OVERTIME CHANGES OF THE SIZE DISTRIBUTION OF HOUSEHOLD INCOME IN KOREA, 1963-71

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I. INTRODUCTION

FOCUSING on the overtime changes in size distribution in South Korea in the period from 1963 to 1971, we see that the Korean economy grew at remarkably fast rates, therefore, it is interesting to ask whether or not the inequality of size distribution of income increased during the period. Data after 1972 will not be examined because of the exceptionally high inflation rate which disturbed the Korean economy in the 1970s. We believe that examinations on this period should be done in the late 1970s when the Korean economy is expected to return to a normal growing process. Admitting the importance of the study on the distribution in the 1950s when the growth rate of the Korean economy was relatively low, we are forced to exclude the period from our study mainly because of data scarcity.

Strictly speaking, it seems to us that studies on the Korean income distribution have not been developed much. This is a little strange considering the relative abundance of Korean data on this field. While we take great care regarding the reliability of the data as pointed out by Dr. Choo [5], the studies can be developed to some extent by making use of this data. It is especially convenient for our purposes to have time-series data on size distribution of Korean household income.

In previous studies on household income size distribution in South Korea, the major interest focused on relative equality. For instance, Professor Harry T. Oshima proved by international comparison that Korea had an index of equality

in income distribution as low as that of Japan or the United States.[1] This is a special characteristic of the Korean economy considering Paukert's hypothesis suggesting that income was distributed more unequally in less developed than in developed countries [17]. The relatively equal Korean income distribution thesis was supported by comprehensive research from the World Bank and Sussex University [4]. According to these studies, Gini coefficients for Korean household income were around 0.35.

While this is a very interesting characteristic and should be examined further, the emphasis here is upon studies of overtime changes in income distribution. Adelman has suggested that the degree of inequality was relatively stable in the 1960s despite high growth rates in the South Korean economy [1]. This idea can be examined further by using different types of estimates.

Statistical data for studies on Korean income distribution should be explained briefly. In evaluating data great importance was attached to the reliability of income figures in each sample. This is necessary in studies of income distribution in developing countries where a large portion of households are agricultural. Since these households do not use modern accounting method in managing agriculture, accurate estimates of household income are very difficult to make. In this sense, the two kinds of survey data adopted in this analysis are very good although the size of samples seems too small to arrive at a firm conclusion.

There are annual publications on reliable family budget data for nonagricultural employee households. The survey is called the Family Income and Expenditure Survey—FIES—(tosi kage chosa). The survey principally employs interview methods except for the measurement of food consumption expenditures where accounting methods are used to show monthly change. The sample households are required to compile a balance sheet on income and expenditure. The number in the sample is not necessarily large—for example, it was 1,079 in 1970. There is also good annual data on economic activities of farm households: the Farm Household Economic Survey—FHES—(nonga kyongjae chosa). This survey uses a detailed accounting book method to determine farm household income. The total income is balanced against expenditures in the sample. A drawback for this survey also is the smallness of sample size—1,180 in 1970. Another problem is that the report is composed of tables classified by size of farm land and an income class table can be derived only through subsidiary information.

While these two surveys try to estimate average annual income for agricultural and employee households, there are some households not included in the survey population. The FIES does not cover employee households in township and rural area, and excludes any households with income over 200,000 won per month. The FHES does not sample agricultural households cultivating less than one danbo (about 0.1 hectare). While these limitations of coverage tend to result in an overrepresentation of those nearer the mean of household income distribution as suggested by Dr. Choo [5], it seems that these biases would not be great enough to make it impossible to compare overtime changes in income distribution.

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[1] The review of previous studies on Korean income distribution can be found in [9].

There are few data to study income distribution on households other than the two groups mentioned above—the "other households" mentioned in this paper. Most previous researches were based on the outstanding survey by the Institute of Social Sciences, Chung-Ang University—ISSCU—which covered most multiple member households in its sample population [7]. The survey looked at income from January to March 1966.

Finally we should mention data on taxes from the National Tax Office which can be found in the *Statistical Yearbook of National Tax*—*SYNT*. Needless to say, the tax data has some visible weaknesses in reliability. In addition, it is very inconvenient for our purposes that a system of consolidated taxation has not been adopted in Korea except for high income persons. But this data is very important as information on the income distribution for the other households.

In comparing the degree of inequality, various measures have been proposed. But we shall use the classic and most popular measure, the Gini coefficient, although we admit to the problems regarding this measure as suggested by Atkinson [2]. This is because our attempt is preliminary and should be checked by comparing it with previous studies. The calculations will be done by using the system developed by our project [11].

II. ESTIMATION OF INCOME DISTRIBUTION FOR TOTAL HOUSEHOLDS

Here, our interests focus on the estimation of household income covering all multiple member households. Some previous attempts will be reviewed in Section II A. When we want to estimate the distribution by using FIES and FHES, difficulties appear because of the lack of data for other households. A device to counteract this will be proposed in Section II B. In Section II C, we shall be able to present a preliminary estimate for total household income distribution.

A. *Review of the Existing Studies on Estimates of Total Household Income Distribution*

Korea has household budget surveys available relating to agricultural and urban households. Apart from these two kinds of surveys, no other similar official data are available which directly show income distribution per household, although the forthcoming report on the employment status survey is supposed to supply new data. Therefore, if we want to estimate the income distribution for total households, various kinds of data must be combined: for instance, the size distribution of consumption expenditure data of budget survey, national income statistics, saving data, or tax data. These have been grafted in one way or another in order to approximate an argument for total household distribution.

