

A NOTE ON WEALTH DISTRIBUTION IN JAPAN

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I. Introduction

Aim of Study

Empirical studies of wealth distribution in the U.S. and the U.K. have concentrated on the top wealth holders. It is the share of the top wealth holders that has received most attention in public debate on distribution problems. This share is most relevant in discussions of taxation policy, such as those concerning the revision of inheritance tax and the introduction of wealth tax (see Atkinson and Harrison 1978).

On the other hand, people in Japan have a different focus on distributional issues involving wealth holdings. Many Japanese often complain of their meager wealth holdings. Indeed, not a few workers are obliged to give up the idea of acquiring any land or house of their own. At the same time, it is true that there exists in modern Japan a mass of lucky workers who have managed to own houses, but these are generally small or are located far away from places of work (it usually takes over one and a half hours every morning for the typical commuter to get to his office in Tokyo). In these respects, distributional aspects of wealth holdings are closely related to the aspect of poverty or relative deprivation. The central interest of the public, therefore, may lie not in the share of top wealth holders but in wealth differences (or inequalities) among the population. This is

The main body of this paper was written by N. Takayama (Assistant Professor of Economics, Musashi University) and the Appendix was written by M. Togashi (Assistant Professor, Chiba Commercial University). The authors are greatly indebted to Drs. Toshiyuki Mizoguchi, Harry T. Oshima, C.C. Chen and Hakchung Choo for their valuable suggestions, and to Mr. Yasuhiro Terasaki for his help in computing degrees of inequality.

partly a reflection of the fact that there exist in recent Japan few men of huge wealth who have succeeded in preserving it for many generations.

It is the concern of this paper to investigate: (1) how wealth differences between agricultural and non-agricultural households were altered in postwar Japan with rapid economic growth; (2) how inequalities in asset holdings were developed; and (3) whether or not the decline of inequality in the distribution of income in the 1960's had an equalizing impact on wealth distribution. Monetary assets, housing and land are the components of wealth that are examined in this study.¹

Data Availability

Unfortunately, we have no comprehensive wealth data in Japan which cover the entire population.² Available are surveys which tabulate wealth figures of some groups of the population.³ With regard to the wealth holdings of agricultural households, we can use the Farm Household Economic Survey (FHES), though it has only six wealth classes classified by areas of cultivated land. The Family Saving Survey (FSS) gives us monetary assets distribution of non-agricultural households only. We have no data on real estate holdings of non-agricultural households. We have, however, another data source which can be connected to the wealth distribution of non-agricultural households. The National Survey of Family Income and Expenditures (NFIE) reports imputed rents for owner-occupied houses, which can be regarded as housing (with land) distribution.

1. Dr. H. Choo pointed out that the components of wealth should be extended to include antiques and art pieces in the case of top wealth holders.

2. One exception is the data made available by the Tominaga laboratory, which is examined thoroughly by Mr. Togashi in the Appendix to this paper. Dr. Oshima, however, casts grave doubts upon the reliability of data on personal wealth of rich urban families even when comprehensive wealth data are available.

3. This data limitation makes empirical studies on wealth distribution considerably difficult. Indeed, there are few empirical studies on this problem in Japan. It presents a striking contrast to the recent publications of many intensive studies in the empirical field which deal with income distribution in Japan (see Mizoguchi 1975; RGIDP 1975; Takayama 1976; Mizoguchi, Takayama and Terasaki 1977).

Outline of this Paper

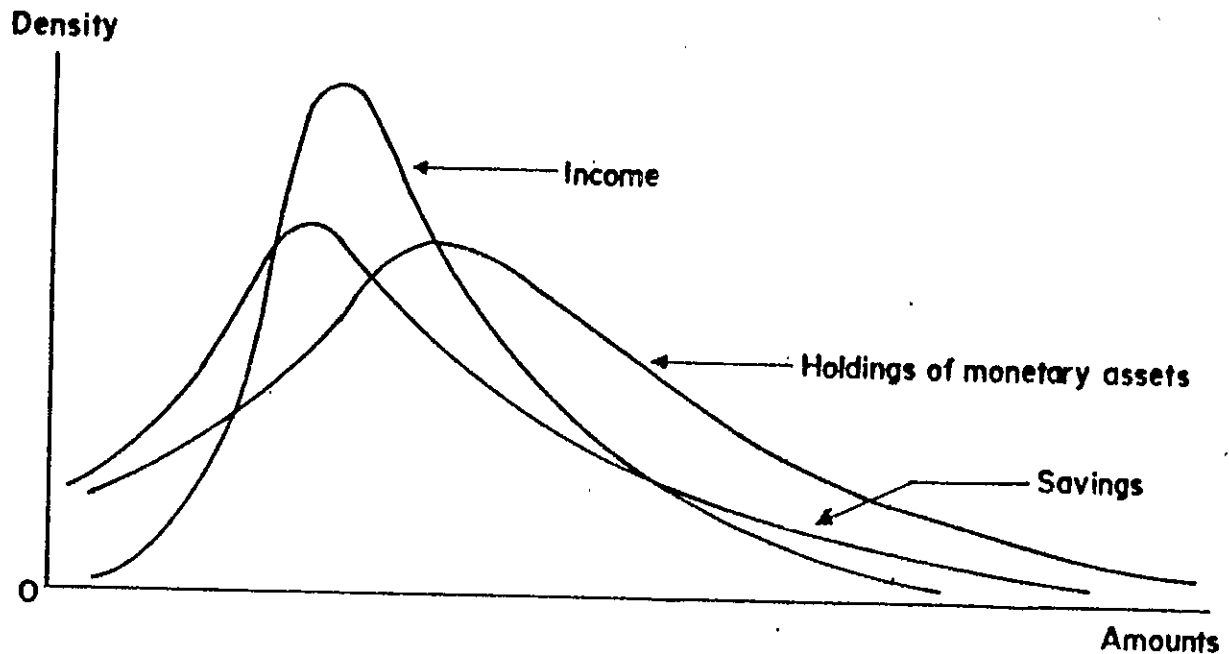
The object is to build a mosaic with the FSS, the NFIE and the FHES in order to get a tentative estimate of wealth distribution in Japan. The next section deals with the theoretical background relevant to this study. The inequality ordering of income, savings and monetary assets will be discussed. Portfolio selection between personal and real estates or between owned and rented houses will be also mentioned. Sections III and IV investigate wealth distributions of non-agricultural households. Over time changes in wealth differences between agricultural and non-agricultural households will be examined in section V. The last section summarizes main findings and makes some concluding remarks.

