Over-time Changes in the Size Distribution of Household Income under Rapid Economic Growth: The Japanese Experience

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One of the most important policy problems faced by developing countries is the maintainance of economic growth while preserving the relative equity of income distribution.* In this respect, we will want to consider the Kuznets inverted-U hypothesis which maintains that there will be a regressive trend in the size distribution of income until some point in the development process, after which a progressive trend will appear. When plotted, the shape of the curve will resemble the letter U turned upside down. The knowledge that such a pattern exists might be very helpful in devising strategies for development countries. Unfortunately, the Kuznets hypothesis has been insufficiently tested, mainly because of the scarcity of data.

As Kuznets pointed out, it is very difficult to find appropriate long-term data. Several attempts, using various kinds of data, have been made to verify the Kuznets hypothesis. Some have tried to use historical data (Paukert, 1973), but most studies have depended on very special kinds of data such as tax statistics. Others have attempted to clarify the relation between income levels in U.S. dollars and degrees of inequality (Bacha, 1977). The difficulty with these approaches is that the degree of inequality varies with social factors and with the nature of the data.

We believe that the Japanese experience provides a good chance to test the Kuznets hypothesis, although we have data on the size distribution of income only for the post-world War II period. Judged by the magnitude of the change in the level of income, the quarter-century

of postwar Japanese development can be compared to a century of growth in most developed countries. Therefore, we can hope to get an idea of the long-term relation between economic development and changes in the inequality of the size distribution of household income. In this paper we shall, in Section II, investigate the over-time changes in size distribution of total household income in relation to the changes in inequality "between" and "within" selected household subgroups. In Section III, relying on more detailed data, we shall examine the causes of the changes in inequality for various subgroups.

Before proceeding, it is necessary to comment on the measures of inequality to be used in this paper. Among the various measures which have been used in income distribution studies, the most popular is the Gini concentration ratio or the Gini coefficient, which can be decomposed into additive factor components (Rao, 1969). Where G = the Gini coefficient of total income, G_i = the pseudo-Gini coefficient of the i-th income component (obtained from tables classified by total household income), and w_i = the share of i-th income in total income, we have

$$G = \sum_i wi\bar{G}_i.$$

However, there are two deficiencies in the Gini coefficient. First, when the Lorenz curves being compared cross, the ordering pattern of this measure becomes arbitrary. In fact, it has been shown by Atkinson (Atkinson, 1970) that the Gini coefficient weighs the modal income classes more heavily than those at the margins. The other drawback of the Gini coefficient is its ineffective treatment of the between–within type of decomposition. When income distribution is calculated according to heterogeneous household groups, it is desirable to decompose the inequality measures into between and within components.[1]

Regarding the latter problem, we will want to look at the log variance decomposition. It is not necessarily admitted that the income distribution follows the log-normal distribution, but the log variances have been used to indicate the measures of inequality. In this case we can divide the total log variance into between and within components using the technique of variance analysis.

[1] The total Gini coefficient, G, can be decomposed into the between-group Gini G_b, and the within-group Gini, $G_w(i)$, using the following formula:
$$G = G_b + \sum_i w_i \, G_w(i)$$
where $w_i = [g(Y_i)]^2 \, (\bar{Y}/Y_i)$
and $\bar{Y}$, Y_i, and $g(Y_i)$ are, respectively, the mean income of the total group, the measure of the i-th subgroup, and the population share of each group. Note that all G defined here are Gini coefficients, not pseudo-Gini coefficients.

Theil's measure, derived from information theory, is also a popular measure in the study of income distribution. One of the merits of this measure is that total inequality can be divided into the two components mentioned above. To some extent, Toyoda (1975) succeeded in generalizing the Theil measure. He gave us measures of the expected-utility. type which are made up under a general weighing system with one parameter (a). When (a) equals unity, his measure is reduced to the well-known Theil measure (T), and when $a = 2$, his measure equals half the square of the coefficient of variation. Furthermore, when (a) is less than unity, his measure (B) corresponds to Atkinson's measure (A) in the following formula:

$$A = 1 - (1 - aB)^{1/a}, \, a \neq 0, \, a < 1$$
$$A = 1 - \exp(-B), \quad a = 1.$$

In this sense, B can be treated as Atkinson's variant when $a < 1$.

$$(a = 1 - E.)$$
$$B = (1/a) \, [1 - \sum(Y_j/\bar{Y})^a f(Y_j)] \qquad a \neq 0, \, a < 1$$
$$B = -\sum[\log(Y_j/\bar{Y})] f(Y_j), \qquad a = 0$$
$$B = \sum[(Y_j/\bar{Y}) \log(Y_j/\bar{Y})] f(Y_j) \qquad a = 1$$
$$B = (1/a) \, [\sum(Y_j/\bar{Y})^a f(Y_j) - 1] \qquad a < 1$$

where $Y_j, f(Y_j)$ and $\bar{Y}$ are, respectively, the income of the j-th class, its population share, and its mean income.

Corresponding to the form of decomposition of Theil's measure, we can decompose Toyoda's measure as follows:

$$B = B_{} + \sum w_i \, B_w(i) \qquad\qquad w_i = g(Y_i) \, (Y(\bar{Y})^a$$

where $B_b, B_{w(i)}, Y_i, g(Y_i)$ are, respectively, the between-group inequality, the within-group inequality, the mean income of the i-th group, and the population share of that group. When (a) equals unity or zero, we have $w_i = 1$, and the total within-group inequality $(\sum w_i B_{w(i)})$ becomes just the weighted average of the within-group inequality. The smaller the value of (a), the heavier is the weight given to the lower income classes at the margin.

Total Household Income Distribution

This section aims to estimate the degrees of inequality for the size

distribution of household income covering all types of household income in Japan. Such an attempt is important in showing the broad characteristics of Japanese income distribution and in understanding the behavior of occupational groups.

Needless to say, obtaining reliable data is the most important task in the study of income distribution. There have been published annually in Japan two kinds of reliable data on the size distribution of multi-member households: the Family Income and Expenditure Survey of the Bureau of Statistics, Office of the Prime Minister (hereafter FIES), and the Cost of Living Survey of Farm Households of the Ministry of Agriculture and Forestry (hereafter CLSF).[2] The sample size is medium —that is, about 10,000—and the reporting households are requested to make balance sheets for their income and expenditures. It is our impression that the non-sampling biases are more serious than the sampling biases in the income survey. In this sense, the two surveys have reliable figures on income in comparison with the figures of other kinds of surveys which depend on a simple questionnaire.

Restricting ourselves only to these data, however, we leave the following household groups unexamined: the nonagricultural entrepreneur multi-member household, the unemployed multi-member household, and the single-member household. According to the 1974 Employment Status Survey of the Bureau of Statistics, Office of the Prime Minister (hereafter ESS), the percentage of the number of households occupied by these groups is about 40; therefore, we cannot neglect these household groups in our study.

Since the early 1970s, some attempts at filling this vacuum in income distribution studies have been made. Wada (1975) estimated the size distribution for total households, relying mainly on the ESS,[3] which collects figures on the cash income of individuals. In the reports before 1968, the ESS estimated household cash income using questionnaires on household property and transfer income. Wada adjusted the figures for agricultural households by adding his estimates of income in kind. He also tried to revise the ESS property income figures, which he believed to have downward biases. Since we cannot get information on property income and transfer income from recent ESS surveys, we cannot really corroborate Wada's method. In addition, there remain some problems regarding the accuracy of ESS income figures. Because the main purpose of the survey is to provide information on employ-

[2] A brief explanation of these surveys was presented in (Mizoguchi, 1975).
[3] While Wada estimated the 1971 distribution, there was not much description of the method used to compensate for the lack of data on property and transfer income for that year. Therefore, we adopt in this section only his pre-1968 results.

ment structure, income has been treated as a matter of subsidiary interest. Further, the questionnaire used has been simplified in subsequent years. Additionally, it is somewhat inconvenient to use ESS data which are prepared every three years when most other Japanese data are published annually.

A second approach was proposed by the Research Group on Income Distribution Problems (hereafter RGIDP) organized by the EPA (RGIDP, 1976). They adopted the annual income data reported in the Family Saving Survey of the Bureau of Statistics, Office of the Prime Minister (hereafter FSS), in order to derive the size distribution of income for urban households. Since the samples for the FSS are taken from the sample households selected at the beginning of each year, the annual income information should be relatively reliable, even though gathered through a simple questionnaire.[4]

A third type of study was proposed by Mizoguchi (1975). While the FIES has income data only for employee households, it has expenditure data for other than employee non-agricultural households (let us call these households "Other Households"). Since we can get the annual saving ratios by income class for the Other Households from the FSS, we can derive the size distribution of disposable income by using the FIES and the FSS together.

Another approach would be to seek data which cover a range of household groups broader than the CLSF and the FIES and give more reliable income data than the ESS. Among various candidates, we should pay attention to the Survey of People's Living Conditions of the Ministry of Welfare (hereafter SPLC) and the Survey of Consumer Finances of the EPA (hereafter SCF). About 10,000 households are taken as the sample for the SPLC, which examines the income from July of the previous year to June of the survey year. Since the reports have been published, with some exceptions, annually, we can investigate the annual change in income distribution for all households. The interviewing has been done through the fixed districts used by the Office of Social Welfare Commissions, and it is said that, in comparison with other kinds of surveys, the refusal ratio is low for low-income classes.

