ON THE HIGH PERSONAL SAVING RATIO IN JAPAN*

By TOSHIYUKI MIZOGUCHI**

I. *Review of Previous Analyses*

One of the most important topics in the analysis of the Japanese economy is to explain why the personal savings ratio has recently been very high in Japan. There have been published many papers on this topic by Japanese economists. Luckily, two comprehensive reviews were published, and they are sufficient, the writer believes, to follow the main discussions made in the previous contributions.[1]

The first type of explanations stresses the high saving ratio of non-farm self-employed families. This approach was firstly presented by Shinohara,[2] and has since been commonly accepted by Japanese economists without any rigid international comparisons, but there are few attempts to explain this. Shinohara also presented a proposal that the saving ratios in worker's families might be higher in Japan than in the other countries,[3] though his proposal depends on a too broad international comparison. His proposal is very interesting when we consider the time-series changes of the personal saving ratios in Japan. As was mentioned in the writer's earlier paper,[4] the up-ward trend of the personal saving ratio in Japan mainly originates from the increase of the ratio in worker's and salaried employee's families. If Shinohara's proposal is accepted, then it follows that the higher personal saving ratio in Japan has been attained by the increases of the ratios in these groups.

The latter proposal can be also related with the so-called "bonus effects." Japanese workers and salaried employees receive bonus payments at least twice a year, and in the past several years the percentage of this income amounts to nearly 17% of total familie's income. Since the marginal propensity to save would be higher in other incomes than in the usual wages and salaries of the household heads, an increases in this share would induce a rise in the average savings ratio of these families. Shinohara tried to apply this principle also in his international comparison.[5] That is, using the comparison of wage structures by Magota, he tried to explain

* The writer expresses his appreciations to Mr. Bernard Key, for his editorial assistance.

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[1] The Central Committee on Promoting Savings, Bank of Japan, *Whitepaper on Savings*, 1963 (in Japanese). Komiya, Ryūtarō "Supply of Personal Savings," Chapter 8 of Komiya (ed.), *Post-War Japanese Economic Growth*, Iwanami-Shoten, 1963 (in Japanese and which is published in English from California University Press in 1966).

[2] Shinohara, M., *Consumption Function*, Keisō-shobō, 1958 (in Japanese).

[3] Shinohara, M., *The Secrets of High Speed Growth*, Nihon-Keizai-Shinbun-sha (in Japanese), 1960.

[4] Mizoguchi, T., "Progress in the Empirical Analysis of Consumption Function in Japan", *Hitotsubashi Journal of Economics*, Vol. 4, No. 1-2, 1964.

[5] Shinohara, M., "The Subsistence and Explanations of Saving Ratios," in Chapter 4 of the Central Committee on Promoting Savings, *Whitepaper on Savings*, *op. cit.*

TABLE 1. THE COMPOSITION OF FAMILY INCOME IN WORKER'S AND SALARIED EMPLOYEE'S FAMILIES

(unit: %)

	1954	1958	1964
Wages and Salaries			
Usual income of household heads	68.6	69.7	65.7
Bonus and others of household head	12.8	13.6	17.4
Other familie's income	11.6	9.8	9.9
Business and Home Works	2.2	2.0	2.3
Other Incomes	4.6	4.8	4.7

Source: Statistical Bureau of Prime Minister's Office: *Annual Report of Income and Expenditure Survey*, 1964.

the high savings ratio by the large percentage of bonus payments in Japan. As his assertion includes some theoretical difficulties, as will be pointed out in this paper, we cannot accept this hypothesis in its original form. But we must examine the bonus effect carefully, because the bonus system is one of the special characteristics of the income condition of Japanese families.

