

Chapter 2

The Effect of Changes in Family Structures on Intergenerational Transfer of Inequality in Japan

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1. Introduction

There is a great concern in Japan about an increase in inequality in income distribution and/or an increase in the number of poor people. Not only specialists but also politicians, media and ordinary people discuss these issues frequently. There are several causes to explain the reasons why the degree of income inequality and/or the number of poor people have increased significantly. Many specialists like Ohtake(2005), Oshio(2004,2006) etc. propose a following consensus such that a change in the structures of families such as increases in the number of aged people and in single member families is responsible for higher inequality in addition to the fact that income inequality among the youth has increased.

Several recent studies, moreover, presented evidence such that the degree of income inequality among the common age group people has increased. In particular, it is apparent that income inequality among the youth is high. For example, the 2004 *National Consumption Survey Data* showed that a significant increase in the Gini Coefficient was observed among households where ages of household heads were 30 years old and younger in comparison with the 1990 Survey. Tachibanaki and Urakawa(2006) showed also that the Gini Coefficients for households where ages of household heads were in the 20s and 30s were in an increasing trend from 1995 to 2001. It is noted that the income figures adopted by Tachibanaki and Urakawa(2006) are equivalent incomes adjusted for household size.

Ohta(2005) showed that the main two reasons for the increase in income

inequality among the youth in the 1990s is due to increases in both the number of non-regular employees and the rate of unemployment during the period of youth's difficulty in finding jobs. Kohara(2001) presented her study, showing that the cause of the increasing inequality from 1993 to 1996 for young married couples is due to a decreasing degree of correlations between husband's income and wife's income. Her result was derived from the study which used *the Panel Survey on Consumption Lives*.

Those studies mentioned above suggest that the main reasons for explaining income inequality among the youth are a bipolarization of the labor market, a decrease in the family size, a change in the wife's working behavior, a change in income compositions between a husband and a wife, etc. These changes may be called a change in family attitudes and behaviors, which encouraged widening income inequality among the youth in the 90s.

The purpose of this study is to investigate income inequality for both the youth, the middle and the elderly, in particular the effect of a change in income sources of total family incomes. Serious attention is paid to the effect of wife's incomes, not only the effect of income amount when a wife works but also the effect of the difference between working and non-working. It is anticipated that these effects have a large impact on the difference in family incomes.

There are several studies in abroad about the effect of wife's incomes on family incomes. Several examples are Karoly and Burtless(1995), Cancian and Reed(1998), Del Boca and Pasqua(2003). We are interested in studying, in particular a couple consisting of a husband with a high income and of a wife with a high income. At the same time, we investigate the following subjects; "Who are those high family income holders?," and their family characteristics and their opinions on their childrens' education, etc.

Following is the content of this study; Part 2 describes how the relationship between husband income and wife labor force participation rate has changed. Part 3 investigates the effect of wife's labor incomes on changes in family incomes in the 90s and the early 21st century. The method of the investigation is a decomposition of the Gini Coefficients in total income into several compositions and sources, as

Lerman and Yitzhaki(1985) applied. Part 4 investigates whether there is any difference between a couple whose both husband and wife incomes are high, and a couple whose both husband and wife incomes are low. Moreover we focus on what kind of characteristics, jobs, educations, etc. they have.

2. Husband Income and Wife Working (or Not Working)

This part investigates a movement in the relationship between husband income and wife working (or no working) for young couples where ages are 20s and 30s years old during the period between the middle of the 1990s and the early 2000s. The main statistical source is the *Income Redistribution Survey* by the Ministry of Welfare and Labor. Table 1 shows husband income and wife labor force status, and their incomes. Income figures are separated by the quintile measure.

The table indicates, first, that the rate of wife working has been increasing for all quintile measures. The reason is obvious in the following sense; many households have decided that wives start to work in order to supplement their family incomes because all quintile groups except for the fifth quintile (the highest income class) lowered their husband incomes during the serious recession period. Another reason is that the number of wives who stop working temporarily, or retire from labor market because of child-birth has declined considerably.

Secondly, the negative correlation between the labor force participation rate for wives and husband income is observed. The highest participation rate is given by the first quintile class, the lowest husband income class in both 1995 and 2001. Concretely, the rate is 39.7% in 1995 and 48.5% in 2001, respectively. These results suggest that the Douglas=Arisawa second law, namely the negative correlation between the wife's labor force participation rate and the husband's income level, is supported in Japan to a certain extent.

It should be noted, nevertheless, that a certain modification is necessary regarding the Douglas=Arisawa second law, because the wife's average income for the fourth and fifth quintile classes which were classified by the husband incomes have increased considerably from 1995 to 2001, while the average income for the first

quintile has declined. The same result is obtained in the case in which the sample includes non-working wives. Incidentally, the wife's average incomes in 1995 for the sample where both working and non-working wives are included were 0.809 million yen for the first quintile, 0.715 for the second quintile, 0.763 for the third quintile, 0.592 for the fourth quintile, and 0.428 for the fifth quintile, respectively. The same figure in 2001 is 0.787 million yen, 0.833, 0.683, 1.129 and 1.037, respectively.

These results lead to conclude that the low husband income level encourages her wife to work. This does not, however, reduce the income gap among all households because wife income levels are kept lower, and do not compensate for husband low incomes. The similar results are observed by both Higuchi et al.(2003) and Manabe(2004). In particular, Manabe showed that wife incomes are higher as husband incomes are higher, when a wife works as a regular employee.

An interesting outcome is seen when we pay attention to couples in which both a husband and a wife work. The rate of marriage between a husband with a high income and a wife whose job is a civil servant with stable employment status has increased from 1995 to 2001, and this feature is regarded as one of the reasons for widening household incomes. Maruyama(2001) also presented evidence, showing that working as civil servants and living with parents are crucial in the determination whether women continue to work after their first baby births.

After recognizing these empirical results described above, our next task is to study the effect of wife's income on income differentials among households by applying a decomposition method of total incomes.