The SCF has taken its sample households from the same population used for the FIES and the CLSF. Since the survey obtains income figures from a simple questionnaire, the SCF income data would be less reliable than that of the FIES. However, careful attention has been paid to income since the main object of this survey is to study con-

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[4] The FIES asked the sample households their annual income for the preceding year. Because the samples have been rotated gradually, we cannot use the annual income in the study of income distribution.

sumption behavior. Thus, its income data are better in quality than the ESS's.

A comparison of estimates

Now let us compare various kinds of estimates obtained from different data. Because of data limitations, the comparison is restricted to the years after 1962. Since our purpose here is to follow the broad pattern of over-time change, let us adopt the most often used indicator, the Gini coefficient. All income data are presented in decile group breakdown using the packaged program developed in our project (Matsuda *et al.*, 1976), and the coefficients obtained are shown in Table 1.

For the income distribution of all types of households, we have only two kinds of estimates. Although there are minor differences in the household coverage, it is not impossible to compare the two. Wada's calculations for the Gini coefficient are nearly constant from 1962 to 1968; our SPLC estimates show a decline. The difference between the pattern suggested by Wada and that used by us can be traced to the varying patterns of distribution for single-member households. The pattern of overtime change in distribution is similar in the two series with respect to multi-member households. For the multi-member households, we have four kinds of estimates. Differences in coverage are not so serious as to affect the estimates. Generally speaking, the overtime changes show very similar patterns. The coefficients rise until 1962, decline from 1963 to 1968, and increase thereafter.

The over-time income distribution pattern suggested by the four kinds of estimates for the non-agricultural multi-member household is also similar: there is a decreasing trend from 1960 to 1972 and an increasing trend afterwards. While the original draft of Wada's paper showed figures for only two years, 1956 and 1962, the result seems to be consistent with our estimates.

Regarding the period before 1961, we can get information on the size distribution of total households only through the ESS. According to Wada's calculations, the distribution changed regressively during this period. While we cannot check his results with other data, there are some figures which permit a partial examination of the reliability of the ESS data. The ESS suggests that the distribution within employee households showed a regressive trend from 1956 to 1959. This is consistent with the results from the FIES which are examined below. (See "Income Distribution of Employee Households"). Wada has calculated the Gini coefficients for agricultural households only for 1956 and 1962. The regressive trend he suggested there is supported by the results from

Table 1. Estimates of Gini Coefficients for Total Households Using Various Data Sources*

Data	Estimate by authors	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
					Total Households						
(1) ESS (CLSF)	Wada	0.3819	....	....	0.3766	....	....	0.3800	....	....	....
(2) SPLC	Mizoguchi	0.3759	0.3607	0.3528	0.3441	....	0.3523	0.3488	0.3539	0.3553	0.3521
				Multiple member households							
(3) ESS (CLSF)	Wada	0.340	....	....	0.337	....	....	0.324	....	....	....
(4) SPLC	Mizoguchi	0.3629	0.3461	0.3402	0.3276	....	0.3307	0.3257	0.3319	0.3284	0.3301
(5) FIES, CLSF & FSS	Mizoguchi	0.2744	0.2544	0.2440	0.2392	0.2373	0.2403	0.2191	0.2017	0.2197	0.2094
(6) SCF	Mizoguchi	....	....	0.2922	0.3050	0.3113	0.3004	0.2826	0.2732	0.2872	0.2661
				Urban multimember households							
(7) SPLC	Mizoguchi	0.3636	0.3464	0.3232	0.3232	....	0.3224	0.3184	0.3232	0.3140	0.3139
(8) FIES, CLSF & FSS	Mizoguchi	0.2745	0.2563	0.2380	0.2276	0.2284	0.2307	0.2104	0.2002	0.2043	0.2076
(9) FSS	RGID	0.2972	0.2968	0.2572	0.2988	0.2916	0.2864	0.2712	0.2652	0.2664	0.2756

a. While the SPLC is based on fiscal year income surveys from July-June, other surveys are based on calendar year income.
b. The SPLC was not taken in 1966; the ESS has been done every three years.
c. The sources used by Wada and the RGIDP are shown in (Wada, 1975) and (RGIDP, 1976), respectively.
d. While (5) and (8) measure the distribution of household disposable income, all other income figures are for household pre-tax income.

the CLSF which are examined in Section III (see "Urban Rural Income Differences and Income Distribution of Agricultural Households"). Since these two household groups occupied a large portion of multi-member households in the 1950s, his estimates would be valid at least for these households.

However, we still must explain the difference in the level of inequality measures for the multi-member household as well as the non-agricultural multi-member household. For example, the results from the ESS and the SPLC range from 0.30 to 0.35; the estimates from the FIES, the FHES, and the FSS are generally lower. We can point out two reasons for these differences. The first is that the samples of the FIES are taken from households of relatively moderate income.

Although the FIES adopts the random sampling method, it is quite possible that the refusal ratio is high in low-income households due to the difficulty in keeping family account books. A similar situation could arise with the SCF or the FSS. In constrast with these surveys, the SPLC uses officers of the Social Welfare Commission as interviewers, and the refusal ratio is relatively low in low-income households. Since the ESS inquires mainly about the employment situation, the refusal ratio is said to be low in comparison with other surveys. The second reason

Table 2. Gini Coefficient for Household Subgroup*

Year	(1) Total H.H.	(1.1) Single-member H.H.	(1.2) Ordin-ary H.H.	(2.1) Regular employee H.H.	(2.2) Daily employee H.H.	(2.3) Agricultural H.H.	(2.4) Non-agricultural self-employed H.H.	(2.5) Unemployed H.H.
				Subgroups of ordinary households				
1962	0.3759	0.4215	0.3629	0.3244	0.2931	0.3192	0.3855	0.4275
1963	0.3607	0.4155	0.3461	.03116	0.2816	0.3023	0.3818	0.3699
1964	0.3528	0.3672	0.3402	0.3027	0.2598	0.3187	0.3950	0.3661
1965	0.3441	0.4131	0.3276	0.2988	0.2765	0.2917	0.3971	0.4057
1966	—	—	—	—	—	—	—	—
1967	0.3523	0.3541	0.3307	0.2961	0.2590	0.2949	0.4374	0.4131
1968	0.3488	0.4591	0.3257	0.2961	0.2973	0.2925	0.3977	0.3561
1969	0.3539	0.4046	0.3319	0.3043	0.2682	0.2844	0.4915	0.3903
1970	0.3553	0.3733	0.3284	0.2934	0.2530	0.2938	0.4467	0.4155
1971	0.3521	0.3987	0.3301	0.2986	0.2570	0.3081	0.4328	0.4012
1972	0.3570	0.4304	0.3388	0.3022	0.2586	0.3197	0.4215	0.3826
1973	0.3496	0.4760	0.3287	0.2936	0.3271	0.3126	0.4073	0.4210
1974	0.3443	0.3651	0.3268	0.2890	0.4683	0.3041	0.4505	0.4172

* Data from the SPLC.
a. H.H. = household.

concerns only the FIES. To avoid difficulties caused by FIES sample rotation, we have used here the average annual income calculated for household groups in the annual report of the FIES.

Since we believe that the nonsampling biases are small in the FIES and the CLSF, we must refer to these data to determine the pattern of over-time change in the Gini coefficients. However, regarding the absolute level of the Gini coefficients, the results from the SPLC are more realistic. Further, it is very fortunate for us that the pattern suggested by the SPLC is very similar to that of the FIES and the CLSF. Considering these circumstances, we can use the SPLC to investigate all types of household income distribution.

Decomposition of SPLC log variances

Various methods have been proposed for decomposing the inequality measures. However, let us use here the log variance of income. By using the technique of variance analysis, the total log variance in the data classified by occupational groups can be decomposed into weighted averages *within* variances and *between* variances. The results are shown in Table 3, where total variances for all households are first decomposed into those for single- and multi-member households. The variance for the multi-member household is again divided into five occupational groups. The pattern of over-time change is very similar to that of the Gini coefficients shown in Table 2. Therefore we can safely use the log variances, although we do not necessarily believe that the pattern of income distribution follows that of the log normal distribution.

First, let us examine the decomposition between the single- and the multi-member households. The within variances for the two groups change differently over time. The curve for the single-member household declines from the early to the late 1960s and rises afterwards. However, the opposite pattern is shown in most years by the multi-member household curve. Since about 80 percent of all households are multi-member, the overall within-variance pattern will closely resemble that of the multi-member household. In this context, it is very important to note that the between variance increases, especially after the mid-1960s. This could be explained if the relative income of single-member households had decreased remarkably after the mid-1960s. However, in fact the relative income of single-member employee households did not decline.