In order to understand previous attempts, one can refer to compilations by Shail Jain [8]. Regarding Korea, the data obtained from various sources are placed in decile groups as shown in Table I. Since these distributions depend on previous studies using the different kinds of data we cannot compare them with each other. But it may be useful to review the methodology of estimation in each study.

TABLE I

PREVIOUS ESTIMATES OF INCOME DISTRIBUTION FOR TOTAL HOUSEHOLDS

(Per cent of income)

Source Year Population of Survey (Per Cent of Population)	(1) 1966 HH	(2) 1966 HH	(3) 1968 HH	(3) 1969 HH	(5) 1970 HH	(6) 1970 HH	(4) 1970 POP	(7) 1971 HH	(8) 1971 HH
0–10	3.9	2.3	3.6	3.4	3.1	2.5	2.4	2.9	4.2
10–20	5.5	4.2	5.0	5.0	4.0	4.0	3.7	4.3	5.7
20–30	6.4	5.4	6.0	6.0	4.8	5.0	4.6	5.2	6.5
30–40	7.4	6.5	6.8	7.0	5.8	6.0	5.5	6.3	7.3
40–50	8.4	7.8	7.9	8.1	7.0	7.0	6.7	7.3	8.2
50–60	9.4	9.2	9.0	9.2	8.2	8.4	8.1	8.5	9.1
60–70	10.8	10.9	10.3	10.6	10.1	9.9	9.7	10.0	10.2
70–80	12.4	13.1	12.2	12.5	12.5	12.0	12.2	12.1	11.6
80–90	14.8	16.3	15.0	15.2	16.5	15.6	16.1	15.3	13.9
90–100	21.0	24.3	24.2	23.0	28.0	29.6	31.0	28.1	23.3
Gini coeff.	.2650	.3416	.3045	.2982	.3719	.3836	.4065	.3601	.2718
Kuznets ind.	.2000	.2589	.2295	.2242	.2874	.2884	.3095	.2705	.2011
Entropy	.1111	.1801	.1492	.1404	.2139	.2339	.2576	.2079	.1259

Source: [8].

Note: Data sources are as follows: (1) [15]; (2) [7]; (3) Economic Planning Board, Government of Korea, *Korean Statistical Yearbook, 1970;* (4) C. Morrison, "Korea," unpublished memorandum of the Income Distribution Division of the World Bank; (5) estimated from FIES and FHES; (6) Moon Kyoo Chae's estimates based on tax data as quoted in B. Renaud, "Economic Growth and Income Inequality in Korea," mimeographed (1975); (7) estimated from FIES and FHES; (8) Economic Planning Board, Government of Korea, *Korean Statistical Yearbook.*

HHs signify households and POP is used for individuals.

As mentioned in the previous section, ISSCU conducted an income and expenditure survey in 1966. Since this data covered a relatively large number of households, the survey deserves to have value to be used prior to detailed studies. Second, it seems that Mr. Moon Kyoo Chae presented the income distribution covering all taxpayers by using the administrative statistics of the National Tax Administration. However, since Korean tax data did not cover agricultural income, some devices have to be used to obtain total income distribution: for example, Professor Ki Hyuk Park combined the tax data with the FHES [16].

Thirdly, Morrison also adopted the FIES and the FHES as the basic material for his estimate. In order to estimate the income distribution uncovered by these two surveys, he considered two kinds of approaches: i.e., the family budget approach and national accounts approach. With the budget approach, he had taken the way to estimate other household distribution from the expenditure distribution shown in FIES. In this case, assumptions must be made regarding amount of savings. He then assumed that income was equal to consumption expenditures except in the upper bracket and for the high income households

TABLE II

DISTRIBUTION PER HOUSEHOLD AND PER ECONOMICALLY ACTIVE PERSONS
ESTIMATED BY MORRISON AND ADELMAN

(Income share: %)

Population of Survey (Qintile)	Morrison Budget Approach		Adelman National Accounts Approach		
	HH (A)	HH (B)	HH	EAP	EAP
1	8.0	8.0	7	6.0	7
2	12.0	12.0	11	10.5	11
3	17.0	16.0	15	14.5	15
4	21.5	21.5	22	21.5	23
5	41.5	42.5	45	48.0	44

Sources: C. Morrison, "Korea," unpublished memorandum of the
Income Distribution Division of the World Bank (1972), and [1].
Note: HH and EAP mean the household and the economically active
population. (A) and (B) correspond to the hypothesis shown in the
text.

some rather arbitrary figures were given; i.e., regarding households which spent 72,000 won per month in 1970, two kinds of hypotheses were proposed, (A) 90,000 won and (B) 100,000 won. For the national accounts approach, the total income in national account statistics was distributed into three occupational groups and then the income distribution was derived within this restriction. He further tried to estimate the income distribution by economically active population. In this attempt, the results of a large sample survey called wage survey were used to estimate employee income. Adelman tried to revise Morrison's estimate by using agricultural statistics for farming households.

What is surprising is how broadly similar the estimates of some studies shown in Tables I and II are despite the differing overall approaches and specifications and the particular shortcomings of each. However, there are difficulties in obtaining an overtime pattern of income distribution. Our attempt is to overcome these difficulties.

