980s or until the early 1990s, while Ohtake (2003) overviewed the trends in various data of income distribution from the past two decades. Along with those studies, the MHLW recently showed in its Annual Report (2003) that the recent rise in the Gini coefficient (not household size-adjusted) can be explained almost entirely by population aging and smaller household sizes.

This paper extends the literature by examining the longer-term trend in income inequality covering most of the 1980s and 1990s, based on the micro data from the SIR which was conducted every three years from 1981 to 1999. To be more specific, we first aim to investigate how and why Japan has experienced widening income inequality during the past two decades, in particular by estimating the impact of population aging as well as changes in between-age and within-age inequalities. For this purpose, we examine a variety of inequality measures based on household size-adjusted income data, making the estimation results robust and reliable. In addition, we investigate whether there has been any cohort effect on widening income inequality using the synthetic panel data, following the analyses of Ohtake and Saito (1996) and Iwamoto (2000). In doing these analyses, we adjust the income data according to the LIS standard as much as possible and compare income inequality and its changes with those of other countries.

Then, we aim to assess the extent to which taxation and social security policies succeeded in redistributing income among households. Population aging is expected to automatically raise the degree of income transfer from the young to the elderly through pay-as-you-go (PAYG)-type

public pension schemes as well as medical and long-term nursing care. Within-age income redistribution, however, is also important as far as equity within the cohort is concerned. Our methodology is basically the same as applied by Ohtake and Saito (1999) and Oshio (2004), which is to decompose income redistribution into between- and within-age effects. We point out in this paper, however, that the within-age redistribution among the elderly tends to be overestimated: income transfer from the young tends to raise mean income of the elderly and thus reduce the value of within-age inequality measures regardless of within-age income redistribution among the elderly. We try to get rid of this bias and present a more precise assessment of redistributive impact of the current policies.

The three main conclusions are as follows. First, we confirm that income distribution in Japan – based on the micro data from the SIR and assessed by the Gini coefficient and Atkinson indices for equivalized disposable income – is more unequal than average among the LIS countries, at least on an annual income basis. We also observe that the pace of widening of the inequality has been relatively fast in Japan compared to the LIS member countries. While international comparisons depend heavily on the survey employed, these results suggest that we should be cautious in accepting any argument that Japan remains to be a relatively even society.

Second, in line with the preceding surveys, we look at several measures of income inequality to show that widening inequality during the past two decades was largely attributable to population aging. We find, however, that within-age inequality has also been widening. Also, using the synthetic panel data constructed from the cross-section SIR data for seven survey years, we recognize that the younger cohorts face wider income inequality of equivalized disposable income. These facts suggest that widening income inequality should be taken more seriously than before, even though most of it is attributable to population aging.

Third, we show that distribution policies have concentrated heavily on the between-age effect, which accounted for about nine-tenths of a reduction in income inequality from initial

income to disposable income. In addition, both the absolute and relative magnitudes of between-age redistribution have been growing during the past two decades given an aging population. On the other hand, within-age income redistribution has been quite limited in general, and it worked rather *regressively* among the elderly in the latest survey year, if the impact of income transfer from the young is excluded. Together with the second result, this implies the need for enhancing progressivity of redistribution policies given an increasing share of the elderly in the context of population aging and the uptrend in income inequality within the younger cohort.

The remainder of the paper is constructed as follows. Section 1 briefly describes the features of the SIR, on which our empirical analysis is based. Section 2 explains the methodology by which we assess income inequality and decompose its changes. Section 3 summarizes the trends in income inequalities during the past two decades and examines the extent to which population aging can explain a widening of income inequality. Section 4 assesses the redistributive impact of taxation and social security on income redistribution. Finally, Section 5 summarizes the estimation results and their policy implications.