TABLE 2. THE INTERNATIONAL COMPARISON OF THE WAGE COMPONENTS

(unit: %)

Countries	Basic Wage	Bonus	Overtime Pays	Other Wages
Austria	81.9	3.9	2.6	11.6
Belgium	91.8	0.7		7.5
Denmark	90.5			9.5
France	88.1	1.6	3.7	6.6
Germany	86.6	3.3	1.7	8.4
Greece	83.5	7.5	1.7	5.3
Italy	80.2	8.3	1.4	10.1
Japan	71.7	16.4	11.1	0.8
Turkey	63.0	7.5	15.4	14.0
U.K.	92.9	0.8		6.3
U.S.	90.5	1.4		8.1
Yugoslavia	77.7	8.9	4.5	8.8

Source: Ryōhei, Magota "An International Comparison of Real Wages", in Shinohara-Funabashi (ed.) *Studies on Japanese type Wage Structures*, Rhōdōhō-Kenkyūjo, 1961 (in Japanese).

The second type of assumptions concerns themselves with the income distribution. In the analysis of the pre-war Japanese economy, Lockwood argued that the high saving ratio would originate from the in-equality in income distributions in that period.[6] This consideration has been taken up by Shinohara in the analysis of post war Japan.[7] However, it is well known that the income distribution was much equalized after the Second World War in Japan.

[6] Lockwood, W. W., *Economic Development in Japan*, London, 1958.
[7] Shinohara, M., *The Secret of High Speed Growth*, *op. cit.*

Komiya raised an objection against this assertion.[8] That is, when we investigate the statistics on taxations and others the income distribution in Japan seems less inequal than in most Western, developed countries. Shinohara rejoined,[9] that the income distribution would be more inequal than that shown in the income statistics because there are differencials in the supports of large enterprises for their employees. Since the employees have tended to remain in the same enterprises for a long period, the employers have expended much money for the welfare of their employees. For example, they construct residential accomodations or recreation facilities for their employees. These expenses are calculated as costs to the firms, so we cannot know the amounts. However, even if we accept Shinohara's rejoinder, there remains a check by international comparisons whether the more inequal income distribution induces the higher saving ratio.

The third type of approach involves the composition of personal incomes by occupational groups. It is usually believed that the saving ratios in the self-employed families are larger than those in the worker's or salaried employee's families. Therefore the average saving ratio would be larger as the ratio of self-employed income in personal income increases. It is true

TABLE 3. AN INTERNATIONAL COMPARISON OF PERSONAL SAVINGS, AND THE RATIOS OF SELF-EMPLOYED INCOME AND THE PROPERTY INCOME TO PERSONAL INCOMES

Country	1) Saving Ratio	2) Self-Employed Income Ratios	3) Property Income Ratio	4) 2)+3)
Japan	16.2	38.9	5.9	44.8
Australia	13.2	23.6	8.8	32.4
Finland	11.8	34.3	5.6	39.9
Belgium	11.3	25.0	10.9	35.9
Norway	9.3	17.2	3.8	21.0
New Zealand	8.5	26.9	9.2	36.1
Canada	7.6	15.9	9.7	25.6
U.S.A.	7.4	13.4	12.4	25.8
Sweden	6.6	15.5	2.5	18.0
France	6.1	25.6	5.9	31.5
U.K.	2.9	9.6	10.0	19.6

Note: As for the detailed notes, see the original source.
Source: Table 4 of Komiya, R. "Supply of Savings", *op., cit.*

that the latter ratio is higher in Japan than in Western, developed countries. This factor seems to explain the high saving ratio in Japan, as was pointed out by Shinohara.[10] The writer thinks that his suggestion is valid if other things remain equal, but two comments should be added to his assertions. First, a large part of the self-employed incomes is composed of the farmer's income whose saving ratio in Japan is not too high. Second, the composition

[8] Komiya, R., "Supply of Savings", *op. cit.*, Before Komiya's work, Ishizaki proved that the inequality of income distribution in Japan is nearly the same as that in the United States, though he was not interested in the analysis of saving ratios. See Ishizaki, Tadao, "Income Distributions and Allotments of Income" *Nihon-Rhōdō-Kyōkai-Zasshi*, No. 29, 1961 (in Japanese).

[9] Shinohara, M., "The Subsistence and Explanations of Saving Ratios", *op. cit.*

[10] Shinohara, M., *Growth and Cycles in the Japanese Economy*, Kinokuniya, 1962.

of income distribution should be examined in a more systematic way, including the other sort of income. This problem will be treated in section (IV) of this paper.

