Title	INCOME DISTRIBUTION IN JAPAN: AN EXAMINATION OF THE FIES DATA, 1963-1971
Sub Title	
Author	MOUER, ROSS
Publisher	Keio Economic Society, Keio University
Publication year	1974
Jtitle	Keio economic studies Vol.11, No.2 (1974.) ,p.21- 39
JaLC DOI	
Abstract	
Notes	
Genre	Journal Article
URL	https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AA00260492-19740002-0021

INCOME DISTRIBUTION IN JAPAN: AN EXAMINATION OF THE FIES DATA, 1963–1971*

ROSS MOUER**

TABLE OF CONTENTS

VII. SOME DIMENSIONS OF SOCIAL STRATIFICATION AND THE FIES SAMPLE REPRESENTATIVENESS

The final item to be examined with regard to the reliability and useability of the FIES data is the survey sample's representativeness *vis a vis* its universe. Such an examination can be conducted by comparing in terms of several demographic or stratification variables the composition of the FIES sample with that of other more comprehensive surveys. In this fashion Gini coefficients can be recalculated with other sample distributions while still retaining the original FIES income differentials. However, in the process of decomposing the FIES data into the various dimensions of stratal segmentation or the stratification subsystems, some light is also thrown upon the relative importance of income differentials and population structures in each subsystem in accounting for overall trends in inequality. However, in considering Gini coefficients as they are calculated for these kinds

* Sections I through VI appear in Vol. X, No. 1 and Vol. XI, No. 1 of this journal. For a more detailed discussion of household size and income in Section IV and the use of the stratification subsystem approach, see the note on page nine of Vol. XI, No. 1.

** The author has benefited greatly from the assistance and cooperation of many persons. A more elaborate note of appreciation appears on the first page of this article (Vol. X, No. 1). Readers are kindly referred to that part of the article which was published in 1973 and 1974.

of subsystems, it also becomes important for us to consider aspects of both longitudinal and latitudinal mobility. The Gini coefficient itself is a static expression of a relationship between a given ordering of households at a given point in time (a one year period). In other words, the coefficient does not measure changes in the ordering of the households. Thus, as we explain below, the long-term distribution of income (over, say, two years, a decade, or the individual's lifetime) may be significantly more egalitarian than that measured over the standard period of one year.

For ease of publishing and later reference, a major portion of the data upon which the following analysis is based is gathered together in Table XIX. Although the FIES data is available for subgroupings for the six stratification subsystems (or demographic variables) shown in Table XIX, only four will be dealt with here in terms of representation. Consideration of variation and distributive patterns between age groups was foregone in view of the difficulty of obtaining comparable data for sample testing purposes. In the case of occupational subgroupings there is in reality only three significant subgroups, a drawback which would tend to make any analysis sophmoric.

The data in Table XIX is grouped into three sections. The first three columns give Gini coefficients for the distribution among households in terms of ① the wage and salary income of household heads who are defined as the primary earners, ② the wage and salary income of all household members, and ③ total household income. The six subsystem groupings are delineated according to the geographical location of the household's residence (nine geographical regions and five categories based on city size), the occupation of the household head (four groups), the industrial classification of the household head (ten groups), the size of the firm at which the household head is employed (nine groups) and the age of the household head (ten groups). Thus, strictly speaking, the distributions for geographical groupings should be examined in terms of household income, while those for the latter four subsystems should be examined in terms of the earnings of the household head.

The second set of figures including columns four through nine shows the effect of additional income from secondary earners and other sources on the original distribution among household heads alone. As suggested above in Section IV, comparisons of Gini coefficients for total household income ignore differences in labor force participation which involve a cost calculation but also result in greater equality on a household basis at least in some cases (the distribution by age groupings being a noticeable exception). In other words, the overall economic status of households can be markedly influenced by the extent to which income from secondary earners and other sources enters the family coffers. Two measures are involved. The first is a comparison of Gini coefficients before and after secondary income is added in. This comparison is shown in columns four, six and eight. A second comparison focuses directly on mobility, since in some cases the relative ordering of different subgroupings in terms of their average incomes can be changed

by such additional income, a fact which is important to note in making comparisons of Gini coefficients. The extent to which this kind of latitudinal mobility occurs is shown by the indices in columns five, seven and nine.

The final set of figures in columns ten through fourteen show the extent of longitudinal mobility through time for different types of income. Longitudinal mobility occurs in two ways. One is the flow of individuals between different income groups. Unfortunately, however, the FIES doesn't provide data on this type of mobility and we can know only the net changes in the distribution of the population. However, as the discussion above in Subsection V.C indicates, the time lag between monthly income estimates and annual income estimates allows us to ascertain the fact that this kind of mobility does exist in terms of the overall distribution based upon income groupings. The second approach to longitudinal mobility looks at the rearrangement of the different categories or subgroupings within each of the six stratification subsystems in terms of income averages. In other words, when comparing Gini coefficients, not only does the Lorenze curve move in or out from one year to the next, but the relative positioning of subgroups on the Lorenz curve may also change over time in terms of where their interval fits in on the horizontal axis. The possible significance of this type of mobility can better be understood through a brief examination of the three hypothetical cases in Table XX. Although the Gini coefficient for any of the distributions of income earned during a one year period (columns ①, ②, ④, ⑤, ⑦ and ⑧) would be the same, the relative amount of reordering among subgroups over time affects considerably the Gini coefficient when income flows are measured over longer periods of time such as two-year periods (columns ③, ⑥ and ⑨).

A. *Geographical Representativeness*

The FIES has most consistently sought to maintain a high degree of geographical representativeness. Although the FIES sample population has often been unbalanced in terms of the distribution of the actual population, these imbalances have been offset by a system of weighting the sample returns. Therefore, the percentage composition of the corrected or adjusted totals[23] in terms of geographic areas[24] or urban concentration[25] has corresponded closely with that derived from the

[23] This total was called the *"chōsei shūkei setei sū"* from 1963 through 1967, the *"setai sū (chōsei)"* in 1968, the *"chōsei shūkei setai sū (kōseihi)"* in 1969, and the *"setai sū bumpu (chōshutsu ritsu chōsei)"* in 1970.

