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"Dual-Earner Couples' Housework Behavior in Japan: Exchange, Display, or 'Her Money'?"

Dual-Earner Couples' Housework Behavior in Japan: Exchange, Display, or "Her Money"?

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ABSTRACT

The purpose of this paper is to examine Japanese dual-earner couples' housework behavior using the Japanese Panel Survey of Consumers (JPSC) in 2007 of the Institute for Research on Household Economics. Economic exchange, gender display, and "her money" models were estimated including interactions of independent variables and wives' employment status. With respect to housework time, on one hand, from exchange and display perspectives, the results supported that husbands who married to wives employed full-time and these wives show display as husbands' relative earnings share decreases, and, on the other hand, from autonomy, or "her money" perspective, the results suggested that absolute earnings of wives engaged in full-time jobs increase their husbands' housework time and, in contrast, those of wives working part-time reduce their own time spent on domestic work. With respect to husbands' housework-sharing behavior, the results showed that husbands with wives employed full-time display gender.

Key Words: economic exchange, gender display, autonomy, her money, housework

JEL Codes: D03, D19, D19, J16, Z13

1. Introduction

Husbands' and wives' housework behavior has been one of the concerns in the fields of sociology and economics, and most of previous studies have focused on economic exchange and gender display mainly for the US and European countries. In Japan, the behavior has been analyzed mostly in family sociology, but gender display model has seldom been examined in previous studies and reported in the scholarly journals. Ando (forthcoming), using data from the social research conducted in 2006 in Japan, estimated economic exchange and gender display models from the point of view of identity economics and showed that the results support gender display model for Japanese husband's housework-sharing behavior, although sample size was small and only the age of the youngest child was used as control variables, which called for reexamination. Thus, in this paper, Japanese dual-earner couples' housework behavior is reexamined, using the Japanese Panel Survey of Consumers (JPSC) of the Institute for Research on Household Economics because it has conducted the survey since 1993 and therefore it has much more respondents and much larger number of questionnaires which are likely to be sources of control variables often used in the previous studies.

Previous studies have often included both husbands' relative earnings share and its squared term as independent variable to gender display models in the estimation, but muticolliniearity is easily expected to occur in the estimation because of high correlation between them. In addition, in previous researches on husbands' and wives' housework behavior, either spouse's relative earnings share or dependency measure has been used as independent variable when estimating the models, but Gupta (2006, 2007) claimed that husbands' and wives' absolute earnings, not either spouse's relative earnings share, should be used as independent variable and showed that wives' absolute income plays important roles for

explaining her housework behavior. In this paper, in addition to economic exchange and gender display models, autonomy model, which was estimated only for married and cohabiting married women working full-time by Gupta (2006, 2007, 2009), are also estimated for dual-earner couples in Japan.

This paper is composed of six sections. In the following section, previous literature on economic exchange, gender display, and autonomy models will be overviewed. In section 3, analytical framework and strategy are outlined. In section 4, including descriptive statistics by wives' employment status, the results of empirical analyses are shown. Conclusions are drawn in section 5.

2. Previous Literature

2.1 Economic Exchange and Gender Display

There have been two controversial explanations for husbands' and wives' housework behavior. Gender neutral economic exchange model, dependency model, or bargaining model claims that as husbands' earnings share or work share as a proxy for the measure decreases, husbands increase their housework time or housework share and wives decrease theirs (Mancer and Brown 1980, McElroy and Harney 1981, Lundberg and Pollak 1993, 1996). On the other hand, gender display model assumes that although husbands increase their housework time they come to be gradually reluctant to accept housework time or housework share more as their relative earnings share or work share decreases untli it reaches unusually small level, but once it passes the level, they accept it less while wives undertake it more.

Previous studies show inconsistent results. In the field of sociology, Brines (1994) specified the estimated models for gender display and showed that it explains American husbands' housework behavior while dependency model accounts for wives', using data from the wave 20 of the Panel Study of Income Dynamics (PSID). Greenstein (2000), using 1987-1988 National Survey of Families and Household (NSFH), estimated five models for husbands and wives by seemingly unrelated regression (SUR) technique, two of which were

replication of what Brines (1994) ran regressions. He made it clear that gender display can be found not only for husbands but also for wives when distributional measure (husband's or wife's share for couple's total housework) is employed as a dependent variable, asserting that gender display is caused by (gender) deviance neutralization. Bittman et al. (2003) compared Australian husbands and wives with American couples, using 1992 Australian National Time-Use Survey (ANTUS) and 1987—1988 NSFH. They found that gender display accounts for Australian wives' and American husbands' housework behavior and economic exchange model for American wives', but neither model explains Australian husbands'. Evertson and Nermo (2004), using the Swedish Level of Living Survey (LNU) for the years 1974, 1981, 1991, and 2000 for Sweden and the PSID for the years 1973, 1981, 1991, and 1999 for the US, compared husbands' and wives' housework behaviors in both countries. The results supported gender display model for American wives for the years 1981, 1991, and 1999 and for American husbands for the year 1973, while dependency model explains Swedish husbands and wives for all years.