3. Decomposition of Total Income Differentials by Income Sources

3.1 Method to Decompose

We investigate the effect of income sources on total income differentials for the young couples. The method to decompose is to apply Lerman and Yitzhaki(1985) Gini coefficient method, and its method was applied by Karoly and Burtless(1995). The Gini coefficient is decomposed as follows, when there are K different sources of

incomes.

$$\begin{aligned}
 G &= \sum_{k=1}^K [\text{cov}(y_k, F) / \text{cov}(y_k, F_k)] \cdot [2 \text{cov}(y_k, F_k) / m_k] \cdot [m_k / m] \\
 &= \sum_{k=1}^K R_k G_k S_k
 \end{aligned} \tag{3.1}$$

where F is the distribution function of total household income, F_k is the distribution function of the k -th income source, m is the average household total income, and m_k is the average income of k -th income source. S_k is the share of the average income of k -th income source over the average of the total incomes, R_k is the correlation between the rank of k -th income source and the rank of the total income where R_k can have negative values in some cases. G_k is the Gini Coefficient for k -th income source.

The contribution of each income source to total income inequality is given by

$$I_k = \frac{S_k R_k G_k}{G} \tag{3.2}$$

Where the sum of I_k is equal to unity.

3.2 Estimated Results

(i) Married Households

Table 2 shows the rate of contribution by each income source such as household head's labor income, spouse's labor income, other family member's labor income, and non-labor income to total household primary income. Primary income is given by the sum of labor income, enterprise income, income earned within household, farm income, interest and dividend income, corporate pension, transfer within household, and other income. Non-labor income consists of interest and dividend income, rent, corporate pension, transfer within household, and other income. This table is estimated separately for the youth family (i.e., 25-39 years old) and the

middle-age family (i.e., 40-59 years old), and in two years, namely 1995 and 2001. Primary income is adjusted by the number of household members in order to obtain the so-called equivalent scale income figure. The concrete way of the adjustment is given by dividing primary income by the root of the number of household members.

The table suggests that the share (S) explained by spouse's labor income over total household income increased from 1995 to 2001 for the two samples, namely the youth and the middle-age. For the youth in 2001 about 82 percent of primary income is provided by household head's income, and about 15 percent is by spouse's income. The shares by the other sources are quite small.

The correlations (R) regarding between the rank of household income and each income source suggest that the highest rank is given by household head labor income for both the youth and middle-age. The figures are 0.855 and 0.821 respectively in 2001. The correlation with spouse labor income increased from 0.656 in 1995 to 0.714 in 2001. Since this increase is considerably higher compared with the correlation for the middle-age, the influence of spouse labor income is stronger for the youth than the middle-age. This does not necessary imply that the influence of spouse labor income does not contribute for the middle-age. To the contrary, it increased from 0.472 in 1995 to 0.501 in 2001. Thus, the influence of spouse income is fairly important also for all age classes.

The contribution by household head's income to total inequality (I) decreased from 0.686 in 1995 to 0.633 in 2001 by about 5 % points for the youth, while the contribution of spouse labor income increased from 0.260 to 0.323 by about 7% points. It is emphasized that the rate of spouse (mostly wife) labor is fairly important to differentiate total household income. Finally, the contribution of the other member's income is small, say about 2 or 3 percent.

(ii) The Case in which Non-married Persons are Included.

Table 3 shows the contribution of each income source to total primary income for the sample where non-married persons are included in addition to married persons in both 1995 and 2001. It is quite natural that the share of spouse labor incomes over

total household incomes becomes smaller for both the youth and middle-age. It is noted that we excluded the youth, whose age is younger than 24 years old, in order to eliminate young students whose income figures are not so reliable for various reasons. An interesting observation is that no significant change occurred from 1995 to 2001 regarding the value of share (S) when we added non-married persons for this exercise. Concretely speaking, it is 9.1% in 1995, and 10.7% in 2001.

A remarkable outcome, however, appeared in the case of the Gini correlation (R) regarding spouse's labor income because it increased fairly significantly for both the youth and middle age like the case of married persons. The increase is from 0.601 in 1995 to 0.644 in 2001 for the youth, and 0.507 to 0.559 for the middle-age. The similar result was observed for the sample where non-married persons are added. When an increase in the family size due to marriage is occurred, equivalent income figures decrease, while when a spouse worked and received some income, the equivalent income would increase. Our study produced, on balance, the fact that marriage increased the equivalent income on the whole.

Let us examine the contribution of spouse labor income to total income inequality (I). It increased slightly from 0.187 in 1995 to 0.194 in 2001 for the youth. The similar result was obtained for the middle-age. The number of families living alone has increased in Japan, and some of them have become rich. Therefore, the contribution of spouse labor income to total income inequality decreased in the case of total samples in comparison with married couples only samples. Incidentally, the ratio of young households whose spouse labor incomes are zero but whose equivalent incomes are over 3 million yen was about 40 percent in both 1995 and 2001. The share of the households which can be included in these categories among the youth was 5.1% and 7.0% respectively.

We can summarize the above empirical results in the following way. First, the effect of spouse income raised the degree of inequality in total household income distribution from the middle 90s to the early 2000s for the both young-age samples and middle-age samples. Second, the effect of spouse income on the increase in total income inequality was larger for the youth than for the middle-age samples.

4. Wife's Working and Differentials among Households

4.1 Higher Income Couples versus Lower Income Couples

Kohara(2001) concluded, as we described previously, that the degree of the negative correlation between husband income and wife income has declined, and thus this decline has contributed to widening income differentials among young couples in the 1990s. This reflects the fact that when wife income is higher, husband income is higher. More concretely speaking, the possibility such that a husband with a high income gets married with a wife with high income has increased, and thus positive correlation between wife income and total household income has increased. One typical example is a couple who consists of a husband with high income and a wife with a slightly high income by a part-time job.

It is possible to guess, therefore, that the number of couples whose both husband and wife incomes are high, and of couples whose both husband and wife incomes are low has increased. This contributes to widening household income differentials further. It is an interesting subject to inquire "Who are these couples?" For example, is there any difference between a couple whose both husband and wife incomes are high, and a couple whose both husband and wife incomes are low? What kind of characteristics, jobs, educations, etc. do they have? Is there any policy option in order to reduce household income differentials between such two extreme couples?

Manabe(2004) classified couples into the following six groups based on the income level of both husband and wife, and wife working status. Here, high(or low) means that income level is high (or low).

- (1) Husband high and wife high
- (2) Husband high and wife low
- (3) Husband high and wife non-working
- (4) Husband low and wife high
- (5) Husband low and wife low
- (6) Husband low and wife non-working

Manabe(2004) presented several characteristics of couples such as education, life-stage, working history, etc. She presented the following finding; couples of husband high and wife high have the state such that a wife's first job is professional, and the probability of having no child is high, even if the other qualifications are controlled compared with couples of husband high and wife low.