[24] "In terms of geographic area" refers to the distribution of the population among Japan's nine major geographical areas: Hokkaidō, Tōhoku, Kantō, Hokuriku, Tōkai, Kinki, Chūgoku, Shikoku and Kyūshū.

[25] "In terms of urban concentration" refers to the distribution of population between Japan's five city-size groupings: (1) Japan's seven largest cities which each have a population over one million, (2) middle-sized cities with populations between 150,000 and one million, (3) class A small-sized cities with populations between 50 and 150 thousand, (4) class B small-sized cities with populations under 50 thousand, and (5) villages and townships.

TABLE XIX. GINI COEFFICIENTS FOR THREE INCOME TOTALS IN SIX STRATIFICATION SUBSYSTEMS ALONG WITH THE INDEX OF CHANGE IN THE INCOME RANKING OF THE VARIOUS CATEGORIES WITHIN EACH SUBSYSTEM: 1963–1972

Stratification Subsystem	Year	Gini Coefficient			Latitudinal Mobility: A Comparison of Gini Coefficients and the Index of Change in the Income Ranking of the Various Categories within Each Subsystem						Longitudinal Mobility: Index of Change Over Time in the Ranking of the Various Categories within Each Subsystem in Terms of the Averages of Various Kinds of Income (Figures for the year t represent the amount of change between Y_{t-1} and Y_t)				
		1 Employment Income of the Household Head	2 All Employment Income of the Household	3 All Household Income	4 2/1	5 Index of Change in the Income Ranking in Comparing Columns ① & ②	6 3/2	7 Index of Change in the Income Ranking in Comparing Columns ② & ③	8 3/1	9 Index of Change in the Income Ranking in Comparing Columns ① & ③	10 Employment Income of the Household	11 Employment Income of Secondary Earners	12 Income from Entrepreneurial Activity	13 Other Income	14 Total Household Income
City Size	1963	.0767	.0675	.0674	.880		.999		.879						
	1964	.0674	.0632	.0651	.938		1.030		.966			.667		.167	
	1965	.0597	.0526	.0534	.881		1.015		.894			.667	.667	.333	
	1966	.0685	.0581	.0571	.848		.983		.834			1.000	.500	.500	
	1967	.0622	.0548	.0562	.881		1.026		.904			.667	.167	.500	
	1968	.0391	.0315	.0341	.806		1.083		.872			.167	.333		
	1969	.0345	.0264	.0292	.765		1.106		.846			.167		.333	
	1970	.0373	.0252	.0261	.676		1.040	.166	.702	.166	.333	.500		.500	.167
	1971	.0346	.0245	.0242	.708	.166	.998	.166	.699	.333	.167	.333	.333	.500	
	1972	.0271	.0172	.0185	.635		1.076	.166	.683	.166			.666	.666	.167
	1973	.0308	.0213	.0231	.692		1.085		.750			.333	.333	.500	.167
Geographic Region	1963	.0644	.0577	.0600	.896	.050	1.040		.932	.050					
	1964	.0596	.0561	.0565	.958	.250	.989		.948	.250	.150	.150	.300	.700	.200
	1965	.0455	.0413	.0444	.908	.200	1.075	.050	.976	.250	.200	.100	.200	.700	.150
	1966	.0511	.0414	.0441	.810	.225	1.065	.100	.863	.275	.050	.150	.250	.500	.100
	1967	.0585	.0503	.0510	.860	.100	.984	.050	.846	.150	.050	.200	.300	.500	.150
	1968	.0367	.0258	.0276	.703	.150	1.070	.100	.752	.250	.200	.300	.300	.700	.200
	1969	.0264	.0210	.0233	.795	.350	1.110	.050	.883	.300	.200	.100	.300	.600	.200
	1970	.0320	.0243	.0278	.759	.350	1.144	.100	.868	.250	.200	.100	.200	.450	.300
	1971	.0275	.0204	.0241	.742	.450	1.181	.100	.876	.500	.250	.200	.250	.600	.250
	1972	.0300	.0246	.0266	.820	.300	1.081	.100	.887	.300	.400	.100	.450	.900	.350
	1973	.0294	.0250	.0268	.850	.350	1.072	.050	.912	.400	.250	.250	.350	.600	.250