II. Some Theoretical Insights

Before going into empirical investigation, let us argue for some of the theoretical insights we have concerning wealth — its generation, accumulation and transmission. The first point we want to clarify is the inequality ordering of income, savings and holdings of monetary assets. Degrees of inequality in the distribution of these attributes are theoretically expected to be in ascending order, as depicted in Figure 1. The distribution of saving is more unequal than that of income because the average propensity to save is an increasing function of income (see Table 1). That is, the income elasticity of saving is greater than unity. This causes the Lorenz curve of saving to lie below the Lorenz curve of income, as postulated by Kakwani (1977). Monetary assets tend to be distributed more unequally than saving, since the rate of return from the accumulation of monetary assets will be larger as the amount of monetary asset holdings gets larger. This is because the richer have more securities (stocks and shares or bonds) and less deposits or life insurance. In addition, the richer persons tend to get more money (or monetary assets) from their parents or grandparents through gifts *inter vivos* and bequests. We cannot expect any unique ordering between the distribution of total wealth holdings and monetary assets holdings.

Our next concern is the dynamic pattern of the inequality of wealth distribution, namely, what are the forces making for increased or decreased concentration of household wealth? First, savings of workers' households allow them to initiate wealth accumulation,

FIGURE 1
INEQUALITY ORDERINGS



which will tend to be an equalizing factor in the distribution of wealth. But, at the same time, it should be noted that the economy will never converge to a situation wherein income and wealth among individuals are perfectly equalized if saving is a non-linear function of income. Secondly, differences in the rate of accumulation peculiar to different wealth classes are a force making for inequality. Thirdly, rapidly declining inequality in the distribution of wage income is another force for decreased concentration of wealth. Fourthly, institutional arrangements of inheritance affect wealth distribution. Equal division of inheritances and increased family size tend to equalize wealth distribution. It must be remembered, however, that these relationships must be qualified under alternative or additional assumptions (Stiglitz 1969; Atkinson 1971; Ishikawa 1974; Blinder 1974; Atkinson and Harrison 1978).

TABLE 1
AVERAGE PROPENSITY TO SAVE (APS)

Average income class (yen)	93,990	136,733	166,539	202,702	295,481
Flows of saving (yen)	16,262	27,376	36,137	48,615	89,916
APS (%)	17.0	20.0	21.7	24.0	30.4

Source: *The 1974 NFIE* by money income quintile groups (workers' households).

Let us turn now to the third topic—portfolio selection. The composition of wealth is apt to be different depending upon the amount of wealth involved. When the amount of wealth is small, it is composed wholly of safe assets such as time deposits and life insurance. Stocks and shares are risky assets and are therefore hardly selected by small wealth holders. As the amount of wealth gets larger, its composition tends to be more diversified. People begin to buy not only safe assets but also risky ones (see Table 2). Moreover, they are able to buy real estate, too, as they become eligible to make credit loans from city banks. With regard to the choice between owned and rented houses in Japan, institutional arrangements favor owned houses. There are no taxes on imputed rents and public housing loans involve relatively low interest rates. Needless to say, the person with his own house can dispense with several costs peculiar to any lease, which enables him to enjoy the benefits from “vertical integration” (see Iwata 1977). We can say, therefore, that one without any real estate belongs to the lower wealth class, in general.

Let us go further to discuss the importance of life cycle factors in interpreting evidence on current wealth holding. The same amounts of current wealth should not be regarded as equal if the ages of wealth holders are different. One million dollars of those aged 30 are worth 10.3 million dollars of those aged 70 (the annual accumulation rate is assumed to be 0.06). Therefore, we must regard current wealth distribution as being perfectly equal if wealth differences are wholly dominated by intergenerational differences. What is required is not just the inequality of the current wealth distribution but that of the wealth distribution reflecting life cycle factors.

ECONOMIC JOURNAL

TABLE 2
COMPOSITION OF MONETARY ASSET HOLDINGS

Income (1,000 yen)	1,699	2,414	2,991	3,799	5,747
Savings (1,000 yen)	1,313	2,107	2,593	3,520	6,270
Demand deposits (%)	18.4	14.6	15.1	12.6	10.7
Time deposits (%)	44.0	47.6	45.6	42.9	41.9
Life insurance (%)	26.6	22.2	19.6	18.0	13.5
Securities (%)	8.1	10.4	12.6	18.8	27.4
Others (%)	2.8	5.2	7.1	7.8	6.5

Source: *The 1976 FSS* yearly income quintile groups (workers' households).

III. Non-agricultural Households

Monetary Assets

Table 3 shows over time changes in inequalities of (current) monetary assets distribution of non-agricultural households. It tells us that the inequalities were decreasing in the 1960's when income distribution was becoming more equal (see Mizoguchi, Takayama and Terasaki 1977). The Japanese economy had experienced rapid growth in the 1960's with a rapid levelling of wage income annually. This fact enabled workers' households or even the lower income class households to save. Forces making for greater income equality in the 1960's had also made for greater equality of monetary assets distribution, owing to the relatively high (average) propensity to save of lower wealth classes (see Table 1). It should be noted, however, that the changes in income distribution between 1969 and 1974 indicate the reverse. This may reflect the extraordinary events such as the oil crisis and "stagflation," but this remains to be examined in depth in future research.