2. Data and inequality measures

2-1. Data

Our empirical analysis is based on the micro data from the Survey on Income Redistribution (SIR), which is conducted by the Ministry of Health, Labour and Welfare (MHLW) every three years. Unlike other household surveys, this survey primarily aims at measuring income distribution and the effects of redistribution policies. As emphasized by Mizoguchi and Takayama (1984) and Tachibanaki and Yagi (1994), the SIR is one of the most suitable household surveys for analysis of income distribution given its wide coverage and reliability of

reported income. We use the micro data from seven SIRs, from 1981 to 1999; however, information about income reported in each survey is from the previous year. We focus on the household data, sample sizes of which are in the range between 7,165 (in 1983) and 8,856 (in 1989).

Our main focus is on the two income variables: “initial” (*tosho*; pre-tax and pre-transfer) income and “disposable” (*saibunpai*; post-tax and post-transfer) income, both of which are headline indexes reported in the SIR. Initial income is defined as the sum of salaries, self-employed income, farm income, dividends, interests, rents, and private transfer receipts. Disposable income is calculated as the initial income *minus* income/property taxes and social security contributions, *plus* social security benefits. Social security benefits include not only in-cash benefits (such as public pension and unemployment benefits) but also in-kind benefits (such as medical and nursing care), the cash value of which is derived from the services reported to be received by the household. Taxes include state/local income, property and automobile taxes, but not consumption tax. We believe that disposable income defined that way is almost comparable to the one defined in the LIS. Unfortunately, the SIR does not provide any information about consumption expenditures¹ or longitudinal information, limiting our analysis purely to income.

In the empirical analysis, we apply the internationally standardized approach to make our estimation results as internationally (and intertemporally) comparable as possible. First, we control for differences of household size, i.e., the number of people living in a household. While there is no single universally-agreed measure for size-adjusted income to reflect economies of scale, we adopt the commonly-used formula of dividing household income by the square root of the number of household members (Buhmann *et al.*, 1998). Second, following Gottesshalk and

¹ Ohtake and Saito (1998) and Iwamoto (2000) focused on consumption inequality rather than income inequality, following Deaton and Paxson (1994).

Smeeding (1997) and the LIS method, we bottom-code the equivalized disposable income at one percent of equivalized mean income and top-code at ten times the median of non-equivalized income. We bottom-code and top-code initial income in the same way.

However, we have to bear in mind the well-established argument that the SIR tends to indicate higher income inequality, especially on an initial income basis, compared to other household surveys in Japan¹. One plausible reason of the upward bias is that, unlike other surveys, the SIR includes retirement lump-sum allowances (*taishoku-kin*) in the initial income. Retirement lump-sum allowances differ substantially from employee to employee and are not paid to self-employed workers. Those allowances likely add to income inequality among the elderly, especially those aged around 60, which is the common retirement age in Japan. In this paper, we do not adjust for it, since we believe that retirement lump-sum allowances are one of the most important factors that actually affect income distribution among the elderly. The second reason is that the SIR does not include pension benefits in initial income, presumably raising income inequality on an initial income basis compared to some surveys that include them in initial income. We do not need to worry about this criticism since we focus on disposable income as well as initial income, and we aim to discuss the impact of redistribution policies, including public pensions. Another likely factor to raise income inequality in the SIR is that the Survey includes single-person households whose income levels are generally lower than those of households of two or more members, while other surveys do not cover single-person households or cover only a limited portion of them. We include single-person households in our analysis adjusting for household size, because we believe that by doing so a more precise and comprehensive picture of income distribution for the overall society can be obtained.

Finally, we conduct some “data cleaning” to make estimation results relevant. Following

¹ Funaoka (1999) and Umetani (2000) compared several household surveys on income and expenditures from a viewpoint of Gini coefficients, and pointed an upward bias of income inequality in the SIR.

the criteria suggested by Matsuura (2002), we exclude households that seem to have reported clearly irrational responses. Specifically, we drop the following five types of households from the empirical analysis: 1) those which responded that there is at least one income earner but reports no earning income at all; 2) those which responded that its head is an employed worker but reports no employment income; 3) those which responded that its head is a self-employed worker but reports no self-employment income; 4) those which responded that there is at least one pensioner in it but reports no pension benefits; 5) those whose disposable income is not positive. Excluding those households, the range of the sample size falls to between 6,321 (in 1983) and 7,873 (in 1989), which is 86-94 percent of the original size.