Occupation	1963	.1109	.0961	.0968	.867	.250	1.007		.873	.250					
	1964	.1004	.0867	.0878	.864		1.013		.875			.250	.250	.250	
	1965	.1012	.0890	.0904	.879		1.016		.893		.250	.500	.250	.250	
	1966	.0997	.0914	.0907	.917		.992		.910			.250	.750		
	1967	.0997	.0869	.0860	.872		.990		.863				.750		
	1968	.0920	.0824	.0829	.896		1.006		.901			.250	.500	.250	
	1969	.0862	.0788	.0774	.914		.982		.898				.750	.250	
	1970	.0864	.0771	.0741	.892		.961		.858			.500	.750	.500	
	1971	.0896	.0816	.0811	.911		.994		.905			.250			
	1972	.0922	.0860	.0848	.933		.986		.920			.250	.500	.500	
	1973	.0919	.0870	.0857	.947		.985		.933				.750		
Age	1963	.0846	.0849	.0812	1.003	.200	.956	.040	.960	.240					
	1964	.0798	.0869	.0860	1.089	.240	.990	.080	1.078	.320	.080	.080	.480	.400	.120
	1965	.0797	.0816	.0801	1.024	.200	.982	.080	1.005	.280	.120	.160	.280	.480	.160
	1966	.0838	.0889	.0857	1.061	.200	.964	.080	1.023	.280	.080		.440	.280	.120
	1967	.0885	.0932	.0888	1.053	.200	.953	.040	1.003	.240	.080	.120	.280	.360	.120
	1968	.0713	.0812	.0797	1.139	.200	.982	.120	1.118	.320	.120	.160	.240	.240	.120
	1969	.0750	.0796	.0763	1.061	.240	.959		1.017	.240	.080	.120	.360	.120	.160
	1970	.0779	.0868	.0835	1.114	.200	.962	.040	1.072	.240	.080	.040	.360	.280	.080
	1971	.0804	.0849	.0822	1.056	.200	.968	.080	1.022	.280	.040	.040	.480	.320	.080
	1972	.0791	.0831	.0793	1.051	.240	.954		1.003	.240	.040	.080	.400	.240	.080
	1973	.0739	.0804	.0792	1.088	.160	.985	.080	1.072	.240	.040	.040	.200	.160	.040
Firm Size	1963	.0932	.0793	.0742	.850	.050	.936		.796	.050					
	1964	.0938	.0781	.0746	.832	.050	.955		.795	.050	.150	.350	.425	.500	.150
	1965	.0893	.0735	.0711	.823	.050	.967		.796	.050	.100	.500	.200	.250	.100
	1966	.1010	.0865	.0825	.856		.954		.815		.100	.300	.575	.400	.150
	1967	.1037	.0869	.0827	.838		.952		.797		.050	.500	.950	.450	.050
	1968	.0876	.0785	.0760	.896	.100	.868	.050	.868	.150		.350	.450	.250	.150
	1969	.0919	.0829	.0779	.904	.050	.940		.850	.050		.350	.450	.350	.100
	1970	.0929	.0847	.0797	.912	.050	.941		.859	.050		.100	.800	.600	
	1971	.0972	.0886	.0844	.912		.953		.868		.050	.350	.750	.550	
	1972	.0933	.0885	.0865	.949		.977		.927		.050	.300	.700	.400	.050
	1973	.0948	.0922	.0883	.973		.958		.931		.050	.550	.450	.350	
Industry	1963	.0597	.0556	.0567	.931	.050	1.020	.100	.950	.150					
	1964	.0546	.0486	.0494	.890	.100	1.016		.905	.100		.400	.250	.300	.050
	1965	.0593	.0571	.0568	.963	.100	.995		.958	.100		.200	.350	.850	
	1966	.0608	.0582	.0578	.957	.050	.993		.951	.050		.450	.600	.550	.050
	1967	.0600	.0570	.0555	.950		.974	.050	.925	.050	.050	.550	.600	.350	.050
	1968	.0563	.0535	.0537	.950		1.004		.954		.050	.350	.600	.450	.100
	1969	.0505	.0492	.0474	.974	.100	.963	.100	.938	.100	.100	.250	.500	.350	.100
	1970	.0529	.0497	.0479	.940		.964	.050	.905	.050	.050	.350	.400	.425	.100
	1971	.0575	.0541	.0525	.941	.050	.970		.913	.050	.150	.450	.300	.400	.050
	1972	.0575	.0583	.0563	1.014	.100	.969	.050	.979	.150	.150	.300	.300	.350	.150
	1973	.0474	.0524	.0511	1.105	.150	.975		1.078	.150	.150	.300	.600	.500	.050

National Population Census.[26] Nevertheless, despite these careful efforts to protect the overall representativeness of the survey results in terms of geographical composition, two major changes have occurred which might have noticeably affected the presentation of the data.

The first of these was the inclusion of samples from the prefectural seats of government beginning in 1967. From 1963 through 1966 about thirty percent of the survey sample was tallied separately. Thus, for example, out of 8064 households surveyed in 1966 (*chōsa setai sū*) (see Table II above), only 5736 were tallied together in order to derive the totals for all national averages (*zenkoku heikin shūkei yō*), with 2328 being used for the supplementary data on those living in the cities which also serve as prefectural seats of government (*tsuika kenchō*). Since 1967, however, this distinction has been abolished and all totals calculated together. At the same time, however, the weighting procedure was also changed, with the weighted total shifting from 11,813 in 1966 to 94,628 in 1967. However, as shown in the first three columns of Table XIX, there seems to have been no dramatic change in the overall percentage composition of the adjusted sample.

The second change is related to the lagged adjustment of the weights for the various geographic regions and city-size groupings in 1968 and 1972 as the final results of the 1965 and 1970 censuses became known. Thus, the adjusted sample totals for the five year period from 1963 through 1967 were based upon a weighting system made to correspond with the geographical distribution of the population as of 1960. The totals for the four year period from 1965 through 1971 are readjusted to match the demographic distribution as recorded in the 1965 census. The 1970 census became the model distribution in 1972. Thus, there is a break first between 1967 and 1968, and then again between 1971 and 1972. Looking at the geographic distribution of the sample in Table XXI, the most noticeable change is the sudden increase by five percent (in 1968) and six percent (in 1972) in the weight of households in middle-sized cities (with populations ranging between 150,000 and one million). A sudden change in the sample by geographic regions is also

[26] In calculating percentage compositions for the sample's totals, one must be aware that six different totals are sometimes used: the actual and adjusted totals for (1) the ideal sample, (2) the monthly account book sample, and (3) the annual income report sample. For the benefit of the by now confused reader, these various totals are given below for the 1970 FIES by city-size groupings.

	National Population Census—1965	Ideal Sample		Monthly Account Book Sample		Annual Income Report Sample	
		Actual	Adjusted	Actual	Adjusted	Actual	Adjusted
7 Major Cities	4,290,262	1320	28,488	1269	27,335	917	19,184
Middle Cities	4,247,808	3780	28,236	3699	27,418	2880	21,189
Small Cities—A	2,897,863	1728	19,404	1687	18,851	1310	14,608
Small Cities—B	1,314,165	552	8 736	537	8,487	418	6,611
Towns & Villages	3,062,906	648	20,412	633	19,936	496	15,700
Total	15,813,368	8028	105,276	7825	82,091	6021	77,292

Source: 1970 FIES, pp. 40, 82, 96-104, 411 and 425.