The fourth type of approaches stresses on the scarcity of liquid-type assets, compared with their incomes. When we calculate the ratio of liquid-type assets in personal income ratio by using Japanese national accounts statistics and financial statistics, it is clear that the highest present value level had not been quite yet attained to the level in 1940. If the highest pre-war level could be considered as the reasonable ratio in consumer behavior in Japan, the high saving ratio may be explained as a behavior supplementing scarce liquid assets.[11] But it would be also necessary to check this hypothesis by an international comparison because the savings patterns have much changed since the end of the Second World War in Japan.

The life-cycle analysis induces the fifth problem. It is commonly admitted that the saving ratio is high from young to middle-aged families, but it is low in old-aged the families in Western, developed countries. Since the percentage of the number of families occupied by young families is larger in Japan than in Western, developed countries, the differences of age

TABLE 4. A COMPARISON OF THE DISTRIBUTION OF URBAN FAMILIES BY THE AGES OF FAMILY HEADS

(unit: %)

Age from to	under 25	25 34	35 44	45 54	55 64	65 over
Japan 1964	1.3	22.5	31.3	24.7	15.2	4.9
U.S. 1960/61	5.3	19.6	22.1	19.6	15.5	17.3

Note: Japanese figures does not include single households.
Source: Japan: Statistical Bureau, Prime Minister's Office, *1963 National Survey of Family Income and Expenditures*, 1965.
U.S.: B.L.S., "Consumer Expenditure and Income, Urban United States, 1960-61", *B.L.S. Report*, No. 237-238, 1964.

distribution can be considered as one of the factors explaining the high personal saving ratios in Japan, if we suppose that the Japanese life cycle pattern of saving ratios is similar to that in Western, developed countries.[12] The figures in the *Family Saving Survey* in Japan, however, contradict this supposition; *i.e.*, the saving ratio is very high in old-aged families, even if we adjust the differences of income level among the age groups.[13] Therefore, we cannot accept the age distribution explanation. Rather, the particular pattern itself should be considered as a subsidiary factor to explain the high saving ratio in Japan. From this view-point, it is interesting to find out the reason why this particular pattern is found in Japan. Komiya presented a hypothesis that this pattern can be related to the particular wage system in Japan.[14] The wage rate rapidly increases as the ages of workers rise from 20's to 50's in Japan as is shown in Table 5, and there are some differences of the patterns in Japan and in West Germany. Though this explanation seems to have been generally accepted in Japan, the writer thinks that some comments are necessary to this assertion, as will be mentioned in section (III).

[11] Komiya doubts the validity of using the pre-war level for this purpose.

[12] Shinohara, *Growth and Cycles in the Japanese Economy*, *op. cit.*

[13] See Kanamori, H., "Why the Saving Ratio is too high in Japan", *Keizai-Geppō* of the Economic Planning Agency, 1961, Nov., (in Japanese).

[14] Komiya, R., "Supply of Personal Saving Ratio", *op. cit.*

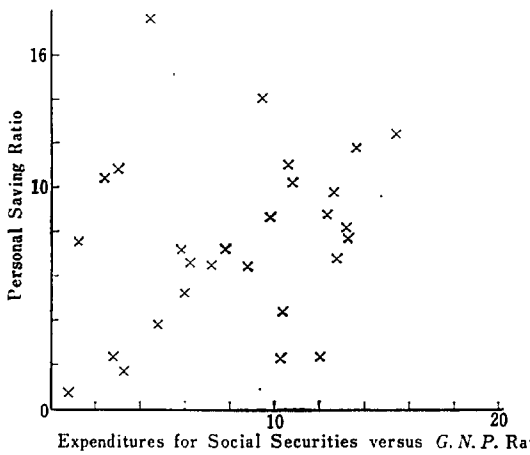
TABLE 5. DIFFERENTIALS OF WAGE RATES OF MALE WORKERS BY AGE GROUPS
(Wage Rate under 30 years old=100.0)

Age	West Germany	Japan
under 30	100.0	100.0
30-40	105.2	153.7
40-50	103.3	179.5
50-55	100.4	
55-60	97.4	147.5
60 over	94.4	

Source: Komiya, "Supply of Personal Savings", *op. cit.*, Table 7.