B. The Method of Estimation of Size Distribution of Income

Our method of estimation is a variant of Morrison's family budget approach. What we have tried to do is to weaken his hypothesis on savings for the other households. Whether depending on hypothesis (A) or (B), the entirety of savings is allocated to upper income households and the remainder assumed to hold zero savings. This seems too strong an assumption and we shall revise the estimate by assuming a consumption function for other households. Further we want to get estimates for some years which can be used for overtime comparison.

1. Estimating expenditure distribution for other households

FIES annual reports have figures not only for income and expenditures by income classes for employee households but also on consumption expenditures by expenditure class for all urban households. Initially it is intended to derive

the expenditure distribution of other households by subtracting employee household expenditures from aggregate urban household expenditure distribution. This type of work is easy if the same classification is made for two different tables—those for employee's and for total urban households. But in FIES, we have tables by income class for employees and those by expenditure classes for urban households, so we must convert the former into the latter form depending on various assumptions. For this purpose, we estimate the numbers of households belonging to each expenditure class shown in tables for urban households by applying the linear approximation for amounts of expenditures shown in the income class tables for employees. Owing to this approximation, we cannot deny that there are some errors in our estimates but when we investigate the estimated distribution we believe that the form is reasonable enough to be used for our study.

2. Expenditure distribution for other households

In Korea it is difficult to find data on household savings for other households. We can refer to the ISSCU data which gives the income and consumption expenditures for merchant households as well as for salary earner's households. Since this data was researched only during special periods we cannot directly use the average propensity to consume for merchants when we convert our expenditure distribution into income distribution. But we can refer to the data to understand the difference of consumption behavior between merchant and salary earner's households.

In the report of the ISSCU data, two kinds of linear consumption functions were estimated for these two households groups.

$$C = 1,041.38 + 0.9513Y. \quad \text{(merchant)}$$
$$C = 1,511.99 + 0.5329Y. \quad \text{(salary earners)}$$

These results seem to be a little strange when we recall the consumption functions by occupational groups in developed countries (for example, see [12]). In most, the marginal propensity to consume of entrepreneurs is lower than that of employees. However, remembering the economic situation of merchants in Korea, we hesitate to deny ISSCU's conclusion. Therefore, we will use the results in our beginning work.

When we adopt these two kinds of consumption functions, average propensity to consume for these household groups can be derived corresponding to the percentile position in the expenditure distribution of urban households in ISSCU data. Let us note them as $CM(j)$ and $CS(j)$ where j represents the j-th percentile position, and M and S are for merchants and salary earners. On the other hand, we can get the average propensity to consume for employee households by the percentile position shown in FIES, and indicate it as $CW(j)$. What we are considering is an estimate of the average propensity to consume for other households, $CO(j)$ by adjusting $CW(j)$ in using information from $CM(j)$ and $CS(j)$. For this purpose, we adjust $CS(j)$ to $CS^*(j)$ by considering the fact that the average propensity to consume would be lower for salary earners than for em-

ployees including wage earners. We then estimate $CO(j)$ as

$$CO(j) = CW(j) \times [CM(j)/CS^*(j)].$$

Since $CW(j)$ is taken from the FIES, $CO(j)$ differs year by year.

We can easily obtain the income distribution of other households from their expenditure distribution by using the estimated ratio of $CO(j)$. However, our estimation is preliminary because it depends on the ISSCU data for an estimation of $CM(j)$. But we also believe that our figures would be better than the results obtained by Morrison with their very strong assumptions on consumption behavior.

3. Estimate of total household income distribution

Since we believe that FIES and FHES are relatively good data for the study of Korean income distribution, we shall use them for employee and agricultural households. The reliable information for agricultural household income can be found in 1965, and from 1967 to 1971 from the FHES. While some information can be found in FHES for 1963 and 1964, we restricted our study in this section to the period after 1965.

First, we derive the size distribution of employee and other households by income classes used in the FHES report. For this purpose, we used the Gini law in interpolating or extrapolating the figures defined for different intervals of income classes. Second, the aggregation should be done by considering the distribution of number of households by these three groups. The weight was calculated from the population census done in 1960, 1966, and 1970. We also assumed that the distribution was a smooth change between census years. In this calculation, we exclude the figures for single households.

C. Total Household Income Distribution

Our findings on the income distribution size among total households from 1965 to 1971 are shown in Table III. Before 1969, all measures show a widening of inequality and consequent ups and downs nearly at the level of the previous average period. If we suppose that the 1964 coefficient was near the 1965 value, our conclusion is consistent with Adelman's presentation mentioned above suggesting that the degree of inequality in 1964 was nearly equal to that of the 1970s. The rise of coefficients from 1967 to 1969 seems drastic, and needs to be examined in the near future. However, we believe that the pattern of change would be valid. When we compare our estimates with Gini coefficients shown in Table I, our estimate is a little higher than others. This is especially true for 1968 and 1969 values.