TABLE XX. LONGITUDINAL INCOME MOBILITY AND INCOME EQUALITY: THREE HYPOTHICAL CASES

Subsystem Subgrouping (or household)	A Extreme Case With No Mobility			B Case With Some Mobility			C Extreme Case With Perfect Mobility		
	Short Period for Measuring Income Flow		Income Measured Over a Longer Period	Short Period for Measuring Income Flow		Income Measured Over a Longer Period	Short Period for Measuring Income Flow		Income Measured Over a Longer Period
	① Y_1	② Y_2	③ $Y_1 + Y_2$	④ Y_1	⑤ Y_2	⑥ $Y_1 + Y_2$	⑦ Y_1	⑧ Y_2	⑨ $Y_1 + Y_2$
A	1	1	2	1	2	3	1	5	6
B	2	2	4	2	1	3	2	4	6
C	3	3	6	3	3	6	3	3	6
D	4	4	8	4	5	9	4	2	6
E	5	5	10	5	4	9	5	1	6
i. Maximum Possible Change in Income Ranking	12			12			12		
ii. Actual Change in Income Ranking	0			4			12		
iii. Index of Change in Income Ranking ii/i	.0000			.3333			1.0000		
iv. Extent of Mobility	Complete Immobility						Complete Mobility		

apparent but more difficult to pinpoint to specific years, although the changes in 1968 and 1972 are most conspicuous.

Very large drops in the Gini coefficient for the distributions by both geographic regions and city-size groupings (45 percent and 40 percent respectively can be seen in 1968. Another large drop is registered again for the distribution by city-size groupings in 1972. On the other hand, both coefficients rise (by 14 percent and 37 percent respectively) in 1967 when the prefectural sample is added to the national sample, even though the distribution of the sample does not seem to be significantly influenced.

In examining these three periods of change (1966–1967, 1967–1968, and 1971–1972), one would expect to find at least a partial explanation for the shift in the city-size coefficient to lie in the marked increase of the actual sample size for middle-sized cities. Among the 47 prefectural seats for which households were newly added beginning in 1967, seven are the major cities, 34 are middle-sized cities, and six are class A small-sized cities. Moreover, as shown in Table XXI,

TABLE XXI. GEOGRAPHIC DISTRIBUTION OF THE FIES SAMPLE: 1963–1970
(based on adjusted totals for household account books)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
A. Geographic Region										
Hokkaidō	5.81	5.82	5.68	5.69	5.70	5.58	5.56	5.59	6.24	5.87
Tōhoku	6.76	6.77	6.73	6.73	6.70	6.62	6.64	6.62	6.42	6.11
Kantō	30.69	30.59	30.71	30.58	30.73	32.41	32.54	32.59	33.17	34.77
Hokuriku	4.51	4.51	4.52	4.49	4.46	4.23	4.25	4.25	3.92	3.98
Tōkai	10.76	10.76	1067	10.58	10.49	11.13	11.05	10.99	11.11	10.94
Kinki	18.06	18.16	18.13	18.31	18.43	19.24	19.15	19.07	19.26	19.62
Chūgoku	7.04	7.00	6.85	6.77	6.74	6.17	6.23	6.22	6.77	6.38
Shikoku	4.23	4.21	4.19	4.21	4.16	3.43	3.42	3.43	2.69	2.76
Kyūshū	12.16	12.17	12.52	12.64	12.59	11.19	11.17	11.23	10.41	9.56
B. Urban-Rural										
Major Cities	26.57	27.79	28.14	28.30	28.49	26.79	26.84	26.83	26.22	26.38
Middle Cities	21.85	20.97	20.94	20.97	21.89	26.87	26.88	26.87	28.28	34.40
Small Cities—A	18.58	19.55	19.27	19.10	19.58	18.48	18.49	18.46	19.87	17.76
Small Cities—B	10.56	9.86	10.24	10.30	8.86	8.32	8.25	8.27	7.55	6.94
Towns and Villages	22.45	21.83	21.42	21.33	21.27	19.54	19.54	19.57	18.08	14.51
Totals	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

it was the weight of households in the middle-sized cities which increased quite noticeably in 1968 and 1972. Therefore, it would seem logical that we examine the distributions within each city-size grouping. In this regard, Table XXII shows that the distribution of household income is most egalitarian in medium-sized cities, followed by class A small-sized cities and then large cities.[27] It is also important to consider the fact that the average income in the middle-sized cities tends to be closest to the national average. These two considerations suggest that any tendency to increase within the overall sample the portion of households from middle-sized cities would result in an egalitarian bias. However, while the movement of the Gini coefficient for the city-size groupings toward greater inequality in 1967 supports the contention that the additional households from the prefectural seats did not affect the sample in the manner hypothesized above, the data in Tables XXI and XXII would seem to be consistent with the shifts in the

[27] In view of Kuznet's assumption that income distribution in the rural agricultural sector is more equal than that in the urban, non-argicultural sector, it is interesting to note in Table XXI that the highest Gini coefficient exists for the most rural locations—class B small-sized cities and towns and villages. Since agricultural households in the agricultural sector are not included, this fact does not contradict Kuznets, but simple suggests the need for further clarification perhaps. See Simon Kuznets, "Economic Growth and Income Inequality," *American Economic Review* (vol. 45, no. 1: March, 1955) and reprinted in Kuznets, *Economic Growth and Structure: Selected Essays* (London: Heinemann Educational Books, Ltd., 1966), pp. 269–274.

TABLE XXII. URBAN-RURAL DIFFERENCES IN GINI COEFFICIENTS: 1970

Type of Geographic Area	Gini Coefficient
Major Cities (Population over 1,000,000)	.2640
Middle-sized Cities (150,000—1,000,000)	.2540
Small Cities—A (5,0000—15,0000)	.2633
Small Cities—B (less than 50,000)	.2840
Towns and Villages	.2697
Average for all Japan	.2694

Source: Calculated by the author from the 1970 FIES, pp. 120–129. The data was organized according to the sixteen income groups.