The present study extends her study further, in particular by taking into account husband educational achievement, family background of both husband and wife, educational policy for their children.

4.2 Data Background

The data used in this analysis is *Survey on the Stratified Japanese Society*; 2004-2006. The Survey asked both individual persons' education and occupation, and their spouses' and parents' education and occupation. It is feasible to investigate the effect of family background on children's educational and occupational achievement, more specifically the study on intergenerational mobility. The Survey was conducted through an internet interview. The number of interviewers is 5,473 and the number of available answers is 4,158. Thus, the response rate is 76.0%. We restrict the sample within 20-49 years old married couples. The sample size is 1,351, after we eliminated husbands or wives who are self-employed, and samples with no answers.

Internet interview surveys are criticized often because their samples are biased. For examples, a higher proportion of educated persons are picked up than the entire population because persons who can answer to internet questions are normally educated. Thus, it is necessary to examine whether the current data are not biased in comparison with the entire population, which are provided, for example , by the government data.

We compare our data with *the Employment Status Survey* by the Ministry of Public Management, Home Affairs, Posts and Telecommunications, 2002 for 20-49 years samples. We obtained the following comparisons. First, our data show that persons who live in urban areas are 87.4%, persons whose educational levels are

higher than college (including students) are 32.9%, and the rate of married people is 58.1%, while the *Employment Status Survey* gives the fact that the corresponding figures are 80.8%, 27.0% and 52.6%, respectively. Our data have about 5% points higher than the *Employment Status Survey* for the above three variables. The male figure for higher education (i.e., college), and the female figure for higher education (i.e., college and junior college) are lower than 40 percent. These figures suggest that biases in our data are much smaller than the usual internet interview surveys.

Second, our data show that the age over 20 years old is 32.1%, over 30 years old is 35.2%, and over 40 years old is 32.7%, while the *Employment Status Survey* show the corresponding figures are 34.1%, 34.7% and 32.7%. We can say that these remains no bias in our data.

Third, our data show that the average household income level is 2.82 million yen for the age 20s, 5.54 million yen for the age 30s, and 6.54 million yen for the age 40s, while the corresponding figures at the *Employment Status Survey* are 2.97 million yen, 5.16 million yen, and 6.57 million yen, respectively. We find no significant difference between the two statistical sources.

It is concluded based on the above comparison that these exists no significant bias at least the samples, 20-49 years old, in our data source, although it is impossible to remark that our data represent the entire population in Japan. Of course, we attempt to control for other information in order to reduce a possible bias, as Yoshida and Mizuochi(2005) did for their econometric analysis.

4.3 High Income Couples versus Low Income Couples: Their Characteristics

We divide the husband samples based on their incomes between high income and low income. The distinction is made by the average income of all samples. The wife samples are divided into three parts: non-working, low income and high income. The distinction between low and high is made by the average income of all working wives. It is noted that several females have wealth incomes and social security benefits, even if they are not working. These figures are included in the analysis. The above descriptions imply that we adopt the same classifications as the Manabe(2004)

classifications.

Table 4 shows male average annual income, female average annual income, and the contribution of wife income to household income. The lowest household total income is observed by husband low and wife non-working, 4.154 million yen, while the highest one is observed by husband high and wife high, 12.855 million yen. The gap between the lowest and the highest is about 8.7 million yen, and it is considerably large. An interesting result shows the fact the contribution rate of wife differs very significantly from group to group. For example, both husband high and wife non-working, and husband low and wife non-working produce the contribution rates like 5%, which is quite negligible but understandable. The contribution rate of the case of husband low and wife high is quite high, about 49%, implying that a wife earned almost the same amount as her husband. A lower contribution rate, namely about 40% is seen for the case of husband high and wife low, and wife income is 4.708 million yen. The reason why a lower contribution rate is obtained for husband high and wife high than for husband low and wife high is that husband income in the former is significantly high.

4.3.1 Couple's Characteristics by Income Class

It should be interesting to examine what kind of characteristics such as education, profession and so on are observed, which are separated by income class. Table 5.1 shows such characteristics like age, age of the youngest child, both husband and wife education and profession, by income class.

There are several notable findings based on Table 5.1. First, when wife income is high, the rate of no child is high. The exact figures are as follows, 30.0% for husband low and wife high, and 20.7% for husband high and wife high. The rate of no jobs for wives is high when the age of her youngest child is lower than 6 years old. This implies that there are still a large number of wives who do not work, when mothers have to commit to child-care.

Second, the educational levels of both husbands who receive high incomes, and wives who receive also high incomes are high. It is noted, however, that the

proportion of wives who attained college education is about 20 percent among husband high and wife non-working, and it is interesting that in the case of non-working wives the higher wife educational attainment is, the higher husband income is. Abe(2006) also presented the similar result as ours.

Third, regarding husband professions the great majority of married couples are employed as regular employees, and only 5.6 percent of husbands are non-regular employees. In other words, there are a significant number of young unmarried persons among non-regular employees.

One interesting observation is that 7.1% are “house husbands” among the group of husband low and wife high. “house husbands” here mean that a husband commits to house-keeping and possibly child-care without working like “house wives” who did these activities traditionally. This is a new phenomenon which did not exist previously in Japan. The total figure, however, of these “house husbands” is only about 1.0%, and thus such a new movement is still very uncommon. If the proportion of female regular employees whose ages are over 30 years old increased, the rate of “house husbands” might increase, or the number of the cases of husband low and wife high would increase. Abe(2006) attempted to estimate whether the proportion of female regular employees increased or not, and found no increase in the population. This suggests that a large number of female regular employees stop working when they have babies. It is important to predict whether the proportion will increase in future.

Fourth, the rate of both professional and technical jobs among total female employees is over 30 percent for husband high and wife high. Manabe(2004) found that the above was true even for their first jobs, and at the same time that the proportion of husband high and wife high was higher if wives were engaged in professional jobs at their first jobs. Similarly, Manabe(2004) found that among these households about 40 percent of husband professions are civil servants. If husbands were civil servants, their wives would find easiness in working activity.