According to our estimate, the rise of inequality from 1965 to 1968 relates to the fact that the relative economic position of the lower income groups has steadily deteriorated despite the rise in level of income at the national level: the relative position of the upper income groups was gaining while the lower groups were declining. All measures indicate that the loss of the lower groups outweighted the gain of the upper groups, leading to a decline in inequality

TABLE III

OUR PRELIMINARY ESTIMATE OF TOTAL HOUSEHOLD INCOME
DISTRIBUTION BY DECILE GROUPS

(Per cent of income)

Year Deciles	1965	1967	1968	1969	1970	1971
First	3.27	2.60	2.54	2.13	2.85	2.48
Second	3.53	3.59	3.53	3.85	4.56	4.19
Third	5.99	4.26	4.83	4.28	5.42	5.32
Fourth	6.46	5.99	5.27	5.54	6.14	6.27
Fifth	7.03	6.57	6.37	6.28	7.17	7.21
Sixth	7.82	8.13	7.37	7.42	8.21	8.25
Seventh	10.80	9.75	8.84	8.78	9.49	9.47
Eighth	12.28	12.30	10.73	10.83	11.43	11.60
Ninth	15.14	16.59	14.04	14.05	14.85	15.05
Tenth	27.68	30.22	36.47	36.44	29.88	30.16
Gini ratio	.34281 (100.0)	.39615 (115.6)	.42505 (123.9)	.42455 (123.8)	.35500 (103.6)	.36466 (106.4)
Coeff. of variation	.68840 (100·0)	.78603 (114.2)	.94113 (136.7)	.94532 (137.3)	.74087 (107.6)	.75613 (109.8)
Log variation	.38289 (100.0)	.49380 (128.9)	.51376 (134.2)	.55470 (144.9)	.38878 (101.5)	.43549 (113.7)
Average in- come (won)	103,855	194,122	242,372	302,768	297,338	384,819
Real in- come* (won)	177,834 (100.0)	267,754 (156.6)	300,709 (169.1)	341,339 (191.9)	297,338 (167.2)	342,671 (192.7)

Source: Budget surveys.
* These figures are the nominal average income deflated by the Seoul consumer
price index (1970=100).

TABLE IV

COMPARISON OF DISTRIBUTION BETWEEN THE URBAN AND THE RURAL AREAS

	Year	Bottom 40%	Middle 40%	Top 20%	Gini Ratio
Urban	1965	16.95	36.18	46.87	.38801
	1967	14.62	37.71	47.67	.41308
	1968	12.47	26.55	60.98	.52332
	1969	12.27	27.54	60.19	.51859
	1970	15.76	30.12	54.12	.44711
	1971	16.15	31.79	52.06	.43119
Rural	1965	21.56	39.12	39.32	.29852
	1967	19.76	39.84	40.40	.31866
	1968	20.53	38.85	40.62	.31763
	1969	19.93	40.21	39.86	.31636
	1970	20.94	40.29	38.77	.29953
	1971	19.52	40.03	40.45	.32470
Urban-Rural	1965	19.26	37.92	42.82	.34609
	1967	16.44	36.75	46.81	.39260
	1968	16.16	33.32	50.52	.42026
	1969	15.81	33.30	50.89	.42651
	1970	18.97	36.30	44.73	.35644
	1971	18.26	36.53	45.21	.36716

Source: Budget surveys.
Note: Calculated from decile distribution of income estimated.

although the opposite appears between 1969 and 1970. When we remember that the period between 1965 and 1969 is characterized by an accelerated trend of economic growth, averaging about 10.8 per cent per year, it could be said that there were some complicated trade off relations between the efficiency and equality throughout the period of rapid economic growth.

It has been often pointed out that the urban-rural income difference problem is very important in studying the income distribution of developing countries. While our data are not classified by urban-rural area, we can approximate the problem by agricultural and nonagricultural household groups. According to our results shown in Table IV, the rural distribution is more equal than the urban. This is very interesting when we recall the results for other developing countries. We should also note that the average income level is not much different between urban and rural areas.

III.   DETAILED STUDIES ON INCOME DISTRIBUTION
BY OCCUPATIONAL GROUPS

Overtime change in inequality of income distribution by occupational groups should be examined in detail. Considering data conditions, we shall divide total households into three groups: (A) employee households, (B) agricultural households, and (C) other households. FIES and FHES will be used for (A) and (B). While we used FIES for (C) in the previous section, tax data will be analyzed in this section.

A.   Income Distribution of Employee Households

Income distribution of multiple member households of nonagricultural employees can be examined by using FIES. While FIES excludes very high income employee households, this is not too important a factor for our study because the number of such households seems to be small according to the *Statistical Yearbook of National Tax—SYNT—(kugse tongge yeonbo)*. There may be rather serious limitations in that the survey does not cover single member households as well as it does employee households in township or villages. But the degree of bias caused by this restriction cannot be examined because of the lack of data.

In Figure 1, the overtime change is shown for the Gini coefficients and for the growth rate of nominal pretax income for urban employee households. Among the household group of employees, the Gini coefficients declined in the sixties except for 1966 and 1967 when the growth rate was extremely high. Recalling the Japanese experience, it is not surprising that the coefficients deviate to some extent from the trend in the period of boom (see [14]). Therefore we can safely say that there was a decline in the changes of Gini coefficients for employee households in the 1960s.

There are various factors determining income distribution of employee households. We should first examine regional differences in income. The difference is especially large between Seoul and other cities: the average household income

Fig. 1. Gini Coefficients and Growth Rates in Nominal Income of Nonagricultural Multiple Member Employee Households

Source: FIES.