Gini coefficent in 1968 and 1972. Accordingly, one might examine the impact of changes in the sample as the new census data became available. However, if we hold the population composition constant and calculate the Gini coefficients for both 1967 and 1968, as shown in Table XXIII, we can clearly see that the important variable was not the adjustment in the sample's apportionment. Although the overall change in the subsystem Gini coefficients between 1971 and 1972 are relatively small, income is again by far the most significant variable. Moreover, this small effect from reapportionment can be thought of as having been spread over the intervening period. The major factor to consider is the very dramatic narrowing of income differentials.

One final consideration with regard to geographic differentials and income inequality is mobility. Looking first at the reordering of the sub-groupings in terms of average household income over time (column ⑭ in Table XIX), we can see that there has been no mobility among city size groupings while a considerable amount of mobility has occurred among geographic regions. For illustrative purposes, Diagram XI is added to show how the index of change is calculated. It would appear that this type of mobility has increased significantly over time, no doubt reflecting in part the fact that income differentials have narrowed considerably between geographic regions. In contrast, income seems to have varied directly with city size from 1963 through 1969, although some small change in the

TABLE XXIII. AFFECTS OF INCOME CHANGES AND POPULATION SHIFTS ON THE GINI COEFFICIENT BASED UPON GEOGRAPHICAL DIFFERENTIALS: 1967 AND 1968

Income Estimates	Population Estimates	
	1967	1968
A. Case of Coefficients based upon Urban-Rural Differentials		
1967	.0562	.0535
1968	.0359	.0340
B. Case of Coefficients based upon Regional Differentials		
1967	.0510	.0494
1968	.0289	.0278

DIAGRAM XI

CHANGES IN THE RANKING OF AVERAGE INCOMES BY GEOGRAPHIC AREA AND THE INDEX OF CHANGE: 1963–1972

Ranking of Average Income	Geographic Region (for 1963)	Year									
		1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
9	Shikoku										
8	Tōhoku										
7	Kyūshū										
6	Chūgoku										
5	Tōkai										
4	Hokuriku										
3	Hokkaidō										
2	Kinki										
1	Kantō										
(i) Number of Regions for Which the Income Ranking Changed			5	5	3	5	4	7	8	8	6
(ii) The Relative Amount of Change (or Total Distance) Involved in Such Mobility			8	6	4	6	10	8	12	10	14
(iii) The Maximum Possible Distance Which Could Be Involved in Such Mobility			40	40	40	40	40	40	40	40	40
(iv) The Index of Change in Income Ranking ((ii)/(iii))			.200	.150	.100	.150	.250	.200	.300	.250	.350

ordering occurred in 1970, 1972 and 1973. Unfortunately, the data does not tell us about the geographic mobility of the individual earning units among the various areas which make up the subgroupings. The best we can do is estimate the net changes in the distribution of the earning units. Using the approach found in Table XXIII, we can gain some idea as to the relative importance of the sample redistribution over the ten-year period. In the case of both geographical regions and city-size groupings, sample redistribution (e.g., geographic mobility) would seem to have been of negligible importance. However, this type of analysis does not consider the income size distributions within each category. Although this would not affect the kinds of Gini coefficients in the first three columns of Table XIX (which are calculated from the average income for each subgrouping), sample redistribution coupled with variation in the dispersion within intra-subgroup distributions could affect the Gini coefficients calculated for the overall size distributions in Tables II or IV. Finally, a look at latitudinal mobility suggests that secondary earners have played a significant role in equalizing the original distribution among household heads alone (column ④ in Table XIX). Much of this affect as well as the reordering of the geographic regions (column ⑤) are due to differentials in workforce participation. Other types of income (including property and entrepreneurial income) tend to make the distributions more inegalitarian (column ⑥). The fact that these relationships remain stable over time suggests that the composition of the sample remains rather stable over time.

In conclusion, I think we can say that geographic representation has been rather well maintained. Geographic inequality has diminished remarkedly over the past decade with narrowed income differentials being the most important variable accounting for the lower Gini coefficients. However, as the Gini coefficient is a static expression, it does not take account of mobility over time, a factor which has been of considerable significance in the case of Japan. On this point it is also important that one be aware of the dynamic aspects of mobility. For example, the static analysis presented above (e.g., Table XXIII) would suggest that the demographic shift from rural to urban areas has only slightly affected the coefficient. Therefore, although the Gini coefficients do not tell us much about the dynamics of demographic movements, one should be aware that such movements do involve the law of diminishing returns and thereby may be of use in further explaining the remarkable narrowing of income differentials in the case of the FIES data.

B. *Representativeness in Terms of Industrial Classifications*

A major assumption in the FIES sampling procedure is that geographic representativeness will result in a fair cross-section of the population. To check the reliability of this assumption, one must examine the FIES data in terms of some of the characteristics of the household head: the industry in which he works, the size of his firm, his occupation, and his age. Unfortunately, the FIES data on these dimensions are available only for the households of employees. Moreover,

comparatively organized data for occupational groups and age groups are not available. Consequently, the analysis must be confined primarily to industrial categories and firm size groupings. The first of these will be examined in this sub-section, and the latter will be examined in the following sub-section.