Fifth, we asked a question, “Who proposed the marriage between a husband and a wife?” The high rate, namely 78.5% was obtained for the case where a husband

proposed to a wife. It is remarkable, nevertheless, that a lower rate of the husband marriage proposal was obtained in the case of husband low and wife high than in the other cases. A fascinating subject would be to recognize which side takes an initiative in the determination of marriage between men and women. Our guess is that the amount of income is one factor to determine it.

4.3.2 Parents Social Status by Income Class

Table 5.2 shows how educational attainments for both husband parents and wife parents are distributed by income class. Here, income class is given by the respondent's income figure, not by parents' one.

Table 5.3 presents the proportions of university educations regarding parents educational attainments by four groups which are separated by husband and wife incomes. Husband low and wife non-working, and husband low and wife low are combined into one group, namely husband low and wife low, while husband high and wife non-working, and husband high and wife low are combined into one group, namely husband high and wife low.

One remarkable difference appears on parents education between the two groups, husband high and wife high versus husband low and wife low. There is no significant difference regarding the proportion of university education for husband's father. However, the rates of university education for husband's mother, wife's father and wife's mother are higher significantly in husband high and wife high than in husband low and wife low. It is possible to guess that mother's education affects husband's (i.e., son's) status strongly, and father's education affects wife's (i.e., daughter's) status.

4.3.3 Econometric Analysis of the Determination of Household Characteristics

This section investigates how the determination of household characteristics is made, after we controlled for various independent variables such as education, profession, age, location and others. Four groups of household characteristics are considered in this section, as was given previously like husband high and wife high,

and the other three groups. Table 6 is the estimated result based on a multiple logit model, and the dependent variables are three groups separated by income. The base category is the group of husband high and wife low.

Table 6 gives the following empirical findings. Compared with the base category, the other three groups show that the effect of having no children is positive. The probability of having the youngest child under 6 years old is high for husband low and wife low, and consequently the duty of child-care reduces the possibility of wife's working activity. One interesting finding about the effect of living together with parents (including spouse's parents) is that it raises the probability of wife's working activity because the wife's time for working can be increased due to the sharing role for child-care and house-keeping with her parents. This raises also total household income.

Also, if husbands received college or more higher education than college, the possibility of husband low and wife low is low. The effect of wife's education does not matter for the determination of household type if the other variables are controlled for. The possibility of husband high and wife high is higher significantly, if wife's occupation is professional or technical. Instead, the probability of husband high and wife high is lower, if wife's occupation is sale's and service job. The result associated with education and occupation implies that these two variables are very important for the determination of income status of households.

4.4 Difference in Attitudes and Opinions on Children's Education

This section attempts to investigate the influence of the difference among household income groups on their children, in particular children's educational opportunity.

4.4.1 Attitude on Education: The Difference between Higher Income Households and Lower Income Households

Table 7 shows the difference with respect to the attitudes on children's education and the expectations on children's future life. Figures in this table are the

ratio of support (i.e, yes) for each category. The support figure in this table is given by the sum of “true(yes)” and “true slightly” in each answer. The sample figures in this table are 696 families with sons whose ages are younger than 18 years old, 682 families with daughters with the same ages.

The following findings were obtained based on Table 7. First, we pay attention to the question, ‘whether parents desire to send their children to outside-schooling and/or private schools when the childrens’ ages are quite low.’ Although there was no significantly different supporting rate for sons between higher income households and lower income households, there appeared the different supporting rate for daughters between high income households, 20.8% and low income households, 13.2%. It is curious to recognize the fact the difference is higher for daughter’s education than son’s education because our general understanding for education in Japan used to be that parents normally hope more education for their sons than for their daughters. The present general understanding, nevertheless, is supported partly because the high desiring rate, 25.5%, for son’s education is observed for the groups of husband low and wife high.

The previous observation suggests the following human nature; it is likely that a couple of husband low and wife high judges that the husband low income can be explained by his lower education. Thus, these couples wish that their son should attain higher education in order to compensate for husband’s lower education, or not to encounter the common feeling of the inferior complex of lower education for their son. The above human nature encourages a wife to work because low household income can be compensated by wife’s extra income.

Second, a higher supporting rate, namely over 60%, is observed for the question, ‘whether parents desire that their children should obtain skills which enable them to engage in superior jobs.’ The supporting rate of higher income households is higher than that of lower income households for both sons and daughters.

Third, the supporting rate for the statement, ‘To study hard is not so important for children,’ is very different between higher income households and lower income households for both sons and daughters. The concrete figures for the latter households

are 49.0% for sons and 50.2 % for daughters, while they are 23.1 % for sons and 30.6% for daughters for the former households. The difference with respect to the opinion on childrens' study will affect childrens' schooling achievement and educational attainment to a certain extent.

The fourth question is about marriage. Specifically, it asks 'whether the unmarried status should be kept until a person can get married with an ideal spouse.' The supporting rates are different by about 10% points between higher income households and lower income households for both sons and daughters. The actual supporting rate for lower income households is 64.0% for sons and 62.6% for daughters respectively, while it is 52.3% for sons and 51.4% for daughters respectively for higher income households. Higher income parents desire more strongly their childrens' marriages than lower income parents.

Fifth, the question is addressed, 'whether parents support things where their children desire to do.' In other words, childrens' free choice on their lives should be admitted or not. Higher income households support sons' free choice less strongly, i.e., 46.2%, than lower income households. In other words, parents of higher income households accept their childrens' realistic lives more strongly than those of lower income households. "Realistic" here means that it is not appropriate to desire unrealistic lives beyond capability on economic conditions.

It should be noted, nevertheless, that the question on childrens' occupation gives us a slightly different but attractive picture. Specifically, lower income couples show a higher supporting rate, 68.8% with respect to childrens' stable job status than higher income couples, 56.9%. It may be possible to estimate that the recognition on the understanding of stable job status differs from higher income couples from lower income couples. Therefore, the difference regarding the above supporting rate may be explained by other reasons. It is, nevertheless, interesting to propose with fairly high confidence that lower income couples desire childrens' stable lives more strongly than higher income couples.

4.4.2 Attitudes on Children's Education: Working Wives versus Household Wives

There was a popular word in Japan; "an educational mama (mother)," implying that mothers are enthusiastic in educating their children. Normally, these mothers were household wives because they could have sufficient time to devote their effort to childrens' education under the non-working condition. The labor force participation rate has increased gradually and gradually, and thus there are a large number of wives currently who are working. It is an appealing subject to inquire whether these working mothers are able to spend their time for their childrens' education. This section intends to study the difference between house wives and working mothers as for their educational effort for their children.