The figures of Table 3 depict *current* distribution of monetary assets. We must take into account the age factor to arrive at the real

TABLE 3
 SIZE DISTRIBUTION OF (GROSS) MONETARY ASSETS HOLDINGS
 BY DECILE GROUPS (1,000 yen)

Income Decile	Non-agricultural households					Workers' households			
	1962	1964	1969	1974	1974	1962	1964	1969	1974
I	11	29	88	189		13	31	94	206
II	41	90	223	492		45	90	228	483
III	75	144	337	775		75	139	335	766
IV	121	217	499	1,107		123	208	486	1,073
V	170	272	681	1,308		168	253	651	1,231
VI	250	366	854	1,749		244	350	791	1,687
VII	328	500	1,177	2,345		307	446	1,032	2,060
VIII	461	700	1,540	3,199		419	612	1,385	2,732
IX	705	1,148	2,588	4,753		602	988	2,020	3,812
X	2,193	3,316	6,187	11,130		1,635	2,279	4,273	8,471
Mean	436	678	1,417	2,705		363	540	1,130	2,252
Gini coefficient	0.6179	0.6005	0.5621	0.5345		0.5739	0.5503	0.5062	0.4925

Source: *The FSS*.

inequality of that distribution. Table 4 gives us the inter- and intra-generational inequality of monetary assets distribution by decomposition of the Theil measure (see Takayama 1978 for a discussion on the methodology of decomposing inequality measures). The contribution of differences between age groups to the overall dispersion of asset holdings is only a little over 10 per cent and the intragenerational differences account for an overwhelming part of total inequality. We cannot say, therefore, that differences in *lifetime* asset holdings are minor and negligible from a policy point of view.

TABLE 4
A DECOMPOSITION OF THE THEIL MEASURE (T) BY THE AGE FACTOR

<i>Overall T</i> (a)	<i>Between-set T</i> (b)	<i>b/a (%)</i>	<i>Weighted within set T</i>
0.6010	0.0708	11.8	0.5302

Note: The between-set *T* represents the Theil measure reflecting the intergenerational differences in monetary asset holdings.

Source: *The 1973 FSS* (non-agricultural households).

Figures of Table 5 indicate that the inequalities of asset holdings *within* age groups work toward greater equality up to the age 40 but contribute to greater inequality thereafter. Note that these changes are based upon cross-section data of the 1973 FSS. What is missing is cohort data of a long time span, which may qualify the above evidence.

The Gini coefficients of income, savings and monetary asset holdings of workers' households in 1974 are 0.1974, 0.3479, and 0.5048, respectively. This ordering is consistent with theoretical expectations discussed in section II.

Differences in net holdings of monetary assets tend to be greater than those in gross holdings because the lower asset classes have larger amounts of liabilities as a percentage of gross holdings. Consider Table 6 wherein the decomposition of the Gini coefficient by additive factor components is shown. Gross holdings of monetary assets are composed of net holdings and liabilities. It should not be overlooked, however, that almost all liabilities of workers' households are housing/land expenses, which do not lead to an exaggeration of inequality in net terms.

TABLE 5
THE INTRAGENERATIONAL INEQUALITIES OF MONETARY ASSETS
HOLDINGS (measured by T)

Age	T	Weight (%)	Age	T	Weight (%)
≤24	0.5354	0.3	45-49	0.4981	16
25-29	0.5201	3	50-54	0.5316	14
30-34	0.4969	8	55-59	0.5999	11
35-39	0.4486	12	60-64	0.5547	10
40-44	0.4752	15	≤65	0.6901	11

Source: *The 1973 FSS* (non-agricultural households).

TABLE 6
DIFFERENCES IN GROSS AND NET HOLDINGS OF MONETARY ASSETS

Year	Gross Holdings	Net holdings (Weight)	Liabilities (Weight)
1969	0.5277	0.6787*(77.4%)	0.0098*(22.6%)
1974	0.5152	0.8497*(64.2%)	-0.0857*(35.7%)

Note: Figures without asterisk are the Gini coefficients and those with asterisk mean the pseudo-Gini coefficients.

Source: *The NFIF* (workers' households with owned houses).

As is obvious in Table 2, the ratio of securities (which are the most profitable monetary assets) to total monetary assets is an increasing function of the amount of asset holdings. This is a force making for greater inequality of the wealth distribution.

Housing and Land

There are few survey data on real estate holdings of non-agricultural households. The National Wealth Survey (NWS) in 1955 is an

exception. Using this Survey, Mizoguchi (1974) calculated the pseudo-Gini of that distribution (from income class tables) and obtained a figure of approximately 0.27. Unfortunately, the NWS has not tabulated any data on housing/land distribution afterwards.

The Research Group on Income Distribution Problems (RGIDP 1975) has examined data on the real estate tax paid by non-agricultural households from the FIES (which is tabulated by income classes). The pseudo-Gini coefficient computed was about 0.2158 in 1973. This tax is a linear function of real estate and enables us to interpret the degree of inequality as that of housing/land distribution.

But these two Ginis are much smaller than expected. Additional evidence is required before accepting these Ginis at face value. In this paper, alternative evidence using the 1969 and 1974 NFIE containing data on imputed rents for owned houses is presented. Asset values (V) of housing with land can be identified as the present value of the sum of all expected future flows of housing rents. If housing rents R are expected to rise at a steady rate g , then V can be written as

$$V = R (1 + d) / (d - g) \quad (1)$$

where d is a discount rate. Differences in R can be a proxy for differences in V because d and g are assumed to be constant.

The Gini coefficients of real estate holdings are given in Table 7. The inequality in real estate holdings of workers' households with own houses is astonishingly small and requires careful interpretation (an underestimation may be due to the misclassification of wealth holdings).⁴ At the same time, the inequality in holdings between households with owned houses and rented houses is so large that it accounts for an overwhelming part of the overall inequality. It appears that the Gini coefficient of real estate holdings of workers' households around 1970 is greater than 0.5, a figure which comes much nearer to our expectations than that of Mizoguchi (1974). The decline in inequality from 1969 to 1974 is mainly due to the relative increase of people with own houses (from 51.1 per cent to 57.9 per cent).