The percentage composition by industry for the household heads of employee households, based upon the adjusted totals, is given in Table XXIV. There seems to have been no significant change in this composition over the ten-year period under consideration. Unfortunately, comparably organized data is not available. However, in order to test the representativeness of the FIES data, two rough comparisons have been made. The first comparison is made with the data from the Census of Business Establishments (*Jigyō Tōkei Chōsa*) which is taken every three years. The shortcoming of this data is that there are no separate data for male and female employees. Since nearly all household heads are males and there are some differences in the male-female ratio from one industry to another, this data leaves something to be desired. Moreover, this survey is taken only once every three years. The second comparison combines data from two surveys, the Survey of the Labor Force (*Rōdō Ryoku Chōsa*) and the Survey on Employment Trends (*Kōyō Dōkō Chōsa*). The former unfortunately includes all males who are gainfully employed (*shūgyōsha*) as opposed to the FIES data which is only for employees (*kinrōsha*). Furthermore, the Survey of the Labor Force groups together the wholesale, retail, finance and insurance industries into one bunch and totals transportation and communications with all other public utilities for another. The latter survey gives data for male employees (*koyōsha*) but excludes data on employees in the construction industry and government services while limiting its coverage to regular employees (*jōyō rōdōsha*) in firms with five or

TABLE XXIV. PERCENTAGE COMPOSITION OF THE FIES SAMPLE (HOUSEHOLD HEADS) BY INDUSTRY: 1963–1970
(employee households, all Japan, adjusted totals)

Industry	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Mining	1.64	1.47	1.05	1.75	.74	.87	.93	1.01	.44	.30
Construction	6.18	6.18	6.67	6.85	7.52	7.78	8.71	8.02	7.72	8.39
Manufacturing	35.35	35.26	36.57	33.29	32.93	33.80	35.12	34.18	35.10	33.99
Wholesaling & Retailing	10.32	10.71	11.43	10.58	9.52	10.48	11.58	11.80	11.80	12.70
Finance	4.14	4.12	4.17	3.50	3.60	3.22	2.96	3.16	3.21	3.35
Real Estate	.72	.47	.31	.45	.35	.35				
Transportation & Communications	17.15	17.69	16.18	17.27	17.30	14.90	14.01	14.71	14.52	13.29
Elect., Gas & Water						1.81	1.51	1.74	2.34	1.96
Private Services	12.10	11.28	11.58	13.36	14.93	15.12	13.72	13.88	13.36	14.06
Public Services	10.14	10.90	10.34	10.80	10.55	10.61	9.97	10.14	10.17	10.65
Others	2.28	1.93	1.71	2.15	2.55	1.07	1.50	1.36	1.38	1.30
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

more employees. Therefore, the two surveys have been combined for a second comparison, using the latter survey for the purposes of interpolation in order to obtain the necessary industrial breakdowns with the former data. Thus, the second comparison is with male participants in the labor force.

For comparative purposes, Gini coefficients were calculated for the FIES data and then again with the other two population distributions being used while the FIES income estimates were retained at face value. The three sets of Gini coefficients are shown in Table XXV and graphed in Diagram XII. The FIES coefficients in the first column suggest that industrial differentials have remained more stable over the past decade than those for geographic units, thereby being a much less, if at all, important factor in the overall shift toward lower Gini coefficients based upon the income groups. However, both of the revised series suggest that the decline in the coefficient between 1966 and 1969 did not fully offset the increases from 1963 to 1966. Moreover, the revised coefficients suggest that the FIES sample tended to exaggerate the amount of inequality in the earlier years

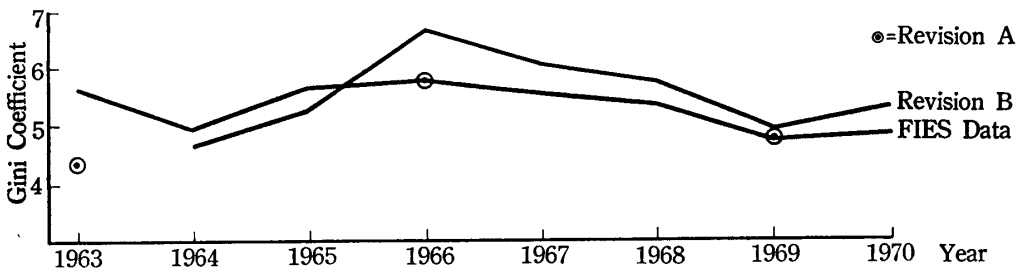
TABLE XXV. GINI COEFFICENTS FOR INDUSTRIAL GROUPINGS: 1963–1970

	FIES Data	Revised Data A	Revised Data B
1963	.0565	.0436	
1964	.0493		.0466
1965	.0568		.0524
1966	.0578	.0574	.0664
1967	.0556		.0606
1968	.0537		.0576
1969	.0474	.0478	.0489
1970	.0481		.0531

Source: FIES data is from the annual FIES reports. Revised Data A is based upon the Census of Business Establishments (Jigyō Tōkei Chōsa) and Revised Data B uses the population estimates given in both the Survey of the Labor Force (Rōdō Ryoku Chōsa) and the Survey on Employment Trends (Koyō Dōkō Chōsa). The figures for all the revised data were taken from the annual *Year Book of Labor Statistics* (Rōdō Tōkei Nenpō) published by the Minister of Labor (Rōdō Daijin Kanbō, Rōdō Tōkei Chōsa Bu).

DIAGRAM XII

GINI COEFFICIENTS FOR INDUSTRIAL GROUPINGS: 1963–1970



and then exaggerated the amount of equality in the latter part of the period under consideration, thereby giving the appearance of a slight movement toward equality. In other words, the revised series suggest that the distribution of income among industries has increased slightly during the eight-year period as a whole. Nevertheless, before drawing final conclusions, one must also consider the intra-subgroup distributions which are not available in the FIES reports.

Finally, dealing with the question of mobility, it can be said that a small amount of change in the income ranking of industries occurs each year (column ⑭ in Table XIX). Moreover, over half of this change is due to the movement of average income in mining which is in many ways influenced by several special features of Japan's mining industry and involves a very small portion of the total FIES sample. Thus, the ordering of industries seems to be fairly stable over time. Looking at the role of secondary earners (column ④ in Table XIX), it could be said that they have served to equalize the original distribution of income among household heads only to a modest degree, and that this effect has weakened over the decade under consideration.