Fig. 2. Comparison of Income Distribution between Employee Households in All Cities and Seoul (1966)
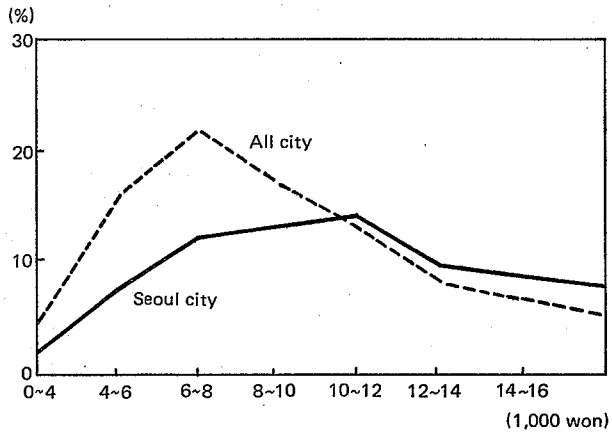
Source: [10].

in other cities was only 74 per cent of that in Seoul in 1970. Professor Hyun Jae Lee pointed out that the form of income distribution was quite different between these household groups as shown in Figure 2 [10]. However, regional differences seem to have had a less important role in the explanation of over-time changes of Gini coefficients. This can be verified by applying the variance

analysis;[2] we can divide total variances of household income into between and within variances by regional classification. Because variance increases with the rise of average income, it is convenient to make our comparison in the coefficients variation form defined as the ratio of variance to the average income of all cities. According to Table V, the coefficients for within variances decrease together with the decline of total variances, but between variances were relatively stable until the late sixties.

TABLE V

COEFFICIENT OF VARIATION FOR BETWEEN AND WITHIN VARIANCES FOR
REGIONAL DIFFERENCES BETWEEN SEOUL AND OTHER CITIES

	Total	Between	Within
1963	0.649	0.132	0.636
1967	0.622	0.132	0.608
1971	0.537	0.118	0.525

Source: FIES.

The occupational differentials of income are also important to study the origin of income differences. A relatively large difference between wage and salary earner's households can be found in Korean household income. It is interesting, however, that there is a decline in this difference as shown in Figure 3. The trend was strong in the mid-sixties, and would be a major factors explaining the equalization of income distribution among employee households. This tendency was also investigated in the other survey. In 1967 and 1970, two large-scale sample surveys on wages were done by the Bank of Korea and the Research Institute of Industrial Development (RIID) [3]. According to this survey, the annual growth rate of wages differed by level of education; the figures in Table VI indicate that the rate of increases was low for highly educated persons. We suppose that a more pronounced trend could be found if we had data for before 1967. This seems to suggest the relative abundance of highly educated laborers in comparison with the stage of economic development in Korea. It is well known that the Korean people consider it extremely important to have their children educated. This resulted in a relative disadvantage for highly educated employees. In such a situation, these persons could obtain relatively small profit from the fruits of economic development. Further we should note that in the early stage of economic development, the number of skilled laborers would be small even if there were many unskilled laborers. If this was also true in Korea, rapid economic growth would induce a scarcity of skilled laborers and increase their wage. This is another explanation for Figure 3.[3]

The other important factor would be wage differences by length of employment. It is said that the seniority rule has governed the Korean wage system, and we can find great income differences by age of household head in FIES.

[2] Since income class tables have been published only for total city average since 1970, we cannot apply the variance analysis for the logarithm of household income. The co-efficients of variations are used here for this alternative.

[3] The second explanation was suggested by Dr. Hak Chung Choo of the Korea Development Institute.

Fig. 3. The Ratio of Household Income of
Salary Earners to That of Wage Earners

Source: FIES.

TABLE VI

RATE INCREASE IN NOMINAL WAGE BY EDUCATIONAL LEVEL FROM
1967 TO 1971

(%)

Educational Level	Rate of Increases
Primary school	31.6
Middle school	31.8
High school	31.3
University and college	28.3

Sources: [3] [18].

However, the coefficients of variation had not changed from 1963 to 1971 on
income differences by age of household heads.

Finally, we should consider the changes in the number of income earners.
Owing to economic development in the sixties, the chance of employment in-
creased remarkably. The unemployment ratio declined from 7.4 per cent to
4.5 per cent between 1965 and 1971. While we admit the unemployment ratio
is not necessarily a suitable measure to study the labor market in Korea where
a great amount of disguised unemployment exists. But the above figures seem
to reflect the tightness of the Korean labor market. The increased number of
employed laborers induced a rise in the number of income earners per house-
hold in FIES, rising from 1.15 in 1963 to 1.34 in 1971. Since, in seeking jobs
for family members, low income households would be more earnest than high
income ones, the rise of employment opportunities had the effect of equalizing
income distribution among employee households.

In sum, the income distribution among employee households moved toward
equalization in the sixties. Important factors to explain this are summarized as
(1) the decrease in income difference between salary and wage earner's house-

holds, (2) the increase in income earners per household, and (3) the decrease in regional differences in the late sixties.

B. *Income Distribution of Agricultural Households*

Agricultural households have taken a large portion of the occupational distribution in Korea. A decrease is shown in the percentage of households in agriculture, about 50 per cent in 1966 and 40 per cent in 1970. The percentages are similar to those found in some developing countries. But there were some unique characteristics in Korea compared with other developing countries. First, the average income of agricultural households was relatively high. When we compare the household income of FHES with that of FIES, the farm household income was nearly equal to that of nonagricultural employees in the early sixties (see Figure 4). While there was an increasing tendency toward difference

TABLE VII

CHANGES IN AGRICULTURAL HOUSEHOLD INCOME COMPONENTS

|	1963	1967	1970
Agricultural income	0.8341	0.7915	0.7585
Income from other business	0.0244	0.0347	0.0357
Wage income from agricultural employment	0.0223	0.0263	0.0206
Wage income from nonagricultural employment	0.0648	0.0629	0.0842
Other	0.0671	0.0846	0.0992

Source: FHES.