The single-member household includes the following four categories: (1) young employee households, (2) young unemployed households, (3) aged households, and (4) others. Although detailed analysis will be

Table 3. Decomposition of Log Variances for All Types of Household*

Year	(1) Total H.H. var.	(1.1) Var. between single and ordinary H.H.	(1.2) Weighted average of two H.H. groups	(1.2.1) Weighted Var. within single H.H.	(1.2.2) Var. within ordinary H.H.	(2.1) Var. between five H.H. subgroups	(2.2) Weighted variances within subgroups / Average of within var. of subgroups	(2.2.1) Regular employee H.H.	((2.2.2)) Daily employee H.H.	(2.2.3) Agricultural H.H.	(2.2.4) Non-agricultural self-employed H.H.	(2.2.5) Unemployed H.H.
1962	0.5227	0.0503	0.4724	0.5005	0.4702	0.0919	0.3783	0.3548	0.2800	0.3664	0.4681	0.5216
1963	0.5155	0.0640	0.4515	0.6018	0.4394	0.0847	0.3547	0.3313	0.2978	0.3335	0.4704	0.4284
1964	0.4604	0.0507	0.4103	0.5798	0.3963	0.0609	0.3354	0.2923	0.2539	0.3109	0.4793	0.5060
1965	0.4779	0.0627	0.4152	0.6527	0.3942	0.0538	0.3408	0.2898	0.2713	0.3317	0.4930	0.6174
1966	....	....	....	....	....	....	....	....	....	....	....	....
1967	0.4861	0.0845	0.4016	0.5159	0.3898	0.0623	0.3275	0.3019	0.2488	0.3311	0.6044	0.5588
1968	0.5026	0.0869	0.4157	0.5928	0.3940	0.0456	0.3484	0.2933	0.3759	0.3315	0.5321	0.4414
1969	0.5077	0.0830	0.4247	0.5658	0.4070	0.0460	0.3610	0.3076	0.2685	0.3130	0.7943	0.5521
1970	0.5019	0.1006	0.4013	0.4551	0.3930	0.0364	0.3560	0.2862	0.2248	0.3126	0.6749	0.5612
1971	0.4890	0.0921	0.3979	0.4273	0.3955	0.0272	0.3683	0.3005	0.2402	0.2490	0.6745	0.5330
1972	0.4962	0.0818	0.4144	0.5609	0.4021	0.0301	0.3720	0.3148	0.2534	0.3853	0.5741	0.5048
1973	0.4554	0.0533	0.4021	0.7334	0.3661	0.0161	0.3500	0.2751	0.3645	0.3503	0.5152	0.6232
1974	0.4515	0.0577	0.3938	0.4744	0.3855	0.0055	0.3800	0.2766	0.5629	0.3519	0.6495	0.6045

* Data from the SPLC.

a. H.H. = household: Var = variance.

b. Single households consist of (1) young employee households, (2) young unemployed households, (3) aged households, and (4) others.

presented below, we would like to point out here, without offering any numerical illustrations, that the most important factor underlying this increase is the rise in the number of households in category (2), which is largely composed of students living away from home.

Regarding the within variances for multi-member households, we can identify occupation and group differences in the over-time pattern of change. In the 1960s the pattern of change for employee households was progressive. While there was a regressive tendency in the early 1970s, we can safely say that the progressive changes in employee household income distribution played an important role in keeping the distribution of total households relatively equal in the process of rapid economic growth.[5] In spite of fluctuation, the trends in inequality measures for agricultural households have been relatively stable. This group is important in examining total household behavior in the 1950s because it represented a relatively large portion of households. Thereafter, we need not pay much attention to these households since their number as a proportion of total households declined sharply.

The distribution of the non-agricultural entrepreneur's income has changed regressively in both the 1960s and the 1970s. Further, the level of inequality measures is higher than that for either the employee or the agricultural household. Since this group represents about 20 percent of multi-member households, its pattern affects to some extent the pattern of total household income distribution. It is important to examine the regressive tendency itself using various sources of information. It is not surprising that high inequality values can be found for unemployed household income distribution because income in this sector is obtained from property income or transfer payments. But it is very interesting to note here that the inequality coefficients for the unemployed household were relatively stable in the 1960s.

The between variances regarding these five household subgroups decline significantly in this period. This decline can be seen in Figure 1, where we have presented the decreases in income differences between employee and agricultural households. The figures also indicate that income differences decreased during the 1960s between employee households and non-agricultural entrepreneur households, another reason for the decline of the between variances. In contrast to this trend the relative income of the unemployed household decreased, and this slowed down the speed of decline of the between variances.

[5] Since the number of daily worker households decreased sharply in the 1960s, we can use regular laborer households as representative of the employee households in our investigation.
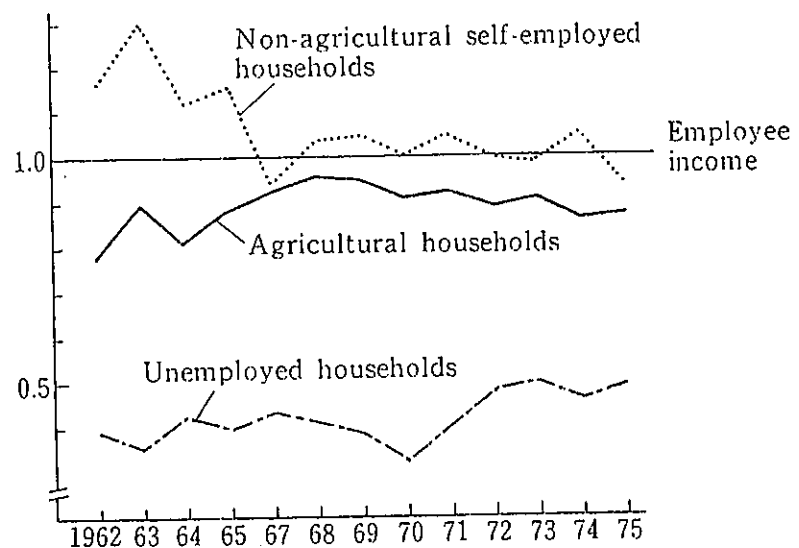
Figure 1. Over-time changes in relative income*

* Data from the SPLC.
a. Employee income = 1.0.

Detailed Studies of Income Distribution by Household Occupational Groups

In this section, let us examine in detail the causes of the over-time changes in income distribution inequality. For this purpose, we need information about the income components as well as income distribution for household subgroups. Unfortunately, the SPLC is not a good source, and we shall use other kinds of survey data (for a detailed explanation, see the notes to Table 4).

Income distribution of employee households

Table 4 shows the over-time changes in the Gini coefficient (G) and the Atkinson's measure (A: $\in$ = 5) of income distribution from FIES data for employee households. Both measures rose slightly in the latter half of the 1950s, decreased during the 1960s, and showed little change in the early 1970s. This tendency is consistent with that shown by the SPLC data for employee households, although the absolute levels of the inequality coefficients are higher in the SPLC than in the FIES. The degrees of income inequality computed for twelve-monthly (January to December) averages were significantly higher than those calculated from

Table 4. Employee Household Income Inequality*

From decile income group data of monthly income

	December included				December excluded			
	G	A (a = − 4)	B (a = 0)	B (a = 2)	G	A (a = − 4)	B (a = 0)	B (a = 2)
1953	0.2865	0.4876	0.1325	0.1410	0.2838	0.5034	0.1305	0.1376
1954	0.3145	0.5442	0.1615	0.1761	0.2908	0.5320	0.1382	0.1469
1955	0.3007	0.5240	0.1471	0.1580	0.2963	0.5363	0.14382	0.1542
1956	0.3134	0.5428	0.1616	0.1774	0.2899	0.5026	0.1384	0.1505
1957	0.3184	0.5623	0.1666	0.1822	0.2994	0.5211	0.1489	0.1643
1958	0.3212	0.5613	0.1711	0.1900	0.2991	0.5254	0.1479	0.1621
1959	0.3174	0.5752	0.1643	0.1759	0.2964	0.5249	0.1461	0.1605
1960	0.3217	0.5603	0.1702	0.1876	0.3015	0.5191	0.1516	0.1688
1961	0.3179	0.5657	0.1655	0.1797	0.2904	0.5288	0.1597	0.1793
1962	0.3081	0.5516	0.1555	0.1680	0.2963	0.5225	0.1465	0.1619
1963	0.3090	0.5325	0.1557	0.1687	0.2992	0.5115	0.1504	0.1688

From decile income group data of annual income reported

1963	0.2237	0.3213	0.0795	0.0828
1964	0.2134	0.2790	0.0725	0.0765
1965	0.2056	0.2655	0.0660	0.0696
1966	0.2110	0.2703	0.0708	0.0767
1967	0.2150	0.2818	0.0736	0.0776
1968	0.2008	0.2444	0.0641	0.0676
1969	0.1874	0.2338	0.0560	0.0582
1970	0.1859	0.2338	0.0546	0.0561
1971	0.1862	0.2309	0.0545	0.0561
1972	0.1872	0.2316	0.0555	0.0574
1973	0.1873	0.2286	0.0551	0.0570
1974	0.1974	0.2478	0.0603	0.0638
1975	0.1979	0.0306	0.0604	0.0643

* Data from the FIES

a. For multi-member employee households, the FIES is the most important data source, having some advantages over the SPLC. The income figures of the FIES are considered to be reliable since these are sums taken from the daily domestic account books in which income and expenditure entries are made and balanced. The FIES has published detailed figures on income, and, since 1963, household subgroup data have been included.

b. There are some difficulties in using the FIES for over-time comparisons, one of which concerns the revision made in mid-1962. The FIES has been taken monthly since 1971; at that time the survey covered only non-agricultural households in large cities with two or more family members. In 1962, the FIES was redesigned to cover such households in all the cities, towns, and villages of Japan. Since we use the enlarged coverage for the study of income distribution after 1963, we cannot compare directly with the pre-1962 FIES results.

c. There is also a discontinuity in the nature of the income distribution tables before and after 1963. One-sixth of the FIES sample is rotated successively so as to avoid data biases in the time-series comparison. This rotation system is efficient to prevent systematic biases, but makes it difficult to obtain annual income estimates from the accounts of each household. Because the seasonal variations of income are great in Japan, it is impossible to estimate the annual income by multiplying

the monthly income by 12. Two devices have been proposed in the annual report of the FIES in order to construct annual tables. One proposal has been to use the relative position of monthly income. Since the tables present monthly income data, we can construct quintile or decile income groups for each month. Annual quintile or decile group data can be obtained by taking twelve-month average figures for each group. The other proposal, made in the 1962 revision, is to refer to the reported annual income inequality of the sample. After the revision, sample households have been asked to report a broad estimate of annual income for the previous year. Although the FIES does not adopt the reported amount as the income figure, it is used to construct annual income tables. Since we shall use the latter figures for the post-1963 period and the former figures for years prior to 1962, we cannot compare the absolute levels of the inequality measure before and after 1963.

the average income for "normal" months only (January to November). The differences are mainly due to the bonus payments which nearly all employees receive in December. This seems to imply that the bonus payment is one of the important factors in explaining the regressive trend of the 1950s, as has been suggested by Mizoguchi (Mizoguchi, 1975).