Total Wealth Holdings

In Table 8, the inequalities of wealth holdings of workers' house-

4. Figures were obtained from money income class tables, *not* from wealth class tables.

TABLE 7
THE GINI COEFFICIENTS OF REAL ESTATE HOLDINGS

Year	Overall <i>G</i>	Between-set <i>G</i>	Within-set <i>G</i>	(Weight)
1969	0.5208	0.4893	0.0616	(0.5107)
1974	0.4517	0.4214	0.0524	(0.5786)

Note: The between-set *G* reflects the difference in real estate holdings between households with own houses and rented houses. The within-set *G* is the Gini Coefficient of housing/land distribution of those with own houses.

Source: *The NFIE* by money income groups (workers' households).

TABLE 8
THE GINI COEFFICIENTS OF WEALTH DISTRIBUTION

Year	Overall <i>G</i> (a)	Between-set <i>G</i> (b)	<i>b/a</i> (%)	Within-set <i>G</i> (Weight, %)		
				<i>G</i> ₁	<i>G</i> ₂	
1969	(g=0.10)	0.4758	0.2943	61.9	0.6491(9.5)	0.2914(41.1)
	(g=0.15)	0.4896	0.3593	73.4	0.6491(6.4)	0.1999(44.4)
	(g=0.17)	0.4975	0.3993	80.3	0.6491(4.4)	0.1497(46.5)
1974	(g=0.10)	0.4952	0.2904	58.6	0.7683(5.5)	0.3231(50.3)
	(g=0.15)	0.4754	0.3374	71.0	0.7683(3.5)	0.2097(53.0)
	(g=0.17)	0.4644	0.3644	78.5	0.7683(2.4)	0.1494(54.6)

Note: *G*₁ is the Gini coefficient of concentration of net monetary asset holdings within households with rented houses. *G*₂ is the Gini coefficient of concentration of wealth distribution within those with own houses. It is assumed that households in rented houses have no real estate and their amounts of asset holdings are lower than the amount of wealth of the lowest class of those with own houses in calculating the between-set *G*_a and the overall *G*.

Source: *The NFIE* by wealth holding classes of monetary assets in net terms (workers' households).

holds are presented under the strong assumptions that (1) households in rented houses have no real estate and (2) households with own houses are richer than any household in rented houses. These are unrealistic assumptions, but they enable us to compute the between-set Gini coefficients and to aggregate the overall Gini coefficients. Assumption (1) overestimates the between-set Gini coefficients. Moreover, as mentioned above, the differences in real estate holdings of those who own houses are surprisingly small, and should be regarded

as another underestimation. On balance, the overall Gini coefficients in Table 8 may probably underestimate the degree of wealth inequality.

In computing the figures in Table 8, we assume also that the discount rate d in equation (1) equals 20 per cent (as per figures of the annual rate of return in the market for stocks and share in 1954-1974, provided by the Japan Economic Institute of Security Research) Three alternative expected annual rates of increase of housing rents were examined: 10 per cent (as per indices of private house and room rent from 1959 to 1974 given in the Annual Report on the Consumer Price Index), 15 per cent and 17 per cent (as per land price indices of urban districts from 1964 to 1969 and from 1964 to 1974, estimated by the Japan Real Estate Institute) Table 8 suggests the following.

(1) Differences in wealth holdings of workers' households around 1970 are about 0.5 as measured by the Gini coefficient and changes between 1969 and 1974 are different depending upon the expected annual rates of increase of housing rents used.⁵

(2) Differences in asset holdings between those with own and rented houses account for the predominant part of the overall differences (about 70 per cent). A slight reduction of these differences between 1969 and 1974 worked towards equality of the total wealth distribution.

(3) Inequalities of (net) monetary asset holdings within the set of people in rented houses or those of wealth holdings within the set of people with own houses climbed upward from 1969 to 1974.

Admittedly these three points were arrived at by employing the strong assumptions stated above, but they conform more to our daily experiences than the evidence presented by Mizoguchi (1974).

IV. Agricultural Households

The FHES tabulated figures of wealth holdings of agricultural households by groups classified according to area of cultivated lands. It will be shown later, however, that the market values of land holdings of the same area are quite different according to the regions in which they are located. We cannot rely fully on the above data to obtain overall inequality of the distribution of wealth.

5. This evidence coincides with the estimation made by Mr. Togashi in the Appendix to this paper.

In addition, the amount of land holdings in money terms listed in the FHES is based on the value estimated by the authorities for the imposition of the real estate tax. It is generally believed that the estimated value is much smaller than the market value. The FHES also tabulates figures which indicate the differences between the market and estimated value of sold land. Degrees of underestimation have been obtained from these figures and are shown in Table 9. The estimated values of land are very low falling below 10 per cent of the market values. Some appropriate adjustments are necessary to arrive at the true amounts of total wealth holdings. Table 10, where inequalities of each asset holding are given, implies the following observations:

(1) Differences in land holdings between prefectures have been expanding since 1959. On the other hand, differences within prefectures have been in the same period. The overall distribution of land holdings, however, has become more unequal in the Japanese post-war growth period.

(2) Differences in housing of agricultural households are very small in comparison with land holdings, but have increased slightly in the 1960's due to the rising inequality between prefectures.

(3) Degrees of inequality of the monetary assets distribution have fluctuated from year to year, but were close to those of land holdings in the 1960's.

It is noteworthy that the trend in inequalities of income and land holdings of agricultural households moved in opposite directions in the growth period.⁶ Rapid economic growth transformed the Japanese economy from a labor-surplus to a labor-scarce one around 1960, resulting in a more equal distribution of income. On the other hand, it made land more scarce relative to other factors of production, bringing about a high annual rate of increase in the land price index, as shown in Table 11. Land owners in large cities and suburbs enjoyed enormous amounts of capital gains from land price increases. Changes in average land holdings of agricultural households in Tokyo are shown in Table 12, which indicates that agricultural households in the biggest city owned land worth one billion yen or so in 1974. These amounts of asset holdings will not be accumulated by industrial workers' households in the near future.