Fig. 4. Indices of Agricultural Household Income Compared to Employee Household Income

(Employee household income=100)
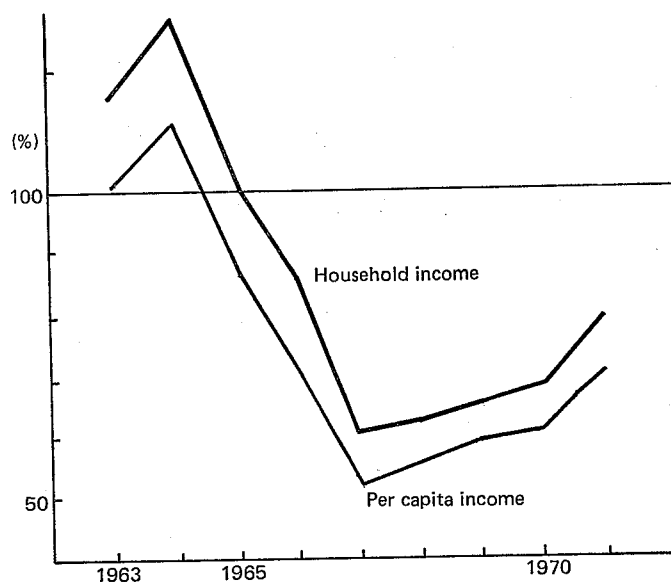
Source: FIES and FHES.

Fig. 5.   Gini Coefficient of Agricultural Household Income

Source: FHES.
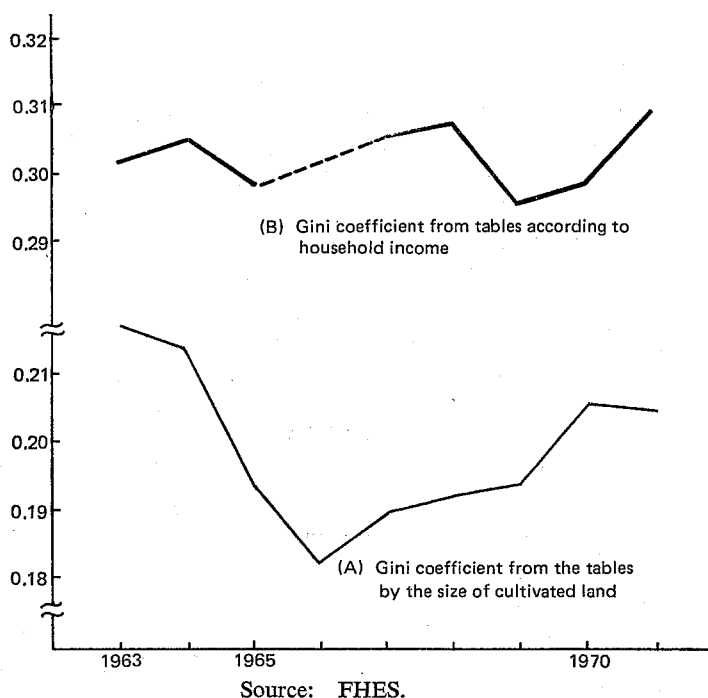
in the mid-sixties owing to the rapid rise in nonagricultural income, the reverse could be found afterwards. While agricultural income grew at a lower rate than urban wage, the income from side businesses including that through nonagricultural employment filled this gap.

Another important feature is the relatively equal distribution among agricultural households. A crucial problem in developing countries is said to be the large income difference between rural households and this has its origin in the unequal distribution of farm land ownership. In this respect, land reform should be evaluated highly as Dr. Park pointed out [16]. Figure 5 shows the change in Gini coefficients calculated from two kinds of tables: (A) those classified by size of farm land and (B) those by amount of household income. Of course the latter is better for our purpose, but this type of table was published occasionally before 1971 and was not found after 1972. According to results from (A), there was a drop and an increase: the inequalization until the mid-sixties and the reverse afterwards. These two kinds of movements seem to be explained by the change in agricultural policies by the Korean government. Owing to industrialization before the mid-sixties, the growth rate of agricultural income was relatively low in comparison with that of employee income. Since the opportunities for employment from nonagricultural firms had increased for family members of farm households, nonagricultural income had risen markedly in agricultural households with small amounts of farm land.[4] This had, no doubt, an effect on decreasing

4 This behavior was studied by one of the authors using an econometric model. See [13].

TABLE VIII

RATE OF INCREASE IN AGRICULTURAL AND NONAGRICULTURAL INCOME
BY SIZE OF CULTIVATED FARM LAND (1963–67, 1967–71)

Size of Cultivated Land	Agricultural Income		Nonagricultural Income	
	1967 / 1963	1971 / 1967	1967 / 1963	1971 / 1967
Under 0.5 cheongbo	1.32	2.28	2.47	2.04
0.5–1.0	1.52	2.48	2.07	1.89
1.0–1.5	1.39	2.64	1.50	1.75
1.5–2.0	1.47	2.42	1.73	2.14
Over 2.0	1.39	2.49	2.00	1.89

Source: FHES.
Note: 1.0 cheongbo is about 1.0 hectare.

differences in agricultural household income. In the late sixties, the government of Korea changed its policy of encouraging agricultural production. This change seemed to be less advantageous for small-scale farming households, and regional differences would increase in this period for agricultural production.