A less developed social security system has been taken us as a cause of the high saving ratio in Japan. Other things remaining equal, the development of a social security system would induce a decrease in the average personal saving ratios. Since the expenditures on social securities are small in Japan compared with her *G.N.P.*, this assertion should be examined. The weak point of this hypothesis is that there is little correlation between the personal saving ratios and the social security expenditures vis-a-vis *G.N.P.* ratio in the international comparison shown in Fig. 1.[15] Emi suggested that the social security expenditures should be divided by their uses in order to related to personal saving ratios.[16] Some comments on this presentation will be shown in section (IV) of this paper.

FIG. 1. PERSONAL SAVING RATIO AND SOCIAL SECURITY EXPENSES VERSUS *G.N.P.* RATIOS IN THE INTERNATIONAL COMPARISON



Note: This figure is based on calculations by Emi, K. "An International Comparison of Social Security Costs" *Keizai-Kenkyū*, Vol. 17, No. 4, 1966 (in Japanese)

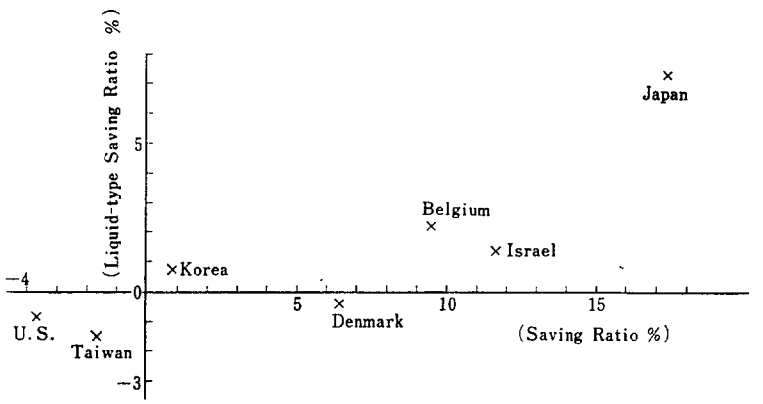
[15] Komiya suggested this by using more limited data in his paper "Supply of Personal Savings", *op. cit.*
[16] See footnote to Fig. 1.

Finally, we cannot neglect the assertion that the higher personal saving ratio in Japan is caused from the special characteristics of Japanese consumers, though this is very difficult to check by empirical analysis.

II. *Comparisons by Occupational Groups*

To begin with, let us comment on the first and the fourth hypothesis mentioned in the previous section. An examination of these have been attempted in the previous paper by the writer. Their main results are as follows.[17] First, we can prove, by the international comparison of survey data by occupational groups, that the saving ratio is higher in Japanese worker's families and non-farm and self-employed families than the corresponding families in the other countries. The result is consistent with the previous suggestions. The writer also considered that this fact seemed to be related to the high growth rate of real incomes in Japan. One of the new findings in the paper is the high ratio of liquid-type saving in these occupational groups in Japan. According to the paper, the liquid-type saving ratio is much higher in Japanese worker's families than those in the Western developed countries, but the investments in real assets and the decreases of debts are small in Japan, compared with her income level. In Fig. 2, the components of the saving ratio are compared by their com-

FIG. 2. AN INTERNATIONAL COMPARISON OF SAVING RATIOS AND LIQUID-TYPE SAVING RATIO
(Worker's Families)



Source: Mizoguchi, T., "International Comparison of Saving Ratios by Occupational Groups", *op. cit.*, Table 9.

ponents, and the above assertion is supported in this figure. Nearly the same tendencies can be found in Japanese non-farm self-employed families. That is, the saving ratio as well as the liquid-type saving ratio is very much higher in Japanese non-farm self-employed families than in those of Western, developed countries, but the investments in business and private