6. Concerning income inequality, see Mizoguchi, Takayama and Terasaki (1977).

TABLE 9
ESTIMATED VALUES OF LAND HOLDINGS AS A PERCENTAGE
OF MARKET VALUE

Year	%	Year	%	Year	%	Year	%
1959	13.3	1965	4.2	1969	3.6	1973	4.7
1962	8.5	1966	6.2	1970	4.3	1975	6.6
1963	5.6	1967	5.9	1971	3.8	1975	4.1
1964	6.2	1968	6.3	1972	2.5	1976	9.6

Source: *The FHES* (all Japan).

TABLE 10
INEQUALITIES OF ASSET/HOLDINGS (Theil Measure, *T*)

Assets	Year	Overall <i>T</i>	Between-set <i>T</i>	Within-set <i>T</i>
Lands	1959	0.1361	0.0140 (0.0939)	0.1221 (0.2705)
	1964	0.1699	0.0483 (0.1581)	0.1216 (0.2741)
	1969	0.1664	0.0706 (0.1665)	0.0958 (0.2414)
	1974	0.4515	0.4297 (0.4003)	0.0218 (0.1109)
Housing	1959	0.0328	0.0171	0.0157
	1964	0.0380	0.0197	0.0183
	1969	0.0426	0.0301	0.0125
	1974	0.0297	0.0215	0.0082
Net holdings of monetary assets	1959	0.1578	0.1102	0.0476
	1964	0.1104	0.1035	0.0069
	1969	0.1416	0.1396	0.0020
	1974	0.0874	0.0847	0.0027

Note: The between-set *T* is the inequality between 46 prefectures and the within-set *T* is the inequality within prefectures by size groups of cultivated land areas. It is assumed in computing the overall *T* that the within-set *T* is the same as that of the average. Figures in parenthesis are the Gini coefficients.

Source: *The FHES*.

TABLE 11
ANNUAL INCREASES OF PRICE INDICES (in percent)

Year	(a)	(b)	(c)	Year	(a)	(b)	(c)
1961	5.1	37.9	53.2	1969	5.2	19.8	14.5
62	6.9	26.4	31.2	70	7.7	22.6	16.9
63	7.5	15.6	19.0	71	6.1	17.7	15.0
64	3.9	13.8	15.8	72	4.5	14.4	14.3
65	6.6	14.6	12.2	73	11.7	29.0	24.6
66	5.1	6.2	3.1	74	24.5	26.1	23.1
67	4.0	10.0	4.6	75	12.4	4.0	-5.3
68	5.3	16.5	10.3	76	9.3	1.5	0.3

Notes: a, b and c are for the consumer price index, the residential land price index, and the industrial land price index, respectively.

Sources: *Annual Report on the Consumer Price Index* (Bureau of Statistics, Office of the Prime Minister, Japan), and *Land Price Indexes of All Urban Districts* (The Japan Real Estate Institute).

TABLE 12
AVERAGE LAND HOLDINGS OF AGRICULTURAL HOUSEHOLDS IN TOKYO

Year	1959	1964	1972	1974
Area (hectares)	71.2	69.5	65.8	64.0
Value in money (million yen)				
{ (b = 4%)	11.95	58.4	280.1	1,856.7
{ (b = 5%)	9.56	46.7	224.0	1,485.4
{ (b = 10%)	4.78	23.4	112.0	742.7

Note: b is the percentage of the estimated value in the FHES to the market value.

Source: *The FHES*.

We can decompose Toyoda measure B, employing a degree of inequality aversion of unity, by multiple factor components because it is a logarithmic function of variables.⁷ The market value of land is a product of its area and its unit price. Inequality figures of market values and areas of land holdings by B ($\epsilon = 1$) are 0.2782 and 0.2015 (72.4 per cent) in 1974.

7. See Takayama (1978) for a more detailed explanation of Toyoda measure B.

We can safely say that differences in total wealth holdings of agricultural households are dominated by differences in land holdings because of their overwhelming shares in total wealth (nearly 90 per cent; see Table 13 in section V). Over time changes of the wealth distribution have been, therefore, toward the direction of greater inequality. Note that the respective Gini coefficients of land holdings between and within prefectures were 0.4003 and 0.1109 in 1974. With these figures, we can estimate the Gini coefficient of total wealth holdings of agricultural households as at least around 0.5 in recent years.

Tenants obtained their own farms by putting up small amounts of money in the late 1940's under the land reform arrangements made by the U.S. Occupation Force. These arrangements generated a mass of landed farmers with small-scale farms of relatively equal area. Due to these institutional reforms concerning land holdings, all agricultural households had, more or less, the same starting point for wealth accumulation by 1950. In fact, the Gini coefficients of land holdings between and within prefectures were 0.0930 and 0.2705 in 1959.

The rapid economic growth of postwar Japan was biased in favor of landed farmers in large cities and their environs. Some changes in capital gains or inheritance taxation are required to combat the upward trend in inequalities of wealth holdings.

V. Differences in Wealth holdings between Agricultural and Non-Agricultural households

The third concern in this study is to examine changes in the differences of average wealth holdings between agricultural and non-agricultural households, between 1969 and 1974. As mentioned above, some adjustments are necessary to estimate real values of wealth holdings given by the NFIE and the FHES. First, the discount rate d in equation (1) is assumed to equal 10 per cent. Secondly, we use three alternative expected annual growth rates of housing rents g (0.10, 0.15, and 0.17). Thirdly, we assume three multipliers (12, 24, and 40) for annual housing rents in estimating the value of real estate. Lastly, we use alternative proportions (3.6 per cent in 1969, and 6.6 per cent in 1974) of the listed to the market value of land holdings given by the FHES.