Usdansky and parker (2011), using pooled data from the 2003 through 2006 American Time Use Survey (ATUS), restricted the sample to wives employed full-time with working husbands at the age of 18 and 65 for both spouses, and considered whether wives' educational attainment and their motherhood have effects on their housework time. They classified wives into four groups: wives without a college degree and with children aged 18 years and younger in the household, those with a degree of college and with children under 18 years old, those without a degree of college or children, and those with a degree but without children; and they showed that only wives without a college degree and with these children display gender when they perform housework.

In the field of economics, Akerlof and Kranton (2000) incorporated the concept of identity into utility function and showed that although husbands undertake housework share more as their work share decreases from 100%, when their work share decreases less than a given small level, they become inelastic to accept it. Akerlof and Kranton explained this

husbands' behavior from the view point of losses in identity on the part of husband as well as on the part of wife. Ando (forthcoming) estimated gender display models for Japanese husbands' housework-sharing behavior,[1] and showed that the graph is depicted as the parabolic, quadratic form, supporting gender display.[2] Ando (2011) demonstrated by experimental investigations that when husbands' work share is extremely small Japanese husbands could show gender display and wives could help their husband do it in more than a half of couples in Japan.

2.2 Autonomy, or "Her Money"

Gupta (2006, 2007) raised questions for including relative earnings share measure as independent variable and family income as one of the control variables when estimating wives' housework behavior. He argued that these measures imply the assumption that both spouses' earnings have the same effects on wife's housework time, but in fact they have different ones, and that while husbands are likely to use their earnings are used for their personal purposes, wives' expenditures from their earnings are associated with those for substitutes of household goods and services in the market, which enables wives to outsource their housework and decrease their time spent on it. His argument was based on some previous studies. In Ross (1987), who was the first to examine the different effects of husbands' and wives' absolute earnings by estimating them separately, the estimated coefficients were -.039 and .047 for husband's earnings and wife's respectively, showing different impacts with opposite signs.[3] Oropesa (1993) used proprietary survey data in 1999 from the Market facts Consumer Mail Panel for DDB Needham Worldwide's Life Style Study and found that regardless of their employment status, the odds of household's paying someone for housecleaning service is positively connected with wives' income using logistic regression technique.[4] Cohen (1998),

1 Earlier version of this paper is Ando (2008), but it was written in Japanese.

2 It should be noted that confronted with budget constraint, the number of questionnaires for the author was restricted and, as a result, the control variables were also restricted to the respondents' youngest child's age.

3 Note that dependent variable was not married husbands' housework time, but an averaged index of their responses to five questions on household tasks.

4 The results of Oropesa (1993) suggested that how many time household have dinner out at restaurants is also positively and significantly associated with wives' income when family income is excluded from the estimated equation, although wives' income no longer holds significant correlation when estimating with family income also included, which, in turn, showed a positive and significant association with dependent variable. Other results

using data for the 1993 Consumer Expenditure Survey (CEX), examined housework-related service consumption in the US, found that husbands' and wives' earnings are positively and significantly associated with spending on housekeeping and percentage of food away home, and the rises in wives' earnings raise almost twice expenditure for housekeeping service as those in husbands' while they have the same effect on the percentage of eating away home, and concluded that wives use housekeeping service in the market as a substitutes of their own to reduce their time allocated on it. Brandon (1999) estimated determinants of market child care use among married mothers using data from the fifth follow-up survey of the National Longitudinal study of the High School Class of 1972 and logistic regression method. The results indicated that irrespective of their employment status, mothers' income is positively and significantly associated with their market child care use.

From these empirical evidences and examinations in previous studies, Gupta claimed that it is not spouse's relative earnings share, rather, it is wives' absolute earnings that have effects on their housework time, and that not family income, but husbands' and wives' absolute earnings should be estimated separately in the estimation, and he named the model "autonomy." In effect, Gupta (2006) showed with data from the second wave of NSFH that when estimating autonomy model with all control variables, working married women's income is negatively and significantly related to their housework hours while their partner's is negatively but insignificantly associated to them. Also, Gupta (2007), using a sample of married women working full-time from the second wave of NSFH, made it clear that the results support gender display model for married full-time working women when couple's total income was included in the model, but that once both partners' income were estimated separately, gender display model no longer holds and wives' income is negatively and significantly, and husbands' income is negatively but insignificantly associated with wives' housework time when wives' relative earnings share and its squared term were excluded.