[17] Mizoguchi, T., "International Comparison of Saving Ratios by Occupational Groups, (I), (II)", *Hitotsubashi Journal of Economics*, Vol. 7, No. 2 and Vol. 8, No. 1, 1967.

houses are not large and are rather smaller in Japan compared with the income level. The saving pattern in Japanese farming families is much more singular in the international comparison. That is, their saving ratio is lower than the ratios of farmer's families in the other countries, including some less developed countries, but the liquid-type saving ratio is much higher in Japan. These facts may be surprising because the rise of consumer prices is significant in Japan. That is, even if we exclude the period of violent inflation which followed the Second World War, the average rate of rise of the consumer prices is 27.1% from 1951 to 1960, and 25.6% from 1961 to 1965. Since a large portion of the liquid-type saving consists of demand- and time- deposits, the rise of consumer prices would affect negatively the liquid-type saving ratio. Therefore, some positive factors should be found to explain the above phenomenon.

On this point, we recall the fourth hypothesis mentioned in the previous section. If the stock of liquid-type savings is low in Japan compared with her income as was pointed out by Shinohara, the higher liquid-type saving ratio can be explained as an adjustment behavior. However, when we compare the liquid-assets-income ratios internationally by occupational groups using the saving surveys,[18] the ratio is not necessarily lower than in other countries. Therefore, it is difficult to accept the fourth hypothesis in its original form. However, it may be possible to apply a version of this hypothesis. Firstly, even if we suppose that the liquid-assets-income ratio in Japan has attained a reasonable level, the higher growth of income requires a higher liquid type saving ratio to keep the former ratio constant. Since the growth rates of incomes in Japan are very high in all occupational groups, this approach would partially explain the high liquid-type saving ratio. The other attempt concerns the scarcity of real assets. There may be few objections in Japan to the assertion that the level of accomodations is very low, compared with incomes, and that the demands for own houses are very large. However, the system of consumer financing is underdeveloped in Japan, consumers find it very difficult to get consumer financing without some amounts of liquid-assets. The high speed with which the prices of land and building costs rise accelerates this tendency. From this point of view, the desired level of liquid assets-income ratio may be higher in Japan than in the other countries.

Next, we should add a word on the so-called "bonus effect". We cannot deny that the increases in the percentage of worker's incomes occupied by the bonus-type income can be closely related to the rises of the worker's saving ratio in the time-series changes since 1951. As the rapid increases of the personal saving ratio in post-war Japan mainly depend on the upward trend of the worker's saving ratio, the analysis of this effect is very important to forecast the future movements of the personal saving ratio.[19] However, it is another problem to explain the high saving ratio in Japan by the international comparison of income components because it is doubtful that Japanese consumers refer in their consumption behavior to income composition in the other countries. In order to assert the bonus effect, a more detailed examination should be done on the relation between time-series changes of saving ratios and the high level of the ratio in international comparisons.

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[18] Mizoguchi, T., "International Comparison of Saving Ratios by Occupational Groups", *op. cit.*

[19] The time-series analysis, as well as that of cross-section, of bonus effects on the saving ratio can be found in Mizoguchi, T., *Statistical Analysis of the Consumption Function*, Iwanami-Shoten, 1964, (in Japanese).

III. *Saving Ratios by Ages of Household Heads and by Classes of Incomes*

The fifth approach in section (I) is important only in the sense that it deals with a new aspect of the special saving pattern in Japan, because the old approach itself has already been rejected by Kanamori. The new problem concerns why the saving ratio is high even in old-aged families in Japan. This is an important problem in order to predict the future saving ratio in Japan, because the percentage of old aged persons will increase in this country. According to Kanamori and Komiya's suggestions, this particular pattern can be explained by the special structure of the wage system by aged groups as was shown in Table 5. But when we calculate the relative incomes by ages of family heads in Japan, India, Sweden, the United Kingdom and the United States by using the survey data in each country, the life-cycle pattern of relative incomes is very similar among these countries.[20] The writer thinks that the transient retirement fund system in Japan is more important to explain the particular life-cycle pattern of the saving ratio in Japan. Since the transient retirement fund is of a relatively large amount compared with the usual income and since the retirement pension system is less developed in Japan, the largest amount of transient retirement funds would be saved in the form of stocks or bonds or as investments in own houses. Further, workers usually engage in second jobs because of small pensions. This in turn prevents a lower saving ratio in old-aged families. Therefore, we should consider the fifth factor as a positive effect on the saving ratio rather than a negative effect.