Table 13 shows the estimated average wealth holdings of agricultural and workers' households in 1969 and 1974. It suggests that

TABLE 13
DIFFERENCES IN AVERAGE WEALTH HOLDINGS BETWEEN WORKERS'
AND AGRICULTURAL HOUSEHOLDS (million yen)

Assets	Agricultural households	Workers' households		
		Owned houses	Rented houses	Total
Net monetary assets	1.136(3.108)	0.971(1.565)	0.701(1.147)	0.839(1.389)
Housing	1.893(2.451)	1.566(2.842)*		0.800(1.644)*
Lands	19.997(47.680)	3.132(5.685)**	0.0 (0.0)	1.599(2.806)**
		5.220(9.474)***		2.666(5.481)***
Total	22.972(53.239)	2.537(4.407)*	0.701(1.147)	1.639(3.033)*
		4.103(7.250)**		2.438(4.195)**
		6.191(11.039)		3.505(6.870)***

Notes: Figures outside and within parentheses are amounts of wealth holdings in 1969 and in 1974, respectively. Figures with asterisks *, **, and *** are obtained assuming expected annual growth rates of housing rents equal to 0.10, 0.15, and 0.17, respectively. Real estate of workers' households with rented houses are assumed to equal zero.

Source: The *FHES* and the *NFIE*.

wealth holdings of agricultural households are much larger than those of workers' households, and that differences increased in the early 1970's. The average amounts of net monetary assets of workers' households were, for instance, 73.8 per cent (in 1969) and 44.7 per cent (in 1974) of those of agricultural households. The 1974 amounts of total wealth holdings were 2.3 times (in agricultural households) and 1.8 times (in workers' households with own houses) as large as those in 1969. As a result, the proportions of the average wealth holdings of workers' households with own houses to those of agricultural households of workers' households with own houses to those of agricultural households were reduced from 27 per cent (in 1969) to 21 per cent (in 1974). These are maximum estimates and actual ratios would probably be lower.

The 1969-1974 increase in the gap between the average amounts of wealth holdings of these households were mainly due to the exorbitant rise in land prices in large cities and their environs during the period, coupled with the fact that the share of lands in total wealth holdings was much bigger in agricultural households than in workers' households. The shares were close to 90 per cent in agricultural

households, but they probably be lower than, say, 60 per cent in workers' households. The 1974 land price indices were 2.4 times (in residential districts) and 2.7 times (in industrial districts) as large as those in 1969 (see Table 11).

With regard to the absolute amount of wealth holdings, it is worth noting that even agricultural households in the lowest wealth class by prefectural classification (those in Kagoshima or in Tottori) had amounts of land worth 12 million yen in 1974. This figure is larger than the average wealth holdings of workers' households with own houses. On the other hand, the amount of wealth holdings, even in the top three per cent of workers' households with own houses, was at most 26 million yen in 1974 (NFIE with $g = 0.17$). Land holding is clearly a factor of great significance determining wealth distribution in modern Japan.

VI. Concluding Remarks

The main conclusions of this paper are summarized below:

- (1) Differences in monetary asset holdings among non-agricultural households declined in the 1960's due to a decrease in income inequality.
- (2) Inequalities in the distribution of gross monetary assets are larger than those of savings (which, in turn, are much bigger than those of income). Inequalities in the distribution of monetary assets are narrower in gross than in net terms.
- (3) Differences in real estate holdings between households with own houses and households with rented houses are so large that they account for an overwhelming part (about 70 per cent) of overall inequality in wealth holdings of workers' households (estimated at a 0.5 Gini coefficient around 1970).
- (4) Differences in wealth holdings among agricultural households are dominated by land holdings which were distributed more unequally in postwar Japan during the rapid economic growth period. The Gini coefficient of land holdings of agricultural households was probably more than 0.5 in the mid-1970's.
- (5) Owing to large land holdings in money terms, the average amounts of wealth holdings of agricultural households are now much larger than those of workers' households; in 1974, they were at least four times as large as those of workers' households with own houses.

(6) The land price increase expanded the differences in the average amounts of wealth holdings between agricultural and workers' households in the early 1970's.

Findings (3) to (6) were obtained using several restrictive assumptions. Comprehensive survey data on wealth distribution covering all households in Japan are not presently available but are most crucial in studies of this nature.

The following three points should be noted. First, we did not examine wealth holdings of households engaged in forestry. These households were exempt from land reform policies made by the U.S. Occupation Force in the late 1940's, and consequently many of them were relatively richer and better able to accumulate wealth in postwar Japan. In fact, the average amounts of forestry holdings were worth 48.2 million yen in 1974, according to the Forestry Household Economic Survey conducted by Ministry of Agriculture. Comparing this figure with the recorded amount of wealth holdings of agricultural households in the 1974 FHES, the latter amounted to 7.8 million yen. These two figures suggest that wealth holdings of forestry households are probably an additional factor making for a more unequal wealth distribution. This, however, remains to be analyzed in the future.

Secondly, wealth holdings of other households such as those of merchants and artisans, private and corporate administrators, and professional service workers may also contribute towards greater inequality. But analyses of these are beyond the scope of this paper.

Finally, another topic in studies of wealth distribution is what shares top wealth holders have (see Lampman 1962; Atkinson and Harrison 1978). Top wealth holders (one billion yen or more) in Japan can be identified as landowners in the biggest city and its environs, those in forestry, private and corporate administrators, doctors, dentists, lawyers, and other professionals. These are some data which enable us to examine their wealth shares (e.g., income tax data of those with income of more than 20 million yen an/or inheritance tax data). An intensive study employing these data will require work.

APPENDIX

Distortion in the distribution of personal wealth is being focused upon in Japan today. While there are some data on the wealth distribution in Japan (dis-

cussed in the main part of this paper), there are no surveys covering all assets of households. For example, the FSS (Family Saving Survey) covers only financial assets and the HS (Housing Survey) researches only on housing conditions. This is very inconvenient when it comes to obtaining wealth distribution of households.