Gupta (2009), using data from the 1999 wave of the German Socio-Economic Panel

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indicated that frequency of the use of delivery service for meal doesn't have significant relation with wives' income.

(GSOEP) for Germany, the LNU for the year 2000 for Sweden, and the 1999 wave of the PSID for the US, estimated economic exchange, gender display, and autonomy models for each country and compared married or cohabiting full-time working women's housework behavior. The results indicated that although gender display model cannot be necessarily rejected for Germany and the US, autonomy model accounts for all three countries, demonstrating how important women's absolute earnings are for reducing their time spent on household chores.

Usdansky and Parker (2011), using the 2003 through 2006 ATUS pooled data as mentioned above, also included wives' income as one of independent variables when estimating economic exchange and gender display models, and presented that it is reversely and significantly related to their housework hours.

3. Analytical Framework

3.1 Models and Strategy

When confirming whether economic exchange and/or gender display supports husbands' and wives' housework behavior, previous studies often estimated the equation described as below:

Model I: $Y_i = \alpha_{0i} + \alpha_{1i} X + \alpha_{2i} X^2 + \alpha_{3i} Z + \varepsilon_0, i = 1,2$ (3.1)

where Y is housework time, X is husbands' relative earnings share, X^2 is its squared term, and Z is a vector of control variables. i denotes genders; 1 and 2 mean husband and wife respectively. The expected sign of α_{1i} is negative for husband and positive for wife. α_{2i} means curvilinear effect and the expected sign is negative for husband and positive for wife. But one problem in the estimation can be pointed out: multicollinearity between X and X^2 is easily expected to occur, and there is the possibility that the results don't show the correct coefficients and statistical significances for them. Therefore, in this paper, in order to evaluate those two housework behaviors, not only equation (3.1) but also two equations

Model II: $Y_i = \alpha_{0i} + \alpha_{1i} X + \alpha_{3i} Z + \varepsilon_0, i = 1,2$ (3.2)

and

Model III: $Y_i = \alpha_{0i} + \alpha_{2i} X^2 + \alpha_{3i} Z + \varepsilon_0, i = 1,2$ (3.3)

are estimated.

Autonomy model is generally described as:

Model IV: $Y_i = \beta_{0i} + \beta_{1h} H + \beta_{1w} W + \beta_2 Z + \varepsilon_0, i = 1,2$ (3.4)

where H and W are husbands' and wives' absolute earnings respectively, and i is 2. Usually, autonomy model is estimated for working women, not for their partners (Gupta 2006, 2007, 2009, Usdansky and Parker 2011), but in this paper equation (3.4) is estimated also for husbands to investigate whether not only "her money" (wives' income) but also "his money" (husbands' income) affect dual-earner couples' housework behavior, firstly because the rises in female labor force participation rates can be found in Japan even after marriage, childbearing, and childrearing and there is the possibility that earnings of working wives have the power to have their husband undertake housework, and secondly because in Japan where gender traditionalism is said to be deep-rooted, it is not surprising that husbands' earnings could affect both spouses' housework. The expected sign of β_{1w} is negative in the results for wives if it is true that wives spend their own earnings on substitutable goods and services of her domestic work in the market, reducing their housework time, and positive in those for husbands if wives' income has the power to have husbands perform housework. The sign of β_{1h} is unknown *a priori* in the results of the estimation for husbands as well as for wives. Even in developed countries such as Japan, at the times when husbands' income has much more power against wives and female labor participation rates are lower than today, husbands' earnings as one of the symbols of patriarchy could be considered to decease their housework time and increase wives', and therefore it is no wonder that the effects still remain. Of course, they can also be considered to decrease wives' time spent on housework chores when husbands pool their income for the family.

Finally, in order to confirm whether or not wives' employment status produces the differences in housework behavior for husbands and wives, especially paying attention to exchange, display, and "his money" and "her money," I estimate theses equations with

interactions of four independent variables and standardized dummy variable for wives' employment status as full-time worker added to equations (3.1), (3.2), (3.3), and (3.4).