2-2. Inequality measures

We concentrate on four measures to evaluate income inequality to make the estimation results robust. The first is the Gini coefficient, which is one of the most conventional measures and also used in the MHLW's official reports on income redistribution. The Gini coefficient (GC) is given by

$$GC = \frac{1}{2n^2\mu} \sum_{j=1}^n \sum_{i=1}^n |y_i - y_j| = 1 + \frac{1}{n} - \frac{1}{n} \sum_{k=1}^n \left(\frac{1}{n\mu} \sum_{i=1}^k y_i \right),$$

where n is the number of the households in the survey, μ is the mean income, y_i is the i -th household's income ($y_1 \leq y_2 \leq \dots \leq y_i \dots \leq y_n$), and the value in the parenthesis on the right hand side shows the cumulative distribution of income up to and including y_i . The closer to zero (unity) the coefficient is, the more equally (unequally) income is assessed to be distributed.

The second is the Atkinson index, which is another commonly used measure. With $\varepsilon (\geq 0)$ as a parameter referring to relative inequality aversion, the Atkinson index (AI) is given by

$$AI = 1 - \frac{1}{\mu} \left(\frac{1}{n} \sum_{i=1}^n y_i^{1-\varepsilon} \right)^{1/(1-\varepsilon)}, \quad 0 < \varepsilon, \varepsilon \neq 1; \quad AI = 1 - \frac{1}{\mu} \exp \left(\frac{1}{n} \sum_{i=1}^n \log y_i \right), \quad \varepsilon = 1.$$

The Atkinson index is linked to a specific form of the social welfare function

$$W = \sum_{i=1}^n \frac{y_i^{1-\varepsilon} - 1}{1-\varepsilon}, \quad 0 < \varepsilon, \varepsilon \neq 1; \quad W = \sum_{i=1}^n \log y_i, \quad \varepsilon = 1,$$

and gauges a loss of social welfare due to uneven income distribution. We consider two cases of $\varepsilon = 0.5$ and $\varepsilon = 1$ as is done in the LIS.

The third measure is the mean logarithmic deviation (MLD), which is defined as

$$MLD = \frac{1}{n} \sum_{i=1}^n \ln \left(\frac{\bar{y}}{y_i} \right) = \ln \bar{y} - \frac{1}{n} \sum_{i=1}^n \ln y_i.$$

MLD is equal to zero if income is completely evenly distributed and has a higher value with more unequal distribution. MLD corresponds to the Atkinson index with ε set to be unity such that $AI = 1 - \exp(-MLD)$.

MLD is useful in that it can easily decompose the factors that affect inequality corresponding to each group's characteristics. For example, dividing the society into m age groups with α_g as a share of g -th age group, and denoting each age group's MLD as MLD_g , simple calculations yield

$$MLD = \sum_{g=1}^m \alpha_g MLD_g + \sum_{g=1}^m \alpha_g \ln \left(\frac{\bar{y}}{y_g} \right),$$

where y_g is the mean income of the g -th age group. The first term on the right hand side corresponds to the within-age inequality and the second term to between-age.

Finally, we use the logarithmic variance, LV, which is defined as

$$LV = \text{var}(\ln y).$$

We can decompose LV in the same manner as in the case of MLD:

$$LV = \sum_{g=1}^m \alpha_g LV_g + \sum_{g=1}^m \alpha_g (\ln y_g - \overline{\ln y})^2,$$

where LV_g is each age group's LV and the first and second terms on the right hand side correspond to the within-age and between-age inequality, respectively.

It is well established that the Gini coefficient is more sensitive to movements around the mean, while the Atkinson index is more sensitive to changes at the extremes of the distribution. Also, the MLD and LV tend to give more weight to the bottom of the distribution. Despite these statistical differences, similar movements in all four indices would give greater confidence that the indicated change in income inequality is not just a statistical distortion. It should be noted, however, that there is sampling error present in these estimates and, therefore, small changes over time may not be statistically significant.