Now, let us proceed to the second type of approaches. According to this hypothesis, the income distribution in Japan is more inequal than in the other countries, and this induces a high saving ratio. It is commonly believed that income distribution is very inequal in pre-war Japan as was pointed out earlier, but the writer doubts that the same pattern has remained in post-war Japan. In fact, when we calculate the coefficient of variations of income from large-scale survey data, the figure is smaller in Japan than in other countries, and this is consistent with Komiya's suggestions mentioned in section (I). Further it is important to check the hypothesis that the inequality in the income distributions can be used to explain the differences in the saving ratio which appears in international comparisons. To illustrate this, let us calculate the incomes and savings by a sort of relative income classes called the "five quintile groups" which is adopted in the family budget surveys in Japan.[21] Investigating the figures in Table 6, there are few correlations between the average saving ratios and the coefficients of variations of incomes among these countries. Though the writer has not understood completely the hypothesis that the in-equality in income distributions induce the high personal saving ratios, this assumption may be that the saving ratios in the upper income classes are very high when the income is distributed inequally. This assumption itself is valid in Table 5, but the average saving ratios depend also on those of the lower income classes. We cannot find too significant a relationship between the coefficients of variation of income

[20] See Mizoguchi, T., "International Comparison of Saving Ratios by Occupational Groups", *op. cit.*

[21] The figures by five quintile groups are defined as follows: all samples are divided into five groups in order of income magnitudes. Then simple arithmetic mean values are calculated. The values will be called the "i-th quintile group" (i=I, II, ..., V) starting from the lowest income classes, depending on the definition in the *Family Income and Expenditure Survey*, of Statistical Office, Japanese Goverment. In order to calculate the table correctly, detailed income classed data are requested. Since there are few data in each country, some approximations must be made for Table 6.

TABLE 6. RELATIVE INCOMES AND SAVING RATIOS BY QUINTILE GROUPS

(unit: %)

Quintile Group		I	II	III	IV	V	
		Relative Per Capita Income					Coefficient of Variation
Ceylon	1953	47	49	85	98	221	68.4
Greece	1957/58	29	38	51	60	322	111.9
India	1960	36		76	95	257	94.3
Japan	1963	48	72	89	110	181	45.1
Philippines	1957	25	42	66	100	274	88.9
Sweden	1958	28	44	91	112	225	69.7
Thailand	1962	46		68	126	260	93.0
U.K.	1953	58	80	94	113	156	33.0
U.S.	1960/61	10	62	124	151	153	55.7
		Saving Ratio					Average
Ceylon	1953	−37.1	−26.3	−12.8	−11.4	60.0	4.3
Greece	1957/58	−40.9	−27.0	−11.2	−11.5	58.4	−2.0
India	1960	−20.0		− 8.6	− 4.5	13.2	3.3
Japan	1963	13.4	18.1	15.7	20.3	22.9	18.0
Philippines	1957	−15.2	− 3.8	7.8	13.8	19.5	9.3
Sweden	1958	2.7	5.3	5.7	15.1	20.0	6.9
Thailand	1962	−57.8		−35.1	−13.6	6.1	−9.2
U.K.	1953	−16.2	− 0.4	2.3	2.6	6.4	2.4
U.S.	1960/61	−26.6	− 5.0	2.7	4.7	11.3	3.6

Note: 1. All surveys cover nearly all families in each country.
2. Savings includes the depreciations in all countries, except in the United States and India.
3. Savings in India includes the net increase of consumer's durables.
4. The survey list can be found in Mizoguchi, "International Comparison by Occupational Groups."

distributions and the saving ratios in the lower income classes, but the percentages of numbers of families occupied by those showing the negative savings seems to be higher in countries with more inequal distributions.[22] The latter tendency cancels out the former's effects on the average personal savings and induces the low correlation of the coefficients of variations of incomes and the average saving ratios. This finding may explain why personal saving ratios in underdeveloped countries are in general low in spite of the inequality of income distribution. There remain many detailed analyses to clarify the relations themselves. But it may safely be added that the second type of approach is not adequate to explain the high personal saving ratio in post-war Japan, even if we partially admit Shinohara's objection referred to in footnote 12 of this paper.