3.2 Samples

The Institute for Research on Household Economics has conducted JPSC since 1993[5]. Cohort A consists of a group of 1,500 women aged between 24 and 34 in 1993. Cohort B, consisting of 500 women aged between 24 and 27, and cohort C, consisting of 836 women aged between 24 and 29 were added to cohort A in 1997 and 2003 respectively. Cohort D was already added in 2008, but we cannot use Waves 16 in 2008 and 17 in 2009 when I started tackling the subject. The sample was restricted to working married women actually living with their husband. Respondents with missing values, those living apart from their spouse, and those in the case of either spouse being student, retired or unemployed were excluded from the sample. Consequently, 623 married women at the age of 28―48 remained, 248 of whom are employed part-time and the rest of whom are engaged in full-time jobs, with the age of their husbands ranging from 25―58.[6]

3.3 Variables

Dependent and Independent Variable Dependent variable in this paper is husbands' and wives' housework time, specifically, minutes per day allocated on domestic work including childcare. Independent variables for economic exchange and gender display models are husbands' relative earnings share and its squared term, and husbands' and wives' absolute earnings for "his money" and "her money" model. Gupta (2006, 2007, 2009) estimated autonomy models only for wives' housework behavior, but in this paper both spouses' earnings are included in the model for wives as well as for husbands in order to compare the effects of both earnings on wives' housework time with those on husbands'.

Control Variables Control variables are husbands' and wives' work time, educational attainment, age, and employment status as full-time worker; in addtion to these, the number of

5 The Institute for Research on Household Economics has the website and its English version (http://www.kakeiken.or.jp/en/JPSC/jpsc.html).

6 The JPSC uses the terms "regular (worker)" and "irregular (worker)" in the survey. They are almost the same as "full-time (worker)" and "part-time (worker)" respectively. In this paper, following previous literature, the latter terms are used.

children, existence of the youngest child as pre-schooler and as elementary school student are used.

According to time-availability hypothesis, the more one spouse spends his/her time on market labor, the less he/she allocate time on housework and the more he/she raises the other spouse's housework time. Therefore, irrespective of gender, the expected signs of the coefficient of husbands' and wives' work hours are negative for the estimation of his/her own housework behavior and positive for that of his/her spouse's.

Generally, husbands with higher educational attainment are considered to be so educated in egalitarianism that they undertake housework and spend their time on it more, which leads to the expectation that these husbands raise their housework time and reduce wives'. In contrast, wives with higher educational attainment are assumed to have higher consciousness of egalitarianism, reducing their own housework hours and have their husbands participate in domestic work more. Following the definitions by the JPSC, as their highest educational attainment, 1 is given for junior high school, 2 for vocational college and school (only for respondents without graduation of high school), 3 for high school, 4 for vocational college and school (only for respondents with graduation of high school), 5 for junior college and technical college, 6 for college, and 7 for graduate school.

Husbands' and wives' employment status is assumed to affect their housework time. Full-time workers generally spend time more on market labor and time is less available for household tasks compared to part-time workers. In this paper, 1 is given if husbands and wives are engaged in full-time jobs, and 0 if they are not.

With regard to husbands' and wives' age, it is commonly considered that the more aged, the less egalitarian and the more conservative for gender roles, which leads to the assumption that more aged husbands and those who married to higher- year- old wives spend time less on household tasks and that wives at the higher age and those with more aged husbands allocate time more on domestic works.

In the society into which egalitarianism has penetrated more or less, husbands as well

as wives are likely to participate in childbearing until children need not to be supported or in the case of many children. The number of children is assumed to raise husbands' and wives' housework time, especially time spent on child rearing. This is the case with husbands and wives with their youngest child being as pre-schooler or elementary school student. Therefore, 1 is given if they have the youngest child as a pre-schooler and 0 if they don't; likewise, 1 is given if they have the youngest child as an elementary school student and 0 if they don't.

4. Results

4.1 Descriptive Findings

Table 1

Descriptive statistics by wives' employment status for the variables used in this paper is presented in Table 1. One-way ANOVAs were conducted for dependent and independent variables respectively to confirm the differences in these variables by the status. The Table 1 shows that wives spend their time more on housework and less on paid work than husbands: husbands with full-time working wives do housework no more than 36 minutes and those who married to part-time working wives only nearly 26 minutes on average; on the contrary, the former wives spend 215 minutes and the latter wives 281 minutes on domestic work averagely. As a result, wives allocate more time on total work time, that is, the summed time worked inside and outside home, than husbands; mean of total work time of wives exceeds husbands' by 77.05 minutes for full-time worker and 6.92 minutes for part-time worker. Because most husbands in the sample are employed full-time as we can imagine from the mean of dummy variable "husband as a full-time worker" in the last low, dichotomous variable which provide 1 for those working full-time and 0 for those employed part-time, is 0.95 for those who married to wives as full-time worker and 0.94 for those with wives engaged in part-time jobs, there cannot be found significant differences in their housework time and earnings, but with respect

to husbands' relative earnings share and work share and wives' housework time and earnings, means are significantly different by wives' employment status; wives in full-time jobs spend more time on housework than those in part-time jobs and therefore husbands who married to the former wives share it less than husbands with the latter wives.