Based on the above findings, we should like to inquire in detail why the Kuznets inverted-U pattern of income disparity appeared during the postwar period of rapid growth, why the turning point was about 1960, and why bonus payments had the effect of widening income inequality. However, before presenting our detailed study it would be convenient to give a brief review of the views of various authors. Mizoguchi (1975) first suggested that the regressive trend in the 1950s was due to the concentration of income in the relatively high income classes and that this could be related to the bonus toso (bonus struggle) of the big trade unions which aimed at increasing bonus payments. He also suggested that the progressive tendency in the 1960s could be explained mainly by the scarcity of labor. Mouer (1973–74) pointed out that the population movements from rural to urban areas were an important factor underlying this progressive tendency. Other supporting evidence for Mizoguchi's labor scarcity hypothesis was given in an over-time comparison with the NFIE (Takayama and Yoshioka, 1976). Most of this work, however, should be regarded as tentative; here we hope to offer a rather strong hypothesis of our own.

Breaking down pre-tax income into its various components will shed much light on the various changes which took place, particularly with regard to the following components: (1) the regular employment income of household heads, (2) the extraordinary (e.g. bonus) or temporary employment income of household heads, (3) the employment income of other family members and the income of household heads from subsidiary jobs, and (4) other kinds of income. Table 5 shows a

Table 5. A Rao Decomposition of Employee Income Distribution*

		Gini coefficients					Income share (%)			
		(1)	(2)	(3)	(4)	Total	(1)	(2)	(3)	(4)
Monthly	1953									
income	1954	0.2326	0.4433	0.3900	0.2942	0.3139	55(41)	28(39)	13(16)	4(4)
decile	1955	0.2178	0.4249	0.3697	0.3274	0.3007	55(40)	29(41)	12(15)	4(5)
data	1956	0.2203	0.4490	0.3410	0.3326	0.3134	52(36)	33(49)	11(12)	4(4)
	1957	0.2216	0.4456	0.3694	0.2947	0.3184	50(35)	35(49)	11(12)	4(4)
	1958	0.2231	0.4505	0.3650	0.3119	0.3212	50(35)	35(49)	11(12)	4(4)
	1959	0.2214	0.4310	0.3645	0.3035	0.3174	48(34)	36(49)	12(13)	4(4)
	1960	0.2209	0.4384	0.3471	0.2988	0.3271	47(32)	39(53)	11(12)	3(3)
	1961	0.2151	0.4144	0.3920	0.3510	0.3179	46(31)	39(51)	11(14)	3(4)
	1962	0.1916	0.4014	0.4050	0.4254	0.3081	45(28)	39(50)	12(15)	4(6)
	1963	0.1938	0.4180	0.3497	0.4007	0.3090	45(28)	40(55)	11(12)	4(5)
Annual	1963*	0.1891	0.2937	0.3077	0.2291	0.2237	66(56)	17(22)	13(18)	5(5)
income	1964*	0.1785	0.2677	0.3265	0.2158	0.2134	66(56)	16(20)	12(19)	5(5)
decile	1965*	0.1696	0.2617	0.3164	0.2201	0.2056	66(55)	16(21)	13(20)	5(5)
data	1966*	0.1678	0.2807	0.3635	0.1453	0.2110	66(53)	17(22)	13(22)	4(7)
	1967*	0.1687	0.3047	0.3437	0.1598	0.2150	66(52)	18(25)	13(20)	4(3)
	1968*	0.1502	0.2646	0.3606	0.2187	0.2009	65(49)	18(24)	13(23)	4(4)
	1969*	0.1409	0.2243	0.3652	0.1791	0.1874	63(48)	20(25)	12(24)	4(4)
	1970*	0.1369	0.2270	0.3686	0.1526	0.1859	62(46)	21(26)	13(23)	4(3)
	1971*	0.1383	0.2216	0.3828	0.1328	0.1862	63(47)	21(25)	12(25)	4(3)
	1972*	0.1385	0.2384	0.3802	0.1350	0.1872	64(47)	21(26)	12(24)	4(3)
	1973*	0.1365	0.2172	0.3957	0.1750	0.1873	62(45)	22(25)	12(26)	4(4)
	1974*	0.1336	0.2867	0.3560	0.2577	0.1979	63(42)	21(31)	12(22)	4(5)
	1975*	0.1343	0.2854	0.3788	0.2470	0.1979	66(44)	20(28)	12(23)	4(5)

* Data from the FIES.
a. Figures for 1953–63 are calculated from annual income decile data; figures for 1963–75 are derived from monthly income data. Therefore, we cannot compare the Gini coefficients or the income share figures of pre- and post-1963.
b. Income share: (1) = regular employment income of household heads, (2) = extraordinary or temporary income of household heads, (3) = the employment income of other family members and the income of household heads from subsidiary jobs, (4) = other kinds of income.
c. The figures in parentheses under income share indicate the products of the income share x the pseudo-Gini coefficient.

Rao decomposition using these four income components. Regarding the period before 1963, it can be said that
   (a) the degree of inequality for income categories (2) and (3) is larger than that of (1);
   (b) the Gini coefficients of regular income seemed to show little change in the late 1950s while those of extraordinary income fluctuated from year to year;
   (c) the share of the regular income of household heads was on the decrease: from 55 percent in 1955 to 45 percent in 1962. On the

other hand, the share of extraordinary income increased: f
29 percent in 1955 to 39 percent in 1960.

(d) The inequality of extraordinary income distribution (as a
centage of total inequality) played the most dominant rol
determining the income disparity for employee households.
example, its importance rose from 41 percent in 1955 to
percent in 1960. Meanwhile, regular income became less
portant, declining from 40 percent in 1958 to 28 percent in 19

This leads us to the conclusion that the slight increase in inco
inequality for employee households in the late 1950s mainly origina
from the increased share of extraordinary income of household he
where the degree of inequality was largest. This has much to do v
trade union activity and employer response during those years. '
insistent requests for bigger bonuses made by the unions increased
share of this income category. The increases were made possible pa
by employers' response preference for using bonus payments pointe
to reward their employees. The size of bonus payments differs accord
to the profits and the occupational status of employees, so the incre
in bonus income relative to other types of income serves to boost
come inequality.

For the post-1963 period, our findings are as follows:

(a) The degree of regular income inequality is generally lowest
this period. Differing from the pre-1962 data is the finding t
the highest inequality can be found in the coefficient for
employee income of other family members.

(b) Gini coefficients for regular and extraordinary income sho
decreasing trend in the 1960s, while those for employment
come of other household members show an upward trenc

(c) In contrast to the drastic changes in income shares which
curred in the 1950s, the composition of employee househ
income was relatively stable in the 1960s, although there wa
slight increase in the share of extraordinary income after 196

(d) The most important factor explaining the progressive trend
the distribution of the employee household income is the chai
in the inequality of regular income of household heads. But t
effect has been canceled out to some extent by the regress
trend found in the income of other household members.

Now let us proceed to an examination of the effect of populati
movements on income inequality. Population movement from rural
urban areas has been significant and has resulted in changes in 1
by-city-size share of employee households. Figure 2 shows these chan;
using FIES sample distribution data which suggest that migration cc
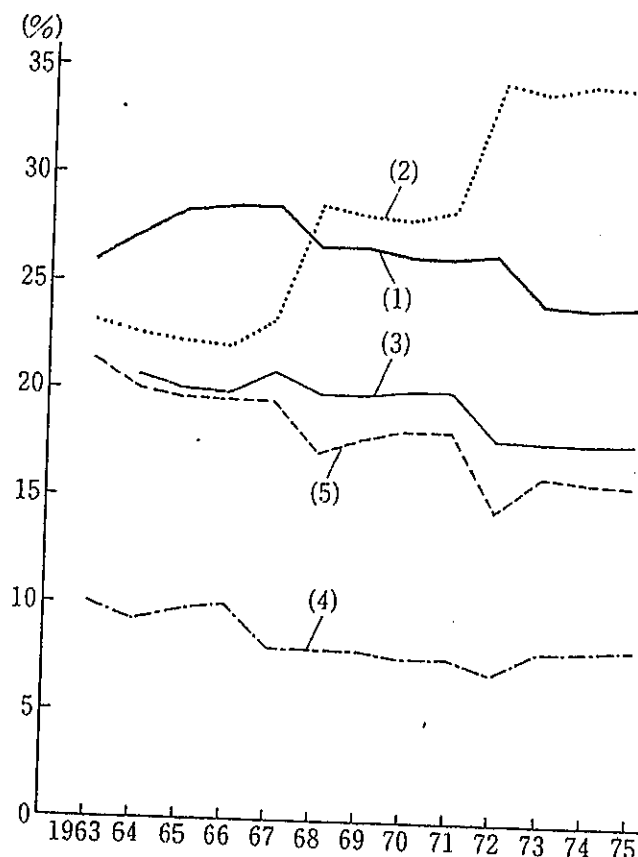
Figure 2. City size and number of households*

* Data from the FIES.
a. City size is defined as follows: (1) Major: population of 1,000,000 or more; (2) Medium: population of 150,000–1,000,000; (3) Small, Class A: population of 50,000 to 150,000); (4) Small, Class B: population of less than 50,000; (5) Towns and villages.

centrated on major cities until the mid-1960s; thereafter, the share of population in the medium size cities rose significantly. Because the mean incomes of small cities, towns, and villages was lower than that of the major and the medium-sized cities, the population movements described above have a progressive effect on income distribution. The question is whether the effect is so powerful as to account for the trend in inequality changes during the 1960s.