The assumptions can be partially supported by information from Table VIII. The rate of increase of income for four years is shown in this table. The rate of nonagricultural income was high in households with small farm land in the early period. It is interesting that the rate of agricultural income was similar among households of different farming scale in this period. In the late sixties, there were differentials in the rate of growth in agricultural income but few differences regarding nonagricultural income. The latter situation was quite different from the Japanese experience in the late fifties when the growth rate of nonagricultural income was very low in large-scale farming households. This would suggest the existence of disguised unemployment in large-scale farming families in Korea. Regarding differences in agricultural income growth, we should remember that there were changes in relative prices of farm products. In order to encourage agricultural production, the government raised the rice price at higher rates than other agricultural prices. The percentage of agricultural income occupied by rice growing was significantly high in the large-scale farming family [6]. Therefore, it is natural that the change of policy was an advantage to large-scale farming households.

It should be noted that, in contrast to the above tendencies, the Gini coefficients from the income class tables do not show any remarkable trends. This means that the income differences within farm households with similar farm size are also important. This is quite possible because there are large regional differences in agricultural products and because the chances of employment by nonagricultural firm differ by kinds of households. In order to analyze the relation between coefficients from (A) and (B), we need further information about the income formation in the agricultural households.

C. *Business Income Distribution from National Tax Data*

In Section II we pointed out that the role of nonagricultural entrepreneur income distribution could not be neglected in studying the distribution of total households. However, our discussion depends on our own estimates, and the results should be checked by using other kinds of data. Among various possibilities of access to this problem, the examination of national tax data may be one. Of course this data have many problems. As in other countries, assessed income was said to have a downward bias. The income tax data showed its distribution by individual, not by household. In addition there is a technical problem that the size distribution could be obtained only for upper income classes, and this makes it impossible to write a Lorenz curve. To avoid this difficulty, we shall use Pareto's law. As is well known, we can convert Pareto coefficients into the Gini ratio under the assumption of Gini law. Our Gini coefficients will be estimated indirectly by using the formula,

Gini coefficient $= 1 \ / \ (2 \times$ Pareto coefficient $- 1)$,

when the Pareto coefficient, b, is estimated by applying the regression equation:

Fig. 6. Gini Coefficient of Business Income from Income Tax Data
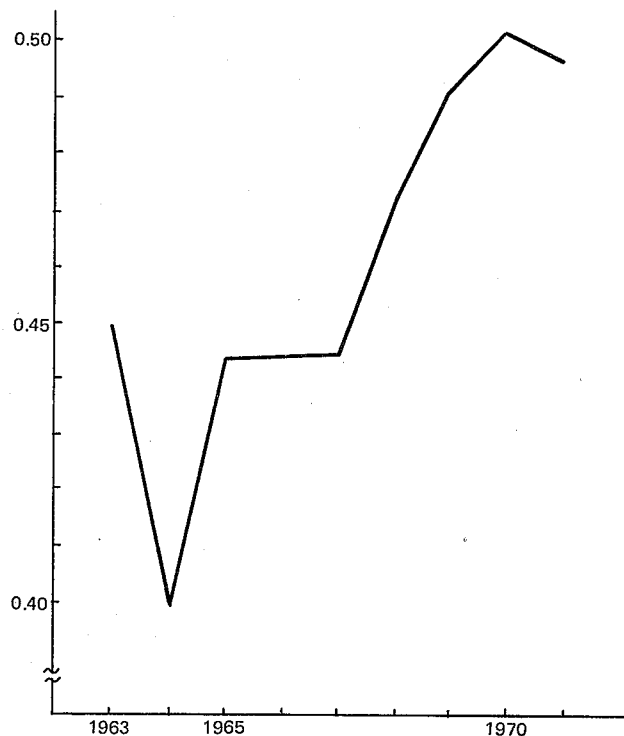
Source: *SYNT*.

$$\log\ N = a + b\ \log\ X,$$

where N is the number of persons with income above X.

Business income defined in *SYNT* covers all kinds of self-employed income except agricultural and entrepreneur's income assessed by following the global income tax assessment. The former exception is convenient for our purpose. We postulate that all income assessed as global income is business income. Figure 6 shows the change of Gini coefficients calculated from Pareto coefficients. In obtaining Pareto coefficients we omit some figures regarding relatively low income groups because it is known that Pareto law can be applied for relatively high income groups. Obviously the value for 1966 is much higher than the one for the merchant households obtained from ISSCU data.

In order to explain this, it is important to examine differences in income distribution of subgroups of nonagricultural self-employed persons. Figure 7 shows that the major components of the highest income groups are composed of wholesale dealers and industrial entrepreneurs, while low income groups are those mainly of retail dealers and service business managers. Further, it is very important to note that the forms of income distribution differ by these subgroups. In Figure 8, the Pareto line slopes are sharp for retail dealers and eating house managers, and distribution for these group is relatively equal. We should remember that the ISSCU data covers mainly these groups as representative of other households.