We pay attention to the following two groups; husband high and wife non-working, and husband high and wife high. The reason why we pick um only the above two groups is that they showed a strong desire to educate their children, as we saw previously. Wives of the former group can have sufficient time, while those of the latter group can earn over 1.8 million yen per year. It is emphasized that the number of the latter has increased significantly in recent years. Do we find any effect of this increase on the mothers' behavior regarding childrens' education?

We can observe the following results based on Table 8 First, the question on whether parents want to send their sons to outside schooling and/or private schools gives the result such that no difference appeared between husband high and wife non-working, and husband high and wife high. It is interesting to note, however, that mothers of the latter show a stronger desire for their daughters than those of the former, probably because they hope that their daughters can engage in professional and technical jobs due to better education. This guess is supported by the following question; do you want that your children should obtain higher skills to be engaged in better jobs? The answer is that mothers of husband high and wife high tend to support it strongly for both sons and daughters.

Second, it is interesting to notice the difference in the way how to educate sons between the couple of husband high and wife high, and the one of husband high

and wife non-working. Mothers of the former tend to appraise the performance of sons' academic activity, while those of the latter tend to scold it. There should be several reasons. On the one hand, the difference in available times spending for their sons may be responsible. On the other hand, it is possible to guess that sons of the former is more eager to learn than those of the latter. It is impossible to identify the exact reasons, while it is an appealing subject to inquire further.

Third, mothers of husband high and wife high express an affirmative answer to the following question, "Whether they attach much importance to childrens' academic performance." In other words, an improvement in academic performance is highly appreciated.

Fourth, mothers of husband high and wife high regard that it is desirable to work for daughters ever if the degree of job status (i.e., prestige) is lower. Thus, mothers of husband high and wife high are enthusiastic in educating their daughters, and they desire that their children, in particular their daughters commit to working activity.

It is an interesting subject to inquire whether the difference in economic resources (i.e., income levels or available financial resources) to explain the difference in the anxiety for their childrens' education. Table 9 is the empirical result estimated by both OLS and the Heckman's two-step method in order to draw the effect of household income levels on educational expenditures. The reason why we adopted the two-step estimation method is that there may be some difference in the incentive in educational expenditures between households with some children and those with no children. If there were any sample selection bias, we should have to rely on the Heckman's method. Since the estimated results, however, did not give any significant difference in the estimated coefficients between the two estimation methods, it would be very likely that there was no sampling bias.

The empirical result based on Table 9 provides us with the following conclusion; the amount of educational expenditures is higher significantly for husband high and wife high than for husband low and wife low, even if we controlled for several variables such age dummies, age dummies of the oldest child, etc. It is

quite likely that the household income levels are responsible for the difference in the amount of educational expenditures.

5. Concluding Remarks

The main purpose of this study was to investigate whether the Douglas-Arisawa law has been eroding under the condition such that the labor force participation rate of wives has been increasing even among households where husband income levels are high, and at the same time that there appear a non-negligible number of wives, who do not work, of households where husband incomes are low. The method of the study was to make a decomposition of the Gini coefficients of the total household income into various elements such as spouse labor income, in particular wife income.

We found apparent the following empirical results. First of all, the degree of the contribution of wife income to the total household income has been increasing among households. This is obvious in particular among young households. This observation led us to study the difference in the structure of households such as both husband and wife education, occupation and attitudes on childrens' education.

Second, among couples whose husband income and wife income are both high the probability of professional and technical jobs for wife first job is higher significantly than among couples whose husband income high and wife income low, even if we controlled for other variables. The similar result was obtained in the case of the probability of having no children.

Third, we found that couples of husband high income and wife high income were more enthusiastic for their childrens' education than couples of husband low income and wife low income. This is true not only sons' education but also daughters' education.

We obtained the following conclusion; the labor force participation rate for the wives of husbands with high incomes is considerably high, and thus the possibility of high households income is fairly high because these wives earn high incomes. The working conditions of wives are considerably different according to the wife first jobs

and/or the husband occupation, as the present study and Manabe(2004) showed.

The working conditions of civil servants are fairly favorable regarding the work life balance such as child-care, etc., while there are considerably wide differences in the working conditions by the size of firms in the private sector. There are also significant differences between regular employees and non-regular employees as for the provision of enterprise-based welfare, as was shown by Nishikubo(2005) and Tachibanaki(2005). It should be desirable to prepare various universal benefits which improve the working conditions of all workers in order to reduce the difference in household incomes which arise from, for example, wider wage differentials among the youth.

Oshio(2006) and Abe(2006) proposed the findings which showed a lower degree of income re-distributing effect for all working generations, and a weaker effect of reducing income inequality for the youth generation. In particular, Oshio(2006) obtained the fact that the degree of income inequality has been increasing even after the income re-distributing policies were adopted.

One reason why a lower or weaker income re-distribution policy in Japan is observed is due to a lower rate of benefits in child-cares, employment policies, etc. by the public sector than that in many European nations. A small number of larger firms are able to provide child-care services to their employees. The great majority of workers, however, are working in smaller firms which are unable to provide employees with various services. It is necessary to construct a society such that the public sector provides all workers with various services such as child-cares, employment policies, etc. in view of the fact that couples who earn higher incomes are working in larger firms, or whose occupations are restricted to civil servants and/or employees who are engaged in professional and technical jobs.