In this vein, we should note a new survey: the *Survey on Behavior and Consciousness of Savings*, which was conducted in September by Prof. Kenichi Tomi-naga and his collaborators with the financial support of the Ministry of Post and Communication.¹ The survey aims to research on saving behavior, from both the economic and sociological points of view. Proponents of the Income and Assets Distribution Project, Hitotsubashi University, requested that some questions be added concerning assets distribution although the number of questions was re-stricted due to financial considerations.

The survey adopted the multi-stage random sampling method to cover all households in Japan. The original plan involved questions on the amounts of fi-nancial assets and liabilities. We requested them to add the queries on real assets. The financial assets defined in the survey cover all assets excluding insurance and cash holdings. This may introduce a little bias in the estimation of inequality of financial asset distribution. The questions asked concerned evaluation of mone-tary values of houses and land owned by sample households. Additional ques-tions on these real assets which could be used to check the reliability of evalua-tions were considered, with restrictions on the number of questions.

As in all studies of this type, care must be taken to check the reliability of fig-ures reported by sample households. For financial assets, the FSS can be used to support reliability. Regarding real assets, however, the reliability of reported values can be ascertained only by using varied methods and data.

In the case of land, we have data on the space and the evaluated value of it. Therefore, we can check the evaluation if we get the average prices of land by regions. Fortunately, the Government of Japan has published the prices of land by detailed regional classification (the *Public Announcement of Land Value*). We calculated the average prices for the sample frames which were selected as the unit of the second stage sample, from which some third stage sample households were chosen. Therefore, the average values of publicly announced land prices are comparable with the total values of land evaluation divided by the total space of samples belonging to the same second stage frame. Since we found 86 such frames, we applied a regression equation, the results of which are presented:

Case 1 (V_{sl} = Mean of samples by each sample point)

$$\ln V_{sl} = \ln 8.476 + 0.524 \ln V_{ol} \quad \bar{R} = 0.65$$

(7.783)

1. The general report of the survey was given in: Research Groups on Savings. *Report on the Research on Postal Savings, Part II (Yubin Chokin nikansuru Kenkyukai Hokoku)*. The Research Group, 1978 (in Japanese).

Case 2 (V_{sl} = Median of sample by each sample point)

$$\ln V_{sl} = \ln 8.421 + 0.441 \ln V_{ol} \bar{R} = 0.65$$

(7.828)

where V_{ol} is the publicly announced land price and the values in parentheses are the t statistics.

Regarding houses, we have information on the types of houses, the years of existence and extensions or large repairs performed after construction. Making use of such information, we calculated the following equations:

1) Wooden, for domestic use ($n = 1125$):

$$\ln V_{sh} = -1.909 + 1.855 \ln V_{oh} + 0.108 \ln \delta - 0.026t \bar{R} = 0.43 \bar{R}$$

(8.977) (1.770) (-13.875)

2) Wooden, for domestic and other use ($n = 177$):

$$\ln V_{sh} = -0.022 + 2.201 \ln V_{oh} + 0.173 \ln \delta - 0.010t \bar{R} = 0.33$$

(3.907) (0.605) (-2.488)

3) Reinforced concrete, for domestic use only and domestic combined with other use ($n = 54$):

$$\ln V_{sh} = -0.045 + 0.945 \ln V_{oh} + 0.945 \ln \delta - 0.020t \bar{R} = 0.36$$

(2.000) (0.871) (-1.925)

where V_{sh} : Owner's evaluated value of house

V_{oh} : Mean construction cost by prefectures²

δ : Dummy variable (extended or rebuilt = 1, neither = 2)

t : Years having passed after construction.

Considering the degrees of freedom, the equation is valid for wooden houses for domestic uses and we can conclude that the evaluation of houses is relatively reliable for wooden houses for domestic uses.

As a next step, we must correct for the bias which derived from the response rate. Table A.1 show the response rate classification of holders and non-holders of real assets.

From the table, we can say that the rate of non-response concerning space and value of real assets differs across classifications. In order to correct the bias, a weight which is the reciprocal of the response rate is attached to the sample which holds real assets.

2. Data source is "Statistics for Construction" given by the Ministry of Construction.

TABLE A.1 RATE OF RESPONSE OF HOLDERS AND NON-HOLDERS OF REAL ASSETS

Items	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Classification								
Non-holders of housing	131 (9.8%)	103 (7.7%)	30 (2.2%)	34 (2.2%)	54 (4.0%)	0 (0.0%)	0 (0.0%)	1341 84.0%
Holders of housing	344 (13.2%)	273 (10.5%)	85 (3.3%)	278 (10.7%)	552 (21.3%)	843 (32.4%)	543 (20.9%)	2498 66.0%
Non-holders of land	192 (10.7%)	155 (0.6%)	38 (2.1%)	0 (0.0%)	0 (0.0%)	218 (12.1%)	151 (8.4%)	1802 45.0%
Holders of land	283 (13.2%)	221 (10.3%)	77 (3.6%)	312 (14.6%)	605 (28.3%)	625 (29.2%)	329 (8.3%)	2137 54.3%

Notes: a) Items are as follows:

- (1) Time deposits in banks
- (2) Collection deposits in post offices
- (3) Stocks
- (4) Area of land
- (5) Evaluated value of land
- (6) Space of house
- (7) Evaluated value of house
- (8) Total number of sample households

b) Each figure in the table is the number of response/refusals.

c) Each figure in parenthesis is the rate of refusal.

d) Each figure under the total number of the sample is the percentage of the number of the sample in each classification.

Since our survey covers only financial assets, liabilities, houses and land for residential use, our analysis should be restricted to only employee households. This is because land assets of agricultural households and non-agricultural self-employed household are used for business purposes. For employee households, we obtained, after correcting for some biases, a Gini coefficient for total net assets of 0.6142 which is much higher than that for income distribution; it seems to be lower though than that obtained from the Family Saving Survey in Great Britain. The Gini coefficient for land is 0.7530, 0.7045 for houses and 0.6610 for financial assets. These difference can be seen more clearly if we investigate the share of the top asset holders in Table A.2. The data for wealth distribution by decile groups are shown in Table A.3.