C. *Representativeness in Terms of Firm Size*

Table XXVI shows the sample distribution of household heads in terms of firm size. The proportion in firms with less than 1000 employees has increased gradually from 47.6 percent in 1963 to 54.5 percent in 1972. However, looking at the percentage of those in firms with over 1000 employees and those in public enterprises, there is a noticeable discontinuity between 1968 and 1969. In 1968 public employees accounted for thirty percent of the sample as opposed to twenty percent for employees in the largest firms with over 1000 employees, whereas in the following year these percentages were dramatically reversed for some unexplained reason as the changeover from the 1960 to the 1965 census base occurred in 1968. Nevertheless, a calculation of the Gini coefficient for 1968 and 1969 with the population

TABLE XXVI. PERCENTAGE COMPOSITION OF THE FIES SAMPLE (HOUSEHOLD HEADS) BY FIRM SIZE: 1963–1970
(employee households, all Japan, adjusted totals)

Firm Size	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
1–4	3.15	3.14	2.88	3.79	3.33	3.08	3.36	3.74	3.66	3.25
5–9	4.25	4.30	4.28	4.65	4.97	4.74	5.24	4.85	5.35	6.03
10–29	10.66	10.94	11.48	11.72	11.45	12.03	12.10	12.37	12.40	12.36
30–99	12.77	12.59	13.35	12.76	13.30	13.76	13.42	13.21	13.49	13.84
100–299	7.76	8.50	8.98	8.66	8.94	9.81	10.30	9.91	9.94	9.69
300–499	3.06	3.98	3.53	3.12	3.47	3.52	3.22	3.32	3.09	3.64
500–999	4.39	4.03	3.55	3.76	3.43	3.32	3.65	3.87	3.34	4.25
1000+	21.63	20.83	21.17	21.09	20.48	19.96	28.12	28.15	28.98	27.29
Public Enterprises	32.33	31.70	30.77	30.45	30.63	29.78	20.59	20.59	19.76	18.19
Total	100.00	100.01	99.99	100.00	100.00	100.00	100.00	100.00	100.00	100.00

distribution held constant suggests that this sudden change in the sample did not much affect the results (see Table XXVII). This is no doubt due to the fact that the average income as well as the entire wage system for both subgroupings is similar.

A more important problem arises from the fact that ① public employees have actually accounted for only about 14 or 15 percent of all those employed, ② the number employed in the largest firms is smaller, and ③ the actual number of employees in small firms with less than 100 employees is much greater than is suggested by the FIES sample. This interpretation seems to be supported by recalculations using the sample distributions of two other surveys: the Census of Business Establishments (*Jigyō Tōkei Chōsa*) and the Survey of the Labor Force (*Rōdō Ryoku Chōsa*) (revisions A and B respectively in Table XVIII and Diagram XIII). The former gives a very detailed breakdown by firm size for employees, but un-

TABLE XXVII. SAMPLE CHANGE AND THE GINI COEFFICIENT: 1968 AND 1969

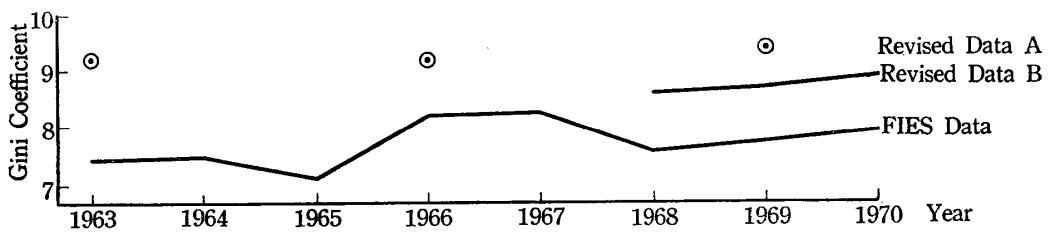
		Sample Distribution	
		1968	1969
Income	1968	.0761	.0764
Estimates	1969	.0774	.0777

TABLE XXVIII. GINI GOEFFICENTS FOR FIRM-SIZE GROUPINGS: 1963–1970

Year	FIES Data	Revised Data A	Revised Data B
1963	.0742	.0919	
1964	.0746		
1965	.0711		
1966	.0825	.0919	
1967	.0827		
1968	.0761		.0865
1969	.0777	.0940	.0876
1970	.0796		.0893

DIAGRAM XIII

GINI COEFFICIENTS FOR FIRM-SIZE GROUPINGS: 1963–1970



fortunately does not give separate data for males and females which is important because most of the household heads (by whose employment status the data is classified) are men. The monthly reports of the later have since 1968 given breakdowns by firm size with seven categories as opposed to the nine groupings provided by the FIES. However, before 1968 only four groupings based on firm size were used in the Survey of the Labor Force; therefore, comparisons are more difficult for the years from 1963 through 1967. The revised calculations suggest that the Gini coefficient is actually one or two points higher than the FIES sample would suggest. It is possible that the Gini coefficients for the overall distribution could be even higher if, as suggested above, the amount of intra-subgroup dispersion across income groupings is significantly smaller for the largest firms and the public sector.

Finally, longitudinal mobility in terms of changes in the rank order of average income for firm-size groupings seems to fluctuate considerable among firm-size groups with more than 100 employees during the first part of the decade under consideration. Nonetheless, the order of the four groups for those working in firms with less than 100 employees has not changed even once during the period under consideration. These four groupings account for about thirty percent of all employees in the FIES sample and over forty percent of all employees in the Survey of the Labor Force. Since 1969 income seems to have varied directly with firm size. It will be interesting to see whether this pattern becomes more or less rigid during the middle and latter part of the seventies. Latitudinal mobility was considerable during the first part of the decade, but decreases markedly in the latter part. Whereas the number of participants in the labor force used to vary with firm size in the fashion of an "n" or an inverted "u" shaped curve, with a noticeable drop-off for households headed by persons in the public sector or the largest-sized firms, these differences in work force participation seem to have disappeared over the past few years.