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Tables and Figures

Table 1: Husband income and wife labor force status (Young couples where ages are 20s and 30s years old)

Husband's income (x10,000 yen)		Wife labor force status					Wife's income (x10,000 yen) [occupied person]		Number of households
Quintile	Mean	Employment rate	(Executive)	(Full-time employee)	(Civil servant)	(Non-regular employee)	Mean	Standard Deviation	
1995 total		30.80%	0.60%	18.00%	3.40%	8.90%	174.7	159	1111
I	267.2	39.7	0.9	28	2.2	8.7	173.7	127.7	233
II	408.4	32.4	0	20.4	4.2	7.9	166	137.2	217
III	496.4	33.8	0	20.7	4.7	8.5	188.9	165.7	217
IV	590.3	27	0.5	12.6	3.2	10.8	172.6	179.9	223
V	829.9	20.9	1.4	8.2	2.7	8.6	170.7	205	221
2001 total		39.00%	1.00%	21.70%	4.80%	11.60%	198.7	217.7	842
I	237.5	48.5	1.8	28.7	3	15	140.9	128.9	170
II	383.7	40.1	1.2	23.8	3.5	11.6	173.9	161.4	172
III	472.6	35.8	0	20.6	3	12.1	147.6	161.3	166
IV	576.4	37.4	0	22.3	8.4	6.6	265	218	166
V	833.3	33.1	1.8	12.7	6	12.7	295.2	350.7	168

Table 2: The rate of contribution by each income source
(Equivalent household primary income [e=0.5])
[Married households]

	Youth family (20~39 years old)		Middle-age family (40~59 years old)	
	1995	2001	1995	2001
Share of Income(S)				
Household head's labor income	0.855	0.819	0.761	0.752
Spouse's labor income	0.119	0.158	0.126	0.14
Other family member's labor	0.012	0.011	0.085	0.078
Non-labor income	0.013	0.012	0.028	0.03
Gini Correlation (R)				
Household head's labor income	0.855	0.855	0.817	0.821
Spouse's labor income	0.656	0.714	0.472	0.501
Other family member's labor	0.505	0.559	0.489	0.379
Non-labor income	0.528	0.496	0.567	0.612
Gini Coefficient (G)				
Household head's labor income	0.227	0.249	0.302	0.314
Spouse's labor income	0.806	0.79	0.718	0.723
Other family member's labor	0.983	0.985	0.833	0.831
Non-labor income	0.972	0.975	0.961	0.969
Share of Inequality (I)				
Household head's labor income	0.686	0.633	0.668	0.675
Spouse's labor income	0.260	0.323	0.153	0.177
Other family member's labor	0.025	0.022	0.124	0.085
Non-labor income	0.028	0.021	0.055	0.064
Overall Gini Coefficient	0.242	0.275	0.28	0.287
Gini coefficient without wife's income	0.229	0.25	0.292	0.301
Number of sample observations	1111	862	2237	1664

Table 3: The rate of contribution by each income source
(Equivalent household primary income [e=0.5])
[The case in which non-married persons are included]

	Youth family (20~39 years old)		Middle-age family (40~59 years old)	
	1995	2001	1995	2001
Share of households type(H)				
Married households	0.773	0.680		
Share of Income(S)				
Household head's labor income	0.885	0.863	0.759	0.755
Spouse's labor income	0.091	0.107	0.105	0.113
Other family member's labor income	0.018	0.024	0.096	0.086
Non-labor income	0.006	0.005	0.04	0.046
Gini Correlation (R)				
Household head's labor income	0.885	0.901	0.828	0.848
Spouse's labor income	0.601	0.644	0.507	0.559
Other family member's labor income	0.470	0.636	0.426	0.324
Non-labor income	0.038	0.022	0.576	0.629
Gini Coefficient (G)				
Household head's labor income	0.248	0.296	0.338	0.371
Spouse's labor income	0.852	0.857	0.778	0.798
Other family member's labor income	0.976	0.983	0.832	0.837
Non-labor income	0.987	0.987	0.962	0.969
Share of Inequality (I)				
Household head's labor income	0.780	0.755	0.685	0.701
Spouse's labor income	0.187	0.194	0.134	0.148
Other family member's labor income	0.032	0.05	0.109	0.068
Non-labor income	0.001	0.001	0.072	0.082
Overall Gini Coefficient	0.25	0.305	0.309	0.339
Gini coefficient without wife's income	0.245	0.297	0.317	0.345
Number of sample observations	1425	1242	2840	2279

Table 4: Husband average annual income, wife average annual income, and the contribution of wife income to household income by income class (unit: x10,000 yen)

	(1) Husband low Wife non-working	(2) Husband low Wife low	(3) Husband low Wife high	(4) Husband high Wife non-working	(5) Husband high Wife low	(6) Husband high Wife high	Total
Husband income	408.1	394.5	359.1	794.9	771.1	814.7	598.6
Wife income	7.3	72.3	345.5	7.5	73.5	470.8	112.3
Contribution rate of wife income	1.80%	15.50%	49.00%	0.90%	8.70%	36.60%	15.50%
N	242 (17.9%)	215 (15.9%)	140 (10.3%)	380 (28.1%)	224 (16.6%)	150 (11.1%)	1351

Table 5.1: The characteristics of couple by income class (unit: %)

		(1) Husband low Wife non-working	(2) Husband low Wife low	(3) Husband low Wife high	(4) Husband high Wife non-working	(5) Husband high Wife low	(6) Husband high Wife high	Total
Age	20s	15.7	7.9	10	5.3	1.8	1.3	7
	30s	64.1	46.5	45	39.7	24.6	30	42.1
	40s	20.3	45.6	45	55	73.7	68.7	50.9
Children	Number of children	1.4	1.6	1.2	1.6	1.8	1.6	1.6
Youngest child's age	No child	16.9	17.2	30	12.9	12.5	20.7	16.9
	Lower than 6 years old	57.9	29.8	27.9	34.5	12.5	23.3	32.4
	6-12 years old	16.1	30.2	21.4	25.8	31.7	19.3	24.6
	Over 12 years old	9.1	22.8	20.7	26.8	43.3	36.7	26.2
Husband academic background	Junior high school or senior high school	50.4	60.5	52.9	35.3	58.9	38.7	48.1
	Technical college graduate/ Career college	18.6	13.5	14.3	9.5	7.1	7.3	11.6
	College graduate	31	26	32.9	55.3	33.9	54	40.3
Wife Academic background	Junior high school or high school graduate	57.4	63.3	55	48.7	59.8	42	54.3
	Junior college or Technical college graduate	27.3	25.1	25	29	24.6	28.7	26.9
	College graduate	15.3	11.6	20	22.3	15.6	29.3	18.8
Husband job type	Regular employees	91.7	87.4	81.4	97.6	96.9	99.3	93.3
	Non-regular employees	6.2	11.6	11.4	1.1	3.1	0.7	5
	No job	2.1	0.9	7.1	1.3	0	0	1.6
Wife job type	Professional and technical	/	10.2	18.6	/	8	30.7	8.3
	Managerial job	/	0.5	2.1	/	1.3	4.7	1
	Clerical job	/	32.1	52.9	/	36.6	44	21.5
	Sales and service job	/	36.3	10	/	31.3	4.7	12.5
	Other job	/	20.9	7.9	/	22.8	5.3	8.5
	No job	100	0	8.6	100	0	10.7	48.1
Who proposed	Husband	78.1	76.3	72.9	81.8	78.1	80	78.5
	N	242 (17.9%)	215 (15.9%)	140 (10.3%)	380 (28.1%)	224 (16.6%)	150 (11.1%)	1351

Note) In the case in which respondents are male, first-person academic background and job type are husband academic background and job type, while in the case in which respondents are female, spouse academic background and job type are husband academic background and job type.