To answer this question we have calculated a measure of inequality for city size under the restriction that the population share in some years remains constant. Table 6 indicates that the 1963 population share fixed figures are higher than the "actual" figures, but the share fixed on 1968 population does not show a similar pattern. It would seem that in the mid-1960s population movements had some effect on income dis-

Table 6. Population Movement and Income Inequality*

	Actual	Population share fixed in	
		1963	1968
1963	0.0073	0.0073	——
1964	0.0068	0.0069	——
1965	0.0045	0.0046	——
1966	0.0053	0.0054	——
1967	0.0051	0.0052	——
1968	0.0019	0.0022	0.0019
1969	0.0015	0.0017	0.0015
1970	0.0012	0.0013	0.0012
1971	0.0010	0.0011	0.0010
1972	0.0007	0.0007	0.0007
1973	0.0009	0.0010	0.0010
1974	0.0006	0.0007	0.0006
1975	0.0002	0.0002	0.0002

* Data from the FIES.
a. B Measure with a = 1 for income disparity by city size.

tribution. However, in making a comparison between the actual and the population fixed figures, it is assumed that the mean income in each city group is independent of changes in the population share. But this is assumed only to simplify the calculation. As is shown in Figure 3,
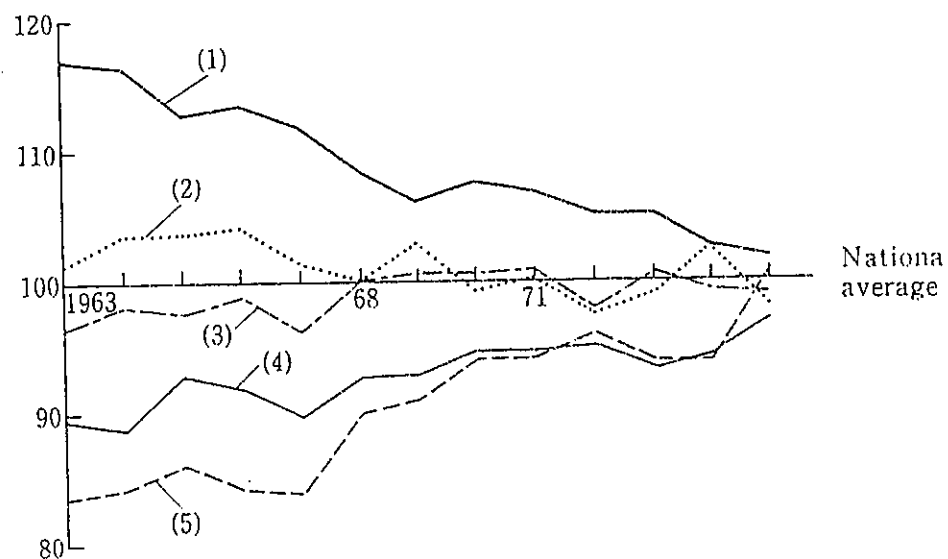

Figure 3. City size and relative level of employee household income *

* Data from the FIES.
a. Definition of city size - see Figure 2.
b. The Japanese national average is shown as 100.

the disparity in mean income by city size decreased during this period.
First, the population movement to large cities decreased the relative
income of large cities. Second, because of the scarcity of labor in the
vicinity of large cities, many factories were dispersed into small cities
and by the mid-1960s had spread into local areas. Taken together, the
above phenomena might explain how population movements affected
the tendency for income distribution to become more progressive. It
might be added here that we could not find for Japan the tendency sug-
gested by Theil (1967) for the United States.

Next we turn our attention to the decomposition of inequality meas-
ures by household subgroup. As was mentioned earlier, the inequality
measures for regular income remained unchanged until the mid-1950s
but decreased after 1958. This pattern can partially be explained by the
behavior of trade unions, which, since the end of the 1950s, have tended
to stress raises in the basic wage rather than concentrating on bonus
demands. However, more fundamental is the scarcity of labor and re-
lated factors such as population movements. After the late 1950s, the
scarcity of younger workers became pronounced, and the relative wage
for young employees was pushed up. Although the Japanese wage sys-
tem has been based upon seniority, the scarcity of young workers had
the effect of decreasing wage differentials based on length of service.

In Figure 4 we have presented a synopsis of the behavior inequality
calculations made from FIES household subgroup income class data
for the following categories: (A) age of household head, (B) occupation
of household, (C) family size, (D) city size, (E) industry of employment
of household head, and (F) size of firm which employs household head.
It should be emphasized that these are two-factor tables, with informa-
tion given only for income and one of the above categories. Therefore,
it is impossible to get the "pure" effect of these categories which are
not independent. However, we can get the over-time effects of these
changes on total income distribution. Figure 4 shows these over-time
changes in between-group inequality for each of the above-mentioned
categories; the changes can be summarized as follows:

(a) For categories (C), (D), and (E), the between-group inequality
decreased in the 1960s.

(b) The inequality for (A) shows an unclear trend with relatively
large fluctuations.

(c) The income gaps for (F) narrowed slightly until the mid-1960s,
but widened thereafter.

The trends discussed under (a) above can be related to the scarcity of
labor. Needless to say, this labor shortage has much to do with the
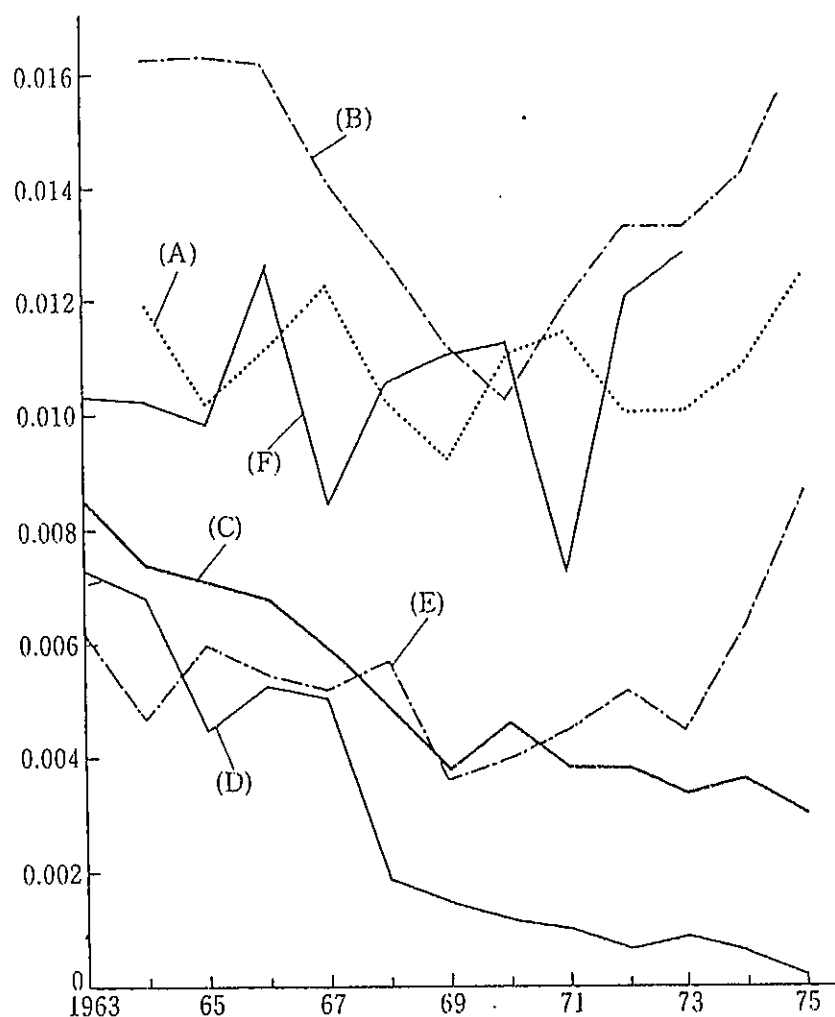rapid economic growth of this period. The rapidly increasing demand

Figure 4. The between inequality measure for household subgroups*

* Data from the FIES.
a. (A) = age of household head; (B) = occupation of household head; (C) = family size; (D) = city size; (E) = industry of employment of household head (F) = size of firm which employs household head.
b. B : a = 1.

for labor services caused an upward movement in wages as a whole which brought about population movement from the rural to the urbai sector, from declining to developing industries, and from occupation where labor was abundant to occupations where labor was scarce.[6] A the same time, firms have been relocating in small cities in order to see

[6] In the period of rapid economic growth, the population share of non-offic workers decreased while their income share increased (Takayama and Yoshiok; 1967).

workers. This urbanization process has been accompanied by the so-called nuclearization of families—*i.e.*, the independence of young families from their parents.[7]

The trend discussed under (b) above should be examined in light of the evidence computed from the National Survey of Family Income and Expenditures (NFIE) and shown in Table 7.