[22] In order to check the suggestion in the main sentence, we should examine the ratio of numbers of families with negative savings to those with positive savings by income classes. But there are two or three series necessary to fulfil this information. The suggestions depend only on the average saving ratios by each income class, and some reservations are inevitable on this result.

IV. *Effect of a Lower Percentage of Personal Income Occupied by Wage-Type Income*

The third type of approaches, which is in section (I) of this paper seems to have been commonly accepted by Japanese economists. It is very important to examine this explanation because the share of wage-type income in personal income has rapidly increased in Japan over the past several years. As was mentioned in Section (I) in this paper, the writer has no intention of denying the assumption that the rise of the share of self-employed type income in total personal income generally raises the average personal saving ratio. His doubt only concerns whether the Japanese income composition is of too particular a type to induce overly high a saving ratio when we examine this effect in a more detailed fashion. In order to solve this problem, let us use the information in survey data by occupational groups. According to the investigation of Japanese economists, the saving ratios used in Section (II) in this paper are consistent with the ratio in the national accounts statistics in Japan ; that is, when we calculate personal income and saving by multiplying the number of families with the average figures in each survey by occupational groups, the result is nearly equal to the figures in the national accounts statistics in Japan if we admit a few differences of the definitions in each survey and in the national accounts statistics.[23] Therefore, we can calculate the imaginary personal saving ratio depending on any distributions of families by occupational groups. From

TABLE 7. COMPARISON OF DISTRIBUTION OF FAMILIES BY OCCUPATIONAL GROUPS IN JAPAN AND IN THE UNITED STATES

(unit: %)

	Japan (1963)	United States (1960-'61)
Worker's Families	53.6	55.0
Farmer's Families	22.4	6.3
Non-Farm Entrepreneur's Families	15.8	6.1
Professionals	5.2	16.2
Families without Occupations	3.0	16.4

Source: Japan: *1963 National Survey of Family Income and Expenditure and Fundamental Surveys of Structure Employments.*
U.S.: *Consumer Expenditure and Income, Urban United States, Consumer Expenditure and Income, Rural Farm Population.*

this viewpoint, it is interesting to calculate hypothetical savings by using the distribution of families in the United States.[24] Table 6 indicates that the percentage of the total number of families occupied by the self-employed families is larger than in the United States, if we

[23] See Andō, Y., "Estimate of Personal Saving by Occupational Groups", Keizai-Bunseki, No. 6, 1961, Nakamura, T., "Income Distribution and Consumption Structures," in Shinohara, M., and Funabashi, S., (ed.) *Studies on Japanese-type Wage Structures*, Rhōdōhō-Kenkyūjo, 1962, Noda, A. and Egaitsu, N., "Consumption Structures and the Propensity to Consume", Keizai-Bunseki, No. 15, 1965, (all in Japanese).

[24] Since these surveys are large-scale sample surveys, we can use them as estimates of family distribution by occupational groups. Though there is a small difference in the definition of occupations in Japan and in the United States, there is not too much danger in getting a large error.