Table 5.2: The distribution of educational attainments for both husband parents and wife parents (unit: %)

		(1) Husband low Wife non-working	(2) Husband low Wife low	(3) Husband low Wife high	(4) Husband high Wife non-working	(5) Husband high Wife low	(6) Husband high Wife high	Total
Husband's father academic background	Junior high school or senior high school	69.5	66.7	75	66.7	80.3	71.6	71
	Technical college graduate / Career college graduate	4.7	8.2	2.4	2	2	0.9	3.3
	College graduate	25.8	25.2	22.6	31.3	17.8	27.6	25.8
Husband's mother academic background	Junior high school or high school	84.4	85.4	83.2	80.7	88.2	78.3	83.2
	Junior college or Technical college graduate	9.4	9.5	9	11.5	9.2	7.8	9.7
	College graduate	6.3	5.1	7.9	7.8	2.6	13.9	7.1
Wife's father academic background	Junior high school or senior high school	75.3	75.3	71.3	66.4	75.8	66	71.3
	Technical college graduate / Career college graduate	2.9	4	1.1	2.7	2.6	4.7	3
	College graduate	21.8	20.7	27.7	30.9	21.6	29.3	25.7
Wife's mother academic background	Junior high school or high school	85.9	87.2	84.4	82.7	86.4	76.7	84.1
	Junior college or Technical college graduate	8.5	7.4	14.6	10	7.1	11.7	9.5
	College graduate	5.7	5.4	1	7.3	6.5	11.7	6.4
	N	128 (14.9%)	135 (15.7%)	84 (9.8%)	246 (28.6%)	152 (17.7%)	116 (13.5%)	861

Table 5.3: The proportions of university educations regarding parents educational attainments by income class (unit: %)

		(1) Husband low Wife low	(2) Husband low Wife high	(3) Husband high Wife low	(4) Husband high Wife high	Total	The difference between high income couples (4) and low income couples
[Academic background]							
Husband's father academic background	College graduate and above	25.5	22.3	26.1	27.6	25.8	2.1
Husband's mother academic background	College graduate and above	5.7	7.9	5.8	13.9	7.1	8.2*
Wife's father academic background	College graduate and above	21.3	27.7	27.7	29.3	25.7	8.0*
Wife's mother academic background	College graduate and above	5.5	1.1	7.1	11.7	6.4	6.2*

** refers to a significant level at 1%, while * at 5%, + at 10%.

Table 6: Multiple logit estimation on the determining factor of income class
 [Base category: husband high and wife low (3)] (N=1329)

Reference group	Independent Variable	(1) Husband low / Wife low			(2) Husband low / Wife high			(4) Husband high / Wife high		
		Coefficient	Standard Deviation	Marginal Effect	Coefficient	Standard Deviation	Marginal Effect	Coefficient	Standard Deviation	Marginal Effect
Age [20s]	30s	-0.545*	0.278	-0.12	-0.919*	0.452	-0.042	0.598	0.793	0.059
	40s	-1.494**	0.308	-0.307	-1.613**	0.486	-0.06	0.524	0.807	0.076
Youngest child age [6-12 years old]	No child	0.531*	0.23	0.072	0.986**	0.333	0.049	0.769*	0.346	0.034
	Lower than 6 years old	0.586**	0.197	0.11	0.478	0.329	0.011	0.590+	0.338	0.021
	Over 12 years old	-0.218	0.212	-0.05	-0.349	0.327	-0.016	0.274	0.294	0.026
Academic background	Husband/ college graduate and above	-0.593**	0.159	-0.133	-0.383	0.257	-0.01	0.311	0.234	0.038
	Wife/ college graduate and above	-0.255	0.203	-0.054	-0.165	0.318	-0.004	0.012	0.275	0.008
Husband / job type [Clerical job]	Professional and technical job	-0.221	0.178	-0.048	-0.505*	0.299	-0.024	0.3	0.268	0.029
	Managerial job	-1.163**	0.283	-0.226	-0.485	0.387	-0.009	0.275	0.323	0.051
	Sales and service job	0.23	0.304	0.023	0.844*	0.433	0.056	0.154	0.572	-0.001
	Other job	0.410*	0.197	0.09	0.387	0.322	0.014	-0.104	0.404	-0.018
Wife / job type [Clerical job]	Professional and technical job	0.531	0.377	0.077	0.487	0.388	0.01	1.001**	0.337	0.062
	Managerial job	-0.651	1.22	-0.162	0.294	0.889	0.026	0.881	0.736	0.106
	Sales and service job	0.175	0.256	0.095	-1.573**	0.361	-0.056	-1.990**	0.438	-0.074
	Other job	-0.124	0.287	0.017	-1.529**	0.393	-0.051	-1.542**	0.423	-0.058
	No job	-0.637**	0.206	0.03	-3.648**	0.369	-0.202	-3.037**	0.318	-0.162
Inhabited area Cohabitation	Large city	-0.232	0.167	-0.05	-0.11	0.264	-0.001	0.01	0.246	0.007
	Living with parents	0.196	0.194	0.019	0.614*	0.271	0.034	0.381	0.266	0.018
	Constant	1.119**	0.378		1.093*	0.568		-1.467*	0.867	
	Pseudo R2	0.211								
	Log-likelihood	-1257.3								

Note) ** < 0.01, * < 0.05, + < 0.1

Table 7: The attitudes on children's education and the expectations on children's future life by income class