4.2 Results for Husband's and Wife's Housework Time

4.2.1 Husband

Table 2

Table 3

Table 4

The Results of estimations of economic exchange and gender display for husbands are presented in Table 2 and table 3. In Tabke 2, Model I shows that all coefficients of linear and squared terms with regard to husband's relative earnings share and interactions are not significant, but, as shown in Table 4, the correlation coefficient between these two independent variables is .985 for uncensored observations, which indicates that they have high correlation and multicollinearity occurs in the estimation. In fact, when estimating with either of them excluded, the coefficients and *z*-statistics of those independent variables in the table changed dramatically; results of Models II and III support economic exchange and gender display respectively, although both interactions are not significant. It should be noted that they are not to be interpreted as they are and that coefficients and standard errors should be calculated because of using interactions. In these cases, dummy variable is dichotomous and, therefore, only two values are provided for the dummy variables, one of which is 1.229, standardized value of 1, for wives working full-time and the other of which is -.813, that of 0, for wives employed part-time. Calculated simple slopes and *z*-values are presented in Table 3; the results of Model I show that both linear and squared terms for husband's relative earnings share are not significant irrespective of wife's employment status. Although significances of the spurious

coefficients of interactions of Models II and III in Table 2 is not beyond 5% level, calculated simple slopes of husband's relative earnings share in Model II and its squared term in Model III for husbands with wives engaged in part-time jobs are show negative and significant relation with husbands' housework time whereas both of those for husbands who married to wives employed full-time has negative but insignificant association with it. It should be kept in mind that husbands never reduce their housework hours even though their relative earnings share decreases to 0%; they only decrease marginal increases in housework time.

The results of Model IV is presented also in Table 2, showing seemingly that husbands' earnings don't affect their time spent on housework independent of their wives' employment status and that wives' income raises it whether their wives work full-time or part-time. However, Table 3 indicates that although husbands' absolute income is not significant for both husbands with wives as full-time worker and those with wives engaged in part-time jobs, but full-time employed wives' earnings are positively and significantly associated with husbands' housework hours.

The results of Models I, II, and III in Table 2 are consistent with time-availability hypothesis; husbands' work hours decrease their housework time and wives' increase it. Existence of pre-schooler and elementary school student raises husbands' participation in household activities. Both spouses' educational attainments are not shown to have significant relation with time spent on the activities. The results of all four models show that husbands' age neither raises nor reduces their housework hours, and those of Models I, II, and III indicate wives' have negative but weak correlation with them. The results of Model IV show the changes in statistical significance for three control variables; they demonstrate that while retaining the significance of husbands' work hours, wives' turned insignificant; wives' age shows positive and significant association with them; and the coefficient of the number of children became significant with positive sign. Constant term, which I call "fundamental housework time" hereinafter, ranges from nearly 130 minutes to about 147 minutes, which tells us how less husbands do housework basically in weekdays.

4.2.2 Wife

Table 5

Table 6

Table 7

The results of estimations of Models I, II, III, and IV and calculated coefficients and *t*-values for interactions are shown in Table 5 and 6. Seemingly, the squared term of husband's relative earnings share is positively and significantly related to the time wives spend on household tasks, but, as mentioned above, multicollinerity is much likely to occur in the estimation of Model I with correlation coefficient between the linear and squared terms for total observations shown to be .978 in Table 7. In effect, coefficients and *t*-values greattly changed in the estimations of Models II and III. Economic exchange and gender display can be found in the results of these two models in Table 5. However, Table 6 rejects economic exchange irrespective of wives' employment status and gender display for wives working full-time; it demonstrates that gender display explains housework behavior for wives engaged in part-time jobs, although they never increase their housework time even though husbands' relative earnings share decreases to 0%; they only reduce marginal decreases in housework time. Looking at the results of Model IV in Table 5, "her money" reduces wives' housework hours for both groups of working wives, but calculated coefficients and *t*-values in Table 7 tell us that wives' absolute earnings decrease them for those working part-time, not for those employed full-time.

As is clear from Tables 5, wives' work time reduces their housework time, but husbands' don't affect it. Unlike husbands, even though they have a child on the 1st to the 9th grade, wives never raise the time; on the other hand, they increase it by around 26 minutes per child and by about an hour when they have pre-schooler. Husbands' and wives' age and employment status *per se* are not significantly associated with wives' time allocated on

housework. As is expected above, except Model IV, the results in Table 5 indicate that wives can reduce the time if they are married to husbands with higher educational attainment and that in contrast husbands, the longer wives' period of education, the more they accept housework, which doesn't meet the expectation that was made above. Wives' fundamental housework time ranges from nearly 380 minutes to about 469 minutes, which means what many hours they allocate on it compared to husbands. As we can understand from the result that husbands' and wives' employment status doesn't affect wives' fundamental housework time, even though they are employed full-time, wives are forced to undertake it much more than husbands.