Fig. 7. Comparison of Taxpayer Composition by Business Type and Income Class (1971)
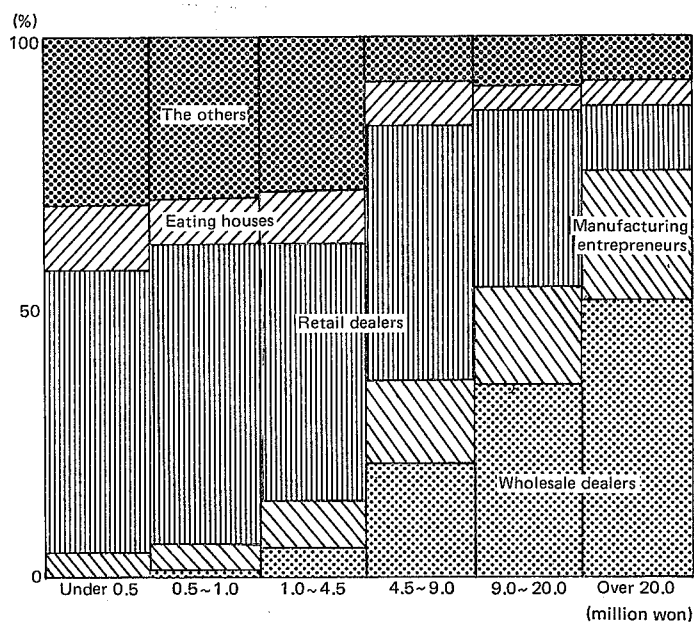
Source: 1972 *SYNT*.

Fig. 8. Pareto Lines for Assessed Business Income by Business
Type (1971)
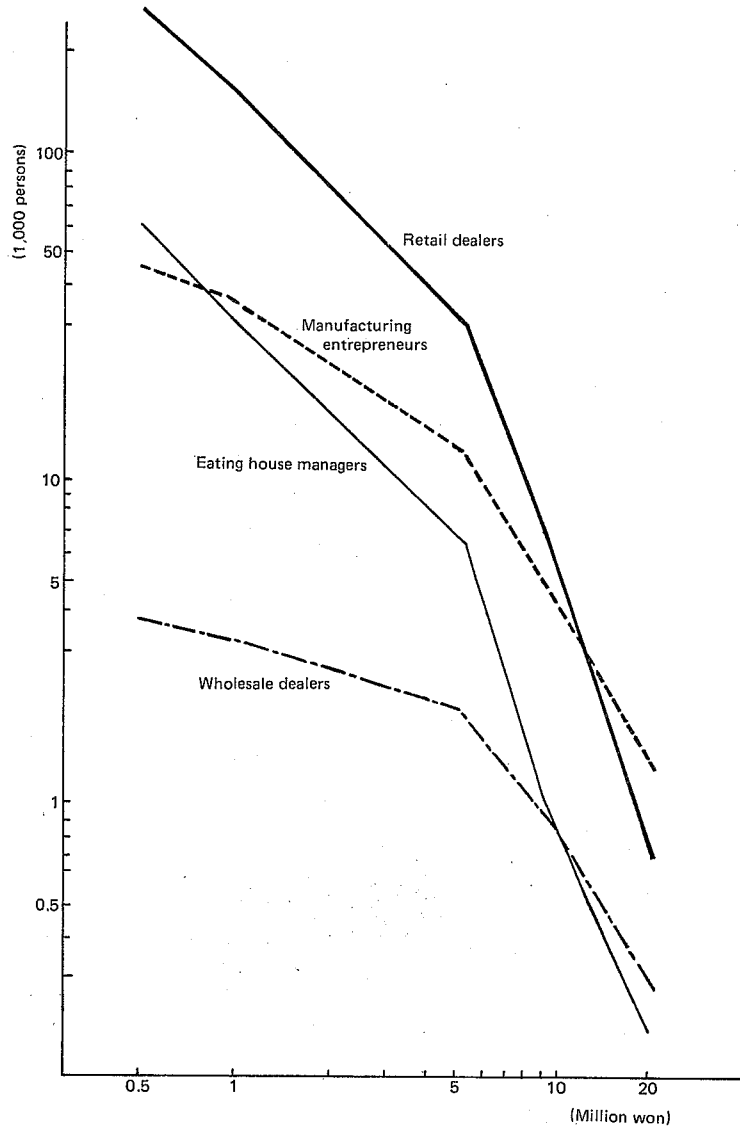
Source: 1972 *SYNT*.

When we look at Figure 6, we found a marked upward trend. It has been
often said, but not proved, that economic growth after the mid-sixties distributed
relatively large amounts of profits to a small number of entrepreneurs, and
therefore distribution was unequal. In the Japanese experience, a portion of
these profits was distributed to employees through the increases in bonus pay-
ments. In this sense, future movements in business income distribution should
be examined in detail.

Finally, there is a problem in the income distribution of households with no occupation, about 16 per cent of total households in 1970. However, this problem is not very serious in Korea for the following reasons. The unemployment ratio was low in the sixties in Korea compared to other developing countries. Further it is possible that some family members had occupations in households where household heads were unemployed. In Korea where a traditional family system survived, retired persons, in general, lived with young people with jobs, therefore, their household income would not be too low. However, we should also note that the unemployment problem appeared after the depression caused by the oil crisis.

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