Table 7. The Toyoda Measure for Over-time Changes in Intra- and Inter-generation Inequality*

	Within age inequality					Between	Total
	20s and younger	30s	40s	50s	60s +	inequa-lity	inequa-lity
1959	0.0412	0.0524	0.0903	0.1296	0.0984	0.0116	0.0900
1964	0.0218	0.0343	0.0579	0.0718	0.0902	0.0115	0.0607
1969	0.0523	0.0518	0.0589	0.0869	0.1253	0.0090	0.0721
1974	0.0277	0.0364	0.0406	0.0523	0.1028	0.0080	0.0506
	Percentage by Theil decomposition (%)						
1959	14	41	28	15	3·	12.9	100
1964	12	42	28	15	4	19.0	100
1969	13	39	30	14	4	12.4	100
1974	12	37	32	15	5	15.8	100

* Data from the NFIE.
a. The percentages are defined as $w_i B_i/B$ and B_b/B.
b. B : a = 1.

There we can clearly see the decreasing trend in inter-generational inequality over the four periods (1959–64, 1964–69, 1969–74, and 1959–74) for which the NFIE are available. We should also consider the fact that economic prosperity has made it possible for students to spend a longer average length of time in school.

The trend discussed under (c) above shows that the impact of economic growth was not confined to the between-size inequality of firms. In general, the larger employee household income is, the bigger is the firm by which the household head is employed (Takayama and Yoshioka, 1976). Rapid economic growth makes it possible for big firms to develop relatively rapidly, but also enables some small firms to continue operating. The small firms seem to be supported by relatively low-quality, aged laborers. These trends, which have continued since the mid-1960s, serve to enlarge the income gap between firms of different sizes. The share of between inequality by firm size in total inequality

[7] The within inequality of the four-member household group is the lowest among the various family size groups. Generally, however, the larger the family size, the higher its within inequality.

is now at its highest levels. It amounted to nearly 25 percent in 1973 and reached over 30 percent in the same year if we calculate B (a = —4)—*i.e.*, if more weight is placed on low income classes at the margin.

Next, we must touch upon the changes in income other than the regular income of household heads. From the beginning of the 1960s the distribution of the extraordinary income of household heads showed a trend similar to that of regular income. Moreover, the level of the extraordinary income had been determined by the level of regular income. At the same time, however, there were cyclical changes in the extraordinary income inequality. Regarding the employment income of other household members, we can identify a U-shape trend in income inequality, with the kink occurring in 1960. In the 1950s, wives or children of low-income households were forced to obtain additional income. The additional entry of these people into the labor force operated initially to decrease income inequality. But since 1960 the increasing demand for labor has attracted into the labor market even wives or daughters in relatively high-income households. This is verified by the increase in the average number of income earners in the high-income classes in the FIES data. Thus, the previous equalization effect of this income has been canceled out.

Although this regressive effect was overshadowed by other progressive factors, it is important to keep it in mind in light of changes which occurred in the 1970s. Overall inequality of income distribution ceased to decrease in the early 1970s and even showed a small increase by the middle of the decade. This movement could be explained as one of the effects of the stagflation which followed the oil crisis. However, we should not ignore the possible regressive effect produced by the employment income of other household members. However, a further examination of the changes in the income distribution of the stagflation period should be carried out in future when the Japanese economy returns to a steady growth path.

Urban-rural income differences and income distribution of agricultural households

We have pointed out two characteristics to be investigated regarding the income of agricultural households: (1) the relative equality in income distribution within agricultural households and (2) the decrease in urban-rural income differences. The basic factor underlying the equal distribution among agricultural households is the land reform instituted in the late 1940s by the Allied Occupation Forces. Under the reform, all

tenants were able to posses their own farms after paying a small amount as purchase price. Since then, the typical Japanese farmer has been the owner of a small-scale farm whose average area is about one hectare. This relatively equal distribution of farmland resulted in income distribution equality. However, we cannot rely on the land reform to explain the trend of the past two decades. This trend can be explained by the sustained economic growth which was significant enough to alter the initial conditions set by the land reform.

This interaction between growth and initial conditions can be seen in the CLSF, which is composed of tables classified by "farm household income" defined either as pre-tax income minus transfer income or as farm household disposable income. The agricultural households defined in the CLSF are those who cultivated more than 0.3 hectares in Hokkaido and more than 0.1 hectares in other areas, or earned an equivalent agricultural income. This definition is somewhat different from that of the SPLC, which defines the agricultural household as one which cultivates more than 0.3 hectares.

In Figure 5 the average income of agricultural households is compared with that of the multi-member non-agricultural employee household obtained from the FIES. While there were some income differences between these household groups in the late 1950s, they decreased gradually. Since the late 1960s, agricultural household income has been higher than employee household income, although on a per-capita basis agricultural household income did not catch up with employee household income until the early 1970s. A similar trend can be seen in a comparison of consumption levels between farm and urban households.

Our problem here is to explain the process underlying the narrowing income differences. Readers should remember that the annual growth rate of nominal income of non-agricultural employee households was about 15 percent. In such a growing economy it is very difficult to decrease urban-rural income differences because the productivity of agriculture will rise slowly in comparison with that of modern industry. The usual process underlying decreasing income differences could be described as follows. With industrial development agricultural laborers move to the urban sector. The small-scale farming households tend to vanish, and relatively large-scale farming households remain. This process results in a decrease in the growth rate of wages in the urban sector and a rise in per-household agricultural income.

However, the Japanese pattern of change is somewhat different from the typical pattern described above. Although the number of full-time
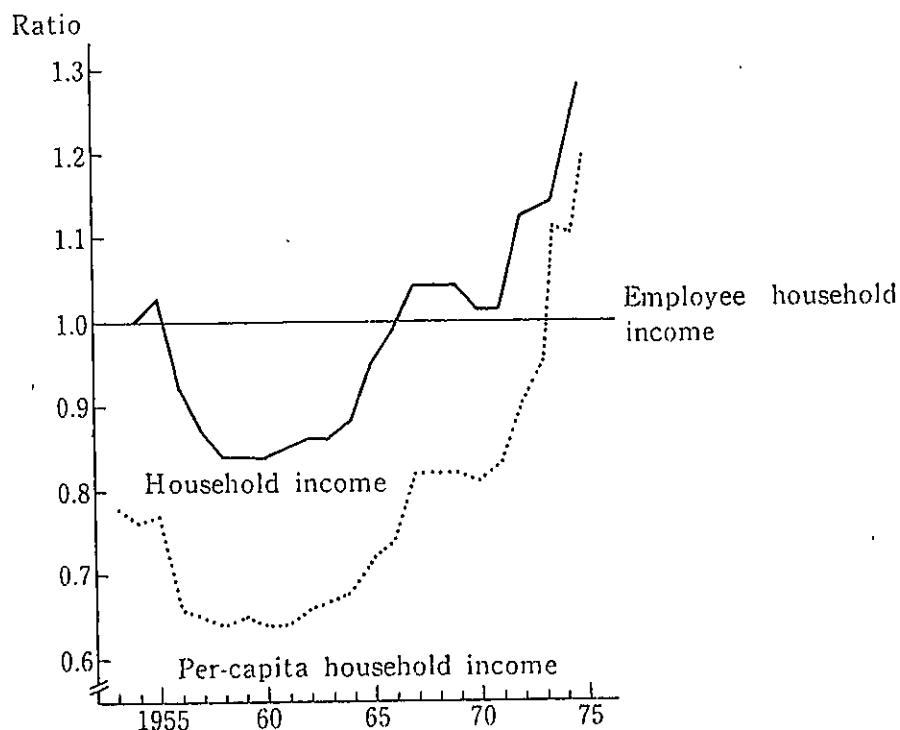
Figure 5. Ratio of agricultural household income to employee household income*

* Data from the FIES and the FHES.
a. Employee household income = 1.0

farmers decreased sharply, the number of agricultural households declined slowly in comparison. Further, the average size of per-household farmland did not change remarkably. This can be related to the law (*Nōchiho*) which prohibits farmland transactions between agricultural households. Although this was effective in preventing the revival of landlordism, it reduced the incentive to increase productivity in agriculture by enlarging the scale of production. The following two factors supported the economic existence of these households under conditions of rapid economic growth: (1) the increase in non-agricultural income of agricultural households and (2) the government rice price support. Agricultural households earn the following three types of income: (i) agricultural income, (ii) income from side businesses, including wages from non-agricultural employment, and (iii) property and transfer income. Figure 6 shows the decline of agricultural income as a percentage of total farm household income in the 1960s.