5. Conclusion

In this paper, using the JPSC of the Institute for Research on Household Economics, dual-earner couples' housework behavior in Japan was examined from economic exchange, gender display, and "his money" and "her money" perspectives. These three models were estimated and whether wives' employment status affect couples' housework behavior was investigated. Then, improvements were made for two problems in estimating: avoidance of multicollinearity and calculation of simple slopes and significances for interactions.

When estimating Model I often used to confirm economic exchange and gender display, and in the case of no calculations of simple slopes and statistical significances for interactions as most of previous literature in the fields of economics and sociology did, the results supported gender display for wives irrespective of their employment status, but neither of the two models explained husbands housework behavior. Taking high correlation between husband's relative earnings share and its squared term into account, when estimating with either of them excluded from Model I, the results of Model II showed economic exchange and those of Model III did gender display for husbands and wives independent of wives' employment status.

In addition, when calculating simple slopes and significances of them for interactions, it was found that both economic exchange and gender display explain housework behavior for

husbands who married to wives employed part-time, not that for husbands with wives working full-time; with respect to wives, gender display account for housework behavior of part-time workers, and not for full-time workers, although economic exchange doesn't support it irrespective of their employment status. In other words, gender displays appear between wives employed part-time and husbands with these wives, not between wives working full-time and husbands who married to the wives.

When not taking control variables, equations for husbands who married to wives working part-time are obtained as below:

$Y_h = 131.611 - 41.64 * X^2$ (5.1)

$Y_w = 396.128 + 34.441 * X^2$ (5.2)

where Y_h and Y_w are husbands' and wives' housework time, and X^2 is husbands' relative earnings share. Equations (5.1) and (5.2) leads to husbands' housework share corresponding to each husbands' relative earnings share.

Graph 1

Graph 1 illustrates these husbands' housework-sharing behavior, which shows that as Akerlof and Kranton (2000) insisted, husbands become reluctant to accept housework-sharing as their relative earnings sharing decreases, and the couples do gender with respect to housework-sharing as well as with respect to housework time. It should be remembered that also with regard to housework-sharing, these husbands never reduces the share and their wives never increase it even husbands' relative earnings share decreases and it reaches 0%.

Another concern in this paper is whether husbands' and wives' absolute earnings have effects on their housework hours. As a result of estimations of Model IV for both spouses without calculations of simple slopes and significances for interactions, it was found that husbands' earnings don't affect husbands' and wives' housework time, that wives' income increases husbands' housework time and reduce theirs regardless of their employment status,

and that earnings of wives as part-time worker decrease their housework hours more than that of those engaged in full-time jobs. However, when calculating simple slopes and significances of them, it was made clear that income of wives as part-time worker reduces their housework time but it doesn't increase their husbands'; in contrast, that of wives as full-time worker increases their husbands' housework hours, but it doesn't reduce theirs.

In Japan, as more than half of husbands were censored in Tobit regressions, many of them never spend their time on housework. It has been often pointed out that the key to making husbands participate in housework is considered to removing gender traditionalisms from the society. But, taking most of husbands in the sample are full-time workers into account, empirical findings in this paper might imply that gender display depends on whether husbands and wives have equal relations in employment and level of income between dual-earner couples; in addition, interestingly, although husbands' income doesn't affect both spouses' housework time, wives' does; that of wives working full-time increases their husbands' time allocated on household tasks and that of wives employed part-time decreases their own time spent on them, and as time-availability hypothesis says, husbands' and wives' working hours restrict their participating time in domestic work. It is well known that work hours of full-time workers, especially male workers in Japan is longer on the global standard. Therefore, the government should take policies which promote companies and offices to recruit women as well as men as full-time worker and introduce family-friendly system in order for female workers not to resign when they get married or in the period of pregnancy and childbearing and to reentry the labor market as a part-time worker after these life events. In fact, female's labor participation rates decrease at the age of 30 ― 40; most of them reentry to the labor market after childrearing, but they can hardly get full-time jobs however eagerly they want. Also for realizing work-life balance, it is an importnat role that the government should play to reduce full-time male workers' working time, make it possible for more female workers to be employed full-time so that they can increase thier work hours up to adequate level, and arrange supporting system in which wives with pre-schooler can be liberated from child care.