		(1) Husband low Wife low	(2) Husband low Wife high	(3) Husband high Wife low	(4) Husband high Wife high	Total	The difference between high income couples (4) and low income
[Attitudes on children's education]							
Whether parents desire to send their children to outside-schooling and/or private schools when the children's ages are quite low.	[Male]	13	25.5	17.7	15.4	16.4	2.4
	[Female]	13.2	12.3	14.2	20.8	14.4	7.6*
Whether parents desire that their children should obtain skills which enable them to engage in	[Male]	64.7	68.6	68.4	72.3	67.9	7.6*
	[Female]	53.5	54.4	66.5	66.7	60.9	12.2*
To study hard is not so important for children	[Male]	49	37.2	34.2	23.1	38.6	-25.9**
	[Female]	50.2	42.1	39.4	30.6	42.5	-19.6**
Whether parents desire that their children should receive education in good taste such as piano, etc.	[Male]	30.8	39.2	36.9	49.2	36.1	18.4**
	[Female]	53.1	59.6	57.4	66.7	57	13.6*
[Expectations on children's future life]							
Whether unmarried status should be kept until a person get married with an ideal spouse.	[Male]	64	56.9	61.3	52.3	61.1	-11.7*
	[Female]	62.6	56.1	57.7	51.4	58.7	-11.2*
Whether parents desire that their children to work in a stable job.	[Male]	42.9	27.5	43.8	43.1	42.2	0.2
	[Female]	44	33.3	41.3	48.6	42.4	4.6
Whether parents encourage their children lower excessive hope for occupation in the case in which it is difficult for them to work on ideal jobs.	[Male]	68.8	74.5	67.9	56.9	67.7	-11.9*
	[Female]	65.8	70.2	65.8	61.1	65.7	-4.7
Whether parents support things where their children desire to do.	[Male]	59.5	64.7	55.6	46.2	56.8	-13.3*
	[Female]	59.6	68.4	60.3	65.3	61.3	0.7

Note) ** refers to a significant level at 1%, while * at 5%, + at 10%.

Table 8: The attitudes on children's education and the expectations on children's future life
-Working wives versus household wives-

		(1) Husband high Wife non-	(2) Husband high Wife high	Total	The difference between (2) and (1)
[Educational expenditures for children]	/				
Annual expenditures for school fees	/	528,000	749,000	487,000	221,000**
Monthly expenditures for outside-schooling and/or private tutor	/	12,300	20,700	11,900	8,400*
Monthly expenditures for various exercises	/	10,100	14,000	9,700	3,900+
[Attitudes on children's education] (Mother)					
Whether you desire to send your children to outside-schooling and/or private schools when the children's ages are quite low.	[Male] [Female]	14.80% 11.8	14.30% 25.8	13.30% 13.1	-0.50% 14.0*
Whether you desire that your children should obtain skills which enable them to engage in superior jobs.	[Male] [Female]	65.8 64.7	75 77.4	71.1 64.1	9.2+ 12.7+
To study hard is not so important for children	[Male] [Female]	25.5 34.6	28.6 25.8	34.7 38.7	3.1 -8.8+
Whether you desire that your children should receive education in good taste such as piano, etc.	[Male] [Female]	34.9 57.4	50 64.5	34.5 57.1	15.1* 7.1
Whether you appraise the performance of your children's academic activity	[Male] [Female]	79.2 84.6	89.3 83.9	81.8 83.2	10.1+ 0.7
Whether you scold the performance of your children's academic activity	[Male] [Female]	85.9 87.5	75.1 83.9	83 82.5	-10.8+ -4.6
Whether you talk a lot with your children	[Male] [Female]	79.2 84.6	60.7 77.4	77.2 84.3	-18.5** -7.2
Whether you are strict to your children's discipline.	[Male] [Female]	59.7 64.5	57.1 67.6	53.6 59.4	-2.6 3.1
Whether you attach much your children's academic performance	[Male] [Female]	49 44.1	64.3 48.4	40.8 39.2	15.3* 4.3
[Expectations on children's future life] (Mother)					
Whether unmarried status should be kept until a person get married with an ideal spouse.	[Male] [Female]	66.4 61.8	75.1 71	65.8 65.2	8.7 9.2+
Whether mothers desire that their children to work in a stable job.	[Male] [Female]	36.9 34.6	42.9 54.8	40 41.9	6 10.2+
Whether mothers encourage their children lower excessive hope for occupation in the case in which it is difficult for them to work on ideal jobs.	[Male] [Female]	73.8 65.4	60.7 74.2	72.6 68.6	-13.1 8.4
Whether mothers support things where their children desire to do.	[Male] [Female]	53.7 61.3	35.7 65.3	54.9 67.7	-18.0** 4

Note) ** refers to a significant level at 1%, while * at 5%, + at 10%.

Table 9: The effect of the income class of couples on educational expenditures
 Dependent variable: Educational expenditures for children (x10,000 yen)

Reference group	Independent Variable	OLS		Heckman	
		Coefficient	Standard error	Coefficient	Standard error
Age [20s]	30s	13.05	8.85	18.35 ⁺	10.53
	40s	31.74 ^{**}	9.31	41.70 ^{**}	11.17
Eldest child's age	Eldest child/ over 12 years old	78.20 ^{**}	5.75	62.35 ^{**}	6.44
Husband academic background [below college graduate]	Husband/ college graduate and above	10.21 ^{**}	4.85	14.93 ^{**}	5.74
Wife academic background [below college graduate]	Wife/ college graduate and above	5.45	5.95	11.78 ⁺	7.30
The income class of couples [Husband low / Wife low (including Wife non working)]	Husband high / Wife high	-6.14	7.73	-1.14	10.07
	Husband high / Wife non-working	11.94 [*]	5.79	10.63 ⁺	6.74
	Husband high / Wife low	25.60 ^{**}	6.81	29.55 ^{**}	7.85
	Husband high / Wife high	30.27 ^{**}	7.83	42.03 ^{**}	9.31
Inhabited area [except large cities]	large city	0.87	5.14	7.25	6.42
Cohabitation	living with parents	20.72 ^{**}	5.91	21.57 ^{**}	6.81
	Heckman's modified variable	/	/	-0.14	0.17
	_cons	0.18	8.69	2.17	11.07
	Prob>Chi2	0.00		0.00	
	Number of obs	1123		1351	
	Censored obs	/		228	
	Uncensored obs	/		1123	

Note 1) All independent variables are dummy variables.

Note 2) In the Heckman's two step procedure, having child dummy is used as the dependent variable of the first estimation. As the independent variables, age group dummy, husband academic background dummy, wife academic background dummy, husband job type dummy, wife job type dummy, large city dummy and living with parents dummy are used for the estimation.