The CLSF's sample is a subsample of the Farm Household Economic Survey (FHES) with tables classified by size of cultivated land. Ac-
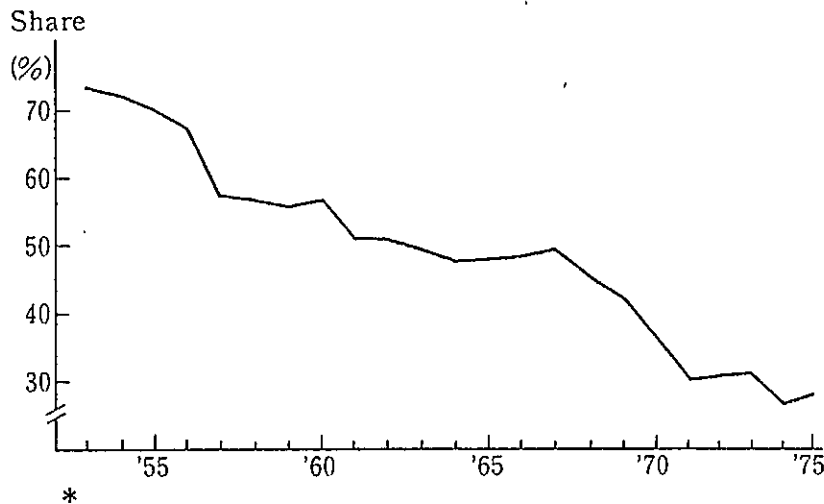
Figure 6. Share of agricultural income in household income*
* Data from the FHES.

cording to the FHES, until the late 1950s non-agricultural work occupied a relatively large portion of small-scale farm household work hours, especially in households with farmland of 0.5 hectares or less. From the early to the mid-1960s the share of non-agricultural income increased in medium-sized farming households, and the tendency spread to large-scale farming households in the late 1960s.

In view of this trend, it may be revealing to examine the ratio of agricultural income of farming households to the average income of urban employee households. In the mid-1950s, the urban wage was not so high as to act as an incentive to reduce agricultural work in order to get non-agricultural income. However, since the ratio was under 50 percent for the smallest-scale farming households, these households were forced to seek non-agricultural employment. In the late 1950s, young workers became scarce and wages in the non-agricultural sector rose significantly. This gave job opportunities for non-agricultural work to medium-sized farming households. In this process, nearly all the surplus labor of the agricultural households found jobs in non-agricultural firms, and urban-rural income differences tended to decrease. After the mid-1960s, the labor shortage became more acute, and many factories located in local cities in order to seek employees. At the same time, the use of labor-saving technology spread throughout Japanese agriculture. These changed circumstances resulted in nuclear family members, such as the household head or wife, in medium- or large-scale farming households taking non-agricultural jobs. Agricultural produc-

tion has been maintained by aged family members, where present, or by the Sunday work of households heads. It is said that a relatively large agricultural income can be obtained from these activities if agricultural machines are used and if production is concentrated on rice.

While the increase in non-agricultural income is the major factor behind decreasing urban-rural income differences, as a subsidiary factor we should also mention the price support policies of the Japanese government. From the beginning of World War II, the government had intervened in the rice market in order to relieve the shortage of food and monopolized transactions in rice, wheat, and other cereals. After the mid-1950s, these controls were gradually loosened except for those on rice. This was not because the government was afraid of food short-ages, but because controls were considered necessary in order to keep the price of rice at a relatively high and stable level in order to stimulate agricultural activities. Since the late 1950s, the rice price has been raised in accordance with the level of urban wages. This had the effect of post-poning the shift of nuclear family labor in medium-scale farm families into non-agricultural employment.

In the late 1960s the supply exceeded the demand for rice, and the government was forced to cease its policy of successively raising the rice price. This reinforced the shift of labor from the agricultural to the non-agricultural sector. Non-agricultural income increased even in the relatively large-scale farm households. On the other hand, the govern-ment has given relatively large subsidies to farmers who engage in agricultural production other than rice. Since a substantial portion of large-scale farming households receive such subsidies, these agricultural household incomes tended to increase.

We will now turn our attention to the over-time change in the degree of inequality within agricultural households. According to Table 8, the degree was relatively constant in the 1950s. From the late 1950s to the mid-1960s, the degree of inequality declined; thereafter the trend was reversed, and a tendency to increase can be seen in the late 1960s. It is most interesting to observe that the progressive trend can be identi-fied with the period when drastic changes were appearing in the com-position of household income. Although the land reform induced relatively equal distribution of agricultural land, inequality of agricul-tural income remained. Since transactions in agricultural land were prohibited, the degree of inequality remained relatively unchanged throughout the 1950s, although there were some fluctuations caused by harvest conditions. The Gini coefficients calculated from the FHES tables classified by agricultural land size are not much different in this

period from the Gini coefficients calculated from the income class data of the CLSF tables.

After the mid-1960s, the stable situation mentioned above began to change due to the increase in the demand for labor by the non-agricultural sector. The small-scale farming household had increased its non-agricultural income, and no doubt this tended to fill the income gap between the small-scale and large-scale farming households. This progressive tendency lasted until the mid-1960s, when most of the surplus labor in the agricultural household had been drawn into non-agricultural firms. Since the mid-1960s, the degree of inequality has shown an upward trend. With the spread of non-agricultural work to large-scale farming households, income differences by scale of agricultural production again appeared in the distribution of agricultural household income. Further, the government policy for increasing agricultural production other than rice benefited mainly large-scale farming households. A portion of these large-scale farming households endeavored to increase their non-rice agricultural production and obtained government subsidies. This may be one of the causes of the regressive tendency seen in Table 8.

This pattern is also supported by a Rao decomposition of Gini coefficients for agricultural household income where income can be decomposed into three major categories: (1) agricultural income, (2) non-agricultural income, and (3) transfer income. Transfer income includes the government subsidies allowed since 1966 for promoting agricultural production other than rice. When we investigate the over-time changes, a significant decline is found in the contribution of agricultural income. This originates mainly from the fall in the pseudo-Gini coefficients. Regarding the latter, we should note that the pseudo-Gini coefficients are calculated from income tables classified by household income. Before the mid-1950s, the distribution of agricultural income dominated that of household income. However, as the share of non-agricultural income increased, differences emerged between the patterns of distribution of agricultural and non-agricultural income. In such a situation, it is natural that the pseudo-Gini coefficients should tend to decline, even if agricultural income distribution remains stable. In fact, no downward trend can be found in the pseudo-Gini coefficients for agricultural income from the FHES tables classified by the size of agricultural land holdings. A simliar explanation could be applied to the changes in the pseudo-Gini coefficients for non-agricultural income. Looking at the post-1965 trend, we should note the role of transfer income. As mentioned before, government subsidies to large-scale farming

Table 8. Over-time Changes in Agricultural Household Income Inequality and a Rao Decompsosition of the Gini Coefficient for Agricultural Households*

| | Inequality measures for agricultural households | | | Rao decomposition | | | | | |
| | | | | Psuedo Gini coefficients | | | Percentages of inequalities explained by components of income (%) | | |
	Theil measure	Log variances	Gini coefficients	Agricultural income	Non-agricultural income	Transfer income	Agricultural income	Non-agricultural income	Transfer income
1953	(0.0992)	(0.1930)	(0.2436)						
1954	(0.0993)	(0.1910)	(0.2427)						
1955	0.994	0.1910	0.2427	0.2786	0.1823	0.1710	75.63	20.47	3.87
1956	0.0921	0.1936	0.2408	0.2505	0.2359	0.1698	66.20	29.15	4.65
1957	0.0979	0.1959	0.2476	0.2578	0.2749	0.0358	62.91	36.05	1.03
1958	(0.0962)	(0.1899)	(0.2444)						
1959	0.0932	0.1840	0.2421	0.2380	0.2871	0.0728	61.22	36.58	2.17
1960	0.0887	0.1807	0.2354	0.2395	0.2776	−0.0101	58.62	41.66	−0.30
1961	0.0928	0.1693	0.2409	0.2489	0.2663	0.0481	57.15	41.41	1.45
1962	0.0913	0.1895	0.2391	0.2323	0.3023	−0.0810	46.11	56.55	−2.69
1963	0.0853	0.1712	0.2316	0.2283	0.2961	−0.0877	44.27	59.06	−3.36
1964	0.0902	0.1768	0.2373	0.2179	0.3072	−0.0476	39.33	62.45	−1.79
1965	0.0831	0.1846	0.2286	0.2137	0.2908	−0.0551	40.19	61.51	−1.70
1966	0.0879	0.1796	0.2297	0.2012	0.2660	0.1645	37.14	56.54	6.29
1967	0.0844	0.1946	0.2344	0.2387	0.2409	0.1765	44.32	49.16	6.51
1968	0.0918	0.1796	0.2317	0.2294	0.2486	0.1523	41.91	52.07	6.03
1969	0.0919	0.1991	0.2310	0.2192	0.2678	0.1698	34.71	57.73	7.56
1970	0.0945	0.2054	0.2438	0.2162	0.2697	0.1993	28.34	61.47	10.19
1971	0.0951	0.2074	0.2469	0.2140	0.2964	0.1874	25.30	63.48	11.49
1972	0.0996	0.2730	0.2491	0.2105	0.2737	0.2196	23.04	64.92	12.02
1973	0.0932	0.1917	0.2414	0.2221	0.2495	0.2449	25.43	60.32	14.22
1974	0.1048	0.2260	0.2550	0.2103	0.2799	0.2409	34.19	55.72	10.09

households in the latter half of the 1960s had the effect of increasing inequality. We have also noted that non-agricultural work had spread to large-scale farming households by this time.

Income distribution of other groups of households

To complete our detailed examination we must investigate the distribution of household groups other than employee and agricultural households. Such groups include the multi-member non-farm self-employed household, the multi-member unemployed household, and the single-member household. Because of the paucity of reliable data, we can only hope to reach some preliminary conclusions by comparing results derived from various sources. Unfortunately, the multi-member unemployed household cannot be treated here due to lack of information.