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Table 1 Descriptive Statistics By Wives' Employment Status

Variable	Full-Time (n=375)				Part-Time (n=248)			
	Min.	*Max.*	*Mean*	*S.D.*	*Min.*	*Max.*	*Mean*	*S.D.*
Hasband's housework time (minutes)	0.00	360.00	36.00	58.57	0.00	240.00	25.51	46.67
Wife's housework time (minutes)	0.00	720.00	215.39 *	120.06	2.00	843.00	280.99	141.96
Husband's housework share	0.00	0.67	0.08 *	0.14	0.00	1.00	0.12	0.19
Husband's work time (minutes)	0.00	1320.00	604.17	126.30	0.00	1380.00	602.57	133.24
Wife's work time (minutes)	0.00	900.00	501.83	110.19	0.00	1080.00	354.01	120.60
Husband's earnings (10 thousand JPN Yen	0.00	3400.00	548.02	335.55	0.00	1872.00	544.35	249.64
Wife's earnings (10 thousand JPN Yen)	0.00	1171.00	304.60 *	203.73	0.00	719.00	109.19	82.91
Husband's relative earnings share	0.00	1.00	0.65 *	0.17	0.00	1.00	0.82	0.13
Husband's educational attainment	1.00	7.00	4.13	1.65	1.00	7.00	3.91	1.64
Wife's educational attainment	1.00	7.00	4.23	1.21	1.00	6.00	3.76	1.18
Husband's age	25.00	58.00	41.07	7.64	27.00	57.00	42.05	6.89
Wife's age	28.00	48.00	38.93	6.36	28.00	48.00	39.58	5.81
Number of children	0.00	5.00	1.65	1.07	0.00	4.00	1.83	0.95
Pre-school, youngest child	0.00	1.00	0.24	0.43	0.00	1.00	0.22	0.41
Elementary school, youngest child	0.00	1.00	0.22	0.42	0.00	1.00	0.30	0.46
Husband, full-time worker	0.00	1.00	0.95	0.22	0.00	1.00	0.94	0.24

Note: One-way ANOVAs were conducted for two dependent variables and three independent ones. * indicates that with respect to the variable, mean is significantly different by wives' employment status.

Table 2 Results for Husbands

Variable	Model I			Model II			Model III			Model IV		
	Coef.	z-value		Coef.	z-value		Coef.	z-value		Coef.	z-value	
Constant	129.445	2.294	*	147.108	3.201	**	131.611	3.051	**	124.075	2.937	**
Husband's relative earnings share												
Linear term	9.946	0.092		-55.487	-1.987	*						
Linear term* Wife, fulltime	14.266	0.143		3.167	0.136							
Squared term	-49.740	-0.639					-42.234	-2.102	*			
Suared term* Wife, full-time	-11.598	-0.158					-0.730	-0.043				
Husband's earnings										-0.008	-0.542	
Husband's earnings* Wife, fulltime										0.007	0.535	
Wife's earnings										0.115	3.238	**
Wife's earnings* Wife, full-time										-0.012	-0.405	
Work hours												
Husband	-0.245	-7.660	***	-0.244	-7.675	***	-0.244	-7.681	***	-0.248	-7.841	***
Wife	0.070	2.166	*	0.073	2.248	*	0.070	2.171	*	0.051	1.604	
Educational attainment												
Husband	4.653	1.813		4.680	1.836		4.697	1.838		3.953	1.545	
Wife	0.665	0.190		0.489	0.140		0.598	0.172		-0.445	-0.129	
Age												
Husband	0.011	0.011		0.032	0.033		0.021	0.022		0.078	0.082	
Wife	-1.957	-1.643		-1.972	-1.658		-1.964	-1.650		-2.448	-2.067	*
Number of children	8.850	1.928		8.623	1.891		8.844	1.938		9.604	2.123	*
Youngest child												
Pre-school	64.796	5.661	***	64.763	5.663	***	64.856	5.670	***	63.524	5.660	***
Elementary school	28.270	2.960	**	28.189	2.954	**	28.277	2.964	**	27.725	2.958	**
Employment status												
Husband, full-time				24.258	1.573		22.841	1.487		22.789	1.482	
	22.347	1.428										
Wife, full-time				-1.736	-0.099		0.768	0.074		-5.165	-0.611	
	-3.581	-0.103										
Total observations	623			623			623			623		
Uncensored observations	309			309			309			309		