3. Trends in income inequality

3-1. The trend in income inequality during the 1980s and 1990s

We start with overviewing the trend in income inequality during the past two decades. Table 1 shows how the inequality measures, which are described in the previous section, changed during 1980 and 1998 both on a non-equivalized and equivalized income basis and both for initial and disposable income. For the Gini coefficients we also show the MHLW's official figures for non-equivalized income for comparison. The official figures are somewhat lower than our estimates, but there is no significant difference to our figures in both the levels and trends of inequality. In addition, Figure 1 depicts the trends of Gini coefficients of initial and redistributed income (other measures show almost the same trend as seen in this figure).

We can confirm the following facts from the table and figure. First, income inequality of initial income widened substantially between 1980 and 1998. Its Gini coefficient rose 35 percent

during that period to 0.449 in 1998 from 0.332 in 1980. Dividing the whole period up into the 1980s (1980-1989) and the 1990s (1989-1998), we find that the pace of rising inequality was faster in the former period – at 2.2 percent in the 1980s compared to 1.1 percent at an annual rate – as already pointed out by several preceding studies. Figure 1, however, shows a sizable jump from 1980 to 1983, and if this period is excluded, the difference in the pace between the 1980s and 1990s is much smaller (0.9 percent point as opposed to 1.1 percent). This may well be cause for skepticism about the comparability of the 1980 data with those in the subsequent survey years, as will be discussed in more detail below.

Second, a rise in the Gini coefficient of disposable income to 0.337 from 0.286 over the whole period (18 percent) was about half of that of initial income. The discrepancy between the trends of initial and disposable income suggests that redistribution policies succeeded at least partially in preventing income inequality from widening at least on a macro level. In fact, the Gini coefficient of disposable income declined 24.9 percent from initial income in 1998, much more than the 13.9 percent in 1980 due to taxation and social security policies (see the fourth column in Table 1). A reduction in inequality *per se* is welcome, but it should be noted that population aging tends to automatically raise between-age income transfer through public pensions and other social security programs. This makes it difficult to assess the redistributive effects of social policies.

The two facts mentioned above, which can be observed also in the Atkinson indices, *MLD*, and *LV*, raise a curious question; that is, to what extent is Japan an unequal society compared to other industrialized countries? Although Japan is not contained in the LIS dataset, there have been some empirical studies about cross-country differences in income distribution which tentatively included the Japanese data. A series of research papers published by OECD economists – including Oxley *et al.* (1997), Burniaux *et al.* (1998), and Förster and Pearson (2002) – as well as Nishizaki, Yamada, and Ando (1998) and Yamada and Casey (2002) are

recent examples. Their analyses in general show that income inequality in Japan, measured by Gini coefficient and other indices, was around the average of the surveyed OECD countries in the mid-1990s. Their comparisons, however, were based on the National Survey of Family Income and Expenditure (NSFIE; conducted by the Statistics Bureau), which tends to show lower income inequality than the SIR. Our analysis based on the SIR is expected to examine the robustness of their arguments.

Table 2 compares Japan's Gini coefficient and the Atkinson index with $\varepsilon = 0.5$, which are based on the micro data from the SIR, to those of the LIS member countries in the latest survey year (around 2000 in most countries) for equivalized disposable income. The left part of the table reveals that Japan is a relatively uneven country in terms of the Gini coefficient and the Atkinson index, both of which place Japan in the seventh highest rank among twenty-eight countries on the list. Within the OECD member countries, income inequality is wider in Japan than in other countries except for the United States and the United Kingdom.

We also find that Japan has been facing a relatively high pace of widening income inequality over the past two decades. The right part of the table confirms this by comparing the absolute changes at an annual rate of the two inequality measures during the period between the early 1980s and the latest survey year. Excluding the three countries of the Czech Republic, Slovenia, and Russia, which are in a transition from a socialist economy to a market economy, Japan is one country whose pace of widening inequality is higher than in many other countries.

On the whole, we can summarize that income inequality has been widening in Japan during the 1980s and 1990s especially for initial income, and also that both the level of inequality and pace of its widening inequality in terms of disposable income are relatively high among industrialized countries.