VIII. SOME CONCLUSIONS

The preceding discussion set out to examine trends in income equality and survey methodology by using the FIES data. In seeking to realize these aims, the author has in a sense tried only to turn the pages of the FIES annual reports, thereby letting the data take the lead and more-or-less speak for itself. Rather than testing theories on income distribution, or seeking to find causative explanations for trends, energy was directed at uncovering basic relationships, ascertaining fundamental trends, and identifying methodological problems by considering the FIES data largely as a closed system.[28] One unexpected but most pleasant result

[28] For a more comprehensive view of the size distribution of income in postwar Japan which combines a variety of surveys on different sectors of Japanese society, see Mizoguchi Toshiyuki, "Sengo Nihon no Shotoku Bunpu to Shisan Bunpu" (The Distribution of Income and Wealth in Postwar Japan), *Keizai Kenkyū* (Hitotsubashi University) (Vol. 25, No. 4: October, 1974), pp. 346–366.

from this exercise was the growing awareness that the FIES contains a wealth of imaginative possibilities, many of which are yet unexplored. In this connection one might also mention the monthly reports of the FIES and the National Survey of Family Income and Expenditures (*Zenkoku Shōhi Jittai Chōsa*), the latter being a much enlarged version of the FIES taken every five years.

Looking at the trends in equality, the following conclusions can be made. First, there would appear to be a marked drop in the Gini coefficient, indicating a shift toward greater equality in the overall distribution. Second, the life cycle of the household head—as it reflects itself in the composition of the household through its participation in the labor force and the age of the household head which is tied to his earnings—would seem to account for a considerable amount of measured inequality. In other words, measures of lifetime earnings would show greater equality. Third, in this connection, the income of secondary earners would seem to account for considerable latitudinal mobility by either reordering the various rankings of the household in terms of differentials associated with the household head (according to geographic location and age) or by narrowing subsystem differentials except in the case of age groups where they seem to widen such differentials. Fourth, there is considerable mobility over time, as indicated by the apparent discrepancy between annual and monthly income estimates (Section V.C) and the reordering of subsystem groupings over time (columns ⑪ and ⑭ in Table XIX). Fifth, the decomposition into the various subsystem groupings would tend to suggest that the overall decline in the Gini coefficient is due largely to growing geographical equality as regional and urban-rural differentials diminish over time. The other subsystem distributions would seem to have remained at a rather stable level of inequality. However, before a final conclusion can be made as to the importance of changes in the distribution of one subsystem to those in another, intra-subgroup distributions must be examined. These, unfortunately, are not available in the FIES reports.

Turning our attention to survey methodology, a number of problems can be found. First is the number of discontinuities in the FIES data over time. Some of these such as the changes in the industrial classification scheme or the change in the income intervals merely provide inconveniences in making statistical comparisons over time. Other changes such as the introduction of newer census data into the sampling formula suggest that every fifth year might have slightly exaggerated fluctuations which should have been spread out over the entire five-year period between census adjustments. Nevertheless, the sudden and dramatic narrowing of Gini coefficients in the two geographic subsystems in 1968 were the result of narrowed income differentials, not the redistribution of the sample population. This is rather odd and difficult to explain. Other revisions also leave us with question marks. These include the sudden and significant change in the firm-size composition between 1968 and 1969. They also include the method of collecting income estimates which spreads income over a 28 month period and gives the data a one-year time lag, thereby perhaps introducing the possibility of

baising the Gini coefficient. Finally, there is the question of representativeness. The revised data for industrial groupings and firm-size groupings both suggest that the Gini is actually higher than that shown by the FIES sample. Therefore, while concluding that these various changes do not seem to have significantly affected the FIES data, and tentatively accepting the conclusion that there has indeed been some move toward equality between 1963 and 1971 among households headed by employees, a further checking of the sample distribution, including a look at occupational and age breakdowns, and an examination of the income estimates would be desireable.

As a second shortcoming or limitation, it is important that we keep in mind the universe of the survey. The FIES household is completely non-agricultural, has two or more members and participated in the survey voluntarily. The high rate of rejections suggests that upper and lower income groups might be under-represented. Moreover, reliable income data has been obtained only from the households of employees. Finally, the number of persons in small enterprises seems to be seriously underestimated in the FIES sample. Therefore, one might qualify the above conclusion by saying that the FIES data should be considered a rather accurate reflection of the situation among households headed by persons employed by the larger firms and the public sector.

Third, the purist would like more data on income. On the one hand there is the cost side of the income equation which includes hours of work, differential exposure to industrial and occupational hazards, and perhaps educational costs. On the other had, there are a number of kinds of income which seem to slip through the FIES. Expense accounts and property income are two such items. In the latter case, statistics on national income will show that the gap between those with property income and those with non-property income has increased remarkably during the past ten years due to rising land values, the growth of stock dividends and interest income, and the appearance of various kinds of speculative income[29].

Oftentimes we begin our research with a theory and use survey data simply to plug in the missing variables, perhaps cursing mildly when the data is not organized in the most convenient fashion for our own uses. We seldom look beyond our immediate needs and seek to take responsibility for the data itself. However, statistical sources evolve as human institutions in response to certain needs, having as it were their own rationale. This study would suggest, as some anthropologists

[29] The above interpretation would also be supported by the observed fact that slowdowns in economic activity also result in greater inequality among salaried incomes whereas periods of rapid economic growth lead to growing inequality between those with property income and those with non-property income. Given the one-year time lag in the FIES income estimates, the economic slowdown in the mid-sixties (1965) would seem to coincide well with the observed increase in the FIES Gini coefficient in 1966 and to a lesser extent in 1967. In other words, the FIES data seems to react in a way consistent with the hypotheses for salary income. See Takahashi, *Dynamic Changes of Income and Its Distribution in Japan*, p. 58; and Koji Taira, *Economic Development and the Labor Market in Japan* (New York: Columbia University Press, 1970), pp. 28–31.

have been wont to argue for some time, that it might sometimes be worthwhile to let such institutions speak for themselves. Theory is important and should not be discarded by any means, but perhaps there is a need for occasional journeys into the unknown.

Keio Uniersity