***: $p < 0.001$, **: $p < 0.01$, *: $p < 0.05$

Table 3 Results of Simple Slopes and Significances of Interactions for Husbands

Variable	Model I		Model II			Model III			Model IV		
	Slope	*z*-value	Slope	*z*-value		Slope	*z*-value		Slope	*z*-value	
Husband's relative earnings share											
Wife employed part-time	-1.646	-0.011	-58.061	-2.236	*						
Wife employed full-time	27.474	0.205	-51.595	-1.533							
Husband's relative earnings share squared											
Wife employed part-time	-40.315	-0.372				-41.641	-2.015	*			
Wife employed full-time	-63.990	-0.611				-43.130	-1.659				
Husband's earnings											
Wife employed part-time									-0.013	-0.981	
Wife employed full-time									0.000	0.027	
Wife's earnings											
Wife employed part-time									0.124	1.035	
Wife employed full-time									0.100	3.611	***

***: $p < 0.001$, **: $p < 0.01$, *: $p < 0.05$

Table 4 Correlation Coefficients for Uncensored Observations

	Husband's relative earnings share	Husband's relative earnings share^2	Husband's earnings	Wife's earnings
Husband's relative earnings share	1.000			
Husband's relative earnings share^2	0.985	1.000		
Husband's earnings	0.278	0.266	1.000	
Wife's earnings	-0.807	-0.799	0.156	1.000

Table 5 Results for Wives

Variable	Model I			Model II			Model III			Model IV		
	Coef.	*t*-value		Coef.	*t*-value		Coef.	*t*-value		Coef.	*t*-value	
Constant	469.150	6.598	***	379.869	6.611	***	396.128	7.425	***	424.626	8.174	***
Husband's relative earnings share												
Linear term	-208.645	-1.505		74.237	2.077	*						
Linear term* Wife, fulltime	119.231	0.943		-8.210	-0.275							
Squared term	206.856	2.095	*				65.348	2.567	*			
Suared term* Wife, full-time	-84.305	-0.911					-7.270	-0.334				
Husband's earnings										-0.016	-0.931	
Husband's earnings* Wife, fulltime										0.016	1.052	
Wife's earnings										-0.175	-3.712	***
Wife's earnings* Wife, full-time										0.091	2.396	*
Work hours												
Husband	0.013	0.382		0.015	0.449		0.014	0.405		0.023	0.678	
Wife	-0.495	-11.952	***	-0.504	-12.201	***	-0.494	-11.934	***	-0.489	-11.932	***
Educational attainment												
Husband	-7.577	-2.345	*	-7.359	-2.285	*	-7.580	-2.356	*	-5.635	-1.729	
Wife	11.932	2.689	**	12.677	2.863	**	12.588	2.859	**	13.546	3.071	**
Age												
Husband	-1.904	-1.564		-1.913	-1.569		-1.941	-1.596		-1.816	-1.499	
Wife	0.509	0.336		0.479	0.316		0.488	0.322		1.032	0.679	
Number of children	25.795	4.542	***	27.415	4.864	***	26.934	4.782	***	25.679	4.569	***
Youngest child												
Pre-school	59.783	4.031	***	59.823	4.027	***	59.275	3.999	***	60.765	4.136	***
Elementary school	-6.553	-0.550		-6.639	-0.556		-7.414	-0.622		-4.695	-0.399	
Employment status												
Husband, full-time	2.030	0.105		-2.608	-0.136		-1.735	-0.091		-2.257	-0.119	
Wife, full-time	-30.489	-0.685		15.063	0.667		13.834	1.041		-11.065	-1.021	
Total observations	623			623			623			623		
adj R squared	0.403			0.400			0.402					

***: $p < 0.001$, **: $p < 0.01$, *: $p < 0.05$

Table 6 Results of Simple Slopes amd Signidficances of Interactions for Wives

Variable	Model I			Model II			Model III			Model IV		
	Slope	*t*-value		Slope	*t*-value		Slope	*t*-value		Slope	*t*-value	
Husband's relative earnings share												
Wife employed part-time	165.351	-0.376		49.956	1.620							
Wife employed full-time	200.998	-1.520		40.919	1.568							
Husband's relative earnings share squared												
Wife employed part-time	179.274	0.576					34.441	2.069	*			
Wife employed full-time	95.640	2.879	**				32.028	1.761				
Husband's earnings												
Wife employed part-time										0.024	-1.197	
Wife employed full-time										0.021	0.160	
Wife's earnings												
Wife employed part-time										0.072	-3.439	***
Wife employed full-time										0.036	-1.756	

***: $p < 0.001$, **: $p < 0.01$, *: $p < 0.05$

Table 7 Correlation Coefficients for Total Observations

	Husband's relative earnigs share	Husband's relative earnigs share^2	Husband's earnings	Wife's earnings
Husband's relative earnigs share	1.000			
Husband's relative earnigs share^2	0.978	1.000		
Husband's earnings	0.345	0.337	1.000	
Wife's earnings	-0.758	-0.768	0.113	1.000

Graph 1 Husbands' Housework-Sharing Behavior (Wives: Working Part-time)