Using SPLC data, we have already pointed out that in the 1960s there were regressive changes in income distribution for non-farm self-employed households. Wada (1975) also showed from ESS data that the Gini coefficients for these households rose remarkably. This trend was also pointed out by the Research Group on Income Distribution Problems (RGIDP, 1976), which reached the same conclusion relying on annual income data shown in the Family Saving Survey (FSS). These three data sources imply a regressive trend. In order to conclude that this is what has actually happened, we must present some supporting evidence.

The non-farm self-employed households include (1) merchants and artisans, (2) managers of unincorporated firms, and (3) professionals. Since we cannot get detailed information from the SPLC, we must look for other supplementary data. The NFIE gives income tables for these groups. When we calculate the B measures with a = −4, the results are 2.0207 for (1), 2.7997 for (2) and 10.2070 for (3). However, since the population share of (3) is low, we will focus our analysis on (1) and (2). Regarding the changes in income distribution for (1), the FIES can supply some information. As noted earlier, the FIES has asked sample households to report, relying on memory, their annual income in the previous 12 months. These replies must include some error, but they can be used to infer the broad trend in income distribution changes. According to the results shown in Figure 7, the over-time pattern of income distribution for group (1) was progressive.

Now we need information on the income distribution pattern of group (2). While we cannot find directly related information, the Unincorporated Enterprise Survey (UES) of the Bureau of Statistics, Office of the
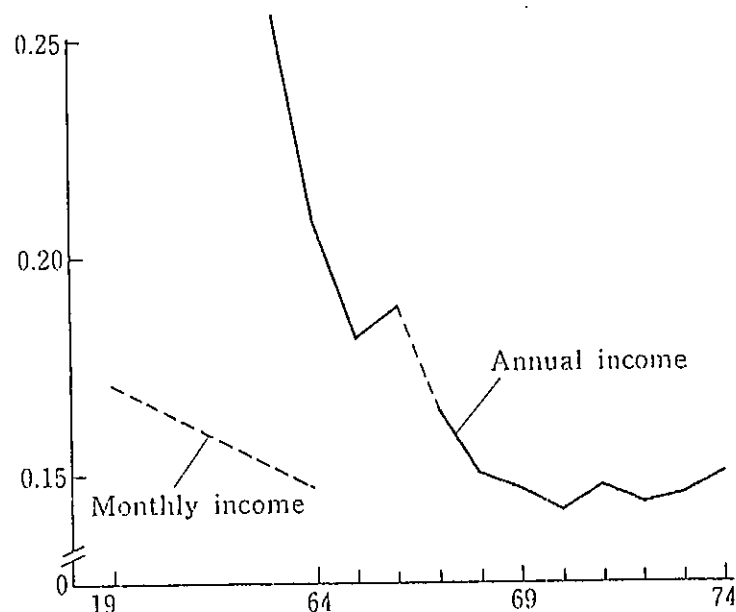
Figure 7. Over-time change in inequality between merchant and artisan households*
* Data for annual income from the FIES; data for monthly income from the NFIE.
a. B : a = 1.

Prime Minister, gives profit data for firms by size, in this case measured
by the number of employees. According to Table 9, the population share
of unincorporated enterprises with one or two employees grew during

Table 9. Income Disparities among Administrators of Unincorporated Firms*

Industries	Number of employees	Population share (%)				Relative income level (average = 100)			
		1959	1964	1969	1973	1959	1964	1969	1973
Manufacturing	≤2	31.9	37.5	38.4	47.9	41.9	40.3	44.7	52.0
	3	17.2	16.6	14.6	16.6	66.4	88.8	83.2	90.8
	4	13.1	13.4	13.8	9.9	74.8	86.2	94.8	100.3
	≥5	37.7	32.6	31.1	27.9	173.4	180.9	178.2	189.2
Wholesale and retail	1	26.2	26.5	23.7	29.5	38.4	34.7	34.0	33.9
	2	35.1	35.4	34.8	35.6	71.4	68.7	73.6	83.9
	3	18.0	16.8	18.1	16.2	126.4	109.6	110.1	121.6
	4	8.9	10.1	10.2	7.7	142.9	166.7	144.0	170.0
	≥5	12.5	11.1	13.2	11.0	258.5	276.4	237.3	252.6
Services	1		28.9	21.6	35.2		51.0	47.8	53.5
	2		30.5	34.6	31.4		80.9	86.8	94.4
	3		17.1	20.0	17.2		118.0	101.4	117.9
	4		9.9	11.8	8.0		127.2	134.4	157.4
	≥5		13.6	12.1	8.2		204.8	186.0	229.7

* Data from the UES.

the period of rapid growth. The rise in wages forced the unincorporated enterprise to manage with fewer employees. Nevertheless, the relative level of the profit income of large unincorporated enterprises with more than five employees increased during this period. Rapid economic growth provided the opportunity to expand business, the management was inclined toward expansion. When management attitudes in these unincorporated firm was more passive, these firms were forced to decrease the number of employees to counteract the rapid rise in wage payments. Therefore, economic growth has divided unincorporated firms into two groups, those of small-scale and those of relatively large-scale management. This separation might serve to widen the income disparity for group (2) households. In the early 1970s the Japanese economy was disturbed by factors such as the post-1972 galloping inflation and the 1974 oil crisis. It is likely that the inequality of income distribution increased as a result of the windfall profits acquired during this period by non-farm self-employed households. However, this conjecture cannot yet be supported by sufficiently reliable data.

For the income distribution of single-member households, we have less data than for any multi-member household group. To compensate for this lack of data, we, and others, have tried to piece together information on the various elements included in this group. For example, Wada has already made a brave attack on this problem using the ESS. His hypothesis is that a regressive tendency can be found in the income distribution for this group. In postwar Japan, many unmarried young sons or daughters have migrated from rural to urban areas to seek jobs and have formed separate household units. These young people present a a striking contrast with the aged unemployed single household or young students living away from home.

But is this contrast important, given the likelihood that the young and employed single member household will, sooner or later, become a standard household unit? Young students should be looked upon as members of the parent's household, as far as the family living unit in Japan is concerned. Furthermore, some salaried employees of big companies are assigned to work in local cities, but their families remain in Tokyo or Osaka where educational opportunities for the children are considered to be superior. Although these middle-aged employees are classified as single-member households, most of the salary is transferred to the family. Given the above complexities, it may be better to study the distribution of each subgroup rather than to attempt to analyze the total distribution of single households.

According to the 1969 NFIE, 84 percent of single-member households are employee households. The income disparity for this subgroup

shows a progressive change: their Theil measures were 0.1040 in 1959, 0.0812 in 1964, 0.0768 in 1969, and 0.0593 in 1974. This trend is similar to that found in the multi-member employee household.

Our next concern is the aged, single-member household, employed or unemployed. Although it is difficult to find reliable data dealing exclusively with this subgroup, we can make indirect inferences using the SPLC. As mentioned earlier, the survey is said to cover the poor households, including this subgroup, relatively well. Since we can obtain income distribution data for single-member households, we can clarify the changes in income disparity by calculating the inequality measure, giving greater weight to the low-income classes in this calculation. According to the results shown in Table 10, the degree of inequality increased from the early 1960s and into the 1970s, with an interruption in the 1960s. This pattern might be partially explained by the rising share of the aged in single-member households. Although pensions and other social security payments are provided, almost all these people are retired and live separately from their children. Thus, only a very small portion can lead a life of comfort. It is most important for the Japanese government to develop policies to aid these households.

Table 10. Income Inequality of Single-member Households*

Year	Measure	Year	Measure	Year	Measure
1962	0.5882	1967	0.6273	1971	0.5969
1963	0.6839	1968	0.7279	1972	0.6833
1964	0.7122	1969	0.7156	1973	0.8074
1965	0.7474	1970	0.5876	1974	

* Data from the SPLC.
a. Atkinson measure: $\in = 5$.

Conclusion

Our study concludes that the inverted U-shape pattern can be seen in the Japanese size distribution of household income between 1953 and 1975. The turning point can be placed in the early 1960s when a scarcity of labor appeared in the Japanese economy.

During the 1950s, economic growth had a regressive effect on the size distribution of income because of the increase in the income gap between agricultural and non-agricultural households and the rise in inequality within employee households. The first phenomenon is similar to recent trends in most developing countries. The second phenomenon can be

related to increasing differentials between firms according to size.

The shift from a labor-surplus to a labor-scarce economy significantly altered the income inequality trend. For example, income differences within employee households declined. Declining inequalities between regions and between household groups by family size are important factors in explaining this progressive trend. Decreased regional inequalities can be related to the movement of factories to local cities, which was also effective in equalizing income distribution within agricultural households by providing non-agricultural job opportunities. While government policies supporting agriculture were effective in decreasing the income gap between the agricultural and the non-agricultural sector, these same policies have tended to increase the inequality within agricultural households. It is also rather problematic that the inequality within non-agricultural self-employed households has increased. This is very important because these groups include the service sector, whose productivity has risen less than that in the industrial sector. Hopefully, these facts will be taken into consideration in future policy formulation.

Based on our various findings, our impression is that the Japanese experience is not necessarily unique. For example, recent changes in income distribution in some Asian countries seem to be similar to Japanese trends (Oshima and Mizoguchi, 1978). We hope that our study can be of some contribution in discussing future changes in various Asian countries.

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