TABLE A.2 THE SHARE OF TOP ASSET HOLDERS OF EACH ASSET

<i>Asset Percentile</i>	<i>Land</i>	<i>Housing</i>	<i>Financial asset</i>	<i>Total asset</i>
Top 1%	12.3%	9.3%	5.1%	10.1%
Top 5%	35.4%	26.7%	15.5%	29.3%
Top 10%	52.9%	39.8%	34.5%	45.5%

It is interesting to relate the holdings of wealth to the income level. It is natural that income has a positive correlation with wealth, but it is also true that there exist various factors that alter the relationship. One of them may be inheritance. Another may be the existence of retired persons. In Japan most retired employees tend to find jobs paying relatively low salaries. In such a situation, low income groups have a relatively large amount of assets. This can be observed in Table A.4. It is interesting that differences in wealth are small between income groups if we restrict our discussions to low and middle income classes.

TABLE A.3 AVERAGE VALUE OF EACH ASSET BY WEALTH DECILE

<i>Wealth decile</i>	<i>(ten thousand yen)</i>	<i>Land</i>	<i>Housing</i>	<i>Financial assets</i>	<i>Total assets</i>	<i>Annual income</i>
I	(0 ~)	12	43	-160*	2	186
II	(13 ~)	7	10	20	37	205
III	(63 ~)	4	9	81	95	267
IV	(135 ~)	18	60	114	194	287
V	(271 ~)	61	112	184	357	314
VI	(450 ~)	210	271	100	582	336
VII	(708 ~)	384	359	167	912	318
VIII	(1161 ~)	775	372	203	1351	366
IX	(1558 ~)	1125	571	324	2021	426
X	(2635 ~)	2987	1236	563	4787	441

*The value is *minus* 160.

TABLE A.4 AVERAGE VALUE OF EACH ASSET BY WEALTH DECILE

<i>Wealth decile</i>	<i>(ten thousand yen)</i>	<i>Land</i>	<i>Housing</i>	<i>Financial assets</i>	<i>Total assets</i>	<i>Annual income</i>
I	(0 ~)	297	154	94	546	14
II	(95 ~)	266	139	88	494	155
III	(195 ~)	232	153	44	430	214
IV	(234 ~)	365	259	101	726	248
V	(260 ~)	450	192	170	814	278
VI	(300 ~)	519	264	134	919	312
VII	(330 ~)	502	355	153	1011	354
VIII	(375 ~)	606	337	158	1101	399
IX	(428 ~)	957	598	206	1762	471
X	(530 ~)	1262	568	436	2268	711

TABLE A.5 DEGREE OF INEQUALITY OF WEALTH AND INCOME DISTRIBUTION BY AGE GROUPS (Gini Coefficient)

<i>Age groups</i>	<i>Wealth distribution</i>	<i>Income distribution</i>
< 30	0.7647 (0.7335)	0.3145
30-39	0.6531 (0.6263)	0.2551
40-49	0.5850 (0.5580)	0.2881
50-59	0.5112 (0.4988)	0.3216
≥ 60	0.5875 (0.5682)	0.3719

Note: Figures in parentheses are the Gini coefficients for holders of wealth only.

The degrees of inequality within age groups are interesting enough to be examined. Table A.5 shows the degree of inequality of wealth and income distribution by age groups. From this table, it can be said that the inequality of wealth distribution in low age groups is higher than that in high age groups except for the age group above 60. By contrast, the inequality of income distribution in low age groups except for the groups below 30 is lower than that in high age groups.

High degrees of inequality of wealth distribution in low age groups can be attributable to many factors. One of them may be inheritance. Another may be the difference in the propensity to save.

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Discussion

Dr. Hakchung Choo (Korea Development Institute)

The paper by Togashi and Takayam has dealt with some success on the delicate problems of asset and wealth distribution in Japan. Since the paper is aimed to amend at a meaningful asset and wealth distribution analysis with available data and present the preliminary findings as an incomplete "mosaic work", I would like to render some suggestions for further analysis.

- (1) An analysis of asset and wealth distribution should encompass all assets and wealth by households. The paper dealt with segmented household assets. An overall distribution pattern of assets and wealth needs to be derived and analyzed.
- (2) In doing so, the concepts of assets and wealth should be preferably extended to include antiques and art pieces, the prices of which rise very rapidly with increased induced demands for them as per capita income increases. These are often used by high income classes to avoid the inheritance taxes.
- (3) N. Takayama mentioned numerous factors affecting the concentration of household wealth. One important factor omitted is inflation, often resulting in capital gains. Under such economic climate, i.e., rapid inflation, price increases in land and housing, partially or wholly financed by loans of sometimes small or negative effective interest rates, as experienced in recent Japan and Korea, would be one of the important factors affecting the formation and concentration of household wealth.
- (4) An interesting theoretical exposition of inequalities ordering of income, saving flow, and accumulated saving given in Section II, Figure 1 is essentially a static and cross-section picture. The major content of this paper is dynamic. This scheme of analogy should be further extended to consider intra-and inter-generational patterns of inequality orderings in explaining the changes in household wealth concentration.

Dr. Cheng-Cherng Chen (National Taiwan University)

- (1) With incomplete data, different methods, and without adding any strong restriction, the authors analyze wealth distribution. On these points, I would say that the paper might be a good work.
- (2) It is important that the paper emphasizes the importance of "life cycle" factors in interpreting evidences on current wealth holdings.
- (3) The formula $V = R(1 + d)/(d - g)$ is applied to land, but not to houses. We know that house values are largely determined by present value and not by its durability. If we apply the formula, it would imply that the value of a new house is equal to the value of an old one. This may not be reasonable.