define self-employed families by the farmer's and the non-farm entrepreneur's families. Since the average income per family is not too much different by occupational groups except for the relatively high income of the professionals the result is consistent with the proposal that the share of self-employed income is large in Japan. Now if we suppose that the average income and the average saving by occupational groups remain constant in the different distributions of number of families the effect of the differences of distributions can be measured. A rather unexpected result is found in the calculation by using the distribution in Table 7; that is, the imaginary saving ratio for the distribution in the United States is nearly equal to but a little higher than that for the Japanese distribution, which is nearly consistent with Japanese national income statistics. This result can be explained as follows. It is true that the saving ratio in the non-farm, self-employed families is higher than in worker's families, so the full in the percentage from 15.8% to 6.1% affects negatively the imaginary saving ratio as was pointed out by Japanese economists. But it also should be mentioned that the fall in the percentage of farmer's families has little effect on the imaginary saving ratio because the saving ratio in these families is not too high when compared with the worker's saving ratio. The increase of the percentage of the total number of families occupied by families without occupations is also a negative effect on the assumed saving ratio but the saving ratio in this group is not too low in Japan which is the case in developed countries. A significant positive factor is the increase in the percentage of professionals from 5.2% to 16.2%. Since the saving ratio is very high in this family group, the effect on the imaginary saving ratio is large enough to cancel out the negative effects mentioned above. However, there is a problem in using this calculation to reject the third type approach referred to in Section I. The above calculation has been executed on the hypothesis that average income as well as average saving does not change even if the family distribution shifts from the type in Japan to that in the United States. It may certainly be true that the changes in occupational distribution would induced the different type of incomes by occupational groups. For example, the increase in professionals would reduce their relative incomes and saving ratios. The inverse could be found in the farmer's families because the decrease in this numbers of famers would induce an increase in cultivated lands per family. It is very complicated to proceed along such an analysis, but the above results seem at least to indicate that we cannot accept the third type approach unconditionally.

V. *Examinations of the Other Factors*

There may remain some further investigations necessary to conclude this paper. But the writer wants to finish his primary task after some comments are given on the following two factors. The first concerns the less developed social security system in Japan. As was mentioned in section (I), it is difficult to find a direct relationship between the expenditure on the social security and the personal saving ratio. However, it may not be worth-while, the writer thinks, to abandon this hypothesis. A survey on the motivations of saving in Japan indicates that nearly half of the Japanese consider their savings as a precaution against unforeseen accidents and to facilitate their living after retirement.[25] If the social security system has been more developed in Japan, such motivations would be less important. On this point,

[25] See, Central Committee of Promoting Savings, *Public Opinion Survey on Saving, 1962*, 1963, Bank of Japan, (in Japanese).

Emi's analysis is very interesting. According to his calculation, the social security situation in Japan is less developed not only in the amount of expenditure, but also in their type.[26] The expenditure for social security can be divided into three large groups: 1) public health and sickness, 2) on the job accidents and unemployment compensation, 3) pension funds. In Western developed countries, the share of the third group are very large. For example, 64.0% in the United States and over 60% in the most of the central European countries. The ratios are rather lower in the northern European countries and Canada, but they are around 50%. In contrast with these figures, the percentage for Japanese 10.5%, and 62.3% of the expenditures for social securities is used for the purpose of health insurance. This particular type of social security system may induce the high saving ratio in Japan. For example, the low percentage of the number of families occupied by retired families may be partially explained by this characteristic. A rather special pattern of life-cycles in the saving ratio in Japan could be related to this fact. Therefore, it is important to proceed into a detailed examinations on its character in order to forecast the future saving ratio in Japan.

Finally, it is difficult to check the assumption that the high saving ratio originates from the particular characteristics of Japanese individuals. However, an indirect check will be possible if we can get long time-series changes in personal saving ratios since the 1860's. Since systematic work on the historical statistics has been progressing in Ohkawa's project, we hope that this problem will be at least partially solved in the near future.

VI. *Concluding Remarks*

The examinations in this paper have rejected some hypotheses which have been adhered to by some Japanese economists. Among the remaining proposals, the most important fact may be the high liquid-type saving ratios in worker's families and in the non-farm entrepreheur's families. This phenomenon is related to the high growth rate of the Japanese economy as well as the financial condition of consumer credits or the financing of private businesses. The supplemental factor is the high saving ratio in old-aged families. This particular type of life-cycle in saving ratio may be partially explained by the less developed situation of the social security system, including the retirement pension fund system. The other factors seems to be less important for our purposes.

[26] See Emi, K., "An International Comparison of Social Security Costs", *op. cit.*